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Special Issue Reprint

Typology of Chinese Languages

One Name, Many Languages

Edited by
Umberto Ansaldo and Pui Yiu Szeto

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Typology of Chinese Languages: One Name, Many Languages

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About the Editors

Umberto Ansaldo

Umberto Ansaldo is Professor and Dean of the College of Arts and Sciences at VinUniversity in Hanoi, Vietnam. Umberto specializes in the study of languages of East and Southeast Asia, as well as Pidgin and Creoles of the Indian Ocean. His research covers typological, historical, and sociolinguistic aspects of these languages. In his papers and books, Umberto developed an evolutionary framework for the study of contact languages. This approach positions the dynamics of language contact as central mechanisms of language change, and argues that multilingual transmission should be considered a fundamental factor behind the evolution of linguistic diversity. For many years Umberto led a project that resulted in a comprehensive documentation of an endangered Creole of Sri Lanka - Sri Lanka Malay. In his role as higher education administrator, Umberto has worked on translational research for impact and engagement, as well as championed the importance of humanities and social sciences as core elements of value-driven education for a better future.

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Editorial

Typology of Chinese Languages: An Introduction to the Special Issue

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Of the world's major language groups, the Sinitic (Chinese) branch of the Sino-Tibetan family stands out for the profound disconnect between its popular perception and its linguistic reality. To the layperson, "Chinese" is a single language, a monolith spoken by over a billion people. To the linguist, however, it is a branch of languages as diverse as, if not more so than, the Romance or Germanic languages. Decades of descriptive work on previously lesser-known Sinitic languages have effectively dispelled the old myth of "universal Chinese grammar" (Chao, 1968), revealing a remarkable degree of internal diversity (Norman, 1988; Chappell, 2001, 2015). This diversity is not merely a matter of variation between the major, traditionally recognized groups (such as Mandarin vs. Yue vs. Min), but is also profoundly present within them. Even Mandarin, often considered the most homogenous of the Sinitic languages, exhibits significant typological variation across its vast geographical spread, as quantitative areal studies have shown (Szeto et al., 2018).

A prevailing explanation for this variation is the prolonged and intensive language contact Sinitic has had with its neighbours. Sinitic can be conceptualized as a "typological sandwich" (Szeto & Yurayong, 2021), situated between the Altaic languages to its north and the Mainland Southeast Asian (MSEA) languages to its south. This has resulted in a broad north–south typological cline. Northern Sinitic varieties show signs of convergence towards the Altaic type—a process termed "Altaicization" in Hashimoto's (1976) pioneering work—while Southern Sinitic varieties share features with their MSEA neighbours. Northern varieties, for instance, tend towards fewer tones and classifiers and a stronger head-final tendency, mirroring Altaic languages, whereas southern varieties exhibit more complex tonal systems and a larger inventory of classifiers, consistent with the MSEA areal tendencies.

This Special Issue, "Typology of Chinese Languages: One Name, Many Languages", was conceived to explore this rich, multi-layered diversity within Sinitic. The goal is to move beyond the traditional focus on a handful of standardized or majority varieties and to examine the intricate patterns of variation—phonological, lexical, and syntactic—that characterize the branch. By examining under-described varieties, contact-induced changes, and internal innovations from both synchronic and diachronic perspectives, the contributions herein collectively argue that a nuanced understanding of Sinitic is essential not only for Chinese linguistics but for linguistic typology, language contact studies, and the theory of language change as a whole. This collection demonstrates that the Sinitic languages, far from being uniform, represent a dynamic laboratory for observing the complex interplay of inheritance, contact, and independent evolution.

The papers in this Special Issue weave a narrative that spans from the macro-typological context of the entire Sino-Tibetan family to the micro-grammatical analysis

of specific constructions in individual Chinese languages. Setting the broadest possible stage, **Chingduang Yurayong and Erika Sandman** analyse word order patterns across 20 Chinese languages and 43 other Sino-Tibetan languages. They argue that the branch has a head-final baseline, but Chinese languages have developed a hybrid profile, with verb phrases shifting towards head-initial structures due to contact with MSEA languages, followed by a partial re-installation of head-finality in the north under the influence of Altaic-type languages. Crucially, they demonstrate that this north–south typological divide is not a sharp boundary but a gradable cline, confirming that geography and contact are powerful shapers of Sinitic syntax.

Zooming into these contact zones, several papers explore the intricate dynamics of linguistic convergence and divergence. **Hanbo Liao's** paper provides a compelling case study of bidirectional diffusion. By comparing tonal split patterns in Lingnan Sinitic and neighbouring Kam-Tai languages, Liao shows that influence has not been a one-way street. Features such as the secondary tonal split in upper-register tones appear to have spread from Kam-Tai to Sinitic, while the *zhuóshǎng guī q*ù (濁上歸去) phenomenon diffused from Northern Sinitic varieties into the loanword phonology of Kam-Tai. This work underscores the importance of viewing Sinitic languages not in isolation, but as deeply integrated components of their local linguistic ecologies.

The theme of intense contact is further examined in papers focusing on highly restructured Sinitic varieties. **Chenlei Zhou** meticulously documents five distinct comparative constructions in Zhoutun, a Mandarin variety heavily influenced by Amdo Tibetan. This deep dive reveals how each construction is a hybrid of features from both language families and proposes new subcategories for typological analysis, such as the distinction between "comparative" and "attributive" subjects, born from the unique contact situation. **Sami Honkasalo** explores a different contact scenario, demonstrating that Russian influence on Dungan permeates all layers of the language, from phonology to morphosyntax, going far beyond mere lexical borrowing. This Russianization has led to significant structural remodelling, particularly in clause combining and complex sentences, pulling Dungan further away from the Sinitic prototype. **Julie Pauline Marie Lefort's** work on Tangwang complements this by carefully distinguishing between different layers of Altaic influence on another hybrid variety. She teases apart recent borrowings from Dongxiang, which are few, and deeper, regionally shared Altaic features, arguing that Tangwang's grammar is the result of multiple historical contact events rather than a simple case of modern adstratal influence.

The focus then shifts from external contact to internal variation within the Sinitic family itself. **Giorgio Francesco Arcodia** challenges the long-held typological assumption that Sinitic languages are universally "tenseless". Surveying a wide range of non-standard varieties, particularly in Northern China, he reveals a spectrum of temporal marking systems, from the canonical aspect-prominent type to "mixed-temporal" systems and even varieties with arguably obligatory, grammaticalized tense markers. This work cautions against over-generalization and highlights the significant, areally clustered diversity that exists even in core grammatical categories. **Xinyi Gao** explores this internal diversity through the lens of dative marking strategies in the transitional Hunan region. She identifies five distinct patterns of syncretism between dative, allative, benefactive, passive, and object markers, tracing them back to three main grammaticalization pathways. This work vividly illustrates how Hunan serves as a linguistic crossroads where different historical developments converge and interact.

This internal variation is also the focus of **Man-Shan Hui and Richard VanNess Simmons's** "Contact-Induced Layering and Diffusion in Yuè Chinese Varieties—The *-iun/iut and *-un/ut Merger Reconsidered." Using dialect geography, they re-examine a classic

phonological problem and find that the merger of these rimes is not a general characteristic of Yue, but is instead localized. Their analysis traces the diffusion of different reflexes along historical transportation and migration routes, elegantly demonstrating how phonological change is intimately linked to demographic history. **Hilario de Sousa** provides another deep dive into the historical development within Yue, examining the origins of tonal affixes. By comparing modern Standard Cantonese with older texts and non-standard varieties, he shows that the system of suprafixation is not static; words can gain or lose these affixes over time, and their prevalence varies significantly across different Cantonese-speaking communities. He argues that the theory of a diminutive suffix origin remains the most plausible, while highlighting the dynamic nature of this morphological process.

The collection then moves toward methodological innovation and the analysis of specific grammatical domains. **Robert Marcelo Sevilla** explores a novel source of data for typological classification. Analysing the acoustic properties of hesitation markers (e.g., "uh", "um"), he tests whether their vowel quality can serve as a diagnostic for the internal subgrouping of the transitional Xiang dialects. While the results do not yield a neat classificatory tool, they powerfully reflect the mixed nature of Xiang, which blends northern and southern phonological features, demonstrating that even sub-lexical phenomena can bear the imprint of broad typological trends. **Qi Huang and Walter Bisang** use a cognitive experiment to investigate how classifiers contribute to referentiality in a dialect that lacks the bare classifier construction. Their findings show that the choice between specific and general classifiers serves a contrastive function, especially when deictic gestures are insufficient, providing a "last-resort" strategy for object identification.

Ryan Ka Yau Lai and Michelle Man-Long Pang propose a radical re-analysis of a core Cantonese construction. Arguing against traditional decompositional accounts, they put forth a holistic constructional schema (the Causative–Resultative Construction, or CRC) that unifies a wide range of structures, from resultatives to comparatives and particle constructions. Their work shows that even in a well-studied language like Cantonese, fresh theoretical perspectives can reveal deeper grammatical generalizations and challenge long-standing descriptive conventions. This is complemented by **Wen Lu and Pui Yiu Szeto's** study, which analyses the morpheme GIVE across 27 varieties of the lesser-known Hui group. They identify ten distinct functions and multiple etymological sources, showing how mechanisms like semantic extension and co-optation have led to radical polyfunctionality, and they argue that the diversity of "give" verbs challenges its status as a stable "basic" vocabulary item for assessing genetic relatedness. Lastly, **Shanshan Lü and Xiao Huang** investigate the grammaticalization of the adjective "good" into a modal auxiliary in Shaoxing Wu. They trace its development from "fit to" into markers of circumstantial, deontic, and epistemic possibility, contributing new evidence to our understanding of universal grammaticalization pathways for modality.

While this Special Issue provides a broad survey of the diversity within Sinitic, it is by no means exhaustive. A notable limitation is the focus on certain groups to the exclusion of others; major groups such as Hakka and Gan, for example, are mentioned but do not receive the dedicated focus of a full paper. This is a reflection of the papers submitted rather than a deliberate omission, but it highlights a persistent gap in the literature that future research must address. Methodologically, the papers here are diverse, employing historical-comparative analysis, dialect geography, corpus linguistics, and acoustic and cognitive experiments. However, a more systematic integration of sociolinguistic fieldwork and psycholinguistic experimentation would undoubtedly enrich our understanding of the synchronic variation and the cognitive realities underpinning these typological patterns.

Looking towards the future, the path forward for the typology of Chinese languages is clear. First, there is a pressing need for more descriptive and analytical work on the under-

documented varieties, particularly within the aforementioned underrepresented groups and the many non-Mandarin varieties spoken outside of China. Second, research should increasingly integrate methodologies, combining, for example, the rigour of historical-comparative linguistics with the precision of acoustic phonetics and the geographic insights of dialectology. Third, we must continue to explore novel data sources, following the lead of studies on hesitation markers, to see what other "marginal" phenomena might hold clues to deeper typological patterns. Finally, and perhaps most importantly, the rich and varied data from the Sinitic branch should not be an end in itself. It must be brought into a broader dialogue with linguistic theory, serving as a crucial testing ground for hypotheses about argument structure, grammaticalization, language contact, and the fundamental principles of language change. The "many languages" that exist under the "one name" of Chinese offer a world of insight, and we have only just begun to explore it.

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Article

Chinese Word Order in the Comparative Sino-Tibetan and Sociotypological Contexts

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Abstract: The present study discusses typology and variation of word order patterns in nominal and verb structures across 20 Chinese languages and compares them with another 43 languages from the Sino-Tibetan family. The methods employed are internal and external historical reconstruction and correlation studies from linguistic typology and sociolinguistics. The results show that the head-final tendency is a baseline across the family, but individual languages differ by the degree of head-initial structures allowed in a language, leading to a hybrid word order profile. On the one hand, Chinese languages consistently manifest the head-final noun phrase structures, whereas head-initial deviants can be explained either internally through reanalysis or externally through contact. On the other hand, Chinese verb phrases have varied toward head-initial structures due to contact with verb-medial languages of Mainland Southeast Asia, before reinstalling the head-final structures as a consequence of contact with verb-final languages in North Asia. When extralinguistic factors are considered, the typological north-south divide of Chinese appears to be geographically consistent and gradable by the latitude of individual Chinese language communities, confirming the validity of a broader typological cline from north to south in Eastern Eurasia.

Keywords: Chinese; Sino-Tibetan; word order; variation; historical linguistics; linguistic typology; areal linguistics

1. Introduction

Comparative studies of Chinese languages have become more widely practised in recent decades, particularly thanks to an increasing amount of information and data on understudied Chinese languages. Such valuable language descriptions supplement previous comparative works on Chinese dialectology (Yue-Hashimoto 1999; Li 2002; Cao 2008; Kurpaska 2010) and contribute to our better understanding of variation across Chinese languages. The advancement of such a diversity-based approach provides more evidence against the approach of "Universal Chinese Grammar" (Chao 1968, p. 13), which has been influential in Chinese linguistics for many decades (see also its criticism in Matthews 1999).

Such trends and advancement in the field of Chinese and Asian linguistics as well as linguistic typology in general have enabled further investigational attempts, which confirm an early observation by Hashimoto (1976) and strengthen the current consensus that variation in word order patterns of nominal and verb structures across Chinese languages largely results from language contact with non-Chinese languages. This emerging variation has been considered in a number of studies as evidence for areal diffusion in particular locations (Ansaldo 1999, 2010; Peyraube 2015; Szeto et al. 2018; Szeto 2019; Szeto and Yurayong 2021), particularly in Northwest China (Janhunen 2007; Sandman and Simon 2016) and South China (Li 2008; Matthews 2007; de Sousa 2015; Huang and Wu 2018; Szeto and Yurayong 2022).

Given the state of the art, the present study revisits earlier accounts of Chinese word order typology discussed in the context of the Sino-Tibetan family (Dryer 2003; LaPolla 2015). We aim to analyse diachronic changes of Sino-Tibetan word order based on synchronic data, naturally since diachronic data are only available for Chinese, Bodic and Burmo-Qiangic branches. For example, Nichols (1992) and Bickel (2015) have demonstrated that synchronic distributions of typological features can predictively provide information on diachronic trends and geographical clines as a directional implication for spread of languages and their features. Previously, variation and changes in the word order structure of Chinese have been discussed in a number of studies (e.g., Sun 1996; Xu 2006). However, Chinese has often been presented in publications as one name and one language possessing a single homogenous grammar contrasting with other more diverse Tibeto-Burman languages, leaving subtle differences present among individual Chinese languages unveiled. Unlike what has been usually done in previous studies, we adopt a diversity-linguistic approach which treats word order features of Chinese together with other Tibeto-Burman languages as equal datapoints without assumption or bias towards the hypothetical first level split of Proto-Sino-Tibetan into two major branches: Chinese vs. Tibeto-Burman (à Matisoff 2003; Sagart et al. 2019). The use of the term "Tibeto-Burman" in this study is therefore only for the purpose of referring to Sino-Tibetan languages which are not classified as belonging to the Chinese branch.

The aim of the current study is to tackle two main research questions, regarding the reconstruction of Proto-Chinese syntax and the role of variation and sociolinguistic factors in its change over time. By sociolinguistic factors, we refer to social factors related to language use in a broad sense, including population size, the number of L2 speakers and their speech communities. While these factors are usually not at the core of variationist sociolinguistics, they have received considerable attention in the work of sociolinguists interested in language change and language contact (e.g., Weinreich 1974; Thomason and Kaufman 1988). More recent works have also connected these factors to tendencies of typological change, including morphological complexity (e.g., Lupyan and Dale 2010; Sinnemäki and Di Garbo 2018). Although it is not possible to collect detailed sociolinguistic data on all the languages in our sample, the relevance of sociolinguistic factors for typological change have received so much attention in earlier research that we consider it necessary to bring out this issue as one of the factors which can explain our observations.

For the first research question, we explore diversity of word order structures across Chinese and the entire Sino-Tibetan language family through a variety sampling method developed by Miestamo et al. (2016). The principle is that one variety per one subbranch is taken in order to "display as much variety as possible in the linguistic realizations of the phenomena under investigation and to reveal even the rarest strategies or types of expression in the domain explored" (Miestamo et al. 2016, p. 234). The sample includes 20 Chinese and 43 Tibeto-Burman languages, geographically distributed across the Himalayas, their foothills in Southeast Asia and China as shown in Figure 1.

The data are collected from reference grammars and individual publications which provide synchronic (but sometimes also diachronic) descriptions and examples of individual word order features. Sociolinguistic data related to numbers of speakers and geographical locations of speech communities are also collected.

In terms of diachronic analysis to explain changes in word order typology of Sino-Tibetan languages, the current study uses a typological framework for both internal and external reconstruction methods. In practice, it means that we try to find an internal explanation first and will consider an external explanation only after the former reaches its limit, following a methodological practice of Thomason (2010). We challenge a holistic view that a protolanguage of any hitherto known language family must have been purely either the head-initial or head-final type without room for variation and hybridity.

As for the second research question, the data are quantitatively processed through coefficient of determination (R^2, Wright 1921) for testing correlations between intralinguistic (a structural aspect of language) and extralinguistic (social and geographical) variables

(see Section 3 for detailed description of the method). Concretely, we quantify variables by taking numbers of speakers and a geographical location (GIS coordinates) of any given speech community. The discussion pays special attention to a scenario of change initiated from sociolinguistically motivated free variation which further leads to the deviation of word order structure from the predominant head-final tendency of the Proto-Sino-Tibetan syntax, as is generally presented in the literature (see Dryer 2003; LaPolla 2015).

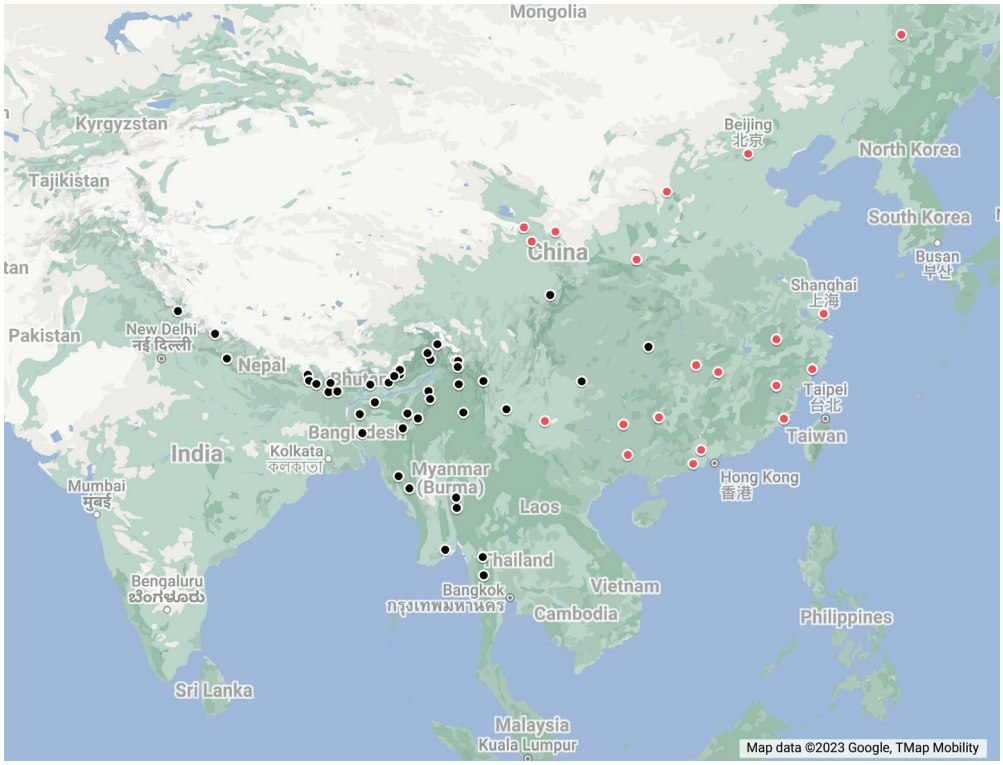


Figure 1. Geographical coverage of the data: n = 63 (red = Chinese, black = Tibeto-Burman).

As a roadmap of the work structure, Section 2 provides relevant information and observations made in previous studies on word order and its related sociolinguistic factors in general and in Sino-Tibetan languages specifically. Section 3 describes data related matters and the method of analysis which is applied to the description of individual word order features in Section 4. The information and insights obtained from analysis of the data are used in the discussion of reconstruction and the explanation of directionality changes in word order from the Proto-Chinese and Proto-Sino-Tibetan stages, as shown in Section 5. Section 6 concludes the study with essential notes and suggestions for conducting further studies of the topic.

2. Background and Theoretical Framework

This section reviews significant observations of Chinese word order structure, as discussed in previous studies, and serves as a basis for building the research method for the present study (Section 3), as references for description of different word order features (Section 4) and as a theoretical framework for the discussion of reconstruction and the directionality of change in Chinese word order, motivated by multiple intralinguistic and extralinguistic factors (Section 5).

2.1. Typology and Directionality Change of Word Order

A nuclear element of syntax is labelled as "head" which interacts with its complements labelled as "dependent(s)". A formalist approach assumes that a language has strictly consistent parameters for the order of head and its dependents (e.g., Jackendoff

1977; Lightfoot 1982; Chomsky and Lasnik 1993). However, natural languages are not always confined to such invariable parameters; instead, deviations can be observed, and the most we can say is that a language possesses a cross-category harmony governing tendencies of placing head before or after dependent(s) (e.g., Greenberg 1963; Hawkins 1983; Dryer 1992a). The present study will illustrate concrete evidence from Chinese and other Sino-Tibetan languages against the formalist idea of invariable parameters (as will be demonstrated in Sections 4 and 5).

Throughout the entire work, we adopt a dichotomy widely used in the literature on syntax to describe a structure and directionality where head precedes dependent(s) as "head-initial", e.g., Vietnamese ***năm*** *nay* [**year** this] 'this year', whereas another structure where head follows dependent(s) as "head-final", e.g., Mongolian *ene* ***jil*** [this **year**] 'this year' (see also alternative terminologies, e.g., "right" and "left branching" in Dryer 1992a). To give some examples from neighbouring languages of Chinese, Tai-Kadai, Hmong-Mien and Austroasiatic predominantly use head-initial nominal and verb structures, while languages of the Altaic type, Japonic, Koreanic, Tungusic, Mongolic and Turkic, consistently conform with head-final directionality (see numerous chapters on word order features in Dryer and Haspelmath 2013 for a worldwide survey).

Due to its binary characteristics, when a change of head directionality occurs in word order, it tends to be abrupt or is even sometimes considered catastrophic (Lightfoot 1999, p. 105). From the opposing viewpoint, the directionality change may not occur catastrophically over a night, but the result is a predictable outcome of competition among existing variants which are available and competing in the speakers' linguistic resources at a certain point before one has won over the others (see the variationist approaches to language change in Kroch 1989; Santorini 1993; Pintzuk 2017). In the current study, we adopt the latter variationist approach and will show varying degrees of directionality change in individual phrase and clause structures in Sino-Tibetan languages (see Sections 4 and 5).

Regarding the predictability of changes in head directionality, we are always dealing with a finite set of possibilities, particularly when there are only binary options for directionality of word order, as discussed above. The attempt has been made to explain the directionality of word order in a typological framework by providing a relative chronology in which constituents and their related constructions shift their directionality faster. For instance, Greenbergian implicational universals (1963) have been applied in the discussion of hierarchy among different noun modification types in Hawkins (1983, p. 75), Dryer (1992b) and Croft (2003, p. 123), as shown in Table 1. The given constituent orders in each row represent word order profiles, six scenarios which are typologically expected in a language.

Table 1. The Prepositional Noun Modifier Hierarchy (modified from Hawkins 1983, p. 75; Dryer 1992b; and Croft 2003, p. 123): N = Noun; Quan = Quantifier; Dem = Demonstrative; Adj =Adjective; Poss = Possessor; and Rel = Relative clause.

Type	Head-Initial Structures	Head-Final Structures
1	NQuan & NDem & NAdj & NPoss & NRel	–
2	NDem & NAdj & NPoss & NRel	QuantN
3	NAdj & NPoss & NRel	QuantN & DemN
4	NPoss & NRel	QuantN & DemN & AdjN
5	NRel	QuantN & DemN & AdjN & PossN
6	–	QuantN & DemN & AdjN & PossN & RelN

When they are put in an ordered rank below, we can apply their hierarchical order to conduct a diachronic prediction of which types tend to shift their directionality earlier.

Quantifiers → Demonstratives → Adjectives → Possessors → Relative clauses

According to the proposed hierarchy, quantifiers being at the higher surface of noun phrase structure tend to shift their directionality first whereas relative clauses at a deeper structural level would be resistant and the last among the noun phrase constituents to shift their position. However, this postulation based on the noun phrase modification hierarchy is not necessarily valid universally across languages of the world (as will be shown in Section 5.3), but it can serve as a starting point for the prediction of syntactic change, which utilises a predictive power of the typological approach to language change (Greenberg 1957, p. 77; Jakobson 1958, p. 528). The Chinese and Sino-Tibetan data discussed in the present study will contribute further to the improvement of such a predictive tool.

When it comes to the extension of directionality changes, the effects may apply at different levels of syntactic structure in different rates. For instance, it has been discussed in diachronic syntax literature that subordinate clauses tend to be more conservative and therefore can preserve older patterns better than main clauses (Bybee 2001). This assumption is applicable, for example, to West Germanic languages in which main clauses have shifted to the verb-medial pattern (1a), while subordinate clauses still retain the Proto-Germanic verb-final pattern (1b).

Dutch (Indo-European)

(1) a. *Ze* ***spreken*** *geen* *Chinees.*
3PL [**speak.3PL** no Chinese]
'They do not speak Chinese.'

b. *Het* *is* *jammer* *dat* *ze* *geen* *Chinees* ***spreken***.
it be.3SG pity QUOT 3PL [no Chinese **speak.3PL**]
'It is pity that they do not speak Chinese.'

A similar explanation has also been applied to trace the verb-initial structures inherited from Proto-Austroasiatic, which are retained in subordinate clauses of modern Austroasiatic languages, although they may have shifted to verb-medial or verb-final patterns due to contact and may vary in terms of how extensively the retention of the verb-initial structures still applies across the grammatical system (Jenny 2015, 2020). This assumption and related observations, which Chinese and other Sino-Tibetan languages provide evidence for (see Section 5.2), are useful also for the current study which conducts a syntactic reconstruction of Proto-Chinese and beyond by also paying attention to differences in the word order patterns of main vs. complex clauses.

2.2. Word Order Typology of Chinese and Sino-Tibetan Languages

In linguistic typology, Chinese and Sino-Tibetan languages are generally regarded as belonging to a head-final type of language, meaning that they tend to prefer word order with the head following dependents. This view is largely based on the observation that verb-final is the predominant syntactic pattern among the majority of Sino-Tibetan languages, which typologically entails correlations with other head-final structures (as discussed in Greenberg 1963; Dryer 1992a). However, individual Sino-Tibetan languages show varying degrees of deviation from this baseline head-final tendency, with Chinese exhibiting significantly more variation and admixture of head-final and head-initial structures. It has been argued that this phenomenon is best explained by language contact and areal diffusion (as examined by Dryer 2003; Chappell et al. 2007; Szeto and Yurayong 2021).

As illustrated in Table 2, the noticeably non-harmonious profile of word order structures in Chinese languages is evident particularly in verb phrases due to their predominant verb-medial basic word order, unlike noun phrases which are largely head-final.

Table 2. General tendencies of word order features of Chinese languages (based on Chappell et al. 2007, p. 189).

Head-Final Structures	**Head-Initial Structures**
Adjective → Noun	Verb ← Direct Object
Possessor → Possessee	Auxiliary Verb ← Main Verb
Numeral → Classifier → Noun	Verb ← Adverbial complement
Demonstrative → Classifier → Noun	Adposition ← Noun phrase
Relative Clause → Noun	Complementiser ← Sentence
Degree adverb → Adjective	
Standard of comparison → Adjective	
Adverb → Verb	
Adpositional phrase → Verb	

Note that this is a generalisation which does not take into account the entire subtle variation observed across Chinese languages (for more data and analyses on variation across Chinese, see e.g., Yue-Hashimoto 1999; Szeto 2019, and examples in Section 4).

Previous discussions by Dryer (1992a, 2003) postulate that Chinese languages have more consistently preserved the original head-final structures in noun phrases, while verb phrases are affected by the assumed directionality change in basic word order from the verb-final to verb-medial pattern. However, other Sino-Tibetan languages, which retain the verb-final basic word order, also use the head-initial order for adjectival and quantity modifications as well as degree adverbs, all of which appear as head-final in Chinese languages. The situation is indeed fuzzier for other Sino-Tibetan languages as there are likewise a lot of hybrid phrase patterns (as discussed in LaPolla 2015), which makes it worth to compare them with Chinese in the present study, in order to shed light on the fact that the Sino-Tibetan syntax is far from being internally harmonious and homogenous. Many intralinguistic and extralinguistic factors have been responsible for head-dependent word order in the languages today (see further discussion in Section 5).

Coming to language contact issues, neighbouring languages to the north of Chinese, namely Tungusic, Mongolic and Turkic, consistently use head-final structures for all the features mentioned in Table 2 (as has been extensively discussed in Szeto et al. 2018; Szeto 2019; Szeto and Yurayong 2021). This is thought to have influenced the preference for a head-final tendency in northern Chinese languages, one of the components of a larger "Altaicisation" process occurring towards the northern zone of Chinese speaking areas, where language shift from a language of the Altaic type to Chinese has been continuously taking place during the past millennium (Hashimoto 1976; Janhunen 2007, 2012). On the contrary, a similar scenario for the head-initial tendency could have stemmed from neighbouring languages to the south of Chinese, namely Tai-Kadai, Hmong-Mien and Austroasiatic, which consistently use head-initial structures (Bennett 1979; de Sousa 2015; Szeto and Yurayong 2022). It remains disputable whether it ultimately was the northern or southern part of the Chinese dialect continuum which has changed from the Proto-Chinese word order patterns. Furthermore, the investigation of historical syntax of Chinese with evidence solely from Archaic Chinese may also be biased towards several specific varieties of Chinese (as will be discussed in Section 2.3).

Despite uncertainty in the directionality of changes in Chinese, what has been agreed upon among Chinese contact linguistics scholars is that the role of language contact is certainly considerable with regards to both the north and the south. Based on the contact explanation, we can draw the line along the Qinling Mountain–Huaihe River Line (see Szeto and Yurayong 2021), a boundary which is also frequently used in other biosciences and population sciences to distinguish the two major vegetation, climate and demographic zones of China (see e.g., Fang et al. 2002; Xie et al. 2004), as illustrated in Figure 2.



Figure 2. The Qinling Mountain–Huaihe River line (Szeto and Yurayong 2021, p. 557).

Furthermore, a more fine-grained classification of Chinese languages in terms of using a large set of word order features also identifies the transitional zone in between (Norman 1988; Chappell 2015; Szeto and Yurayong 2021), in which the preferred head-final tendency in the north and the head-initial one in the south are used interchangeably. The validity of the Qinling Mountain–Huaihe River Line will be discussed further in Section 5.4.

2.3. Archaic Chinese Word Order

Moving from the typological to philological approach, studies on historical Chinese syntax are, unlike the majority of the world's languages, possible thanks to somewhat sufficient documentation of early forms of Chinese, providing concrete diachronic data of word order structures. Despite a potential bias toward the dialects or sociolects of the text producers, the attested documents are useful in the sense that they confirm the non-harmonious word order profile of Chinese to be in place since the late-2nd millennium BCE. In this section, we deal with Archaic Chinese, a Chinese language form spoken from the Shang dynasty during the 14th–11th centuries BCE to the Warring States period during the 5th–2nd centuries BCE (see also the complete periodisations in Sun 1996; Chappell 2001; Aldridge 2013).

As discussed in Section 2.2, Chinese languages consistently show a head-final tendency in noun phrase structures where possessors and modifiers precede head nouns, a pattern which largely applies also to Archaic Chinese (Aldridge 2015a), as in (2).

(2) 先 王 之 **道**
former king that[LINK] **way**
'ways of the former kings' (Analects, *Xue'er*, Aldridge 2013, p. 44)

As in modern Chinese languages, modifiers are often attached to head nouns with a linker, a demonstrative 之 'that' in the Archaic Chinese case. Likewise, relative clauses precede the head noun, and the two constituents are linked by the demonstrative 之, as in (3).

(3) 避 世 之 **士**
avoid world that[LINK] **scholar**
'scholar who avoids the world' (*Lúnyǔ Wēizǐ*, Aldridge 2015a, 3b)

When there are multiple modifiers in a noun phrase, there is at least evidence for demonstratives preceding quantifiers, as in (4).

(4) 願 君 去 此 三 **子** 者 也。
desire lord dismiss [this 3 **gentleman**] DET NMLZ
'(I) hope your lordship will dismiss these three gentlemen.' (*Hánfēizǐ* 36, Aldridge 2015a, 4b)

Interestingly, the use of classifiers was not attested in the Archaic Chinese sources (Peyraube 1991), but the order was consistently head nouns in the final position, as 'these three gentlemen' in (4).

The use of prepositions, meanwhile, has been attested since the Archaic Chinese period when locational and dynamic verbs were already grammaticalised and used in the preverbal position, such as 於 '(in)to' (< 'to go'), 在 'in, at' (< 'to be in') and 從 'from' (< 'to follow'), as can be seen in (5).

(5) 孝文 帝 **從** **代** 來。
Xiàowén emperor [**from** **Dài**] come
'Emperor Xiàowén arrived from Dài.' (*Shǐjì Xiàowén běnjì*, Aldridge 2015a, 6a)

Typologically speaking, prepositions should be more common among head-initial languages and can be considered a secondary innovation in head-final Chinese languages, supplementing a more typical postpositional phrase based on relational nouns, such as 上 'top' and 面 'side', a strategy which is still productive in modern Chinese languages and other Sino-Tibetan languages (see concrete examples in Section 4.3).

In terms of the verb phrase, verb-medial basic word order has been attested since the beginning of literary Chinese language history. However, pragmatic variation due to dislocation of topic has also been attested since the Archaic Chinese period. Often, the topicalised lexical unit may be repeated with a resumptive pronoun, such as the demonstrative-derived 3rd person pronoun 之 in (6).

(6) **子路**， 人 告 **之** 以 有 過。
[**Zǐlù**]$_{\text{TOP}}$ person tell [**3.ACC**]$_{\text{RES}}$ APPL have error
'Zǐlù, someone told him he made a mistake.' (*Mèngzǐ Gōngsūnchǒu shàng*, Aldridge 2015a, 7)

In any case, there are also instances of the verb-final pattern in some specific constructions, which correspond to equivalent constructions in other Sino-Tibetan languages and are thus viewed by several scholars as remnants of pre-Archaic Chinese syntax (e.g., Li and Thompson 1974; Feng 1996; Xu 2006). This concerns, for instance, non-in situ question word phrases (7) and negative clauses (8). As for objects in negative clauses, there is a diachronic observation that fronting of the object disappeared later towards the 1st century BCE, as contrasted between texts from the 5th century BCE (8a) and the 1st century BCE (8b) (Aldridge 2015a).

(7) 公 **誰** 欲 與 ___?
2SG **who** want give
'Who do you want to give (it) to?' (*Zhuāngzǐ Xúwúguǐ*, Aldridge 2015a, 9a)

(8) a. 莫 **我** 知 也 夫!
none [**1SG** know] NMLZ EXCL
'No one understands me!' (*Lúnyǔ Xiànwèn*, the 5th century BCE, Aldridge 2015a, 18a)
b. 莫 知 **我** 夫!
none [know **1SG**] EXCL
'No one understands me!' (*Shǐjì Kǒngzǐ shìjiā*, the 1st century BCE, Aldridge 2015a, 18b)

Some previous studies have argued that the reason for object fronting may be due to an information structure effect (Djamouri 1991), cliticisation of the object (Feng 1996) or a need to apply accusative case marking on the object (Aldridge 2015b). Given the lack of

consensus on the factor(s) behind dislocation of the object, we maintain in the current study that pragmatic factors are significant for determining variation but are at the same time difficult to predict and judge from the ancient texts with the limited contexts given. In any case, we still consider it useful to discuss the order of direct object and verb in comparison with other Sino-Tibetan languages with a rigid verb-final pattern (see also an additional explanation in Section 3).

Regarding other verb phrase structures, there is a consistent division between head-final and head-initial patterns. Head-initial modal auxiliaries (9) and complement clauses (10) consistently occur since the Archaic Chinese stage. Meanwhile, locational adverbials and temporal adverbials may vary between the preverbal (5) and postverbal positions (9), with both being equally frequent (Aldridge 2015a). Preverbal adverbials likely stem from the grammaticalisation of locational and dynamic verbs, as discussed above.

(9) 天子 **能** 薦 人 **於** **天**。
ruler [**can** recommend] person [**to** **heaven**]
'The ruler can recommend someone to heaven.' (*Mèngzǐ Wànzhāng shàng*, Aldridge 2015a, 5a)

(10) 言 非 禮 義， **謂** 之 自 暴 也。
speech betray Rite Righteousness **say** [3.ACC self injure NMLZ]
'If his speech betrays the Rites and Righteousness, then (one) says of him that he harms himself.' (*Mèngzǐ Lílóushàng*, Aldridge 2015a, 22)

As for comparatives, the head-initial construction with adjectives preceding standards of comparison linked by comparative markers 於 'to go (into)' (11a) or 過 'to surpass' (11b) has been attested in Archaic Chinese (Sun 1996, pp. 10–11).

(11) a. 苛 政 猛 **於** 虎。
severe government [ferocious **COMP** tiger]
'A severe government is more ferocious than a tiger.' (*Lǐjì*, Sun 1996, p. 25)

b. 由 也 好 勇 **過** 我。
Yóu PART fond [dare **COMP** 1SG]
'Yóu is more fond of daring than I (am).' (*Lúnyǔ Gōng yě zhǎng*, Sun 1996, p. 38)

Later, another head-final construction with standards of comparison preceding adjectives emerged in Middle Chinese (the 2nd century CE onwards), through functional extension from a lexical meaning of 比 'to compare' in Archaic Chinese (12) to a comparative marker in Middle Chinese (Sun 1996, p. 39).

(12) 爾 何 曾 **比** 予 於 是?
2SG how EMPH **compare** 1SG to 3SG
'How (dare) you compare me to him?' (*Mèngzǐ Gōngsūn Chǒu Shàng*, Sun 1996, p. 39)

The Middle Chinese alternation is still productive in southern Chinese languages, while the head-final construction with 比 'to compare' is the only pattern in northern Chinese languages (Sun 1996, p. 38; Ansaldo 1999, 2010; Chappell 2015). Interestingly, the head-final type is used across other Sino-Tibetan languages (see Section 4.3), so the Archaic Chinese head-initial construction with 於 'to go (into)' and 過 'to surpass' showed an early deviation from the head-final baseline tendency. At the same time, the preferred patterns in the present-day northern and southern Chinese languages align with those of their neighbouring Altaic languages in the north and Mainland Southeast Asian languages in the south, as discussed in Section 2.2.

Through the discussion with evidence from Archaic Chinese in this section, we see that a non-harmonious profile of Chinese with hybrid word order is diachronically consistent. This observation has motivated the idea that Chinese was originally a syntactically hybrid language which likely has maintained the Sino-Tibetan head-final tendency to a certain extent especially in noun phrase structures but also acquired head-initial structures from neighbouring languages. The head-initial tendency may be subject to areal diffusion from the south, particularly Tai-Kadai and Hmong-Mien, which have been in contact with

Chinese for several millennia and from which a significant number of groups have shifted their language to Chinese (see also DeLancey 2013 for the discussion on the mixed origin of Chinese). Though such sociolinguistic factors and demographic changes may also be responsible for the non-harmonious word order patterns in Chinese throughout its attested history, we speculate that extralinguistic evidence and related explanation may also contribute to the discussion of the word order typology of Chinese and its change from a broader perspective.

2.4. Sociolinguistic and Other Explanation to Language Change

In addition to linguistic reconstruction methods, we also consider the role of sociolinguistic factors in language variation and change. Social factors alone cannot determine variation in language structure, and they are often difficult to separate from inheritance. Nevertheless, several theoretical approaches have looked for a link between sociolinguistics and variation in structural features of languages (as discussed in Ladd et al. 2015). One of them is sociolinguistic typology, a research program initiated by Trudgill (2011, 2020). Sociolinguistic typology aims at bridging the gap between sociolinguistics and linguistic typology, which up until recently have been largely separate subfields of linguistics. Sociolinguistics has mainly focused on language-external factors that shape language use and cause variation (such as age, social class, gender, language policies), while linguistic typology has been more concerned about language-internal diversity (such as word order correlations). A key question in sociolinguistic typology is whether there are any systematicities regarding what types of linguistic structures are developed and maintained in different types of sociolinguistic environments. Sociolinguistic typology has looked at, for example, the role of community size (small vs. large), density of social networks (dense vs. loose), social stability (stable vs. instable), the degree of shared information in the language community (high vs. low) and degree of contact with neighbouring language communities (high degree of contact vs. isolation) in relation to the complexity of language structure.

Recent research on sociolinguistic typology has shown that population size, the number of native speakers (henceforth, L1 speakers) and the proportion of second language speakers (henceforth, L2 speakers) correlate with morphological complexity. By using data from *World Atlas of Language Structures* (*WALS*), Lupyan and Dale (2010) have shown that languages with a smaller number of native speakers tend to have more complex morphological systems than languages with a larger number of native speakers. Bentz and Winter (2013) have found evidence that the greater the proportion of L2 speakers in the speech community is, the smaller the case system of the language is. Sinnemäki and Di Garbo (2018) have argued that morphological complexity depends on both population size and the number of L2 speakers. Finally, Sinnemäki (2020) has studied the role of population size and the number of L2 speakers together with a language-internal factor, word-order, in predicting the number of cases in a language. His results suggest that both population size and the number of L2 speakers are important predictors of the number of cases in a language, either in complex interaction with word order or as an independent predictor together with word order (Sinnemäki 2020).

Research on sociolinguistic typology has also found some evidence that a large population size and a high number of adult L2 speakers can lead to the preference of analytic expressions instead of inflectional expressions. A case in point is the reflexive in Kuki-Chin and Bodo-Garo languages of Northeast India (DeLancey 2014). Proto-Tibeto-Burman originally had a middle reflexive suffix **-(n)si*, which has been lost in both Kuki-Chin and Bodo-Garo subbranches. However, both subbranches have recreated new reflexive constructions, whose structures at least partially reflect the sociolinguistic contexts in which these languages are spoken. Kuki-Chin languages, spoken by small populations in isolated hill locations, have created an inflectional middle reflexive suffix *-a*, e.g., *ka-**a**-thoŋ* [1SG-**REFL**-hit] 'I hit myself.'. Contrary to Kuki-Chin, Bodo-Garo languages are spoken by large populations in the Assam Valley in Northeast India. They serve as lingua francas in the region and are therefore influenced by contact from large numbers of L2 speakers who

are learning them as adults. Bodo-Garo languages use an analytic expression, an emphatic pronoun *gau*, to express reflexivity, e.g., *bi-w* ***gau****-khwu aina-ao nai-dwŋ-mwn* [3SG-SUBJ **self**-OBJ mirror-LOC see-REAL-PST] 'He saw himself in the mirror'. One of the possible reasons why Kuki-Chin and Bodo-Garo languages are using different strategies for reflexive expression is that analytic expression is easier to learn for adult L2 speakers. Therefore, sociolinguistic factors such as population size and multilingualism shape the environment in which the language is learned and used, and this, in turn, can affect the language structure together with internal factors.

Apart from bilingualism, language attitudes and ideologies, language awareness and stylistic practice have been shown to be important in understanding language change (Rodríguez-Ordóñez 2019). While typologically similar languages tend to converge in language contact and typological distance tends to deter convergence (see Thomason and Kaufman 1988), in some contact situations the language attitudes of the speakers may override the effects of structural similarities or differences in the languages in question. In any case, research on attitudes and ideologies has been largely qualitative and difficult to quantify, so we do not include it as a variable in this study.

As the language sociology of a given community not only concerns its members but also its environment, we must not ignore the role of geographical factors such as climate and mobility. A pioneer work by Johanna Nichols (1992) and subsequent publications with various collaborators have identified typological clines which are the result of early human expansion prior to the formation of current linguistic groups or families and *Sprachbünde*. Most notably, the observation points to a stable incline or decline within selected language features from the west to the east of the northern hemisphere, especially across Northern Eurasia. However, such a large-scale approach has not been applied much in the quantitative explanation of linguistic diversity and variation of Sino-Tibetan languages spoken across the Trans-Himalayan zone. The current study operates on a working hypothesis developed by Szeto and Yurayong (2021) that Chinese speaking areas potentially illustrate the incline or decline of typological features in a stable and statistically significant manner. By integrating word order and geographical data, we seek to identify another north-to-south and east-to-west cline in East Asia and show that variation across Chinese, as discussed in previous studies and given in Section 2.2, are not necessarily divided sharply by the Qinling Mountain–Huaihe River line, but the decline of the head-final tendency has a significant correlation with extralinguistic factors (see Section 5.4).

We have seen in this section that both extralinguistic and intralinguistic factors are important in understanding language variation and change. The extralinguistic factors which have received most attention in studies of sociolinguistic typology are speaker population in terms of size and proportion of L1 and L2 speakers, as well as geographical factors. These factors have been shown to play an important role in predicting morphological complexity and patterns of language change. However, sociolinguistic factors alone cannot predict language change, and they must be studied together with diachronic analysis and language-internal factors, such as word order correlations discussed in Sections 2.1–2.3.

3. Data, Method and Results

The data for comparative analyses in the present study include 20 Chinese and 43 Tibeto-Burman languages, acquired from published reference grammars, grammatical sketches and analyses of individual constructions. The sample includes one language of each Sino-Tibetan second level subbranch as classified in Glottolog 4.6 (Hammarström et al. 2022). Several methods have been practised in linguistic typology with different degrees of control for genealogical and areal biases. For the present study, we adapt the variety sampling method developed by Miestamo et al. (2016), which takes one language per one branch. The reason for choosing this method is to capture general tendencies across Sino-Tibetan and to prevent an issue of oversampling, in which Chinese with the highest numbers of speakers and varieties would become unnecessarily overrepresented for the

entire Sino-Tibetan family (see also discussion on advantages and issues within different sampling methods in Guzmán Naranjo and Becker 2022).

Since the milestone of the present study is to identify if there exist statistical correlations between the degree of directionality of change in word order and sociolinguistic factors, it is also crucial that sociolinguistic information such as numbers of speakers and geographical locations of linguistic varieties and communities under investigation are available for data accumulation. Information on genealogical status of individual variety in the Sino-Tibetan language family, number of speakers, geographical location in GIS coordinators and sources of data is given in Supplementary Material A. However, in reality, the data on word order features and sociolinguistic information may be insufficiently or fragmentally provided in the grammatical descriptions for some subbranches. This is the case for Gongduk, which unfortunately is excluded from the sample in terms of the quantitative analysis. In any case, Gongduk examples will still be mentioned in the qualitative analysis when they are relevant for the discussion.

In terms of word order features, the current study investigates 16 constructions involving different types of phrases and clauses, as given in Table 3.

Table 3. Word order features under investigation.

Feature	Construction	Head–Dependent	Domain
1	Noun compounding	Noun[head]–Noun[modifier]	Noun (Section 4.1)
2	Adjectival modification	Noun–Adjective	
3	Adnominal possession	Possessee–Possessor	
4	Gender specification	Noun–Gender specifier	
5	Quantity modification	Noun–Numeral	
6	Deictic modification	Noun–Demonstrative	
7	Noun relativisation	Noun–Relative clause	
8	Degree adverb	Adjective–Degree adverb	Adjective (Section 4.2)
9	Comparative	Adjective–Standard of comparison	
10	Locational adverbial	Verb–Locational adverbial	Verb (Section 4.3)
11	Direct object	Verb–Direct object	
12	Predicative possession	Verb–Possessee	
13	Modal auxiliation	Verb[modal]–Verb[content]	
14	Adposition	Adposition–Noun	
15	Reported speech	Speech verb–Complement clause	
16	Negation	Negator–Verb	

The analysis takes into account the relation between the head and dependent of the constructions, thereby enabling a quantification of head-initial vs. head-final tendencies occurring in a given language.

It is worth remarking that direct objects can be prone to variation due to pragmatic factors, such as information structure (topic and comment) and text genres (narrative and dialogue), as discussed in Section 2.3 in connection to (6) and (8). A similar issue of pragmatically variable syntactic constructions, which causes some difficulties in terms of comparison and syntactic reconstruction, has been also discussed for Austroasiatic languages (see Jenny 2020). Despite such variation, it is still reasonable to consider this as a feature which is expected to appear as a head-initial construction in languages with more loosened tendency of verb-final structures.

In the process of data collection, queries are biased toward the head-final variant of a construction, and data are organised as binary values: 1 = head-final vs. 0 = head-initial. In cases where variation is reported in language descriptions, i.e., a language allows both

head-final and head-initial variants of a construction either conditionally in specific contexts or unconditionally, the value is assigned as 0.5. These word order scores aggregated from different constructions under investigation have two uses. On the one hand, they serve as evidence for the generalisation of cross-family tendencies and a baseline for the reconstruction of Proto-Chinese and Proto-Sino-Tibetan syntax (see Section 5.3). On the other hand, they are used to identify whether there exist statistical correlations between the degree of word order variation and extralinguistic factors related to language sociology of given speech communities (see Section 5.4).

Supplementary Material B shows the results with head-finalness scores of each variety in the right-most column and family-average scores of each word order features in the bottom lines. As Chinese languages make up more than one-third of the sample, the feature average scores are accumulated separately from the rest of the Tibeto-Burman languages to prevent bias toward Chinese.

Several immediate observations can be made from Supplementary Material B, which will be followed up in more details in Section 4. Among Chinese, the range of variation is between 9.5 and 13.5, with Zhoutun being on the top. More strikingly, Karenic languages have significantly low overall head-finalness scores, ranging from 4.5 to 6.5. This corresponds to previous observations regarding a radical typological shift in Karenic which could have taken place already at the Proto-Karenic stage based on the observed distribution (see Kato 2019 and further observation and discussion in Sections 4 and 5, respectively). At the same time, overall head-finalness scores are consistently high across Bodic, Dhimalish, Himalayish, Macro-Tani and Raji-Raute languages. Feature-wise, adnominal possession is consistently head-final across languages, followed by noun compounding, locational adverbial, relative clause and comparative constructions, in line with earlier typological investigations of variation across Chinese languages (Chappell et al. 2007, p. 189; Szeto and Yurayong 2021).

A closer look will be taken at individual word order features with concrete examples in Section 4, focusing on how they are generally realised across Chinese and Tibeto-Burman languages and whether some specific branches show significant deviation from the baseline.

4. Description of Word Order Variation across Sino-Tibetan Languages

This section provides examples of 16 word order features under investigation by primarily describing homogeneity or variation across Chinese languages and secondarily making references to Tibeto-Burman languages as a supplementary explanation of individual features. Table 4 contrasts the average head-finalness scores between Chinese and other Sino-Tibetan languages to support the description below in this section.

The results are largely in line with observations in the previous cross-Sino-Tibetan surveys by Dryer (2003) and LaPolla (2015) in that the head-initial tendency is present in several grammatical constructions, deviating from the head-final baseline. In particular, adjectival and quantity modification show a consistent opposition between Chinese, which prefers the head-final pattern, and Tibeto-Burman, which prefers the head-initial pattern, while the opposite applies for predicative possession, modal auxiliaries and reported speech. Obvious and subtle differences between Chinese and other Sino-Tibetan languages will be discussed below in connection with individual features. Unless the source is given for language examples embedded in text, particularly the Chinese ones, refer to the sources given in Supplementary Material A.

Table 4. Average head-finalness scores for Chinese and Tibeto-Burman languages: 1 = head-final vs. 0 = head-initial.

Feature	Construction	Chinese	Tibeto-Burman	Domain
1	Noun compounding	1.00	0.95	Noun (Section 4.1)
2	Adjectival modification	0.98	0.36	
3	Adnominal possession	1.00	0.98	
4	Gender specification	0.35	0.06	
5	Quantity modification	0.93	0.20	
6	Deictic modification	0.98	0.71	
7	Noun relativisation	1.00	0.77	
8	Degree adverb	0.83	0.65	Adjective (Section 4.2)
9	Comparative	0.83	0.91	
10	Locational adverbial	1.00	0.86	Verb (Section 4.3)
11	Direct object	0.53	0.88	
12	Predicative possession	0.10	0.93	
13	Modal auxiliation	0.43	0.94	
14	Adposition	0.55	0.94	
15	Reported speech	0.08	0.71	
16	Negation	0.05	0.33	

4.1. Noun Phrase Structures

Across Chinese and Tibeto-Burman languages, the most consistently head-final noun phrases are compounds and possession. In Chinese noun compounds, a modifier noun always precedes a head noun, e.g., Shanghai Wu *jiéu* ***di*** [wine **shop**] 'hotel', *shiã̂* ***sí*** [fragrant **water**] 'perfume', and *hú* ***tsuo*** [fire **car**] 'train' (see also Arcodia 2007 for further subtypes of compounds). This is also a general tendency across Tibeto-Burman languages, but variation is, however, marginally found, e.g., Sgaw Karen *plì* ***tʰāˀ*** [string **iron**] 'wire' vs. ***pʰɛ̄*** *tʰū* [**necklace** gold] 'golden necklace' (Kerbs Forthcoming), and Anong *kʰɛn*^{55} ***tʂʰɿ***^{31} [vegetable **juice**] 'vegetable soup' vs. ***luŋ***^{55} *sɯ*^{55} [**stone** mill] 'grindstone' (Sun and Liu 2009, p. 50).

Likewise, a head-final adnominal possessive construction with the possessor preceding the possessee is prevalent across Chinese and Tibeto-Burman, e.g., Kunming Mandarin *ni*^{3} *nə*^{1} ***tie***^{1} [2SG LINK **father**] 'your father' and *ɕio*^{2} *ɕiɔ*^{4} *nə*^{1} ***tsʰiɛ***^{2}***tʂʰa***^{3} [school LINK **property**] 'school's property'. Juxtaposition is a common strategy, while some languages may also optionally use genitive linkers, e.g., Mandarin *de* 的 and Cantonese *ge*^{3} 嘅, which can be an instance of alienable possession in some sense (see e.g., Li 2018, pp. 54–57 for Yichun Gan). However, there is also an instance of head-initial adnominal possession reported in Raji with possessors marked by possessive suffixes, e.g., ***tsa***-*ŋ* [**son**-POSS.1SG] 'my son', and this pattern has likely been adopted from contact with an Indo-Aryan language (Khatri 2008, p. 22).

In contrast, there are several noun modifiers which are to a certain extent consistently placed before a head noun in Chinese but after a head noun in Tibeto-Burman, such as adjectives, gender specifiers and quantifiers. While prenominal adjectives and quantifiers are prevalent across Chinese languages, e.g., Yichun Gan *san*^{34} *pun*^{42} *xao*^{42} ***ɕy***^{34} [three CLF good **book**] 'three good books', northwestern Mandarin also allows postnominal adjectives as in Wutun and postnominal quantifiers as in Tangwang, Wutun and Zhoutun, e.g., Wutun ***hu*** *yak-la~la-de-ge* [**flower** beautiful-INCOMP~INCOMPL-NMLZ-CLF] 'beautiful flower' and ***gek*** *san-ge* [**dog** three-CLF] 'three dogs'. This phenomenon has been explained for these varieties as a result of contact with Tibetan. For Tibeto-Burman, a diachronic scenario is the reanalysis

of relative clauses (see Section 5.1). Interestingly, some other factors for variation are also reported in language descriptions or noticed in our observation.

In terms of semantics, when there are multiple adjectives in a noun phrase in Konyak, a language which allows the use of prenominal adjectives (prefixed by *ə-*) alongside canonical postnominal adjectives (suffixed by *-pu*), there is a tendency to place a quality adjective before the head noun but a quantity adjective after noun, e.g., ***yəwməy-pu*** *ciŋ* ***ə-ñu*** [**beautiful-ADJ** village **ADJ-big**] 'a beautiful big city' (Nagaraja 2010, pp. 75–76). From the syntactic perspective, meanwhile, East-Central Tangkhul Naga, a language which also allows free alternation between prenominal and postnominal adjectives, seems to prefer the prenominal adjectives in the contexts of predicative (13) and reduplication for plurals e.g., ***k^{h}ra k^{h}ra*** *seiŋ* [**old old** house] 'old houses', while the word order for adjectives in subject and direct object phrases remains more variable (see Devi 2011, pp. 134–40, 231, 234, 290–91).

East-Central Tangkhul Naga (Kuki-Chin-Naga)

(13) a. *və* ***kəp^{h}ə*** *ləsiŋəu* *ə-ŋi-mə-ne.*
3SG.FEM [**good** girl] NEG-BE-NEG-ASP
'She is not a good girl.' (Devi 2011, p. 256)

Regarding phonology, Anong, which predominantly uses postnominal adjectives, may also allow the use of adjectives with two or more syllables in the prenominal position before a nominaliser *u*^{55}, e.g., ***bɑ^{35}bɑ^{31}-tɕ^{h}ɛn^{31}*** *u*^{55} *ʂɿ*^{55}*va*^{31} [**thin-DIM** NMLZ book] 'a thin book' and ***sɿ^{31}la^{33}*** *u*^{55} *a*^{31}*ts*^{h}*aŋ*^{31} [**good** NMLZ person] 'a good person' (see Sun and Liu 2009, p. 115).

Specification of gender shows two patterns across Chinese languages, among which the northern varieties have a head-final pattern (14a), whereas the southern varieties have a head-initial pattern (14c). Interestingly, Changsha Xiang allows both orders as free alternation among different animal referents, first attested in *Shìmén Xiànzhì* 'Gazetteer of Shimen' in 1875 (Wu 2005, p. 113). This may be largely due to the transitional identity of Xiang and its geography in the central zone of the Chinese dialect continuum (as discussed by Ho 1987; Norman 1988, p. 182; Szeto and Yurayong 2021, and in Section 2.2).

(14) a.

gōng	*jī*	***mǔ***	*jī*	Beijing Mandarin
h'ióng	*ji*	***tsì***	*ji*	Shanghai Wu
kən^{33}	*tɕi^{33}*	***po^{13}***	*tɕi^{33}*	Changsha Xiang
(s)kjo-	*kukəri*	***manʈ-***	*kukəri*	Kinnauri
male	chicken	**female**	chicken	
'rooster'		'hen'		

b.

daŋkha	*juhã*	***maini***	*juhã*	Dhimal
male	rat	**female**	rat	
'male rat'		'female rat'		

c.

tɕie^{11}	***kan^{11}***	*tɕie^{11}*	***m̩^{24}***	Tunxi Hui
tɕi^{33}	***kən^{33} tsɪ***	*tɕi^{33}*	***po^{13} tsɪ***	Changsha Xiang
kɪ^{21}	***bo^{33}***	*kɪ^{21}*	***tɕie^{55}***	Caijia
naga	***-whaba***	*naga*	***-mama***	Eastern Tamang
chicken	**male**	chicken	**female**	
'rooster'		'hen'		

The head-final pattern is considered a Chinese construction, though our data show that it is consistently so only for Mandarin and Jin, while the other Chinese languages allow and use the head-initial pattern more frequently. The head-initial pattern is often considered to be a pattern borrowing from Mainland Southeast Asian substrate languages, most notably Tai-Kadai and Hmong-Mien (Yuan 1983, p. 10; Wang 1991, pp. 177–78; Pan 1991, pp. 287–88; Szeto and Yurayong 2021, p. 566). Such a preference is concretely reported for the Xiang dialect continuum, in which the northern part prefers the head-final pattern, which is considered to be prototypical for Chinese, while the southern part prefers the

head-initial pattern, considered an innovation (Wu 2005, pp. 111–13). At the same time, Tibeto-Burman languages mostly use the head-initial pattern like in southern Chinese languages (Szeto and Yurayong 2022, p. 29), with the exception of the head-final pattern observed in Dhimalish languages and Kinnauri, as shown in the parallel examples in (14a) and (14b). The emergence of the head-initial structure in both Chinese and Tibeto-Burman can also be explained language-internally without unnecessary reference to a contact explanation, but rather to the nominalisation of the adjectival constituent (see further discussion in Section 5.1). As a side note, we also observe a conditioned alternation in Toto, as given in (15).

Toto (Dhimalish)

(15) a. ***dabe****-kuŋwa* — ***cabe****-kuŋwa*
MASC-tiger — FEM-tiger
'tiger' — 'tigress'

b. ***bale****-keka* — ***cabe****-keka*
MASC-chicken — FEM-chicken
'cock' — 'hen'

c. *muri* — ***dabe***
chilli — **male**
'male chilli' (a chilli which fails to bear fruits)

d. *yui-wa-****poɟa*** — *yui-wa-****meme***
dance-AGENT-MASC — dance-AGENT-FEM
'male dancer' — 'female dancer' (Basumatary 2016, pp. 81–83)

The rule is that Toto uses gender specifiers before animal (15a) and bird referents (15b) but after plant (15c) and human referents (15d).

Regarding the use of numerals and classifiers, some conditioned behaviour is observed in several languages which allow both prenominal and postnominal quantifiers. For instance, Eastern Tamang classifiers are obligatory when the quantifier precedes a noun (16b), but they can be omitted when the quantifier follows a noun (16a), the latter being reportedly a more frequent pattern in texts and normal dialogue (Lee 2011, p. 32).

Eastern Tamang (Bodic)

(16) a. *jha-gade* — ***(gor)*** — ***som*** — *mu-la*
son-PL — [(CLF) — **three**] — COP-NPST
'(He) has three sons.' [lit. There are three sons.]

b. ***gor*** — ***som*** — *jha(-gade)*
[CLF — **three**] — son(-PL)
'three sons' (Lee 2011, p. 32)

At the same time, Amri Karbi generally uses fused forms of numerals attached to classifiers in the postnominal position, e.g., *kampi* ***i-jon*** [monkey **one-CLF**] 'one monkey', but also sometimes allows the use of prenominal quantifiers for animate referents, e.g., ***isi i-jon*** *a-kampi-so* [**one one-CLF** POSS-monkey-DIM] 'one little monkey' (Philippova 2021, pp. 129–30). The alternation is also reported for Garo *mechik* ***sak-sa*** [woman **CLF-one**] and ***sak-sa*** *mechik* [**CLF-one** woman] 'one woman' (Burling 2003, p. 97), and Zakhring *dungpu* ***nga*** [tree **five**] 'five trees' and ***nga*** *simjong* [**five** banana] 'five bananas' (Landi 2005, p. 56).

Other groups of noun modifiers with less consistent variation between head-final and head-initial patterns are demonstratives and relative clauses. On the one hand, demonstratives are prenominal across Chinese languages, e.g., Xi'an Mandarin ***tʂɿ***^{55}/***u***^{55}/***næ***^{55} *kɤ*^{31} *ʐən*^{31} [this/that/yonder CLF person] '**this/that/yonder person**'. On the other hand, there is variation between prenominal and postnominal demonstratives among Tibeto-Burman languages. Interestingly, for noun phrases with multiple modifiers in Toto, demonstratives occur consistently in the prenominal position, while adjectives may alter between the prenominal (17a) and postnominal positions (17b).

Toto (Dhimalish)

(17) a. ***i*** ***dasiwa*** *ziya* ***u*** ***haŋpuwa*** *ziya*
this **black** bird **that** **white** bird

b. ***i*** *ziya* ***dasiwa*** ***u*** *ziya* ***haŋpuwa***
this bird **black** **that** bird **white**
'this black bird' 'that white bird' (Basumatary 2016, pp. 152–53)

Such a phenomenon is not observed in Chinese languages because the position of adjectives is consistently prenominal (as discussed above).

As for relative clauses, their position is always prenominal in Chinese languages, as shown in (18a). Note that Tunxi Hui speakers reportedly use more spontaneously a construction formed by a noun phrase with a demonstrative without a relativiser as in (18b) (Lu 2018, pp. 167–68).

Tunxi Hui

(18) a. *kə*^{44} *ɕio*^{11} *ka* ***tʂʰə***^{42}
[3SG cook REL] **dish**
'the dishes which (s)he cooks'

b. *tɕʰiʔ*^{5} *tɕiɔn*^{24} ***mo***^{31} ***ka***^{42} ***ian***^{44}
[eat dumpling] **that** **CLF** **person**
'the person who is eating dumplings' (Lu 2018, p. 169)

The predominance of prenominal relative clauses also applies to Tibeto-Burman. There is, however, an exception in Karenic languages which predominantly use postnominal relative clauses for both subject (19a) and object relativization (19b). At the same time, the use of the prenominal pattern for objects is also reported for Eastern Pwo Karen under certain conditions (20).

Sgaw Karen (Karenic)

(19) a. ***pɣākaɲɔ́*** *lá* *ʔə* *hɛ́* *lá* *pɣākaɲɔ́* *kɔ*
person [REL 3SG come LOC Karen country]
'the person who came to Kayin State'

b. ***pɣākaɲɔ́*** *lá* *jə* *tɔ̀* *ʔɔ̄* *nê*
person [REL 1SG hit 3SG] that
'that person whom I hit' (Kato 2021, p. 356)

Eastern Pwo Karen (Karenic)

(20) *jə* *tháʊ* *lá́* *dàʊ* *phàɴ* ***kháɴphài*** *nɔ́*
[1SG ride LOC room inside] **shoes** that
'those shoes which I wear in the room' (Kato 2021, p. 355)

Among other verb-final Tibeto-Burman languages, an unconditioned free alternation is also observed in several languages as indicated in Supplementary Material B. This is a consistent free alternation, for instance, in both Digarish languages as shown in the prenominal (21a) and postnominal patterns (21b).

Tawra (Digarish)

(21) a. *hã̄* *hɨbáŋ* *bóyà* ***jyinaŋdõ̂*** *kitab* *haŋde*
I.NOM [forest.DAT go] **cousin.DAT** book.ACC give.HAB.3SG
'I give the book to (my) cousin who goes to the forest.'

b. ***masáŋsyígwèlàŋ*** *bɨríhɨriso* *cyá* *katɬgharɨmso*
tree.fruit.PL.ACC [fall.RECIP] she.NOM collect.RECIP
'She collected the fallen fruit.' (Devi Prasada Sastry 1984, pp. 187–89)

4.2. Adjective Phrase Structures

Two constructions fall under adjective phrase: (1) degree adverb and (2) comparative. The use of an adverb 'very' varies across Chinese and Tibeto-Burman languages. Particularly, the northwestern Chinese languages predominantly use postadjectival degree adverbs, e.g., Zhoutun ***ɻʊ*** *li uʊ* [**hot** very] 'very hot'. At the same time, some languages possess both preadjectival and postadjectival degree adverbs, as is the case for Dhimal preadjecti-

val particle *menaŋ* 'very' and suffix *-ŋ* 'very' (King 2008, p. 53), and Amri Karbi preadjectival particle *bohut* (potentially borrowed from Indic) and suffixes *-ad* and *-det* 'very' (Philippova 2021, pp. 74, 136, 192, 218).

Moving to the comparative, we are only interested in comparatives of degree, not in comparatives of (in)equality which may show more variation (see, e.g., Zhou 2023 for such variation in Zhoutun). The majority of Chinese languages can use a head-final pattern with a standard preceding an adjective, as in (22a). However, the far southern Chinese languages, Yue and Pinghua in particular, also allow the use of an adjective before a standard (23a), as contrasted and paralleled with other Tibeto-Burman languages in (22b) and (23b).

(22)	a.	a^{24}	pi^{31} $k^{h}ə^{44}$		***kə*^{11}**	Tunxi Hui
	b.	*i*		*pa-sone*	***hubibe**-ləi*	Bugun
		1SG	COMP 3SG	3SG-COMP	**tall(er)**-DECL	
(23)	a.	*ŋoi*^{33}	***kɔ*^{33}**	$kɔ^{33}$	$k'ui^{33}$	Dancun Taishanese
	b.	*jə̄*	***t*^{h}*ó***	*-dɔ̀lí*	*sə̄*	Geba Karen
		1SG	**tall**	COMP	3SG	
		'I am taller than him.'				

This contrast has been characterized as areal diffusion from neighbouring Altaic languages in the north and Mainland Southeast Asian languages in the south (Ansaldo 1999, 2010). The idea is also supported by the predominant head-final tendency across Tibeto-Burman languages, with the exception only for Karenic languages which use adjectives before standards of comparison, as is shown in (23b).

Typically across the Chinese languages, adjectives can precede a standard of comparison, even in Chinese languages which predominantly use the head-final *bǐ*-construction when the comparison involves degree measurement (Wu 2005, p. 183; Li 2018, p. 94; Lu 2018, p. 238), as shown in the Xiang example (24b).

Changsha Xiang

(24)	a.	$t^{h}a^{33}$	pi^{41}	$ŋo^{41}$	***kau*^{33}**	
		3SG	COMP	1SG	**tall**	
		'(S)he is taller than me.'				
	b.	$t^{h}a^{33}$	***kau*^{55}**	$ŋo^{41}$	san^{33}	li^{13} mi^{41}
		3SG	**tall**	1SG	[three	centimetre]
		'(S)he is three centimetres taller than me.' (Wu 2005, p. 183)				

This pattern is considered by Yue-Hashimoto (2003, p. 111) as a reflex of the historical pattern, as discussed in Section 2.3 under (11). The study of Zhoutun comparatives also suggests that this pattern might be an instance of reinstalling the original head-initial comparatives (Zhou 2023).

4.3. Verb Phrase Structures

Unlike nominal phrase structures, Chinese languages use many head-initial patterns whereas most Tibeto-Burman prefer head-final structures. For instance, most Chinese languages generally place the direct object after the verb in their basic word order, while also allowing the opposite pattern for topicalisation (as discussed in Sections 2.3 and 3). At the same time, the majority of Tibeto-Burman languages possess a verb-final basic word order, while several branches also allow placing the direct object after the verb, as is common for verb-medial Karenic and Caijia and less frequent in verb-final Zakhring and Mruic languages, as given in (25).

Mru (Mruic)

(25)	*pariŋ*	***ca***	*ɯip*^{h}*um*	$k^{h}ɔk$
	Paring	**eat**	mango	PST
	'Paring eats mango.' (Rashel 2009, p. 146)			

The position for possessee in predicative possession also shows a direct correlation with basic word order. Chinese languages place the possessee in the postverbal position

due to their verb-medial basic word order and *topic*-type of predicative possession, i.e., possessor as topic (see Stassen's 2009 typology of predicative possession). In any case, northwestern Chinese languages with the verb-final basic word order place the possessee before an existential verb, similarly to verb-final Tibeto-Burman languages. Interestingly the verb-medial Karenic languages can place the possessee before the existential verb, although the quantifier still follows the verb, as given in (26).

Geba Karen (Karenic)

(26) *sə̄* *ʃì* ***ʔɔ̀*** *θó* *wà*
3.POSS house **exist** three CLF
'He has three houses.' [lit. His three houses exist.] (Naw 2008, p. 129)

This might be an instance of archaism as a remnant of verb-final pattern in Karenic (see further discussion in Section 5.3). In any case, the use of verb-medial pattern for predicative possession is also reported for Sgaw Karen when the construction belongs to the *with*-type in Stassen's (2009) classification (Kerbs Forthcoming), as given in (27a). This variant is considered by the informant as being more formal and poetic than the spoken variant with verb-final pattern given in (26) and (27b).

Sgaw Karen (Karenic)

(27) a. *jə* *sē* ***ʔôˀ*** [more common, spoken]
1SG.POSS money **exist**

b. *jə* ***ʔôˀ*** *dɔ̄ˀ* *sē* [more formal, written, poetic]
1SG **exist** with money
'I have money.' (Kerbs Forthcoming)

As for adverbials, the expression of location is generally preverbal across Chinese and Tibeto-Burman languages, as is shown in (28).

Yichun Gan

(28) *n̥i*^{34} ***ʦhoe***^{213} ***ko***^{34} ***xau***^{42} ***ko*** ***t^{h}ai***$^{213\text{-}21}$***xoʔ*** *t^{h}uʔɕy*^{34} *a.*
2SG [**LOC** **so** **good** **LINK** **university**] study INTJ
'You are studying at such a good university!' (Li 2018, p. 72)

However, deviation is observed in Mruic languages which allow multiple clausal word orders, with the verb-medial pattern being more frequent (Rashel 2009, p. 160; Wright 2009, pp. 49–50), and crucially also alternation between preverbal (29a) and postverbal locational adverbials (29b). At the same time, Karenic languages consistently place locational adverbials after verbs (30) in accordance with their predominant verb-medial basic word order.

Hkongso (Mruic)

(29) a. ***pələŋkrum***˥ ***t^{h}aŋ***˥ ***hai***˧ *aŋ*˦ *łoi*˦ *ra*˥
[**Paletwa** **side** **from**] 1SG return come
'I come back from Paletwa.'

b. *va*˧ *kəji*˦ ***ləmuk***˦ ***nam***˥ ***t^{h}aŋ***˦
bird fly [**sky** **village** **at**]
'The bird is flying in the sky.' (Wright 2009, p. 63)

Kayan Lahta (Karenic)

(30) *ka˩jaŋʔ*˧ *lwaŋ*˩ *ɲi*˦ *teiŋ*˧ *ba*˩ ***də***˦ ***tu***˩
Kayan go get porcupine CLF [**in** **forest**]
'The Kayan got a porcupine in the forest.' (Naw 2013, p. 79)

In any case, Chinese languages with verb-medial basic word order are homogenous in that they use both prepositions and postpositions. As discussed in Section 2.3, both are the results of grammaticalisation from locational or directional verbs to prepositions and relational nouns to postpositions, respectively, from the verb *lɑ̃*$^{5\text{-}4}$ 'to stay' and the noun *lai*^{4} (<*lai*^{4}*pak*^{7}) 'inside', as shown in the Min example (31).

Hui'an Min

(31) *kau*^{3} ***lã*$^{5\text{-}4}$** *tshu*$^{5\text{-}3}$-***lai*^{4}** *khun*^{5}
dog **[at** house-**inside]** sleep
'The dog sleeps in the house.' (modified from Chen 2020, p. 262)

A similar phenomenon is also reported for Karenic, such as Eastern Pwo Karen ***lə́ dàʊ phànɴ*** [**LOC** room **inside**] 'in the room' in (20), and Caijia ***tɯ*^{21}** *tɣ*^{24} ***tɣ*^{33}** [**at** yard **upside**] 'in the yard' (Lü 2022, p. 47). The observation from Chinese, Karenic and Caijia clearly points to a correlation between the verb-medial basic word order and prepositions (as discussed in Greenberg 1963; Dryer 1992a). At the same time, the tendency that relational nouns always follow the content noun also correlates with the general head-final tendency of noun compounding (as discussed in Section 4.1). In the northwestern Chinese languages, Tangwang and Wutun, meanwhile, postpositions are the only option because verbs always occur in clause-final position and cannot precede any adpositional phrases. In any case, the verb-final Zhoutun also marginally uses prepositions, e.g., ***iũ*** *xuɤthã* [**along** riverbank] '**along** the riverbank' and ***iũ*** *kɤ lu* [**along** this road] 'along this road' (Zhou 2022, p. 106).

In terms of verb morphology, word order of the modal auxiliary is surveyed by looking at the position of an ability verb 'to be able'. Most Chinese languages head-initially place an ability verb such as 可以 before the main verb (32a), but some languages also head-finally use the postverbal auxiliary 得 'to get' for ability as in (32b).

Cantonese

(32) a. *lei*^{5} ***ho*^{2} *ji*^{5}** *daap*^{3} *baa*^{31}*si*^{2} *heoi*^{3} *man*^{4} *faa*^{3} *zung*^{1}*sam*^{1}
2SG [**can** catch] bus go culture centre
'You can take a bus (to get) to the Cultural Centre.'

b. *li*^{1} *di*^{1} *zi*^{1} *liu*^{2} *m*^{4} *seon*^{3} ***dak*^{1}** *gwo*^{3}
this PL information [NEG believe **get**] pass
'These figures are not worth believing.' (Matthews and Yip 2011, pp. 265, 278)

Paternicò and Arcodia (2023) discuss variation between the use of 得 in preverbal and postverbal position and show that the postverbal use is predominant in Cantonese with more versatile modal functions than in Mandarin, in which the postverbal use of 得 is declining, whereas the preverbal use remains common.

At the same time, northwestern Chinese languages place the suffixed ability verb clause-finally as predicate, similarly to verb-final Tibeto-Burman languages, as given in (33) and (34).

Zhoutun

(33) *tɤ* *ŋɤ* *tʂɯthũxua* *itiãtiã* *ʂuɤ=**lɛ**=lɔ.*
PART 1SG Zhoutun.vernacular little [speak=**able**=PFV]
'I can speak a little Zhoutun vernacular.' (Zhou 2022, p. 39)

Bulu Puroik (Kho-Bwa)

(34) *atsɨ* *sɑ̃ʤo* *ap^{h}ɔ* *ba-hí-**rjaò**-ʧa* ...
grandchild Sanʤo male [NEG-speak-**able**-PFV]
'Grandsons Sanʤo's father doesn't know to speak [Puroik] . . . ' (Lieberherr 2017, p. 188)

However, we find deviation in Mruic languages which place the ability verb before the main verb, as shown in (35). This pattern is similar to the use of preverbal 可以 'to be able' in Chinese languages, as in the Cantonese form *ho*^{2} *ji*^{5} in (32a).

Hkongso (Mruic)

(35) *mu˥mai˦* *maʔ˥* *nin˥* *aŋ˨* *kəcəʔ˦* *aŋ˥* *no˦* ***hai˦*** *au˥*
cloud SUBJ cover 1SG if 1SG [NEG **able** shine]
'If the clouds cover me, I cannot shine.' (Wright 2009, p. 81)

Another feature related to verb morphology is negator, the order of which is predominantly preverbal in most Chinese languages as in (32b) and (36), as opposed to Tangwang and Zhoutun which also use postverbal negators in some contexts as in (37).

Linxia Jin

(36) *tɕin11 zəʔ2* ***pəʔ2*** *xa35* *y42* *lie11,* *tʻiæ11* *tɕʻ11* *lie11-21!*
today [NEG fall] rain PART sky clear PART
'Today it does not rain, it is sunny!' (Wang 2007, p. 248)

Zhoutun

(37) *tha* *i=kɤ* *ɻɤ̃* *sɑ̃=tɕĩ* *xuɤ=**pu**=xɑ̃* *a.*
1SG one=CLF person three=jin [drink=NEG=down] PART
'I cannot drink up three jin (of wine) alone.' (Zhou 2022, p. 75)

Although preverbal negators tend to be more common across Tibeto-Burman and the world's languages (see Dahl 1979; Dryer 2013), there are also languages which only use postverbal negators as indicated in Supplementary Material B, such as in (38).

Northern Tujia (Burmo-Qiangic)

(38) *lai*^{4} *nga*^{2} *re*^{2} *hu*^{3} ***ta*^{1}**
today 1SG wine [drink NEG]
'I will not drink any wine today.' (Brassett et al. 2006, p. 132)

At the same time, some Tibeto-Burman languages may also use circumflexive negators, being on both sides of the negated verb (39). This type of language is assigned with 0.5 in Supplementary Material B.

Lepcha (Himalayish)

(39) *hó* *hryóp-pung* *ʔân* *mák-kung* *gang-lá* *taʔyu* *ʔáre* ***ma**-thop-**ne***
2SG cry-PTCP and die-PTCP if-also girl this [NEG-get-NEG]
'Even if you cry or die, you won't get this girl.' (Plaisier 2006, p. 136)

As for negation, we also test whether negators and their order vary between main and subordinate clauses. This observation is a secondary finding which will be discussed in more detail with a diachronic analysis in Section 5.2.

Lastly, we also investigate word order in complex clauses, focusing on reported speech in which the order of the complement clause depends on the placement of a speech verb 'to say'. In Chinese languages with the verb-medial basic word order, the complement clause always follows the speech verb, while the verb-final Chinese and Tibeto-Burman languages naturally place the complement clause before the speech verb, as contrasted in (40) and (41).

Dancun Taishanese

(40) *ni*^{33} ***kɔŋ*^{55}** *kʻui*^{33} *hiɛŋ*^{33} *ŋɔi*^{33} *tiu*^{32} *lɔi*^{22} *lɔ*^{55}
2SG **say** 3SG listen [1SG at.once come PART]
'You tell him that I am coming right away.' (Yue-Hashimoto 2005, p. 392)

Tangam (Macro-Tani)

(41) *ami=de* *kutuk=de* *to-ma(ŋ)-ne=do* ***en-la*** *keta-duŋ*
person=ANAP [frog=ANAP exist-NEG-NMLZ:SUBJ=QUOT] **say-NF** look-IPFV
'The man looked [into the hole in the tree], thinking that the frog might be in there.'
(Post 2017, p. 125)

At the same time, there are also verb-final languages such as Bangru, which besides the preverbal complement clause (42a) also allows the postverbal complement clause (42b).

Bangru (Miji)

(42) a. *madhu* *ravi-ya* *miavi* *teacher* ***té-ro***
Madhu [Raviya-ACC good teacher] **say-PST**
'Madhu said that Ravi is a good teacher.'

b. *mari* ***té-ro*** *iya-ga* *maŋia* *čo* *mia* *engineer-ro*
Mary **say-PST** [3SG-GEN mother DET good engineer-PST]
'Mary said that her mother is a good engineer.'

c. *madhu* *ravi-ya* *bajar* *liadi* *ka* ***té-ro***
Madhu Raviya-ACC [market go to] **say-PST**
'Madhu told Raviya to go to the market.' (Devi and Ramya 2017, p. 48)

Interestingly, when the complement part is built on a non-finite verb, it always precedes the speech verb 'to say' as in (42c), revealing the original head-final pattern at a deeper syntactic level (see Devi and Ramya 2017, p. 48, and further discussion on subordinate clauses in Section 5.2).

5. Discussion of Methodological Issues in the Reconstruction of Protolanguage Syntax

This section aims to highlight four main issues arising from the present study which can contribute to a more general understanding and discussion of reconstructing and explaining syntactic changes. Visualisation of quantified data will also be presented to support arguments made on the basis of the data discussed hitherto.

5.1. Internal Explanation for the Head-Initial Noun Phrase Structures: Adjectives, Gender Specifiers and Quantifiers

The investigation of word order in noun modification has shown deviation among different constructions in Chinese and Tibeto-Burman languages. On the one hand, modifying nouns and possessors are consistently placed before head nouns, maintaining a canonical head-final pattern in Sino-Tibetan at deeper syntactic levels. On the other hand, some other modifiers such as quantifiers and adjectives are consistently prenominal in Chinese but more frequently postnominal in other Tibeto-Burman languages contrary to the Greenbergian word order correlations expected from verb-final languages. The reason for the latter may be due to a similar mechanism which is responsible for head-initial structures emerging in southern Chinese languages as discussed in Section 4.1. Therefore, we are particularly interested in the features which show deviation from expected typology, i.e., adjectives, gender specifiers and quantifiers. In this section, we will use evidence from Chinese languages as an explanatory tool for what could have happened in Tibeto-Burman at much earlier stages.

In Sino-Tibetan languages, adjectives syntactically behave like verbs, from which they have diachronically developed (Genetti 2011, pp. 181–82). In terms of paradigmatic syncretism, we can observe for instance the co-expression of the unstressed linking words in Mandarin *de* 的 and Hui *ka* and the Cantonese classifier ge^{3} 嘅 for different types of noun modifications: possessor, adjective and relative clause. Regarding adjectives, there is evidence that several languages morphologically mark adjectives with dedicated derivational affixes when adjectives are used in a non-canonical postnominal position. This phenomenon is particularly observed in colour modifiers such as in Bai xo^{55} $\boldsymbol{ts^{h}\varepsilon^{44}\text{-}no^{33}}$ [flower **red-ATTR**] 'a red flower' and se^{44} $\boldsymbol{lv̩^{44}\text{-}no^{33}}$ [leaf **green-ATTR**] 'green leaf' (Wang 2005, p. 108) and in Tujia $ka^{1}pu^{1}$ $\boldsymbol{mian^{1}\text{-}jie^{1}}$ [flower **red-ATTR**] 'red flower' (Brassett et al. 2006, p. 101). It might be possible that colour terms, which are frequent in use, was one potential source construction from which a language may start to treat the adjectival constituent as a head modified by the preceding noun, i.e., 'the flower red' and 'the leaf green'.

The same principle can be applied to gender specifiers. Wu (2005, p. 106) is of the opinion that both orders stem from the Archaic Chinese head-final pattern, but their distribution varies across animal referents, and the head-initial pattern is a result of interpreting the gender-specifying constituent as a head noun. Consider, for instance, the latter constituent of Changsha Xiang example po^{13} $ts\imath$ 'old woman; grandmother' in (14c). A similar explanation is also given for Caijia postnominal gender specifiers, e.g., $t\text{ɕ}ie^{55}$ 'sister' (Lü 2022, p. 56). This interpretation would ultimately be comparable to how we treat other postnominal markers, such as diminutive and plural markers. The use of the term 'child' as a diminutive marker has been reported for Sino-Tibetan and also cross-linguistically, e.g., Hakka $tyau^{1}$ $\boldsymbol{tsai^{3}}$ [bird **DIM**] 'little bird' in which the diminutive constituent 仔 $tsai^{3}$ etymologically derives from 子 'child'. Beyond Sino-Tibetan, there has been a discussion of other East Asian agglutinative languages, in which plural markers have been grammaticalised from a collective noun, e.g., the Japanese postnominal plural marker *tachi* from Old Japanese *tati* has been reconstructed to a Pre-Old Japanese noun **totwi* (< Pre-Proto-Japanese **tətəj*) with a lexical meaning 'fellow, everyone, together' (Francis-Ratte 2021).

As for quantifiers, the head-initial pattern in Tibeto-Burman could be an analogy to postverbal quantifiers used in the comparative construction in Chinese, consider the adverbial *san*^{33} *li*^{13}*mi*^{41} [three centimetre] 'three centimetres' in (24b). However, apart from Karenic, Mruic and Caijia, we found no evidence from other contemporary verb-final Tibeto-Burman languages which would allow the insertion of postverbal adverbials. We maintain this as one possible explanation which requires more evidence from future studies.

The current view would then assume that northern Chinese languages with consistent prenominal modification must have undergone some reinforcement of the rigid head-final pattern for noun phrase structures at some point in their history (see also a similar case for Zhoutun comparative constructions discussed in Zhou 2023). The hypothesis is in line with the Altaicisation of Chinese which mainly concerns the northern part of Chinese speaking areas (as discussed in Hashimoto 1976; Xu 2006; Janhunen 2007, 2012; Szeto et al. 2018; Szeto 2019; Szeto and Yurayong 2022). The reason is that languages of the Altaic type are consistently head-final with close to zero tendency of realizing head-initial structures, in terms of the features given in Table 3.

Given the previous discussion, we have good reason to reconstruct Proto-Chinese as well as Proto-Sino-Tibetan noun phrases as being consistently head-final. Firstly, the head-initial deviants in Tibeto-Burman can be explained to a certain degree by an internal development through reanalysis of modifier constituents. Secondly, the predominance of head-final noun phrase structures in Chinese, particularly the northern varieties, may also have been reinforced by contact with the consistently head-final Altaic languages.

5.2. Archaism in the Head-Final Subordinate Clauses: Reported Speech and Negation

Compared to noun phrases, verb phrases are more hybrid and vary across Chinese languages. Crucially, the head-initial deviants have been attested since the Archaic Chinese stage (as discussed in Section 2.3), so the directionality shift to head-initial verb structures must have been well established and can be considered a relatively early Proto-Chinese innovation. In this section, we proceed beyond Proto-Chinese to other Tibeto-Burman languages. As noted in Section 4.3, some languages may organise reported speech and negative construction word order asymmetrically between main and subordinate clauses. Such asymmetry has been discussed in the typological literature (see Bybee 2001 as discussed in Section 2.1), and it seems to be applicable to the Sino-Tibetan context to a certain extent.

In (42), we have observed word order variation in Bangru reported speech with a finite compliment clause, which allows both a preverbal (42a) and postverbal position (42b). However, a preverbal complement clause as in (42c) is the only acceptable pattern when the verb is non-finite. Similarly, negative constructions may include both preverbal and postverbal negators in main clauses, as in the Lepcha example (39). Yet, few languages of the circumflexive negator type drop the postverbal negator in subordinate clauses because the postverbal slot is occupied, for instance, by a linker in conditional clauses or a relativiser in relative clauses, as is the case for Sgaw Karen (Kerbs Forthcoming) and Burmese in (43).

Burmese (Burmo-Qiangic)

(43) a. *paiʔs^{h}an* ***mə-ɕí-bù***
money [NEG-exist-NEG]
'(I) don't have money.'

b. *paiʔs^{h}an* ***mə-ɕí-yin*** *mə-la-nɛ́* *le*
money [NEG-exist]-if NEG-come-PROH EMPH
'If you don't have any money, don't come!' (Jenny and Hnin Tun 2016, p. 360)

The opposite direction is reported in Eastern Pwo Karen where main clauses employ the postverbal negator ʔé (44a) whereas subordinate clauses have circumflexive negators (44b).

Eastern Pwo Karen (Karenic)

(44) a. *ʔəwê* *ʔáɴ* *bá* *mì* *dài* ***ʔé***
3SG eat OPP rice still **NEG**
'He has not managed to eat rice yet.' (Kato 2021, p. 356)

b. *ʔəwê* ***lə*** *ɣê* *lɔ́* *jò* ***bá*** *ʔəkhúcòŋjə* *bá* *mà*
3SG **NEG** come LOC here **NEG** because 1SG must do
'Because he did not come here, I have to do.' (Kato 2021, p. 357)

In some other languages, the construction may remain identical to main clauses but there can be some morphophonological alternation of the postverbal negator, as in Phedappe Limbu *mɛN*-V-***nɛn-n*** vs. *mɛN*-V-***mna***, and East-Central Tangkhul Naga *ə*-V-*mə* vs. *ə*-V-***k^{h}ə***-*mo*, respectively.

In the typology of negation, the former type in Burmese and Karenic is labelled as "constructional asymmetry", and the latter type in Phedappe Limbu and East-Central Tankhul is labelled as "paradigmatic asymmetry" (see Miestamo 2005, 2013). The asymmetry between main and subordinate clauses in negative constructions is, however, not a widely observed phenomenon in Sino-Tibetan languages according to our observation. Moreover, the postverbal element of circumflexive negators can be etymologised as deriving from a negative status marker because the preverbal **ma-* is reconstructed as a Proto-Tibeto-Burman standard negator alongside the imperative **ta-/da-* (Benedict 1972, p. 97; Matisoff 2003, p. 162). Thus, the triggering effect of clausal complexity does not seem to go back to Proto-Sino-Tibetan, nor to any second level protolanguages. In any case, the similarity between Burmese and Sgaw Karen could stem from more recent contact with Burmese-speaking ruling elites in many Karenic speaking areas in the past centuries (see also Kato 2019).

Another interesting observation comes from Raji which uses a postverbal *-ma* as a standard negator as in (45a), but its position shifts to preverbal in non-finite verb structures, such as adverbial (45b), complement (45c) and relative clauses (45d).

Raji (Raji-Raute)

(45) a. *ŋa* *bʌtaŋ* *dza-tɨ̃-**ma***
1SG rice eat-PFV-**NEG**
'I have not eaten rice.' (Khatri 2012, p. 82)

b. *daktʌr* *sʌmʌi-ɦa* ***ma**-toŋpi-tɨnʌŋ* *beramya* *si-k-a*
doctor time-LOC **NEG**-arrive-NF patient die-same.day-PST
'The patient died since the doctor did not come on time.' (Khatri 2012, p. 83)

c. ***ma**-dzʌk-tɨnʌŋ* *noknʌŋ* *yo-k-ɨ*
NEG-put-NF good be-same.day-NPST
'Is it good not to put?' (Khatri 2012, p. 83)

d. ***ma**-dʌs-tɨnʌŋ* *aŋe* *aŋe*
NEG-know-NF what what
'Unskilled people do not know.' (Khatri 2012, p. 83)

Applying Bybee's (2001) idea that subordinate clauses preserve original constructions better than in main clauses, we can assume that the original position of the Raji negator was preverbal, in line with the closely related Rawat preverbal negator *hã-*.

As a diachronic implication, subordinate clauses seem to reveal the original syntactic patterns of reported speech and negation as they conform to the general head-final tendency across the family. The previous analysis, thus, supports the view that subordinate clauses tend to preserve original syntax better than in main clauses and are suitable for being used as a criterion for reconstructing protosyntax (as discussed in Bybee 2001; Jenny 2015, 2020, and in Section 2.1). Crucially, this criterion can also be effectively used to describe the variation and deviating patterns of word order observed in other lesser studied Chinese languages with heavy contact influence from neighbouring languages, such as Dungan in Central Asia and Junhua and Maihua in Southeast Asia.

5.3. Reconstructing Non-Harmonious Word Order Patterns for Proto-Chinese

The data discussed hitherto have shown that none of the Chinese and Tibeto-Burman languages are fully head-final, i.e., receiving the full score in Supplementary Material B. In any case, such a hybrid profile of Chinese word order is not to be used as an argument for the mixed origin of Proto-Chinese (Benedict 1972; Bodman 1980; DeLancey 2013), and as discussed in Sections 2.3, 4.3 and 5.1, this has crucially also provided an explanation from the perspective of language-internal change (à Thomason 2010). At least some of the head-initial deviants can be explained by internal reconstruction through grammaticalisation, particularly in the case of adpositional phrases, whereas certain other constructions still need further analysis in the framework of historical syntax (a challenge previously encountered also in Dryer 2003).

At a methodological level, we propose an approach to deal with the varying degrees of word order variation across Sino-Tibetan and their development by referring to the notion of "protolanguage". Namely, any protolanguage which has been discussed in historical linguistics dates no further than ca. 6000–8000 years back in time, which is significantly much later than the emergence of human speech ability a hundred thousand years ago (e.g., Oller 2000; Lieberman 2007; Perreault and Mathew 2012). This thereby leaves some room for the possibility of reconstructing a protolanguage with hybrid word order profiles which conform with one of the scenarios given in Table 1. This seems to be the case for the Proto-Chinese intermediate stage and the earlier Proto-Sino-Tibetan stage. The approach would be in line with a functional approach to word order variation in a tendency-like manner rather than an invariant parameter (as discussed in Section 2.1). With this starting point, we will discuss further how the hybrid profile of Proto-Chinese and Proto-Sino-Tibetan should be analysed.

Regardless of variation at the level of individual languages, the head-final baseline is in place for the majority of the sample Chinese and Tibeto-Burman languages. A deviation from the general tendency described above occurs in Karenic languages which receive notably lower than half of the head-finalness score in Supplementary Material B. This supports the view of an early radical typological change in Proto-Karenic, considered to be the result of intense and long-standing contact with Mainland Southeast Asian verb-medial languages, most notably with Austroasiatic languages, Monic and then Palaungic languages and more recently with Tai languages (see Matisoff 2000; Manson 2009; and Kato 2019). The same can be said for Chinese (excluding modern contact varieties in the northwest) as there is a geographically significant cline along which the degree of head-finalness decreases towards the south, an area where most contact languages prefer the head-initial structures, similar to the Northern Eurasian cline observed in Nichols (1992) (see Figure 6 in Section 5.4).

This observation also gives an implication that change of head directionality does not necessarily concern the entire word order system. Instead, the shift of constituent orders gradually becomes activated in individual constructions in a predictable way (such as the hierarchy of noun phrase modification and the postulation of shift order discussed in Section 2.1). For instance, the relational order between adjectives and demonstratives observed from Sino-Tibetan languages contradicts implicational universals and the postulation of word order shift (as discussed in Section 2.1), namely that adjectives tend to change before demonstratives. As we see from the counterexample (17), Toto retains the prenominal position of demonstratives more firmly than that of adjectives.

In any case, the implicational universals, according to which relative clauses would change their directionality last are supported by a report about demonstratives in Daai Chin, in which prenominal demonstratives cannot occur adjacent to a relative clause or possessor as a modifier in the noun phrase, since demonstratives would otherwise be pushed to the postnominal position (So-Hartmann 2009, pp. 133, 141). A similar complementary relation between prenominal relative clauses and postnominal demonstratives has been observed in Rawat (Rastogi 2012, p. 86). Among Chinese languages, Tunxi Hui noun relativization, with the demonstrative following the relative clause and preceding the head

noun, as in (18b), is considered indigenous (Lu 2018, p. 168). The same pattern is also reported for Yichun Gan (Li 2018, p. 250).

With the quantitative data from Sino-Tibetan languages presented in Supplementary Material B, in Table 4 and the discussion to this point, we propose in Table 5 an alternative schema to the model in Table 1, in which noun modification types have shifted from head-final to head-initial in a chronological order.

Table 5. Hierarchy of directionality change in word order of nominal structures.

Relative Chronology	**The Version Based on Implicational Universals in Hawkins (1983, p. 75), Dryer (1992b) and Croft (2003, p. 123)**	**The Version Based on the Sino-Tibetan Data**
First		Gender specifiers
↓	Quantifiers	Quantifiers
↓	Demonstratives	Adjectives
↓	Adjectives	Demonstratives
↓	Possessors	Relative clauses
↓	Relative clauses	Compounds
Last		Possessors

Based on our data and proposal, possessors and then compounds would be at even deeper syntactic levels of the noun phrase and thereby more resistant to change than relative clauses. At the same time, gender specifiers and then quantifiers are clearly more mobile as is seen in the ongoing reanalysis of gender-specifying morphemes as head nouns (as discussed in Section 5.1) and the word order variation of quantifiers used as an abstract measurement in comparatives, as shown in (24b) and discussed in Section 4.1.

Applying this hierarchy to the comparative Sino-Tibetan data discussed in the present study, we reconstruct head-final word order profile for the Proto-Sino-Tibetan noun phrase structures which are retained in Proto-Chinese. Our assumption as shown in Table 6 is that other intermediate protolanguages later gradually underwent the shift towards head-initial structures in quantifiers, gender specifiers and adjectives in a similar manner to what has recently taken place in southern Chinese languages, as discussed in Section 5.1. The opposite direction with Chinese being innovative in restructuring the noun phrase structures into a rigid head-final type would be less probable. Firstly, the secondary reinforcement of head-final tendency under Altaic contact (as discussed in Section 5.1) would not have taken place and had significant effects on Chinese typology until the second half of the first millennium CE. Secondly, there has been hitherto no information about any prehistoric head-final languages to the west and north of Chinese speaking areas other than the cognate Tibeto-Burman and the Altaic type of languages in the north, which could have been candidates for the pre-Altaic restructuring stage.

Table 6. A reconstruction of Proto-Chinese and Proto-Sino-Tibetan noun phrases: N = Noun; $N_{[H]}$ = Head noun; Quant = Quantifier; Gend = Gender specifier; Adj = Adjective; Dem = Demonstrative; Rel = Relative clause; and Poss = Possessive.

	Head-Initial Structures	**Head-Final Structures**
Other intermediate protolanguages	NQuant & NGend & NAdj	DemN & RelN & $NN_{[H]}$ & PossN
Proto-Chinese	QuantN & GendN & AdjN & DemN & RelN & $NN_{[H]}$ & PossN	
Proto-Sino-Tibetan		

The proposed hierarchy can be further used to define the complexity level of different noun modifications of Sino-Tibetan languages typologically (as discussed in Section 5.2). A similar analysis can be empirically tested with other language families to achieve ultimately a cross-linguistically valid prediction of change in word order patterns.

In contrast, Proto-Sino-Tibetan verb phrase structures must have been consistently head-final, which is largely retained in Tibeto-Burman, apart from Karenic affected by contact with Mainland Southeast Asian languages and Burmo-Qiangic, and Macro-Bai with a recent restructuring stage under Mandarin influence. At the same time, Proto-Chinese verb phrases presumably shifted their pattern to head-initial in the constructions indicated in Table 7, which might have been the result of pre-historic contact with Mainland Southeast Asian languages (as hypothesised in DeLancey 2013).

Table 7. A reconstruction of Proto-Chinese and Proto-Sino-Tibetan verb phrases: V = Verb; O = Direct object; Quot = Quotation; Adj = Adjective; Comp = Standard of comparison; Loc = Locational adverb.

	Head-Initial Structures	**Head-Final Structures**
Proto-Chinese	VO & VQuot & AdjComp	LocV
Pre-Proto-Chinese & Other intermediate protolanguages	OV & QuotV & CompAdj & LocV	
Proto-Sino-Tibetan		

Among these verb phrases, the comparative, existential and reported speech constructions seem to have deviated from other Sino-Tibetan languages and shifted to the head-initial pattern early enough to become stabilised in Archaic Chinese, similarly to the grammaticalisation of location and directional verbs into prepositions. At the same time, the location adverbial remains largely preverbal. The situation after intense contact with head-final Altaic languages then presumably led to the reinforcement and secondary re-establishment of pre-Proto-Chinese/Proto-Sino-Tibetan head-final construction types. Meanwhile, the situation with ditransitives, which is a pragmatically highly variable construction as discussed in Section 2.3 in connection to (7) and (9), remains to be studied further.

5.4. Statistical Correlations between Word Order Variation and Sociological Factors

To complement the internal and external reconstruction of Proto-Chinese and Proto-Sino-Tibetan syntax proposed throughout Section 5, we also conduct coefficient of determination (R^2, Wright 1921) tests to explore whether extralinguistic factors can also add significant explanatory power. The degree of significance is determined by the following scalar: 0.00–0.19 (not interesting) → 0.20–0.49 (low) → 0.50–0.79 (moderate) → 0.80–1.00 (high). As a precaution, the correlations discussed in this section are predominantly statistical and do not necessarily indicate causality between the tested variables.

In terms of the speech community, language change can be affected by the proportion of L1 and L2 speakers and by linguistic awareness, as well as by geographical factors (as discussed in Section 2.4). However, the information concerning the number of L2 speakers is not always reported, let alone the accuracy of the number of overall speakers of a language. Likewise, it is often difficult to assess the linguistic awareness of a given speech community. We acknowledge the significance of all the aforementioned factors for the explanation of language change, but due to the limited amount of available data, we limit our scope in this section to two extralinguistic factors: (1) the overall number of speakers (Scenario type 1) and (2) geographical location of a speech community (Scenario types 2 and 3). Then, we run ca. 30 different test scenarios to detect statistical correlations between the extralinguistic factors and two aspects of word order: (1) the degree of head-final tendency and (2) the degree of hybrid word order profile. Due to the limitations of space, we present in this section only scenarios which show statistically interesting results.

Scenario type 1: Head-finalness x Number of speakers

At a macro level, there is no interesting result ($R^2 < 0.01$) across the entire Sino-Tibetan family regarding the statistical correlation between head-finalness and number of speakers. However, when we select a filtered sampling with only languages which share a similar scenario of historical development, we detect significant correlations among northwestern Chinese contact varieties (Tangwang, Wutun, Zhoutun) and Karenic languages. For the former case, the head-final tendency decreases as the number of speakers increases in a relatively significant fashion ($R^2 \approx 0.81$), as is shown in Figure 3.

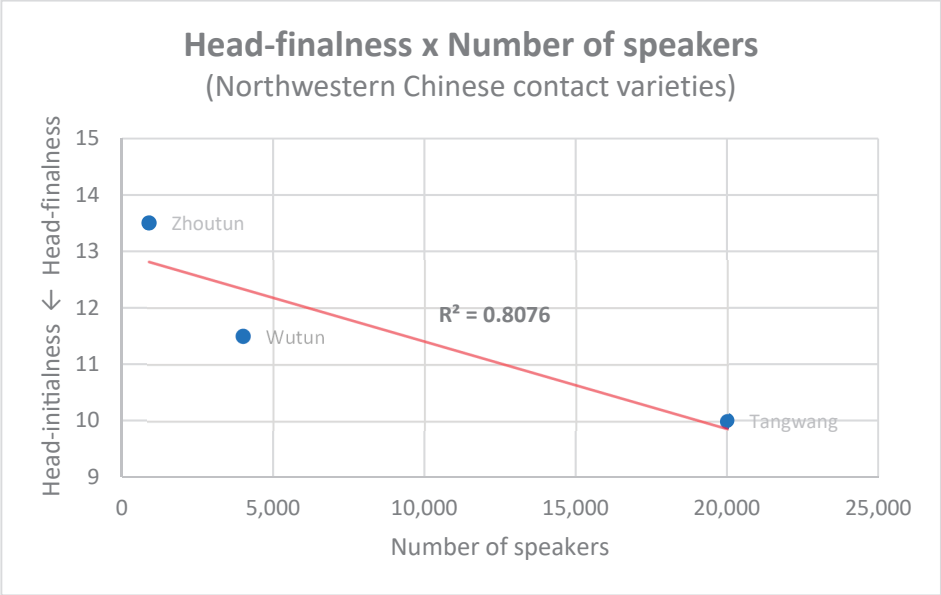


Figure 3. The statistical correlation between head-final tendency and number of speakers across northwestern Chinese contact varieties.

At the same time, the number of Karenic speakers statistically correlates in a highly significant manner ($R^2 \approx 0.99$) with the number of hybrid constructions, i.e., variation in head directionality (assigned as 0.5. in Supplementary Material B), as is observable in Figure 4.

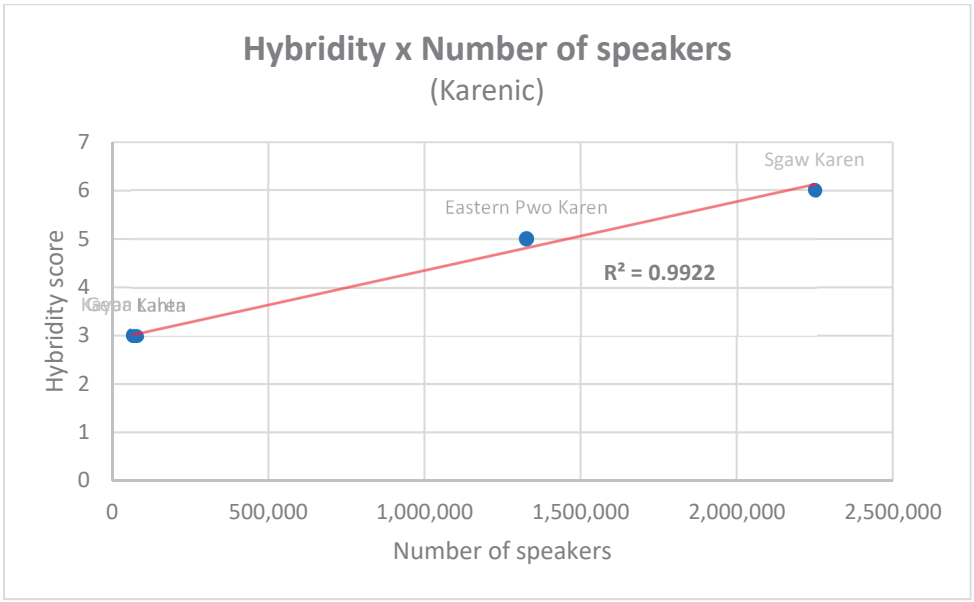


Figure 4. The statistical correlation between the number of hybrid constructions and number of speakers across Karenic.

Both micro-area cases statistically imply that the more speakers a speech community has, the more a language tends to tolerate variation and hybridity, from which it likewise may become more deviant from its baseline syntactic pattern (head-final in this case). However, we speculate that the statistical correlation between the number of speakers and syntactic variation does not work independently without consideration of other sociolinguistic factors. The reason we detect the micro-areal correlations in Figures 3 and 4 could be due to the fact that these languages belong to the same genealogical groups, which makes the tested scenarios valid in their own sociohistorical contexts.

Scenario type 2: Head-finalness x Longitude

Replicating the macro-area investigation by Nichols (1992) in the Sino-Tibetan context, we notice that Chinese languages are too deviant from the rest and affect the result, which yields no interesting statistical significance ($R^2 \approx 0.11$). Among Chinese languages themselves, there is also only an uninteresting significance detected ($R^2 \approx 0.08$). However, when we conduct a separate test for Tibeto-Burman, the correlation is improved ($R^2 \approx 0.23$). We also try scenarios which exclude languages considered as outliers: (1) Burmese which arrived in its current area less than a millennium ago and (2) languages spoken in China (Na-Qiangic, Tujia, Baic and Tai-Li) as they are reportedly undergoing a heavy influence from standard or regional Mandarin syntax. With this filter, we achieve a better result ($R^2 \approx 0.31$), as shown in Figure 5.

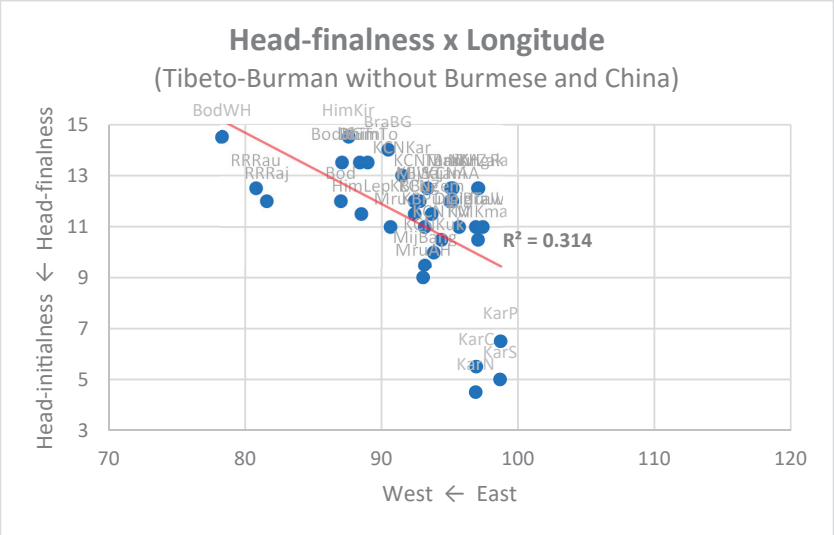


Figure 5. The statistical correlation between the head-final tendency and longitude across Tibeto-Burman, excluding Burmese and the languages spoken in China.

This scenario type does not indicate a high significance in terms of intralinguistic and extralinguistic correlations. In any case, we maintain that the east–west cline is still there in the Sino-Tibetan sphere (as observed for individual features in Dryer 2003) and might have decreased due to its time depth which could go back to the early migration and expansion of the Sino-Tibetan speaking populations, similarly to the east–west cline observed across Northern Eurasia and North America by Nichols (1992). Such a prehistoric cline where the west retains the head-final tendency more firmly seems to be due to the prehistoric Trans-Himalayan migration from the Sino-Tibetan *Urheimat* located further to the east (see also discussion on the Sino-Tibetan *Urheimat* in Peiros 1998, p. 217; van Driem 2007; Sagart et al. 2019; Zhang et al. 2019).

Scenario type 3: Head-finalness x Latitude

In another axis, we identify the cline from north to south by conducting two separate tests for Chinese and Tibeto-Burman, as the correlation rate across the entire family is relatively low ($R^2 \approx 0.17$) and might have been affected by many layers of later con-

tact. For Chinese and Tibeto-Burman, we also run two tests each with and without outlier languages: Harbin and northwestern Mandarin for the former case due to their recent expansion and Burmese, Na-Qiangic, Tujia, Baic and Tai-Li for the latter case similarly to Scenario type 2. The latter scenarios yield significantly better results, so we rely on the filtered scenarios.

For Chinese, the north-to-south cline has a relatively high degree of significance ($R^2 \approx 0.8$), as shown in Figure 6.

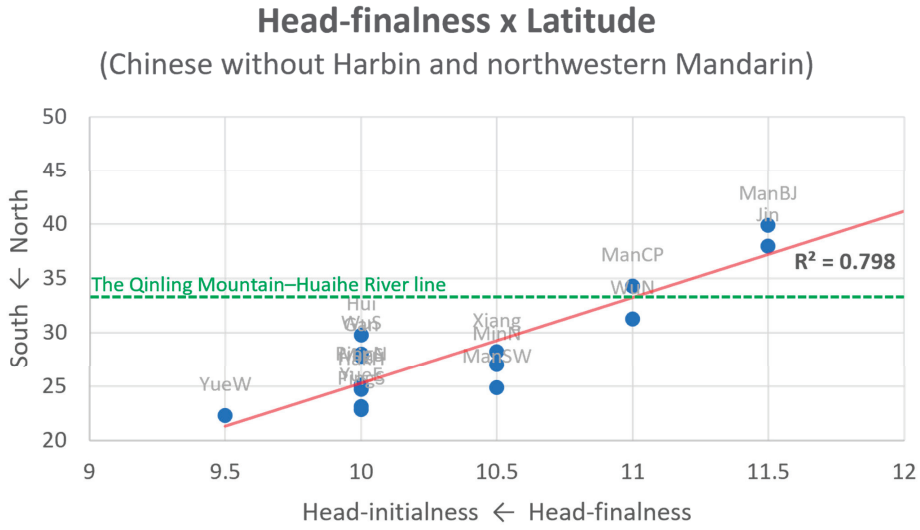


Figure 6. The statistical correlation between the head-final tendency and latitude across Chinese, excluding Harbin and northwestern Mandarin.

This observation confirms the validity of the Qinling Mountain–Huaihe River line (as discussed in Section 2.2 under Figure 2) and puts that hypothesis into an even more fine-grained and quantifiable manner, showing that the variation across Chinese has a gradable geographical trajectory rather than a sharp binary division.

Tibeto-Burman, meanwhile, shows a lower but still moderately significant degree of correlation ($R^2 \approx 0.61$), as shown in Figure 7.

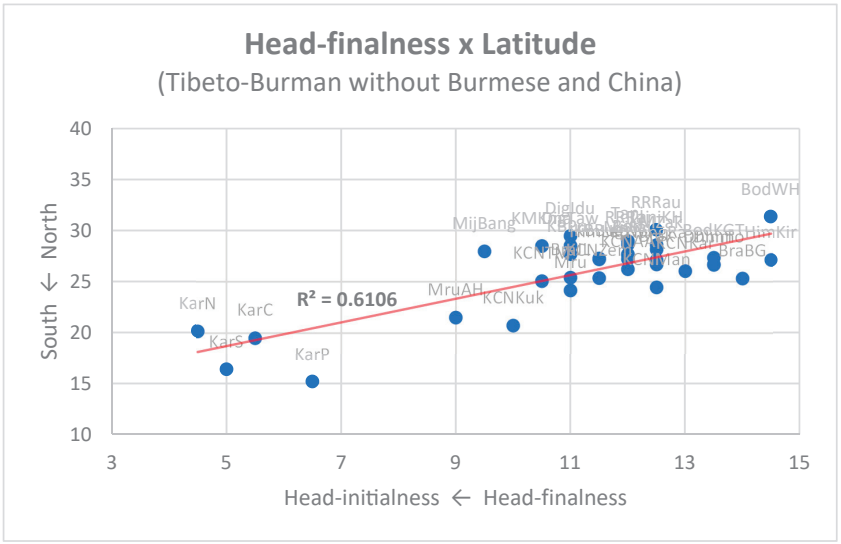


Figure 7. The statistical correlation between the head-final tendency and latitude across Tibeto-Burman, excluding Burmese and the languages spoken in China.

Similar to the case of Chinese above, the cline in Figure 7 might also give an areal implication of the typological distinction between core Tibeto-Burman and Mainland Southeast Asian type of Tibeto-Burman, including Karenic, Kuki-Chin and Mruic.

The observation based on latitude shows that the north-to-south cline (as hypothesised in Section 2.4) is applicable to the Sino-Tibetan family, and further studies can retest this hypothesis with a larger sampling which includes also other language families of Eastern Eurasia.

6. Conclusions

In the present study, we have investigated word order of nominal and verbal structures in Sino-Tibetan languages in terms of head-final vs. head-initial patterns by using evidence from both internal reconstruction and external factors, such as language contact, geographical location and sociolinguistic context. We have shown that while the Sino-Tibetan language family in general tends to favour head-final structures; individual languages show considerable degrees of variation in the number of head-initial structures allowed for. We have discovered that internal development through reanalysis and contact with neighbouring languages are both relevant for explaining variation and changes in word order structures. It is also evident from the results of this study that nominal and verbal categories might be non-harmonious in one and the same language, as has been the case for Chinese since the Proto-Chinese stage.

In terms of extralinguistic variables, we have found that a sociolinguistic factor (number of speakers) and geographical factors (latitude and longitude) show statistical correlations with word order variation. At least on the level of micro-areas, the discussed extralinguistic factors can ultimately also give some implications on directionality changes in word order of Sino-Tibetan language communities. Crucially, we have demonstrated that in the case of modern Chinese contact varieties of Northwest China, smaller speech communities tend to be more consistent with the head-final tendency. Among Karenic languages, meanwhile, larger speech communities tend to tolerate more variation in word order patterns, which, in turn, causes deviation from the head-final syntactic baseline. The most significant factor on the level of the entire language family seems to be latitude, which statistically correlates with the degree of head-final tendency, and therefore the north–south cline is of considerable significance for Sino-Tibetan languages. At the same time, the east–west cline is in line with the hypothesis about the early Trans-Himalayan migration from the east. In any case, the role of the proportion of L2 speakers, as well as language attitudes and language awareness of the speakers as explanations to language change in the Sino-Tibetan family, still requires further data and research.

In the current study, we have used the variety sampling method with stricter areal and genealogical controls for language selection which yields results as discussed throughout the entire work. In future studies, the application of a larger sample of languages and typological features as well as more versatile extralinguistic factors related to language sociology can shed light on variation across Sino-Tibetan at an even more fine-grained level.

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Abbreviations

1	First person	LOC	Locative
2	Second person	MASC	Masculine
3	Third person	NEG	Negation
ACC	Accusative	NF	Non-finite
AGENT	Agent	NOM	Nominative
ANAP	Anaphoric	NMLZ	Nominaliser
APPL	Applicative	NPST	Non-past
ASP	Aspect	OBJ	Object
ATTR	Attributive	OPP	Opportunity
CLF	Classifier	PART	Particle
COMP	Comparative	PFV	Perfective
COP	Copula	PL	Plural
DAT	Dative	POSS	Possessive
DECL	Declarative	PROH	Prohibitive
DET	Determiner	PST	Past
EMPH	Emphatic	PTCP	Participle
EXCL	Exclamation	QUOT	Quotative
FEM	Feminine	REAL	Realis
GEN	Genitive	RECIP	Reciprocal
HAB	Habitual	REFL	Reflexive
INCOMPL	Incompletive	REL	Relative clause
INTJ	Interjection	RES	Resultative
IPFV	Imperfective	SG	Singular
LINK	Linker	SUBJ	Subject

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Tonal Behavior as of Areal and Typological Concerns: Centering on the Sinitic and Kam-Tai Languages in Lingnan

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Abstract: From the perspective of areal linguistics, this paper examines the similarities in tonal behavior between Sinitic and Kam-Tai, the two most populous language groups in Lingnan. By relying on some frameworks for investigating tone systems, i.e., tone-box theories, which largely involve the evolution of tones, the following duplicating patterns and paths of diffusion of areal features are identified. (1) The secondary tonal split conditioned by vowel length on checked syllables, as well as the secondary tonal split of the upper-register tones conditioned by the laryngeal features of initial consonants, both originated in Kam-Tai languages and have diffused into some neighboring Sinitic languages. (2) The pattern of the secondary tonal split of the lower-register tones conditioned by laryngeal features of the initial consonants originated in northern authoritative Sinitic languages and spread widely among different subgroups of Sinitic languages; its diffusion into the Kam-Tai languages is limited to the lexical category of loanwords. (3) The upper-register tones associated with sonorant initials found in Lingnan Sinitic languages are suggested to be of a Kam-Tai origin trait. Further, their underlying areal typological rules are also summarized, concentrating on different upper limits for the possible secondary tonal split in the Sinitic and Kam-Tai languages, which were determined by the historically distinct laryngeal features of the initial consonants of the two language groups.

Keywords: Lingnan; Sinitic; Kam-Tai; areal linguistics; tone-box; language typology; tonology

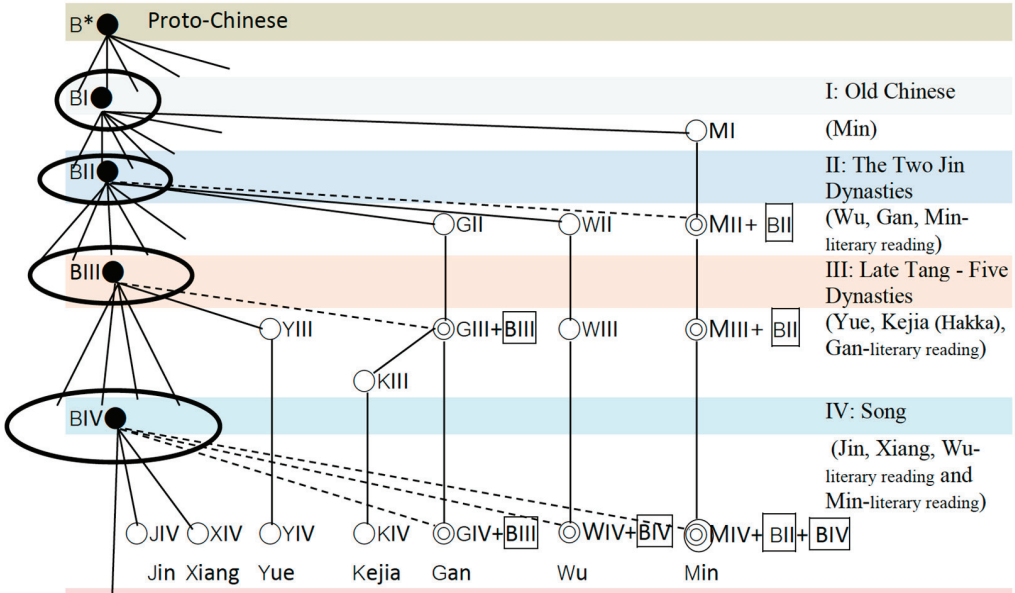
1. Introduction: Tones as an Areal Feature Diffusing in Sinitic and Kra-Dai

This paper is a study on the tonal systems of the languages spoken in the Lingnan region, centered on Guangxi and Guangdong, China. Among the languages of the world, Sinitic and Kam-Tai are perhaps two of those language groups with the most complex tonal split patterns in the history of tonal development, both from diachronic and synchronic points of view. The core Lingnan region[1] roughly equals the western Lingnan sprachbund proposed by Szeto and Yurayong (2022) and is the geographical area in which the target languages of this paper, Sinitic and Kam-Tai, have the most concentrated contact. In this paper, I present various tonal split patterns and tonal behavior of the Lingnan languages in these two language groups, determine areal features in tonal split patterns emerging as a result of intense language contact and extensive diffusion, take into account the diachronic depth and the synchronic breadth, and ultimately conclude with the number of tonological areal types.

To present, at a glance, the position of Sinitic and Kam-Tai languages in their respective language families, we present tree diagrams of their affiliation in Figures 1 and 2.

According to the subdivisions and affinities within the two linguistic groups illustrated in the two figures above, there are two major points that need to be noted as premises for the discussion in this paper. The first is that the non-Mandarin Sinitic languages, including Cantonese, Pinghua, and Hakka in Lingnan, all have colloquial readings of Chinese etyma inherited from older phonological layers, as well as literary readings adapted from the authoritative northern dialects of the Late Middle Chinese (LMC) periods. The

second point is that the Kra-Dai languages discussed in this paper, including the Zhuang and Kam languages of core Lingnan, as well as Thai and other Southwestern Tai languages on the MSEA, are all of the most populous branch of Kam-Tai, particularly the Kam-Sui and Tai subbranches, which have had intense and long-standing contact with Lingnan Sinitic languages in history. The non-Kam-Tai languages of the peripheral Lingnan, namely Kra and Hlai, as well as Be of Tai-Be, are not included in the main scope.



Notes:

I. An ellipse ⬭ indicates the area bulldozed by the northern authority Sinitic variety at that period, while the branches beyond are those that have not been bulldozed. The solid line connects the sequence of evolution of the phonological system itself, while the dotted line connects the literary reading in that subgroup to the origin of the external authority dialectal hierarchy.

II. ● Authoritative Chinese varieties in successive dynasties in Northern China (北方通語 Běifāng Tōngyǔ), abbreviated as B; ○ Sinitic subgroups preserved to this day; ◎ Multi-layered superimposed Sinitic subgroups.

III. Roman numerals with character box line such as BII indicate the literary layer, i.e. the reading system adapted from the authoritative Chinese variety in the political center of Northern China during that period. Note that the phonetic of the northern authoritative dialects had undergone a dialectal phonological adaptation in each group.

IV. The Min, Wu, Gan, Kejia (Hakka), Yue, Xiang, and Jin groups underwent their own evolutionary differentiation during the Yuan, Ming and Qing dynasties and accepted the new literary readings, which are no longer represented in the figure.

Figure 1. H. Wang's (2009, pp. 212–14) model of Sinitic subgrouping and classification.

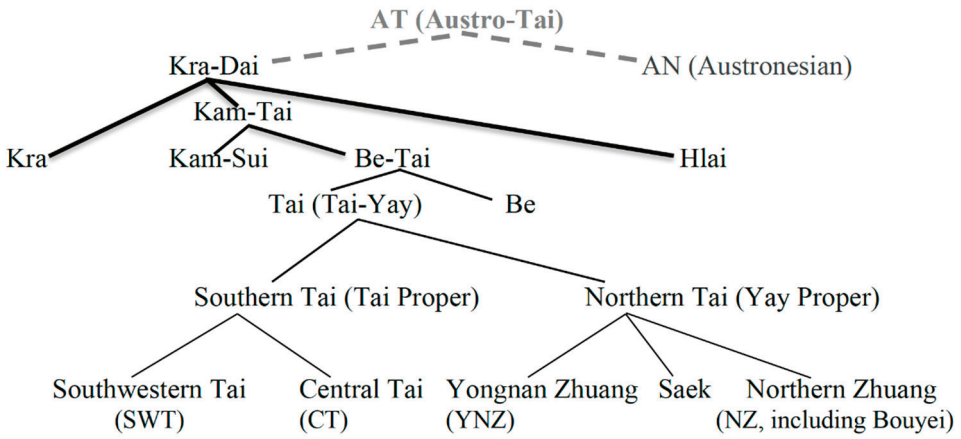


Figure 2. A Kra-Dai language family tree: Austro-Tai hypothesis (Ostapirat 2005), Kam-Tai division, and two plus three Tai taxonomy (Liao and Tai 2019).

An important phonological trait for Lingnan as part of Mainland Southeast Asia (MSEA) is the similar tone systems among numerous languages, despite them coming from different language families, namely Sinitic, Kra-Dai, Hmong-Mien, and Việt–Mường. This similarity is first demonstrated by the fact that the modern tone systems in these languages all reflect a proto-system of "three-plus-one", i.e., three tonal categories *A, *B, and *C on "smooth syllables", syllables with continuant (vowel/sonorant) endings, plus a tonal category *D on a non-tonal checked syllable, and syllables with oral stop endings (such as *-p*, *-t*, and *-k*, mostly unreleased)[2]. It is further illustrated by the neat correspondence of the later 8–10 tonal categories as the result of register tonal splits among the above languages. Such neat correspondence of tone systems among these languages has been demonstrated in previous studies, such as Haudricourt's (1954) tonal correspondences between Vietnamese and Chinese, and Downer's (1963) tonal correspondences between Chinese, Thai, and Hmong-Mien.

To clarify how the neat tonal correspondences among these languages formed, it is first necessary to determine whether tones in these languages are innate or an acquired characteristic. One of the methodological aspects of this paper is indeed based on the theories of the origin and development of tones. Previous studies have differed regarding whether tone is an inherited feature or an areal trait in a tonal language. Some early studies, such as Maspero (1912), suggested that tone was an inherent feature of tonal languages, i.e., that these languages had tones from the beginning. However, since Haudricourt (1954) suggested that Vietnamese tones arose from the decline of specific consonantal rime endings, other scholars have proposed a similar process for the emergence of tones in Sinitic, Hmong-Mien, and Kra-Dai languages, which Matisoff (1973) refers to as tonogenesis. Since then, most historical and comparative linguists have tended to attribute the tones of these languages to a later development, and to an areal trait that began in Chinese and diffused to other languages, as demonstrated in Section 2. On this premise, some common tonal behaviors represented by abundant secondary tonal split patterns in Lingnan Sinitic and Kam-Tai languages, the main objects of this study, can hardly be regarded as inherited in these languages, as they developed on the basis of earlier tones, which have already been suggested to be later developments themselves. Thus, exploring the origins and the direction of the diffusion of some common tonal behaviors becomes one of the key findings of this paper. Another methodological aspect is to improve the inadequate use of tone-box frameworks, which deal with tonal split theories, including primary and secondary splits, according to the laryngeal features of initial consonants at the time of the tonal split, for indicating the currently complicated tonal correspondence among sister languages. These methods will be maximized in this paper to reveal new insights and cross-family correlations from the empirical data that have significantly increased in recent decades. Put simply, by using these updated and improved tone-box frameworks to present the complicated tonal correspondences at a glance, we can easily identify tonal behaviors that were previously not readily apparent as cross-family. If a tonal behavior is widespread among all the subbranches of the Kam-Tai languages, but has limited presence in the neighboring Sinitic languages and is not found in Sinitic languages elsewhere, then we can rule out its Sinitic origin, and vice versa.

Based on a combination of previous research findings and empirical tonal data from cross-family correlations, this paper finds that different tonal split patterns and tonal behaviors may have different origins and may have diffused in opposite directions. Previous studies have pointed to secondary tonal split patterns conditioned by vowel length in checked syllables, which originated in Kam-Tai and diffused to some Lingnan Sinitic languages. However, although it is also found that a secondary split of upper-register tones conditioned by laryngeal features of originally voiceless initial consonants is found in both Kam-Tai and some Lingnan Sinitic languages, little has been done to associate them together. In this paper, a cross-family comparison of this topic reveals that this trait also originated in Kam-Tai and diffused into some Lingnan Sinitic languages, particularly the Cantonese and Pinghua dialects. In contrast, for the secondary split of lower-register tones

conditioned by laryngeal features of originally voiced initial consonants, similar cross-family comparisons reveal that the direction of origin and diffusion is reversed. A hypothesis of the lexical diglossia of colloquial vs. literary readings in Lingnan Sinitic languages, particularly the *zhuóshǎng guīqù* phenomenon in tone B2, is given to explain the formation of this trait, together with an approach to deal with this phenomenon as "borrowings" in both the Lingnan Sinitic and Kam-Tai languages in a conventional sense.

Apart from secondary tonal split patterns, there is another notable tonal behavior presenting as a number of lexicons with sonorant initials associated with the upper-register tones in Lingnan Sinitic languages, such as Cantonese and Pinghua. These Lingnan Sinitic languages are generally considered to be direct descendants of Middle Chinese (MC), which did not have voiceless sonorant initial consonants; thus, such tonal behavior is anomalous. A cross-family comparison reveals new insights that a large proportion of these lexical items in Lingnan Sinitic languages are likely to be of Kam-Tai origin, either substratum or loanwords.

Furthermore, the tonal evidence in this paper can be used to propose a more fine-grained relative chronology of the changes under contact between Sinitic and Kra-Dai, as well as criteria to detect Kam-Tai borrowings in southern Sinitic. A typical example is that the number of Sinitic loanwords with the *zhuóshǎng guīqù* phenomenon shared among Tai dialects from all the terminal Tai subgroups suggests that the *zhuóshǎng guīqù* phenomenon occurred before the latest limit of the primary tonal split, i.e., before SWT split from CT languages, as the register tonal split in Kam-Tai languages occurred much later than in Chinese because it was a trait adapted from LMC, and Thai did not have a primary tonal split until around 700 years ago (as demonstrated in Sections 2.1 and 3.2).

In short, the above key points are those highlighted as the methodological contribution of this paper to the field, aiming at filling research gaps by exploring secondary tonal split patterns and tonal behavior as areal features and some other specific tonal behaviors from an areal linguistic perspective. In the following discussion, we will introduce the theoretical frameworks of this study in the two subsections of Section 2, with a large amount of specific detail on the phenomenon and related theoretical matters; Section 3 and its subsections will introduce the major findings of this study, revealing the origins and directions of the diffusion of secondary tonal split patterns and some specific areal tonal behavior as a result of language contact; and Section 4 concludes this paper.

2. Theoretical Basis: Tonology Applied to Sinitic and Kam-Tai languages

2.1. Tonogenesis and Tonal Splits

We have mentioned the similarities of tone systems among the language families of Sinitic, Kra-Dai, Hmong-Mien, and Việt–Mường, and have pointed out that these similarities are not the result of the innate or separate development of the languages mentioned above, but rather the result of the diffusion of tone traits. In this diffusion, loanwords borrowed from Chinese, including Old Chinese (OC), MC, and other historical predecessors of the Chinese language, played a key role. The process of borrowing began with the emergence of tones. Tones emerged in Chinese some 1500 years ago (cf. Pulleyblank 1978), while research into other languages also presents similar theories about the emergence and development of tones. For the first step, tonogenesis, these languages developed from non-tonal languages due to the loss or degradation of two rhyme endings, *-ʔ and *-h (← *-s), because syllables with these two endings were semantically discriminative to plain syllables without these two endings and those ending with oral stops (*-p/-t/-k). As a result, three early tones, *A, *B, and *C, on smooth syllables were developed to maintain semantic distinctions, while syllables ending in *-p/-t/-k were designated as "checked syllables" and the pitch on them was tone *D, presenting an *ABC/*D or 3/1 tone category pattern (cf. Handel 2014; Hill 2019). The generalization and definition of the tonogenesis of languages in MSEA can be seen in Matisoff (1973), while the respective tonogenesis of different language families/groups can be seen in some of the following studies: Haudricourt (1954) for Vietnamese, Pulleyblank (1962), Mei (1970, p. 86) and Norman (1988, pp. 55–57) for

Chinese, Chang (1972) for Hmong-Mien, Pittayaporn (2009, pp. 270–71) and Liao (2016a, pp. 81–84; 2016b, pp. 96–120) for Tai, and Sagart (2019) and Liao (2020) for Kra-Dai and Tai. However, the triggers for tonogenesis may vary, with mainstream studies suggesting that, for non-Sinitic groups, the triggers may be contact-induced, specifically by contact with Chinese, which had a strong historical influence.

Pittayaporn (2014) discussed diachronic layers of Chinese loanwords in the Tai languages that spanned more than 1000 years from OC to Late Middle Chinese (LMC). Although his intention was to verify the timing of the migration of the southwestern Tai language group from its ancestral homeland of Guangxi–North Vietnam into the core areas of MSEA, we can also see the temporal depth and breadth of Chinese loanwords in the Tai languages. For example, when borrowing a term with the sibilant final *-s from non-tonal OC (Baxter and Sagart 2014b), such as *s.li[j]-s 'four' (cf. Baxter and Sagart 2014a, p. 104), the non-tonal, early proto-Tai might have used its aspirated final *-h to adapt this term, namely *ɬi:h 'four' (Liao 2020). Later, as OC *-s became the MC *-h, which gave rise to a tone, tone *C/tone qù (去聲), to preserve semantic distinctions, the term 'four' changed to *sij^{C} in Early Middle Chinese (EMC) (via *sijH) (cf. Baxter and Sagart 2014a, p. 104). Under this influence, the *-h of proto-Tai was also dropped off to develop a tone B, so that, in the tonal late proto-Tai (Liao 2016b, p. 94), *ɬi:h 'four' became *ɬi:^{B}. Thus, a correspondence between the Chinese tone *C/*qù* and Tai tone *B was formed. Such tonal correspondence among the early tone systems of these different language groups, and their historical sources that are commonly suggested are summarized in Table 1.

Table 1. Correspondence of the early tone systems among Chinese, Kra-Dai, Vietnamese, and Hmong-Mien.

Suggested Origin	EMC	Vietnamese	Kra-Dai	Hmong-Mien
-	A (*píng*/level)	*A (*ngang-huyền*)	*A	*A
*-ʔ	B (*shǎng*/rising)	*B (*sắc-nặng*)	*C	*B
*-s > *-h/*-h	C (*qù*/departing)	*C (*hỏi-ngã*)	*B	*C
*-p/t/k	D (*rù*/entering)	*D (*sắc-nặng*)	*D	*D

For the second step, further tonal splits from these four early tone categories in each of the above groups were also very similar in the split patterns. Unlike tonogenesis, which began with the loss of final syllable consonants, tonal splits are conditioned by the loss of voicing contrast in initial consonants. As a major areal trait in both China and MSEA, it is suggested to have begun in LMC around 1000 years ago, during the late Tang period, when the voicing contrast of initial consonants began to be lost, mainly through the devoicing of the original voiced initial stops to cause the merge into voiceless initial stops (Norman 1988, p. 53). Such a loss of voicing contrast in initials led to a further split of the early tones into two pitch registers, the high (upper) and low (lower) tones conditioned by originally voiceless and voiced initials, respectively. As a result, the original four tones became eight tones, i.e., *ABC/*D > A1, A2, B1, B2, C1, C2/D1, and D2, or 3/1 > 6/2 (in which tones before the slash are on smooth syllables and those behind the slash are on checked syllables), and this pattern was clearly replicated in Vietnamese and Tai (Norman 1988, pp. 54–55)[3]. We know from previous studies, such as Downer (1963) and Ballard (1981), that tonal splits of the Hmong-Mien languages adopted this pattern without exception. It is speculated that the devoicing of early voiced initial stops and register tonal split, two traits of the MSEA, began to spread around 1000 years ago from Chinese to all the above languages. This pattern was, however, merely the first step in the register tonal split for Kam-Tai languages, so it is called a primary tonal split (Liang and Zhang 1993, 1996, p. 62; Zhang 1980; Zhang et al. 1999, p. 243; Liao 2016a, pp. 20–22; 2016b, pp. 124–26). Using Table 2 as an example, the neat correspondence between register tonal split patterns in LMC and Kam-Tai is

presented. In particular, the traditional Chinese phonetic terms (e.g., *píng*/level) refer to Chinese tones, while ABCD refers to Kam-Tai tones in the primary tonal split pattern.

Table 2. Sinitic tonal split pattern and the identical Kam-Tai primary tonal split pattern.

MC/PKT Tone / MC/PKT Initial	Píng/*A (平 Level)	Qù/*B (去 Departing)	Shǎng/*C (上 Rising)	Rù/*D (入 Entering)
Voiceless	Yīnpíng/A1 (陰平 Upper level)	Yīnqù/B1 (陰去 Upper departing)	Yīnshǎng/C1 (陰上 Upper rising)	Yīnrù 陰入/D1 (陰入 Upper entering)
Voiced	Yángpíng/A2 (陽平 Lower level)	Yángqù/B2 (陽去 Lower departing)	Yángshǎng/C2 (陽上 Upper rising)	Yángrù 陽入/D2 (陽入 Upper entering)

Again, in the formation of such a neat correspondence between register tonal split patterns, it was Chinese loanwords that played a decisive role in this process. Previous studies, such as Wulff (1934), Manomaivibool (1975), and Li (1976), established the correspondence between Tai and Chinese in terms of the vocabulary shared between them. Most of the words that make up the shared vocabulary appear to be MC loanwords borrowed into Tai. This can be demonstrated in the tonal correspondence between Cantonese and Debao Urban Yang Zhuang (a Central Tai language) that Liao (2016b, p. 97) compiled, as revised in Table 3, with additional data from the Yang Zhuang variety of Jingxi Urban. The mutually corresponding tonal categories from the three language varieties may have different tonal values, but maintain a neat correspondence (as seen between the gloss series 1 and 2). This indicates the systematic nature of historical Chinese loanwords in the Tai languages.

Table 3. Tonal correspondence between Cantonese and two Yang Zhuang varieties.

Tonal Category	**A1**	**A2**	**B1**	**B2**	**C1**	**C2**	**DS1**	**DL1**	**DS2**	**DL2**
Tai Tone in the Sinitic Circles	**1**	**2**	**5**	**6**	**3**	**4**	**7**	**9**	**8**	**10**
Chinese terms	yīn píng	yáng píng	yīn qù	yáng qù	yīn shǎng	yáng shǎng	yīn rù (short)	yīn rù (long)	yáng rù (short)	yáng rù (long)
Tonal value: Cantonese	55	21/11	33	22	35	24	55	33	22	22
Tonal value: DB Yang Z.	453	31	55	33	24ʔ	213ʔ	45	55	33	33
Tonal value: JX Yang Z.	53	31	45	132	33ʔ	213ʔ	33	45	21	13
Gloss Series 1	開 open	時 time	過 to pass	伴 company	廣 wide	馬 horse	七 seven	發 deliver	佛 Buddha	抹 wipe
Cantonese	$hɔi^{55}$	si^{21}	$kwɔ^{33}$	pun^{22}	$kwɔŋ^{35}$	ma^{24}	$ts^hɐt^{55}$	fat^{33}	$fɐt^{22}$	mat^{22}
DBYang Z.	$k^hɐj^{453}$	$ɬəj^{31}$	kwa^{55}	$puːn^{33}$	$kuːŋ^{24ʔ}$	$ma^{213ʔ}$	$tɕɐt^{45}$	$faːt^{55}$	$pɐt^{33}$	$maːt^{33}$
JX Yang Z.	$k^hɐj^{53}$	$ɬəj^{31}$	kwa^{45}	$puːn^{132}$	$kuːŋ^{33ʔ}$	$ma^{213ʔ}$	$tɕɐt^{33}$	$faːt^{45}$	$pɐt^{21}$	$maːt^{13}$
Gloss Series 2	書 book	頭 first	救 save	用 use	炒 to fry	老 senior	北 north	八 eight	十 ten/October	蠟 candle
Cantonese	sy^{55}	$t^hɐw^{21}$	$kɐw^{33}$	$jʊŋ^{22}$	$tʃ^hau^{35}$	low^{24}	$pɐk^{55}$	pat^{33}	$sɐp^{22}$	lap^{22}
DBYang Z.	$ɬøɥ^{453}$	$tɐw^{31}$	$kjɐw^{55}$	$jʊŋ^{33}$	$ɕaːw^{24ʔ}$	$laːw^{213ʔ}$	$pɐk^{45}$	$peːt^{55}$	$tɕəp^{33}$	$laːp^{33}$
JX Yang Z.	$ɬəj^{53}$	$tɐw^{31}$	$kjɐw^{45}$	$jʊŋ^{132}$	$ɕaːw^{33ʔ}$	$laːw^{213ʔ}$	$pɐk^{33}$	$peːt^{45}$	$tɕəp^{21}$	$laːp^{13}$

Note that the glottal symbol -ʔ following the tonal values 24ʔ, 33ʔ or 231ʔ in Table 3 refers to glottalization of these tones. It is a remnant of the historical glottal stop rime ending in these Tai dialects after tone C had been created by the weakening of that glottal stop ending. From Table 3, we can see that, unlike the tonal correspondence presented in Table 2, the D tones further split in addition to the upper and lower registers due to the different vocalic lengths of the syllable rimes to form a pattern of four tonal categories.

Among them, Cantonese and Debao Urban Yang Zhuang have this secondary split in the upper register only, so in the checked syllables, there are, in fact, three tones. Note that these checked syllable tones are often analyzed as allotones of tones on smooth syllables with the same or similar pitch contour in modern phonology because of the complementary distribution between them. Such a condition of the secondary tonal split, namely the vowel length on the checked syllables conditioning further possible tonal splits, is commonly found in Kra-Dai dialects, particularly the Kam-Sui and Tai subbranches, including Southern Kam, Sui, Thai, Lao, and many Zhuang varieties. Thus, in Kam-Tai languages, the tone category patterns can be summarized as an integrated pattern of A1, A2, B1, B2, C1, C2, DL1, DL2, DS1, and DS2, and because of some modern tonal mergers on smooth syllables, the number of tones may change into some patterns from 5/3 to 6/3 or 6/4, in which the tone numbers before the slash are on smooth syllables and those behind the slash are on checked syllables. This trait has diffused into the Sinitic languages in the core Lingnan area, Yue, and Pinghua, such as the 6/3 pattern in Cantonese (Guangzhou and Hong Kong) shown in Table 3, which is not found in non-Lingnan Sinitic languages (de Sousa 2015a, pp. 168–69; 2015b, pp. 368–71).

In summary, tonal development is involved in diachrony. As an example, Figure 3 shows a full diachronic picture of the tonal development in the Sinitic languages, including those in Lingnan and non-Lingnan areas (except Min Chinese). In particular, Cantonese represents the secondary patterns developed on the basis of the eight tones of LMC, while Standard Mandarin represents those merging some of the tones of the eight-tone pattern.

Stage 1: Old Chinese (first millennium BC): no tones but four types of phonetic syllable contrast

voiceless initial voiced initial	vowels ending in sonorants	vowels-ʔ	vowels-s	vowels-p/-t/-k

⇩ ⇩ ⇩ ⇩

Stage 2: Early Middle Chinese (around 6th Century AD): phonemic four tones

voiceless initial voiced initial	*píng*	*shǎng*	*qù*	*rù*

⇩ ⇩ ⇩ ⇩

Stage 3: Tonal splits to phonemic eight tones in Late Middle Chinese (around 1000 year BP.)

Initial voicing mergers	*yīn píng*	*yīn shǎng*	*yīn qù*	*yīn rù*
	yáng píng	*yáng shǎng*	*yáng qù*	*yáng rù*

⇩ ⇩ ⇩ ⇩

Stage 4: Modern Chinese: tones preserved, or merged, or split from 8-tone system.

e.g. *Guǎngzhōu* (Cantonese/Standard Yue)

Preservation & split of LMC tones	*yīn píng*	*yīn shǎng*	*yīn qù*	split >	short *yīn rù*
					long *yīn rù*
	yáng píng	*yáng shǎng*	*yáng qù*	*yáng rù*	

e.g. *Běijīng* (Standard Mandarin):

Preservation & mergers of LMC tones	*yīn píng*	Merger > *shǎng*		Merger >*qù*	Merger > *one of the other four tones*
	yáng píng				

Figure 3. Chinese tonal development scheme (cf. Liao 2016b, p. 62).

Although it is commonly agreed that the traits of tonogenesis and tonal register splits occurred first in Chinese and affected other languages in South China and MSEA as a whole, as the further secondary tonal split pattern on checked syllables demonstrates above, certain specific details of tonal development have taken on a character of their own in MSEA (including Kam-Tai and Sinitic in Lingnan), that is, they have given rise to MSEA-specific traits that are distinct from those of the common Sinitic languages. However, previous studies on languages in Lingnan did not sort out the secondary tonal split patterns beyond those on checked syllables and did not treat them as a trait. The result is that these phenomena are only seen in individual languages, ignoring the fact that other languages in the region also share these features, obscuring the essence of secondary tonal split patterns as a significant areal trait.

2.2. Tonal Split Patterns Displayed in a Tone-Box Framework

As a tool and theoretical framework for investigating secondary tonal splits, tone-box charts designed to address the secondary tonal split patterns of the Kam-Tai languages form an important basis. This is because the tonal splits of the Kam-Sui and Tai branches of Kam-Tai are by far the most varied and complex of any of the language groups, although the tonal split is an areal phenomenon, as demonstrated above, found in the Sinitic, Kra-Dai, Hmong-Mien, and Vietic languages. A review of the Kam-Tai tone-box theories, which are commonly used, is called for when we need to take a comprehensive look at secondary tonal split patterns and provide a similar theoretical framework for the Sinitic languages of Lingnan.

We have illustrated the neat correspondence between the tone system of Kam-Tai and that of Chinese (especially in Lingnan Sinitic languages, such as Cantonese and Pinghua) by introducing the role played by Chinese loanwords. In practice, however, we find that many words still have seemingly irregular correspondences due to the laryngeal features of initial consonants. This is the result of what we call secondary tonal splits in Kam-Tai. This is the most significant difference between Kam-Tai and Sinitic languages in the tonal split patterns. Among the tonal split patterns of Kam-Tai languages, in addition to historically occurring with the primary tonal splits (similar to Sinitic as in Table 2), in nearly half of the dialects, there are also secondary tonal splits, i.e., in the upper-register tones, where different laryngeal features of initial consonants (such as aspiration and glottalization) may later condition further splits. These secondary tonal splits can be shown at a glance by using a tone-box chart. Among various tone-box frameworks, Gedney's ([1972] 1989) tone-box chart has been commonly used in the study of the tonal systems of the Southwestern Tai dialects, as seen in its application to the tones of Standard Thai and Northern Thai (Chiang Rai) shown in Tables 4 and 5, respectively.

Unlike the Sinitic two series of initials, voiceless and voiceless, in order to accurately describe the upper-register secondary tonal splits that are often found in the Southwestern Tai dialects, Gedney's formulation subdivides the original upper series (voiceless) into three sets based on different laryngeal features, namely voiceless friction (including voiceless aspirated stops and voiceless continuants) and voiceless unaspirated stops, and glottal (glottal stop and preglottalized stops/sonorants)[4], which conditioned possible tonal splits in any Southwestern Tai dialect. Note that the original lower series remains unchanged (as no secondary splits on lower-register tones are found in Tai dialects). As shown in Tables 4 and 5, boxes with the same color indicate those with the same tone, and checkered syllable tones being regarded as allotones of smooth syllable tones, although their tone values may have slightly different contours from the toneme on smooth syllables due to the differences in syllable structure.

Table 4. Gedney's tone-box chart (Gedney [1972] 1989, p. 202) applied to Standard Thai.

Initials at Time of Tonal Splits	Proto-Tai Tones				
	A	B	C	DL	DS
Voiceless friction sounds, **s-*, **hm-*, **ph-*, etc.	*hu:*^{24} 'ear'; *kʰa:*^{24} 'leg'	*kʰaj*^{11} 'egg'; *pʰa:*^{11} 'to split'	*kʰa:*^{41ʔ} 'to kill'; *sɨa*^{41ʔ} 'shirt'	*kʰa:tˢ*^{11} 'torn'; *ŋɨak*^{11} 'gums'	*matˢ*^{11} 'flea'; *pʰak*^{11} 'vegetable'
Voiceless unaspirated stops, **p-*, **t-*, **k-*, etc.	*pi:*^{33} 'year'; *ta:*^{33} 'eye'	*pa:*^{11} 'forest'; *kaj*^{11} 'chicken'	*ka:w*^{41ʔ} 'nine'; *tom*^{41ʔ} 'to boil'	*pɔ:tˢ*^{11} 'lung'; *tɔ:k*^{11} 'to pound'	*kop*^{11} 'frog'; *tap*^{11} 'liver'
Glottal, **ʔ-*, **ʔb-*, etc.	*bin*^{33} 'to fly'; *dɛ:ŋ*^{33} 'red'	*da:*^{11} 'to scold'; *ba:*^{11} 'shoulder'	*ba:*^{41ʔ} 'crazy'; *ba:n*^{41ʔ} 'village'	*dɛ:tˢ*^{11} 'sunshine'; *ʔa:pˢ*^{11} 'to bathe'	*betˢ*^{11} 'fishhook'; *ʔok*^{11} 'chest'
Voiced, **b-*, **m-*, **l-*, **z-*, etc.	*mɨ:*^{33} 'hand'; *na:*^{33} 'rice field'	*pʰɔ:*^{41ʔ} 'father'; *raj*^{41ʔ} 'dry field'	*na:m*^{453ʔ} 'water'; *ma:j*^{453ʔ} 'wood'	*mi:tˢ*^{41} 'knife'; *lɨatˢ*^{41} 'blood'	*nok*^{45} 'bird'; *lak*^{45} 'to steal'

Table 5. Gedney's tone-box chart (Gedney [1972] 1989, p. 202) applied to the Chiang Rai variety of Northern Thai.

Initials at Time of Tonal Splits	Proto-Tai Tones				
	A	B	C	DL	DS
Voiceless friction sounds, **s-*, **hm-*, **ph-*, etc.	*hu:*^{24} 'ear'; *kʰa:*^{24} 'leg'	*kʰaj*^{22} 'egg'; *pʰa:*^{22} 'to split'	*kʰa:*^{44ʔ} 'to kill'; *sɨa*^{44ʔ} 'shirt'	*kʰa:tˢ*^{22} 'torn'; *ŋɨak*^{22} 'gums'	*matˢ*^{24} 'flea'; *pʰak*^{24} 'vegetable'
Voiceless unaspirated stops, **p-*, **t-*, **k-*, etc.	*pi:*^{24} 'year'; *ta:*^{24} 'eye'	*pa:*^{22} 'forest'; *kaj*^{22} 'chicken'	*kaw*^{44ʔ} 'nine'; *tom*^{44ʔ} 'to boil'	*pɔ:tˢ*^{22} 'lung'; *tɔ:k*^{22} 'to pound'	*kop*^{24} 'frog'; *tap*^{24} 'liver'
Glottal, **ʔ-*, **ʔb-*, etc.	*bin*^{335} 'to fly'; *dɛ:ŋ*^{335} 'red'	*da:*^{22} 'to scold'; *ba:*^{22} 'shoulder'	*ba:*^{44ʔ} 'crazy'; *ba:n*^{44ʔ} 'village'	*dɛ:tˢ*^{22} 'sunshine'; *ʔa:pˢ*^{22} 'to bathe'	*betˢ*^{24} 'fishhook'; *ʔok*^{24} 'chest'
Voiced, **b-*, **m-*, **l-*, **z-*, etc.	*mɨ:*^{335} 'hand'; *na:*^{335} 'rice field'	*pɔ:*^{31} 'father'; *haj*^{31} 'dry field'	*nam*^{53ʔ} 'water'; *ma:j*^{53ʔ} 'wood'	*mi:tˢ*^{31} 'knife'; *lɨatˢ*^{31} 'blood'	*nok*^{35} 'bird'; *lak*^{35} 'to steal'

Synchronically, Standard Thai (Table 4) keeps the primary tonal splits between historical voiceless sounds and voiced sounds, which can be shown as in Sets 123-4, on proto-Tai tones *BCD, but has a secondary two-way split as Sets 1-234 on tone *A. Based on some historical documents of Thai, Tingsabadh (2001) and Pittayaporn (2018) pointed out that this tonal split pattern in tone *A in Standard Thai was the result of the original three-way split A1-23-4 to the later merger of tones A23 and A4, forming a secondary two-way split A1-234. This illustrates that the secondary tonal split was a kind of later change in relation to the primary tonal split. Liao (2016a, pp. 88–89; 2016b, pp. 168–72) illustrated this diachronic order in detail, as summarized at a glance in Liao (2022, p. 16): primary two-way split (e.g., *A > A1 and A2) > secondary three-way split (e.g., A1 > A1X and A1Y, and A1 ≠ A1Y ≠ A2) > secondary two-way split (e.g., A1Y merging into A2, and A1X ≠ A1Y = A2). In addition to this, a secondary merger took place in Standard Thai, in which tones B4 and

C123 merged, so that Standard Thai has five distinct tones (in the case of treating checked syllable tones to be allotones).

As for Northern Thai (Table 5), like Standard Thai, it only has a secondary tonal split in the original upper A tone, but the split is in a different position, appearing as A12-34. In addition, it does not have a horizontal tonal merger (which refers to mergers across A, B, C, and D tones), so it has six distinct tones. By comparing the tonal split patterns of Northern Thai and Standard Thai, we can understand why Gedney's formulation of the Southwestern Tai tones needs four sets of initial consonants on horizontal lines, because, in the case of A, there are splits of 1-234 (Standard Thai), 12-34 (Northern Thai), and 123-4 (both Standard and Northern Thai) for the other tones. In short, the examples of Standard Thai and Northern Thai show that Gedney's tone-box formulation ingeniously captures all tonal splits at a glance. More complex examples, such as Southern Thai with a three-way split in all five columns of *A/B/C/DL/DS (cf. Liao 2022, p. 6), can also be fully represented in this formulation.

However, as the variety of secondary tonal splits in Central Tai goes beyond Gedney's formulation, and the fixed testing lexical items in each box of Gedney's chart cannot deal with the so-called "voicing alternation" problem of the initial consonants between Southwestern/Central Tai and Northern Tai[5], such tone-box formulation has rarely been used in studies of the tonal systems of Tai dialects other than Southwestern Tai. In response to this problem, Liao (2022, cf. Liao 2016b, p. 211) proposed an integrated Tai tone-box scheme to capture all the tonal distinctions in any Tai variety and to solve the problems involved in various irregular tonal correspondences (including "voicing alternation"). The "main chart" of this scheme and its test etyma are shown in Tables 6 and 7, respectively.

Table 6. Integrated Tai (Kam-Tai) tone-box chart (Liao 2022, p. 17, cf. Liao 2016b, p. 211).

Primary Initial Groups	**Ultimate Laryngeal Natures at Time of Tonal Split**			**Tone Categories**				
				A	**C**	**DS**	**B**	**DL**
Proto-voiceless sounds (1)	(NT) Plain (1P)	(SWT/Saek/KS) Friction (1F)	Aspirated sounds (1A)	A1A	C1A	DS1A	B1A	DL1A
			Continuant sounds (1C)	A1C	C1C	DS1C	B1C	DL1C
		Unaspirated stops (1U)		A1U	C1U	DS1U	B1U	DL1U
	Glottal sounds (1G)			A1G	C1G	DS1G	B1G	DL1G
Proto-voiced sounds (2)	Plosives + continuants (2)			A2	C2	DS2	B2	DL2

There are two key points to this design. First, the maximum number of initial consonant sets that conditioned possible tonal splits in the Kam-Tai languages is displayed in this integrated Tai (Kam-Tai) tone-box chart as five, which the author called the "ultimate laryngeal natures at time of tonal split". They are aspirated sounds, such as *p^h-, *t^h-, *k^h-, *k^{hw}-, *p^{hj}-, and *h-, voiceless (pre-aspirated) continuant sounds, such as *^{h}m-, *^{h}l-, *^{h}ŋ, and *^{h}ɻ-, unaspirated stops, such as *p-, *t-,*k-, *pl-, and *kw-, glottalized sounds, such as *^{ʔ}b-, *^{ʔ}d-, *^{ʔ}j-, *^{ʔ}w-, and *ʔ-, and voiced sounds, such as *b-, *d-, *n-, *ɟ-, and *ɣ-.[6] The first four of these five sets are all contained in proto-voiceless initials (the upper series), and the first two are contained in the voiceless friction sounds of Gedney's formulation. Some varieties of Central Tai and Yongnan Zhuang (belonging to Northern Tai) have a secondary tonal split between voiceless aspirated sounds and originally voiceless continuants on an original upper-register tone, e.g., k^ha:^{31} 'leg' and ma:^{53} 'dog' in Debao Ma'ai Yang Zhuang both have initials belonging to Gedney's "friction sounds", but have tonal contrast (vs. Thai k^ha:^{24} and ma:^{24}, having the same tone). Therefore, a distinction between voice-

less aspirated sounds and originally voiceless continuants needs to be made in this integrated chart[7].

Table 7. Test etyma for all Tai subgroups in the main chart of the integrated Tai tone-box scheme (Liao 2022, p. 18).

	A	C	DS	B	DL
1A	*pra:^{A} 'rocky hill/cliff'	*χɨ:n^{C} 'upward'	*prak^{D} 'vegetable'	*qraj^{B} 'egg'	*pra:k^{D} 'forehead'
	*χiŋ^{A} 'ginger'	*k.raj^{C} 'fever'	*krok^{D} 'six'	*pra:^{B} 'to split'	*tra:p^{D} 'to carry (a load)'
	*tri:l^{A} 'stone'	*tram^{C} 'to chop'	*trep^{D} 'hail'	*χɣaw^{B} 'knee'	*xe:k^{D} 'guest'
1C	*^{h}na:^{A} 'thick'	*ɬom^{C} 'sour'	*^{h}nak^{D} 'heavy'	*ɬi:^{B} 'four'	*^{h}ma:k^{D} 'fruit'
	*^{h}ma:^{A} 'dog'	*^{h}na:^{C} 'face'	*^{h}mat^{D} 'flea'	*^{h}nɣʏ:j^{B} 'tired'	*ɬa:p^{D} 'cockroach'
	*ɬa:w^{A} 'girl'	*^{h}ɲɣa:^{C} 'grass'	*ɬak^{D} 'color/tattoo'	*^{h}mɣaɯ^{B} 'new'	*^{h}no:k^{D} 'hump'
1U	*tu:^{A} 'door'	*kaw^{C} 'nine'	*tap^{D} 'liver'	*kaj^{B} 'chicken'	*ko:t^{D} 'to hug'
	*kɨŋ^{A} 'to eat'	*taŋ^{C} 'to erect'	*kop^{D} 'frog'	*tam^{B} 'low'	*pa:k^{D} 'mouth'
	*pow^{A} 'crab'	*pa:^{C} 'aunt'	*pet^{D} 'duck'	*pɣaw^{B} 'to blow'	*ka:t^{D} 'leaf mustard'
1G	*ʔdram^{A} 'black'	*ʔba:n^{C} 'village'	*ʔdrip^{D} 'raw'	*ʔbwa:^{B} 'shoulder'	*ʔo:k^{D} 'out'
	*ʔbin^{A} 'to fly'	*ʔdaj^{C} 'to get'	*ʔbup^{D} 'concave'	*ʔda:^{B} 'to scold'	*ʔdɨa:t^{D} 'hot/boiled'
	*ʔjɣa:^{A} 'medicine'	*ʔo:j^{C} 'sugarcane'	*ʔɨk^{D} 'chest'	*ʔju:^{B} 'to be at'	*ʔjɣa:k^{D} 'hungry/to want'
2	*na:^{A} 'rice field'	*dɣu:ŋ^{C} 'stomach'	*ʼC.nok^{D} 'bird'	*bo:^{B} 'father'	*lɨat^{D} 'blood'
	*ɣwa:j^{A} 'buffalo'	*ma:^{C} 'horse'	*mot^{D} 'ant'	*gu:^{B} 'pair'	*ɟɨa:k^{D} 'rope'
	*ga:^{A} 'stuck'	*li:n^{C} 'tongue'	*lak^{D} 'to steal'	*da:^{B} 'river/wharf'	*C̣.ra:k^{D} 'root'

Second, in the integrated Tai tone-box chart, each initial set according to different laryngeal features that conditioned a possible tonal split in history is given a fixed name by using the combination of the number (1 for original voiceless and 2 for original voiced initials following the tradition of Tai tone studies) and abbreviations of those laryngeal features at the time of the tonal split, such as 1A for the voiceless aspirated initials and 1C for voiceless continuants (pre-aspirated sonorants + lateral *ɬ). By combining the tonal categories preceding these laryngeal sets, each tone-box is given a fixed name, such as A1A, A1C, A1U, A1G, A2, B1A, B1C, B1U, B1G, B2, etc. The order of the tonal categories in this chart is A, C, DS, B, and DL. This is because scholars in China are generally used to ordering Tai tones according to the order of A1 (1) A2 (2), C1 (3), C2 (4), B1 (5), B2 (6), DS1 (7), DS2 (8), DL1 (9), and DL2 (10) to correspond to the ordering of the LMC tones (as demonstrated in Table 2), and because, in most Tai varieties, the short vowel tonal category (*DS) in checked syllables tends to have the same split pattern as tone *C, while the long vowel tonal category (*DL) tends to have the same split pattern as tone *B (as seen in the tonal split patterns of several Tai varieties in Tables 8–10). Thus, C and DS, and B and DL are arranged together, making it easier to present such patterns. However, as the author indicated when he proposed this tone-box scheme, this ordering is not compulsory, and any investigator can follow the conventional order to reorder the horizontal columns of the integrated Kam-Tai tone-box as of A, B, C, DL, and DS, especially for the Kam-Sui branch, where this order makes more sense (as seen from the Southern Kam tonal split pattern displayed in Table 11) (cf. Liao 2022, pp. 22–23, 36). Tables 8–11 show that secondary tonal splits on original upper-register tones are a common Kam-Tai tone trait.

Table 8. Two-way split pattern in Debao Urban Yang Zhuang (Central Tai).

	A	C	DS	B	DL
1A	$p^hja:^{453}$ 'rocky hill' $k^həŋ^{453}$ 'ginger' $t^hən^{31}$ 'stone'	$k^hʊn^{24ʔ}$ 'upward' $k^haj^{24ʔ}$ 'fever' $t^ham^{24ʔ}$ 'to chop'	p^hjak^{45} 'vegetable' $k^hjɔ:k^{45}$ 'six' t^hap^{45} 'hail'	k^hjai^{33} 'egg' $p^ha:^{33}$ 'to split' k^haw^{33} 'knee'	$p^hja:k^{33}$ 'forehead' $t^ha:p^{33}$ 'to carry' $k^he:k^{33}$ 'guest'
1C	$na:^{453}$ 'thick' $ma:^{453}$ 'dog' $ɬa:w^{453}$ 'girl'	$ɬam^{24ʔ}$ 'sour' $na:^{24ʔ}$ 'face' $ɲaj^{24ʔ}$ 'grass'	nak^{45} 'heavy' mat^{45} 'flea' $ɬak^{45}$ 'color/tattoo'	$ɬaj^{55}$ 'four' $nu:j^{55}$ 'tired' $mɔ:j^{55}$ 'new'	$ma:k^{55}$ 'fruit' $ɬa:p^{55}$ 'cockroach' $no:k^{55}$ 'hump'
1U	$təw^{453}$ 'door' $kən^{453}$ 'to eat' $pəw^{453}$ 'crab'	$kaw^{24ʔ}$ 'nine' $taŋ^{24ʔ}$ 'to erect' $pa:^{24ʔ}$ 'aunt'	tap^{45} 'liver' kap^{45} 'frog' pat^{45} 'duck'	kaj^{55} 'chicken' tam^{55} 'low' paw^{55} 'to blow'	$ko:t^{55}$ 'to hug' $pa:k^{55}$ 'mouth' $ka:t^{55}$ 'leaf mustard'
1G	$ʔdam^{31}$ 'black' $ʔban^{31}$ 'to fly' $ʔja:^{31}$ 'medicine'	$ʔba:n^{24ʔ}$ 'village' $ʔdaj^{24ʔ}$ 'to get' $ʔo:j^{24ʔ}$ 'sugarcane'	$ʔdəp^{45}$ 'raw' $ʔbʊp^{45}$ 'concave' $ʔak^{45}$ 'chest'	$ʔba:^{33}$ 'shoulder' $ʔda:^{33}$ 'to scold' $ʔjəw^{33}$ 'to be at'	$ʔo:k^{33}$ 'out' $ʔdu:t^{33}$ 'hot/boiled' $ʔja:k^{33}$ 'hungry'
2	$na:^{31}$ 'rice field' $ʋa:j^{31}$ 'buffalo' $ka:^{31}$ 'stuck'	$to:ŋ^{213ʔ}$ 'stomach' $ma:^{213ʔ}$ 'horse' $lən^{213ʔ}$ 'tongue'	$nɔ:k^{33}$ 'bird' $mɔ:t^{33}$ 'ant' lak^{33} 'to steal'	$po:^{33}$ 'father' $kəw^{33}$ 'pair' $ta:^{33}$ 'river'	$lu:t^{33}$ 'blood' $tɕʏ:k^{33}$ 'rope' $la:k^{33}$ 'root'

Table 9. Three-way split pattern in Baoxu Zhuang (Central Tai) (cf. Liao 2016b, p. 170).

Primary Initial Groups	Ultimate Phonetic Natures at Time of Tonal Splits			Tone Categories				
				A	C	DS	B	DL
Proto-voiceless sounds (1)	Plain (1P)	Friction (1F)	Aspirated sounds (1A)	45	13ʔ	13	34	34
			Continuant sounds (1C)	45	13ʔ	13	34	34
		Unaspirated stops (1U)		53	34ʔ	34	33	33
	Glottal sounds (1G)			53	34ʔ	34	33	33
Proto-voiced sounds (2)	Plosives + Continuants (2)			31	11ʔ	11	33	33

Table 10. Three-way split pattern in Xialeng Zhuang (Yongnan Zhuang) (Liao 2022, p. 27).

Primary Initial Groups	Ultimate Phonetic Natures at Time of Tonal Splits			Tone Categories				
				A	C	DS	B	DL
Proto-voiceless sounds (1)	Plain (1P)	Friction (1F)	Aspirated sounds (1A)	33	13	55	53	53
			Continuant sounds (1C)	55	35	55	13	13
		Unaspirated stops (1U)		55	35	55	13	13
	Glottal sounds (1G)			33	13	55	53	53
Proto-voiced sounds (2)	Plosives + Continuants (2)			31	11	33	53	53

Table 11. Three-way split pattern in the Zhanglu Variety of Southern Kam (Kam-Sui) (Liao 2022, p. 36).

		A	B	C	DL	DS
1F	(1A)	55	53	323	323/24	55
	(1C)					
1U/G	(1U)	35	453	13	13	35
	(1G)					
2		212	33	31	31	21

The tonal split patterns in the four Kam-Tai dialects shown in Tables 8–10 are all different from each other in terms of the secondary split. The number of initial sets, the number of ways of tone differentiation (two-way or three-way), and the number of distinct tones required for each dialect show a complex relationship that is not necessarily proportional. Debao Urban Yang Zhuang only has a two-way split and six tones, but it requires four sets of initials, as its tonal split pattern is 1A-1C/U-1G-2. The other three languages have seemingly more complicated tonal split patterns than Debao Urban Yang Zhuang in terms of three-way split and the tone numbers being seven (Baoxu and Xialeng Zhuang) and nine (Southern Kam), but the required numbers of sets of initials are only three, 1AC-1UG-2 (for both Baoxu Zhuang and Southern Kam), and four, 1A-1CU-1G-2 (Xialeng Zhuang), respectively.

For two Central Tai varieties, the patterns 1A-1C/U-1G-2 (Debao Yang Zhuang in Table 8) and 1AC-1UG-2 (Baoxu Zhuang in Table 9) are combined to require all the five sets 1A-1C-1U-1G-2 of the integrated Tai tone-box chart. In contrast, the other Kam-Tai subgroups require fewer initial sets if only focusing on their internal tone systems, namely three sets for Northern Zhuang (1ACU-1G-2) (cf. Liao 2016b, p. 209), Saek (Liao 2022, p. 34), and Kam-Sui (Liao 2022, p. 36), four sets for Southwestern Thai (1AC-1U-1G-2, as in the Standard Thai and Northern Thai cases in Tables 4 and 5) and Yongnan Zhuang (1A-1C/U-1G-2, as in Xialeng Zhuang in Table 10). Therefore, in terms of integrity, five sets of initial consonants are required to be compatible with the complex tonal split patterns of the entire Kam-Tai languages. In other words, Central Tai is the subgroup with the most complex tonal split patterns among all Kam-Tai languages. From the studied Kra-Dai languages, in terms of tonal split patterns, the two branches Tai and Kam-Sui are already the most complex. The other branches or subbranches, namely Kra, Be, and Hlai, have a much simpler pattern, which is generally similar to common Sinitic languages' upper-lower register split pattern. Thus, the integrated Kam-Tai tone-box, which contains the initial sets of these five laryngeal features, already contains the most complex tonal splitting conditions for all Kam-Tai languages known.

As demonstrated, a tone-box chart is not only a handy tool for studying the complexities of tone systems, but also a framework for presenting tonal split patterns at a glance. In previous studies, we saw that the tone systems of some specific Lingnan Sinitic dialects (i.e., various varieties of Yue Chinese and Pinghua that have been in close contact with Kam-Tai for a millennium) have similar secondary tonal split patterns to those of Kam-Tai languages. In order to present the tonal split patterns of these Lingnan Sinitic languages visually, modeled on the Kam-Tai tone-box framework, I assembled an integrated Sinitic tone-box chart, as shown in Table 12.

Table 12. An integrated (Lingnan) Sinitic tone-box chart.

EMC Initial Voicing	Ultimate Laryngeal Natures at Time of Tonal Split	Sinitic Tonal Categories				
		A 平 ***píng***	**B 上** ***shǎng***	**C 去** ***qù***	**DL 長入 long *rù***	**DS 短入 short *rù***
清 (clear) Voiceless (1)	次清 (semi-clear) Aspirated surd (1A)	A1A 方清溪	B1A 粉體起	C1A 派透去	DL1A 法塔客	DS1A 匹七曲
	全清 (clear) Unaspirated surd (1U)	A1U 幫知乖	B1U 審古影	C1U 變對見	DL1U 百節覺	DS1U 北德屋
濁 (muddy) Voiced (2)	次濁 (semi-muddy) Sonorants/Liquid (2S)	A2S 明來疑	B2S 武朗五	C2S 望弄用	DL2S 滅納月	DS2S 物入日
	全濁(muddy) Obstruent (stops/fricatives) (2O)	A2O 旁唐群	B2O 坐斷近	C2O 病定具	DL2O 白絕達	DS2O 讀十及

This Sinitic tone-box chart is firstly based on the determination of the upper limit of the set of initial laryngeal features that determine possible tonal split in these Sinitic languages, inspired by Kam-Tai tone-box theories. It is also a framework designed in a way that is compatible with the tradition of Sinitic tonology for facilitating the discussion of tonal split patterns as an areal trait in Lingnan languages in the next section. The four horizontal lines in this chart are arranged according to the four sets of initial consonants with different laryngeal features in traditional Chinese phonology, namely voiceless aspirated obstruents, voiceless unaspirated obstruents, voiced sonorants, and voiced obstruents. The three Chinese characters in each box were selected from the list of characters in the GuangYun (廣韻), the Chinese rime dictionary that was compiled from 1007 to 1008 by the Northern Song court, and were placed in the box according to their initial consonant category (horizontally) and tonal category (vertically). In the checked syllables (the DL and DS columns), the Chinese characters were also assigned respectively according to their rime's long vowel (corresponding to one of the vowels a, ɛ, œ, ɔ, i, u, y in Guangzhou/Hong Kong Cantonese) or short vowel (corresponding to one of the vowels ɐ, ɪ, ʊ, ɵ in Guangzhou/Hong Kong Cantonese), because the determination of their "long" and "short" status was quite consistent in their conditioning role in the possible horizontal tonal split in checked syllables in the Yue and Pinghua dialects, which was suggested to be a trait diffused from Kam-Tai, as mentioned. Although this chart is theoretically able to capture most tonal distinctions of all Sinitic languages as long as they follow regular tone rules, I am cautiously limiting its application to the Sinitic languages in the core Lingnan area and its surrounding areas for the time being, as it might not be necessary for Sinitic languages elsewhere to require such a formulation.

3. Similarities of Tonal Behavior in Lingnan Languages

In the subsections of this section, we examine the tonal split patterns and certain similarities in tonal behavior between the Siniti and Kam-Tai languages of the core Lingnan area from three perspectives: upper-register secondary tonal splits, lower-register secondary tonal splits, and upper-register tone associated with sonorant initials, in order to trace their historical contact and mutual influence.

3.1. Upper Register Secondary Tonal Split as a Kam-Tai Origin Trait

We devoted considerable space in Section 2 to the tonal development of the Kam-Tai languages in Lingnan and MSEA in order to distill and summarize the tonal split patterns that are of the areal traits of this region. By virtue of the convenience of the tone-box frameworks, it is clear that the feature of potential secondary splits in the upper register of the primary tonal split is a trait of the Kam-Tai languages. Furthermore, this trait, together with the previously mentioned potential split according to vowel length in checked sylla-

bles, has diffused into some of the Lingnan Sinitic languages, particularly some Yue and Pinghua dialects. Let us now take a look at some of the details of the distribution of these traits in the two major language groups Kam-Tai and Sinitic.

First, there are the Kam-Tai languages. While the various secondary tonal split patterns of Kam-Tai languages are illustrated in Section 2, their status as a "trait", even within Kam-Tai languages themselves, needs to be further clarified. Crucially, the criterion for the number of languages, or rather language families, in a linguistic area has been the subject of controversial scholarly discussion, such as three or more languages (Thomason 2001, p. 99), three languages not belonging to the same family (Schaller 1975, p. 58), and more than two languages (Campbell 1985, p. 25). However, as Campbell (2006, pp. 7–8; 2017, p. 25) points out that even the Balkans, probably the most well-established sprachbund, involves only Indo-European languages, and that the requirements for the number of languages or language families in a sprachbund are not really a focus of attention, we can conclude that at least two or more languages without a genetically close relationship is basically a requirement. Moreover, Szeto and Yurayong (2022, p. 44) pointed out that western Lingnan already has languages from five language families, so the requirement for Lingnan to establish a sprachbund is even less of a problem. On the face of it, one could certainly argue that some of the tonal behaviors as features shared by languages from the Kam-Tai and Sinitic languages in Lingnan are the result of diffusion. However, when we only focus on the Kam-Tai languages, which belong to the same Kra-Dai family, the sharing of a trait, such as the secondary tonal split of the original high-register tone commonly found in Kam-Tai languages, first appeared to be an inherent feature of Kam-Tai, rather than a trait acquired through diffusion. However, as we have demonstrated that at least tonogenesis and primary tonal split are indeed traits diffusing from Sinitic languages in history, the determination of abundant secondary tonal split patterns as "an inherent feature" becomes problematic. A further examination of the specific distribution of the different patterns of secondary tonal splits in various Kam-Tai languages themselves shows that they are indeed a trait, as demonstrated below.

According to Liao and Tai (2019), we have already arrived at that, among the five terminal subgroups of Tai, as shown in Figure 2, Northern Zhuang, Yongnan Zhuang, and Saek are grouped together to form Northern Tai, while Central Tai and Southwestern Tai are grouped together to form Southern Tai. Northern Tai and Southern Tai form the Tai subbranch of Kam-Tai. Meanwhile, the Kam-Sui languages are another subbranch distinct from Tai. Further, Kam-Sui and Tai have been commonly placed under Kam-Tai, which is mostly regarded as a first-order primary branch under Kra-Dai. Not proportional to the above affinities is the fact that, as Northern Zhuang did not develop aspirated initials, the language varieties belonging to it lack possible secondary tonal split patterns conditioned by aspirated sounds (1A), which is, however, shared by some more distantly related Yongnan Zhuang and Central Tai language varieties, as shown in the tonal split patterns of Debao Urban Yang Zhuang (Central Tai) and Xialeng Zhuang (Yongnan Zhuang) demonstrated in Tables 8 and 10 above. In addition, in Northern Zhuang varieties, unaspirated voiceless stops (1U) and original voiceless frictions (i.e., 1F) conditioned tonal split together everywhere, so these two sets were grouped together to be the same initial set 1P in Northern Zhuang (referring to the integrated Tai tone-box in Table 6). However, that 1F and 1U being treated as two individual sets is shared by more distantly related language varieties, such as Southern Kam and Mak of Kam-Sui, Saek, Baoxu Zhuang, and Leiping Ping Zhuang of Central Tai, and Standard Thai, Northern Thai, Laos, and Southern Thai of Southwestern Tai. Note that Saek's tonal split pattern is very close to those of Standard Thai and Southern Kam (cf. Liao 2022, pp. 34–36). It is also important to keep in mind that, in the languages in all the terminal subgroups of the Tai and Kam-Sui branches, there may be languages that retain the most primitive primary tonal split pattern in all the prototones—for example, non-Southern Kam and non-Mak Kam-Sui languages, about half of the Central Tai and Yongnan Zhuang dialects, most of the Northern Zhuang dialects, and some of the Southwestern dialects (such as Tai Lue and Shan)—and preserve the primary

tonal split patterns; i.e., they have no secondary tonal split patterns. Moreover, it is possible that, in a single Tai language (determined based on the principles of intelligibility, similarity of wordlists, and speaker attitudes), such as Yang Zhuang, there are many dialects without any secondary tonal split patterns (e.g., Jingxi and Napo Yang Zhuang), but there is also a cluster of dialects with complex secondary tonal split patterns (e.g., various Debao Yang Zhuang varieties and the Hurun variety of Jingxi Yang Zhuang) (cf. Liao 2016b, p. 257 ff.). Therefore, such secondary tonal split patterns have to be considered as an areal trait across many of the more distantly related Kam-Tai language varieties. Note that this trait has also penetrated MSEA with the migration of Southwestern Tai and is not restricted to Lingnan, but it is not found in any non-Tai languages on the Indo-China Peninsula, the heartland of MSEA. The details of this trait in the Kam-Tai languages demonstrated or mentioned above, together with some other Tai varieties in Liao's (2016b, p. 257 ff.) study of Tai tonal development, are condensed in Figure 4 so that the readers can understand the nature of it as a diffused "trait" at a glance.

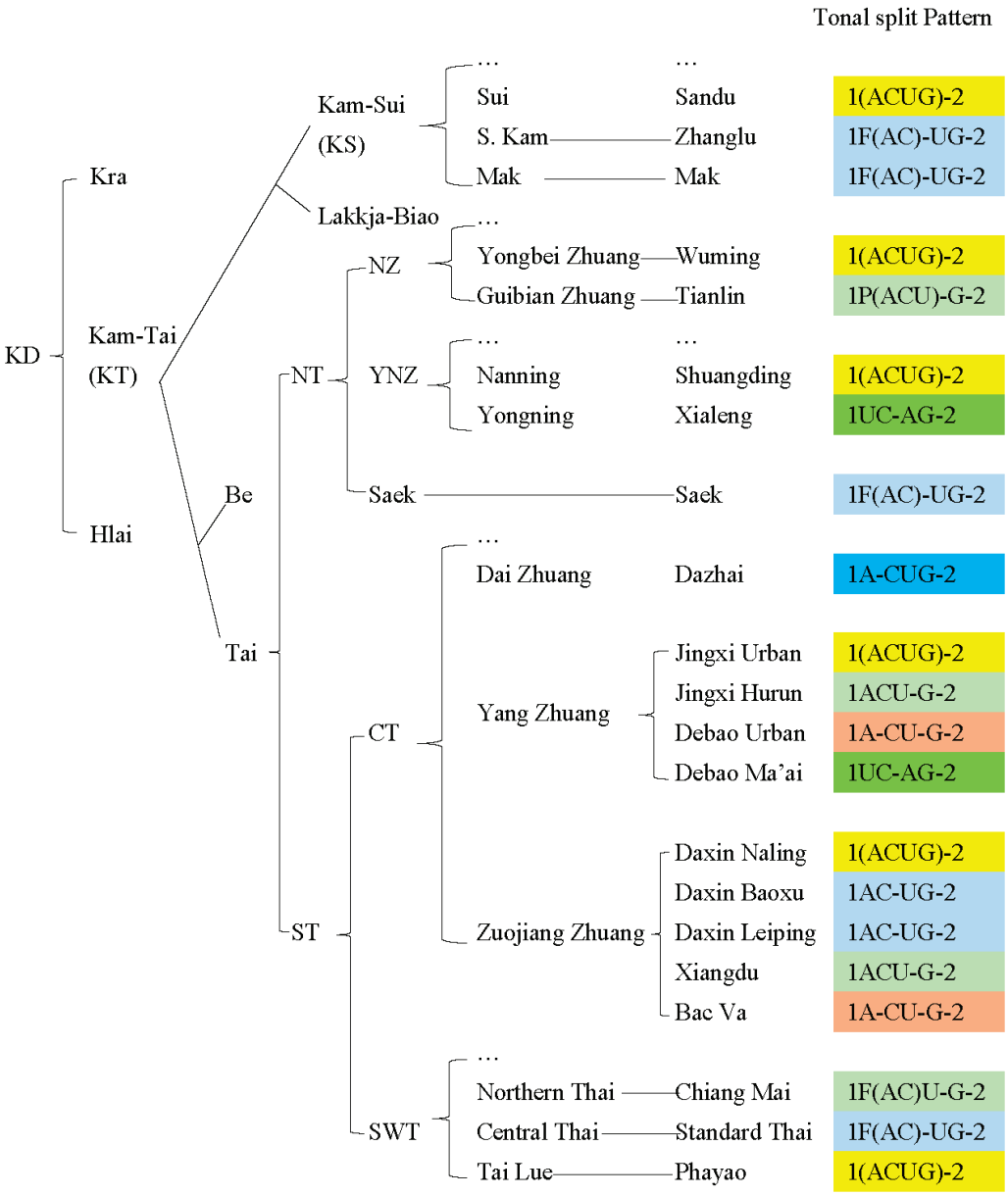


Figure 4. Tonal split patterns as a trait distributed in the Kam-Tai languages.

In Figure 4, the language groups and language varieties are arranged by their respective affiliations within the Kam-Tai family according to their close or distant genetic relationship, and each language variety is labeled with its maximum tonal split patterns, i.e., how many sets of initial consonants are needed to capture all the tonal split patterns of that dialect, with each set of initial consonants being separated by a dash to indicate a horizontal line (in a particular tone-box chart). The same pattern is highlighted in the same color, e.g., yellow is the primary tonal split pattern, and those language varieties that maintain the primary tonal split pattern are uniformly represented by the pattern of 1(ACUG)-2, but for others where a secondary split pattern occurs, the set name of the initials of the tone-box chart of that terminal Tai subgroup is followed by parentheses in which the set names of the integrated tone-box chart are filled. For example, Tianlin Zhuang in Northern Zhuang, whose maximum tonal split pattern is 1P(ACU)-G-2, where 1P refers to "plain voiceless sounds" (excluding glottalized sounds in the upper register initials) in the Northern Tai tone-box chart (Liao 2016b, p. 209), and (ACU) in the parentheses is the set names of the first three horizontal lines of the integrated Kam-Tai tone-box (Table 6) corresponding to Set 1P for Northern Zhuang varieties.

However, we should be aware that pattern 1P(ACU)-G-2 of Tianlin Zhuang is not substantially different from 1ACU-G-2 of Jingxi Hurun Yang Zhuang and Xiangdu Zuojiang Zhuang, as well as 1F(AC)U-G-2 of Northern Thai, as they are all highlighted in the same salmon pink color. They differ in labeling only because the distinction between sets within P and F is unnecessary for Northern Zhuang (to which Tianlin Zhuang belongs) and Southwestern Tai (to which Northern Tai belongs), respectively, and the distinction of A, C, and U is necessary for Central Tai (to which Hurun Yang Zhuang belongs). From this figure, we can conclude that the tonal split trait is manifested in the Kam-Tai languages in the following ways.

(A) The primary tonal split pattern is found in every terminal subgroup of Tai, except for Saek, which is a single language only including a small number of varieties. This pattern actually refers to a retention of the post-proto-Tai feature;
(B) Northern Zhuang's maximum pattern 1P(ACU)-G-2, secondary tonal split conditioned by 1G alone, is also found in some Central Tai and Southwestern Tai languages;
(C) There is a special pattern, 1A-CUG-2, in Dai Zhuang of Central Tai, with the secondary tonal split conditioned by aspirated initials (1A) alone. According to Liao (2016b, pp. 134, 320), the Huashan variety of Min Zhuang (Central Tai) also has this pattern;
(D) Secondary tonal split conditioned by unaspirated stops (1U) and glottalized sounds (1G) together, 1F(AC)-UG-2 or 1AC-UG-2, is found in Kam-Sui, Central Tai, Saek, and Southwestern Tai, and this is the most widely spread pattern in terms of the secondary tonal split in Kam-Tai languages, both geographically and dialectally;
(E) Secondary tonal split conditioned by aspirated sounds (1A) and glottalized sounds (1G) together, 1UC-AG-2, is only found in Central Tai and Yongnan Zhuang, which are geographically close to each other in southcentral–southwestern Guangxi;
(F) Secondary tonal split conditioned by aspirated sounds (1A) or glottalized sounds (1G), but not always together on all tones that have secondary tonal split, form a pattern of 1A-CU-G-2, is only found in Central Tai, but it is dispersed in language varieties in different Central Tai languages, namely Yang Zhuang and Zuojiang Zhuang (as well as Min Zhuang according to Liao 2016b, pp. 134, 320), which contain more patterns in their respective dialectal varieties;
(G) Taken together, as mentioned in Section 2, Central Tai is the most internally diverse terminal subgroup of all Kam-Tai languages in terms of tonal split patterns. This is understandable in terms of its geographical distribution, as it is situated south of Kam-Sui and Northern Tai, west and south-west of Yongnan Zhuang, and north-east of Southwestern Tai in a central transition zone. From these details, we are confident in considering the upper-register secondary tonal split patterns as a complex

phonological trait in the Kam-Tai languages, even not including its diffusion into the Sinitic languages.

Next, let us move on to consider how the trait of a secondary tonal split diffused from Kam-Tai into Lingnan Sinitic languages, as well as from Sinitic to Kam-Tai, if applicable. We begin below by examining the two Sinitic dialects, Standard Cantonese (Guangzhou-Hong Kong) and the Luxu (蘆墟) variety of Binyang (賓陽) Pinghua in the integrated Sinitic tone-box chart in Tables 13 and 14, respectively, to see how the tonal split patterns from Kam-Tai have diffused to Lingnan Sinitic languages in a specific way[8].

Table 13. Tonal split patterns in Guangzhou–Hong Kong Cantonese.

	A	B	C	DL	DS
1A	方*fɔŋ*^{55} 'square' 清 *tʃʰɪŋ*^{55}'clear' 溪*kʰɐi*^{55} 'stream'	粉*fɐn*^{25} 'powder' 體*tʰɐi*^{25}'body' 起*hei*^{25} 'rise'	派*pʰai*^{33} 'send' 透*tʰɐu*^{33} 'pierce' 去*hɵy*^{33} 'go'	法*fat*^{33} 'law' 塔*tʰap*^{33} 'tower' 客*hak*^{33} 'guest'	匹*pʰɐt*^{55} 'equal' 七*tʃʰɐt*^{55} 'seven' 曲*kʰʊk*^{55} 'music'
1U	幫*pɔŋ*^{55} 'help' 知*tʃi*^{55} 'know' 乖*kʷai*^{55} 'tractable'	審*ʃɐm*^{25} 'interrogate' 古*ku*^{25} 'to get' 影*jɪŋ*^{25} 'shadow'	變*pin*^{33} 'change' 對*tɵy*^{33}'correct' 見*kin*^{33} 'see'	百*pak*^{33} 'hundred' 節*tʃit*^{33} 'festival' 覺*kɔk*^{33} 'feel'	北*pɐk*^{55} 'north' 德*tɐk*^{55} 'morality' 屋*ʔʊk*^{55} 'room'
2S	明*mɪŋ*^{21} 'light' 來*lɔi*^{21} 'come' 疑*ji*^{21} 'suspect'	武*mou*^{23} 'military' 朗*lɔŋ*^{23} 'bright' 五*ŋ*^{,23} 'five'	望*mɔŋ*^{22} 'look' 弄*nʊŋ*^{22} 'handle' 用*jʊŋ*^{22} 'use'	滅*mit*^{22} 'extinguish' 納*nap*^{22} 'accept' 月*jyt*^{22} 'month'	物*mɐt*^{22} 'object' 入*jɐp*^{22} 'enter' 日*jɐt*^{22} 'date'
2O	旁*pʰɔŋ*^{21} 'side' 唐*tʰɔŋ*^{21} 'bright' 群*kʰʷɐn*^{21} 'group'	坐*tʃʰɔ*^{23} 'sit' 斷*tʰyn*^{23} 'broken' 近*kʰɐn*^{23} 'near' 坐*tʃɔ*^{22} 'sit' 斷*tyn*^{22} 'broken' 近*kɐn*^{22} 'near'	病*pɛŋ*^{22} 'sick' 定*tɪŋ*^{22} 'certain' 具*kɵy*^{22} 'tool'	白*pak*^{22} 'white' 絕*tʃyt*^{22} 'extremely' 達*tat*^{22} 'reach'	讀*tʊk*^{22} 'read' 十*ʃɐp*^{22} 'ten' 及*kʰɐp*^{22} 'rich'

Table 14. Tonal split patterns in Binyang Luxu Pinghua.

	A	B	C	DL	DS
1A	方*fuŋ*^{34} 'square' 清 *tsʰɐŋ*^{34} 'clear' 溪*hei*^{34} 'stream'	粉*fən*^{33} 'powder' 體*tʰei*^{33} 'body' 起*hei*^{33} 'rise'	派*pʰai*^{55} 'style' 透*tʰɔu*^{55} 'pierce' 去*hu*^{55} 'go'	法*fap*^{33} 'law' 塔*tʰap*^{33} 'tower' 客*hak*^{33} 'guest'	匹*pʰɐt*^{55} 'equal' 七*tsʰɐt*^{55} 'seven' 曲*kʰɔk*^{55} 'music'
1U	幫*paŋ*^{34} 'help' 知*tsi*^{34} 'know' 乖*kʷai*^{34} 'tractable'	審*səm*^{33} 'interrogate' 古*kou*^{33} 'to get' 影*ʔɐŋ*^{33} 'shadow'	變*pin*^{55} 'change' 對*tu*^{55} 'correct' 見*kin*^{55} 'see'	百*pak*^{33} 'hundred' 節*tsit*^{33} 'festival' 覺*tsak*^{33} 'feel'	北*pɐk*^{55} 'north' 德*tɐk*^{55} 'morality' 屋*ʔʊk*^{55} 'room'
2S	明*mɐn*^{213} 'light' 來*lai*^{213} 'come' 疑*ɲi*^{213} 'suspect'	武*fou*^{22} 'military' 朗*løŋ*^{22} 'bright' 五*ŋɔu*^{22} 'five'	望*muŋ*^{42} 'look' 弄*noŋ*^{42} 'handle' 用*joŋ*^{42} 'use'	滅*mit*^{42} 'extinguish' 納*nap*^{42} 'accept' 月*ɲut*^{42} 'month'	物*fɐt*^{11} 'object' 入*ɲəp*^{11} 'enter' 日*ɲɐt*^{11} 'date'
2O	旁*puŋ*^{213} 'side' 唐*tøŋ*^{213} 'bright' 群*kʷən*^{213} 'group'	坐*tsou*^{22} 'sit' 斷*tun*^{22} 'broken' 近*kən*^{22} 'near'	病*pɐŋ*^{42} 'sick' 定*tɐŋ*^{42} 'certain' 具*ku*^{42} 'tool'	白*pak*^{42} 'white' 絕*tʃit*^{42} 'extremely' 達*tat*^{42} 'reach'	讀*tɔk*^{11} 'read' 十*səp*^{11} 'ten' 及*tsəp*^{11} 'rich'

As can be seen from the above two tables, the horizontal tonal split patterns of both Cantonese in Guangzhou/Hong Kong and Pingyang were neatly conditioned by the voic-

ing of initial consonants in history, i.e., they are equivalent to the primary tonal split of the Kam-Tai languages, so there are no secondary tonal split patterns in the upper register, as found in many Kam-Tai languages. However, both dialects have vertical tonal split patterns in checked syllables (columns DL and DS); that is, secondary tonal splits conditioned by vowel length in checked syllables. In particular, in Cantonese, this secondary split is only found in the upper register, which means that the items in the DL1(AU) and DS1(AU) boxes are systematically different in their tonal values. In contrast, Binyang Luxu Pinghua has splits in both the upper and lower registers, i.e., DL1, DL2, DS1, and DS2 all contain lexical items with different tones to the items in the other boxes. In previous studies, such patterns, especially the Cantonese one, have been regarded as an areal trait diffused from the neighboring Kam-Tai languages, as mentioned. In Table 13, the three characters in the Cantonese Tone-Box B2O have two tones each, marked with different colors according to their respective tonemes, and with the arrow which indicates the tonal merging direction, i.e., a special secondary tonal split occurs in the low-register B2O, which we will discuss in detail in Section 3.2, because in this section, we are only concentrating on the secondary tonal split of the upper register.

Next, we look at the tonal split patterns of another Pinghua dialect, Nanning Weizilu (位子淥) Pinghua, and another Yue dialect, Rongxian (容縣) Yue of Guangxi, as shown in Tables 15 and 16, summarized from de Sousa (Forthcoming) and Ran et al. (2015, p. 32) respectively.

Table 15. Tonal split patterns in the Weizilu variety of Pinghua in suburban Nanning.

	A	B	C	DL	DS
1A	53	33	35	33	33
1U	53	33	55	33	33
2S	21	13	22	23	23
2O	21	13	22	22	22
		22			

Table 16. Tonal split patterns in the Rongxian variety of Yue Chinese in eastern Guangxi.

	A	B	C	DL	DS
1A	35	33	452	35	35
1U	55	44	52	43	55
2S	343	23	31	32	32
2O	343	23	31	32	32
		31			

As shown in Tables 15 and 16, there are secondary tonal splits in the lower registers of both dialects, and this topic is also discussed in Section 3.2 because, here, we focus only on the splits of the upper register. In the patterns of Weizilu Pinghua shown in Table 15, there are no vertical secondary tonal splits according to vowel length on checked syllables, but a secondary tonal split due to the association of voiceless obstruents (including h-) is found in tone C1 (the upper *qù*); that is, the split between Box C1U and Box C1A. Such an upper-register secondary tonal split pattern is found in Weizilu Pinghua only in the upper tone C, but in Rongxian Yue (Table 16), we see a very similar pattern to that of Southern Kam, where each upper-register tone has a secondary tonal split, making this Sinitic dialect a rare one with nine distinct tones (while treating the tones of the checked syllables as allotones). Such upper-register secondary tonal split patterns are quite rarely found in Sinitic languages, but are very commonly found in Kam-Tai languages, as discussed previously.

Our judgment that secondary tonal split patterns in checked syllables and the upper register occurred first in Kam-Tai and diffused into Sinitic, rather than the other direc-

tion, is based on two pieces of evidence presented in the above discussion. One is that secondary tonal split patterns can be found in all Kam-Tai branches and are widespread, but in Sinitic languages, at present, they are only found in Pinghua and Yue, which are the closest to Kam-Tai in terms of language typology (cf. Matthews 2006; de Sousa 2015a, 2015b; Szeto 2019; Szeto and Yurayong 2021, 2022). The second is that, in Sinitic languages, only Pinghua and Cantonese have vowel length contrast, like in Kam-Tai languages, and there are only two contrasting laryngeal features, the semi-clear (次清)/aspirated surd (1A) and the clear (全清)/unaspirated surd (1U), in the original voiceless initials of the Sinitic languages. However, in Kam-Tai, there are four sets (1A, 1C, 1U, and 1G). This is why the Kam-Tai languages have more accessible laryngeal conditions for the occurrence of secondary tonal splits in the original upper-register tones. Simply by virtue of this, we conclude that the Lingnan Sinitic varieties, such as Weizilu Pinghua and Rongxian Yue, which have coexisted with Kam-Tai languages in the Lingnan region for around a thousand years, have received a trait from Kam-Tai languages in the pattern of the upper-register tonal splits.

As a result of the comparison of Kam-Tai and Sinitic tones, in this subsection, by using the frameworks of tone-box charts, we can summarize the following Lingnan tonal behavior traits involved in the original upper-register tones as in (1)–(2) below.

(1) Areal Trait 1 of tonal behavior in Lingnan languages: The secondary tonal split is conditioned by vowel length on checked syllables spread from Kam-Tai languages to some Sinitic languages, such as some varieties of Cantonese and Southern Pinghua.
(2) Areal Trait 2 of tonal behavior in Lingnan languages: The pattern of the secondary tonal split of the upper-register tones spread among various subgroups of Kam-Tai languages and diffused into some nearby Sinitic languages, such as some varieties of Nanning Weizilu Pinghua and Rongxian Yue.

Having established the properties of the above two traits, we turn to the areal typological issues associated with them. At this point, we first need to determine the diachronic order of the primary and secondary tonal splits and the respective triggers that gave rise to them. We will show, in Section 3.3, that the merger of original voiceless and voiced continuants was indeed the trigger of the primary tonal split in Kam-Tai, in contrast with Sinitic, in which the devoicing of original voiced obstruents was the trigger of the register tonal split. Thus, for the triggers of the secondary tonal split, the laryngeal features of original voiceless continuants and original voiceless obstruents are excluded from Kam-Tai and Sinitic, respectively, while the remaining laryngeal features are considered to be the triggers of secondary tonal split. In the inherited etyma of the Sinitic languages (excluding Kam-Tai stratum/loans), because there are only two sets of laryngeal features (aspirated and unaspirated surds) in the upper-register initials, there is only one possibility for the secondary tonal split in the upper register, namely the condition of the set of aspirated obstruents (1A). In contrast, the Kam-Tai languages have three possible conditions for secondary splits, namely aspirated sounds (1A), unaspirated stops (1U), and glottalized sounds (1G). This is why secondary tonal split patterns of the Kam-Tai languages are likely the most complex in this area[9]. Finally, we are able to determine three areal types of tones in Lingnan Sinitic and Kam-Tai, as summarized in (3)–(5).

(3) Lingnan languages' phonological (tonological) Areal Type 1: The upper limit for the laryngeal features in the upper register of initial consonants that may have conditioned the further possible secondary tonal splits is three, namely aspirated (1A), unaspirated (1U), and glottalized (1G), contrasting with original voiceless continuant (1C), which is suggested to be the cause of the primary tonal split (see Section 3.3).
(4) Lingnan languages' phonological (tonological) Areal Type 2: In a single language variety, due to limitations in terms of tone load-bearing capacity, the upper limit for further splits in the high-register tone is two, a primary high-register tone and a secondary high-register tone (whether or not this splitting tone eventually merges into the counterpart low-register tone to form another two-way split pattern).

This means that, although the maximum number of initial sets that conditioned the high register secondary tonal split is three, only one (1A or 1G) of these sets alone, or two (1 A and 1G, or 1U and 1G) of them together, conditioned the same secondary tonal split. That means that neither three of them together conditioned the same secondary tonal split, nor two of them separately conditioned two different tonal splits, not to mention three of them conditioning three tonal splits separately. This leads us to the third relevant typology below.

(5) Lingnan languages' phonological (tonological) Areal Type 3: The secondary tonal split in the high register, if any, was conditioned by either one or two initial sets from the three non-1C sets, aspirated (1A), unaspirated (1U), or glottalized (1G), limited to the following patterns: (a) 1A alone; (b) 1G alone; (c) 1A and 1G together; and (d) 1U and 1G together. That is, the secondary tonal split was never conditioned by 1U alone or 1A and 1U together.

It is not difficult to conceive of the reasoning behind (5). First, aspirated initials and glottalized initials have led to the result of depressing the pitch of the syllable in a number of languages (J. R. Zhang 1980, p. 38; Liao 2016b, pp. 170–71). Based on Southern Kam's three-way tonal split pattern in which the tones conditioned by aspirated initials have a lower pitch than the ones conditioned by unaspirated voiceless sounds, Edmondson (1990, p. 188) suggested that aspirations are not the direct cause of pitch lowering (as they, on the contrary, generally lead to an increase in F0), but rather, breathiness has caused this result in the process of breathy voice > aspiration > deaspiration, as breathiness is the typical pitch depressor. In this regard, Zhu et al. (2016, p. 18) pointed out that, while Edmondson is correct that aspiration is not the direct cause of pitch lowering, the sequence of breathy voice > aspiration > deaspiration would result in the initials becoming unaspirated after pitch lowering, but such a historical phonological change is contrary to the fact that Southern Kam's aspirated consonants are paired with lower pitch tones, not to mention that Edmondson's original breathy voice was voiceless (upper register) or voiced (lower register) in the history of the Kam language. They further argued that the breathy vowels led to the lower pitch, which would have gone through the process of initials aspiration > subsequent vowel invading the aspirated segment > breathiness with vowels > lower pitch. In addition, glottalized initials often bring about creakiness, an incidental feature of low pitch in many languages (Zhu and Yang 2010; Mai 2011, pp. 22–23). Therefore, it is understandable that both the aspirated sounds (1A) and the glottalized sounds (1G), alone or together, determine secondary pitch-lowering splitting tones.

Second, aspirated sounds (1A) and unaspirated stops (1U) are diametrically opposed in terms of laryngeal features, the former having a [+spread] feature and the latter a [-spread] feature, as aspiration tends to result in low tone features; the implication is that the unaspirated sounds (1U) do not follow the aspirated sounds (1A) in conditioning this secondary tonal split, and this point is resolved. Furthermore, although unaspirated stops (1U) do not cause secondary tonal splits alone, they share (+voiceless, -continuant, -aspirated) with the segment (ʔ-) in glottalized initials, which was indeed the condition of register voicing tonal split (Liao 2016b, p. 137). Therefore, in a number of dialects (e.g., Southern Kam, Standard Thai, and Baoxu Zhuang demonstrated above), in which secondary tonal splits were conditioned by glottalized initials (1G), there is the result of 1U later following 1G in conditioning secondary tonal splits.

In short, as 1A could not have conditioned secondary tonal splits together with 1U, the possibility that 1A, 1U, and 1G jointly conditioned secondary tonal splits does not exist, and, at most, only two sets, 1A and 1G, or 1G and 1U, could have conditioned secondary tonal splits.

3.2. Lower Register Secondary Tonal Split as a Sinitic Origin Trait

In the previous subsection, we focused our discussion on the secondary split of upper-register tones and confirmed that it is a trait propagated from the Kam-Tai languages to the Sinitic languages. In contrast, a secondary tonal split in the lower register has long

been found in Sinitic languages and has been much explored, but the status of its diffusion as a trait into the Tai languages seems never to have been explored. With the help of the framework of the tone-box chart, we discovered a secondary tonal split pattern that emerged in Sinitic and diffused into Kam-Tai (or at least Tai), i.e., a special secondary tonal split in the low/lower register, called *zhuóshǎng biàn qù* (濁上變去) or *zhuóshǎng guī qù* (濁上歸去) in traditional Chinese phonology. This is illustrated in the tone-box charts for the four Cantonese and Putonghua varieties in Tables 13–16 in Section 3.1 above, and is elaborated below.

In Table 13, the most distinctive feature of the Cantonese tones is Box B2O, where each of the three lexical items (i.e., three Chinese characters) has two tones. In other words, for the three characters 坐 'to sit', 斷 'to be broken', and 近 'near' in Box B2O (the *shǎng* tone conditioned by historical voiced obstruents), the tone of their literary reading is a low rising tone [23], in line with Box B2S (the *shǎng* tone conditioned by historical voiced sonorants), but the tone of their colloquial reading is a low flat tone [22], in line with Boxes C2S and C2O (the *qù* tone conditioned by historical voiced sounds). That is, if colloquial reading and literary reading were separated, Cantonese would have two different tone-box charts, and in the case of the chart reflecting the older level of colloquial reading, Box B2P would be the same color as Box B2S. i.e., the original tone B2 (lower *shǎng*) does not produce a secondary tonal split according to different laryngeal features of initials, but in the case of a chart reflecting a later level of literary reading, Box B2O would be a secondary tonal split from the original tone B2 (lower *shǎng*) and merge into tone C2 (Boxes C2S and C2O = lower *qù*), which is known in the history of Chinese phonology as the aforementioned *zhuóshǎng guī qù* 濁上歸去 or *zhuóshǎng biàn qù* 濁上變去, meaning "the *shǎng* tone conditioned by a voiced obstruent initial would be merged into the counterpart lower *qù* tone", as very commonly found in the direct descendants of LMC, such as Mandarin, Gan, and most Xiang Chinese varieties. Traces of the *zhuó shǎng guī qù* phenomenon can be found in the records from the 9th to 10th centuries AD in the Tang dynasty, and the first one that explicitly treats all characters with a voiced obstruent initial and the *shǎng* tone as homophones with the counterpart characters having the *qù* tone, as they are arranged together in *Zhou Deqing*'s (周德清) *Zhōngyuán Yīnyùn* (中原音韻) in the Yuan Dynasty (Tang 2013, p. 130). In contrast, in some other Sinitic languages, such as Yue, Wu, Min, and Hakka, at least in the colloquial reading, which reflects the older level, i.e., the pre-LMC level, these words are not incorporated into the counterpart *qù* tone, just as in the Cantonese case of colloquial readings for these items in Box B2O of Table 13. For these languages, the literary reading, which was systematically influenced by the phonology of the authoritative Chinese variety in the political center of Northern China in history from the period of LMC, has completed the process of *zhuó shǎng guī qù* as in Mandarin, and also as in the case of Cantonese literary readings in Box B2O in Table 13.

As for the situation of Binyang Luxu Pinghua in Table 14, the tones of Boxes B2O and B2S are consistent, without such a secondary split of Box B2O from B2, i.e., it appears that this dialect does not have a secondary tonal split in the lower register, but this is, in fact, only an appearance. If we increase the number of eligible Chinese characters in Box B2O, we will find that this dialect also has a similar secondary tonal split pattern to the literary reading of the characters in Box B2O in Cantonese, where the original tone *B (*shǎng*) potentially shifts to the counterpart *C (*qù*) tone if the original initials are voiced obstruents. However, as the differences between the two dialects are presented in Tables 13 and 14, there is no agreement regarding which characters in box C2O (with original voiced obstruent initials and a tone *B or tone *shǎng)* are shifted to the counterpart tone *qù* (*B) or not. Such inconsistency was also pointed out by de Sousa (Forthcoming) in his comparison of Nanning Weizilu Pinghua with Cantonese. Note that, in Weizilu Pinghua and Rongxian Yue, as shown in Tables 15 and 16, box B2O is also split into two tones, one of which is expectedly merged into the counterpart C2 tone, presenting the situation of *zhuó shǎng guī qù* in these two dialects.

If one says that the lower-register secondary tonal split in the four Sinitic language varieties noted above occurs only in the lower tone *shǎng* (B2), and this split is determined by the influence of Northern authoritative dialects in history, rather than by the laryngeal features of their own initial consonant system, we can look at the specific patterns of Weizilu Pinghua in Table 15 to give more evidence. We find that, in addition to *zhuóshǎng guī qù* in the *shǎng* lower tone (B2), the lower-register secondary tonal split also exists in checked syllables; that is, a split occurs between DL2S/DS2S and DL2O/DS2O, i.e., a secondary tonal split on the lower tone *rù* conditioned by original voiced obstruent initials. Furthermore, we also examine the tonal split patterns of some Hakka dialects, such as that of Hong Kong Hakka summarized in Table 17, to learn that the secondary tonal split in the lower-register tones is widespread in Sinitic languages.

Table 17. Tonal split patterns in Hong Kong Hakka.

	A	B	C	DL	DS
1A	223	331	53 (sandhi 55)	33	33
1U	223	331	53 (sandhi 55)	33	33
2S	21	331	53 (sandhi 55)	33	33
		223		55	55
2O	21	233	53 (sandhi 55)	55	55

As shown, in Hong Kong Hakka, we first learn that the secondary tonal split occurs in the tones of lower *shǎng* (B2) and lower *qù* (D2), i.e., tone B2O, which was conditioned by the original voiced obstruent, split from B2 and merged into the *píng* upper tone (A1), while the checked syllable counterpart D2O tone also split from D2, becoming the complementary distribution allotone of *qù* on the checked syllables. Note that there are no vowel-length contrasts in Hakka, so tones *DL and *DS on checked syllables can be considered as a single *D. Second, we also see that a group of words (characters) with the *shǎng* lower tone (B2S) conditioned by the original voiced sonorants, mainly in colloquial readings, also follow the words with tone B2O to merge their original tone B2S into tone upper *píng* (A1), while the rest of the words, mainly of literary reading, have merged their tone into upper *shǎng* (B1), causing box B2S to have an internal split. This pattern is also seen in box D2S, where part of the words follow those with tone D2O to merge their tone into tone C, while the remaining words merge their tone into tone upper D. It can be seen that, although Hong Kong Hakka has only four tones, its tonal split/merger is quite complex, and this is reflected in the lower-register tonal split.

The above five examples of Sinitic languages fully illustrate that the lower-register secondary tonal split represented by *zhuóshǎng guī qù* is quite common in Sinitic languages. When we consider the *zhuóshǎng guī qù* phenomenon in the literary readings of the Southern Sinitic languages as a trait imported from the Northern authoritative dialects through borrowing, we cannot avoid examining the diffusion of this Sinitic trait into the Kam-Tai languages too. Indeed, this trait has actually diffused into the Kam-Tai languages through the Sinitic loanword system—see *zhuóshǎng guī qù* among the lexical items, with tone C2 represented by Yang Zhuang summarized in Appendix A, in which we can illustrate this by comparing some Sinitic languages and Yang Zhuang's MC loanword system. Table 18 shows a comparison of *zhuóshǎng guī qùi* in Lingnan languages, including Yang Zhuang, three Pinghua varieties and Cantonese, and Mandarin, which I have compiled and calculated from Appendix A, a survey of the development of the Chinese characters with *shǎng* tone conditioned by a MC voiced obstruent initial in some modern Lingnan languages and Putonghua.

Table 18. A comparison of the Chinese characters of *zhuóshǎng guī qù* among some modern Sinitic languages.

	156 Items (Chinese Characters) in Total							
	Eliminated Items		Only One Reading			Two Readings (B2/C2, B2/-, -/C2; or -/C1)	% of Tones B2	% of Tones C2 and C2 + C1
	Missing	Irregular	B2 Tone	C2 Tone	C1 Tone			
Luxu PH	13	18	63	49	13	0	40%	31% and 40%
Tingzi PH	13	23	30	81	9	0	19%	52% and 81%
Weizulu PH	9	23	24	77	22	-/1	15%	50% and 64%
Yang Zhuang MC loan	11	8	5	127	4	-/1	3%	82% and 85%
Hong Kong Cantonese	0	4	34	95	4	16/16; 1/-; -/1; -/1	33%	72% and 75%
Guiliu (Liuzhou)	0	0	12	144		0	8%	92%
Putonghua	0	0	11	145		0	7%	93%

The data in Table 18, taken from Appendix A, contain a total of 156 common Chinese characters in EMC whose initial consonant was a voiced obstruent and whose tone was the original *shǎng* tone (*B, corresponding to Tai *C) before the tonal split. As mentioned above, in accordance with the tone rules in the Chinese language, these items would either have developed to have a B2 tone (i.e., lower-register *shǎng* tone) after the tonal split in the descendant languages of MC (and in the LMC loanword system borrowed into Tai), or they would have developed to have a tone that has been merged into its counterpart C tone, i.e., tone C2 or the lower-register *qù* tone, as the result of the secondary tonal split in the low register of tone C. In the Mandarin dialects, the *zhuóshǎng guī qù* progression was completed so thoroughly that the 156 Chinese characters are now overwhelmingly pronounced in the *qù* tone, with 92% in Guiliu and 93% in Putonghua (Standard Mandarin), and only a few characters retaining their original *shǎng* tone. However, because the upper- and lower-register *shǎng* tones have been secondarily merged into a single *shǎng* tone (the modern tone B), and the upper- and lower-register *qù* tones have also merged into another single *qù* tone (the modern tone C) in the vast majority of Mandarin dialects, such as Guiliu and Putonghua, it is not possible to tell from the data of the Mandarin dialects alone whether these words had originally voiced obstruent initials; rather, it is necessary to rely on the lower-register *shǎng* or the lower-register *qù* tones of the southern Sinitic languages, such as Cantonese and Pinghua, to support this. Nevertheless, perhaps it was also the influence of Mandarin's predecessor, the authoritative Sinitic language variety during the LMC period in Northern China, that led the southern Sinitic languages to produce literary readings that are different from their inherited colloquial readings. This is why some of the 156 characters in these dialects (such as Pinghua varieties and Cantonese in Appendix A) of *zhuóshǎng guī qù* have also been misregistered by turning their tone into tone C1 (high register), instead of the expected tone C2 (low register), because the authoritative variety had previously merged the upper and lower *qù*. From this point, the *zhuóshǎng guī qù* or the secondary tonal split leading the merger from the LMC lower *shǎng* (B2) to the lower *qù* (C2) was not an independent development, but rather a trait imported from the Northern authority Sinitic variety in history. In any case, in our statistics, in addition to the lack of data for some items, if there is an aberrant change in tone, i.e., not C2, B2, or B1, such items are excluded from the comparison; therefore, for the comparison of the proportions, three entries are listed, i.e., the proportion of characters with tone C2 (or C, in the case of Mandarin), the proportion of characters with tone B2 (or B, in the case of Mandarin), and the proportion of characters pronounced with B2 plus B1 (which, although it wrongly reg-

isters as original initial voicing, it correctly registers as the tonal category as the result of *zhuóshǎng guī qù*).

As Table 18 shows, of the many languages in Lingnan, with the exception of Guiliu, which was the latest to come to Guangxi, where *zhuóshǎng guī qù* is consistently and thoroughly implemented as in other Mandarin dialects north of Lingnan, the rest of the languages are more or less conservative, i.e., the incidence of *zhuóshǎng guī qù* is lower than that in Mandarin dialects. Among these Lingnan non-Mandarin languages, Binyang Luxu Pinghua has the lowest number of words for *zhuóshǎng guī qù*, and, after eliminating 20% of the invalid data, 40% of the remaining 80% of the valid data, i.e., half of the words, are still read in the lower-register *shǎng* tone (B2); only 31% of the words are read in the lower-register *qù* tone (C2), and even with the deviations in the upper register *qù* tone (C1), the incidence of *zhuóshǎng guī qù* is still 40%, the same as the number of words still read in the lower-register *shǎng* tone (B2). In the other two Pinghua dialects (Nanning Tingzi and Nanning Weizilu), Hong Kong Cantonese, and Debao Urban Yang Zhuang, these words are more often pronounced in the lower-register *qù* tone (C2)[10]. In the above Pinghua dialects, if a word has completed the process of *zhuóshǎng guī qù*, then its original reading (which is supposed to be read in the original B2 tone) has usually been replaced, which means that there is mostly no co-existence of colloquial and literary readings, even though, sometimes, there are sporadic items that keep both readings, as demonstrated in Nanning Wezilu Pinghua by de Sousa (Forthcoming). Cantonese, however, has a significant number of words with different readings, so the proportions of colloquial and literary readings in Cantonese overlap, to some extent. Surprisingly, among the MC loanwords in Yang Zhuang, a non-Chinese language, *zhuóshǎng guī qù* occurs quite thoroughly after excluding 12% of invalid data, with only 3% of the remaining 88% of the words still being read in the lower-register *shǎng* tone and 82% in the lower-register *qù* tone; if we add the words read in the upper-register *qù* tone, the proportion of *zhuóshǎng guī qù* is actually as high as 85% within the valid 88%.

That is to say, diachronically speaking, in terms of tonal behavior, Binyang Luxu Pinghua is the most conservative of the many dialects showing Lingnan's *zhuóshǎng guī qù* trait, or, in other words, it is historically accepted to show a lesser degree of *zhuóshǎng guī qù* than the authoritative dialects of northern Sinitic, while the MC loanword system in Debao Yang Zhuang accepts it to the highest degree. This phenomenon is intriguing, because it reveals that the beginning of *zhuóshǎng guī qù* in the history of the Chinese language may have been earlier than thought. Note that, as in other Zhuang dialects, the Chinese loanwords in Yang Zhuang are borrowed in several historical layers, the oldest being from OC, followed by the Late Han, Early and LMC, Guiliu, Yue, and Putonghua layers; here, the LMC loanwords are those considered to have been borrowed from ancient Pinghua in the various Zhuang dialects (including the various languages of Central Tai and Northern Tai), around the time of the *Yùnjìng* 韻鏡 (c. 1150 AD), the oldest of the so-called rime tables, in the Song dynasty, and differs from the LM^C (7th–11th centuries CE) that Pittayaporn (2014) adopted from Pulleyblank (1991) among the four strata defining Chinese loanwords in Southwestern Tai. In our previous discussion of the history of the development of Chinese tones, we also mentioned that the primary tonal register split occurred as late as the end of the Tang Dynasty (c. 10th century), which, in the present paper, is an important indicator of LMC's distinction from EMC. In the early Northern Song dynasty (11th century), after the Song court had suppressed the rebellion of the Zhuang leader *Nóng Zhìgāo* (儂智高), the northern troops sent to Guangxi brought with them a new LMC variety, which was also the precursor of Pinghua (de Sousa 2015a), so the early period of the Song dynasty can be seen as the beginning of the development of Pinghua in Guangxi. The loanwords borrowed from Pinghua after that period are the main body of MC loanwords that exist in the Zhuang dialects of Guangxi, and this Pinghua system of LMC loanwords is largely absent from the Southwestern Tai languages, echoing Pittayporn's use of the latest Chinese loanword layer to determine that the Southwestern Tai groups migrated out of Guangxi into the MSEA hinterland no earlier than Late Tang, and also indicating that

Southwestern Tai's migration should have been no later than the time of the *Nóng Zhìgāo* rebellion. Therefore, in Appendix A, I regard the loanwords borrowed from ancient Pinghua into Yang Zhuang as another LMC layer, while the OC, Late Han, EMC, and LMC in Pulleyblank (1991) and Pittayaporn (2014) shared by Northern Tai, Central Tai, and Southwestern Tai are collectively referred to as pre-Southwestern Tai (pre-SWT) Sinitic loanwords (these layers are directly identified in this paper using Pittayaporn's (2014) chronology). The following is the basis for the dating of *zhuóshǎng guī qù* from the evidence for pre-SWT Sinitic loans and LMC loans in Tai, represented by Yang Zhuang.

First, of the 137 entries in Yang Zhuang that fit the pattern of tone development, there are only four with lower *shǎng* (B2) and one with lower short *rù* (DS2) on checked syllables, but none of them are LMC loanwords borrowed from the ancient Pinghua system; rather, they are all pre-Southwestern Tai (pre-SWT) loanwords. These entries are *pɔj'*^{13ʔ}, 婢 'maid, daughter-in-law', *taw*^{213ʔ} 杖'crutch', *tɕa:ŋ*^{213ʔ} 象 'elephant', *tɕy:*^{213ʔ} 社 'land's god', and *kjɔk*^{21} 臼 'mortar'; the checked syllable in *kjɔk*^{21} 臼 'mortar' suggests that it may have been borrowed from OC into Tai, vs. *C.[g]^{w}əʔ, reconstructed by Baxter and Sagart (2014a). DS2 is also seen in the history of Tai tonal development as the checked-syllable counterpart of the lower *shǎng* (Sinitic B2 or Tai's C2); therefore, it is also considered as conforming to the rule. These etyma are also commonly shared among the Southwestern Tai languages, e.g., the five etyma above in Thai are *p^{h}aj*^{453ʔ} 'daughter-in-law', *t^{h}a:w*^{453ʔ} 'crutch', *tɕ^{h}a:ŋ*^{453ʔ} 'elephant', *tɕ^{h}ɯəˀ*^{453ʔ} 'lineage', and *k^{h}rok*^{45} 'mortar', indicating that the most tonally conservative words are all borrowed from Chinese earlier than the EMC period.

Second, of the rest, 132 words are read in *qù* tones, including 128 in the lower register *qù* and 4 in the upper register *qù*, which is evidence that Yang Zhuang's MC loanwords are quite thorough in *zhuóshǎng guī qù*. Of the 128 characters reading in the lower *qù* tone, 7 belong to the pre-SWT Sinitic loanwords, such as et *te:ŋ*^{33} 錠 'strip' (vs. Thai *t^{h}ɛ:ŋ*^{41ʔ}), *te:m*^{33} 簟'bamboo mat' (vs. Tai Lue *tɛ:m*^{33}), and *po:*^{33} 父 'father; male' (vs. Thai *p^{h}ɔ:*^{41ʔ}), which are mostly found in Southwestern Tai and are also with the lower *qù* tone; in addition, two of the four upper-register words may also be pre-SWT loanwords. The fact that these characters belong to the pre-SWT loanword system are read in tone *qù*, rather than the original tone *shǎng*, suggests that the phenomenon of *zhuóshǎng guī qù* predates the migration of Southwestern Tai from its ancestral homeland of Guangxi, which occurred before the end of the Tang Dynasty around 1000 years ago. In this way, these items were actually borrowed into Tai before the register tonal split of Tai. It was only after the register tonal split in Tai that the tone of these words developed into a lower-register *qù*, due to the decisive effect of the voicing of the consonants. Such a chronological order is simply displayed in Figure 5.

Note that the Tai languages did not have register tonal splits until after the Chinese language had completed its register tonal split, and the fact that the Thai writing created around 700 years ago has only two tone markers to distinguish the four proto tonal categories, namely tones *A and *D with no marker, and *B and *C with two markers (Brown 1985), shows that the register tonal split occurred much later than that in Chinese. In this case, it is only reasonable to consider the *zhuóshǎng guī qù* phenomenon as having occurred before the latest limit of the primary tonal split, i.e., before the end of the Tang dynasty.

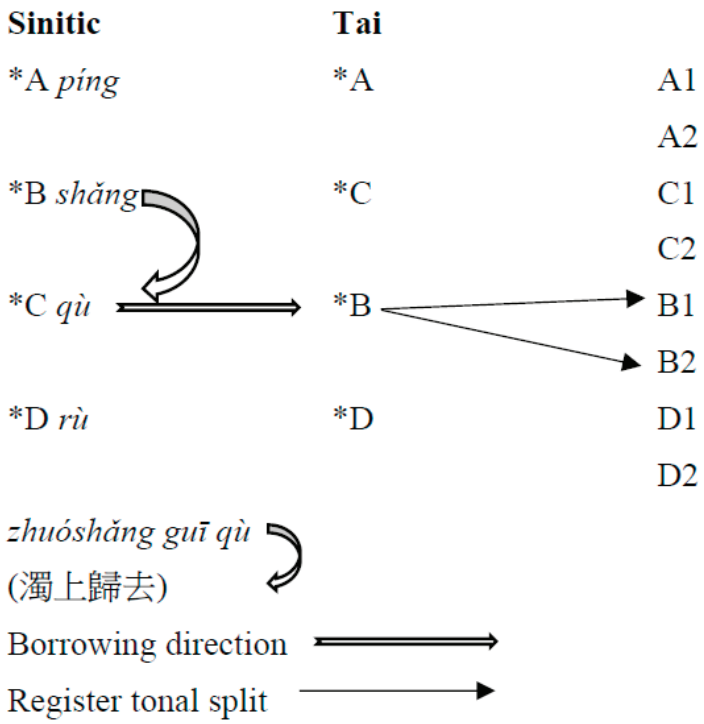


Figure 5. Diachrony of *zhuóshàng guī qù* of Middle Chinese loanwords in Tai languages.

The preliminary conclusion we can draw from the above discussion is that this lower register secondary tonal split is embedded in Tai as a trait. However, unlike the upper-register secondary tonal split, which is automatically conditioned by the laryngeal features of the initial consonant, it is achieved through a group of loanwords. This group of loanwords, some of which were borrowed in the pre-SWT period, also directly influenced the remaining post-SWT loanwords in this group, i.e., the LMC loanwords borrowed through Pinghua, and the vast majority of these *zhuóshǎng* words have merged into the counterpart tone *qù*. Compared with Yang Zhuang's Middle Chinese loanwords, the proportion of *zhuóshǎng* words incorporated into the counterpart tone *qù* is lower in modern Pinghua dialects, especially those represented by Hengxian Luxu. The reason for this is most likely that Pinghua, as a Sinitic language, had its own developmental trajectory; it might not have experienced *zhuóshǎng guī qù* itself before it moved into Guangxi, and it was only after it moved into Guangxi that *zhuóshǎng guī qù* gradually occurred under the influence of the authoritative dialects of the north, but it still retained more of its inherited lower *shǎng* tone in its descendant varieties. In contrast, the Tai dialects received more Middle Chinese loanwords from Pinghua than from pre-SWT Sinitic layers, but because *zhuóshǎng guī qù* had already occurred from these previous Sinitic layers, the *zhuóshǎng* items were automatically assigned as having the counterpart *qù* tone, even in the post-SWT layers. Although *zhuóshǎng guī qù* in Chinese needs to be analyzed and examined in more depth in the light of the Tai corroboration to explain why it occurs so thoroughly in the Middle Chinese loanword system in Tai languages, we can at least conclude here that the lower-register secondary tonal split occurs in tone *C of Tai. Of course, strictly speaking, it can only be seen as a result of absorbing a group of Sinitic loanwords, not as a result of being conditioned by Tai's own initial laryngeal features, because, in Tai's inherited etyma, even if the proto-Tai initial was a voiced obstruent, it did not cause any secondary tonal split in the lower-register tone. Therefore, there is no way to add a horizontal line of laryngeal features to the lower register in the Tai tone-box chart[11].

In fact, if we ignore the genetic relationship between the southern Sinitic languages, Pinghua and Yue, and the direct descendants of the northern authoritative Sinitic dialects, represented by Mandarin, we can also consider the literary readings in these southern Sinitic languages as a layer of "loanwords" borrowed from the historically authoritative Sinitic language after the EMC period. That is, the apparent tonal split of the items in Box B2O is actually not a tonal split from one box, but is simply a tone belonging to the later historical levels of the same Chinese character borrowed from the authoritative language in history, based on the tonal correspondence between these southern Sinitic/Kam-Tai languages and the authoritative Sinitic languages. In this respect, the nature of the lower-register secondary tonal split as a Sinitic-origin trait is different from that of the upper-register secondary tonal split in the Kam-Tai languages. The former is transmitted through the tonal correspondence of the loanword system, whereas the latter is a pattern conditioned by the laryngeal features of a language's own initial consonants. However, we still regard the tone of the etyma involved in *zhuóshǎng guī qù* as a tonal split on the original lower-register tone B2 for two reasons. One, it is indeed a laryngeal feature (original voiced obstruents) to cause such a split for the direct descendants of MC, namely Mandarin, Xiang, and Gan. Secondly, for dialects such as Cantonese, Pinghua, and Hakka, the sound rule of *zhuóshǎng guī qù* has been established within their own sound system because of the strong influence of the written language.

Finally, in this subsection, we summarize the relevant Lingnan areal trait and areal type as in (6) and (7), respectively.

(6) Areal Trait 3 of the tonal behavior in Lingnan languages: The pattern of the secondary tonal split of the lower-register tones spreads among different subgroups of Sinitic languages and has diffused into some Kam-Tai languages, mainly limited to be in the Middle Chinese loanword system.

(7) Lingnan languages' phonological (tonological) Areal Type 4: The lower-register tonal split pattern is limited to two secondary registers, because in both Sinitic and Kam-Tai, only two laryngeal features are found in the original voiced initials, namely voiced sonorants and obstruents.

3.3. Upper-Register Tones Associated with Sonorant Initials as of a Kam-Tai Origin Trait

In this subsection, another tonological trait that originates in Kam-Tai also has infiltrated some Lingnan Sinitic languages through loanwords or substratum. To elaborate on this, a further interpretation of the diachrony of the tonal split is needed, as it is crucial for determining this trait as originating from the Kam-Tai languages. We already referred to the primary and secondary tonal split patterns of the Kam-Tai languages above, and mentioned that "primary" and "secondary" are defined in terms of diachrony for reasons that were suggested in some previous studies, namely Li (1977, pp. 25–17), Zhang (1980), Liang and Zhang (1996, pp. 816–17), Zhang et al. (1999, pp. 243–46), and Liao (2016a, pp. 84–86; 2016b, pp. 121–30). The following discussion of the diachrony of tonal split is largely extracted from these studies.

Unlike Chinese, where the register tonal split was caused by the devoicing of original voiced obstruent initials (2O), the register tonal split in Kam-Tai languages was most likely caused by the voicing of original voiceless (simultaneously pre-aspirated) continuant (or sonorant) initials (1C). That is, for the Sinitic languages, after the devoicing of the initial set 1O triggered the register upper–lower tonal split, the set of 1S (original voiced sonorants) automatically assigned its conditioning tones to the lower-register tone to contrast with the upper-register tone conditioned by the original voiceless obstruents (both aspirated and unaspirated, i.e., 1A and 1U). Meanwhile, for the Kam-Tai languages, after the voicing of initial set 1C caused the register tonal split, the other voiceless initial sets (1U, 1A, and 1G) also automatically assigned their conditioning tones to the upper-register tone to contrast with the lower-register tone conditioned by the original voiced sonorant/obstruent initials. These are the processes known as the primary tonal split in Sinitic and Kam-Tai languages. Later, either the further tonal split that commonly occurred in the upper-register tones in

the Kam-Tai languages or the further tonal splits that are prevalent in the lower-register tones in the Sinitic languages, as well as the further splits that occurred in the checked syllables in Kam-Tai languages and in some Lingnan Sinitic languages according to vowel length, are all regarded as secondary tonal splits; i.e., they are more recent in chronological order.

The evidence for these inferences is largely based on the fact that the original voiced obstruents of certain modern Tai dialects have not yet completed the devoicing process, such as Cao Bang Tho of Central Tai (Haudricourt 1972, p. 65), Dai Zhuang of Central Tai (i.e., Wenma Zhuang of Southern Zhuang) (L-Thongkum 1997, p. 22), Yizhou Suogan of Northern Zhuang, and Baiji of Yongnan Zhuang (Liao 2016b, p. 126), but these dialects have long completed the register tonal split caused by the voicing of original voiceless continuants. In addition, Thai orthography, which was formulated around 700 years ago, still uses original voiced initial letters to write the lower-register voiceless obstruent initials, reflecting the fact that the devoicing of Thai original voiced obstruents was much later than the primary tonal split (L-Thongkum 1997, pp. 207–8; Liao 2016b, pp. 125–26). For the typological plausibility of sound change, L-Thongkum (1997, p. 209) cites Ladefoged's (1971, p. 11) point that voiceless sonorants are actually "partially voiced" before vowels, further pointing out that it takes longer to go from *m- (partially voiced) to *m-*, i.e., *m̥- [m̥^{m}] > *m-*, than to go from *b- (fully voiced) to *p-*, i.e., *b- > *b̥- > *p-*, or from *b- (fully voiced) to *p^{h}-*, i.e., *b- > *b̤- > *bh- > *p^{h}-*. Therefore, it would make sense that the tonal split in the Kam-Tai languages was caused by the voicing of voiceless sonorants, rather than the devoicing of voiced obstruents. Furthermore, L-Thongkum (1997, pp. 209–12) pointed out that the historically voiceless sonorants also played an important role of triggering the tonal split in the Mon-Khmer, Hmong-Mien, and Tibeto-Burman languages, causing pitch raising that led to the tonal split, so this phenomenon is cross-linguistic. For Kam-Tai languages, the decisive role that the voicing of voiceless sonorants played in the history of the primary tonal split is not an isolated phenomenon.

As for the definition of the secondary tonal split in the Kam-Tai languages as being later than the primary tonal split in the chronological evolution, Liao (2016a, pp. 86–89; 2016b, pp. 131–39) summarized some of the previous studies and added other evidence of his own to draw inferences. The following two points are what I consider to be the most important. One is that, although non-straightforward secondary tonal split patterns can be found in all terminal subgroups of the Kam-Tai languages, all of these subgroups, except Saek, also have dialectal varieties that still account for more than half of the modern Kam-Sui languages that retain the straightforward primary pattern. For example, in Yang Zhuang, there are Jingxi and Napo varieties that maintain the primary tonal split patterns and Debao varieties that have developed complex secondary tonal split patterns. The only way to explain this is that all the varieties started out as having primary tonal split patterns, and then the Debao varieties themselves underwent a secondary tonal split. Otherwise, it is impossible to explain why the Jingxi and Napo varieties, which are more closely related to the Debao varieties, differ from the Debao varieties in their straightforward tonal split, and instead have such consistent straightforward patterns as almost half of the varieties from the other Kam-Tam subgroups, such as Tai Lue (Southwestern Tai), Wuming Zhuang (Northern Zhuang), Shuangding Zhuang (Yongnan Zhuang), and Sui (Kam-Sui). Second, as with the secondary tonal split patterns summarized in Section 3.1, in dialects where a secondary tonal split occurred, further tonal splits according to the laryngeal features of the initial sets on upper-register tones are limited to four possible cases, namely set 1A alone, set 1G alone, sets 1A and 1G together, and sets 1G and 1U together, to condition the possible secondary tonal split. The tone conditioned by set 1C, which is treated as a result of the primary tonal split, is always in opposition to the lower-register tones (except in a few dialects where the upper and lower-register tones have been reunited). It is also important to note that secondary tonal splits rarely occur neatly in all five proto-categories as they do in Southern Kam (in fact, the only Kam-Tai language known to have such a pattern is Southern Kam). More dialects where a secondary tonal split occurs are restricted

to one tonal category (e.g., Thai, Northern Thai, and Hurun Yang Zhuang), two tonal categories (e.g., Tiandong Zhuang), or three tonal categories (e.g., Debao Yang Zhuang), while the other tone categories maintain the primary straightforward pattern, which further exemplifies the irregularity of the secondary tonal split. All these findings suggest that the secondary tonal split exists as a diffused trait in the various terminal subgroups of the Kam-Tai languages and could not have been present at the outset, hence creating such inconsistent patterns spread out in different Kam-Tai subgroups.

Furthermore, the dialects in which the secondary tonal split occurs, such as Southern Kam, Xialeng Zhuang, and Baoxu Zhuang, which we introduced above in Section 3.1, are those in which one or all proto-tones underwent a three-way split, i.e., one or all of the upper-register tones split into two tones, in opposition to the lower-register tone(s). However, as in more dialects where a secondary tonal split occurs, such as Thai and Debao Urban Yang Zhuang illustrated in Section 2, the upper splitting tones merged into the lower-register tones, forming a new, non-straightforward two-way split. In particular, the Thai pattern shown in Table 4 synchronically presents a primary straightforward two-way split between historical voiceless sounds (1F, 1U, and 1G) and voiced sounds (2) on PT Tones *BCD, but shows a secondary two-way split as 1F-1U/1G/2 on Tone *A. However, this has been proven to be a result of the later merger of the splitting tone A1U/G and the lower-register tone A2, i.e., from a three-way split to a new two-way split, in recent history after the 17th century (Pittayaporn 2018; Tingsabadh 2001). Liao (2016a, 2016b) also offered his opinion on this issue based on some dialectal evidence, specifically the Huashan Min Zhuang patterns, that all dialects with secondary non-straightforward two-way splits first underwent a three-way split like Southern Kam, but the limitations of the tonal load carried by that language caused the secondary splitting tone to be subsumed into the lower-register tone to form a new two-way split pattern. Refer to Liao (2016a, pp. 88–89; 2016b, pp. 168–72) for the details. In any case, the most important point here is that, regardless of whether a secondary splitting tone is kept as a distinctive tone or has been merged into the lower-register tone, it must have not been conditioned by the original voiceless continuants (sonorants, 1C), but by the other three groups (1A, 1G, and 1U).

In addition, there are a number of dialects in Zhuang that have had long-standing contact with Chinese, especially urban varieties, such as the varieties spoken in the Jingxi (靖西), Napo (那坡), Daxin (大新), Tiandeng (天等), and Tianyang (田陽) county seats; in none of these, the original preglottalized initials *ʔb-, *ʔd-, *ʔj-, and *ʔw- are retained, but all of them are merged into the counterpart continuant initials /m-/, /n-/, /j-/, and /w-/, respectively. This merger must have occurred well after the primary tonal split so that, in most of these dialects, the original preglottalized initials merged with the high-register sonorants, or, in other words, although they have merged into the modern voiced sonorants, the tones conditioned by them in history were the high-register tones, the same as those conditioned by the original voiceless continuants. Unlike them, the Tiandeng urban variety clearly shows that this merger occurred after the secondary tonal split, because, in this dialect, tone *A had a secondary tonal split conditioned by the original glottalized initials, and the tone value of this splitting tone A1G merged into the lower-register tone A2 to complete a new non-straightforward two-way split. Only if the secondary tonal split had occurred first, and the processes *ʔb- > m-, *ʔd- > n-, *ʔj- > j-, and *ʔw- > w- were completed after that, can it be reasonably explained why the tone value of A1G conditioned by these original pre-glottalized initials was the same as that of A2. The most important point to be made here is that pre-glottalized initials are another important source of the seemingly high-register sonorants in modern dialects where deglottalization has been completed. This is because some of the lexical items that combine a sonorant initial and an upper-register tone in the Lingnan Sinitic languages that we are going to discuss below are believed to have come from the Kam-Tai substratum or loanwords, and many of these sonorants were, in fact, historically preglottalized initials in the related forms in the Kam-Tai languages.

In contrast to the important role of the original voiceless continuant initials in the process of the register tonal split in the Kam-Tai languages, in the Sinitic languages, this role has been taken up by the voiced obstruent initials. In our previous discussion of the designs of the integrated Kam-Tai tone-box chart and the integrated Lingnan Sinitic tone-box chart, we have emphasized that MC did not have the same voiceless sonorant and glottalized initials as the Kam-Tai languages by the time of the tonal split, so the trigger of the Chinese primary tonal split, which was limited to the devoicing of the obstruent initials, was also reasonable. Note that the so-called 'zero initial' (零聲母) is called the *yǐng* initial (影母) in traditional Chinese phonology and is generally reconstructed as a glottalized stop *ʔ-, and always conditioned tones together with original unaspirated voiceless obstruents in Sinitic languages. Thus, it is categorized as belonging to the 全清 (clear) or unaspirated surd (1U) set, which is different from Kam-Tai's glottalized initials (including *ʔ- and all preglottalized initials discussed above) in term of tonal split conditioning. As the original voiceless sonorant and glottalized initials did not exist in MC, the predecessor of the majority of the modern Sinitic languages, it is clear that, in some modern Lingnan Sinitic languages, such as Cantonese and Pinghua, lexical items consisting of sonorant consonants associated with the upper-register tones are more likely Kam-Tai substratum words or loanwords from Kam-Tai. This is somewhat similar to the way in which the lower-register tonal split was diffused from Sinitic to Kam-Tai languages through a certain number of loanwords, as demonstrated in Section 3.2.

Note that, in Sinitic languages, there are a number of Sinitic-origin etyma with modern sonorant initials associated with the upper-register tones, but these items either did not have a voiceless sonorant consonant in MC or underwent a later tonal change. For example, items with the bilabial approximant initial (which is phonetically sonorant or continuant) for the upper *píng* tone (A1) items in Chinese languages mostly historically had the *yǐng* initial (影母), which is generally reconstructed as a glottalized stop *ʔ-, such as the Cantonese /wa^{55}/ 蛙 'frog' and /wɐn^{55}/ 温 'warm'. Their modern initial /w-/ is a development of deglottalization after the tonal split. For another example, the Mandarin *māo* and Cantonese /mau^{55}/ 貓 'cat', which had a *míng* initial (明母) and original *shǎng* tone (*B) in MC, underwent an aberrant tone change to the upper *píng* tone (A1) in most modern Chinese dialects. In addition, in Cantonese, there are some semi-muddy (次濁, Sonorant/Liquid) (2S) initials associated with the tone *rù* (*D) on checked syllables that merge into the upper-register tone, e.g., 粒 /nap^{55}/ (DS2S > DS1) 'grain; classifier of a small round object'. Another example is the Cantonese 剝 /mɔk^{55}/ 'to take off; to remove' with a sonorant and a high-register tone *rù* (DL1), but this item actually had a voiceless stop initial *p- (幫母) in MC; thus, the modern Cantonese initial /m-/ is an aberrant initial change after tonal split. Some modern English or foreign loanwords in Cantonese also carry a high-register tone associated with a sonorant initial, such as /mɐk^{55}/ from the English 'mark'. With such exceptions, in these Lingnan Sinitic languages, most of the remaining lexical items with sonorant initials associated with the upper-register tones are of non-Sinitic origin, and a large proportion is likely to be of Kam-Tai origin. This has already been pointed out by Li (1992, p. 331), who suggested that the presence of such a lexicon of sonorant initial and the upper-register tone combination in Cantonese may have been the result of an early contact relationship between the two groups of Yue Chinese and Tai languages. Using Cantonese as an example, we have collected some of the vocabulary in Table 19. Note that the Tai meanings are similar to those in Cantonese, unless otherwise stated.

In Table 19, some of the Chinese characters that we first see are dialectal characters of Cantonese (e.g., 嘅, 揾, and 搵), indicating that they do not exist in other non-Lingnan Sinitic languages. Most of the other characters, although ordinary Chinese characters, have a different meaning in the Cantonese spoken language than in the written language, suggesting that they are used only to represent close or homophonic Cantonese colloquial words and have no etymological connection with the original etymology of the Chinese character. All of these words, in Cantonese, have a sonorant initial paired with an upper-register tone, suggesting that they may have been borrowed from the Kam-Tai languages

into Cantonese. As we mentioned above, some of these words, such as 焫/nat^{33}/'hot', 擘/mak^{33}/'split', 乜/ 歪/mɛ^{25}/'askew', and 搣/mit^{55}/'pinch', originally had preglottalized initials in the Kam-Tai languages, but such initials are not found in Yue Chinese, and the preglottalized initials are neutralized into the counterpart POA (place of articulation) sonorants when borrowed, as is the case with some urban Zhuang varieties.

Table 19. Some Cantonese colloquial words with a sonorant initial associated with an upper-register tone.

Character	Reading and Tone	Meaning	Possible Related Tai Root: PT and Modern Tai Forms
罅	la^{33} C1	Gap	*gle:^{B} > ke:^{B2} Debao
舐	laj^{25} B1	Lick	*liə^{A} > li:^{A2}Debao, liə^{A2} Thai, la:j^{C2} Guangnan
舔	lɛm^{25} B1	Lick	*gle:m^{C} > kle:m^{C2} Hengxian
冧/ 揦	lɐm^{33} C1	Collapse	*^{h}lom^{B} > lam^{B1C} Debao, lom^{B1C} Guangnan
躝	lan^{55} A1	Crawl	*gla:n^{A} > kja:n^{A2} Debao, k^{h}la:n^{A2} Thai
攦	lap^{33} DL1	Take on (all)	*^{h}na:p^{DL} > na:p^{DL1C} 'to clamp' Debao
凹	lɐp^{55} DS1	Concave	*ʔbup^{DS} > ʔbup^{DS1G} Debao, bup^{DS1G} Thai
甩	lɐt^{55} DS1	Drop off	*^{h}lʊt^{DS} > lut^{DS1C} Debao, lut^{DS1C} Thai
佬	low^{25} B1	Fellow, guy	*la:w^{A} > la:w^{A2} 'Tai/Lao tribe' Thai, Lao
嚥	lɛŋ^{55} C1	Young (kids)	*lu:k^{DL} ʔe:ŋ^{A} > luk^{DL2} ʔe:ŋ^{A1G} Debao
焫	nat^{33} DL1	Hot	*ʔdɯa:t^{DL} > ʔdu:t^{DL1G}Debao, dɯət^{DL1G}Thai, ʔda:t^{DL1G} Wuming
諗	nɐm^{25} B1	Think	*^{h}nam^{C} > nam^{C1C} Debao, Wuming
嬲	nɐw^{55} A1	Angry	*^{h}naw^{B} > naw^{B1C} Debao, Daxin, naw^{A1C} Hengxian
奀	ŋɐn^{55} A1	Thin/small	*^{h}ɲan^{B} > ŋʲan^{B1C} Debao
踹	ŋɐn^{33} C1	Vibrate	*ɬan^{B} > ɬan^{B1C} Debao, san^{B1C} Thai
呃	ŋak^{55} DS1	Cheat	*^{h}lo:k^{DL} > lo:k^{DL1C} Debao, lɔ:k^{DL1C} Thai
擘	mak^{33} DL1	Split	*ʔba:k^{DL} > ʔba:k^{DL1G} Debao
乜/ 歪	mɛ^{25} B1	Askew	*ʔbiəw^{C} > ʔbe:w^{C1G} Debao, Hengxian, biəw^{C1G} Thai
搣	mit^{55} DL1	Pinch	*ʔbit^{DS} > ʔbət^{DS1G} Debao, bit^{C1G} Thai
孖	ma^{55} A1	Twin	*pwa:^{A} > p^{h}a:^{A1A} Debao, fa:^{A1F} Thai
扔	wing^{55} A1	Throw off	*ɣwe:ŋ^{B} > we:ŋ^{B2} Debao, k^{h}wa:ŋ^{B2} Tai Lue
搵	wɐn^{25} B1	Seek, find	*wan^{B} > wan^{B2} 'to dig out' Debao
郁	jʊk^{55} DS1	Move	*ʔjok^{DS} > ʔjɔk^{DS1G} 'to poke' Debao

In addition, there are words that do not have an upper-register tone in Kam-Tai languages, such as *liə^{A} 'lick', *gle:m^{C} 'lick', and *gla:n^{A} 'crawl', all with voiced initials in PT, so they all have a lower-register tone in modern Tai dialects. However, Cantonese adapted them with an upper-register tone, suggesting that, at the time of borrowing into Cantonese,

the tonal split had already ended, and that Cantonese did not apply the historical tonal correspondence to borrow them, but may have applied approximate tonal values. This may have had something to do with the tonal flip-flop of some Tai languages we mentioned earlier. For example, in Longsang Zhuang, the original upper-register tones developed into low-pitch tones to shift the original lower-register tones into high-pitch tones so that the B1 and B2 tones in this dialect had values of mid-falling (31) and high-falling (53), respectively, forming a typical flip-flop. If the Cantonese /wiŋ^{55}/(tone A1) 'throw off' (in Table 19) was indeed borrowed from a Kam-Tai dialect that was historically similar to Longsang Zhuang in terms of tonal flip-flop, the situation is understandable. Even though the word has an original lower-register tone B2 in Kam-Tai, it is indeed /weːŋ^{53}/ (<*ɣweːŋB) in Longsang Zhuang, which has a high-pitch tone for it. Therefore, Cantonese probably borrowed it using its tone A1, a high-pitch tone (53 or 55).

In any case, the origin of a number of Cantonese substrate words is more likely to be Kam-Tai languages, where they are commonly found, while their distribution among Sinitic languages is limited, even within the Yue varieties.

The above examples in Table 19 show that sonorant initials associating with an upper-register tone are a trait that diffused from the Kam-Tai languages to the Lingnan Sinitic languages (mainly Yue and Pinghua) through loanwords or substratum, but this does not mean that all the words in the table are necessarily of Kam-Tai origin. Their origins are debatable. The origin of the word 諗 /nɐm^{25}/ 'to think', for example, is controversial. Bai (1980, p. 217), for instance, associates its etymology with the word 恁 in *Jiyun*, a rime dictionary of MC published in 1037 during the Song Dynasty. Wang (1999) constructed this word as *ɽi̯ěm, while Li (1980) constructed it as *ńźjəm, but both failed in explaining the tonal behavior of 諗 /nɐm^{25}/ in Cantonese. Bauer (1996, pp. 1832–33) noted that, although the word is found in Cantonese, Zhuang, and Yao, Ouyang (1989, p. 611) suggested that it comes from Zhuang, etyma with the same or similar meaning as 'to think, consider' in the other Kra-Dai languages are etymologically inconsistent across dialects. Therefore, he considers it premature to define the origin of the Cantonese word /nam^{25}/ 'to think'. However, it is also certain that, even if the word did not enter Cantonese directly from the Tai languages, given that it is an item with a sonorant consonant with an upper-register tone in both Zhuang and Cantonese, it is very unlikely that it is a Sinitic etymon, but more likely first appeared in Zhuang languages and then entered Cantonese[12]. In short, in this subsection, we summarize one more tonal behavior as a Lingnan areal trait as in (8).

(8) Areal Trait 4 of tonal behavior in Lingnan languages: The pattern of sonorant initials associating with an upper-register tone is a Kam-Tai origin trait, which has diffused into some Sinitic languages, mainly Yue and Pinghua.

4. Conclusions

After comparing the commonalities in the tonal behavior of the two most populous language groups in the core Lingnan area, Sinitic and Kam-Tai, some major findings are drawn. In addition to the secondary tonal split pattern on checked syllables which have been suggested to have diffused from Kam-Tai to neighboring Sinitic languages, particularly Cantonese and Pinghua, the secondary tonal split patterns of the upper-register tones as areal traits are also suggested to be of Kam-Tai origin and have diffused to these Lingnan Sinitic languages. In contrast, as the presentative lower-register tonal split pattern, *zhuóshǎng guī qù* was first processed in northern authoritative Sinitic languages and diffused to Lingnan languages, both Sinitic and Kam-Tai, in the form of a lexical category of loanwords. Further, the upper-register tone associated with sonorant initials in Sinitic languages in this area is also a Kam-Tai origin trait, or specifically part of the Kam-Tai substratum. Areal typological issues involved in these secondary tonal split patterns were also determined, focusing on different upper limits for possible secondary splits and the participation of particular sound sets.

During the exploration of the above findings, we are confident that the following methodological contributions to the field have been made in this study.

The first issue is the criteria and argumentation for and against inherited features vs. areal traits. As tonogenesis and tone as areal traits are more plausible explanations for the performance of tones and for the correspondence of tones among related and unrelated languages, there is a growing consensus that tones are an emergent linguistic phenomenon, which forms one of the theoretical foundations of this paper. Thus, it is believed that the tones in all Kra-Dai languages belong to a trait that has been accepted from the earlier Sinitic languages. However, after a cross-family comparison of the tonal behavior of the Lingnan languages, this study is the first to divide the discussion of tonal traits into two chronological phases, i.e., the early one-way diffusion from Sinitic to Kra-Dai in the broader areas, and the later two-way interaction between Kam-Tai and Sinitic languages centered on Lingnan, with Kam-Tai to Sinitic traits dominating. In the case of the upper register tonal split patterns, for example, the original voiceless initial consonants of most Kam-Tai languages had aspirated stops, pre-aspirated continuants, unaspirated stops, and glottalized sounds by the time of the tonal split, two more sets of laryngeal features than the two sets of aspirated and unaspirated surds in the Sinitic originally voiceless initial consonants. Therefore, the upper register tonal splits conditioned by laryngeal features are naturally more diverse in the Kam-Tai languages than in the Sinitic languages, and the diffusion of these patterns from the Kam-Tai to the Sinitic languages through close contact in Lingnan is natural.

The second point Is the improvement in the inadequate use of tone-box theories in previous studies. These frameworks include an integrated Tai tone-box chart (Liao 2022) that can be applied to all Kam-Tai languages based on the Southwestern Tai tone-box chart designed by Gedney ([1972] 1989) half a century ago, and the similar Sinitic tone-box chart devised in this paper based on this theory. These frameworks make it possible to present, at a glance, the tonal correspondence between languages that are genetically related to each other and between languages that are not related to each other. In combination with the empirical data significantly increasing in recent decades, these frameworks can reveal new insights and cross-family correlations in a convenient sense.

Another point is that the tonal evidence in this study was used to propose a more fine-grained relative chronology of changes under contact between Sinitic and Kam-Tai, as well as criteria to detect Kam-Tai borrowings in Lingnan Sinitic languages. The chronology can be represented by the dating of the *zhuóshǎng guī qù* phenomenon. We can tell from the existence of *zhuóshǎng guī qù* found in some pre-SWT Sinitic loanwords that this phenomenon must have occurred in Sinitic languages before the 8th century, at the upper bound, when the SWT speakers migrated out of the Lingnan area. As Thai documentation attests to the fact that no primary tonal split occurred in Thai until 700 years ago, the borrowing of loanwords with *zhuóshǎng guī qù* into Kam-Tai precedes the occurrence of tonal splits. There are, of course, some unanswerable questions in this paper that need to be addressed in further studies. Although the complicated secondary tonal split patterns presented in this study are concentrated in Kam-Tai and some of the Sinitic languages in the core Lingnan area, and in the hinterland of MSEA along with the immigration of Southwestern Tai languages, it cannot be eliminated that such patterns spread as areal traits in other language families as well. For example, Haudricourt (1972) has long described similar two-way and three-way split patterns in some Hmong-Mien languages, but because of the paucity of data and the lack of more in-depth research, we do not know how such secondary tonal splits are distributed in these languages and how they relate to similar patterns in Kam-Tai and Sinitic. We believe that further study of tonal behavior among Hmong-Mien, Kam-Tai, and Sinitic can reveal more new insights and cross-family correlations. In our hypothesis, it was also the influence of Mandarin's predecessor, the authoritative Sinitic language variety during the LMC period in Northern China, that led the southern Sinitic languages to produce literary readings that are different from their inherited colloquial reading. This matter should also be further attested in sociolinguistic analysis in future studies.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Human Research Ethics Committee of The University of Hong Kong (protocol code EA180614) on 19 June 2018.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available in Appendix A and the author's PhD thesis (Liao 2023).

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations

In the text		In tables and figures	
EMC	Early Middle Chinese	CT	Central Tai
LMC	Late Middle Chinese	KD	Kra-Dai (aka Tai-Kadai)
MC	Middle Chinese	KS	Kam-Sui
MSEA	Mainland Southeast Asia	KT	Kam-Tai
OC	Old Chinese	NT	Northern Tai
		NZ	Northern Zhuang
		SWT	Southwestern Tai
		YNZ	Yongnan Zhuang
		YZ	Yang Zhuang

Appendix A. Survey of the Development of the Chinese Characters with *shǎng* Tone Conditioned by an EMC Voiced Obstruent Initial in Some Modern Lingnan Languages and Putonghua (中古漢語全濁上聲字發展情況調查表)

Language / Tone Sinitic/Tai		平話 Pinghua			德保侠壯 Debao YZ	香港粵語 Cantonese (HK)		官話 Mandarin	
		橫縣 Hengxian	亭子 Tingzi	位子祿 Weizilu	老借音 MC loanword	白讀 Colloquial	文讀 Literary	柳州 Guiliu	普通話 Putonghua
陰平 A1	A1U/A1ACU	34	41	53	453	55	55	44	55
	A1A/A1G				31				
陽平A2		213	21	21	31	21	21	31	35
陰上B1/C1		33	33	33	24?	25	25	54	214
次濁上B2S/C2		22	13	13	213?	13	13	54	214
全濁上B2O/C2		22	13	13		13	22	25	51
陰去 C1	C1U/B1UC	55	55	55	55	33	33	25	51
	C1A/B1AG			35	33				
濁去C2		42	223	22	33	22	22	245	51
陰長入 DL1	DL1UC	33	33	33	55	33	33	31 入派陽平 *rù* shifted to the lower *píng* tone	55, 35, 214, 51入派四聲
	DL1AG				33				
	次濁DL2S	42	13	23	33	22	22		*rù* shifted to one of the other four tones
	全濁DL2O	42	22	22		22	22		
短入	陰DS1	55	33	33	45	55	55		
	次濁DS2S	11	13	23	21	22	22		
	全濁DL2S	11	22	22		22	22		

並母	部	pəw^{22}	pu^{223}	pəu^{22}	pəw^{33}	-	pɔw^{22}	pu^{25}	pu^{51}
	簿	pəw^{22}	pu^{223}	pəu^{22}	pəw^{33}	-	pɔw^{22}	pu^{25}	pu^{51}
	罷	pa^{42}	pa^{223}	pa^{22}	pa:^{33}	-	pa^{22}	pa^{25}	pa^{51}
	倍	pu^{22}	puj^{13}	pɔi^{13}	po:j^{33}	pʰuj^{13}	-	pəj^{25}	pei^{51}
	被	pəj^{22}	pi^{13}	pəi^{13}	pəj^{33}	pʰɛj^{13}	pɛj^{22}	pəj^{25}	pei^{51}
	婢	pəj^{42}	pi^{223}	pəi^{22}	# pɔ:j$^{213?}$	pʰɛj^{13}	-	pi^{25}	pi^{51}
	陛	pəj^{42}	pi^{223}	pəi^{55}	paj^{33}	-	paj^{22}	pi^{25}	pi^{51}
	抱	pɛw^{22}	paw^{13}	pau^{13}	pa:w^{33}	pʰow^{13}	-	pɑ^{25}	pau^{51}
	鮑	pøw^{55}	paw^{41}	pau^{53}	-	paw^{55}	paw^{22}	pɑ^{25}	pau^{51}
	鰾	piw^{34}	-	-	-	pʰiw^{13}	-	pʲɑ^{25}	piau^{51}
	辯	pin^{42}	pin^{223}	pin^{22}	pi:n^{33}	-	pin^{22}	pʲẽ^{25}	piɛn^{51}
	辨	pin^{42}	pin^{223}	pin^{22}	pi:n^{33}	-	pin^{22}	pʲẽ^{25}	piɛn^{51}
	辮	pin^{22}	pɛn^{13}	pɛn^{13}	pi:n^{33}	pin^{55}	-	pʲẽ^{25}	piɛn^{51}
	伴	pun^{22}	pun^{13}	pun^{22}	pu:n^{33}	pʰun^{13}	pun^{22}	pã^{25}	pan^{51}
	拌	pun^{22}	pun^{13}	pun^{22}	pu:n^{33}	-	pun^{22}	pã^{25}	pan^{51}
	笨	pən^{42}	pɐn^{223}	pɐn^{22}	pan^{33}	-	pɐn^{22}	pã^{25}	pən^{51}
	棒	paŋ^{22}	paŋ^{223}	paŋ^{22}	pu:ŋ^{33}	pʰaŋ^{13}	-	pɑŋ^{25}	paŋ^{51}
	蚌	pøŋ^{42}	paŋ^{13}	paŋ^{13}	pu:ŋ^{33}	pʰɔŋ^{13}	-	pɑŋ^{25}	paŋ^{51}
	並	pɐŋ^{42}	pɐŋ^{55}	pən^{55}	# pjam^{33}	-	piŋ^{22}	pɪn^{25}	piŋ^{51}
奉母	父	fəw^{22}	fu^{21}	fu^{22}	# po:^{33}	-	fu^{22}	fu^{25}	fu^{51}
	腐	fəw^{22}	fu^{21}	fu^{22}	fəw^{33}	-	fu^{22}	fu^{54}	fu^{214}
	輔	pʰəw^{33}	pu^{33}	phu^{33}	fəw^{33}	-	fu^{22}	fu^{54}	fu^{214}
	婦	fəw^{22}	fu^{223}	fu^{22}	-	fu^{13}	-	fu^{25}	fu^{51}
	負	fəw^{42}	fu^{223}	fu^{22}	-	-	fu^{22}	fu^{25}	fu^{51}
	阜	pəw^{42}	pu^{223}	fəu^{22}	# pəw^{33}	-	fɐw^{22}	fu^{25}	fu^{51}
	范	fam^{55}	fan^{55}	fam^{55}	fa:m^{33}	-	fan^{22}	fan^{25}	fan^{51}
	範	fam^{55}	fan^{55}	fam^{55}	fa:m^{33}	-	fan^{22}	fã^{25}	fan^{51}
	犯人 犯法	fam^{22}	fam^{13} fam^{223}	fam^{22}	fa:m^{33}	-	fan^{22}	fã^{25}	fan^{51}
	憤	fən^{55}	fɐn^{13}	fɐn^{13}	fan^{33}	fɐn^{13}	-	fən^{25}	fən^{51}
	忿	fən^{55}	fɐn^{13}	fɐn^{13}	fan^{33}	fɐn^{13}	fɐn^{22}	fən^{25}	fən^{51}
	奉	foŋ^{42}	føŋ^{223}	fʊŋ^{22}	fuŋ^{33}	-	fuŋ^{22}	fuŋ^{25}	fəŋ^{51}
定母	舵	tø^{213}	ta^{13}	ta^{35}	tɔ:^{33}	tʰaj^{13}	tʰɔ^{21}	to^{25}	tuo^{51}
	惰	təi^{42}	tɔ^{223}	tɔ:^{22}	tɔ:^{33}	-	tɔ^{22}	to^{25}	tuo^{51}
	肚	təw^{33}	tu^{33}	tɔ:^{13}	to^{33}	tʰow^{13}	-	tu^{25}	tu^{51}
	杜	təw^{42}	tu^{223}	tɔ:^{22}	to^{33}	-	tɔw^{22}	tu^{25}	tu^{51}
	代	taj^{22}	taj^{223}	tai^{22}	ta:i^{31}	-	tɔj^{22}	taj^{25}	tai^{51}
	待	taj^{22}	taj^{223}	tai^{22}	ta:j^{33}	-	tɔj^{22}	taj^{25}	tai^{51}
	怠	taj^{22}	taj^{223}	-	ta:j^{33}	tʰɔj^{13}	-	taj^{25}	tai^{51}
	殆	taj^{22}	taj^{223}	tai^{22}	ta:j^{33}	tʰɔj^{13}	-	taj^{25}	tai^{51}
	弟	tej^{22}	tɛj^{223}	tɐi^{13}	taj^{33}	-	tɐj^{22}	ti^{25}	ti^{51}
	道	tɛw^{42}	taw^{223}	tau^{22}	ta:w^{33}	-	tɔw^{22}	tɑ^{25}	tau^{51}
	稻	tɛw^{42}	taw^{223}	tau^{22}	ta:w^{33}	-	tɔw^{22}	tɑ^{25}	tau^{51}
	淡	tam^{22}	tam^{13}	tam^{13}	ta:m^{33}	tʰam^{13}	tam^{22}	tã^{25}	tan^{51}
	簟	-	-	tan^{53}	# te:m^{33}	tʰim^{13}	-	tẽ^{25}	tiɛn^{51}
	誕	tan^{55}	tan^{55}	tan^{55}	ta:n^{33}	-	tan^{33}	tã^{25}	tan^{51}
	艇	tʰəŋ^{33}	taŋ^{33}	tʰɛŋ^{13}	tʰəŋ$^{24?}$	tʰɛŋ^{13}	-	tʰin^{54}	tʰiŋ^{214}
	挺	tʰəŋ^{33}	tʰɐŋ^{33}	tʰən^{33}	tʰəŋ$^{24?}$	tʰiŋ^{13}	-	tʰin^{54}	tʰiŋ^{214}

	錠	təŋ^{22}	tɐŋ^{223}	tən^{22}	# te:ŋ^{33}	-	tiŋ^{33}	tin^{25}	tiŋ^{51}
	斷	tun^{22}	tun^{13}	tun^{13}	tu:n^{33}	tʰyn^{13}	tyn^{22}	tʷã^{25}	tuan^{51}
	盾	tən^{42}	tɐn^{223}	tɐn^{22}	tan^{33}	tʰun^{13}	-	tən^{25}	tuən^{51}
	囤	tən^{34}	tɐn^{21}	tɐn^{21}	tan^{33}	-	tœn^{22}	tən^{25}	tuən^{51}
	蕩	tøŋ^{22}	taŋ^{223}	taŋ^{22}	ta:ŋ^{33}	-	tɔŋ^{22}	taŋ^{25}	taŋ^{51}
	動	toŋ^{22}	tøŋ^{223}	tʊŋ^{22}	tuŋ^{33}	-	tuŋ^{22}	tuŋ^{25}	tʊŋ^{51}
澄母	苧	-	tɕy^{33}	tʃəi^{13}	tɕøy^{33}	tsʰy^{13}	-	tsu^{25}	tʂu^{51}
	柱	tsu^{22}	tɕy^{13}	tʃəi^{13}	tɕøy^{33}	tsʰy^{13}	-	tsu^{25}	tʂu^{51}
	雉	-	tɕi^{41}	tʃi^{22}	tɕəj^{33}	-	tsi^{22}	tsɿ^{25}	tʂʅ^{51}
	痔	tsi^{42}	tɕi^{223}	tʃi^{22}	tɕəj^{33}	-	tsi^{22}	tsɿ^{25}	tʂʅ^{51}
	峙	tsi^{22}	-	-	tɕəj^{33}	tsʰi^{13}	tsi^{22}	tsɿ^{25}	tʂʅ^{51}
	趙	tsiw^{22}	tɕiw^{223}	tʃiu^{22}	tɕiw^{33}	-	tsiw^{22}	tsɑ^{25}	tʂau^{51}
	兆	tsiw^{42}	tɕiw^{223}	tʃiu^{22}	tɕiw^{33}	-	siw^{22}	tsɑ^{25}	tʂau^{51}
	肇	siw^{42}	-	-	tɕiw^{33}	-	siw^{22}	tsɑ^{25}	tʂau^{51}
	紂	-	tɕɐw^{223}	tʃɐu^{22}	tɕaw^{33}	-	tsɐw^{22}	tsɑ^{25}	tʂou^{51}
	朕	-	-	-	tɕam^{33}	-	tsɐm^{22}	tsəw^{25}	tʂən^{51}
	篆	tsun^{55}	ɬyn^{223}	tʃʷan^{55}	tɕy:n^{33}	-	ʃyn^{22}	tsʷã^{25}	tʂuan^{51}
	丈	tsɛŋ^{22}	tɕɛŋ^{223}	tʃɛŋ^{22}	tɕy:ŋ^{33}	-	tsœŋ^{22}	tsɑŋ^{25}	tʂaŋ^{51}
	仗	tsɛŋ^{55}	tɕɛŋ^{55}	tʃɛŋ^{22}	tɕy:ŋ^{33}	-	tsœŋ^{22}	tsɑŋ^{25}	tʂaŋ^{51}
	杖	tsɛŋ^{55}	tɕɛŋ^{223}	tʃɛŋ^{55}	# taw$^{213?}$	-	tsœŋ^{22}	tsɑŋ^{25}	tʂaŋ^{51}
	仲	tsoŋ^{42}	tɕøŋ^{223}	tʃʊŋ^{22}	tɕu:ŋ^{33}	-	tsuŋ^{22}	tsuŋ^{25}	tʂʊŋ^{51}
	輕重	tsoŋ^{22}	tɕøŋ^{13}	tʃʊŋ^{13}	tɕuŋ^{33}	tsʰuŋ^{13}	tsuŋ^{22}	tsuŋ^{25}	tʂʊŋ^{51}
從母	坐	tsəw^{22}	tɕu^{13}	tʃu^{13}	tɕɔ:^{33}	tsʰɔ^{13}	tsɔ^{22}	tso^{25}	tsuo^{51}
	聚	tsu^{22}	tɕy^{223}	tʃi^{22}	tɕøɥ^{33}	-	tsœy^{22}	tsy^{25}	tɕy^{51}
	在	tsaj^{22}	tɕaj^{223}	tʃai^{22}/tʃɐi^{22}	tɕa:j^{33}	-	tsɔj^{22}	tsaj^{25}	tsai^{51}
	載	tsaj^{33}	tɕaj^{55}	tʃai^{55}	tɕa:j^{33}	tsɔj^{25}	tsɔj^{33}	tsaj^{25}	tsai^{51}
	薺	tsɐj^{22}	tɕɛj^{21}	tʃɐi^{21}	-	tsʰɐi^{24}	-	tsi^{25}	tɕi^{51}
	罪	tsu^{55}	tɕuj^{223}	tʃɔi^{22}	tɕo:j^{33}	-	tsœy^{22}	tsʷəj^{25}	tsai^{51}
	皂	tsew^{42}	tɕaw^{223}	tʃau^{22}	tɕa:w^{33}	-	tsɔw^{22}	tsɑ^{25}	tsau^{51}
	造	tsɛw^{22}	tɕaw^{223}	tʃau^{22}	tɕa:w^{33}	tsʰow^{13}	tsɔw^{22}	tsɑ^{25}	tsau^{51}
	漸	tsim^{42}	tɕim^{223}	tʃim^{13}	tɕi:n^{33}	-	tsim^{22}	tsẽ^{25}	tɕiɛn^{51}
	踐	tsin^{42}	tɕin^{33}	tʃin^{33}	tɕi:n^{33}	tsʰin^{13}	tsin^{22}	tsẽ^{25}	tɕiɛn^{51}
	盡	tsən^{22}	tɕʲɐn^{223}	tʃɐn^{22}	tɕan^{33}	-	tsœn^{22}	tsin^{25}	tɕin^{51}
	靖	tɕɐŋ^{22}	tɕɐŋ^{223}	tʃən^{22}	tɕəŋ^{33}	-	tsiŋ^{22}	tsin^{25}	tɕiŋ^{51}
	靜	tɕɐŋ^{22}	tɕɐŋ^{223}	tʃən^{22}	tɕəŋ^{33}	-	tsiŋ^{22}	tsin^{25}	tɕiŋ^{51}
邪母	序	tsu^{22}	tɕy^{13}	tʃi^{22}	tɕøy^{33}	-	tsœy^{22}	sʲy^{25}	ɕy^{51}
	敘	tsu^{22}	tɕy^{13}	tʃi^{22}	tɕøy^{33}	-	tsœy^{22}	sʲy^{25}	ɕy^{51}
	緒	tsu^{22}	ɬy^{55}	ɬi^{55}	tɕøy^{33}	sœy^{13}	-	sʲy^{25}	ɕy^{51}
	祀	si^{22}	ki^{223}	tʃi^{22}	tɕəj^{33}	-	tsi^{22}	sɿ^{25}	sɿ^{51}
	巳	-	ɕi^{223}	tʃi^{22}	tɕəj^{33}	-	tsi^{22}	sɿ^{25}	sɿ^{51}
	似	tsɯj^{42}	tɕi^{33}	tʃʰi^{35}	tɕəj^{33}	tsʰi^{13}	-	sɿ^{25}	sɿ^{51}
	象	tsɛŋ^{22}	tɕɛŋ^{223}	tʃɛŋ^{22}	# tɕa:ŋ$^{213?}$	-	tsœŋ^{22}	sʲɑŋ^{25}	ɕiaŋ^{51}
	像	tsɛŋ^{22}	tɕɛŋ^{223}	tʃɛŋ^{22}	tɕy:ŋ^{33}	-	tsœŋ^{22}	sʲɑŋ^{25}	ɕiaŋ^{51}
	橡	tsɛŋ^{22}	tɕɛŋ^{223}	tʃɛŋ^{22}	tɕy:ŋ^{33}	-	tsœŋ^{22}	sʲɑŋ^{25}	ɕiaŋ^{51}
崇母	士	si^{42}	ɕɛj^{223}	ɬɐi^{22}	# ɬaj^{55}	-	si^{22}	sɿ^{25}	ʂʅ^{51}
	仕	si^{42}	ɕɛj^{223}	ɬɐi^{22}	# ɬaj^{55}	-	si^{22}	sɿ^{25}	ʂʅ^{51}
	柿	səj^{22}	ɕɛj^{223}	ɬɐi^{22}	ɬaj^{33}	tsʰi^{13}	-	sɿ^{25}	ʂʅ^{51}
	撰	-	lyn^{33}	tʃan^{55}	tɕɔ:n^{33}	-	tsan^{22}	tsʷã^{25}	tʂuan^{51}

船母	甚	-	-	-	-	-	sɐm^{22}	sən^{25}	ʂən^{51}
	舐	si^{42}	tim^{21} ?	kɛm^{35} ?	- (li:^{31} ?)	saj^{13}	-	sɿ^{25}	ʂʅ^{51}
禪母	社	si^{22}	ɕɛ^{13}	ɬɛ^{13}	# tɕy:$^{213?}$	sɛ^{13}	-	sʲe^{25}	ʂə^{51}
	墅	suj^{55}	-	-	ɬøy^{33}	sœy^{13}	sœy^{22}	su^{25}	ʂu^{51}
	豎	su^{42}	ɕy^{33}	ɬəi^{22}	ɬøy^{33}	-	sy^{22}	su^{25}	ʂu^{51}
	是	si^{22}	ɕi^{223}	ɬi^{22}	# tɕøy^{33}	-	si^{22}	sɿ^{25}	ʂʅ^{51}
	氏	si^{42}	ɕi^{223}	ɬi^{22}	# te:^{33}	-	si^{22}	sɿ^{25}	ʂʅ^{51}
	市	si^{22}	ɕi^{13}	ɬi^{13}	ɬøy^{33}	si^{13}	-	sɿ^{25}	ʂʅ^{51}
	恃	si^{22}	ɕi^{13}	tʃʰi^{35}	ɬøy^{33}	tsʰi^{13}	-	sɿ^{25}	ʂʅ^{51}
	紹	siw^{42}	ɕiw^{223}	ɬiu^{22}	ɬiw^{33}	-	siw^{22}	sɑ^{25}	ʂau^{51}
	受	səw^{22}	ɕɐw^{223}	ɬəu^{22}	ɬaw^{33}	-	sɐw^{22}	səw^{25}	ʂou^{51}
	甚	səm^{42}	ɕɐm^{33}	ɬɐm^{22}	ɬan^{33}	-	sɐm^{22}	sən^{25}	ʂən^{51}
	善	sin^{42}	-	ɬin^{22}	ɬi:n^{33}	-	sin^{22}	siẽ^{25}	ʂan^{51}
	腎	sən^{22}	ɕʲɐn^{13}	ɬɐn^{13}	ɬan^{33}	sɐn^{13}	sɐn^{22}	sən^{25}	ʂən^{51}
	上	səŋ^{22}	ɕəŋ^{13}	ɬɐŋ^{13}	ɬy:ŋ^{33}	sœŋ^{13}	sœŋ^{22}	saŋ^{25}	ʂaŋ^{51}
群母	巨	ku^{42}	ky^{13}	kəi^{55}	køɥ^{33}	-	kœy^{22}	ky^{25}	tɕy^{51}
	拒	-	ky^{13}	kəi^{55}	køɥ^{33}	kʰœy^{13}	-	ky^{25}	tɕy^{51}
	距	ku^{42}	ky^{13}	kəi^{55}	køɥ^{33}	kʰœy^{13}	-	ky^{25}	tɕy^{51}
	技	kɯj^{42}	ki^{223}	kəi^{22}	kəj^{33}	-	kɛj^{22}	ki^{25}	tɕi^{51}
	妓	kɯj^{42}	ki^{223}	kəi^{33}	kəj^{33}	-	kɛj^{22}	ki^{25}	tɕi^{51}
	倚	kɯj^{33}	-	ki^{21}	-	kʰɛj^{13}	-	ki^{25}	tɕi^{51}
	跪	kʷəj^{42}	kʷɛj^{223}	kʷəi^{22}	kʷəj^{33}	-	kʷɐj^{22}	kʷəj^{25}	kuei^{51}
	舅	tsu^{22}	kɐw^{13}	kəu^{13}	kʲaw^{33}	kʰɐw^{13}	-	kʲəw^{25}	tɕiou^{51}
	臼	-	kɐw^{13}	kɐu^{55}	# kʲɔ:k^{21}	kʰɐw^{13}	-	kʲəw^{25}	tɕiou^{51}
	咎	tsiw^{34}	kɐw^{55}	kɐu^{55}	-	-	kɐw^{33}	kʲəw^{25}	tɕiou^{51}
	儉	kim^{42}	kim^{223}	kim^{22}	kim$^{24?}$	-	kim^{22}	kẽ^{54}	tɕiɛn^{214}
	件	kin^{22}	kyn^{223}	kin^{22}	ki:n^{33}	-	kin^{22}	kẽ^{25}	tɕiɛn^{51}
	鍵	kin^{42}	kin^{55}	kim^{13}	ki:n^{33}	-	kin^{22}	kẽ^{25}	tɕiɛn^{51}
	勉強	kʰɛŋ^{33}	kʰɛŋ^{33}	kʰɛŋ^{33}	ky:ŋ^{33}	kʰœŋ^{13}	-	kʰʲɑŋ^{54}	tɕʰiaŋ^{214}
	倔強	kʰɛŋ^{33}	kʰɛŋ^{33}	kɛŋ^{21}	ky:ŋ^{33} kʲo:ŋ^{31}	kʰœŋ^{13}	kœŋ^{22}	kʲɑŋ^{25}	tɕiaŋ^{51}
	豬圈	kʰun^{34}	hyn^{41}	kʷʰin^{53}	ku:n^{33}	-	ky:n^{22}	kʷẽ^{25}	tɕyɛn^{51}
	近	kən^{22}	kɐn^{13}	kɐn^{13}	kan^{33}	kʰɐn^{13}	kɐn^{22}	kʲin^{25}	tɕin^{51}
	窘	-	-	kʷən^{22}	kun^{33}	-	kʰʷɐn^{33}	kʲuŋ^{54}	tɕiʊŋ^{214}
	菌	kun^{22}	kʰʷɐn^{13}	kʷən^{35}	kun^{33}	-	kʰʷɐn^{35}	kyn^{25}	tɕyn^{51}
匣母	禍	həw^{42}	wu^{223}	hu^{22}	wa:^{33}	-	wɔ^{22}	ho^{25}	xuo^{51}
	下	ja^{22}	ja^{223}	ja^{22} ha^{13}	ja:^{55}	ha^{13}	ha^{22}	hʲa^{25}	ɕia^{51}
	戶	həw^{22}	hu^{223}	hɔ^{22}	wu:^{33}	-	wu^{22}	hu^{25}	xu^{51}
	滬	həw^{42}	hu^{223}	hɔ^{22}	wu:^{33}	-	wu^{22}	hu^{25}	xu^{51}
	亥	hø^{22}	haj^{223}	hai^{22}	ja:j^{33}	-	hɔj^{22}	haj^{25}	xai^{51}
	駭	-	-	hai^{22}	ja:j^{33}	haj^{13}	-	haj^{25}	xai^{51}
	蟹	-	haj^{13}	hai^{33}	-	haj^{13}	-	haj^{54}	ɕiɛ^{51}
	解姓	tsaj^{33}	kaj^{33}	-	ja:j^{33}	-	haj^{22}	haj^{25}	ɕiɛ^{51}
	匯	wei^{42}	wɛj^{223}	wəi^{22}	wo:j^{33}	-	wuj^{22}	hʷəj^{25}	xuei^{51}
	浩	hɛw^{33}	haw^{55}	hau^{33}	ja:w^{33}	-	hɔw^{22}	hɑ^{25}	xau^{51}
	後	hɔw^{42}	hɐw^{223}	hɐu^{22}	jaw^{33}	-	hɐw^{22}	həw^{25}	xou^{51}
	后	hɔw^{42}	hɐw^{223}	hɐu^{22}	jaw^{33}	-	hɐw^{22}	həw^{25}	xou^{51}
	厚	hɔw^{22}	hɐw^{223}	hɐu^{13}	jaw^{33}	hɐw^{13}	-	həw^{25}	xou^{51}
	憾	høm^{33}	hɐm^{223}	ham^{22}	ja:m^{33}	-	hɐm^{22}	hã^{25}	xan^{51}

	艦	lam^{42}	lam^{13}	lam^{22}	-	-	lam^{22}	kẽ^{25}	tɕiɛn^{51}
	旱	høn^{22}	han^{13}	han^{13}	ja:n^{33}	hɔn^{13}	-	hã^{25}	xan^{51}
	限	han^{22}	han^{223}	han^{22}	ja:n^{33}	-	han^{22}	hã^{25}	ɕiɛn^{51}
	很	hən^{213}	hɐn^{33}	hɐn^{33}	han$^{24?}$	-	hɐn^{25}	hən^{54}	xən^{214}
	緩	wun^{22}	wan^{33}	wan^{33}	wu:n^{55}	-	wun^{22}	hʷã^{54}	xuan^{214}
	皖	wən^{33}	wan^{33}	wan^{33}	wa:n^{33}	wun^{13}	-	wã^{25}	wan^{51}
	晃	ʔuŋ^{55}	-	kʷʰaŋ^{33}	wu:ŋ^{33}	-	fɔŋ^{25}	hʷɑŋ^{25}	xuaŋ^{51}
	混	ŋʷən^{213}	kʰʷən^{33}	kʷʰən^{33}	kʰʷan$^{24?}$	-	wɐn^{22}	hʷən^{25}	xuən^{51}
	項	haŋ^{42}	haŋ^{223}	haŋ^{22}	ja:ŋ^{33}	-	hɔŋ^{22}	hʲɑŋ^{25}	ɕiaŋ^{51}
	杏	haŋ^{42}	hɛŋ^{55}	hən^{35}	jaŋ^{33}	-	hɐŋ^{22}	hʲin^{25}	ɕiŋ^{51}
	幸	haŋ^{42}	haŋ^{223}	hɛŋ^{22}	jeŋ^{33}	-	hɐŋ^{22}	hʲin^{25}	ɕiŋ^{51}
	汞	koŋ^{55}	køŋ^{33}	kʊŋ^{55}	kuŋ$^{24?}$	-	huŋ^{22}	kuŋ^{54}	kʊŋ^{214}
	迥	-	-	-	kʷəŋ$^{24?}$	-	kʷiŋ^{25}	kʲuŋ^{54}	tɕiʊŋ^{214}

[1] Note. The main purpose of this wordlist is to identify the percentage of Chinese characters' *zhuóshǎng guī qù* (濁上歸去: the *shǎng* tone conditioned by original voiced obstruent initials shifted to the lower *qù* tone) phenomena in the phonological history of the Chinese language, among the different Lingnan Sinitic languages/dialects. This appendix contains a total of 156 characters with original voiced obstruent initials and tone *shǎng*. (The character '強' is divided into two items based on the different meanings of 'reluctant' and 'stubborn'). The forms in the appendix are based on my own transcription based on phonological analysis (e.g., the rimes /ik/, /in/, and /iŋ/ in Cantonese are actually phonetically [ɪk], [ɪn], and [ɪŋ], respectively), except for Nanning Weizilu Pinghua, which was adopted from de Sousa (Forthcoming). The sources of the data in this appendix are as follows. Nanning Weizilu Pinghua was adopted from de Sousa (Forthcoming); Binyang Luxu Pinghua and Nanning Tingzi Pinghua were basically adapted from Li (2000) and transcribed in my system, and many of the missing items in Binyang Luxu Pinghuar were supplemented by me based on my own fieldwork; data of Hong Kong Cantonese, Liuzhou Urban variety of Guiliu Mandarin, and Standard Mandarin were collected by myself.

Notes

1 The core Lingnan region in this paper refers to those areas centered on western Guangdong Province to the west of the Pearl River Delta (including Guangzhou, Hong Kong, and Macau) and the entirety of Guangxi. Some of the exclusive linguistic areal traits, such as the sole CVX^T syllable structure and its correlative phonological features, are only found in this core Lingnan area (Liao 2023), which excludes Southern Hunan and Southwestern Jiangxi Provinces, as well as the Southern Min-speaking areas of the eastern part of Guangdong Province, Hainan Island outside the mainland, and northern Vietnam to the south of the Sino–Vietnamese border, which were also historically regarded as part of Lingnan.

2 At least for the proto-tone system, there is no tonal contrast on checked syllables, so the so-called tonal category *D, which only "exists" on checked syllables, is not, strictly speaking, a tone. However, in traditional Chinese phonology, a checked syllable is also considered to be equivalent to a tonal category, "entering tone" (tone *rù*), as each syllable in tonal languages is generally considered to be loaded with a tone. Moreover, in the later register tonal split, *D was also split into modern tones with different pitch levels. For convenience, we follow the standard practice of treating proto-tonal category *D as a tone.

3 In the mainstream circles studying the tonal system of the languages of China, it is common to use odd and even numbers to label the upper- and lower-register tones, respectively. Therefore, A1, B1, C1, and D1 denote upper-register tones conditioned by the original voiceless initials, while A2, B2, C2, and D2 denote lower-register tones conditioned by the original voiced initials. If cardinal numerals are used to mark tones, 1, 3, 5, and 7 correspond to A1, B1, C1, and D1, respectively, and 2, 4, 6, and 8 correspond to A2, B2, C2, and D2, respectively. In addition, in modern tonal languages, it is possible for the original upper and lower registers to be switched between high and low pitches, known as "tonal flip-flops" (Matisoff 1973; Fu 1995, p. 82). Tonal flip-flop Tai languages, such as most Southwestern Tai varieties, including Standard Thai, are mostly found in the "new territories of Tai emigrations", and this is one of the reasons for considering tonal flip-flop as a secondary development (Liao 2016b, p. 100).

4 Glottalized voiced stops /ˀb-/ and /ˀd-/ are sometimes described as implosive stops /ɓ-/ and /ɗ-/, respectively, but because it is the preglottalized segment ʔ- that conditioned primary tonal split in history, it is necessary to consistently assign them as preglottalized sounds, phonologically speaking (cf. Liao 2022, p. 4).

5 Voicing alternation of Tai languages refers to the problem that, in a group of cognate Tai etyma, the Southwestern/Central Tai dialects consistently have upper-register tones reflecting proto-original voiceless initial consonants, but the Northern Tai dialects have lower-register tones reflecting proto-voiced initial consonants (cf. Li 1966, 1970, 1977, pp. 36–39; Gedney 1989; Diller 1998, p. 7; Thurgood 2002, 2007; Pittayaporn 2009, p. 13; Liao 2016a, p. 80; 2016b, pp. 16–20, 27–28, 76–77, 141–50, 187–89; 2022,

pp. 8–10). For example, the Thai term /huː^{24}/ 'ear' is located in box A1 in Gedney's formulation, because, in southwestern Tai languages, its tone reflects a proto voiceless initial *kr-, but its cognates in Northern Tai, such as Wuming Zhuang/ɣɯɻ:^{31}/'ear', reflect proto-Tai *r- and should thus be located in box A4 for Northern Tai languages. Thus, it fails to serve as a testing etymon for all Tai languages. In Liao (2016b, 2022), another two series of voicing alternations in Tai languages are identified. One of them is the situation opposite to the above one, i.e., Southwestern/Central Tai dialects consistently have lower-register tones reflecting original voiced initial consonants, but the Northern Tai dialects have upper-register tones reflecting original voiceless initial consonants of proto-Tai (Liao 2016b, pp. 141–42, 187–89; 2022, p. 38). Another one is found in a series of Tai etyma, in which a cluster of Guibei Zhuang varieties (Northern Zhuang), represented by Huanjiang–Suogan, have upper-register tones reflecting the original voiceless initial consonants, but the vast majority of Tai varieties (including the five major Tai subbranches, Northern Zhuang, Yongnan Zhuang, Saek, Central Tai, and Southwestern Tai) have lower-register tones reflecting the original voiced initial consonants of proto-Tai (Liao 2016b, pp. 165–68; 2022, p. 39).

6 These five sets of initial consonants are marked with an asterisk * to indicate that these laryngeal features were present at the time of the tonal split, but the aspirated initial consonants of Central Tai and Southwestern Tai are suggested to be a post-proto-Tai innovation (Liang and Zhang 1996; Pittayaporn 2009; Liao 2016b, pp. 121–24; 2022, p. 14). In addition, after conditioning primary/secondary tonal splits, some initial consonants merged into other consonants or lost their original laryngeal feature, e.g., *^{h}m- has lost its pre-aspirated segment and merged into *m-, and *^{ʔ}d- has lost its pre-glottalized segment to become /d-/ in modern Thai; however, the tones conditioned by them reveal their laryngeal features by the time of the tonal split. For the full entries of each set, refer to Liao (2022, pp. 25, 37–41).

7 The integrity of this tone-box scheme is further achieved by providing an ancillary chart for how to solve the problem of tonal testing failure due to irregular tonal correspondence, including voicing alternation (Liao 2022, p. 10). This ancillary chart provides nineteen sound series for those etyma with irregular tonal correspondences so that these etyma can be placed in different boxes of the main box according to their respective merging direction in the different Tai subgroups. In this way, there are two types of etyma to place in each tone box. One is "test etyma", which can be directly placed in a fixed box for all Tai subgroups, as shown in Table 7. The other is flexible etyma, which are placed in a box depending on the Tai subgroup to which the language variety under investigation belongs, as different Tai subgroups may have these etyma with different merging directions to the terminal tone box. For example, proto-Tai *'k.ɣɤː^{A} 'ear' (cf. Liao 2022, p. 38) should be put into box A1A for Central Tai and Southwestern Tai, as it first developed to *kruː^{A} in proto-Southern Tai (the direct parent of both Central and Southwestern Tai), and ultimately to have an aspirated initial and an upper-register tone in modern Central/Southwestern Tai subgroups; it should be put into box A2 for all Northern Tai languages (including three subgroups, Northern Zhuang, Yongnan Zhuang, and Saek), because it first developed to *rɯɻː^{A} to have a voiced initial in proto-Northern Tai, and ultimately developed to have a lower-register tone in modern Northern Tai dialects. Refer to Liao (2022, pp. 10, 23–27) for more details.

8 Note that, for Guangzhou–Hong Kong Cantonese, only the original tone (whether in the literary and colloquial readings) is used for the items in the wordlist, not the changed tone, which may be more frequently used in spoken language, and the data of Binyang Luxu Pinghua were mostly adopted from Li (2000) and partially from my own field notes.

9 Zhou and Zhu (2020) claimed that, in the Zhajin variety of Gan Chinese, there is a sixteen-tone system and that it is the language with the largest number of tones ever found. However, they did not take into account the complementary distribution of the system, and so considered the tones on the checked syllables to be independent tones. Even if the six tones on the checked syllables they identified are considered to be allotones of the tones on the smooth syllables, the remaining ten tones are also numerous, more than Kra-Dai's largest tone number in Southern Kam, which has nine distinctive tones. In some previous studies on this Zhajin variety of Gan Chinese, there were five to seven tones on smooth syllables according to different authors, but only this experimental acoustic study suggests that there are ten tones on smooth syllables, which I believe is the result of treating some of the slightly natural modulations of each allotone of the same toneme conditioned by different initial categories as separate tones, without taking into account the complementary distribution of the system. However, even if this dialect has 10 tones on the smooth syllable, as they claimed, there are only two secondary registers on the high/upper (清 clear) register: semi-clear (次清 i.e., aspirated surd) and clear (全清 i.e., unaspirated surd); the remaining three secondary registers that have caused possible secondary tonal splits are all of the low/lower (濁 muddy) register: semi-muddy (次濁, i.e., sonorants/liquad), muddy stops (濁塞 i.e., original voiced plosives/affricates), and muddy fricatives (濁擦, i.e., original voiced fricatives). In other words, this Sinitic language, which is claimed to have 16 tones (or 10 distinctive tones), requires two sets of laryngeal features in the upper (clear)-register initials, which is still fewer than the four sets required for the upper (original voiceless) register in Tai. Moreover, although the distribution of Gan Chinese is not in the core areas of the contemporary Lingnan region, its southern varieties are within the northeastern border of the early Lingnan region, not to mention that the whole area south of the Yangtze River is also considered historically an early distribution area for the Kra-Dai family. Therefore, it cannot be ruled out that the secondary tonal split in the upper register of this dialect was also a trait diffused from Kam-Tai in the past.

10 As aforementioned, Debao Urban Yang Zhuang, as a Kra-Dai language, is in the Kra-Dai circle using the letter B to correspond to the *qù* tone and the letter C to correspond to the *shǎng* tone in traditional Chinese phonology, or, in other words, tone *B of Kra-Dai corresponds to *C of Sinitic, and tone *C of Kra-Dai corresponds to *C of Sinitic. However, this part is a discussion of the Sinitic languages and the Sinitic loanword in Yang Zhuang, so for the sake of comparison, the Sinitic tones are also used here in the case of Yang Zhuang, i.e., B refers to *shǎng* and C is *qù*.

[11] However, as Liao (2022, pp. 16, 42) mentioned, there are indeed some Tai etyma involved in tonal categories B (corresponding to Sinitic tone B or *qù*) and C (corresponding to Sinitic tone C or *shǎng*) alternation between Northern Tai (Northern Zhuang-Yongnan Zhuang-Saek) and Southern Tai (Central Tai–Southwestern Tai), and it now appears that they may indeed be the result of the effect of the Chinese loanwords in the *zhuóshǎng guī qù* series. For example, the tone of the Southern Tai etyma *bi:^{B} 'elder siblings' is B2 in modern Central–Southwestern Tai dialects, but in the Northern Tai dialect, it is C2, reflecting *bi:^{C}. In another study, Liao attributed this phenomenon to "phonological contamination", i.e., tone C2 of this etymon in Northern Tai is a result of the analogical change, replacing its original tone *B with the tone of another item /nu:ŋ^{C2}/ 'younger sibling' in the semantic pair /pi:^{C2} nu:ŋ^{C2}/ 'siblings (younger and elder brothers)' (Liao 2017, pp. 129–31). However, from the point of view of areal trait, it cannot be ruled out that the original tone of this etyma was *C, as preserved in Northern Tai dialects, but later, under the influence of the Chinese *zhuóshǎng guī qù* phenomenon via a massive amount of loanwords, tone *C of this item, which was conditioned by the original voiced stop *b-, changed to tone *B in Southern Tai dialects. However, as tone B/C alternation in Tai is not limited to the lower register (cf. Liao 2022, p. 42), this matter needs to be examined in further research.

[12] It is not too far-fetched either to open the possibility of this being *Wanderwort* (without unknown origin, as it is a relatively common cognitive verb) or from other possible Lingnan substrate languages, such as Hmong-Mien. However, according to the author's observations, generally speaking, if an etymon is borrowed from Hmong-Mien into Sinitic languages, or if it is a Hmong-Mien substratum, it appears to be commonly shared among several Sinitic branches and not limited to Sinitic languages in Lingnan. The word 狗 'dog' (kəu:) in Mandarin and most southern Sinitic languages, for example, is suggested to be borrowed from Hmong-Mien *klu^{2}B and became the primary word for 'dog' in most Sinitic languages after the pre-Han period, with only some Min dialects retaining the Sinitic-origin 犬 'dog' (MC *khiwen:*) in spoken language (Norman 1988, p. 17). In contrast, most of the words of non-Sinitic origin found only in Lingnan Sinitic languages, such as Cantonese, Pinghua, and even Guiliu Mandarin, are more related to Kam-Tai than to Hmomg-Mien. This seems to imply that the close contact with Hmong-Mien during the southward migration of Sinitic languages was mostly completed north of Lingnan, whereas the close contact of Sinitic with non-Sinitic languages in Lingnan was mainly with Kam-Tai instead of Hmong-Mien.

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Comparative Constructions in Zhoutun from a Language Contact Perspective

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Abstract: The paper describes comparative constructions in Zhoutun, a Chinese variety that was heavily influenced by Amdo Tibetan and spoken in Guide County, Qinghai Province. There are five comparative constructions (Cxn), based on the type of comparative marker, in Zhoutun, namely (1) the *xa*-Cxn; (2) the *pi*-Cxn; (3) the 'look'-Cxn; (4) the 'and'-Cxn; and (5) the hybrid Cxn. The five constructions illustrate features from both Chinese and Amdo Tibetan, and their co-existence demonstrates the mixed nature of the comparative constructions, as well as the grammar system of Zhoutun due to language contact. This paper also argues that the "comparative subject" should be further subcategorized into "comparative subject" and "attributive subject", and that the "comparative result" should be divided into "abstract measurement" and "concrete measurement" in the typological study of comparative constructions.

Keywords: comparative constructions; language contact; Zhoutun; Chinese; Amdo Tibetan

1. Introduction

Comparing two objects is a common mental act, and in typological study, the linguistically encoded constructions that express the comparison of inequality are known as comparative constructions (Stassen 2013). A typical comparative construction consists of four components: the comparative subject (CS), the standard (St), the comparative marker (CM), and the comparative result (CR), as shown in (1), where CS = John, St = Ben, CM = than, and CR = taller.

(1) John is taller than Ben.

The above-mentioned variables have been deemed to be the loci of interest in typological studies on comparative constructions. (See, among others, Dixon 2012). However, there are still some variables that merit further attention. This study provides evidence that the CS can be further sub-classified into comparative subject and attributive subject, and the CR can be further differentiated into concrete measurement and abstract measurement.

This paper investigates the comparative constructions in Zhoutun. Zhoutun is a Chinese dialect spoken by 800–900 native speakers living in Zhoutun Village, Guide County, Hainan Tibetan Autonomous Prefecture, Qinghai Province, P.R. China.

Zhoutun Village has a population of 882 residents, of whom 85% are Han, 10% are Tibetan, and 5% are Monguor/Tu. These demographic data are based on official statistics from 2014. The majority of the Han population, approximately 750 individuals, regularly use Zhoutun in their daily discourse. The current level of bilingualism among the Tibetan and Monguor/Tu communities in the village is not well documented and remains to be investigated. Based on my observations, the Monguor/Tu population tends to use Zhoutun when communicating with the Han population in the village, while the Tibetans predominantly use Tibetan. It is worth noting that the data collected in this study were limited to the Han population.

According to anecdotal evidence, some older Han individuals in Zhoutun Village, particularly those over 80 years of age, possess the ability to speak Amdo Tibetan. However, due to the limited number of such individuals and the prevalence of poor health among them, data collection from their interactions with Tibetans was unfeasible. Nevertheless, a personal informant, Qiulan Xu (born in 1933), attested that when she was young, the Han population in Zhoutun Village regularly engaged in communication with nearby Tibetans using Amdo Tibetan. The present study also identified a cohort of middle-aged Han speakers, roughly 40 years of age, who possess proficiency in Amdo Tibetan, particularly merchants who have frequent transactional interactions with Tibetan-speaking individuals in neighboring villages.

The younger generation in the Zhoutun Village demonstrates a reduced level of proficiency in the Amdo Tibetan language. This is attributed to two primary factors: the increasing social development in the area, which has led to a preference for relocating to more developed counties, and the mandatory education program that sends village teenagers to boarding schools in the county. These boarding schools foster an environment of increased inter-village communication, where the local variety of Mandarin known as Qiaohua (a variant of the Xining dialect spoken in Guide County, situated 22 km from the Zhoutun village) serves as the common language. As a result of these expanded communication channels, a significant proportion of older individuals in the Zhoutun village have also acquired proficiency in Qiaohua.

The influence of Mandarin Chinese on Zhoutun is apparent, primarily through the exposure to Mandarin-speaking media sources such as television programs. However, the impact of Mandarin is less pronounced compared to that of the regional variety Qiaohua. The utilization of Mandarin as a communicative tool with external speakers, such as the author, varies among the residents of the Zhoutun Village, according to their level of proficiency in the language. Additionally, the influence of Mandarin on Zhoutun is characterized by a marked interference in linguistic features, such as tone and word order.

Zhoutun is characterized by a hybrid analytic–agglutinative linguistic system, which exhibits a higher prevalence of clitics or affixes, such as postpositions and case markers. In terms of basic word order, Zhoutun displays a rigid SOV pattern, where the object always precedes the verb, regardless of whether it is definite or indefinite. This is in contrast to certain northwest Chinese varieties, such as Tangwang and Xining, which are spoken in the same region and exhibit mixed linguistic features. In these varieties, a definite object precedes the verb, while an indefinite object is positioned after the verb, adhering to the preferred SOV order. With regards to ditransitive constructions, the basic word order in Zhoutun is ARTV, where A represents the agent, R the recipient-like role, T the theme-like role, and V the verb, thereby conforming to the OV pattern.

At the subclausal level, including constituents such as Noun Phrases (NP) and Verb Phrases (VP), Zhoutun displays characteristics that are typical of OV languages.

(2) OV correlation pairs found in Zhoutun:
A. NP–adposition;
B. Predicative–copula verb;
C. Verb–tense/aspect auxiliary verb;
D. Genitive–noun;
E. Comparative standard–adjective;
F. Prepositional phrase–verb;
G. Manner adverb–verb.

The OV-pattern is without a doubt the result of prolonged and intensive contact with the nearby Amdo Tibetan (Zhou 2019a, 2019b, 2020a). A number of other syntactic behaviors in Zhoutun, such as the "N+Num" structure (Zhou 2020b), the "locutor-referential pronoun" (Zhou 2021), and the copular system (Zhou 2022a), are also suggested to be induced by the contact with Amdo Tibetan. For a systematic description of Zhoutun, one can refer to Zhou (2022b). In this paper, we demonstrate once more the deep influence of Amdo Tibetan on Zhoutun by illustrating the situation of comparative constructions in

Zhoutun. Moreover, we expect that the case study of Zhoutun (together with Chinese and Amdo Tibetan) will offer a theoretical contribution to the typological study of comparative constructions.

In addition to Zhoutun, there are a number of Chinese dialects (referred to as "Gan-Qing dialects" henceforth) that have been influenced by the surrounding Amdo and Altaic languages (Mongolic: Santa, Bonan, and Mongghul, and Turkic: Western Yugur and Salar) in northwest China, particularly in the west of Gansu, the east of Qinghai, and the border between the two provinces. This area is known as Gan-Qing linguistic area (also referred to as "Qinghai-Gansu Sprachbund" and "Amdo Sprachbund" in the literature, e.g., Slater 2003 and Sandman 2016, respectively). Numerous scholars (Dwyer 1995; Slater 2003; Sandman 2016; Xu 2017; Peyraube 2018; Xu and Peyraube 2018; Zhou 2019a; among others) argue that language contact plays a role in the explanation of a given phenomenon in languages or dialects in this area.

The paper is structured as follows: Section 2 describes five comparative constructions in Zhoutun. Section 3 demonstrates that the comparative constructions in Zhoutun, on the one hand, have features from both Amdo Tibetan and Chinese, and, on the other hand, have a feature that is distinct from both Amdo Tibetan and Chinese, which is the result of contact between the two languages. Section 4 makes a conclusion. We suggest that the typological study of comparative constructions should take into account two parameters: the distinction between comparative subject and attributive subject, and the measurement of the result, which can at least be divided into abstract measurement and concrete measurement.

The data pertaining to Zhoutun presented in this study were acquired through a series of my fieldwork excursions conducted over the course of approximately five months, between September 2014 and October 2020, in the village of Zhoutun. Two distinct sources of data were utilized: structured interviews and naturally occurring discourse. The latter comprised a diverse range of communicative genres, including topic-specific interviews, storytelling, and casual conversations.

2. Comparative Constructions in Zhoutun

Prior to further discussion, I will introduce two pairs of terms used in this paper. The first pair of terms are "comparative subject (ComS)" and "attributive subject (AttS)". These two subjects are further subcategorizations of the CS mentioned previously. The ComS corresponds syntactically to the St, while the AttS is the semantic subject of the adjective in the CR. The second pair of terms are "abstract measurement (AbsM)" and "concrete measurement (ConM)". These two terms are further subcategorizations of the CR, where AbsM is a concrete numerical measurement, and ConM is an abstract degree of the measurement. This will be illustrated with examples from Mandarin Chinese:

(3) a. 头发我比你长一些。

toufa	wo	bi	ni	chang	yixie.
hair	1	CM	2	long	a.little

'My hair is a little longer than yours.'

b. 价格这家商店比那家贵五块。

jiage	zhe	jia	shangdian	bi	na	jia gui	wu kuai.
price	this	CL	shop	CM	that CL	expensive	five yuan

'The price at this shop is five yuan more expensive than that one.'

In (3a), toufa '*hair*' is identified as the AttS as it serves as the semantic subject of the CR expressed by *chang* 'long' (one can say *toufa chang* 'the hair is long'). *Wo* 'I' is classified as the ComS due to its syntactic equivalence with the St *ni* 'you', forming a matching relationship. Analogously, in (3b), *jiage* 'price' is designated as the AttS and *zhe jia shangdian* "this shop" as the ComS. *Yixie* 'a litttle' in (3a) is categorized as the AbsM, while *wu kuai* 'five yuan' in (3b) is considered as the ConM.

2.1. xa-Cxn

xa-Cxn stands for the comparative construction employing the dative–accusative *xa* (and its allophone *a*) as the CM. As a multifunctional case marker, *xa* serves as a means of marking not only the St but also a variety of semantic roles, including patient, recipient, beneficiary, addressee, possessor, and experiencer. This is demonstrated in (24) of Section 3. *Xa* may have originated from the Chinese locative *xia* 'down' (Zhou 2019b).

This section specifically focuses on *xa*'s function as a CM. Illustrative examples are provided in (3) through (5).

(3) 个箇啊大着个

kɤ	kua	ta	tʂɤ	kɤ.
this	that:CM	big	PROG	PART

'This is bigger than that.'

(4) 安文栋连珺哈三岁大着哩。

ãuɤtũ	liãtɕỹ	xa	sã	suɨ	ta	tʂɤ	li.
A	L	CM	three	year	old	PROG	PART

'Anwendong is three years older than Lianjun.'

(5) 我你啊岁数大着多。

ŋɤ	nia	suɨfu	ta	tʂɤ	tuɤ.
1	2:CM	age	old	COMP	much

'I am much older than you.'

xa-Cxn is the most common and grammaticalized comparative construction in Zhoutun. Its St–CR word order is in harmony with that of an OV language (Dryer 1992).

In typological studies on comparatives, CS and CR are two essential parameters (Dixon 2012; Stassen 2013; Stolz 2013). *xa*-Cxn presents two features on these two parameters that merit additional discussion. First, *xa*-Cxn involves two categories of comparative subject, which are referred to, following Liu (2012), as "comparative subject" (ComS) and "attributive subject" (AttS) in this paper. The two sorts of subjects can be identical, as seen by *kɤ* 'this' in (3): *kɤ* and *kuɤ*[1], the St, are both demonstrative pronouns, i.e., they have the same syntactic status, and *kɤ* is the subject of the adjective *ta* 'big' (one can say *kɤta* 'this is big'). However, in *xa*-Cxn, the ComS and AttS can be distinct. In (5), for example, the ComS is *ŋɤ* 'I' (syntactically corresponds to the St *ni* 'you'), while the AttS is *suɨfu* 'age', given that it is *suɨfu* rather than *ŋɤ* that serves as the semantic subject of the adjective *ta* in *suɨfu ta* 'the age is old'[2]. In a number of instances, the ComS could be omitted, resulting in the AttS and the St being the objects being compared. See (6).

(6) 你的鞋我啊一号大着哩。

ni	tɤ	xɛ	ŋa	i	xɔ	ta	tʂɤ	li.
2	GEN	shoe	1:CM	one	size	big	PROG	PART

'Your shoes are one size bigger than mine.'

(6) has no ComS. If there were a ComS, it should be *ni* 'you' that syntactically corresponds to the St *ŋɤ* 'I'. The AttS is *ni tɤxɛ* 'your shoes' (as in *ni tɤxɛ ta* 'your shoes are big'). This "AttS-St" is ungrammatical in many languages. In English, for example, it would be ungrammatical to convert the English translation in (6) to the "AttS-St" frame (**your shoes are one size bigger than me*, in which AttS= *your shoes* and St= *me*).

In typological studies, the distinction between ComS and AttS has received little attention. This distinction is not addressed in works examining comparative constructions from a typological perspective, such as those by Dixon (2012), Stassen (2013), and Stolz (2013). However, this phenomenon is pervasive in Chinese and Tibetan; see Section 3.

Another feature of *xa*-Cxn is that the measurement of the CR can be further subdivided into the "abstract measurement" (AbsM) and the "concrete measurement" (ConM). The semantic distinction between the two types of measurement is inherent, while Zhoutun distinguishes them linguistically: the AbsM follows the adjective of the CR, whereas the ConM precedes it. For example, in (4) the ConM *sã suɨ* 'three years' precedes the adjective *ta* 'old', while in (5) the AbsM *tuɤ* 'much' occurs after *ta* as a complement. Note that the

English translations reveal that the two types of measurement are all placed before the adjective in English, as in *three years*/ *much older*. In Mandarin Chinese, both types of the measurement come after the adjective. See (7).

(7) a. 我比你大三岁。

wo	bi	ni	da	san	sui.
1	CM	2	old	three	year

'I am three years older than you.'

b. 我比你大得多。

wo	bi	ni	da	de	duo.
1	CM	2	old	COMP	much

'I am much older than you.'

In Section 3, I will argue that the different position of ConM and AbsM in Zhoutun reflects the hybrid feature of Chinese and Tibetan and represents an "incomplete" transition from the former to the latter. A preliminary observation shows that languages prefer to place the two types of measurement in the same position relative to the adjective. This is a potential explanation for why previous typological studies did not distinguish between ConM and AbsM. In this light, the data in Zhoutun are worthy of consideration.

2.2. pi-Cxn

pi-Cxn refers to the comparative construction where *pi* is the CM. *pi* is clearly a Chinese word meaning 'to compare' and serves as the comparative marker in Mandarin Chinese. See some examples of *pi*-Cxn in Zhoutun.

(8) a. 老王比老张头一个高着个。

lɔuɑ̃	pi	lɔtʂɑ̃	thɯ	I	kɤ	kɔ	tʂɤ	kɤ.
Old.W	CM	old.Z	head	one	CL	tall	PROG	PART

'Old Wang is one head taller than Old Zhang.'

b. 我比你大一岁。

ŋɤ	pi	ni	ta	i	suɨ.
1	CM	2	old	one	year

'I am one year older than you.'

(9) 我比你大着多。

ŋɤ	pi	ni	ta	tʂɤ	tuɤ.
1	CM	2	old	COMP	much

'I am much older than you.'

(10) 衣裳的样子你的比我的好看着个，价格我的比你的便宜着个。

iʂɑ̃	tɤ	iɑʔtsi	ni	tɤ	pi	ŋɤ	tɤ	xɔkhã	tʂɤ	kɤ,
cloth	GEN	style	2	GEN	CM	1	GEN	nice-looking	PROG	PART
tɕiakɤ	ŋɤ	tɤ	pi	ni	tɤ	phiãi	tʂɤ	kɤ.		
price	1	GEN	CM	1	GEN	cheap	PROG	PART		

'The style of your clothes is better than mine, and the price of mine is cheaper than yours.'

Some essential properties of (8b), (9), and (10) are likewise present in *pi* comparatives of Mandarin Chinese. See the parallel expression in Mandarin Chinese.

(11) a. 我比你大一岁。

wo	bi	ni	da	yi	sui.
1	CM	2	old	one	year

'I am one year old than you.'

b. 我比你大得多。

wo	bi	ni	da	de	duo.
1	CM	1	old	COMP	much

'I am much older than you.'

c. 衣服的样子你的比我的好看，价格我的比你的便宜。

yifu	de	yangzi	ni	de	bi	wo	de	haokan,
cloth	GEN	style	2	GEN	CM	1	GEN	nice-looking
jiage	wo	de	bi	ni	de	pianyi		
price	1	GEN	CM	2	GEN	cheap		

The style of your clothes is better than mine, and the price of mine is cheaper than yours.'

On the one hand, both of the ConM *i suɨ* 'one year' in (8b) and the AbsM *tuɤ* 'much' in (9) follow the adjective. On the other hand, the AttS can be distinguished from ComS, as shown in (10) where the AttS is *iʂɑ̃tɤiɑʔtsi* 'cloth's style' and *tɕiakɤ* 'price', and the ComS is *ni tɤ* 'yours' and *ŋɤtɤ* 'mine' in the first and second clause, respectively. (11) demonstrates that the parallel *pi* constructions are also seen in Mandarin Chinese. Contrary to Mandarin Chinese *pi* comparatives, however, the ConM in Zhoutun's *pi*-Cxn can also be placed before the adjective, as shown in (8a). This performance can be viewed as the effect of contact with Amdo Tibetan, where the ConM comes before the adjective; see Section 3.

In general, *pi*-Cxn is employed less frequently than *xa*-Cxn to convey comparative meaning. However, the author's empirical observation suggests that the frequency of usage is on the rise. A comparison of the author's fieldwork in 2014 and 2020 indicates that the utilization of *pi*-Cxn has become more prevalent and intuitive[3]. This is likely due to the increasing influence from Mandarin Chinese nowadays. It is unknown whether *pi*-Cxn will eventually exceed and supplant *xa*-Cxn. Nonetheless, it is evident that the language contact is not static and is ongoing.

2.3. 'look'-Cxn

'look'-Cxn uses the verb khã 'look' to introduce the St, forming the structure "St-*khã*, CS-CR". For example,

(12) 你们的房子看时，我们的房子大。

ni	mɤ	tɤ	fɑʔtsi	khã	ʂi,	ŋɤ	mɤ	tɤ	fɑʔtsi	ta.
2	PL	GEN	house	look	if	1	PL	GEN	house	big

'My house is bigger than yours (lit. looking at your house, my house is bigger).'

(13) 安文栋的分数看了嘀，连珺的分数高哩。

ãuɤtʰɤ	fɤfu	kha	lɔ	ti,	liãtɕỹ	tɤ	fɤfu	kɔ	li.
A	GEN	scorelookPFV			PARTL		GEN	score high	PART

'Lianjun's score is higher than Anwendong's. (lit. looking at Anwendong's score, Lianjun's is higher).'

The literal meaning of 'look'-Cxn is "(If) looking at X, Y is Adj", and it implicates the comparative meaning "Y is Adj than X". The conditional *ʂi* (time>when>if) is optional. Moreover, no instance is found within which the CS splits into ComS and AttS: they are identical in 'look'-Cxn (at least in my data). In the data I also find no example dealing with the measurement of the CR. Instead, bare adjective is used in this construction.

2.4. 'and'-Cxn

'and'-Cxn refers to the structure "X-and-Y(-verb), X/Y-CR", conveying the comparative meaning "X/Y is adjective than Y/X". This construction is similar to 'look'-Cxn in that both of them consist of two clauses, and the first clause provides the object(s), and the second clause shows the comparative result. For example:

(14) 羊肉带大肉，羊肉香着个。

iɑ̃ɻɯ	tɛ	taɻɯ,	iɑ̃ɻɯ	ɕiɑ̃	tʂɤ	kɤ.
mutton	CONJ	pork	mutton	fragrant	PROG	PART

'Mutton is more delicious than pork (lit. between mutton and pork, mutton is delicious).'

(15) 我带扎西两个，扎西俊哩喔。

ŋɤ	tɛ	tʂaɕi	liɑ̃	kɤ,	tʂaɕi	tɕỹ	li	uɤ.
1	CONJ	Z	two	CL	Z	good.looking	PARTPART	

Zhaxi is more handsome than me (lit. between Zhaxi and I, Zhaxi is handsome).'

(16) 我馍馍带面片儿吃时，馍馍吃着多。

ŋɤ	mɤmɤ	tɛ	miãphiɛ	tʂhi	ʂi	mɤmɤ	tʂhi	tʂɤ	tuɤ.
1	steamed.bread	CONJ	noodle	eat	if	steamed.bread	eat	COMP	more

I eat more steamed bread than noodles (lit. between eating steamed bread and noodles, I eat more steamed bread).'

Although comparable to 'look'-Cxn in some respects, 'and'-Cxn differs significantly from 'look'-Cxn and the other two comparative constructions, namely, *xa*-Cxn and *pi*-Cxn. That is, 'and'-Cxn is a loosely structured comparative strategy rather than a dedicated comparative construction. First, in the structure "X-and-Y(-verb), X/Y-CR", the subject of the CR cannot be determined until the second clause appears. Changing *iɑ̃ɻɯ* 'mutton' in the second clause of (14) to *taɻɯ* 'pork' would result in the sentence 'Pork is more delicious than mutton', in which 'pork' becomes the subject, as opposed to the original version, where 'mutton' is the subject. Second, since 'and' is not a comparative marker, the coordinating construction in the first clause does not necessitate further comparison in the second clause. In (17), for instance, the coordination *ŋɤtɛ tʂaɕi* 'I and Zhaxi' functions as the agent of the verb *tɕhi* 'go' in the second clause, and no comparative sense is indicated.

(17) 我带扎西两个，我两个学里去了。

ŋɤ	tɛ	tʂaɕi	liɑ̃	kɤ,	ŋɤ	liɑ̃	kɤ	ɕyɤ	li	tɕhi lɔ.
1	CONJ	Z	two	CL	1	two	CL	school in	go	PFV

'Zhaxi and I went to school.'

Nevertheless, 'and'-Cxn is taken into account while discussing comparative expressions for two reasons. First, this construction is a common and natural manner of conveying comparative meaning in Zhoutun. Moreover, there is a possibility that 'and'-Cxn will evolve into a dedicated comparative construction (such a process can be found in Wu dialects, as discussed in Section 3). Second, 'and'-Cxn can be used to compare VPs, which is not possible with any of the aforementioned constructions. This is evidenced by (16). The two objects compared in (16) are the NPs within the VP, i.e., *mɤmɤ* 'steamed bread' and *miãphiɛ* 'noodle'. This function, i.e., comparing NPs within the VP, cannot be satisfied by *xa*-Cxn, *pi*-Cxn, and 'look'-Cxn, and is actually prohibited in Mandarin Chinese *pi* comparatives. Let us examine *pi* comparatives in Mandarin in (18)–(19).

(18) a.

Zhangsan	rou	chi	de	bi	fan	duo.
Z	meat	eat	COMP	CM	rice	more

b. 张三肉比饭吃得多。

Zhangsan	rou	bi	fan	chi	chi	duo.
Z	meat	CM	rice	eat	COMP	more

'Zhangsan eats meat more than rice.'

(19) a. * 张三比肉更爱吃米饭。

Zhangsan	bi	rou	geng	ai	chi	mifan.
Z	CM	meat	more	like	eat	rice

b. 张三肉比米饭更爱吃。

Zhangsan	rou	bi	mifan	geng	ai	chi.
Z	meat	CM	rice	more	like	eat

'Zhangsan likes to eat meat more than rice.'

(18) demonstrates that the CS and St can be the patient NPs of the verb, such as the *rou* 'meat' and *fan* 'rice' in (18a) and (18b). Note that these NPs should precede the adjective

CR. Another sort of comparative construction in which the CR is a verb is seen in (19). In this construction, neither CS nor St are placed after the verb CR, the typical position of an object in Mandarin.

Liu (2012) contends that Mandarin *pi* comparative NP_{CS}-NP_{St}-Adj/V_{CR} observes a syntactic restriction, namely the "topic-domain restriction": in $[NP_{CS}\text{-}NP_{St}]_{topic}$-$[Adj/V_{CR}]_{predicate}$, the CS and St must be constrained in the topic domain of the clause, i.e., before the CR. Consequently, no elements in the predicate domain may be directly compared. Thus, it is ungrammatical to directly compare the NP after the verb, as this would violate the topic-domain restriction if the $[NP_{CS}]_{topic}$-$[V\text{-}NP_{St}]_{predicate}$ were used.

In fact, the topic-domain restriction is observed not only at the clause level, but also in the VP that is before the adjective CR. As evidenced by (20), the comparative expression $[V\text{-}NP_{CS}\text{-}NP_{St}]$-[Adj] is ungrammatical.

(20) * 张三吃肉比饭多。

Zhangsan	chi	rou	bi	fan	duo.
Z	eat	meat	CM	rice	more

'Zhangsan eats meat more than rice.'

Only when *rou* 'meat' or both *rou* and *fan* 'rice' are placed before the verb, as shown by (19), would (20) become grammatical. Even if $[V\text{-}[NP_{CS}\text{-}NP_{St}]]$ may be viewed as the topic domain relative to [Adj] as the predicate, $[V\text{-}[NP_{CS}\text{-}NP_{St}]]$ itself requires some sort of topic-domain limitation in that at least the NP_{CS} must be placed before the verb, the topic position relative to the verb.

The topic-domain restriction is not exclusive to *pi* comparative. Mandarin could use structures akin to the 'and'-Cxn in Zhoutun to express comparative meaning. The coordinated NPs could not be placed after the verb in this 'and'-like comparative; see (21a).

(21) a. * 我吃馍馍和面条，馍馍吃得多。

wo	chi	momo	he	miantiao,momo	chi de	duo.
1	eat	steamed.bread	CONJ	noodles steamed.bread	eat COMP	more

b. 我馍馍和面条，馍馍吃得多。

wo	momo	he	miantiao,momo	chi de	duo.
1	steamed.bread	CONJ	noodles steamed.bread	eat COMP	more

'I eat more streamed bread than noodles (lit. between steamed bread and noodles, I eat more steamed).

The "steamed bread" and "noodles" in (22a) are located in the predicate domain (after the verb), making the clause ungrammatical. By simply omitting the verb, (21b) becomes grammatical, as the two NPs are identified as the topic.

In contrast to Mandarin, Zhoutun 'and'-Cxn permits a direct comparison between two NPs within the VP. Comparing (16) to (22a), this discrepancy is readily apparent. It does not mean, however, that the topic-domain restriction fails in Zhoutun. Since Zhoutun's basic word order had shifted to SOV, the O occupies both the topic domain in terms of the clause and the predicate domain in terms of the verb: $[S\text{-}O]_{topic}$-$[V]_{predicate}$ or $[S]_{topic}$-$[[O\text{-}V]_{VP}]_{predicate}$. The dual identity of O enables the acceptability of the structure $[S\text{-}O_{NP1\text{-}and\text{-}NP2}\text{-}V]$, in which NP_1-and-NP_2 observes the topic-domain restriction as a topic, and occur within the VP.

2.5. Hybrid Cxn

Some of the mentioned constructions can be used simultaneously, forming what we term the "hybrid construction". There are two common hybrid constructions. First, the hybrid of 'and' and *xa*. For example:

(22) 我带扎西两个，扎西我啊大着个。

ŋɤ	tɛ	tʂaʨi	liɑ̃	kɤ,	ŋa	ta	tʂɤ	kɤ.
1	CONJ	Z	two	CL	1:CM	old	PROG	PART

'Between Zhaxi and I, Zhaxi is older than me.'

Another type of hybrid construction consists of *xa*, 'look' and *pi*. For example,

(23) 我语文哈看了着，比数学好。

ŋɤ	yuɤ̃	xa	khā	lɔ	tʂɤ,	pi	fuɕyɤ	xɔ.
1	Chinese	CM	look	PFV	PROG	CM	math	good

'Looking at my Chinese, it is better than my math.'

In sum, the comparative constructions in Zhoutun can be concluded as in Table 1.

Table 1. The types and forms of the comparative constructions in Zhoutun.

Type	Form
xa-Cxn	CS(AttS-ComS)+St-*xa*+(ConM+)CR CS(AttS-ComS)+St-*xa*+CR(+AbsM)
pi-Cxn	CS(AttS-ComS)+*pi*-St+CR(ConM/AbsM) CS(AttS-ComS)+*pi*-St+(ConM+)CR
'look'-Cxn	St-'look', CS+CR
'and'-Cxn	X-'and'-Y(-verb), X/Y-CR[4]
Hybrid Cxn	'and'-Cxn plus *xa*-Cxn *xa*-Cxn plus 'look'-Cxn plus *pi*-Cxn

3. Hybrid Features in Comparative Constructions of Zhoutun

Comparative constructions in Zhoutun exhibit both Tibetan and Chinese characteristics. The hybrid features provide an intriguing illustration of how Zhoutun's grammar has been shaped by language contact. We will discuss each one individually.

First, *xa*-Cxn. Zhoutun's SOV order and case marking system are undoubtedly induced by contact with Amdo Tibetan. As a dative–accusative marker, *xa*, can be employed to indicate a variety of semantic roles; see (24).

(24) a. 我箇啊书一本给了。

ŋɤ	kua	fu	i	pɤ̃	kɨ	lɔ.
1	3:DAT	book	one	CL	give	PFV

'I gave him/her a book'.

b. 扎西玉林哈衣裳取给。

tʂaɕi	ylī	xa	iʂɑ̃	tshɯ	kɨ.
Z	Y	DAT	coat	take	give

'Zhaxi takes the coat for Yuli'.

c. 扎西我啊说着个

tʂaɕi	xa	tɕhiɛ	iɯti	
Z	DAT	money	have PART	

Zhaxi has money'.

d. 扎西哈钱有嘀。

tʂaɕi	xa	ɻɤ	tʂɤ	xɤ̃	lɨ.
Z	dat	hot	comp	very	part

'Zhaxi feels very hot'.

e. 扎西哈热着很哩。

tʂaɕi	xa	ɻɤ	tʂɤ	xɤ̃	lɨ.
Z		dat	hot	comp	very part

Zhaxi feels very hot'.

f. 扎西玉林哈打了。

tʂaɕi	ylī	xa	ta	lɔ.
Z	Y	ACC	beat	PFV

'Zhaxi has beaten Yulin'.

(24) illustrates the semantic roles that can be marked by *xa*/*a*, including the recipient (24a), benefactor (24b), addressee (24c), possessor (24d), experiencer (24e), and patient (24f).

Since Altaic languages are nominal–accusative and Tibetan is ergative–absolutive, some believe that *xa* in Gan-Qing dialects was formed due to the influence from Altaic languages (e.g., Zhang 2013). However, this theory fails to account for the following two crucial performances: (1) while Altaic languages lack dative–accusative syncretism[5], all Gan-Qing dialects utilize *xa* as a dative–accusative marker; and (2) only Tibetan uses dative to mark the experiencer (i.e., the subject who experiences particular feelings such as 'hot' and 'angry'). I argue that contact with Tibetan is the cause of the emergence of *xa*, the case marking system, and the SOV order in Gan-Qing dialects[6]; for details, see Zhou (2019a, 2019b, 2020a).

xa-Cxn conforms to the typical word order of comparative constructions in OV languages, namely St-CR (Dryer 1992). This OV-feature of *xa*-Cxn is a result of contact with Tibetan. In Amdo Tibetan, the word order of a comparative construction is identical to that of *xa*-Cxn (without considering the abstract measurement; see below), as shown in (25).

(25)

tsherɯŋ	wsonam-ma-wtina	lo	tɕhe-gɯ.
C	S-dat-cm	age	old-aux

Cairang is elder than Sunnanmu. (Shao 2012, p. 29)

In addition to the general word order of *xa*-Cxn, another feature of the Tibetan type is that the CR's concrete measurement precedes the adjective. See (4) in Zhoutun (repeated in (26a)) and (26b) below in Amdo Tibetan.

(26) a. 安文栋连珺哈三岁大着哩。

ãuʏtũ	liãtɕỹ	xa	sã	suɨ	ta	tʂʏ	li.
A	L	CM	three	year	old	PROG	PART

'Anwendong is three years older than Lianjun.'

b.

ŋa	ɸtʂaɕʰi=ʔa	ɸti=na	mi	khərzək=kə	rəŋ=ŋgə.
1	Z=ALL	look=COND	meter	one=ERG	tall=MIR

'I am one meter taller than Zhaxi.' (Mingyuan Shao, p.c.)

In contrast, the concrete measurement of the CR should follow the adjective in a Chinese comparative construction; see (7a) and (27).

(27) 我比扎西高一米。

wo	bi	Zhaxi	gao	yi	mi.
1	CM	Z	tall	one	meter

'I am one meter taller than Zhaxi.'

However, when it comes to the abstract measurement of the CR, the scenario changes: the abstract measurement in Zhoutun, which is placed after the adjective, maintains the same position as in Chinese (28a), but differs from Tibetan (28b).

(28) a. 我比扎西高得多。

wo	bi	Zhaxi	gao	de	duo.
1	CM	Z	tall	COMP	much

b.

ŋa	ɸtʂaɕhi=ʔa	ɸti=na	jərzək=kə	rəŋ=ŋgə.
1	Z=ALL	look=COND	much=ERG	rəŋ=ŋgə.

'I am much taller than Zhaxi.' (Shao, p.c.)

As demonstrated by the aforementioned examples, with regards to the position of AbsM and ConM, the differences between comparative constructions in Chinese and Tibetan are reflected in the type of word order, with Chinese exhibiting a mirror image of Tibetan in this aspect. Specifically:

Chinese: CS-St-CR-AbsM/ConM

Tibetan: CS-St-AbsM/ConM-CR.

Interestingly, the performance of *xa*-Cxn in Zhoutun in this regard is not entirely comparable to either Chinese or Tibetan. The word order of *xa*-Cxn generally reflects the Tibetan type in that it has St-CR order, with the ConM preceding the CR. In terms of the position of AbsM, however, *xa*-Cxn retains a Chinese feature in that the abstract measurement follows the adjective as a complement. That is:

Zhoutun: (1) CS-St-CR-AbsM; (2) CS-St-ConM-CR

Second, *pi*-Cxn. It is evident that *pi*-Cxn corresponds to its Chinese counterpart, which we refer to as "*pi* comparatives". First, both *pi*-Cxn and *pi* comparatives put abstract and concrete measurement after the adjective of the CR. Second, they both distinguish ComS and AttS. The only difference between the two is that in *pi*-Cxn, the concrete measurement could also be put before the adjective, as shown by (8a). This feature is distinct from the *pi* comparatives and has to do with Amdo Tibetan, in which concrete measurement occurs before the CR. The word order between St and CR in *pi*-Cxn is the same as in Chinese, namely St-CR. Interestingly, this "Chinese type" word order itself is in accordance with OV. In fact, the order of St-CR in Chinese *pi* comparatives is abnormal compared to the typical CR-St in VO languages (Dryer 1992). Given that Zhoutun had changed its basic word order into SOV, the original "abnormal" word order of *pi* comparatives in Chinese[7] became "normal" in Zhoutun *pi*-Cxn.

The contrast between the comparative subject (ComS) and the attributive subject (AttS) is a significant feature shared by both the *xa*-Cxn and the *pi*-Cxn. The distinction between these two types of subject, according to Liu (2012), shows the topic prominence of Chinese comparative constructions. As a topic-prominent language (Li and Thompson 1981), the topic in a Chinese sentence may not have an "argument relationship" with the predicate (i.e., the topic is not an argument of the predicate), so long as some relevance exists, even if it is blurred. See the renowned example in (29).

(29) 那场火幸亏消防队来得快

nei chang huo	xingkui	xiaofangdui lai	de	kuai.
that CL fire	fortunate	fire.brigade come	COMP	fast

'That fire, fortunately the fire brigade came quickly.'

In this sentence, *nei chang huo* 'that fire' is not an argument of the predicate *lai de kuai* 'come quickly'. This trait is also present in Chinese *pi* comparative, in which the ComS and CR can have no argument relationship. See (30)

(30) a. 他房子比我贵。

ta	fangzi	bi	wo	gui.
3	house	CM	1	expensive

b. 房子他比我贵。

fangzi	ta	bi	wo	gui.
house	3	CM	1	expensive

'His house is more expensive than mine (/ *me/*I).'

(*He house is more expensive than I/ * House, he is more expensive than I.)

Regardless of the position, *fangzi* 'house' and *ta* 'he' are separated in (30). As the argument of the adjective *gui* 'expensive', *fangzi* is the AttS, whereas *ta* is the ComS that is syntactically compared to the St *wo* 'I'. ComS and St cannot serve as the subject of the adjective, as in **ta/wo gui* 'he/I expensive'. Note that in English, the ComS should also be the AttS, that is, both roles should be represented by one and the same NP. The English translation in (30) illustrates this performance clearly: *his house* is the ComS in the sense that it is the argument of the adjective *expensive*, and it is the AttS in the sense that it is syntactically compared to the St *mine*.

Following Liu, Shao (2012) observed that the ComS and AttS are also splitable in the comparative constructions in Amdo Tibetan. For example,

(31) ɦigoɾmo cçʰo-a-wtina ŋa ɳoŋ-ngɯ, xʰiwɕa cçʰo-a-wtina ŋa maŋ-ngɯ.
money 2-DAT-CM 1 less-AUX knowledge 2-DAT-CM 1 more-AUX
'My money is less than yours; my knowledge is more than yours.'
(lit. As for money, I have less than you; as for knowledge, I have more than you.)

In earlier research, I had believed that the distinction between the ComS and the AttS in comparative constructions of Zhoutun was a Chinese reservation. However, Shao's research reveals that Amdo Tibetan has this characteristic. Therefore, it cannot be ruled out that Tibetan has impacted it. Regardless of its origin, the distinction between the two types of subject in Sino-Tibetan languages is an important topic deserving of more study. Researchers of Sino-Tibetan languages can investigate if other Sino-Tibetan languages share this characteristic; typologists can include ComS and AttS in cross-linguistic studies of comparative constructions.

Now we turn to 'look'-Cxn. 'look'-Cxn is found not just in Zhoutun, but also in other Gan-Qing dialects, as well as Amdo Tibetan and Altaic languages in the Gan-Qing linguistic area, as discussed in Sandman and Simon (2016). For example:

(32) a. Amdo Tibetan
lhasa-'a ɸti-na səlaŋ ʧʰe-gi.
Lhasa-DAT look-COND Xining big-TEST
'Xining is bigger than Lhasa.'

b. Wutun
je-ge jjhakai zhungo kan-la xaige ga-li.
this-REF country China look-COND very small-SEN.INF
'This country is much smaller than China.'

c. Salar
biqirox jiguo elige ɠan-aŋ vaq-sə da aɣər-a ro.
cloth all that.way life-2POSS look-COND too heavy-TEST INT
Are all such clothes weightier (i.e., more important) than your life?'

They assert that, at first glance, the 'look' comparatives are derived from Amdo Tibetan, as Tibetan is what they refer to as the "model language" and has a significant impact on both Altaic languages and Gan-Qing dialects in the same area in a number of respects. However, as 'look' comparatives are not found in any Tibetan language outside of the Gan-Qing linguistic area, Sandman and Simon believe that 'look' comparatives are an independent development of the Gan-Qing linguistic area and their source "remains unclear" (p. 112). The development of comparative markers from "look" in language is well documented, as one of the reviewers pointed out, Korean being a case in point. According to Rhee (2022), the grammaticalization source of the Korean comparative marker "pota" is "look".

Although the synchronic evidence in Gan-Qing linguistic area may not lead to a definitive conclusion regarding the origin of 'look' comparatives, diachronic data offer a clue. Shao (2012) illustrates the presence of 'look' comparatives in classic Tibetan, as in (33).

(33) da ro-las-bltasna ni ŋamtɕhuŋ,
DEM corpse-CM-look TOP weak
rma-las-bltasna phogsɳa tɕhe-ʑing-mtɕhiis-na.
wound-CM-look scar big-AUX-AUX-have
'(I am) weaker than a corpse; the scar is bigger than the wound.' (*Dunhuang Historical Documents of Tubo*, P.T. 1287 P1.566; Shao 2012, p. 30)

Shao (2012) proposes that the widespread use of 'look' comparatives in contemporary Amdo is a remnant of classic Tibetan. I argue, based on his convincing evidence, that the 'look'-Cxn in Zhoutun is formed due to the contact with Amdo. A minor distinction between Zhoutun and Amdo is that in Zhoutun, the COND morpheme, namely *ʂi*, is optional.

The fourth construction that should be discussed is the 'and'-Cxn. As mentioned, it is better to consider the 'and'-Cxn in Zhoutun as a strategy rather than a grammaticalized construction to convey comparative meaning. The strategy consists of the frame "A and B,

A/B is ADJ", which is pragmatically interpreted as the comparative "A/B is more ADJ than B/A". This strategy represents the topic prominence in Chinese, and the same strategy can be found in Wu dialects that have a higher degree of topic prominence than Mandarin. See the example from Shaoxing Wu (Yimin Sheng, p.c.).

(34) 小张作小王麽，总还是小王高些。

ɕiɔtsaŋ	tso	ɕiɔɦuɔŋ	meʔ,	tsoŋ ɦuɛʔzeʔ	ɕiɔɦuɔŋ	kɔ	seʔ.
Little.Z	and	Little.W	TOP	mustCOP	Little.W	tall	a.little

'As for Little Zhang and Little Wang, Little Wang is a little taller.'

(34) in Shaoxing Wu, like the 'and'-Cxn in Zhoutun, uses the coordination "A and B" as a comparison scope for two objects with the potential to be compared, and the following clause "A/B is ADJ" completes the comparison between A and B. With the usage of the topic marker, "A and B"-"A/B is ADJ" in Shaoxing Wu constitutes an obvious topic–comment pair. Although there is no topic marker in 'and'-Cxn in Zhoutun, the frame "A and B"-"A/B is ADJ" is probably likewise a topic–comment structure. This topic–comment structure in Shaoxing Wu further developed into a grammaticalized construction, as seen in (35a) to (35b).

(35) a. 小张麽，还是小王高。

ɕiɔtsaŋ	meʔ,	ɦuɛʔzeʔ	ɕiɔɦuɔŋ	kɔ.
Little.Zhang	TOP	COP	Little.Wang	tall

'Talking about Little Zhang, Little Wang is taller (than him/her).'

b. 小张还是小王高。

ɕiɔtsaŋ	ɦuɛʔzeʔ	ɕiɔɦuɔŋ	kɔ.
Little.Zhang	COP	Little.Wang	tall

'Little Wang is taller than Little Zhang.'

It is not impossible that the 'and'-Cxn in Zhoutun would undergo the same process to become a dedicated comparative construction in the future, although this has not yet occurred.

The last type of comparative construction that should be discussed is the hybrid Cxn. In this kind of construction, we can see the hybrid features from both Tibetan and Chinese more straightforwardly, as shown by the co-existence between 'and' (Chinese) and *xa* (Tibetan), and between 'look', *xa* (Tibetan) and *pi* (Chinese).

4. Conclusions

This paper investigated the comparative constructions in Zhoutun, a Chinese variety that is heavily influenced by Amdo Tibetan. In Zhoutun, there are five comparative constructions: *xa*-Cxn, *pi*-Cxn, 'look'-Cxn, 'and'-Cxn, and hybrid Cxn.

Zhou (2022a) notes that in general Zhoutun possesses hybrid characteristics of Chinese and Tibetan, namely, Chinese phonology and Tibetan syntax. This paper indicated that Zhoutun syntax also expresses the hybrid characteristic. Regarding comparative constructions, this hybrid characteristic might be viewed in the following ways. First, five types of comparative constructions are utilized simultaneously, including *xa*-Cxn and 'look'-Cxn, which are clearly influenced by Amdo Tibetan, and *pi*-Cxn and 'and'-Cxn, from which one can discern the Chinese trace. Second, although the *xa*-Cxn and *pi*-Cxn are generally more Tibetan-like and Chinese-like, respectively, they also contain traces of the other language. For instance, the *xa*-Cxn, which corresponds in word order with Amdo Tibetan, retains a Chinese performance in terms of the position of abstract measurement of the adjective; in contrary, despite the fact that the *pi*-Cxn corresponds to Chinese *pi* comparative in many respects, the Tibetan influence can be discerned from the position of the concrete measurement of the adjective. The distinction between concrete and abstract measurement reflects the transition between Chinese and Tibetan and gives comparative constructions in Zhoutun their own syntactic behavior.

This paper proposed to differentiate between comparative subject and attributive subject, as well as abstract and concrete measurement, thus enhancing our comprehension of

comparative constructions in typological studies. Liu (2012) posits that the distinction between ComS and AttS reflects the topical attributes of the Chinese *pi*-comparatives. As a variant of Chinese, Zhoutun also exhibits this characteristic, which highlights the prominence of its topic structure. Tibetan, as a language with developed topic structure, also displays this feature. According to a reviewer's suggestion, Japanese and Korean, also topic-prominent, seem to display similar features. Hence, the distinction between ComS and AttS could serve as a relevant variable in future cross-linguistic studies on comparative constructions. The distinction between AbsM and ConM, however, has not yet been found in other languages, but the case of Zhoutun suggests that the two could be differentiated in terms of position. This suggests that further attention could be paid to this issue when studying other languages.

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Notes

1 *kuʏ+ a→kua*. So do *ni+a→nia*, and *ŋʏ+a→ŋa* below.

2 *ŋʏta* is also grammatical, unless it does not mean 'I am old' but 'I am big/tall (in figure)'. Also see (1). Thus, in (3), *ŋʏ* is not the semantic subject of *ta*.

3 In the 2020 investigation, the author observed a more frequent and natural use of *pi*-Cxn by the instructor, compared to the data collected during the 2014 fieldwork. However, this is an empirical observation and further investigation is necessary to establish its validity.

4 Both X and Y can potentially serve as either the CS or the St, depending on which one forms a combination with the CR in the subsequent clause.

5 Mongolic languages in the Gan-Qing linguistic area exhibit dative–locative syncretism, whereas Turkic languages exhibit syncretism between dative and allative. In these languages, accusative markers are strictly separate from dative markers. See Zhou (2020a) for details.

6 It does not necessarily imply that Altaic languages have no effect on Zhoutun and other Gan-Qing dialects. Certain Altaic languages do, in fact, impact Gan-Qing dialects such as Tangwang (Xu 2017) and Gan'gou (Yang and Zhang 2016). However, as argued by Zhou (2020a), the influence should have occurred in the second stratum of language contact in the Gan-Qing linguistic area, whereas the contact between Tibetan and Chinese is earlier and more fundamental for the formation of the current grammatical system of Gan-Qing dialects, particularly for Zhoutun, in which little evidence of the influence of Altaic languages is found.

7 As noted by one of the reviewers, there are indeed examples of CR-St order in Chinese that are in harmony with the VO order. This is evidenced in the 于*yu* 'in, at, than' comparatives in ancient Chinese and the 过 *guo* 'surpass' comparatives in Southern dialects such as Cantonese.

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Kazakhstani Gansu Dungan as a Contact Language: An Analysis of Russian Influence

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Abstract: This paper discusses extensive language contact and its results in Kazakhstani Gansu Dungan, a divergent variety of Mandarin Chinese. Based primarily on recorded conversational source materials, this study offers a contact linguistic overview of the language, introducing both phonological and morphosyntactic contact phenomena. It is shown that Kazakhstani Gansu Dungan is currently under extensive Russian influence. The influence permeates all layers of the language and exceeds lexical borrowing mentioned in earlier Dungan studies. For instance, clause combining and complex clauses in Dungan have shifted to the direction of a Russian model, which makes the language stand out among other Sinitic varieties. This study demonstrates that, in addition to introducing new structures, extensive Russian influence on Dungan also reinforces earlier development that has led the language further away from the Sinitic prototype. In all, Kazakhstani Gansu Dungan forms its own kind of divergent Russianized Sinitic variety and thus offers a contribution to both researching language contact in the Russophone world and to understanding the typological diversity of Sinitic languages.

Keywords: Dungan; Sinitic languages; Central Asia; language contact; grammatical remodeling

1. Introduction

The present paper analyzes Kazakhstani Gansu Dungan from the viewpoint of contact linguistics and focuses on Russian influence on the language, termed 'Russianization'[1] in the analysis and discussion that follow. The introduction consists of four parts: goals of this paper (Section 1.1), sources and methodology (Section 1.2), conventions (Section 1.3), and structure of this paper (Section 1.4).

1.1. Goals of This Paper

In recent years, 'divergent' Sinitic varieties that typically manifest either Altaic or Tibetan contact history have received increasing attention in Chinese linguistics. The trend is exemplified, among others, by the descriptive grammars of Wutun (Sandman 2016), a contact language of the Amdo Sprachbund, and Zhoutun (Zhou 2022), a Tibetanized Northwestern Mandarin variety in the same area. At the same time, Dungan varieties offer yet another Sinitic contact variety type largely neglected in earlier research, especially in Western Sinology.

Dungan research has a long history that has resulted in a sizeable body of publications in various languages, including several descriptive grammars. While earlier research, such as the grammars of Lin (2012) and Wang et al. (2015), mentions and acknowledges Russian contact and its linguistic consequences, it primarily analyzes Dungan as yet another Mandarin Chinese 'dialect'. The sentiment is concisely summarized by Comrie (1981, p. 273): "In terms of its structure and basic vocabulary, Dungan is a form of Mandarin (Northern) Chinese, not standing out particularly from other Northwestern dialects of Mandarin". Such an approach focuses on Russian influence primarily in the lexical domain, where it surfaces saliently due to numerous borrowings. On occasion, morphosyntactic influence

on Written Dungan also receives some mention. The present paper, however, demonstrates that Russian influence in spoken Kazakhstani Gansu Dungan permeates the whole language and is far more extensive than previously thought.

Based on recordings of spoken Gansu Dungan, including natural spontaneous language use, the present study argues that the language is taking steps that lead it away from features that characterize the well-known prototype of a Sinitic language. Chao (1968, p. 13) famously claimed that "There is practically one universal Chinese grammar". While the Sinitic languages have many core features in common, research in "outlier" cases, such as Dungan, is gradually showing that many deviations from the prototype that matches most closely with the features of Standard Mandarin exist.

Russian influence in Dungan extends to morphosyntax and has caused the remodeling of Kazakhstani Gansu Dungan grammar to follow Russian patterns more closely. Unlike earlier influence from Turkic languages also identifiable in Dungan, most conspicuous forms of Russian influence are likely relatively recent and thus not yet well reflected in older Dungan research. In addition to introducing new structures based on a Russian model, extensive Russian influence also reinforces earlier development of Dungan that has led the language to deviate from the Sinitic prototype.

The present study is not an exhaustive analysis of all contact-induced changes in contemporary Kazakhstani Gansu Dungan. On the contrary, by selecting many of the most prominent contact phenomena neglected in earlier work for analysis, the present study lays a foundation on which further contact linguistic research of the language can be built. Also, contact-induced change in Written Dungan is largely omitted since the study focuses on conversational language use.

From the viewpoint of contact linguistics, this study offers two contributions. First, it connects to the ongoing study of 'Russianization' in languages of the Russophone world. Many contact features that Dungan manifests are not restricted to the language but surface in other languages that have been in intense contact with Russian. Second, Dungan additionally offers a contribution to investigating the scope and possibilities of typological variation across Sinitic languages.

1.2. Sources and Methodology

This study is based on Dungan source materials collected through linguistic fieldwork in Kazakhstan in 2022–2023. The materials were collected from Astana, the capital of Kazakhstan, and Dunganovka, a Dungan village outside Taraz in the southern part of the country. Most of the source materials that this study relies on originate from proficient native speakers who continue using Dungan in their daily lives, rather than from speakers who have learned the language only imperfectly. The speakers are bilinguals with a fully proficient command of Russian, since finding monolingual Dungan speakers is becoming increasingly difficult, especially among the younger generations. At present, approximately six hours of recordings exist, of which we have fully annotated and translated approximately an hour with multi-layer annotations and metadata. A considerable portion of the source materials consists of recorded conversations, and most examples selected for the paper represent this speech genre.

1.3. Conventions

The present study follows a five-line glossing system instead of the usual three-line approach common in linguistics. The first line offers an etymological spelling where Sinitic elements are written with Chinese characters. In turn, Russian and Turkic are expressed with the Cyrillic script used for Turkic languages in Kazakhstan, such as Kazakh and Uyghur. Dungan has a written language with some degree of use and standardization, particularly in Kyrgyzstan.[2] Consequently, the second line presents the Dungan Cyrillic spelling of the example. To some extent, Kazakhstani Gansu Dungan differs from Written Dungan. To address this discrepancy between the varieties and to make this study more approachable to readers with no knowledge of the Cyrillic script, the example is also written with the

International Phonetic Alphabet with tone marking. The following three signs are used: V̄ '去声 realized as a high tone (45, 44)', V́ '平声realized as a rising tone (13)', and V̀ '上声 realized as a falling tone (41)' (tonal values from Wang et al. 2015, p. 40). The historical 入声 category is distributed across the three tonal categories above. The absence of tonal marking indicates the presence of a 'neutral tone', namely the neutralization of tonal distinctions. This typically occurs with grammatical enclitics, some of which frequently undergo phonetical erosion in their articulation, as demonstrated in the present article. Finally, while the tone symbols appear visually identical to those used in Hanyu Pinyin, the Dungan tonal system should not be interpreted through them.

Reliable and extensive Dungan lexicographical resources are rare, a situation shared with many other Sinitic varieties. As stated by Janhunen (2020), Salmi's (2018) dictionary of Dungan is the first linguistic dictionary of the language. Consequently, in addition to the fieldwork investigation, the present study uses the dictionary to ascertain the tonal values of the Dungan lexemes.

1.4. Structure of This Paper

This paper is structured as follows: After the introduction, chapter two offers an overview of Dungan and the speakers of the language, particularly in the context of Kazakhstan. Following, chapter three demonstrates how intensive language contact with Russian is now solidifying phonological development that likely started in an earlier era of Turkic contact. In turn, chapter four presents a selection of morphosyntactic phenomena that result from intensive language contact with Russian. The study focuses on the verbal system, clause combining, and complex clauses that earlier research on contact languages of the Russophone world identified as common domains for structural and formal borrowing. Finally, chapter five, concluding this study, contextualizes Dungan as a Northwestern Sinitic contact variety, examines the future trajectory of the language, and reiterates the presented key arguments.

2. Introduction to Dungan

The present chapter offers a brief introduction to Dungan. It starts with an overview (Section 2.1) with a focus on the term 'Dungan' and the sociolinguistic situation of the language. Following, the Dungan varieties and their intelligibility with Standard Chinese (Section 2.2) and the historical origins and migrations of the Dungan speakers (Section 2.3) are discussed. (Section 2.4) addresses why earlier research has tended to neglect contact phenomena in Dungan. The chapter also presents a typological morphosyntactic sketch of Kazakhstani Gansu Dungan (Section 2.5). It concludes with an illustration of Dungan diglossia and how the formality of the speech registers correlates inversely with the presence of Russian influence in the language (Section 2.6).

2.1. Overview: The Term 'Dungan' and the Sociolinguistic Situation of the Language

The Dungan language is known in Written Dungan as *Хуәйзў йүян* /hwízú jỳ́án/ 回族语言 which means 'the language of the Hui nationality'. The Hui (Ch. *huízú* 回族) are Sinophone Muslims, the main population concentration of which lies in the post-Soviet states of Central Asia and Western China. The etymology of the ethnonym 'Dungan' remains unclear. Focusing on the source language, Fougner (2012, pp. 23–27) divides the existing proposals into three groups: Chinese, Russian, and Turkic-based. Many oft-repeated and well-known etymological proposals are Sinitic, such as the toponymically motivated *dōnggān* 东甘 'Eastern Gansu'. The term 'Dungan' is also attested in the regional Turkic languages, e.g., Chagatay *tungan* تونكان (see Schluessel 2018). In Russian, it is attested as *дунгане*.

The Dungan language is becoming increasingly endangered, yet its speakers retain a strong ethnic consciousness. Religion plays an important role in the identity formation and maintenance process of the Dungans, who identify themselves strongly as Muslims

and follow the Hanafi School of Sunni Islam (Akiner 1986, p. 355). The influence of Islam also presents itself through Perso-Arabic loanwords.

Ethnologue classifies Dungan, with approximately 110,000 speakers, as endangered (Eberhard et al. 2022). Language loss is attested among some Dungans (Hai 2004). Speakers of the language are aware of an intergenerational gap that is emerging. The young have difficulties understanding the elderly and frequently communicate in Russian, at least with their siblings and peers. Spoken Dungan with Russian admixture is deemed less proper and correct than the idea of a 'pure' Dungan where everything can be expressed with native resources without resorting to borrowing or code-switching (see also Section 1.2). The following excerpt from an interview summarizes the current sociolinguistic state of the Dungan language in Kazakhstan and young speakers' common self-perception as speakers of the language. Since the speaker narrated everything in fluent Dungan, the total lack of linguistic competence is an exaggeration that likely results from the inability to express everything with Dungan lexical resources. At the same time, the concern expressed about the intergenerational gap is real.

> That (i.e., Dungan) is what my grandma and grandpas speak. Myself, I don't know anything. I don't understand half of their talk. (I speak Dungan) only at home, with my mum and dad and with the elders. Among the siblings, we speak Russian. All young children speak Russian now. (interview recording of a young male in Taraz 2023)

2.2. Dungan Varieties and Mutual Intelligibility with Chinese

The Dungan language has two main varieties: Gansu (甘肃) and Shaanxi (陕西) Dungan. Kazakhstani Gansu Dungans call their language *жунянхуа* /pfə́njə́xwā/ (中原语) 'Central Plains language'. In this paper, 'Dungan' is used as a shorthand for Kazakhstani Gansu Dungan, and the findings should not be considered generalizations valid for all Dungan varieties.

Phonology offers a quick way to identify a Dungan variety. Therefore, in addition to the speakers' self-assertion as Gansu Dungan, I have verified the studied variety from the known phonological differences. For instance, Shaanxi Dungan possesses the initial /ŋ/ that is lacking in Gansu Dungan, as in /ŋɛ/ vs. /nɛ/ 爱 'love' (Zavyalova 2017a). Also, the Shaanxi Dungans are considered culturally more conservative (Rimsky-Korsakoff Dyer et al. 1992, p. 245). The present study does not investigate the Shaanxi variety. It remains to be seen whether the 'cultural conservatism' has linguistic consequences, namely whether the findings apply to Kazakhstani Shaanxi Dungan as well, and if so, to what extent.

The two Dungan varieties differ noticeably, e.g., in the number of their phonemic tones. Because of considerable differences, it is a matter of analysis whether the two should be called Dungan dialects or separate Dungan(ic) languages. The present article leans towards the latter option. To illustrate, when communicating with each other, speakers of Gansu and Shaanxi Dungan in Kazakhstan resort to Russian, the *lingua franca* of the country. To avoid over-emphasizing the differences, however, it should be mentioned that high competence in Russian may direct towards this communicational choice. Many Dungans already speak Russian in their daily lives. The use of Russian consequently obviates the possibility of linguistic discomfort resulting from efforts to make sense of a variety with noticeable differences from one's own.

The "Chineseness" of the Dungan language is often emphasized. To illustrate, the claim that a speaker of Dungan can converse with that of Standard Chinese or the Beijing dialect is often repeated upon mentioning the language in brief discussions of a general nature (see, e.g., Dong 2020, p. 176). Yet no systematic study of mutual comprehension exists, and the degree of such claims should be rigorously measured. At a higher level, this reflects the "myth of mutual intelligibility" among spoken varieties of Mandarin. As Szeto et al. (2018, pp. 21–242) show, homogeneity and mutual intelligibility among Mandarin varieties are often exaggerated, whereas in reality, speakers of different Mandarin dialects may struggle to understand each other even in the same province.

2.3. Historical Origins and Migrations of the Dungans

The Dungans are an ethnic minority of Kazakhstan, a multinational state. Despite the group's marginal status, the Dungans are nevertheless rarely discussed as a 'minority' in the domestic context. This reflects what Dave (2007, p. 131) has identified as "the absence of the term'minority' in either official or public discourse on ethnic relations". The Dungan settlements of Kazakhstan are concentrated in the south along the Kyrgyzstani border. Among other things, economic opportunities have drawn a sizeable Dungan population into the north, epitomized by the capital Astana, where several hundred households now reside.

The Dungan originate from a relatively compact area that covers southern Gansu and western Guanzhong in Shaanxi (Zavyalova 2017a). The Dungan presence in Central Asia was caused by the power politics of the 19th century. The British defeated the Qing dynasty in the first Opium War (1839–1842), which triggered local revolts around the empire and weakened it further (Khalid 2021, p. 79). As a result of a failed revolt against the Qing government, the Dungans had to cross into the Russian Empire to seek refuge. Several migration waves occurred, and they also involved migrating Uyghurs, with whom the Dungans often settled into a new territory in the Russian Empire (see Smagulova 2016, p. 77). According to Rimsky-Korsakoff Dyer (1990–1991, p. 301), two major migrations took place between 1864 and 1887, the first one from the Ili valley and the second one consisting of supporters of the autonomous state of Kashgaria. Rather than being one-off events, Dungan migrations continued on a smaller scale even during the early 20th century until the Sino-Soviet border was closed in the 1960s (Allès 2005, p. 122).

The migrations have a linguistic dimension. First, migrating and settling together with the Uyghurs meant that Dungans remained in contact with the Uyghur language even after the relocation. Jochelson (1928, p. 105) reference to "a corrupt Turkic dialect of Uigur origin" among the Dungan illustrates that Uyghur was widely spoken among the Dungans in the past. Even today, some Kazakhstani Dungans can speak Uyghur (Smagulova 2016, p. 77).

Second, as the links with the Sinophone heartland weakened, Dungan lost many of the elements belonging to the register of Written Chinese (书面语). Since Dungan was typically a spoken language even prior to the migrations, it is hard to ascertain to what extent such features have ever existed in the language. In any case, as Harbsmeier (2015) points out, the independence of Dungan from the Chinese writing system has shaped the development of the language. For instance, severed links with Written Chinese resulted in the loss of literary expressions and sayings, such as *chéngyǔ* (成语).

Standard Chinese possesses many words that are polysyllabic but monomorphemic, such as the famous example of *húdié* 蝴蝶 'butterfly'. Dungan, however, has additionally monomorphemized several Sinitic words that are etymologically polymorphemic. In other words, the compositional etymological structure of the word has been lost, and this may be due, at least to some extent, to losing contact with the Chinese writing system acting as a reminder for the morphological structures of the words.[3] As a representative case, *бу щин* /pə́ɛ́ín/ 不行, 'to be sick' that etymologically means 'not to go well', is now perceived as a single morpheme rather than two. The monomorphemization originates from the negation of the Sinitic verb 行 *xíng*, 'to go, be alright'. If the monomorphemized verb is to be negated in contemporary spoken Dungan, a sequence of two etymological negation markers results (1). The conclusion of this paper will return to the topic of Sinitic etymological awareness by contemplating the possibility of re-establishing more intensive linguistic contact with Chinese and its potential linguistic effects.

(1) 都**不不**行了。
Ду **бу бущин***ли*.
tú ***pə́*** ***pə́ɛ́ín****=le.*
all **NEG** **be.sick**=PFV
'... (and let) no-one be sick.' (New Year's wish)

2.4. Neglect of Contact Phenomena in Earlier Research

There are three main reasons why the extent of Dungan's morphosyntactic contact with Russian has received less attention than it deserves. First, some of the earlier research materials that have played a pioneering role in establishing Dunganological studies are already relatively old, e.g., Rimsky-Korsakoff (1967), a study built on publications in Written Dungan. Turkic language contact has a long history with Dungan and likely predates the Dungan westward migrations into the Russian Empire. On the other hand, the intensification of language contact with Russian in its full magnitude is a more recent phenomenon. During the Soviet era, the Dungans were predominantly agriculturalists inhabiting rural areas where they participated in collective farming, often in 'Dungan kolkhozes' (Rimsky-Korsakoff Dyer 1990–1991, pp. 302–3). At present, however, the Dungan communities are witnessing a "collapse of the traditional trade and way of living" (Smagulova 2016, p. 83). Many migrate to cities where interaction with other ethnic groups in Kazakhstan becomes a daily matter, often in Russian. In sum, it is possible that not all the contact phenomena described in the present paper existed, at least in their full form, when some of the earlier studies were conducted.

Second, Kazakhstan is known for strong prescriptive views and attitudes regarding language and its perceived 'purity'. At the national level, the aim of 'purity' revolves around the Kazakh language. Ethnic Kazakhs are expected to fulfill the performative rule of being 'pure' and 'authentic' (Fleming 2019, p. 72). Consequently, code-switching to Russian or speaking a Russianized variety of Kazakh can be seen as an obstacle to the imagined 'purity' of Kazakh. Kazakhstani Dungans share this purist language attitude. Therefore, an investigator must be careful when researching the language to be able to capture the real spoken form of Dungan, rather than an idealization of the language that is easily offered to an outsider.

Finally, the principle of "you get what you ask for" that applies to linguistic fieldwork in general holds relevance for Dungan. The reason Dungan research has not documented many of the key contact features presented here lies in the neglect of conversational source materials, which remains a persistent issue in linguistic fieldwork more broadly. Elicitation, especially when conducted through translation from a *lingua franca,* the collection of folk stories, and analysis of Written Dungan will not show the extent of language contact, although, as Hai (2006, p. 148) demonstrates, even the formation of the literary standard for Dungan manifests a noticeable Russian impact that separates Written Dungan further from Standard Mandarin. To conclude, Dungan is a contact language, the full extent of which is hidden in plain sight. Only a focus on natural conversation reveals the depth and intensity of the language contact.

2.5. A Brief Typological Morphosyntactic Sketch

This section provides a brief morphosyntactic-typological sketch of Dungan. Dungan is an outlier Sinitic language. While the core of the language remains recognizably Sinitic, extensive language contact throughout history has shaped Dungan even before the current wave of Russianization. To keep this section manageable, some of the offered brief examples originate from non-conversational contexts to illustrate patterns confirmed to exist in spoken Dungan.

The pronominal system of Dungan corresponds to three-term systems that are relatively common in Sinitic languages (Chen 2015, p. 94). Dungan adnominal demonstrative pronouns make a three-way distinction (Julie Lefort p.c., 4 August 2023). In other words, a different pronoun is used for referents that are close to the referee, some distance away, or further away (Table 1). The same seems to apply to locative demonstratives that equally manifest three distance-based distinctions, a topic for further research.

Table 1. Dungan demonstrative pronouns.

Distinction	Pronoun	Gloss
Proximal	/tsə̄(kə)/ 这（个）	this
Medial	/nə̄(kə)/ 那（个）	that
Distal	/nē(kə)/ 那（个）	that (yonder)

Dungan has a typical Northern Sinitic person pronoun system where the plural personal pronouns are formed with the addition of the pluralizing enclitic *му* /=mə ~ =m/ 们 (Table 2). Only in the case of the first person does asymmetry arise in spoken Dungan regarding plural formation. Instead of the expected */və̀=mə/, the first-person plural pronoun is *вэму* /ò=mə/ 我们. Also, the second-person plural pronoun has evolved a secondary function of politeness when used in the singular, a topic discussed later in this paper (see Section 4.1). Finally, the language has a reflexive pronoun in the shape of *гэҗя* /kétɕá/ 个家 'self', which is widely shared in the Sinitic languages of the region.

Table 2. Dungan personal pronouns.

Person	Number			
	Singular		Plural	
1	/və̀/ 我	I	/ò=mə/ 我们	we
2	/nì/ 你	you (SG)	/nì=mə/ 你们	you (PL)
3	/t^hà/ 他她	s/he	/t^hà=mə/ 他们	they

Dungan is less topic-oriented than Standard Mandarin (Salmi 2023, p. 16). In other words, the language has taken steps from topic to subject prominence. Among other things, this manifests through the extensive use of clitics in noun phrases to mark case relations. In terms of the history of their forms, Dungan case enclitics are mostly Sinitic, as the ablative *чочӳ* /ʈʂ^{h}ōpfə= ~ ʈʂ^{h}ōpf=/ 朝着 coding SOURCE (2).

(2) **朝着**розетка上取掉。
Чочӳ розеткахон чүдё.
ʈʂ^{h}ōpf*=raz^{j}etka=xōŋ* *tɕ^{h}ỳ=tō*[4]
ABL=socket=LOC take=COMP
'Take it (i.e., the device) from the power socket'. (conversation)

Several Northwestern Sinitic contact varieties, such as Linxia (临夏), Tangwang (唐汪), and Gangou (甘沟), have evolved a case system in which Altaic languages of the Turkic and Mongolic types serve as the sources of some of the case markers (Peyraube 2017). Dungan shows less Altaic influence in this respect. However, following Sandman's (2016) terminology from Wutun, a terminative case *мала* /=t^hala/ 'until' can be identified in the language (3). It must have been borrowed into Dungan early on, namely prior to the westward migrations (see Section 2.3). The ultimate origin of this regionally attested morpheme likely lies in the Mongolic languages (Peyraube 2017, p. 125).

(3) 我到后半儿**тала**闲的呢。
Вə до хубар**тала** щяндини.
və̀ *tō* *xūbə́=**t^{h}ala*** *ɛ́ján=tini.*
1SG reach evening=TERM be.free=IPFV
'I am free until the evening'. (constructed)

Clitics are not only a property of the nominal system but also surface in verb phrase syntax, where they, among other things, mark TAM distinctions and verbal complementation.[5] They can undergo chaining in what takes the maximal form of three enclitics carried by the predicate (4) in the source materials.

(4) 把人家也喊上了吗？
Ба жынӂя е ханхонлима?
pá=rə́ntɕà= jè *xàn=xōŋ=le=ma.*
ACC=3=also call=COMP:up=PFV=Q
'Did you invite them also?' (conversation)

The close bond of the enclitics with their hosts is substantiated by their phonological erosion in the spoken language, e.g., the imperfective aspect marked by the enclitic *tini* > *tni* (5). This phenomenon is affecting Dungan phonotaxis discussed further in Section 3.

(5) Зульфия, 你咋么个？好**的呢**吗？
Зульфия, ни замугə? Хо**дини**ма?
zulʲfija *nì* *tsàmúkə.* *xò=**tni**=ma?*
Zulfiya 2SG how be.good=**IPFV**=Q
'How are you, Zulfiya? Are you doing well?' (WhatsApp message)

A prominent feature of Dungan is the frequent use of the versatile dative-locative enclitic *хон* /=xōŋ/ 上, one of the most commonly occurring lexemes of the language. The main functions of the enclitic include encoding spatial LOCATION (6), GOAL (7), and POSSESSOR (8). Also, as example (8) demonstrates, the existential-possessive verb *ю* /jù/ 有can be omitted in Dungan. Cognates for /=xōŋ/ exist in other Sinitic languages of the adjacent regions, such as Zhoutun (see Zhou 2022, pp. 26–28).

(6) 我把你们见了Инстаграм上。
Вə ба ниму жянли Инстаграм**хон**.
və *pá=nì=mə* *tɕjān=le* *instagram=**xōŋ**.*
1SG ACC=2=PL see=PFV Instagram=**LOC**
'I saw you on Instagram'. (WhatsApp message)

(7) Базар上去，打了些肉，买了些子青货。
Базар**хон** чи, *дали* ще жу, мэли щезы чинхуə.
*pazə=**xōŋ*** *tɕʰī,* *tù=l* *ɕé* *rū,* *mè=l* *ɕé-zə* *tɕʰíŋxwə*
market=**LOC** go hit=PFV some meat buy=PFV some-DIM fruit
'I went to the market. I bought some meat and some fruits'. (daily activities)

(8) 我们上三个娃娃：两个儿子，一个丫头。
Ому**хон** сангə вава: *лёнгə* эрзы, йигə яту.
*ò=m=**xōŋ*** *sán=kə* *vávà* *ljàŋ=kə* *ázə,* *jí=kə* *játʰu.*
1=PL=**LOC** three=CLF baby two=CLF son one=CLF daughter
'We have three children: two sons and one daughter'. (personal history)

Another oft-noted feature that distinguishes Dungan lies in its high preference for marking the P argument with *ба* /pá=/ 把 (9a), even in cases where Standard Mandarin cannot do so, as in (9b). The use of /pá=/ in Dungan qualifies as differential object marking (see Chappell 2015, pp. 19–24 for a typological survey of DOM constructions in Sinitic). Many scholars, such as Hai (2011, p. 143) and Lin (2003, p. 84), attribute it to Altaicization, since in the 'Altaic languages,' P arguments generally precede the predicate.[6] In Dungan, P arguments high in their referential properties of animacy and definiteness, such as pronouns and personal names, must be marked with /pá=/. This occurs even with emotive verbs of low transitivity and controllability where the marking is not permitted in Standard Mandarin (see also Hai and Wang 2002, pp. 49–50), e.g., *нэ* /nē/ 爱 'to love', *щ̣ён* /ɕòŋ/ 想'to miss', and *жы̣до* /ʈʂə́tó/ 知道 'to know'. In short, Dungan has progressed further in its development towards morphologized coding of noun phrases' semantic roles with a case marker. The question of frequent differential object marking with /pá=/ also directly relates to the canonical word order discussed at the end of this section.

(9a) 我们**把**Тараз想呢。
Вəму **ба** Тараз щённи.
ò=mə ***pá=taraz*** *ɕòŋ=ni.*
1=PL **ACC**=Taraz miss=STAT[7]
'We miss Taraz.' (personal history)

(9b) 我们很想塔拉兹。
Wǒ=men *hěn* *xiǎng* *tǎlāzī.*
1=PL very miss Taraz
'We miss Taraz (a lot).' (constructed)

The nominal numeral classifier system has collapsed in Kazakhstani Gansu Dungan, so that *гə* /=kə/ 个 remains the only remnant of a more complex erstwhile system. As Hashimoto (1978, p. 251) points out, "the unification of noun classifiers" is likely yet another contact-induced change that has occurred in Dungan. While the present study glosses /=kə/ as a classifier, the 'classifier' plays a dummy role in phrase-level syntax. Some previously published Dungan studies report complex classifier systems (see, e.g., Wang et al. 2015, pp. 525–27; Lin 2012, pp. 265–66). The present study could not corroborate this in Kazakhstani Gansu Dungan. While this erosion of nominal numeral classifiers is not solely a feature of Dungan, Sinitic languages that have lost their nominal numeral classifier systems are typically contact varieties. Example (10) demonstrates how Dungan applies the same classifier to all countable nominal referents.

(10) a. 一**个**娃娃 b. 两**个**狗 c. 那**个**书本子
йиɪə вава *лёнɪə ɡу* *нэɪə фубынзы*
*jí=**kə*** *vávà* *ljàŋ=**kə*** *kù* *nə̀=**kə*** *fə́pə̀nzə*
one=**CLF** child two=**CLF** dog that=**CLF** book
'a child' 'two dogs' 'that book'

The Dungan system contrasts with that of Standard Mandarin, which retains a complex and contrastive set of nominal numeral classifiers. Standard Mandarin counts with different classifiers for all three referents that Dungan treats equally with /=kə/ (11).

(11) a. 一**个**娃娃 b. 两**只**狗 c. 那**本**书
*yī=**ge*** *wáwa* *liǎng=**zhī*** *gǒu* *nà=**běn*** *shū*
one=**CLF** child two=**CLF** dog that=**CLF** book
'a child' 'two dogs' 'that book'

Comparative formation forms a core typological variable among the Sinitic languages. Two main patterns exist: 1. Compare and 2. Surpass (Chappell and Peyraube 2015, p. 134) Dungan follows the Compare pattern of Standard Mandarin, where *би* /pì=/ 比 'than' is sandwiched between the comparee and standard of comparison (12).

(12) 我们房子里有三个娃娃呢。第二个是我的妹妹。她**比**我两岁尕。
Ому фонзыни ю сангə вавани. *Ди* эргəсы вəди мими. Та **би** вə *лён* суй га.
ò=m *fóŋzə=ni* *jù* *sán=kə* *vávà=ni.* *tī-ə̄=kə=sə̄*
1=PL house=LOC EXV three=CLF child=STAT ORD-two=CLF=COP

və̀=t *mīmi.* *tʰà* ***pì=və̀*** *ljàŋ=sɯ̄* *ká.*
1SG=MOD little.sister 3SG **CMPR**=1SG two=year be.small
'In our household, there are three children. The secod is my little sister. She is two years younger than me.' (personal history)

In turn, superlative formulations are structurally identical to those of Standard Mandarin, but the superlative marker *zuì* 最 'most' has been replaced by its Turkic semantic equivalent *йин* /in/ 'most' through borrowing, as in (13). Written Dungan uses *дин* /tɨŋ ~ tɕìŋ/ 顶 'most' for the same purpose.

(13) 我是房子的**йин**大的儿子。
Вəсы фонзыди **йин** дади эрзы.
və=sə̄ *fóŋzə=ti* ***in*** *tā=ti* *ə́zə.*
1SG=COP home=MOD **SUPE** be.big=MOD son
'I'm the oldest son in my home.' (personal history)

Dungan word order is SV in intransitive clauses (14) while transitive clauses show variation. In cases without /pá=/, the canonical Sinitic word order AVP dominates (15). When the object is formally marked, the word order appears as APV (16). Lin (2012, p. 291) attributes such preposing of the object with the resulting APV word order to Altaicization in Northwestern Sinitic languages.[8] In any case, establishing a basic word order is more challenging for Dungan than for Standard Mandarin. Since /pá=/ has not reached the status of a universal object marker, the structure can be seen as a marked adjustment of an underlying AVP word order in line with most Sinitic languages. This distinguishes Dungan from many contact languages in Northwestern China with strict APV word orders, such as Zhoutun (see Zhou 2022, p. 18).

(14) A你夜里哪去了?
A ни ели на чили?
a *nì* *jēl* *nà* *tɕ^{h}ī=le.*
and 2SG yesterday where go=PFV
'And where did you go yesterday?' (conversation)

(15) 我今儿买鱼了。
Вə жер(гə) мэ йүрли.
və *tɕə̄:* *mè* *jʉ́=le.*
1SG today buy fish=PFV
'I bought fish today.' (conversation)

(16) 一千九百七十二年我妈Тараз上把我养下了。
Йичян жюбый чишы эр нян вə ма Таразхон ба вə ёнхали.
jí-tɕ^{h}jàn *tɕù-píj* *tɕ^{h}íʂə́-ə=njàn* *və* *má* *tazaz=xōŋ*
one-housand nine-hundred seventy-two=year 1SG mother Taraz=LOC
pá=və *jòŋ=xā=le.*
ACC=1SG give.birth=COMP:down=PFV
'My mum gave birth to me in 1972 in Taraz.' (personal history)

The behavior of ditransitive clauses constitutes another typological division line in the Sinitic languages. With the verb 'to give,' two dominant patterns exist for marking the recipient (R) and theme (T): 1. V R T and 2. V T R, the former dominating in Northern Sinitic (17) and the latter in Southern Sinitic. (Szeto 2019, pp. 70–71).

(17) 我给他钱。
Wǒ *gěi* *tā* *qián*
1SG give 3SG money
'I give him money.' (Standard Mandarin; Szeto 2019, pp. 70–71)

In Dungan, the lexical verb *гu* /kì/ 给 'to give' forms a ditransitive construction where a preverbal /kə= ~ k=/ 给corresponds to a dative proclitic marking the RECIPIENT and the predicate *гu* /kì/ 给indicates the action of transferral (18). This is relatively common in Northwestern dialects of Mandarin; see, e.g., Wang and Wang (2003) on the Lanzhou dialect.

(18) 就那一天**给**我**给**了медаль了。
Жю нэ йитян **ги** вə **ги**ли медальли.
tɕū *nē* *jí=t^{h}jàn* ***kə=və*** ***kì=le*** *mʲidalʲ=le.*
DIS DEM.DIST one=day **DAT** =1SG **give**=PFV medal=SFP
'On that day, (they) gave me a medal.' (Dungan history)

In ditransitive constructions involving other verbs, three patterns are attested. They correspond to the typological tendency of the 'indirect object' or R to precede the 'direct

object' or T in Northern Sinitic languages, with Southern Sinitic showing the opposite tendency (Chappell 2015, p. 17). In all the patterns, the R argument is compulsorily marked with the enclitic /kə= ~ k=/. First, when the /= pá/ construction is absent from the ditransitive clause, the canonical order surfaces as A /kə/ R V T, as in (19). Following Peyraube's (2015, pp. 67–68) six typological classes of ditransitive clauses in Standard Mandarin, this is the only pattern shared both by Standard Mandarin and Dungan.

(19) 雀给个家盖窝窝子的呢。
Чёр **ги** гәжя гэ вәвәзыдини.
tɕʰə ***kə****=kétɕá* *kē* *və́vəzə=tini.*
bird **DAT**=REFL build small.nest=IPFV
'A bird is building a small nest for itself.' (constructed)

In the source materials, however, the /pá=/ construction appears frequently in ditransitive clauses, with the resulting order of A / kə=/ R /pá=/ T V (20).

(20) 妈，我**给**那们**把**билеты拿上了。
Ma, вә **ги** нэму **ба** билеты нахонли.
má *və* ***kə****=nē=mə* ***pá****=biljet-ɨ* *ná=xōŋ=le.*
mother 1SG **DAT** =DEM.DIST=PL **ACC**=ticket-PL take=COMP:up=PFV
'Mom, I bought the (flight) tickets for them.' (WhatsApp message)

Finally, Dungan possesses a double *ги* /kì/ 给 benefactive-causative construction where the affected is marked by the first /kə= ~ k=/ playing the role of a dative proclitic, and the predicate is followed by a second enclitic /kì/ that occupies the same slot as other verbal complements (21). This construction occurs only with a limited list of predicated, most noticeably *фэги* /fə́=kì/ 说给 'to tell', *мэги* /mè=kì/ 买给 'to buy', and the currently only attested causative instance in the source materials, namely *кангги* /kʰān=kì/ 看给 'to show, lit. to give to look'. The phenomenon exists in other Northern Sinitic languages, as documented by Chappell under the term 'applicative and causative syncretism' (Chappell 2023, Forthcoming).

(21) 你**给**他заранее**说给。**
Ни **ги** та заранее **фэ**ги.
nì ***kə****=tʰà* *zaranʲije* *fə=**k**.*
2SG **DAT** =3SG in.advance **say=COMP:BEN**
'Tell him in advance.' (conversation)

2.6. Different Registers of Dungan and Language Contact

Dungan qualifies as a diglossic language. The high (H) variety, namely written Dungan, has a codified written standard and a body of publications, although Dungan publishing has become less common since the collapse of the Soviet Union. Written Dungan is held in high prestige in comparison to the less 'pure' spoken register of the language under heavy Russian influence. No speakers of Kazakhstani Gansu Dungan consulted in the present study speak the H variety in their everyday lives, although those who have mastered the H variety may adjust their speech to approximate it more closely in formal settings, e.g., in giving a religious speech. In contrast, the L variety lacks prestige and is often perceived as less proper than H due to Russian influence (see also Section 1.2 on language attitudes and 'linguistic purity').

The intensity of Russian presence is intrinsically linked to Dungan diglossia and correlates inversely with the formality of the speech register, as summarized in Table 3. A similar correlation between formality and speech register does not exist with Turkic presence. In other words, Turkic borrowing generally appears in all three registers with no regard to the formality of the speech event when this is pragmatically feasible.[9] Since many Turkic borrowings appear to be more established in Dungan than the newest influx of Russian borrowings, this is to be expected.

Table 3. Different registers and Russian presence.

Speech Register	Russian Presence	Formality
Written Dungan (H)	low	high
Planned speech (M)	moderate	moderate
Conversational speech (L)	high	low

Written Dungan shows the least amount of Russian lexical and morphosyntactic influence. This is most noticeable in the lexicon in the relative scarcity of Russian loanwords. To illustrate, (22) is a small description of winter weather first written down in Dungan and subsequently read aloud and recorded. The example contains only lexemes of Sinitic origin.

(22) 今儿个外头冷得很。
Жергә вэту лындихын.
tɕə́:kə *vēt^{h}u* *ləŋ=ti* *xə̀ŋ.*
today outside be.cold=COMP INT
'Today, it is very cold outside.' (prepared text read out loud)

More casual speech sees the emergence of a wider range of Russian loanwords (23). The Russianization of Dungan syntax begins particularly at this level, a topic discovered with examples in Section 4.

(23) 我们的房子，我们的**отель**就**море**跟前呢，一百**метр**.
Вәмуди фонзы, вәмуди **отель** жю **море** гынчянни, йибый **метр**.
ò=mə=ti *fóŋzə,* *ò=mə* ***atelʲ*** *tɕū* ***morʲe*** *kə́ntɕ^{h}jàn=ne,*
1=PL=MOD house 1=PL=MOD **hotel** DIS **sea** next.to=STAT

jí-píj ***mʲetr.***
one-hundred **meter**
'Our house (self-correction), our hotel is next to the sea, one hundred meters.' (travel narrative)

Finally, casual registers of Dungan speech usually contain a noticeable portion of elements of Russian origin. In (24), only the subject pronoun and the interrogative enclitic *ма* /=ma/ 吗 remain Sinitic, while the rest of the utterance is constructed with words of Russian provenance. In the chapters that follow, the present study focuses primarily on this register of Dungan neglected in earlier research.

(24) 你**можешь**吗**отпроситься**?
Ни **можешь**ма **отпроситься**?
nì ***moʐ-eʂ****=ma* ***atprasʲitʲsʲa?***
2SG **can.IPFV.PRES-2SG=Q** **be.excused.INF**
'Can you get leave from work?' (conversation)

Many earlier descriptions of Dungan mention contact influences from Persian and Arabic. While this is correct and such influence certainly exists, it seems to be of a lexical nature only, rather than penetrating into morphosyntax as well.[10] Moreover, Perso-Arabic loanwords have often entered the Dungan lexicon through an intermediary Turkic language rather than directly from Persian and Arabic (Wexler 1980, p. 297). To illustrate, the Persian حاضر /hɒ:zer/ 'present,' itself an Arabic loan, was adopted to Turkic languages of Central Asia, e.g., Kazakh *қазір* /qazɯr/ 'now' and Uyghur هازىر /hɑzır/ 'now'. The word was subsequently borrowed into Dungan, likely via Uyghur: Written Dungan has *хазыр* /xazə/ 'now' and Spoken Kazakhstani Gansu Dungan *ха* /xa/ 'now'.

3. Dungan Phonology in Contact

The present chapter offers a brief overview of the phonological results of Russian language contact. After the introduction (Section 3.1), it is shown that Russian contact reinforces Dungan short forms that emerged before the present intensive contact with Russian

(Section 3.2). Finally, consonant palatalization constitutes one of the most conspicuous results of Russian influence in spoken Dungan.

3.1. Introduction

Dungan has been in linguistic contact long before the intensification of the current Russian contact, the contact having been particularly intensive with the Turkic languages. Older loanwords in the language have undergone phonological adaptation. To illustrate, two Turkic loanwords for Kazakhstan exist: 哈萨国 Хасагуй /xásákɥí/ and Қазақстан /qazaqstan/. The former has been subject to phonological adaptation, such as tonalization and fronting of the velar plosive absent from native Dungan words. In contrast, the latter is pronounced identically to the Kazakh pronunciation of the word, with no perceptible phonological adaptation.

Tonalization, phonotactic adjustment, and other types of adaptation are sometimes mentioned to characterize loanwords in Dungan (see Lin 2012, pp. 95–96). In spoken Kazakhstani, Gansu Dungan, this nevertheless only applies to old, established loans. For instance, unlike Standard Mandarin, no tonalization of new borrowings takes place. The new tendency toward direct, non-adaptive integration of loanwords into Dungan makes differentiating such borrowing from other multilingual discourse phenomena, such as code-switching, a challenging task.

3.2. Sinitic Syllable Structure and Dungan Short Forms

All modern Sinitic languages are known for their simple syllable structure, represented as CGVX, where C stands for consonant, G for 'glide', V for vowel, and X for consonant or the second part of a vowel or a diphthong (Duanmu 2011). The resulting phonotactically maximal syllables are illustrated in (25) from four Sinitic languages.

(25)			
	Standard Mandarin:	*nián* 年	'year'
	Gan:	*sioŋ*^{42} 想	'to think' (Li 2018, p. 17)
	Shaowu:	*kuɔŋ*^{21} 光	'light' (Ngai 2021, p. 39)
	Cantonese:	*gwok*^{3} 國	'country'

Many Dungan words and clitics appear in two forms that the present paper calls full and short. The phenomenon has been identified in pioneering Dungan research, e.g., Dragunow and Dragunowa (1936, p. 38) and Hashimoto (1974, p. 24). The mentions over 80 years ago offer solid evidence of the fact that the phenomenon does not originate from language contact with Russian but possibly from language-internal development. In what follows, however, the present paper argues that the phenomenon has been reinforced by Russian contact.

The short forms result from the deletion of the vowels /i/ and /ə/ only, underlining the high likelihood of their deletion as a result of language-internal development. To illustrate, the word for 'stone' corresponding to Standard Mandarin *shítou* 石头alternates between the full form /ʂə́t^{h}ù/ and its short realization [ʂt^{h}ù]. The short forms do not follow the expected canonical syllabic pattern CGVX. On the contrary, 'stone' is CCV in its short form, forming a consonant cluster. From a comparative viewpoint, the phenomenon of short and full forms resembles Matisoff's (1973, p. 86) sesquisyllabic structure, also known as minor syllable, a phenomenon with "a final heavy syllable preceded by a light and phonologically reduced first syllable" (Butler 2015, p. 443). Sesquisyllabic word structures are widely attested in languages of Southeast Asia.

In rarer cases, the short forms have become the only pronunciations of a word. To illustrate, 'yesterday', spelled conservatively as *елиґэ,* is now pronounced disyllabically more innovatively as /jēl.kə/. This is the only acceptable pronunciation for the word, and trisyllabic pronunciations, such as /jē.li.kə/, are deemed incorrect by native speakers. The etymological origin of the word is clearly trisyllabic: 夜里 'yesterday' (Zavyalova 2017a) with the generic classifier *ge* 个. Leaving this and a few other potential exceptions aside, the colloquial short forms are not yet phonemic but in free variation with the long form consid-

ered 'standard' by the speakers. The phonologized short forms result in new syllable coda consonants and thus create new syllable structures in the syllabic inventory of Dungan.

In addition, final vowel deletion occurs frequently in spoken Dungan with /i/ and /ə/. The phenomenon is attested especially frequently with grammatical enclitics in the nominal and verbal domains, as demonstrated in Table 4. It should be noted that the short forms result in the realization of final consonants not typically present in Northern Mandarin (e.g., -m) or absent from Sinitic languages altogether (e.g., -ɛ).

Table 4. Main weak forms of Dungan grammatical enclitics.

Dungan	Written Chinese	Function
=m ~ =mə	*=men* 们	pluralizer
=k ~ =kə	*=ge* 个	generic classifier
=t ~ =ti	*=de* 的	modification marker
=l ~ =le	*=le* 了	aspectual marker
=tni ~ =nni ~ =tini	*=dene* 的呢	aspectual marker
=n ~ =ni	*=ne* 呢	aspectual marker
=ɕ ~ =tɕ^{h}ī	*=qù* 去	complement verb

The reduced forms surface with far more frequency in everyday conversation than in carefully planned speech. To illustrate, see (26). In (27), only the first instance of the perfective aspect enclitic undergoes reduction, highlighting the variability and non-phonemic status of the phenomenon.

(26) 他**们**把我写**的呢**
Та**му** ба вə ще**дини**.
t^{h}à=m *pá=və* ***ɕjè*=tni**.
3=PL ACC=1SG **write=IPFV**
'They are recording me.' (conversation)

(27) 阿够了够了все。
А, гу**ли** гу**ли**, всё.
a *kū=**l*** *kū=**le*** *fsʲo.*
INTERJ be.enough=**PFV** be.enough=**PFV** all
'Yeah, that is enough.' (conversation)

The short forms emerged either because of Altaicization or through internal development, even before the westward migrations of the Dungans. Heavy Russian-language contact in the present era has nevertheless reinforced the phenomenon. Russian is known for its complex phonotactics and consonant clusters. In short, Dungan short forms have further evolved towards phonotactic adjustment resulting from Russian phonotactics and syllable structure encroaching into the language. To illustrate, the Dungan short form of *шыту* [ʂt^{h}u] 'stone' discussed above matches perfectly with the Russian syllable CCV, as in *что* /ʂto/ 'what'. Similarly, the Dungan short form of *дини* /=tini/ [=tnʲi] 'imperfective aspect' is close to identical with the Russian *дни* /dnʲi/ [dnʲi], save the voicing in the initial consonant. Finally, by altering the syllable structure, frequent use of the short forms in conversational Dungan affects the rhythm of the language and brings it closer to that of Russian.

3.3. Palatalization

Russian manifests phonological palatalization in its consonant system, often illustrated with the minimal pair *мат* /mat/ 'checkmate' vs. *мать* /matʲ/ 'mother'. Similarly, Dungan consonants often undergo palatalization before a front vowel. To illustrate, the locative enclitic *ни* /=ni/ 里 surfaces as [=nʲi]. No minimal pairs where palatalization is contrastive can be identified. Consequently, in contemporary spoken Dungan, palatalization remains a phonetic rather than a phonological phenomenon. It is nevertheless clearly

caused by carrying over articulatory habits from Russian that many of the younger generations feel more comfortable with.

4. Morphosyntactic Remodeling

The present chapter offers an overview of morphosyntactic remodeling in Dungan. After the introduction (Section 4.1), the following key topics are covered in the chapter: nominal system (Section 4.2), verbal system (Section 4.3), copular omission (Section 4.4), clause combining (Section 4.5), complex clauses with a focus on relative clauses and conditionals (Section 4.6), and discourse marking (Section 4.7).

4.1. Introduction

In comparison to lexical borrowing, which has been extensively studied, the morphosyntactic results of language contact in Dungan have received less attention. Sometimes scholars consider them minimal. As stated by Hashimoto (1978, p. 257):

> While influences of the surrounding languages are often talked about with respect to Zhunyanese [Dungan], in the area of syntax they are at best marginal.

Some earlier research nevertheless addresses morphosyntactic remodeling briefly. This is because Written Dungan where such remodeling is studied has been generally accessible due to a sizable body of literature and other publications.[11] It has been highlighted that the constituent-internal order of Written Dungan now approximates that of Russian more closely (Kalimov 1957, p. 165; Lin 2005, p. 45; Hai 2007, p. 40). Lin (2003, p. 84) argues that the contact features in Written Dungan result from early Dungan scholars having been educated in Russian. Consequently, when they contributed to the early development of Written Dungan, they were influenced by their own linguistic background. As evident from (28a–c), Written Dungan replicates the Russian phrase-internal order in coding the semantic roles of TIME and GOAL, which makes it the opposite of Standard Mandarin in this respect. To illustrate with TIME, Dungan places the month before the year, which is identical with Russian. On the other hand, Standard Chinese follows the order year-by-month.

(28a) **打伊尤勒1943 年**我到哩**果拉德车尔尼果夫哩**。
***Да июль* 1943 нян** вə доли **город Черниговли**.
tà=ijunʲ ***1943=nján*** *və̀* *tō=le* ***gorat*** ***tɕirnʲigaf=le.***
ABL=July **1943=year** 1SG arrive=PFV **city** **Chernigov=SFP**
'In July 1943 I arrived in the city of Chernigov.'(Kalimov 1957, p. 165 discussed further in Hai 2007, p. 40, original representation in the Chinese characters maintained, IPA glossing added, and spelling adjusted)

(28b) **В июле 1943 года** я прибыл **в город Чернигов**.
v ***ijulʲ-e*** ***1943*** ***god-a*** *ja* *pribɨ-l* *v* ***gorat***
LOC **July-INST** **1943** **year-GEN.SGM** 1SG arrive.PFV-PST.SG.M **LOC** **city**

tɕirnʲigaf
Chernigov
'In July 1943 I arrived in the city of Chernigov.' (Kalimov 1957, p. 165 discussed further in Hai 2007, p. 40, IPA and glossing added)

(28c) **1943年七月**我就到了**车尔尼果夫市了**。
1943=nián ***qīyuè*** *wǒ* *jiù* *dào=le* ***chē'ěrníguǒfū*** ***shì=le.***
1943=year **July** 1SG DIS reach=PFV **Chernigov** **city=SFP**
'In July 1943 I arrived in the city of Chernigov.' (Kalimov 1957, p. 165 discussed further in Hai 2007, p. 40, Pinyin and glossing added, translation modified[12])

Russian influence on Written Dungan is not discussed further in the limits of the present paper, which aims to focus on more neglected phenomena of the spoken language. What follows is not an exhaustive analysis and aims merely to give an overview of several

noticeable changes in spoken Gansu Dungan, each of which must be investigated in detail in future research. This study uses the concepts of matter (MAT) and pattern (PAT) borrowing, which constitute the two basic ways of linguistic borrowing (Sakel 2007). To illustrate, borrowing a Russian conjunction corresponds to MAT, while restructuring relative clauses with native elements to correspond more closely to a Russian model corresponds to PAT.

Strikingly similar contact phenomena have been identified in all corners of the Russophone world, regardless of genealogical factors. For instance, Mithun (2021, pp. 521–22) reports the use of Russian modal verbs conjunctions and complementizers in Mednyj Aleut, an extinct mixed language of Russian and Aleut ancestry. Stolz and Levkovych's (2022) extensive study of loan conjunctions in the Russophone world provides a solid starting point, but more comparative studies of Russian-influenced contact phenomena are needed to discover the full range of outcomes and limits to variation in language contact situations with Russian.

4.2. Nominal System

The nominal system of spoken Dungan contains both MAT and PAT borrowings from Russian. Three major contact-induced changes in the nominal system of spoken Dungan are the emergence of a polite second-person pronoun, mixed indefinite pronouns, and a caritative preposition.

Starting with the pronominal system, the second-person plural pronoun *ниму* /nì=mə/ 你们 is used also for a single person as a means of showing respect, like the French plural pronoun *vous*, a type of PAT borrowing (29) Among others, Hai (2002, p. 74) and Wang et al. (2015, p. 264) have identified this phenomenon and claim that it is likely caused by linguistic contact with Russian, where the second-person plural pronoun *вы* /vɨ/ also functions as the polite pronoun in the singular.[13] In (29), two people are conversing on the phone. They address each other as *вы* /vɨ/, as evidenced by the first part of the example where code-switching into Russian occurs. When speaking in Dungan, the use of the second-person plural is retained in the conversation.

(29) **Вы** не поверите, 我给**你们**说一个прикол吗?
Вы не поверите, вə ги **ниму** фə йигə приколма?
vɨ *nʲe* *pavʲer-itʲe,* *və* *kə=**nì=mə*** *fə́* *jí=kə* *prʲikol=ma?*
2.PL NEG believe-2PL 1SG DAT=**2=PL** tell one=CLF joke=Q
'You won't believe (it); shall I tell you a joke?' (conversation)

Dungan has evolved mixed indefinite pronouns with both Russian and Dungan components. They are formed with a Sinitic interrogative pro-form carrying the Russian suffix *-то* /-ta/ and attempt to replicate a Russian model, e.g., *что* /ʂto/ 'what' > *что-то* /ʂto-ta/ 'something'. For this reason, they show characteristics of both MAT and PAT borrowing. While genuinely mixed contact structures remain rare in Dungan, the case of indefinite pronouns nevertheless proves that they exist in the language. In (30), the Sinitic base form is *са* /sā/ 啥 'what' while in (31), *натар* /nàtʰé/ 哪搭 'where' serves as the base.

(30) 中原们的туəй，那是啥**та**。
Жунянмуди туəй, нэсы са-**та**.
pfə́njə=m=ti *tʰoj* *nə̄=sə̄* *sā-**ta.***
Dungan=PL=MOD wedding DEM.MED=COP what-**INDEF**
'Dungan weddings are (quite) something.' (explanation of Wedding practices)

(31) 哪搭**та**山上 长好少树。
Натар-**та** санхон жон хошо фу.
*nàtʰé-**ta*** *sán=xōŋ* *ʈʂòŋ* *xóʂò* *fə̄.*
where-**INDEF** mountain=LOC grow many tree
'There are a lot of trees growing somewhere on the mountain.' (constructed)

Finally, spoken Dungan uses a caritative preposition *без* /bʲez/ 'without' (32), a MAT borrowing from the Russian *без* /bʲez/ 'without'. This is likely because no direct Sinitic equivalent exists for the pronoun. At the same time, other Russian prepositions are not at-

tested in the source materials, possibly because Dungan already possesses native resources for encoding the corresponding semantic relations. It remains to be analyzed how widely spread this behavior is among Dungan speakers.

(32) 都安稳 **без**打仗 **без**骂仗。
Ду нанвын, **без** *даӂон*, **без** *маӂон*.

tú	*nánɯ̀n,*	***bʲes***	*tàtʂōŋ,*	***bʲes***	*mātʂōŋ.*
all	safe	**without**	war	**without**	fight

'Everything is safe and secure, without war, without fighting.' (New Year plans)

4.3. Verbal System

In terms of individual items in the lexicon, Dungan manifests both MAT and PAT borrowing. As an example of the latter, *щe* /ɕjè/ 写 'to write' has evolved into a novel meaning 'to record' because in Russian, the two verbs *(на)писать* /(na)pʲisatʲ/ 'to write' and *записать* /zapʲisatʲ/ 'to record' originate from the same root. The present section, however, focuses on the morphosyntactic aspects of borrowing in the verbal system of Dungan rather than on individual verbs. Dungan adopts Russian verbs with direct insertion. No light verb strategy is attested in the language, even though it is common in other contact scenarios with Russian, particularly in Turkic languages (see Forker and Grenoble 2021). Verbs of Russian origin show two patterns: infinitival and fully conjugated. The former host Dungan TAM enclitics (33) and the latter are incompatible with them, retaining Russian TAM and argument indexation (34).

(33) 你咋了？知不道吗谁**скидывать**的呢？几时**скидывать**的呢？
Ни зали? Ӂыбудома? Сый **скидывать** дини? Ӂисы **скидывать** дини?

nì	*tsà=le?*	*ʈʂá*	*pə́*	*tó=ma?*	*síj*	***skʲidɨvatʲ=tini***	*tɕìsə*
2SG	how=PFV	know	NEG	reach=Q	who	**send.IPFV.INF**=IPFV	when

skʲidɨvatʲ=tini?
send.IPFV.INF=IPFV
'What happened (with you)? Don't you know? Who sent (the picture)? When was it sent?'

(34) Хазыр我给你**скину**, 把那个。
Хазыр вə ги ни **скину**, ба нэгə.

xa	*və*	*k=nì*	***skʲinu***	*pá=nē=kə.*
NOW	1SG	DAT=2SG	**send.PFV.1SG**	ACC=DEM.DIST=CLF

'I will send you that (i.e., the information) now.' (conversation)

The example pair shows the behavior of the Russian verb pairs *скидывать* /skʲidɨvatʲ/ (imperfective aspect) and *скинуть* /skʲinutʲ/ (perfective aspect), 'to send.' If a distinction between borrowing and code-switching is made in Dungan, in the absence of available phonological clues, morphosyntactic integration (see Matras and Adamou 2021, p. 240) draws the best demarcation line. In other words, the infinitival pattern that Dunganizes a Russian verb is closer to borrowing, whereas the inclusion of conjugated Russian verbs into the discourse is code-switching. This distinction is necessary, since if it is not made, it follows that Dungan has paradigmatically borrowed the complex system of Russian verbal morphology as well. At the same time, Russian verbal morphology never appears with etymologically Sinitic verb roots.

In the verbal system, a particularly salient phenomenon is the high frequency of modal verbs of Russian origin. This constitutes a phenomenon of alternation rather than complete replacement. Dungan modal verbs of Sinitic origin, such as *ë* /jō/ 要 'need, to have to' and *хуэй* /xwī/ 会 'can, to be able,' still occur in the language (35).

(35) Ну, 把两个娃娃**要**拿上去呢дан。
Ну, ба *лёнгə* вава **ë** нахончини *дан*.

nu	*pá=ljàŋ=kə*	*vávà*	***jō***	*ná=xōŋ*	*tɕʰī=n=dan.*
well	ACC=two=CLF	child	**must**	take=COMP:up	go=STAT=SFP

'Well, we need to take the two children there.' (conversation)

Even so, the spoken language is replete with modal verbs of Russian origin. To illustrate, *надо* /nada/ 'must' (36) and its past counterpart *надо было* /nada bɨla/ 'should have' surface in an unconjugated form, as in Russian. The same applies to *нельзя* /nʲilʲzʲa/ 'must not' (37).

(36) 我们где-то表四个上начало. **Надо**四个上到去的。
Вәму где-то бё сыгәхон начала. **Надо** сыгәхон дочиди.
ò=m *g(dʲ) eta*[14] *pjò* *sə̄=k=xō̱ŋ* *natɕala.* ***nada*** *sə̄=k=xō̱ŋ*
1=PL about o'clock four=CLF=LOC began.N.SG **must** four=CLF=LOC

tō̱=ɕ=ti.
arrive=COMP:GO=NOM
'The beginning is at about four o'clock. We need to arrive at four.' (conversation)

(37) 连他两个，но把人家**нельзя**那个的дан。
Лян та лёнгә, но ба жынҗя **нельзя** нэгәдидан.
ljáŋ=tʰà *ljàŋ=kə,* *no* *pá=rə́ntɕà* ***nʲilzʲa*** *nē=kə=ti=dan.*
COM=3SG two=CLF but ACC=3 **must.not** DEM.DIST=CLF=MOD=SFP
'With those two (people), you must not do that (i.e., let them down).'

4.4. Copular Omission

Dungan retains the inherited Sinitic copula *сы* /=sə̄/ 是. Its formal nature and relationship with the copular subject require more investigation. For instance, Dragunow and Dragunowa (1936, p. 42) argue that the copula has already evolved into a suffix. In the present paper, it is interpreted as an enclitic phonologically dependent on its host and occasionally undergoing erosion into /=s/, vowel deletion being identified earlier as one of the defining characteristics of Dungan grammatical enclitics. Especially in more conscious and planned speech, the copula is frequently retained (38).

(38) 我**是**回族。
Вә**сы** хуэйзў.
*və̀=**sə̄*** *xwítsú.*
1SG=**COP** Dungan
'I am Dungan.' (self-introduction)

Utterances with a zero copula, however, also appear in the language (39). Dragunow and Dragunowa (1936, pp. 42–47) are possibly the first researchers to mention limited copular erosion and even full omission in Dungan. Consequently, the phenomenon might originate from language-internal development, a view Hashimoto elaborates on as an alternative to a contact explanation (Hashimoto 1978, p. 257).

(39) 你можешь把个家рассказать。你谁？几岁？
Ни можешь ба гәҗя рассказать. Ни сый? Жи суй?
nì *mozeʂ* *pá=kétɕá* *raskazatʲ.* *nì* ***ø*** *síj.* *tɕì=swī.*
2SG can ACC=REFL tell.PFV.INF 2SG **Ø** who how.may=old
'You can tell about yourself. Who are you? How old are you?'

Regardless of whether copular deletion arose because of language-internal development or through language contact, it has been reinforced through contact with Russian. Russian is known for its zero copula in the present tense (40). Copular omission has not yet become universal. Even in (39), when analyzing the recording for the first time, the main consultant reported the presence of the copula, *nì sə̄ síj.* On the second replay, she noticed that the copula was missing. In sum, more normative language maintains the copula, but it is sometimes omitted in the L register of spoken Dungan.

(40) Кто вы? Сколько вам лет?
kto ***ø*** *vɨ* *skolʲka* *vam* *lʲet*
who **Ø** 2PL how.many 2PL.DAT years
'Who are you? How old are you?' (constructed; cf. 39)

4.5. Clause Combining

Dungan clause combining constitutes one of the syntactic domains most heavily restructured by Russian language contact. Table 5 lists the most frequently encountered devices from the source materials. In this, Dungan follows the common trend of adopting Russian conjunctions and conjunctional adverbs (Forker and Grenoble 2021, p. 276), a type of MAT borrowing.

Table 5. Summary of Dungan conjunctions for clause combining.

Dungan	Russian	Function
и /i/	*и* /i/	coordinative: 'and'
или /iⁱi/	*или* /iⁱi/	disjunctive: 'or'
а /a/	*а* /a/	adversative: 'and, but'
но /no/	*но* /no/	adversative: 'but'

Stolz and Levkovych (2022) identified Russian loan conjunctions in 71% of the surveyed languages of the Russophone world (sample size 137), which underlines the ubiquitousness of the phenomenon. While the authors classified Dungan as a language in which no Russian loan conjunctions could be verified, the present study shows that Dungan, too, follows the mainstream pattern of Russianized contact languages.

Unlike Standard Mandarin, which has a frequent zero strategy, Dungan marks clause coordination with high frequency. This divergence from the Sinitic pattern results from language contact with Russian. To begin with, (41) contains two clauses with separate predicates connected with the coordinative conjunction *и* /i/.

(41) 把我Дом Дружбы上拉上，**и** потом把我们拉上去。
Ба вə Дом Дружбыхон лахон, **и** потом ба ому лахончи.

pá=və	*dom*	*druzb-ɨ=xōŋ*	*lá=xōŋ*	***i***	*patom*
ACC=1SG	house	friendship-GEN.SG=LOC	take=COMP:up	**and**	then

pá=ò=m	*lá=xōŋ*	*tɕʰī.*
ACC=1=PL	take=COMP:up	go

'Pick me up from the House of Friendship and then, take us (to the circus).' (conversation)

Similarly, example (42) illustrates the disjunctive conjunction *или* /iⁱi/ 'or'. A mother and a son are cleaning an office before going back home. The mother needs to unpluck an electronic device, and she uses the Kazakh expression 'to take from electricity'. Somewhat bemused, the son reacts to this by asking whether she wishes to unpluck the device from electricity or from the power socket. Subsequently, the mother corrects herself and uses the more precise Russian word *розетка* /razʲetka/ 'socket'.

(42) Хаз(ыр)等一会儿，把这个朝着ток上要取掉呢。
Хаз(ыр) дын йихур, ба жыгə жочў токхон ё чүдёни.

xaz	*tə̀ŋ*	*jíxə̄,*	*pá=tsə̄=kə*	*ʈʂʰōpfə=tok=xōŋ*	*jō*	*tɕʰỳ=tō=ni.*
now	wait	bit	ACC=DEM.PROX=CLF	ABL=electricity=LOC	must	take=COMP=STAT

Speaker A: 'Now wait for a minute, (we) need to unplug this (lit. take this from electricity).'

Ток上吗 **или** розетка上?
Токхонма **или** розеткахон?

tok=xōŋ=ma	***ili***	*razʲetka=xōŋ?*
electricity=DAT=Q	**or**	power.socket=LOC

Speaker B: 'From electricity or from a power socket?' (conversation)

Following a Russian model, spoken Dungan contains two adversative conjunctions, *а* /a/ and *но* /no/. The language does not use the Sinicic conjunction *dànshì* 但是 'but'. Kalimov (1968, p. 485), however, lists it as *кəсы* 'but' in the repertoire of conjunctions illustrated with examples, corresponding to the Standard Chinese *kěshì* 可是 'but'. Consequently, it is possible that half a century ago, the conjunction was still in use. Now, the Russian-based conjunctions *а* /a/ 'and, but' and *но* /no/ 'but' appear in the source materials with a very high frequency (43, 44).

(43) 蒸饭。A菜哪？
Жынфан. **А** цэ на?
ʈʂə́ŋ-fān. ***a*** *tsʰē* *nà.*
steam-rice **and** side.dish where
‘(There is) steamed rice. And/but where are the side dishes? ’ (conversation)

(44) Билет чут贵下了。**Но**我拿上了。
Билет чут гуйхали. **Но** вə нахонли.
bilʲet *tɕut* *kɥī=xā=le.* ***no*** *və̀* *ná=xōŋ=le.*
ticket bit be.expensive=COMP:up=PFV **but** 1SG take=COMP:up=PFV
‘The tickets have gotten a bit more expensive, but I bougtht them.’
(WhatsApp message)

Forker and Grenoble (2021, p. 278) argue that many languages that have borrowed the conjunctions /i/ and /a/ from Russian have also adopted their discourse function of marking the continuation of a topic with /i/ and conversely, topic switch or contrast with /a/. This applies to Dungan as well. Longer examples with turn taking are omitted in the limited confines of the present paper.

4.6. Complex Clauses

The complex clauses of Dungan have undergone structural remodeling that brings them closer to Russian. Table 6 summarizes the principal devices encountered. The patterns include both MAT borrowing, e.g., the relativizer *который* /katorɨj/ ‘that, which’, and PAT borrowing, e.g., Dungan *натар* /nàtʰé/ 哪搭 ‘where’ the original function of which is an interrogative pro-form. In Russian, *где* /gdʲe/ ‘where’ can be used to form locational relative clauses, and this function has been borrowed for the Dungan /nàtʰé/.

Table 6. Borrowed devices for forming complex clauses.

Dungan	Borrowing Type	Function
tɕìsə́ 几时	PAT < Ru. *когда* /kogda/ [kagda]	adverbial (temporal): ‘when’
jesliʲi	MAT < Ru. *если* /jesliʲi/	adverbial (conditional): ‘if’
xatʲa	MAT < Ru. *хотя* /xotʲa/ [xatʲa]	adverbial (concessive): ‘if’
ʂto	MAT < Ru. *что* /ʂto/	complement: ‘that’
ʂtobɨ, ~ ʂtob	MAT < Ru. *чтобы* /ʂtobɨ/	complement: ‘(so) that’
katorɨj	MAT < Ru. *который* /kotorɨj/ [katorɨj]	relative: ‘who’
nàtʰé 哪搭	PAT < Ru. *где* /gdʲe/	relative: ‘where’

In (45), the speaker, who has been trying to record new Dungan materials at home, expresses his frustration with not remembering to record something when a good opportunity arises. Similarly, in (46), the children of the speaker promise to come for a visit when they have a holiday. The temporal relation is marked with the interrogative pro-form *жцисы* /tɕìsə́/ 几时 ‘when’ that replicates the use of Russian *когда* /kogda/ ‘when’.

(45) A**几时**喧谎开了,忘掉的呢。
А ***жцисы*** щүанхуонкэли, вондёдини.
a ***tɕìsə́*** *ɕɥánxòŋ=kʰə́le* *wōŋ=tō=tni.*
but **when** talk=INC forget=COMP=IPFV
‘But when I start talking, I forget (to record).’ (conversation)

(46) Ой, **几时**我们缓开了，我们去呢说的。
“Ой, ***жцисы*** вəму хуанкэли, вəму чини,” фəди.
“oj ***tɕìs*** *ò=mə* *xwàn=kʰél* *ò=mə* *tɕʰī=ni”* *fə́=ti*
INTERJ **when** 1=PL have.holiday=INC 1=PL go=PROSP say=MOD
‘They said: “We come when we have a holiday”.’ (conversation)

Spoken Dungan now applies double marking in conditionals with high frequency. In addition to the native enclitic *кели* /=kʰéle/ 开了 serving the function of an adverbializer in the protasis clause (and also encoding temporal and inceptive meanings, as in (45, 46), conditionality is frequently reinforced with the conjunction *если* /jesliʲi/ ‘if’ borrowed from Russian (47). The pattern resembles that

of many Turkic languages of Central Asia that, in addition to a native suffix, have also borrowed the Persian-based اگر /agar/ 'if' as a device for forming conditional clauses.

(47) A **если**我一天не получится**开了**做啥呢？
A **если** вә йитян не получится**кели** зў сани?
a ***jesʲi*** *və* *jí=tʰjàn* *nʲe* *palutɕitsja=**kʰéle*** *tsū* *sā=ne.*
and **if** 1SG one=day NEG be.available.INF=**COND** do what=PROSP
'And what to do if I am not available on a certain day?' (conversation)

The use of the independent conditional marker *если* /jesʲi/ 'if' is not compulsory, although it surfaces with high frequency (48). Also, as the example demonstrates, the conditional enclitic may be further reduced into a monosyllabic form *=kʰe* in rapid speech.

(48) 哪搭想去**开**多贵。
Натар щён чи**кэ** дуə гуй.
nàtʰé *ɕòŋ* *tɕʰī=**kʰé*** *tó* *kwī.*
where **want** go=**COND** very be.expensive
'If you want to go somewhere, it is very expensive.' (description of life in Almaty)

The Russian complementizer *что* /ʂto/ 'that' used among others with *verba dicendi* has been borrowed into Dungan (49).

(49) 说的呢，**что**她丫头没喧的дан说的。
Фəдини, **что** та яту мə щүандидан, фəди.
fə́=tini ***ʂto*** *tʰà* *játʰu* *mə́* *ɕɥán=ti=dan* *fə́=ti.*
say=IPFV **that** 3SG daughter NEG talk=MOD=SFP say=MOD
'(My neighbor) says that her daughter said that does not (want to) talk (with that person). (WhatsApp message)

Purposive clauses in spoken Dungan follow a Russian pattern with the borrowed conjunction *чтобы* /ʂtobɨ/ 'in order to' (50). The borrowing is not limited to the conjunction. Rather, the whole construction follows the Russian model, in which the verb that follows the conjunction must be in the past tense regardless of the pragmatic time reference. The Dungan copy of the structure tries to replicate the construction. The language, however, lacks grammaticalized tense. Consequently, past tense is replicated with the closest available counterpart, namely the perfective aspect marked by the enclitic *ли* /=le/.

(50) 我一会儿шы给папа说给呢**чтобы**他把娃们拉上**了**。
Вə йихуршы ги папа фəгини чтобы та ба ваму *лахон***ли**.
və *jíxə̀=ʂə* *kə=papa* *fə́=k=ni* ***ʂtobɨ*** *tʰà* *pá=vá=mə*
1SG monent=FOC DAT=father say=BEN=PROSP **in.order.to** 3SG ACC=children=PL

*lá=xōŋ=**le.***
take=COMP:up=**PFV**
'After a moment, I will tell (your) father to take the children (from the kindergarten).' (conversation)

Moving to relative clauses, example (51) with *натар* /nàtʰé/ 哪搭 'where' illustrates PAT borrowing from Russian. It can be contrasted with its Russian equivalent below, which shows an identical structure (52). In contrast, Mandarin Chinese disallows such post-head relative structures (53), like many other languages in East Asia.

(51) Потом 把我们拿上去ресторан 上**哪搭**光卖鱼都的呢。
Потом ба вəму нахончи ресторанхон **натар** гуон мэ йүр дудини.
patom *pá=ò=mə* *ná=xōŋ* *tɕʰī* *restoran=xōŋ* ***nàtʰé*** *kóŋ* *mē*
then ACC=1=PL take=COMP:up go restaurant=LOC **where** only sell

jyə́ *tú=tini.*
fish all=CONT
'Then, (the guide) took us to a restaurant where they only sell fish (dishes).'
(travel narrative)

(52) Потом нас отвели в ресторан, **где** готовят только рыбу.
patom *nas* *atvʲi-l-i* *v* *rʲistaran* ***gdʲe*** *gatovʲ-at*
then 1PL.ACC take.PFV-PST-PL LOC restaurant **where** prepare.IPFV-3PL

tolʲka *rɨb-u*
only fish-ACC
'Then, we were taken to a restaurant where they only sell fish (dishes).' (Russian translation of example 43 by Zhalilya (Mia) Shegetayeva)

(53) 然后他把我们带到了**一个只卖鱼的餐厅**。
ránhòu *tā* *bǎ* *wǒ=men* *dài=dào=le* ***yī=ge*** ***zhǐ*** ***mài***
then 3SG DOM 1=PL take=reach=PFV **one=CLF** **only** **sell**

yú=de ***cāntīng***
fish=MOD **restaurant**
'Then, he took us to a restaurant where they only sell fish (dishes).' (Chinese translation of example 43 by Ular Nuerlan)

Some evidence exists to point out that the restructuring of relative clauses along a Russian model is a Central Asian phenomenon of spoken language that is more widely spread than previously documented. To illustrate, in addition to Turkic-type relative clauses, Spoken Kazakh now frequently builds relative clauses with the Russian relativizer *который* /katorɨj/ (Akanov 2022), as in (54).

(54) Үлкен апай-лар бар=ғой котор-ые қорық-па-й-ды ештеңе-ден.
Ylkjen *apaj-lar* *bar=ʁoj* ***katorɨje*** *qorɯq-pa-j-dɯ* *jeɕteŋje-djen*
big woman-PL EXV=CGM **REL-PL** fear-NEG-PRS-3 nothing-ABL
'You know there are old women who do not fear anything.' (Akanov 2022, p. 33)

4.7. Discourse Marking

Spoken Dungan now incorporates many discourse markers of Russian origin (Table 7). Hai (2000, p. 60) briefly mentions the existence of the phenomenon without any full examples, considering it a manifestation of the young with high bilingual capacities. Twenty years later, the discourse markers now appear in the speech of more elderly Dungans in the source materials of the present study. An intergenerational study comparing not only the frequency of Russian-based discourse marking but also Russian borrowing as a whole among different age cohorts of Dungan speakers is clearly needed but not attempted in the confines of the present paper.

Discourse marking is commonly placed either at the beginning or at the end of a phrase. To start with, 'yes' and 'no' have been borrowed from Russian 'yes' (55) and *нет* /nʲet/ 'no', respectively.

(55) ***Да***, 今儿个表四个上。
Да, жергә бё сыгәхон..
da *tɕɑ́ːkə* *pjò* *sə̄=k=xō̞ŋ*.
yes today o'clock four=CLF=LOC
'Yes, it is today at four o'clock.' (conversation)

Table 7. Examples of borrowed discourse markers in Dungan.

Dungan	Borrowing Type	Function
да /da/	MAT < Ru. *да*	agreement
нет /nʲet/	MAT < Ru. *нет*	disagreement, negation
ну /nu/	MAT < Ru. *ну*	alerting of disjunction (Bolden 2016)
вот /vot/	MAT < Ru. *вот*	deictic: directing attention
ҷыма /tsə̄ma/ 这马	PAT? < Ru. *вот*	deictic: directing attention
всё /vsʲo/	MAT < Ru. *всё*	leading to conclusion
короче /karotɕe/	MAT < Ru. *короче*	summarizing, changing direction
значит /znatɕit/	MAT < Ru. *значит*	summarizing, interpersonal management

The Russian attention-directing discourse marker *вот* /vot/ has been copied into Dungan (56). A Dungan equivalent also exists *ҷыма* /tsə̄ma/ 这马, literally '(Is it) this?' It may result from PAT bor-

rowing, whereby a functional equivalent to *вот* /vot/ is constructed with native resources. Both discourse markers surface occasionally together, as in the example.

(56) **Вот这嘛**说的我们朝着садик上回去了，回去的呢。
Вот, жыма фәди: "Вәму чочў садикхон хуэйчили, хуэйчидини".
vot ***tsəma*** *fə́=ti:* *"ò=m* *ʦʂʰōpf=sadik=xōŋ* *xwí=ɕ=le,*
DIS DIS say=MOD 1=PL ABL=kindergarten=LOC return=COMP:go=PFV
xwí=tɕʰī=tini".
return= COMPL:go=IPFV
'This is what they (i.e., the grandchildren) say: "We went back from the kindergarten; we are going back (self-correction)".' (conversation)

Similarly, the Russian-based discourse marker *всё* /vsʲo/ 'well, alright' permeates casual Dungan conversation. In (57), it tells the interlocutor that the topic has now been discussed sufficiently and the conversation is consequently reaching its conclusion.

(57) **Всё,** 你把那两个娃娃拉上啥。
Всё, ни ба нэ лёнгə вава лахонса.
vsʲo *nì* *pá=nē =ljàŋ=kə* *vávà* *lá=xōŋ=sa.*
alright 2SG ACC=DEM.DIST=two=CLF child take=COMP:up=IMP
'Alright, take those two children.' (conversation)

The discourse marker *короче* /karotɕe/ 'in short' is very frequent in Dungan. It appears when the speaker wishes to shorten a longer argument, but it also carries other pragmatic overtones that have not been researched sufficiently despite the advanced stage of research on Russian discourse markers (58).

(58) 我气上来了，**короче**.
Вə чи шонлэли, **короче**.
və̀ *tɕʰī* *ɕōŋ=léj=le* ***karotɕe***
1SG anger go.up=COMP:come=PFV **in.short**
'In short, I got angry.' (conversation)

The discourse marker *значит* /znatɕit/ has the literal meaning 'it means'. It is used in pragmatic interpersonal management, summarizing the ongoing topic of discussion between the speaker and the addressee in an effort to establish a common understanding. In (59), the speaker, who is the addressee's mother, lets him know that he will come to the office at one o'clock the following day.

(59) 朝着明个**значит**你表一个上来。
Чочў мергə **значит** ни бё йигəхон лэ.
ʦʂʰōpfə=mékə ***znatɕit*** *nì* *pjò* *jí=k=xōŋ* *léj.*
ABL=tomorrow **means** 2SG o'clock one=CLF=LOC come
'From tomorrow, you will come at one o'clock.' (conversation)

The phenomenon of discourse-marking borrowing is attested elsewhere in the Russian-speaking region, where 'inegalitarian bilingualism' exists. Inegalitarian bilingualism refers to a situation where the languages have asymmetric power so that one "exerts formidable pressure upon the other" (Hagège 2009, p. 79).

5. Implications and Conclusions

This chapter concludes this study with the following goals: First, it briefly compares Dungan with other 'divergent' Sinitic varieties of the adjacent regions and addresses the question of whether Dungan has evolved into a 'mixed language' (Section 5.1). Following, the chapter examines an ongoing trend, namely deepening connections between China and the Kazakhstani Dungans, from the viewpoint of Kazakhstani Gansu Dungan's future development as a contact language (Section 5.2). The end of the chapter reiterates the key arguments of this study and underlines the importance of researching Dungan further with interactional source materials (Section 5.3).

5.1. Dungan as a Northwestern Sinitic Variety

While Dungan has undergone Russianization, the language manifests many similarities with other regional Sinitic varieties that have undergone various kinds of linguistic interaction in their his-

tory. As Salmi (2007) states, Dungan is better analyzed as the westernmost extension of a Sinitic dialect chain rather than a linguistic island separated from its origin. Focusing on Wutun and Zhoutun, two relatively known divergent varieties of Mandarin, Table 8 compares the three languages along with sixteen parameters that are relevant in analyzing Sinitic languages in the region.

Table 8. Comparison of Sinitic contact varieties.[15]

Feature	Kaz. Gansu Dungan	Wutun	Zhoutun
Speaker population	ca. 110,000	ca. 4000	ca. 800–900
Contact languages	Russian, Turkic	Tibetan, Mongolic	Tibetan
Tonal contrasts	3	none	2
Polite 2SG pronoun	present	absent	absent
DEM distinctions	3	2	2 (basic) + 2
Reflexive	个家*kétɕá*	个家*gejhai*	个家*kuʏtɕia*[16]
Inanimate plural	limited	present	present
Coding of sem. roles	enclitics, proclitics	suffixes	enclitics
Aspect marking	enclitics	suffixes	enclitics
Zero copula	possible	no	no
REL clause position	pre- and post-head	pre-head	pre-head
Conditional marking	single or double	single	single
Basic word order	SVO, (SOV)	rigid SOV	rigid SOV
Nominal CLFs	only generic	only generic	many present
Verbal CLFs	many present	many present	many present
Evidentiality	not present	present	only reportative

In terms of its phonology, morphosyntax, and lexicon, the core of Dungan remains Sinitic. Unlike Wutun and Zhoutun, the language retains a more complex tonal system and SVO word order in several (but not all) contexts. At the same time, Dungan manifests many properties identical to those of other Northwestern Sinitic contact varieties, such as the collapse of the nominal numeral classifier system, also visible in Wutun.

It is important to consider whether Dungan qualifies for a 'mixed language' in the common understanding of the term, namely a language with mixed ancestry (Velupillai 2015, p. 69). At the current stage, the answer is no. Since the term 'mixed language' is used in several ways in the literature, this nevertheless also depends on how we define the concept. Summarizing the research consensus, O'Shannessy (2021, p. 325) argues that languages classifiable in a genetic tree of a single-parent language fail to qualify as mixed languages. Despite heavy Russian influence and numerous borrowings that have resulted in noticeable morphosyntactic restructuring, the core of Dungan remains clearly recognizable as Sinitic.

Challenges in differentiating borrowing and code-switching complicate the research on spoken Dungan. Unlike older layers of loanwords, new Russian loanwords do not undergo any phonological adjustment anymore, which results in difficulties in placing them exactly along what (Matras 2020) calls the codeswitching-borrowing continuum. Moreover, as earlier Dunganological research, such as Lin (2012, pp. 70–71), has pointed out, frequent code-switching has emerged as a discourse strategy. This is particularly observable in coding the predicates. Also, Dungan has witnessed the emergence of some genuinely mixed structures where bound Russian elements have been borrowed into Dungan (60).

(60) 我xa(зыр)找一个谁呢，连**谁нибудь**去呢。
Bə xa(зыр) зо йигə сыйни. *Лян* **сыйнибудь** чини.

və	*xa*	*tsò*	*jí=k*	*síj=ne,*	*lián=**síj-nibudʲ***	*tɕ^{h}ī=ni.*
1SG	now	search	one=CLF	who=SFP	COM=**who-INDF**	go=PROSP

'Now I will search for someone. I will go with someone.' (conversation)

Nevertheless, such mixed structures remain limited, reflecting Weinreich's (2011, p. 50) remark on the relatively low transferability of bound morphemes in borrowing. The language contact with Russian, however, shows no signs of abating. If the current mode of contact with the resulting linguistic developments continues unabated, a likely scenario, it cannot be ruled out that Dungan eventually becomes a more 'mixed language' with a very high degree of relexicalization and morphosyntactic

restructuring, with the caveat that not all theories concerning the emergence of mixed languages recognize a possible birth process merely as a result of heavy code-switching.

5.2. The Future Development of Dungan and the Role of Chinese

This study has demonstrated that, currently, heavy borrowing from Russian is reshaping both the Dungan lexicon and morphosyntax. It affects the phonological system as well by reinforcing earlier development. In short, the dominant source language for borrowing has shifted from earlier Turkic to Russian. This is supported by the Dungans' linguistic self-evaluations in Russian and Kazakh. In 1999, 95.1% of the surveyed Dungans evaluated themselves as proficient in Russian, yet in Kazakh, the corresponding figure was only 35.9% (Suleimenova et al. 2007, cited in Smagulova 2016, p. 67). The figures are somewhat dated and do not fully reflect 'Derussification' and 'Kazakhization', two sides of the same coin, now operating in independent Kazakhstan. Notwithstanding, they clearly highlight a situation that continues to this day among the speakers of Dungan in Kazakhstan: Russian, rather than Kazakh, has become the socially dominant language for many. It is also the language most of them feel the most proficient in.

When addressing the future of Dungan as a contact language, the role of China and Chinese cannot be ignored. As Ding (2007, p. 46) demonstrates, the collapse of the Soviet Union and the resulting cessation of support that the Dungans had earlier received, e.g., for the development of the literary language and mother tongue education, created major challenges that the Dungan language is currently facing. At the same time, it can be argued that this has created an opportunity for re-establishing a more robust connection with China and the Chinese language.

Most Dungans are unable to read Chinese characters (Lin and Ding 2002, p. 70, confirmed by personal fieldwork), save in cases where an individual has been living in China, usually because of studies or work. China has been projecting its influence on Central Asia and beyond, a part of which goes under the Belt and Road Initiative (一带一路). The long-term results of relative isolation of the Dungan from other Chinese-speaking groups may consequently move towards integration into the Sinosphere, which may also include efforts of an orthographic reform by introducing Chinese characters (Janhunen 2020, p. 358; see also Zavyalova 2017a) and increased teaching of Standard Chinese with or without the Chinese characters (Allès 2005, pp. 133–34). At present, however, little concrete action has materialized, save attempts to build Dungan neologisms from a Chinese model. Also, China offers sponsored tours for Dungans to visit the country and scholarships to pursue higher education at a Chinese university (Smagulova 2016, p. 79). Taken as a whole, these activities manifest what Kokaisl and Hejzlarová (2023) perceive as the contemporary Chinese ideology emphasizing the cultural similarities of the Chinese and the Dungan.

If the cultural and linguistic rapprochement between the Dungans and the Chinese intensifies in the future, it will certainly affect the current patterns of linguistic contact as well. It is too early to speculate whether an eventual 'de-Russianization' and shift back towards a more Sinitic model is possible for Dungan. Although we enter a more speculative ground, a possible outcome of this could, among other things, be a trend reversal in'monomorphemization' discussed in Section 2.3 and an increased etymological awareness of the Sinitic lexicon. In sum, Central Asian Dungan as we know it emerged because of the power politics of the time. Once again, such power politics, fully external to language, have the chance of influencing the direction of the cultural and linguistic development of the Dungans.

5.3. Conclusion: Summary of Contact-Induced Russian Features in Dungan and the Role of the Language in Sinitic Typology and Contact Linguistics

The present study demonstrated that phonological and morphosyntactic contact phenomena are plentiful in spoken Kazakhstani Gansu Dungan and manifest as both MAT and PAT borrowing. In phonology, contact with Russian reinforces the short forms, a development that predates intensive contact with Russian. Also, consonantal palatalization likely results from transferring this phonetic feature from Russian, which has become the dominant language for many younger speakers of Dungan. In terms of the nominal and verbal systems, major contact-induced developments include the use of the plural form of the second person pronoun *ниму* /nì=mə/ 你们]to show respect, the emergence of a caritative preposition *без* /bʲez/ 'without', borrowing of modal verbs of Russian origin, and frequent copular omission, a development not likely caused by Russian contact but reinforced by it. Regarding clause combining and complex clauses, Dungan has borrowed a wide range of conjunctions and devices for forming complex clauses from Russian. Additionally, the patterns of forming complex clauses often approximate those found in Russian. Similarly, many devices of discourse marking identifiable in spoken Kazakhstani Gansu Dungan have their origins in Russian.

Rimsky-Korsakoff Dyer, a pioneering Dungan researcher whose contributions helped to establish the field in the West, stated as follows regarding the nature of Russian influence on Dungan:

> Dungans do not use Russian verbs, adverbs, pronouns, adjectives, conjunctions, prepositions, particles, etc. The only Russian words that are adopted are nouns or adjectives... (Dyer 1965, p. 55, cited in Rimsky-Korsakoff Dyer 1977, p. 354)

The statement was possibly correct at the time. More than half a century later, the present study nevertheless demonstrated that the list must be reconsidered. Earlier research on the Sinitic languages emphasized unity and similarity across the language group. On the other hand, the ongoing documentation of Sinitic varieties and their typological comparison that goes hand in hand with the former has made the research community increasingly aware of wide internal variation. The Sintic languages certainly share many core features together, to the extent that we can talk of a Sinitic prototype. At the same time, there is no universal Sinitic grammar (see Szeto and Yurayong 2021) shared in full by all Sinitic languages. By being a highly 'divergent variety of Sinitic,' Dungan plays a key role in mapping the possibilities and extent of Sinitic variation. In conclusion, the present paper aims to offer a springboard to discover the language further and to question some of the fixed ideas about what a Sinitic language should look like. At the same time, Dungan offers new perspectives for the study of contact languages in the Russophone world.

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Abbreviations

1 'first person', 2 'second person', 3 'third person', ABL 'ablative', ACC 'accusative', BEN 'benefactive', CGM 'common ground management' CLF 'classifier', CMP 'completive (aspect)', CMPR 'comparative', COM 'comitative', COMP 'complement', COND 'conditional', CONT 'continuative', COP 'copula', DAT 'dative', DEM 'demonstrative', DIM 'diminutive', DIS 'discourse marker', DIST 'distal', DOM 'differential object marking', EXV 'existential verb', FOC 'focus', GEN 'genitive', IMP 'imperative', INC 'inceptive', INDF 'indefinite', INF 'infinitive', INT 'intensifier', INTERJ 'interjection', IPFV 'imprefective' MOD 'modification', N 'neuter', NEG 'negation', ORD 'ordinal' PFV 'perfective', PL 'plural', PROSP 'prospective', PRS 'present', Q 'interrogative', REFL 'reflexive', SFP 'modal discourse enclitic often known as sentence-final particle', SG 'singular', STAT 'stative', SUPE 'superlative' TERM 'terminative'.

Notes

1 Some earlier research, such as Forker and Grenoble (2021), uses the term 'Slavicization'. Not all contact phenomena in Dungan, however, qualify as pan-Slavic, e.g., the occasional omission of the copula discussed in Section 4.4. For this reason, the term 'Russianization' is argued to be more exact and to more faithfully describe the types of contact-induced change that Dungan is currently undergoing.

2 The modified Cyrillic alphabet includes several additional letters used to represent sounds absent in Russian. It was adopted in a series of conferences organized in Frunze (now Bishkek) from 1953 to 1955 (Rimsky-Korsakoff 1967, p. 357) based on Kyrgyzstani Gansu Dungan (Smagulova 2016, p. 77). The alphabet is not taught formally in Kazakhstan anymore, and functional literacy in Dungan is consequently low, although the Cyrillic basis of Written Dungan offers some support for Dungan speakers who already know the Cyrillic alphabet from Russian and Kazakh. In the past, Dungan was primarily a spoken language. The earliest efforts at its graphization resulted in Dungan being sporadically written in the Perso-Arabic script. From 1928 onwards until the introduction of the Cyrillic alphabet, Dungan writing was Latinized, reflecting the Soviet Latinization policies of the era (Akiner 1986, p. 355).

3 This is connected to Salmi's (2007) observation that Dungan uses less compounding than Standard Chinese. In other words, diminished morphological and etymological awareness among Dungan speakers likely results in less frequent application of compounding as a word-formation strategy.

4 The literary pronunciation of *∂ë* 掉 is /tjō/, but spoken Kazakhstani Gansu Dungan reduces the form to /tō/.'

5 Glossing practices in Chinese linguistics have a tendency to represent bound elements as self-standing, although this is now gradually changing. Also, the Russian research tradition, in particular, has analyzed many Dungan post-predicate elements as suffixes rather than enclitics (see, e.g., Dragunov 1940; Zavyalova 2017b, pp. 26–27). Drawing a line between suffixes and clitics is difficult. What matters here is that the Dungan TAM markers and other post-predicate grammatical elements are not self-standing and independent 'particles', but bound elements deeply connected with their hosts. Whether the nature of this connection is analyzed as suffixation or clitization is, to an extent, a matter of interpretation (see Spencer and Luis 2012 for an overview of the challenges in describing clitic systems). With its clitic interpretation, this study follows Bonet's (2019) definition of clitics as prosodically defective function words that always need a host, occurring often without stress and potentially undergoing vowel reduction. For instance, the preverbal dative enclitic /kə=/ 给 often occurs in its phonologically reduced form /k=/ and always needs a host it depends on phonologically. In other words, /kə=/ 给 is never attested independently without a host in its dative function.

6 The present paper uses the term 'Altaic languages' to refer to North Eurasian languages from the Mongolic, Tungusic, and Turkic language families that have influenced each other throughout their history via language contact. In this use, 'Altaic languages' do not constitute a genealogical unit.

7 The analysis of *ни* /=ni/ remains the most controversial and indecisive among the Dungan TAM markers. For instance, Salmi (1984) interprets *ни* /=ni/ as a type of future that is nevertheless not a 'pure tense', since it is also used in irreal situations. Gathering all functions of *ни* /=ni/ under one label is challenging, and at least synchronically, it may be more fruitful to analyze the form as two distinct enclitics, a course of action followed in the present paper. Here it is glossed as a marker of the prospective aspect (PROSP) and stativity (STAT) because not all instances of /=ni/ fall within the scope of aspectual use, such as its compulsory presence accompanying certain verbs, including *ë* /jō/ 要 'need, to have to'.

8 In the same vein, Janhunen (2007, p. 94; 2012, p. 180) argues that, in addition to suffixal morphology, a verb-final clause structure is one of the key contributions of Altaicization in languages of the Qinghai Linguistic Complex, also known as the Amdo Sprachbund.

9 The caveat 'when pragmatically feasible' is needed here, since some Turkic borrowings, such as the enclitic *=k^{h}u* (see Honkasalo 2023 for a dedicated treatment), used in conversations to negotiate common ground belong primarily to the domain of casual spoken language rather than to Written Dungan.

10 As Hu (1989, p. 41) illustrates, the Chinese Hui also retain some words of Persian origin, which highlights their retention until the present era. However, not all Perso-Arabic words commonly listed in Dunganological literature are recognized by the Kazakhstani Gansu Dungan speakers participating in this research project. On the contrary, the number of Perso-Arabic words in use outside the semantic domain of religion is low. For instance, in short introductions to Dungan loanwords, *асмар* /acma(r)/ 'sky' is frequently quoted as a Dungan word of Persian provenance: آسمان /ɒːs(e)mɒːn/ 'sky' (see, e.g., Imazov 2009, p. 167; Lin and Ding 2002, p. 70). The research team for this study has nevertheless not found speakers who recognize this term. Three mutually non-exclusive solutions for the less than-expected amount of Perso-Arabic loanwords present themselves: 1. Such words belong to the highest registers of Written Dungan and remain outside the lexicon of most speakers. 2. While such words were originally used in spoken Dungan, they have subsequently fallen into disuse, at least in some varieties of the language. 3. Such words are dialect-sensitive and do not exist in all Dungan varieties.

11 The fact that not only spoken Dungan but also the written variety, which is more conservative and resistant to change, has undergone some syntactic remodeling comes as no surprise. As Weinreich (2011, p. 51) states, syntactic elements, such as distinctive order, are less conscious to speakers than segmental units. As a result, even when speakers consciously avoid foreign

influence, e.g., when writing literary Dungan, interference on such elements at the periphery of speakers' awareness is more difficult to control.

12 Hai (2007, p. 40) originally writes: 从一九四三年七月我就到了车尔尼果夫市了. The use of *cóng* 从 in the translation into Standard Mandarin is grammatically unnatural and apparently aims for a closer match with the Dungan original. Since it does not contribute to the key argument, I have omitted it from the example.

13 The Russian origin, however, is not fully certain. Turkic languages also feature a polite pronoun that behaves like a plural second-person pronoun, such as the Kazakh *ciz* 'you' by requiring a plural form of the verb in argument indexation.

14 The element in parenthesis was omitted in rapid articulation.

15 The Table builds on Janhunen et al. (2008) and Sandman (2016) for Wutun and Zhou (2022) for Zhoutun. Also, Standard Mandarin data are offered here for the sake of comparison: Speaker population: hundreds of millions with varying competence; Contact languages: many, such as Austroasiatic and Hmong-Mien languages (ancient times) and Japanese and English (modern times) (see Arcodia and Basciano 2021, pp. 191–96); Tonal contrasts: 4; Polite 2SG pronoun: present; Demonstrative distinctions: 2; Reflexive: 自己 *zìjǐ*; Inanimate plural: no; Coding of semantic roles: converbs, sometimes termed prepositions; Aspect marking: aspectual particles, sometimes interpreted as aspectual suffixes; Zero copula: no; Relative clause position: pre-head; Conditional marking: single; Basic word order: SVO; Nominal classifiers: many present; Verbal classifiers: many present; Evidentiality: no.

16 Transcribed into Chinese characters as 各家 by Zhou (2022, p. 71).

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Article

Altaic Elements in the Chinese Variety of Tangwang: True and False Direct Loans

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Abstract: This paper foccusses on the Tangwang language, a Chinese variety spoken in southern Gansu that has been in contact with the Dongxiang language, a Mongolic language. Tangwang is believed to be a highly altaicised variety, as it demonstrate several traits that are usually absent in this language family are are reputed 'typical' of the Turkic-Mongolic languages. However, most of these traits are present in the other northwestern chinese varieties and are the result of reanalysis, thus, it is difficult to trace their exact origin. This paper aims at analyzing the influence of Mongolic languages on Tangwang from the perspective of borrowings, and in particular direct loans. Taking the formally identical features that are shared in Dongxiang and Tangwang as a starting point, we will try to determine which form can be seen as a direct borrowing due to the adstratal influence of Dongxiang and which one is probably due to an earlier altaic influence. We will try to classify which form is a 'true' direct loan from Dongxiang and which form could be the evidence of an earlier substrate. From the results, and based on the existing models on languages contact, we will try to understand which mechanisms from relexification, grammaticalization, and language shift is the most probable in the case of Tangwang.

Keywords: language contact; grammatical borrowings; Tangwang; Dongxiang; hybrid dialects

1. Introduction

All varieties spoken in Northern China have been influenced by Altaic languages, a process known as the 'Altaicisation of Chinese' (Hashimoto 1976, 1986). It has led to the division of the Chinese dialects into two main areal–typological complexes which correspond to the northern and the southern areas (Norman 1988). During the course of history, various groups of languages, including Mongolic, Turkic, and Manchu-Tungusic, have been in contact with the Chinese varieties spoken in Northern China and have induced changes to the phonology and morpheme structure, but also to syntax and morphosyntax. Because of the historical nature of these contacts, Chinese has received several layers of substratal and superstratal influences of the Altaic type (Janhunen 2015), and, in modern times, most direct contact between northern Chinese dialects and Altaic languages have ceased. However, some dialects also have been in prolonged contact with Mongolic languages on the local level, leading to the adstratal influence on those varieties. These include the Tangwang dialect, spoken by about 15,000 speakers in the village of Tangwang (唐汪镇 *Tángwāng zhèn*), situated in the north-eastern part of the Autonomous County of Dongxiang (东乡族自治县 *Dōngxiāngzú zìzhìxiàn*) at the border of Gansu and Qinghai provinces, in the People's Republic of China. This region, known as the Hexi Corridor complex, is the home of speakers where languages from different families (Mongolic, Turkic, Sinitic, and Bodhic) have been in contact, leading to the formation of a linguistic area (Dwyer 1995; Janhunen 2004; Slater 2001; Szeto 2021, etc.). Tangwang, along with some other dialects spoken in this region (including Wutun 五屯话, Gangou 甘沟话, Zhoutun 周屯话, Linxia 临夏话, and Xining 西宁话), features a certain number of non-Sinitic traits including nominal case, tense, and aspectual markers, verbal dependance marker (equivalent to Mongolic converbs), dominant SOV order, multiple plural markers on unanimated

objects, etc., which are believed to have been induced through language contact with Altaic languages, and in particular, with the surrounding Mongolic languages of Monguor, Bonan, and Dongxiang spoken by their neighboring communities (Peyraube 2017). The lexicon in all these dialects demonstrates only a few lexical loans, and their vocabulary remains strictly Chinese. Because of the high degree of 'mixture' of these dialects on the syntactic level, they have often been considered as a kind of Chinese-based "creoles", "mixed languages", or "Chinese hybrid dialects", which show some degree of mutual intelligibility with other Sinitic varieties (Dwyer 1992; Wurm 1995; Lee-Smith 1996; Slater 2001; Janhunen 2004; Kawasumi 2018; Bell 2020). However, most of these features are formally very different from their Mongolic counterparts, especially from the local Mongolic languages they have been in contact with, and are either the result of a calque or reanalysis process. Another possibility would be that they were borrowed from other now extinct Altaic varieties we have not fully understood yet (e.g., para-mongolic Khitan) or an unknown Altaic language that we do not have any written record of. In any case, the exact source of the influence is often difficult to establish, especially for cases of nominal case markers (Xu 2015). Some other forms seem to be related to those found in other Chinese dialects, especially those of the Shanxi–Shaanxi area, spoken further east, but which are yet not fully reconstructible. While the hybrid dialects of the Hexi corridor all share these syntactic features, Tangwang demonstrates a few additional direct loans from Mongolic that are found only in this variety and that will be the object of this study.

This paper aims at analyzing the influence of Mongolic languages on Tangwang from the perspective of borrowings, and in particular direct loans. Taking the formally identical features that are shared in Dongxiang and Tangwang as a starting point, we will try to determine which form can be seen as a direct borrowing due to the adstratal influence of Dongxiang and which one is probably due to an earlier Altaic influence. This paper is organized as follows: in Section 2, we provide an overview of the context, including the sociolinguistic environment and the contact-induced features found in Tangwang's syntax that are seen as Altaic, but that are commonly shared with other northwestern varieties and should be identified as a superstatal influence. In Section 3, we give an overview of the vocabulary borrowed from and through Dongxiang in Tangwang, as seen in the previous studies, and discuss in detail one particular element found over the different Chinese hybrid dialects of the Hexi corridor, i.e., the formal distinction for the word 'small' (*ka* 尕 and *ɕiɔ* 小) and its particularities in Tangwang compared to Dongxiang. In Section 4, we discuss the pronoun *wɤlũ* 喔咾 '1SG.LOG' and compare it with the Dongxiang reflexive pronoun orun '1SG.LOG'. In Section 5, we describe two possessive suffixes, namely the third-person possessive *-ni* 尼 and the reflexive possessive *-ne* 呢. In Section 6, we compare two case markers, the limitative *thala* 他啦 and the instrumental *-la* 啦 with their Dongxiang counterparts. In the discussion, we will try to classify which form is a 'true' direct loan from Dongxiang and which form could be the evidence of an earlier substrate. From the results, and based on the existing models of contact language, we will try to understand which mechanisms from relexification, grammaticalization, and language shift is the most probable in the case of Tangwang.

2. Context

Tangwang is spoken in the village of Tangwang (u唐汪镇 *Tángwāng zhèn*) where both Han (汉族 *Hànzú*) and Hui Muslims (回族 *Huízú*) cohabitate. This village has been named after the two main families present in the village, respectively, the Tangs (唐) and the Wangs (汪). Based on the legends collected among the Tangwang people, but also on limited historical evidence as well as on genetic affinities, it has been shown that the population inhabiting this village was of different origins, including Tibetan, Mongolian, and Han Chinese (Xu 2014). Three main narratives have been developed regarding the origin of the people of the Tang family. The first one is that they were partly of Mongolian origin. Their ancestors, a Yuan general, (called *Baima jiangjun* 白马将军 'General with the White Horse'), and his three wives (including one of Tatar or Mongolian origin) would

have led a group from Sichuan, situated south of Gansu, to settle in the actual location of the Tangwang village (Tang 2011). This general is still worshipped as the clan god by the local Han Chinese in the local temple and is believed to be the ancestor of the Tang family. The second narrative is that they are of Dongxiang or Mongolic origin that have been Sinicized and that their initial language was relexified with the Chinese lexicon; hence, there are remaining Altaic syntactic features in the Tangwang language. The last narrative is that a group of four Chinese thieves flew from Sichuan to Tangwang and that one of them had converted to Islam. Their descendants would be today's Hui and Han communities (Lefort 2023b, Fieldwork). The Wang family is mostly constituted of Han Chinese populations that have migrated to their actual location during the Ming dynasty and have partially converted to Islam, becoming Huis (Xu 2014). In any case, the time of formation of this community would be between the late Yuan dynasty (1271–1368) and the early Ming dynasty (1368–1644), that is to say, at the junction of the XIIIth and the XIVth centuries. Because of their religious proximity, Hui males from Tangwang and Dongxiang women have frequently intermarried. The Tangwang Hui males usually do not speak Dongxiang, but the Dongxiang women are usually bilingual. Therefore, there exist differences between Hui and Han speakers of Tangwang, a phenomenon that has not been widely described so far. This study focuses on Hui Tangwang speech and data partially collected with native informants in Tangwang during August 2023.

Tangwang remains an under-described variety, both in China and in the West. Ibrahim (1985) was the first to partially describe the Tangwang language. It was only mentioned or partially described by scholars working in this area (Wurm 1995; Lee-Smith 1996; Janhunen 2004) before Xu Dan published her full monograph (Xu 2014). In addition, a few articles on the grammatical characteristics of Tangwang and phonological changes (Mo 2015; Lei 2017; Djamouri 2013, 2015) have been published. More recent research includes Ibrahim's work on Tangwang vocabulary (Ibrahim 2017), Djamouri's glossed and translated material of the Tangwang language and the glossary of the Tangwang language (Djamouri 2022a, 2022b), along with his grammatical description of the Tangwang language (Djamouri, forthcoming). As the Tangwang village forms part of the Dongxiang Autonomous District where Dongxiang (or Santa Mongolian), a Mongolic language from the Shirongolic branch, is spoken, contact-induced change descriptions have mainly focused on analyzing the influence of Mongolic languages on Tangwang by taking Dongxiang as the source (Ibrahim 1985, 2017). However, the influence of Mongolic on Tangwang is more complex than has often been described, involving several layers of contact with different Altaic (possibly Mongolic) languages. Along with the other above-mentioned Chinese hybrid dialects, Tangwang is considered to be a highly 'Altaicised' variety due to the several non-Sinitic traits that have been identified in these languages and the resemblance to what is found in Mongolic and Turkic languages. Those include head final, nominal case markings, converbial markers, quotative, aspectual/tense markers, third-person, and distal demonstrative pronoun syncretism, multiple categories of nouns that can receive plural markers, etc. In addition, Tangwang has a reduced tone system compared to other Sinitic languages. It is unclear if Xu and Wen (2017) believe that these changes have arisen solely from contact with Dongxiang, but at least, they do not propose another scenario and state that all changes have been induced through contact with Mongolic languages. However, although these traits bare some resemblance with Mongolic (and even Turkic languages) on the functional level, they are not completely identical and, in most cases, they formally differ from Mongolic languages.

The Tangwang nominal case includes the objective case *xa* 哈 (regrouping the dative–locative and benefactive functions), the ablative case *ɕiɛ* 些~*liɕiɛ* 里些, the comitative– instrumental case *la* 啦, locative cases *li* 里, and limitative $t^{h}ala$ 他啦 (Djamouri 2015). The limitative case marker $t^{h}ala$ 他啦 is not found with this function in Mongolic languages but could have developed based on the Mongolic converb $t^{h}ala$ 他啦. This point will be further developed in Section 6. The origin and the exact source for the nominal case have not been demonstrated (up to date) and some functions of the objective case *xa* 哈 overlap with those of the Dongxiang counterparts (Xu 2015; Lefort, forthcoming). The formally identical

dative–locative–benefactive marker in Mongolic have two forms in Tangwang, the genitive and accusative cases phonetic forms have merged in Dongxiang as *-ni/ji*, but in Tangwang, we have two clear totally makers (*dzi* 底 and *xa* 哈), and the formally identical accusative–dative–benefactive marker *xa* 哈 is expressed through two different markers in Mongolic. The only marker formally identical to its Dongxiang counterpart is the instrumental *-la*, which could have been borrowed. This point will be further developed in Section 6. Therefore, the main strategies adopted for the transfer of those features are probably calques and reanalysis, and the source is most probably not Dongxiang itself, and maybe not even Mongolic at all[1] for the objective case (see Lefort, forthcoming for details). Consider Table 1 below:

Table 1. Tangwang, Dongxiang, and Middle Mongol nominal case markers.

Tangwang	Function	Dongxiang	Middle Mongol
dzi	Genitive	*-ni/ji*	*-yin, -n (-Un, -in, -Ai/-(n)U('Ai))*
xa 哈 (*a* 啊/*ang* 昂)	Accusative	*-ni/ji*	*-yi (-ni/-i)*
	Dative	*-de*	*-du(r)/-da*
	Benefactive		*-du(r)/-da*
li 里 **	Locative		*-du(r)/-da/-a/-na* ***
t^ha*la* 他啦	Terminative	-	*-cAA*
$ɕ^iɛ$ 些	Ablative	*-se*	*-ca (-sa/-asa)*
	Comparative		
la 啦	Comitative	*-le/-la*	*-luga/-laa*
	Instrumental	*-ghuala/-la*	*-ar/-iar/-niar*

* *ji* 底 is not a nominal case marker per se, as it can be combined with adjectives and verbs. However, its functions partially fulfill the definition of case marking, as it can be combined with nouns, which will be further explained in the section below. In Mongolic, the genitive case is also a part of the case system, as it is the only case that connects two nouns. ** The spatial locative postposition *li* 里, 'inside', (along with *ʂɑ̃* 上 'on', *tʂũ* 中 'in', and *xa* 下 'under') are attested in Chinese, but the marker *li* 里 in Tangwang has other functions that makes it closer to a case marker. *** According to Janhunen (2003, pp. 66–68), there were two distinct forms for the locative, one dative–locative case, *-du(r) / da*, marking indirect objects as well as a variety of local and temporal functions, and a "pure" locative case, *-a / -na*, which later disappeared and was completely replaced by the dative–locative case.

The aspectual markers include the prospective *li* 咧, perfective *lʲɔ* 寮, and imperfective *tʂɛ* 寨. Although post-verbal aspectual markers are attested in other Chinese dialects, this paradigm is closer to what is found in Altaic languages. However, as for nominal case markers, the aspectual markers demonstrate many differences. They formally do not correspond at all to their Dongxiang counterparts, not even to Middle Mongol: Tangwang uses two different markers to express the prospective and imperfective while Tangwang uses two different markers to express the prospective and imperfective while Dongxiang uses only one, and Tangwang lacks progressive and habitual tense markers, consider Table 2 below:

Table 2. Tangwang tense–aspect markers (indicative).

Aspect	Tangwang	Dongxiang	Middle Mongol
Future	*li* 咧	*-ne*	*-m~mU~-mUi*
Imperfective	*tʂɛ* 寨		
Perfective	*lʲɔ* 寮	*-wo*	*-bA~-bAi~bi*
Confirmative	-	-	*-lU'A~.-lU'Ai~-li'i*
Progressive/Durative		*-zhiwo*	*-nAm*
Habitual		*-zhi*	-

Other Gansu–Qinghai hybrid dialects also feature tense–aspect markers, including Gangou (Yang and Zhao 2021), Wutun (Sandman 2016), and Linxia (Liu et al. 1996). Aspectual and tense markers are also found in Jin languages, e.g., northern Shanxi–Shaanxi and southern Inner Mongolia (Arcodia 2021; Xing 2006, 2020), but do not function exactly in the same manner and are thought to be developed from contact with Altaic languages.

One important gap in Tangwang's paradigm compared with the Mongolic languages is the lack of participle markers (or 'nominalizer'), which enable verbs to receive a further nominal morphology (for example, there are three nominalizers in Dongxiang, and thirteen participle markers in Middle Mongol).

Dependence verbal marks that could possibly be of converbial Mongolic origin include the progressive *tʂɔ* 着 and t^h*ala* 他啦. The progressive marker *tʂɔ* 着 is found across all northern dialects and is believed to be an early loan from Altaic languages (Zu and Gao 2022). The form t^h*ala* 他啦 is found in all Mongolic languages and the hybrid languages of the Gansu–Qinghai area, and is probably a secondary loan. It is worth noting that the Tangwang language, along with other hybrid Chinese dialects, feature only a very restricted set of converbs compared to the Mongolic languages (seven converbs in Dongxiang, for example).

Other traits include the quotative *ʂuo* 说 'to say', which has been grammaticalized in most northern dialects, including the Beijing dialect, where it is found as a quotative marker, a complementizer, a topic marker, etc. (Fang 2006). In the Gansu–Qinghai complex, it is attested as a quotative and evidentiality marker in Xining (Zhang 2007), Wutun (Sandman 2016, p. 344), and Tangwang (Djamouri 2013). Those are thought to have been induced through contact with Mongolic languages and in particular, could be a calque Mongolic verb *ke*—'say'. In Tangwang, the quotative *ʂuo* 说 also has epistemic and alethic functions that seem to be internal developments (Djamouri 2013, p. 17).

In addition, Tangwang's distal demonstrative *nə* 呢 (and its related forms) is formally identical to the third singular personal pronoun *nə*, a phenomenon that is found across Mongolic and Turkic languages. This syncretism is also present in Wutun (third-person pronoun *gu* 箇 and distal demonstrative *gu* 箇), while in the other Chinese hybrid dialects of the Gansu–Qinghai area, the third-person form seems to be derived from the proximal demonstrative form (e.g., Lanzhou dialect third-person pronoun *la* 那 and distal demonstrative *lei* 那). Furthermore, in many dialects along the Yellow River in the area of Shanxi and Shaanxi, including in the Jin dialects, distal pronouns and the third-person form are often formally identical (Hou 2012, p. 314). Those forms are believed to have been induced by contact with Altaic languages (Zhang and Zhang 2007, p. 332; Zhen 2002). Moreover, formally identical demonstratives and third-person pronouns are well attested in other languages in the world and are not always the result of language contact (Bhat 2013). Therefore, although contact with Dongxiang could have reinforced the calquing process, this syncretism is probably inherited from an earlier altacised variety of Chinese.

The use of the plural marker *mu* 么 with non-animated objects in Tangwang have not been investigated in detail, but is mentioned by Xu and Wen (2017) who believe it is the result of contacts with Mongolic languages. This trait is also very common to all northern dialects, even those that have not been in contact with Mongolic languages in modern times, and the particularities of the plural marker in the other Gansu–Qinghai dialects have been extensively described (Xu 2012; Mo 2004; Yang 2014, etc.). Compared to other Mongolic languages, Dongxiang has a reduced set of plural markers, which are *-la* and *-sila* and no other Altaic language features a plural marker from which Tangwang could have borrowed the marker *mu* 么. Hence, the marker itself is not of Dongxiang origin, and if the use extention of this marker is the result of language contact, it has gone through a reanalysis process and has probably been inherited from an earlier altaicised variety.

At last, the head-final OV dominant word order has been proven to cohabitate with a VO underlying word order (Djamouri 2013; Xu 2014). Therefore there is no complete SOV to SVO word order shift in Tangwang.

All the above traits are reputed to have been induced through contact with Mongolic (or more generally with Altaic) languages, but most of them are also found in other northern dialects that have not been in contact with any language of this family in modern times. Therefore, we believe they form part of a substratral influence of Altaic languages shared in all northern dialects, including Tangwang. The only trait that is not found in dialects outside of the Gansu–Qinghai area is the case system. We have seen that it does not exactly match the Mongolic nominal case system, both functionally and formally; hence, it is unlikely to be solely the result of the contact with these languages. The other aspectual, converbial, quotative, and plural markers are formally completely different from any Mongolic markers, and therefore should also be identified as calques or reanalyzed forms.

Leaving aside the calques of these syntactic features (case markers, aspect, quotative, plural markers, third-person distal demonstrative syncretism) and the loans that are found cross-dialectally in the northern region (progressive converb), in the next sections, we will turn to what can be identified as the direct influence of Mongolic languages, that is to say, lexical and grammatical borrowings that are formally identical with their Dongxiang counterparts, or formally very close to them.

3. Borrowed Lexicon

3.1. Lexical Loans and Calques

One of the characteristics of the Tangwang language is the contrast between the very low number of lexical borrowings and the high number of non-Sinitic grammatical elements. The non-Sinitic vocabulary represents less than 1.5% of the Tangwang vocabulary (Xu 2017, p. 41) and is mainly borrowed from the Dongxiang language. Secondary sources of loans include Arabic, Persian, and Turkic, mainly related to religion, that have been borrowed through Dongxiang. This is not a feature unique to the Tangwang language, but a common trait in all other Chinese hybrid dialects of the Hexi corridor (Zhou 2023; Sandman 2016). Only two out of the two hundred words listed in the Swadesh list are of Turkic origin, namely *ana* 阿娜 'mother', 'mom' (CT *ana*) and *ata~ada* 阿达 'father', 'dad' (CT *ada*). It is shared in Dongxiang and could have been borrowed through the mothers when intermarriage took place. However, they are most probably the result of areal diffusion, as they are also found in other hybrid dialects of the region, including Wutun (Sandman 2016, p. 36), Linxia (Liu et al. 1996, p. 91), the Linxia city Bafang variety (Lefort 2023b, fieldwork), Hetan (Lefort 2023b, fieldwork), Gangou (Feng and Stuart 1992, p. 5), and partially in other Mongolic languages[2]. The core vocabulary remains strictly Chinese, mainly shared with the vocabulary of northern Chinese dialects, but with two exceptions[3] from southern Chinese, especially Sichuan, which, according to Xu (2020), corroborates the narratives regarding the settlement of the Tang family in the region.

In his work on the Tangwang vocabulary, Ibrahim (2017) has listed about 150 loanwords in Tangwang that he believes were borrowed from Dongxiang (including words of Mongolic, Turkic, Persian, and Arabic origin). Most of them are direct loans, but some others are more probably Chinese borrowings to Dongxiang (most likely from Linxia) rather than the contrary. For example, *vuəvuə* 窝窝 'a kind of doughnut' is identified as a Dongxiang loan but was borrowed first from Linxia *wɤwɤ* 窝窝 to Dongxiang and then loaned to Tangwang, if not already present in Tangwang initially. Furthermore, a significant number of the words listed are common to the hybrid Chinese dialects and the Mongolic languages of the region. For example, Tangwang *aka* 阿尕; Linxia *aka* 阿尕 'elder brother'; Wutun *aka* 'elder brother'; Gangou *akə* 'elder brother'; Dongxiang *aga* 'elder brother'; Mongguor *aġa* 'elder brother'; eastern Yughur *ağa* 'elder brother'; Bonan *a'gha dou* 'brothers', etc. Therefore, it should be considered as a common areal lexicon, or regionalism, probably the result of different contact layers, rather than direct loans from Dongxiang.

Dongxiang has undergone important phonological changes compared with Middle Mongol, which most of its Mongolic vocabulary has been inherited from (Field 1997; Lefort 2012). Therefore, the Dongxiang vocabulary in Tangwang is easily identifiable. Most of the Mongolic vocabulary borrowed from Dongxiang is related to everyday life and in-

cludes words from kin relationships to cultural-related matters through cuisine and animal names. Most of the borrowings are nouns, followed by verbs, while only a few adjectives and adverbs have been loaned. A few examples are provided hereunder (Ibrahim 2017; Djamouri 2022a):

TW 苏唤赤 *suxʷɛ̃ntʂʰə ~ suxɛ̃tʂʰə* 'bridesmaid < DX *suxʷɛ̃ntʂi*
TW 粘连 *tʂɛ̃l/ɛ̃* 'companion; friend'< DX *dʐənliən*
TW 窝咧称 *wɤl/ɛtʂʰə̃* 'orphan' < DX *oliətʂin* [< MMo SHM *onecit*]
TW 哈眯柔 *xamizʉ* 'a person who squints'< DX *χamirəu* 'squinted-eyed'
TW 合里哦屋 *xəliɔvu* 'hawk' < DX *həliəwu* [< MMo HY *hele'e*]
TW 猴娃 *xʉwa* 'spinning top'< DX *χauwa* 'spinning top'
TW 马且 *matɕʰ/ɛ* 'steamed twisted rolls'< DX *matɕiə* 'steamed twisted rolls'
TW 哈楼 *xalɔ* 'ugly' < DX *χalao* 'ugly'
TW 果果 *kʷɤkʷɤ* 'breast'< DX *gogo* [< MMo HY *köken*].

One of the most often used adverbs borrowed from Mongolic is *ətə* (< *ede*) 'now', which is not attested in other hybrid languages. It is almost certain that it is a direct loan from Dongxiang, as neither Shirongolic language forms (Mongguor *do*; Bonan *da ~ de;* Kangjia *da*; Eastern Yughur *ədɔ:*) nor Middle Mongol ones (MMo SHM *edo'e*; HY *edö'e*) are likely to be the source:

(1)	阿德	三十	年	成寮
	ətə	*sɛ̃ʂɿ*	*n/ɛ̃*	*tʂʰə̃ -l/ɔ*
	now	thirty	year	finish–-PFV.

'It happened thirty years ago'. (Djamouri 2022b, p. 2)

In addition, a few Turkic, Persian, and Arabic loans have been borrowed to Tangwang, e.g.:

吾心 *vuɛin* 'face' < *uɛin* (Turkic)
罗波罗 *lʷɤp'olʷɤ* 'a kind of meat congee' < *loporo* (Persian)
杜瓦呐 *tuvana* 'a kind ritual bread used during funerals' < *duwana* (Arabic).

Those words are also present in Dongxiang and have probably been loaned to Tangwang via Dongxiang. Other non-Mongolic lexical borrowings are mostly related to religious matters (Xu 2017, pp. 127–28).

In addition to lexical loans, there are a certain number of expressions that are similar to those found in Dongxiang. Their meaning and structure are copied from the Mongolic languages by using Chinese morphemes, and therefore should be identified as calques rather than lexical loans per se. A few examples are provided below (Ibrahim 2017):

TW 压黑 *jaxi* (lit.'press black') 'to have a nightmare' < DX *qara daru* lit.: black + press 'have a nightmare'.

TW 五形没有 *wuɛʰ/ɪ̃ mɔjʉ* lit.: face + have.not 'ugly' < DX *uɛin wiwo* lit.: face + have.not 'to be ugly' (not 'loose face' as in other Chinese dialects).

TW 往前来 *wãtɕʰ/ɛ̃ lɛ* lit.: from before + come 'to recover from a serious illness' < DX *məliə irə* lit.: from before + come 'to recover from a serious illness.

Some of those expressions, such as 压黑 *jaxi*, 'to have a nightmare', are clearly calques from Mongolic as they are attested in Middle Mongol and have even been conserved in Modern Mongolian: ᠬᠠᠷᠠ ᠳᠠᠷᠤᠭᠤ *qara daruqu* lit.: black + press 'have a nightmare'. They could be loans from earlier contact with other Mongolic varieties rather than from Dongxiang itself, but this is unlikely to be the case.

To conclude, although a certain number of lexical borrowings can be found in Tangwang, the influence of Dongxiang on the vocabulary is sporadic and most of the Tangwang lexicon remains Chinese.

3.2. Formal Distinction of the Word 'Small'

A lexical feature which seems to be shared among most of the Chinese hybrid languages of the Gansu–Qinghai area is the two distinctive forms for the word 'small'. In Tangwang, it is found under the form *ka* 尕 (2) and *ɕi/ɔ* 小 (3):

(2)

过去	驴	走着	过不哈底	中底	尕	路
kʷɔtɕʰi	*lɥ*	*tsʉ-tʂə*	*kʷɔ-pu-xa-tɕi*	*tʂũ -tɕi*	***ka***	*lu,*
past	donkey	walk-SUBV	pass-NEG-POT-SUB	like.this	small	road
阿德	成哈	大卡车	察。			
ətə	*tʂʰə̃-xa*	*ta-xatʂʰə*	*lɔ*			
now	become-RES	big-truck	FP			

'Roads that used to be so small that even a donkey could not go through have now become so big that trucks can drive on them'. (Djamouri 2022b, p. 48)

(3)

这	个	人	小气底很。
tʂɛ	*kɛ*	*zə̃*	***ɕʲɔtɕʰi-tɕi-xə̃***
this	CL	man	mean-SUBS-very

'This man is very mean.' (Djamouri 2022a)

The adjective *ɕʲɔ* 小 is also found in other lexicalized items such as *ɕʲɔtʰʷi* 小腿 'calf' and *ɕʲɔɕĩ* 小心 'careful' (see Djamouri 2022a for details).

The form *ɕʲɔ* 小 is shared among all Chinese dialects, while the origin of *ka* 尕 is more uncertain. According to Dwyer (1992), the source language for *ka* 尕 is clearly not of Chinese origin and appears in loans and onomatopoeias[4]. This distinction is also found in Linxia, Wutun, Xining and Lintan, but also in some Chinese dialects that have been in contact with Mongolic languages in Xinjiang (see, for example Wang and Zhu (Wang and Zhu 2021) for the Jimsar dialect). The main difference between *ka* 尕 and *ɕʲɔ* 小 is that *ɕʲɔ* 小 appears in bound morphemes, while *ka* 尕 is a free one. *ka* 尕 also bears emotional overtones of affection that *ɕʲɔ* 小 does not. In addition, *ka* 尕 is used as predicate, while *ɕʲɔ* 小 is used in an attributive form in Linxia. In Tangwang, the functional distribution of *ɕʲɔ* 小 and *ka* 尕 appears to be similar to what is found in Linxia. *ka* 尕 can be used both in predicative and attributive positions, while *ɕʲɔ* 小 appears only in the attributive position as a bound morpheme (all the examples below are from (Djamouri 2022a)):

(4)

尕尕底	尕驴
kaka:*tɕi*	***ka***.*lɥ*
small-small-SUBS	donkey

'A small donkey; donkey foal'.

(5)

土盖啦	泥哈寨	个	尕	炉子
tʰukɛ-la	*ni-xa-tʂɛ*	*kɛ*	***ka***	*lutsʅ*
clod.of.earth	mud-RES-IPFV	CL	small	stove

'Make a small stove out of mud and clod of earth.'

(6)

这	衣裳	尕	些
tʂʅ	*jiʂã*	***ka***	*ɕʲɛ*
this	clothes	small	a.bit

'These clothes are a little small'.

The Tangwang *ga* 尕 is also a prefix which has lost its primary meaning (such as *in ka.lɥ* 尕驴 'donkey' in example (7)), which is also the case in Linxia.

In Dongxiang, there are also two distinctive forms for the word 'small', which are *ga* and *mila*.

(7)

niə	***ga***	*maoɚ*	*osi-səŋ*	*saiʁaŋ*	*no*	*wo*	*dziuʂi*
one	small	cat	look-P.NMLZ	pretty	very	COP	indeed
daŋdzi-ni	***mila***	*no*	*wo.*				
courage-3SG.REFL	small	very	COP				

'There was a beautiful kitty, but he was very fearful.' (Lefort 2023a)

In Dongxiang, *mila* is used in idiomatic expressions, such as in *mila ʂida*, '(when I) was small', a calque of the Chinese *ka-tɕʰjɛʔtsʅ* 尕前子, '(when I) was small', where it cannot be replaced by *ga*. It is also found in a series of lexical calques borrowed from Chinese with

a predicative function, e.g., *mila otɛin* (*ɛjɔ nɥɪ* 小女儿) 'little girl', *mila sara* (*ɛjɔjɥɛ* 小月) 'a month with less than 30 days', *mila udzə* (*ɛjɔkʰæ̃* 小看) 'to scorn', etc.

In Dongxiang, *ga* is mostly used in a predicative manner, to express 'young' rather than 'small', as in 'small in height', and bears the emotional overtone Dwyer (1992) was referring to in Linxia:

(8)	*ənə*	***ga***	*wawa*	*saiʁaŋ*	*wo.*
	DEM	small	girl	pretty	COP

'This little girl is cute' (Lefort 2012)

ga is also found in a series of calques borrowed from Chinese, but the distinction with *mila* used in a predicative manner is very fuzzy as *ga* and *mila* are used as bound morphemes and can alternate most of the time: *ga baə/mila baə* 'small change' (<*ɛʲɔ tɕʰjɛ̃* 小钱), *ga bəilin/mila bəilin* 'younger member of a family'/'premature' (<*ɛʲɔ pe* 小辈), *ga dziawu/mila dziawu* (<? *ɛʲɔɛʲatsu* 小家族[5]) 'families made up of closely relatives', *ga pudʐa/mila pudʐa* 'green pea' (<*ɛʲɔ tʉ* 小豆); *ga oliə/mila oliə* 'less than half' (<*ɛʲɔpɛ̃* 小半), etc.

It is interesting to note that the Dongxiang *mila* can replace *ga* in all situations, but not the contrary, while in Tangwang, *ka* 尕 can replace *ɛʲɔ* 小 most of the time, but not the contrary. Hence, the use of *mila* in Dongxiang corresponds to *ka* 尕 in Tangwang, while the use of *ga* in Dongxiang corresponds to *ɛʲɔ* 小 in Tangwang.

This syntactic split (predicative vs attributive) exists in other Shirongolic languages, as well as in Amdo Tibetan. The word *mila* is not attested in Middle Mongol sources with the meaning 'small', which reflects a regionalism[6]. *Mila*, 'small', is shared by all the other Shirongolic languages, except Bonan, while *ga* is found only in Dongxiang, which suggests it is a secondary borrowing due to areal diffusion. It could be an initial borrowing from the Mongolic *baga*, 'small', to Chinese (with an initial syllable drop), which has then been re-borrowed to Dongxiang as *ga*. *Baga* 'small' and *mila* 'small' are both found in Eastern Yughur, which could be an indication that Dongxiang initially featured the same form. This would suggest that the origin of *ka* 尕 differs from the same word attested in southern dialects. There are two words for 'small' attested in modern Mongolian as *baga* 'small' and *dzidzig* 'small', but only with a semantic distinction. *Dzidzig* refers just to physical size of the objects, while *baga* refers mainly to less important objects too. The distinction in Tangwang could have arisen from a semantic one and later developed to a syntactic one, but further researches need to be done. The fact that the Dongxiang *mila* and the Tangwang *ka* 尕 (and to some extent the Dongxiang *ga* and the Tangwang *ɛʲɔ* 小) are used in the same manner suggests that it is a language contact-induced phenomenon. However, it is difficult to state which language has influenced the other, and how *ga* is a direct loan in Dongxiang from the local variety of Chinese *ka*尕, but with restrictive features compared to its Chinese counterpart, while *mila* may be a claque of the Chinese *ka* 尕. On the other hand, the Chinese *ka* 尕 could also be a calque of the Mongolic *mila*.

4. First-Person Logophoric Pronoun

The Tangwang first-person logophoric pronoun *wɤlũ (vəlũ)* 喔咾 is formally very close to its Dongxiang counterpart *oruŋ~oroŋ*. The Dongxiang *oruŋ~oroŋ* corresponds to the common reflexive pronoun **öxer-i-xe/n* found in all Mongolic languages. This pronoun is not attested in other Chinese dialects, nor in other Chinese hybrid dialects such as Linxia or in Wutun. This indicates that *wɤlũ (vəlũ)* 喔咾 has been borrowed from Dongxiang itself rather than from an earlier common Mongolic source.

In Dongxiang, even if it was attested to be used as a reflexive pronoun in earlier sources (Buhe 1987; Kim 2003), *oruŋ* and its plural form *oruntaŋ* are nowadays used almost exclusively for reported speech[7], while the function of the reflexive pronoun is carried out by the Linxia loanword *guadzia (gojə)* (<*gedzia* 各家):

(9)	*hə*	*madə*	*kiəliə-dʐiwo:*	*'**oruŋ***	*maʁaʂi*	*Bəijin-də*
	3SG	1 SG.BEN	say-PROG	1SG.LOG	tomorrow	Beijing-LOC
	əchi-nə'	*giə-dʐi*				
	go-IPFV	tell-CONT				

'He told me that he will go to Peking tomorrow' (Lefort 2023b, fieldwork).

(10)	*əminə*	*kiəliə*	*bi*	*jiən-nə*	***gojə***	*waʁa-ne*	*tʂi*	***goye**-ne*
	Amin	say	be	clothes-REFL	self	wash-IPFV	2SG	self-REFL
	nadu-le	*etʂi.*						
	play-PUR	go						

'Amin said, "I'll wash my clothes myself, you go and play!". (Lefort 2023a)

In Tangwang, *wɤlũ* 喔咙 is also attested as a logophoric pronoun (Ibrahim 1985, 2017; Djamouri 2022a):

(11)	呢个人	我哈	说着咧,	"**喔咙**	明个	北京
	nekɛʐə̃	*wɤ=xa*	*ʂʷɔ-tʂəl^{j}e:*	*wɤlũ*	*mīkɛ*	*peitɛɪŋ*
	DEM-CL-MAN	1SG-ACC	say- IMPF	1LOG	tomorrow	Beijing
	去哩	说。				
	tɕʰi=li	*ʂʷɔ*				
	go-FUT	QUOT				

'The man said to me: 'tomorrow, I will go to Beijing' (Fieldwork, Lefort 2023b)

wɤlũ 喔咙 can be used as the first person when stating a long-term situation, such as identity, and be used in place of the regular first person pronoun *wɤ* 我. Consider the examples below (Lefort 2024, fieldwork):

(12)	喔咙	是	老师	是
	wɤlũ	*ʂɿ*	*lɔʂɿ*	*ʂɿ*
	1LOG	COP	teacher	COP

'I am a teacher'

(13)	我	看	书
	wɤ	*kʰɛ̃*	*ʂu*
	1	read	book

'I am reading a book'

It is also used as an inclusive first-person plural pronoun corresponding to standard Chinese *zánmen* 咱们, 'ourselves; we' (inclusive) (also attested in Ibrahim 1985) which is the counterpart of *wɤ-mu* 我仫 'we' (non-inclusive)[8]:

(14)	喔咙	庄稼人	当寨
	wɤlũ	*tʂʷātɕʲaʐə̃*	*tã-tʂɛ*
	1SG.LOG	peasants	be-IPFV
	'We are (all) peasants'		(Lefort 2023b, fieldwork).

This semantic distribution of pronouns (logophoric and reflexive) shows that *wɤlũ* 喔咙 was probably borrowed at an early stage and further developed to an inclusive pronoun based on the original Dongxiang reflexive pronoun.

In addition, both the Dongxiang *oruŋ* and the Tangwang *wɤlũ (vəlũ)* 喔咙 are used in an idiomatic expression in which it refers to the person's overconfidence: Dongxiang *oruŋ gie* (lit.: 'to do self') 'to be arrogant', and Tangwang *wɤlũ* 'to be arrogant':

(15)	你	喔咙	什么咧?
	ni	*wɤlũ*	*ʂɿma-li*
	2SG	arrogant	what-PF

'Why are you being so arrogant (toward me)? (Lefort 2023b, fieldwork).

The use of the reflexive pronoun **öxer* in the meaning of 'arrogant' is not attested in Middle Mongol, but the semantic derivation between 'self', 'selfish', and 'arrogant' is quite

easy to make and this lexical development in Tangwang is most likely based on the reflexive pronoun itself: it was probably first borrowed in Tangwang as a reflexive pronoun that later extended its semantic meaning in Tangwang and was borrowed back to Dongxiang[9]. The use of *gie*, 'do', after *oruŋ* in Dongxiang could indicate that it is borrowed from Chinese, as *gie* is also a borrowed verb auxiliary[10]. Furthermore, *wɤlũ* 喔咙 'to be arrogant' is also attested in Hetan, but not as a logophoric pronoun. However, as far as we are aware, it is not attested in other Chinese hybrid dialects. Hetan is structurally closer to Linxia than to Tangwang, but has also been extensively in contact with Dongxiang, which strongly suggests that the loan of this lexical item is the result of language contact.

5. Possessive Markers

There are two direct loans from Mongolic languages, and most probably Dongxiang, which are found in Tangwang, namely the third-person possessive marker *-ni* 尼 and the possessive marker *-ne* 呢. These two suffixes are solely found in Tangwang and no other hybrid Chinese dialect of the region. As this subject has been discussed by other scholars (Xu 2014, pp. 93–99), we will only make a condensed description here.

Reflexive and possessive suffixes are found in all Mongolic languages and share more or less the same functions. There are specific first, second, and third-person forms that can be added to nouns. In addition, there are two other reflexive–possessive markers whose forms vary from one language to another and have been developed on the possession marker *-*ni* and possessive reflexive marker *-*xAn*.

In Dongxiang, the connective (genitive-accusative) marker *-ni* is formally identical to the third-person marker, as in other Mongolic languages, with reference to the possessor. It is usually attached to the possessed noun phrase, and can also be used when the subject is omitted:

(16)	*kiəli-**ni***	*fugiə*	*fugiə*	*tɕingən*	*olu*	*da- ne*
	belly-3	big	big	at.last	give.birth	cannot-IPFV

'Her belly was extremely big but she could not give birth.' (Lefort 2012)

Tangwang possessive suffix *-ni* functions in a similar manner, and is also attached to the possessed noun phrase:

(17)	我	呢	尕桶尼	bjɛ̃ã:底	气着	撂着	过给察
	wɤ	*nə*	*kat^{h}ũ **-ni***	*bjɛ̃ã:-tɕi*	*tɕ^{h}i -tʂə*	*l^{j}ɔ-tʂə*	*k^{w}ɔ-ki-l^{j}ɔ*
	1SG	3SG	bucket-POSS	ONOM-SUB	angry-PFV	throw-SUBV	pass-CAUS-PFV

'I was so angry at him I took his bucket and throw it on the floor with a crash' (Djamouri 2022b, p. 27)

Both in Tangwang and Dongxiang, the possessive marker *-ni* can be preceded by other case markers.

In addition, Dongxiang features a reflexive possession marker, *-ne*, which derives from the common Mongolic suffix *-*xAn*. As the marker *-ni*, it is affixed to the possessed noun phrase (not the possessor), but unlike *-ni*, it can be used with first, second, or third-person forms. It indicates that one owns X, where X is the possessed noun phrase (Field 1997), and can be translated as 'own' most of the time:

(18)	*Bi*	*aɢuli-**nə***	*a-lə*	*ətʂi-yə*
	1SG	wisdom-REFL	fetch-PUR	go-DES

'I will go (to) fetch my own wisdom' (Lefort 2023b, fieldwork).

It is also found used in the same manner in Tangwang and, as in Mongolic languages, it can be used in combination with other cases:

(19)	腰里呢	还	背寨些,	背寨		一	圪塔	
	*jɔ-li-**nə***	*xɛ̃*	*pi-tʂɛ ɐ^{j}ɛ*	*pitʂɛ*		*ji*	*kɛta*	
	hips-LOC-POSS	also	carry-IPFV	few	carry–IPFV		one	a.few

'(We were) also carrying it on our hips and a little bit on our back.' (Djamouri 2022b, p. 22).

In this case, it is certain that Tangwang has borrowed these two reflexive suffixes from Dongxiang because they are identical on the formal and the functional levels while the set of suffixes differ in all other Mongolic languages of the Hexi corridor, i.e., Bonan 3SGR *-ne* and POSS *-ne*; Shira Yughur 3SGR *–(i)ni* and POSS *-y-aan*; Mongghul 3SGR *-ni* and POSS *-naa*; Mangguer 3SGR *-ni* and POSS *-nang*.

6. Case Markers

There are two case markers in Tangwang that are formally identical with two Mongolic markers: the limitative case *-t^{h}ala* and the instrumental *-la*. The following section examines the possibility of a borrowing from Dongxiang in both cases.

6.1. Limitative Case/Terminative Converb t^{h}ala

The limitative (also found as terminative in the scientific literature) *-tala* is a Mongolic aspectual converb already attested in Middle Mongol that can be used after verbs to express 'until X is complete', where 'X' is an action:

(20)

Ger-ün	*belge*	*sün*	*tusür-ëd*	*esüg-i-yen*	*söni-de*	*üdür*
yurt-GEN	sign	milk	pour.out-after	kumiss-REFL	night-LOC	day

cayi-tala	*büle-ku*	*bü-lee.*
dawn-LIM	churn-NMLZ	be-PFV

'The sign of the yurt (was that) after pouring the milk there would be churning of the kumiss at night until day dawned'. (Street 1957, p. 38)

In Dongxiang (21) and Tangwang (22), the limitative converb is used in a similar manner:

(21)

qara	***olu-tala***	*wiliə*	*giə-wo*
black	arrive- LIM	work	do- PRV

'He worked until dark' (Kim 2003, p. 360).

(22)

学校	里	去-他啦	你	这里	来
ɕ^{u}ɛɕ^{j}ɔ	*li*	***tʂ^{h}i-t^{h}ala***	*ni*	*tʂɻli*	*lɛ*
school	inside	go-LIM	2SG	here	come

'Before going to school, come here' (lit. until you go to school) (Ibrahim 1985, p. 44)

In addition, *-tala* and *-t^{h}ala* are found both Dongxiang (23) and Tangwang (24) in comparative constructions:

(23)

坐-他啦	睡觉 咧
tsu-t^{h}ala	*ʂ^{w}itɕ^{j}ɔ li*
sit-LIM	sleep-PF

'Sleeping is better than sitting' (Ibrahim 1985, p. 44)

(24)

Landzou	***bi-tala***	*badza*	*sao-dzi*	*wo*
Lanzhou	be-LIM	Linxia	live-PROG	COP

'Better live in Linxia than in Lanzhou' (Kim 2003, p. 360)

In Middle Mongol sources, in addition to its terminative functions, *-tala* is sometimes used with the meaning of 'although', but not the alternative action meaning 'rather than' or 'better', which suggests that the comparative function of *-tala* is probably a secondary development.

In addition, Tangwang has developed the word *nũnt^{h}ala* 弄他啦 (<*nũ* 弄 'this.way (v.) + *t^{h}ala* 他啦 LIM (conv.) 'before doing X', 'rather', which has become an indecomposable adverb:

(25)	你	东乡里些	买	山野	去着	弄他啦	这它些
	ni	*tūɕiāɕiɛ̃-li-ɕiɛ*	*mɛ*	*ʂɛ̃jɛ*	*tɕʰi-tʂə*	***nūntʰala***	*tʂətʰa-ɕiɛ*
	2SG	dongxiang-LOC-ABL	buy	potato	go-PROG	better	here-ABL

买	吧啦!
mɛ	*pala*
buy	PF

'You are going to Dongxiang to buy potatoes, (you'd) better buy them here'

(Djamouri 2022a)

In Dongxiang, the equivalent expression *ingie-tala* is not attested, which suggest that *-tala* in Tangwang also functions as a productive suffix that developed independently and is not due to language contact.

It is most probable that the converb *-t^{h}ala* is a direct loan from Mongolic languages, but it is not certain that it was loaned from Dongxiang. Indeed, it is found in all Mongolic languages (except Moghol) as a terminative converb and is attested in the Shirongolic languages as a comparative converb in Bonan and Mangghuer (but not in Shira Yughur nor in Mongghul). Moreover, both terminative and comparative functions are found in Dagur. In the Chinese hybrid dialects of the Hexi corridor, *-t^{h}ala* is found as a terminative converb in all dialects but is not attested as a comparative converb in Xining, Wutun, and Linxia.

In addition to the terminative converb 他啦, Peyraube (2018) has identified a terminative nominal case in Tangwang, *t^{h}ala* 他啦, which sets the boundaries of a moment in a given set of actions:

(26)	你	早上-些	这	会-他啦	做	嘛塞
	ni	*sɔʂɛ̃-xie*	*tʂɛ*	*xʷi–thala*	*tsu*	*ma-tʂɛ*
	2SG	morning-ABL	DEM	time-LIM	do	what-IPFV

'What have you been doing from this morning until now?' (Xu 2017, p. 97)

A marginal nominal terminative marker **-cAA is* attested in Middle Mongol, Buryat, Mongol proper, Ordos, and Oirat (with Kalmuck) (Schönig 2003, p. 416), which is also used in equative constructions. It is rarely used, and the dative–locative case is preferred. The terminative functions of the Mongolic marker **-cAA* are similar to Tangwang's *t^{h}ala* 他啦 but is formally very different and unlikely to be the source of a borrowing.

The most common strategy in Mongolic languages to express 'until' is usually verbal, through the use of converbs (**tala*), verb-based postpositions developed by the aggregation of the verb and the terminative converb *-tal* (e.g., Modern Mongolian *hurtel* 'until'< *hur-* 'arrive' + *-tel* TERM; *boltol* 'until'< *bol-* 'arrive' + *-tol* TERM), or verbs in combination with the ablative case on the head-closed noun (which sets the beginning of the action). Examples from Dongxiang are provided below:

(27)	*bi*	*eqiemagva-**se***	*yizhi*	*gongzuo*	*gie-zhuo*	*xieni*	***kuru**-wo*
	2SG	early.morning-ABL	all.the.way	work	do-PROG	night	arrive-PFV

'From this morning, I have been working until dark' (Buhe 1987, p. 31)

(28)	*Jiu*	*ede*	***liaozhe***,	*hhe*	*goyene*	*xiaojiao-ne*	*usu-de*	*nie*	*chujie-gve-se*
	so	now	until	3SG	own	shadow-REFL	water-LOC	one	see-CS-SEQ

daishun	*qiorun-ne*	*taila-ne.*
right.away	head-REFL	raise-IPFV

'So, until now, each time he sees his reflection in the water, he raises his head up right away'. (Buhe 1987, p. 71)

It is most probable that the terminative case *t^{h}ala* was developed from the limitative converb borrowed from Mongolic languages' *t^{h}ala* and is the result of an internal development rather than a reanalysis of the Middle Mongol terminative case.

6.2. Comitative–Instrumental Case -la

Tangwang features a comitative case (29) and an instrumental case (29), which are formally identical:

(29) 我 呢啦 气 打哈塞 (Xu 2017, p. 91)
wɤ *nə-**la*** *tɕʰi* *ta-xa-ʈʂɛ*
1SG 3SG-COM angry fight-RES- IPFV
'I have quarrelled with him'.

(30) 这 个 老奶奶 过来过去 簸箕啦 护寨 (Djamouri 2022b, p. 39)
ʈʂə *kə* *lɔnɛnɛ* *kʷɔlɛ-kʷɔtɕʰi* *pɔtʰɕi-**la*** *xu-ʈʂɛ*
DEM CL old.woman come-go sieve-INST cover-IPFV
'This old woman was coming and going covering (her body) with a sieve'.

In Standard Chinese, comitative and instrumental functions are borne by the prepositions *gen* 跟 'with' and *yong* 用 'with'[11]. Therefore, the Tangwang marker *la* 啦, being formally very close to Mongolic languages, is most probably a direct loan. However, this marker does not seem to be directly related to Dongxiang (see Table 3 below). The Middle Mongol instrumental case*-*xAr* > **-AAr* is not attested in any of the Mongolic languages of the Hexi corridor, except Shira Yughur. As stated by Rybatzki (2003, p. 337), this could mean that the instrumental case was never present in these languages, but it is more likely that it was secondarily lost and that it has been replaced by the comitative case. The use of the comitative case for the instrumental case is also quite common among other languages in the world (Heine and Kuteva 2005, p. 139). In Mongghul and Mangghuer, the function of the instrumental case is filled by the comitative case in **-lUxA* > **-lAA* > **-la* and has developed an alternative form, *-tai* and *-dii*, based on the possessive case, like in modern Mongolian. In Dongxiang, the comitative and the instrumental cases feature two distinct forms: *-le* and–*ghuala~-ghala*. The Dongxiang (and maybe Bonan) instrumental case *-ghuala ~ ghala* (*ghua-la* lit.: two-PL 'the two') is probably a secondary development and a calque from the Linxia instrumental case marker *liangge* 两个 (lit.: two-CL 'the two'), which has then been replaced by the marker formally identical to the comitative[12] case.

The different forms of the instrumental and comitative cases in the Mongolic languages of the Gansu–Qinghai area are summarized in Table 3 below:

Table 3. Instrumental and comitative case in the Mongolic languages.

	Middle Mongolian	Mangghuer	Mongghul	Dongxiang	Bonan	Shira Yughur
Instrumental	*-ar~-iar~-niar*	*-la*	*-la*	*-ghuala~-ghala*	*-ghuala~ghala*	*-aar*
Comitative	*-lU'A > -laa*	*-la* *-tai (poss)*	*-la* *-dii (-poss)*	*-le ~ -la*	*-ghuala~-ghale*	*-la*

Tangwang instrumental and comitative could have been borrowed either from other Mongolic languages in the region, or even from other Mongolic sources. Given the geographic distance between Mangghuer and Mongghul, it is quite unlikely that Tangwang borrowed the instrumental and comitative case 'as is' from those languages through relatively recent contacts. It is more probable that, as it is the case in other Mongolic languages of the Hexi corridor, the instrumental case has been first replaced by the comitative case in Dongxiang, from which Tangwang borrowed both the instrumental and the comitative cases. Later, the instrumental case has been replaced by a calque of Linxia *liangge* 两个 (lit.: two-CL 'the two') in Dongxiang, developing the secondary form *ghuala~ghala* (*ghua-la* lit.: two-PL 'the two'), while only the comitative form *la* 啦 remained in Tangwang for both the comitative and instrumental cases. Another hypothesis is that Tangwang borrowed (or inherited) the comitative and the instrumental cases at its early stage of formation from Middle Mongol and, as other Mongolic languages of the region, has replaced the instrumental case by the comitative case form. This would be an internal development.

7. Discussion

Although Tangwang features many characteristics that resemble Altaic languages, only a few can be attributed to direct contact with Dongxiang. Dongxiang and Tangwang partially share formally identical functional words and suffixes, but the direct borrowing from Dongxiang is certain only for the possessive markers (third-person possessive *-ni* 尼 and reflective marker *-ne* 呢) and the logophoric pronoun (*wɤlũ* 喔咙). Other syntactic features (instrumental *-la* and limitative *t^hala*) are probably of Mongolic origin, but the certainty of Dongxiang being the source cannot be established. From the above, we can classify Tangwang's 'Altaicised' features resulting from in contacts in at least three types:

(1) Regionally shared features: Western northern Chinese common Altaic features (plural markers on unanimated objects, tense, and aspectual markers, distal demonstrative and third person syncretism, progressive converb, quotative markers);
(2) Areally shared features: features shared in the Gansu–Qinghai area (partial SOV word order, cases, terminative converbs, formal distinction for the world 'little' with attributive and predicative functions);
(3) Tangwang-specific features: Dongxiang loans (few direct content words, first-person logophoric pronoun, reflexive suffix, possessive suffix).

The first type of contact has probably preceded the second and third type, but the development between the second and the third type is uncertain. Certain evidence, such as the mismatch between the comitative–instrumental case form with the Dongxiang form, or the fact that the distinction for the world 'little' is shared in all Gansu–Qinghai hybrid Chinese languages, tend to point at an earlier influence from Mongolic languages on the areal level and a formation context common to other Chinese hybrid dialects.

The mechanisms involved in the contact-induced process based on the existing models have been partially discussed by Xu and Wen (2017), who believe that the language shift with imperfect learning from Dongxiang to Sinitic is not possible given the results of their genetic analysis[13]. Rather, and according to them, the situation of Tangwang (partially) corresponds to Thomasson and Kaufman's borrowing scale's "very strong cultural pressure: heavy structural borrowing structure" (which includes word order, inflectional morphology, and other major syntactic changes). However, the problem is that the 'strong cultural pressure' can be only partially proved[14] and that those kinds of heavy pressure situations are 'preceded by more casual contact situations, characterised by borrowings of content and function words' (Thomason and Kaufman 1988). In the same manner, Heine and Kuteva's (2005, p. 14) concept of grammaticalization is defined as a process leading from lexical to grammatical forms and from grammatical to more grammatical forms. This does not correspond to the situation of Tangwang, as we have seen, in which borrowings are scarce. For the most part, the Tangwang vocabulary remains strictly Chinese, and only little evidence of borrowings from the Mongolic lexicon can be seen. A good part of the vocabulary that is listed as a Dongxiang loan in previous studies is, in fact, common Mongolic areal vocabulary that can be found across most of the other Chinese hybrid languages spoken in the region.

Another scenario would be relexification, which would explain the scarcity of non-Chinese vocabulary and would involve the hypothesis that the population initially spoke a Mongolic language. According to Xu and Wen's genetic evidence, this could be possible (Xu and Wen 2017). Relexification can occur in two kind of situations: bilingualism (Muysken 1981) and second language acquisition with imperfect learning in a dominance situation, such as in the case of the emergence of creole languages (Lefebvre 1998). In the case of bilingualism, recent evidence from bilingual communities which speak both Mongolic languages and Chinese has shown that the syntactic elements remain, for the most part, Mongolic, while the content items are replaced by their Chinese counterpart–-see, for example, Dörbed Mongolian (Bao 2011) and Shineken Buriat (Yamakoshi, forthcoming). In that case, how could the formal discrepancies with the Mongolic case system be explained? If further grammatical reanalysis, or 'relabeling' in Lefevre's meaning (Lefebvre 1998), with Chinese material had occurred in Tangwang, the functions of the Mongolic

nominal cases would have remained, as this process involves the use of equivalent stems from the receiving language. Moreover, more diverse converbial and participle markers would have been found, mirroring the complexity of the Mongolic verbal system. In the case of second language acquisition with imperfect learning, the process of relabeling involves a "very limited access to the superstrate data" (Lefebvre 1998). This means that Chinese would have been the dominant language, but not accessible to the Tangwang speakers. However, we lack historical evidence to confirm this fact. In any case, the main point of opposition for the relexification hypothesis is that it contradicts the scenario which involves the migration of the Tangwang people from Sichuan and fails to explain why traces of the Sichuan dialect are still found in today's lexicon.

Other models involving restructuring, such as metatypy, which Ross (Ross 2006) defines as a diachronic process whereby the morphosyntactic constructions of one of the languages of a bilingual speech community are restructured on the model of the constructions of the speakers' other language, which is preceded by lexical loans and calques, seem to match better, as they can involve 'imitation' rather than direct copying. However, this kind of syntactic change emerges in situations where the features are replicated from the model language (in this case Mongolic), a dominant language, and very often, in bilingual communities. In the modern contexts, Dongxiang is not a dominant language and bilingualism is only partially shared among the Tangwang community. The partial bilingualism with Dongxiang can only explain the direct loans. If bilingualism had happened, it would have been during the Mongolian period, before the supposed settlement of the Wang family in the region.

Therefore, it is possible that the ancestors of the Tangwang people already spoke a Chinese variety before their settlement to their actual location. Prolonged contact with Dongxiang would have helped to maintain the Altaic changes that were already present in their speech. The superstratal influence visible in all northern Chinese dialects has evolved differently in dialects spoken further east, because the contact with Altaic languages had ceased. Due to the local contact with Dongxiang, Tangwang has further developed. However, the presence of nominal case and even direct loans cannot be solely explained by the contact with Dongxiang.

8. Conclusions

This paper analyzed the formally identical function words found in Tangwang and Dongxiang and it has been shown that, like the direct loans of content words, Tangwang's direct loans of function words from Dongxiang are rare and can be certain in only three cases. Generally speaking, Tangwang is very hermetic to direct loans and adopts a calque strategy, which makes it difficult to fit in the existing models of language contact. However, this trait is not exclusive to Tangwang and is shared by all Chinese dialects.

Although the Tangwang people are surrounded by Dongxiang speakers and partial bilingualism is attested in today's Tangwang community, it is difficult to prove that Dongxiang was the sole source language of influence that can explain both syntactic changes and the presence of function words resembling their Mongolic counterparts. On the contrary, the Dongxiang influence seems to be sporadic and several layers of Altaic influence can be identified. However, we still lack historical evidence to fully understand the process, and further research should be made in that direction.

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Notes on Transcriptions: I have used IPA transcriptions for Tangwang as in Djamouri (2022b) and Ma and Chen (2001) for Dongxiang. Chinese pinyin has been used for Standard Chinese.

Abbreviations

GQ	Gansu–Qinhai
HY	*Hua yi yiyu* 华夷译语 (Sino-barbarian Dictionary)
MMo	Middle Mongol
SHM	*Secret history of the Mongols*
1SG	first singular person
1LOG	first singular logophoric pronoun
ABL	ablative
ACC	accusative
BEN	benefactive
CL	classifier
CONT	continuative
COP	copula
DEM	demonstrative
FP	final particle
INST	intrumental
IPFV	imperfective
LIM	limitative
LOC	locative
PFV	perfective
PROG	progressive
PURP	purposive
SUB	nominal subordinator
SUBS	substantiviser
SUBV	verbal subordinator
NEG	negation
POT	potential
QUOT	quotative
REFL	reflexive
RES	resultative

Notes

1 Krueger (1961, p. 102) notes that, in Modern Chuvash, a Turkic language spoken west of the Urals in central Russia, "The function of the objective relational morpheme (…) combines most features of the dative and the accusative cases of other languages, or the functions of direct and indirect object". However, other Turkic languages have formally distinct markers for dative and accusative cases, and contacts between the hybrid languages of the Gansu–Qinghai area and Chuvash are not attested. Therefore, this is most likely to be an internal development in those Chinese dialects.

2 Similar forms are also found in Shaanxi dialects (e.g., *da* 'dad') and could be the remains of an older substrate rather than evidence of a modern borrowing (Sun 2018).

3 She cites [kəu^{22}tʂ$_{1}^{44}$] 'Buttocks' and possibly the self-referential pronoun [kuə^{24}ʐə̃ ^{22}].

4 Chinese dialects spoken in Sichuan, Yunnan, and Guizhou, also feature a similar form, which could indicate it was inherited from an earlier substrate. In the case of Tangwang, it could corroborate the legend of the Sichuan origin of the Tangwang people, but then the areal diffusion would be very difficult to prove, as the groups of speakers of the other Chinese hybrid dialects seem to have formed differently.

5 This word is not attested in Linxia as *ɕʲɔtɕʲɑwu* 小家屋 (?), but as *ɕʲɔɕʲatsu* 小家族, which is probably the source of the calque.

6 However, the word *milaa~milaan* 'short-handled whip' (E'erdengtai 1980, p. 225) could be the source which has been used to express small things in general through a process of semantic analogy.

7 Gansu Bonan has also developed a logophoric pronoun based on the same reflexive pronoun (BN *ojang* MMo <**öxer-*), while Shira Yughur has developed the logophoric pronoun *ejien* (<**ejen* 'master') based on the reflexive pronoun *ejien*. Dongxiang has

developed the alternative form *egven* (<**ejen* 'master') for the third singular person pronoun based on the same word, while all other Mongolic languages have developed other reflexive possessive pronouns.

8 The distinction between inclusive and non-inclusive 1PL is absent in Lanzhou and Linxia.

9 This phenomenon has already been observed: Linxia first borrowed or calqued Mongolic features (probably from Dongxiang) which further extended their functions, and which have then been calqued or borrowed back in Dongxiang (See Lefort 2020).

10 See Bao and Lefort (2024) on borrowed verb morphology in Dongxiang.

11 e.g.,:

我跟他一道去	用 手蒙住眼睛
wǒ gēntā yídào qù	*yòngshǒu méngzhù yǎnjīng*
1SG with 3SG together go	with hands cover eyes
'I am going with him';	'to cover the eyes with the hands'.

12 Previous researchers have also suggested that this marker was of Mongolic or Turkic origin (see Dwyer 1995, pp. 165–69) and borrowed in Linxia as a calque, but I believe it is the contrary as the source of the form *-ghuala* cannot be reconstructed from Mongolic sources.

13 In their studies, Xu and Wen (2017) and Xu (2020) have used 151 samples from males living in the village of Tangwang, which demonstrated that most males were of Mongolian and Chinese Han origin, but not of central Asian origin, as were the greatest majority of the Dongxiang people. However, it is unclear why they used only male samples for their analysis, and their conclusions can only reflect their analysis based on this data sample.

14 Even though we have partial historical evidence, we cannot be certain of the type of contact and the populations involved in the formation of the Tangwang people, nor of the social environment in which the Tangwang language has formed. If we accept the scenario proposed by Xu and Wen that the Mongolian pressure was so strong on Chinese speakers that they started to modify their speech in order to copy their masters, then the lack of lexical loans is difficult to explain.

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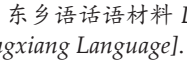
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Tense as a Grammatical Category in Sinitic: A Critical Overview

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Abstract: Sinitic languages are very often described as tenseless, since they are generally seen as lacking 'true' grammatical markers of tense: thus, the interpretation of time reference relies on other factors, such as aspect, modal verbs, and the use of time expressions. However, the debate concerning the tenseless nature of Chinese has not been settled yet: several types of items in Sinitic have been analyzed as expressing both aspect and tense, tense and modality, or even tense only. In this paper, we offer a critical analysis of the proposals made in the description of Standard Mandarin Chinese and (so-called) Chinese dialects concerning grammatical exponents of tense. We shall show that there appears to be a very broad degree of variation within Sinitic in the type and nature of tense(-like) meanings expressed, with different degrees of overlap between tense and other TAM categories (i.e., aspect and modality), and different degrees of grammaticalisation of alleged tense markers. Furthermore, the most grammaticalised tense markers are located in subregions within northern China: we shall thus discuss the relevance of our data for the areal typology of Sinitic.

Keywords: Sinitic; tense; aspect; mood; tenselessness

1. Introduction

Standard Mandarin Chinese (henceforth: SMC)[1] and Sinitic languages in general are very often described as tenseless languages, since they are mostly seen as lacking 'true' grammatical markers of tense (see e.g., Smith and Erbaugh 2005 and Lin 2006, 2012 on SMC; Matthews and Yip 2011 on Cantonese; Sandman 2016 on Wutun; Li 2018 on Yichun Gan). See, for instance, the following SMC examples:[2]

(1)	a.	我	今天	有空
		Wǒ	*jīntiān*	*yǒu-kòng*
		1SG	today	have-free.time
			'I am free today'.	
	b.	我	昨天	有空
		Wǒ	*zuótiān*	*yǒu-kòng*
		1SG	yesterday	have-free.time
			'I was free yesterday'.	
	c.	我	明天	有空
		Wǒ	*míngtiān*	*yǒu-kòng*
		1SG	tomorrow	have-free.time
			'I'll be free tomorrow'.	

As shown in (1), a verb–object compound as 有空 *yǒu-kòng* 'have free time' can constitute a predicate located in the present (1a), past (1b), or future (1c) without any grammatical markers or formal changes. In (1), the correct identification of time reference relies on the time expressions present; other factors in the interpretation of time reference in SMC (and Sinitic in general) include aspect markers, modal verbs, time-oriented verbs, and the *Aktionsart* of the predicate, as we shall see in greater detail later. Indeed, the lack of grammatical expression of tense is normally seen as a feature not only of Sinitic, but also of the whole East and Mainland Southeast Asian area (see Dahl and Velupillai 2013b, 2013c).

However, not everybody supports a tenseless analysis for Sinitic (for a brief overview of the debate, see Soh 2014). Indeed, several types of items (modal and aspectual particles, verbs, etc.) in Chinese have been analyzed as expressing both aspect and tense, tense and modality, or even tense only: this is mostly true for non-standardised Sinitic languages, i.e., Chinese dialects. For instance, Bell (2017a, 2017b) maintains that the particle 俩 [lia] in Xining Mandarin is a future tense marker, when combined with dynamic states of affairs; Xing (2020) discusses sentence-final particles in Jin dialects which, in his view, mark past, present, and future tense (both absolute and relative), some of which are claimed to be fully grammaticalised dedicated exponents of tense, reportedly even obligatory in most contexts.

The aim of this paper is to offer a critical analysis of the claims concerning the presence vs. absence of tense as a grammatical category in Sinitic languages. Starting from hypotheses on the tensed or tenseless nature of SMC, we shall analyze the literature on other Sinitic languages, assessing the proposals made in the description of Sinitic. We shall show that there appears to be a very broad degree of variation within Sinitic in the type and nature of tense (-like) meanings expressed, with different degrees of overlap between tense and other TAM categories (i.e., aspect and modality), and different degrees of grammaticalisation of alleged exponents of tense. Specifically, the most grammaticalised exponents of tense are mostly found in three subregions within northern China: namely, Shanxi and part of Shaanxi (Jin and Mandarin dialects), Hebei (Mandarin dialects), and the languages of the Qinghai-Gansu *Sprachbund* (heavily restructured 'hybrid' Mandarin varieties). Data on the possible grammatical manifestations of tense and on their distribution in Sinitic will then be interpreted in their areal context: just as for many other defining features of the East and Mainland Southeast Asian Area (Bisang 2004; Enfield 2005), the prominence of aspect and the general indeterminatedness of utterances is shown, once again, to be somewhat less evident in northern China than in southern China.

This paper is organised as follows. In Section 2, we shall briefly introduce the theoretical background of our research, discussing the different notions of 'tense' and of 'tenselessness', and we shall illustrate our methodology. In Section 3, we shall present the results of our survey of the literature on tense marking in Sinitic, offering an overview of the various claims and analyses on this grammatical category for this family. In Section 4, we shall discuss the results of our survey, highlighting the trends observed and their theoretical relevance for our understanding of the typology of Sinitic. Finally, in Section 5, we shall summarise the main conclusions of the present paper and offer some hints for further research.

2. Theoretical Background and Methodology

2.1. Tense as a Grammatical Category

It is generally believed that all languages have some way of locating events in time (Comrie 1985). However, the devices used to express temporal meaning do vary considerably across languages. When we speak of 'tense' as a grammatical category, what is usually meant is the grammaticalised location of a state of affairs in time (see Comrie 1985); typically (but not exclusively), grammaticalised tense is expressed in the form of inflection, i.e., bound, obligatory morphemes. A textbook example of a grammaticalised tense distinction may be found in English: as Comrie (1985, p. 10) points out,

> (t)he English past/non-past opposition is a clear instance of a grammaticalised opposition. It is quite impossible to construct an English sentence containing a finite verb that is neutral as between the two poles of this opposition, i.e., *John runs* is clearly non-past, and *John ran* is clearly past, and there is no third term that is neither.

Furthermore, an important distinction may be made between 'absolute' (or 'deictic') tense and 'relative' tense. We said above that the function of tense is to locate a state of affairs in time: more specifically, tense constrains "the topic time[3] of utterances with respect to a reference point" (Lin 2012, p. 670). When the reference point is speech time, then we may speak of absolute (or deictic) tense, as, e.g., present, past, or future; when the reference point is different from speech time, we speak of relative tense, which in English is generally available for non-finite verb forms (Comrie 1985; Lin 2012). In addition, Comrie includes a third category, namely 'absolute–relative' tense, i.e., when topic time is located with respect to a reference point different from speech time, but the reference time is also located with respect to speech time, as in, e.g., the English pluperfect ('past in the past'; Comrie 1985, p. 65). However, not everybody agrees on this third category: Smith (2013) proposes just a binary absolute/relative opposition, and treats forms of the English pluperfect as instances of relative tense.

Needless to say, in the literature, we may find myriad views on tense, and it is simply not feasible to propose a thorough discussion here (for a concise critical survey, see Uusikoski 2016). Thus, in what follows, we shall just limit ourselves to a brief overview of some aspects which are most relevant for the purposes of the present study.

Firstly, a notoriously thorny issue in the study of tense is its relationship with grammatical aspect (see, e.g., Comrie 1985; Hewson 2012). In a nutshell, while tense is related to the expression of location in time, aspect is related to the internal temporal constituency of an event (Comrie 1985); in other words, tense is concerned "with the representation of the time that *contains* the event", while aspect is concerned "with the representation of the time *contained* in the event" (Hewson 2012, p. 511; his emphasis). While the two categories may seem to be easily distinguishable, from the theoretical point of view (and see Lin 2012, p. 671 for a list of features distinguishing tense and aspect), it is not uncommon for languages to mark them cumulatively in the same form(/construction), and in many languages, tense and aspect are not entirely independent from each other, i.e., not all combinations of tense and aspect are possible (Dahl and Velupillai 2013a; Uusikoski 2016). In Italian, for instance, tense and aspect are often coded together in verbal inflection: thus, *cammin-ava* 's/he was walking (IPFV)' contrasts with *cammin-ò* 's/he walked (PFV)', but in both cases past tense and imperfective or perfective aspect are expressed cumulatively. As for the interaction between aspect and tense, for instance, it has been pointed out time and again in the literature that the perfective aspect is biased towards a past tense reading (because "the prototypical uses of perfectives coincide with the default view of an event as a completed whole. But normally such a perspective is possible only if the event is wholly in the past"; Dahl and Velupillai 2013a). In Russian, perfective verb forms can refer to the past (with past tense morphology, e.g., *ona napisa-la* 'she wrote') or to the future (with present tense morphology: *ona napisa-t* 'she will write'), whereas actual reference to the present is available only for imperfective verb forms (ona pisa-t 'she is writing'; see Hewson 2012, p. 510). Indeed, generally speaking, the present tense shows higher compatibility with the imperfective aspect, cross-linguistically (Uusikoski 2016).

A related issue is that of lexical aspect, i.e., "the aspectual information that is contained in the lexical part of the verb or the verb phrase" (Uusikoski 2016, p. 77); it is "a semantic category that concerns properties of eventualities [. . .] expressed by verbs" (Filip 2012, p. 721), and the most basic distinction in terms of lexical aspect is that between telic and atelic states of affairs. Differently from grammatical aspect, lexical aspect, as the name suggests, is not normally a morphosyntactic category in languages (Uusikoski 2016). However, just as in the case of grammatical aspect, lexical aspect may interact with the temporal interpretation of a clause. For instance, Uusikoski (2016, pp. 80, 82) argues that in some creole languages the distinction between actions and states is "a part of determining the temporal value of the sentence and thus arguably a part of the tense system": in the varieties he considered (as, e.g., Nigerian Pidgin, among others), it is implied that "stative verbs are imperfective and the situation they express is thus in progress [i.e., in the present] unless otherwise stated and vice versa", and that "the situation expressed by action [i.e.,

non-stative] verbs is over [i.e., in the past] unless otherwise stated". As we shall see below, lexical aspect and the *Aktionsart* of the predicate[4] do play an important role in temporal interpretation in Sinitic as well.

Note, also, that tense may be hard to disentangle from mood (Dahl and Velupillai 2013a). This is especially true for the future tense, which "inevitably ha[s] a component of modality, or uncertainty" (Smith 2013, p. 2591):

> [t]he future is 'open': we cannot know what will happen but can only predict, with more or less certainty. Thus the categories of irrealis, modal, and future categories overlap. The close connection is often seen in historical development: future tenses tend to develop from modal categories.

For instance, while *will* is normally seen as a future tense marker in English, it patterns (syntactically and semantically) with modals, rather than with tense markers (Smith 2013). As we shall see later, the connection between modality and time reference in Sinitic appears to be particularly strong.

Another aspect of the conception of 'tense' as a grammatical category that is crucial for our analysis is the inflectional nature of tense. As mentioned above, a typical characterisation of grammatical tense includes the features of boundedness and obligatoriness for its exponents. However, as Comrie (1985) himself points out, this is a prototype definition: for instance, grammatical tense may be expressed by non-bound items such as auxiliaries. Uusikoski (2016) analyzed a sample of 193 tense markers[5] from 62 languages, and found out that 21 of them (11%) may be considered non-obligatory, 33 may be replaced by some other tense form, and 110 (57%) are bound: interestingly, only 95 out of 193 exponents (i.e., slightly less than half) are both bound and obligatory (and may not be replaced by other tense markers). Smith (2013) also points out that, as a grammatical category, we expect tense exponents to form a closed class with a limited set of members.

Finally, whereas up to now we have considered 'tense' as a single phenomenon, we may find different conceptions of tense in the literature, depending on the theoretical framework. The definition of tense discussed above largely overlaps with the notion of 'morphological tense', i.e., "a phonologically realised 'tense' morpheme" locating the state of affairs in time (Sun 2014, p. 9). However, tense has also been understood as a syntactic notion: in some generative approaches to tense, it has been proposed that sentences have one or more Tense nodes, "without which their temporal interpretation would be impossible" (Sybesma 2007, p. 581). A Tense node is often headed by a tense inflection, but it has also been proposed that it can have a null head, and thus have covert (morphologically unmarked) tense. Based on these theoretical premises, it may be said that a language has syntactic tense if it has a Tense node that locates events with respect to utterance time (see Soh 2014; Sun 2014; we will get back to this in Section 3.1).

To conclude, in the literature, we may find several different understandings of the notion of 'tense': for the purposes of our research, we may rely on a simple working definition, based on the conception of tense as the grammatical expression of a time reference. As shown above, 'prototypical' tense exponents are bound and obligatory, but we also see considerable variation both in terms of type of exponence and of degree of obligatoriness. Additionally, it is not uncommon for tense to interact with the 'neighboring' categories of grammatical and lexical aspect in determining the temporal interpretation of an utterance; indeed, aspectual categories by themselves may involve temporal implications in some languages. Moreover, in generative approaches, tense as a functional projection may be said to be present in a language even in the absence of overt (morphological) exponents of tense. In Section 2.2, we shall see how these aspects of the notion of tense and temporal reference are related to the distinction between tensed and tenseless languages.

2.2. Tensed vs. Tenseless Languages

In the preceding section, we used the English past vs. non-past opposition as a typical instance of a grammaticalised expression of tense. This is because, as pointed out above,

just about any finite verb form in English must be marked for either value of the tense category. Indeed, English is an example of a 'tensed' language; tensed languages are defined in Smith (2013, p. 2591) as such:

> [i]n tensed languages, tense is an obligatory bound morpheme that expresses temporal information. The tense morpheme is part of the grammatical 'spine' of a sentence. As such, tense has grammatical ramifications: it is involved in agreement, case, anaphora, and the finite/non-finite distinction. All main clauses have an obligatory tense morpheme, so that all main clauses convey temporal information.

Thus, a crucial defining feature of tensed languages is the obligatoriness of tense marking; as pointed out by Binnick (1991, p. 127), "[t]he major difference between languages is not in whether they can make such distinctions, but in whether they require the speaker to do so".

Tensed languages are typically contrasted with 'tenseless' languages, i.e., languages in which time reference is not grammaticalised: tenseless languages thus lack obligatory grammatical exponents of tense as inflections, particles, or specific verb forms (Lin 2012; Smith 2013)[6]. As mentioned in the Introduction, SMC is often seen as a tenseless language, since time reference does not rely on grammatical tense markers, but rather on the interaction of grammatical and lexical aspect, modal markers, past- or future-oriented verbs, overt time expressions, and pragmatic inference (Smith and Erbaugh 2005; Lin 2006, 2012). Thus, for instance, "sentences describing perfective telic states of affairs are interpreted by default as located in the past, while sentences describing imperfective atelic states of affairs are interpreted by default as located in the present" (Arcodia and Basciano 2021, p. 250):

(2)	我	很	忙	
	Wǒ	*hěn*	*máng*	
	1SG	very	busy	
			'I am very busy'.	
(3)	她	在	北京	出生
	Tā	*zài*	*Běijng*	*chūshēng*
	3SG.F	at	Beijing	be.born
			'She was born in Beijing'.	

However, as shown in (1a–c), time expressions may also be used to override default time reference (Smith and Erbaugh 2005). According to Smith (2013), the contrast shown in (2–3) is the expression of a general trend of tenseless languages, in which unbounded situations are located by default in the present, whereas bounded situations are located by default in the past; future references, on the other hand, "require explicit future information" (Smith 2013, p. 2600). This is explained by Smith as the product of the interaction of three pragmatic principles:

a. The Deictic Principle Speech Time is the central orientation point for language. The present is located at Speech Time; the past precedes it, the future follows.
b. The Bounded Event Constraint Bounded situations may not be located in the present.
c. The Simplicity Principle of Interpretation Choose the interpretation that requires the least information added or inferred.

Thus, the speaker infers that unbounded states of affairs are located in the present following the Deictic Principle and the Simplicity Principle, while bounded states of affairs cannot be located in the present, due to the Bounded Event Constraint; according to the Simplicity Principle, they receive a default past interpretation, rather than a future interpretation, because "[t]he past is simpler in terms of information conveyed than the future because the past doesn't have the element of uncertainty that is always part of the future" (Smith 2013, p. 2600). Thus, for instance, in SMC, a reference to the future is generally achieved with the addition of (so-called) 'future modals' (as, e.g., 会 *huì*), future-oriented verbs and expressions, and future time adverbials, as well as by means of pragmatic inference (Smith and Erbaugh 2005).

In addition to the 'canonical' tensed/tenseless opposition, Smith (2013) identifies a third type of language, i.e., the so-called 'mixed-temporal languages'. These are defined as such (Smith 2013, p. 2599):

> [M]ixed-temporal languages have some of the characteristics of tensed languages. They have inflectional morphemes and/or temporal particles and clitics that give direct temporal information. However, these forms are syntactically optional and do not participate in other grammatical processes. Thus a given sentence may or may not convey temporal information [. . .].

Navajo (an Athabaskan language of the United States) is cited as an example of a mixed-temporal language. Navajo has one future tense inflectional marker, and (non-bound) particles for past and future, which are semantically analogous to grammaticalised tense markers in a tensed language, such as English: their basic function is locating an event in time. However, differently from a 'fully' tensed language, the absence of either future inflection or tense particles does not convey temporal information: they contribute temporal meaning when they are present, but they are optional, and temporal information may be recovered from other elements in their absence. Compare the two examples below (Smith et al. 2007, pp. 49, 54).[7]

(4)	*Mary*	*yisk'ągo*	*bił*	*hozhǫǫ*	*doo*
	Mary	tomorrow	3-with	areal.3SUBJ-be-happy	FUT
	'Mary will be (become) happy tomorrow'.				
(5)	*Nínáádeezidgo*	*Na'nízhoozhígóó*	*deeyá*		
	next.month	Gallup.to	3SUBJ.PERF.go		
	'He's going to Gallup next month'.				

As may be seen by the contrast between (4) and (5), the future particle *doo*(*leeł*) is present in the former example, but not in the latter, although they both refer to the future. Indeed, just as seen above for SMC, aspectual information and the three pragmatic principles presented above are mainly used to determine temporal interpretation, if no overt tense marker or time adverbial is present: in this respect, they are consistent with tenseless languages, and contrast with tensed languages (Smith 2013).

By adding mixed-temporal languages to the typology of tense marking, Smith indirectly contradicts the 'traditional' definition of tense as obligatory marking of time. Remember that in Section 2.1, we pointed out that, in Uusikoski's (2016) typological survey, he also identifies optional grammatical markers of tense. Thus, in this conception, a tense marker may be grammaticalised without being obligatory: this applies both to whole languages, in which tense markers are part of the grammar, but are optional (like Navajo), and to individual markers in a language where other tense markers are obligatory. For instance, Kwaza (an isolated language of Brazil) obligatorily marks the distinction between future and non-future (present and past): non-future is zero-marked, while the future is marked by the tense suffix *-nã*. However, while a zero-marked predicate may be understood as referring either to the present or to the past (depending on the context and/or on the presence of temporal adverbs), there is also an optional past tense morpheme, *-ky*, which may be used to overtly mark past reference (Van der Woort 2004, pp. 389–90).

Thus, to sum up, in this section we have shown that there is a range of options for tense marking which goes beyond the basic tensed/tenseless contrast. Languages like English and SMC may look like prototypes of those two categories, but there are also languages in which there are grammatical tense markers, which are however not obligatory, and which thus rely on the very same principles used in tenseless languages to establish time reference. Furthermore, even in a single language we may see fully grammaticalised, obligatory tense distinctions and optional tense marking coexisting.

2.3. Our Sample and Methodology

From the brief presentation of some of the main theoretical issues concerning the grammatical category of tense, we may easily appreciate that performing a complete anal-

ysis of the expression of temporal reference in any individual variety is an enormous task. Doing it for a large sample of languages is simply not feasible in a single paper. Therefore, what we can do in the present article is start from published analyses of language data and provide a critical assessment of the different claims made in the literature related to tense in Sinitic. As for SMC, by far the best-described Sinitic language, there is a rich literature on aspects related to temporal reference, and all sorts of views have already been proposed. Because of this, and because of the fact that the description of Sinitic languages is often made within the grammatical framework conceived for SMC (Chappell 2006), we shall begin our survey with some representative analyses of the national standard language.

Then, we shall offer a critical overview of proposed tense markers/tense-marking systems in non-standardised Sinitic varieties. Since the majority position in the field of Chinese dialect studies (and Chinese linguistics in general) appears to be that Sinitic languages are tenseless, the number of studies which explicitly deal with grammaticalised tense is still relatively small. In order to identify papers on tense marking in Sinitic, we performed a simple query on the CNKI (中国知网 *Zhōngguó Zhīwǎng*) database of academic publications,[8] searching for the keyword 时制 *shízhì* 'tense'. Note that this is not the only possible term in Chinese for tense: the term 时态 *shítài* is also often used to refer to this grammatical category. However, we chose to search for 时制 *shízhì* only, excluding 时态 *shítài*, because only the former is unambiguously used to refer to grammatical 'tense' as it is usually defined (and as we define it here; see Section 2.1). Indeed, while 时态 *shítài* is often used to refer to tense also in the description of tensed languages, it is also commonly used to refer to aspect in the Chinese linguistic literature. Therefore, a search for 时态 *shítài* would return too many results, many (if not most) of which are not relevant to the present research. Reference to the category of tense (again, 时制 *shízhì*) was also identified in grammars (or, anyway, book-length descriptions) of Sinitic languages from a convenience sample available to the author.

Note that the procedure described here is not aimed at constructing a balanced sample of Sinitic: the choice of the varieties considered depends almost exclusively on whether an analysis of grammatical tense is available. Furthermore, as is often the case in typological surveys, the quantity and quality of the data vary considerably, depending on the variety at issue: hence, we cannot consider the same parameters for each dialect. For instance, not all descriptions mention the compatibility of proposed tense markers with negators, or their compatibility with different aspectual classes.

Finally, note also that, for the sake of simplicity, we shall mostly focus on the expression of tense in simple, non-embedded sentences. Indeed, as pointed out by an anonymous reviewer, exponents as sentence-final particles (as we shall see, the overwhelmingly most common type of grammatical tense marker in our survey) do not normally appear in embedded clauses. Thus, the observations related to the obligatoriness (or optionality) of tense markers made in this paper are to be understood as generally limited to the context of non-embedded clauses. The discussion of temporal reference in embedded clauses must be the object of future research.

3. Our Survey: Data and Analysis

3.1. SMC as a Tensed Language

As pointed out earlier, arguably the dominant view in the literature is that SMC is a tenseless language (see, e.g., the references quoted in Sybesma 2007). However, the analysis of SMC as a tenseless language has been challenged from two different perspectives:

a. While admitting that SMC does not have obligatory tense morphemes, some scholars (Sybesma 2007; Sun 2014) suggest that the language does have a Tense node for the temporal interpretation of sentences, albeit with a null head (see Section 2.1);
b. Others (Zhang 2000; Huang 2015) propose that SMC does have overt tense markers, with different views as to their systematicity and obligatoriness.

As for the first perspective, we already mentioned that, in some syntactic theories, the presence of a Tense node is regarded as a potential universal: thus, a language can be superficially tenseless, but still have covert tense. This type of analysis has been proposed to explain how bare predicates, i.e., "predicates without any overt aspectual marker or particle that might contribute to the temporal interpretation of the sentence" (Sun 2014, p. 1) receive their temporal interpretation. For instance, Sun (2014) suggests that SMC has a covert non-future tense, opposed to a future tense. The existence of a covert non-future tense category, in her view, is demonstrated by the fact that bare predicates are often not compatible with a future time interpretation (adapted from Sun 2014, p. 165):

(6)

* 明天	露露	很	沮丧
míngtiān	*Lùlu*	*hěn*	*jǔsàng*
Tomorrow	Lulu	very	frustrated

'(Intended meaning:) Tomorrow, Lulu will be very frustrated'.

According to Sun (2014), (6) may become acceptable if, e.g., the future-oriented modal verb 会 *huì* is added. However, as Sun (2014) herself admits, the acceptability of a future adverbial with a stative predicate largely depends on the individual verb or adjective: for instance, a sentence like (6) would be acceptable without a modal if 忙 *máng* 'busy' (i.e., 'tomorrow, Lulu will be very busy'), rather than 沮丧 *jǔsàng*' 'frustrated' is used. Sun explains this by positing a 'covert modal' for those bare predicates which allow a future reading, similarly to the futurate reading of present tense sentences in English: in a nutshell, states of affairs that are beyond control (like 'be frustrated' or 'rain') require an overt modal for future reference, while planned events (like 'be busy') contain a silent ('plan') modal when referring to the future.

However, the establishment of temporal reference in SMC may be explained without resorting to covert/silent items. Indeed, the very fact that bare predicates sometimes require a modal to refer to future time, depending on the degree of control and/or pianification of the state of affairs at issue, is easily explained in pragmatic terms; the principles outlined in §2.2 generally hold for SMC (see Lin 2006, 2012). Furthermore, as pointed out by Sun and Grisot (2020), we can easily come up with examples of bare predicates that refer simultaneously to the present and future, to the exclusion of the past, or to the past, present, and future, thus casting doubts on the existence of a covert non-future/future tense distinction.

The existence of a covert non-future/future tense distinction for SMC has been proposed by Chen and Husband (2018) too, but we shall not comment on it here due to space constraints (and see He 2020 for an alternative, "two-null-tense" analysis). Interestingly, Huang (2015) also supports the existence of a non-future/future opposition in SMC, but he claims that the future is an overtly marked tense value, as opposed to an unmarked non-future tense. Specifically, Huang (2015) focusses on 将 *jiāng*, a future-oriented item usually seen either as a modal verb or as an adverb. Huang argues that 将 *jiāng* is neither a modal verb nor an adverb (see Huang 2015 for distributional arguments in support of this analysis), but rather a *bona fide* future tense morpheme. In semantic terms, Huang (2015) stresses the point that 将 *jiāng* is compatible with a wide range of types of future time reference, including both planned and non-planned states of affairs, while other future-oriented modals tend to be used only for specific subtypes of future situations (see Smith and Erbaugh 2005, pp. 731–32). For instance, the above mentioned 会 *huì* is generally incompatible with planned/scheduled events, hence the ungrammaticality of (7) (adapted from Lin 2012, p. 674):

(7)

* 火车	三点	会	开
huǒchē	*sān-diǎn*	*huì*	*kāi*
train	three-hour	will	leave

'(Intended meaning:) The train leaves at three o'clock'.

Due to space constraints, we shall not discuss in detail Huang's proposal, and we shall limit ourselves to two remarks. The first one is that 将 *jiāng* is not obligatory in fu-

ture contexts, since, as seen above, future reference may be achieved through many other means, including lexical ones (see e.g., Ex. 1c); thus, if anything, it might qualify as an optional tense marker. Huang (2015) himself points out that 将 *jiāng* is not an obligatory tense marker, and that temporal information may be encoded by means other than syntactic tense morphemes. The second one is that, as Huang (2015) himself highlights, 将 *jiāng* belongs to the formal register of SMC, and is chiefly used in the written language. Therefore, its relevance for the characterisation of the language as a whole might be limited. What is most interesting is that, besides Huang's claims concerning 将 *jiāng* in SMC, we do find several proposed future tense markers in the literature on Sinitic, as we shall see in the next section, arguably more often than past or present tense markers.

Another approach to tense interpretation in SMC focusses on so-called 'sentence-final particles', i.e., grammatical particles located at the end of a sentence with a (broadly defined) modal function, often used to mark illocutionary force, which are widespread in Sinitic and in Mainland Southeast Asian languages (Goddard 2005). An early proposal is Zhu's (1982) analysis of the temporal value of the SMC sentence-final particles 来着 *láizhe*, 呢 *ne*, and 了 *le*. Among those, 来着 *láizhe* is perhaps the one that has the clearest temporal value, as it is generally used to indicate that an event occurred in the recent past; indeed, it appears to be incompatible with past and future temporal adverbs (Zhang 2000). However, 来着 *láizhe* is generally considered to be a local feature of Beijing Mandarin, and even in Chirkova's (2003) sample of data of this dialect, 来着 *láizhe* is the particle with the lowest frequency; it also has limited compatibility with telic predicates (Yang and Wang 2006; Paul 2015). Hence, its significance for the characterisation of SMC is indeed limited (but see below, Sections 3.2.2 and 4).

Similarly to Zhu (1982), Zhang (2000) maintains that 来着 *láizhe* and 呢 *ne* should be understood as "sentence-final temporal particles". She highlights that, just as 来着 *láizhe* is incompatible with adverbs referring to the present or future, 呢 *ne* is incompatible with past and future temporal adverbials (but cf. Yang and Wang 2006): this, according to Zhang (2000), is evidence of the fact that 来着 *láizhe* is a past tense marker, while 呢 *ne* is a present tense marker. As for 了 *le*, Zhang (2000, p. 4) believes that it "cannot be a tense marker in the traditional sense", since it is compatible with past, present, and future adverbials. According to her analysis, while 呢 *ne*, as a present tense marker, indicates that speech time is within topic time (in her terminology, 'assertion time'), sentence-final 了 *le* "is specified with a [within] feature to denote the relation between a contextually explicit temporal point and AST-T [i.e., topic time]" (Zhang 2000, p. 7). Thus, she seems to suggests that 了 *le* is not an absolute tense marker, but rather a marker of relative tense, based on the relation between topic time and a contextually-determined reference point. Indeed, Anderson (1982) proposes that sentence-final 了 *le* is akin to the English perfect, in that they are both used to convey the current relevance of a state of affairs (see also Li et al. 1982).

However, as pointed out, e.g., by Paul (2015, p. 261), the semantic characterisation of 了 *le* is extremely complex, and the only thing that ties together all the possible uses of this particle is that "it 'closes off' the sentence and relates the event to the speech time (in the absence of any other explicit reference time), which might induce an interpretation of the situation as being new". In addition, Arcodia and Basciano (2021) point out that the basic function of 呢 *ne* is that of indicating the continuity of a state of affairs, rather than present tense *per se*. They highlight that while both 呢 *ne* and 了 *le* contribute to establishing the temporal reference of an utterance, their meaning is more akin to aspect (and, we may add, mood) than to tense.

To sum up, in the literature on SMC we may find claims concerning the status of different types of items as markers of tense. While these certainly play a role in building the temporal interpretation of utterances, this function likely derives from their aspectual and modal meanings. They do not seem to be 'proper' tense markers, also because they lack systematicity (i.e., they are not part of systematic tense oppositions).

3.2. Overt Tense Marking in Non-Standardised Sinitic Languages

As pointed out in the Introduction, items that appear to have developed into tense markers are not equally distributed throughout the Chinese dialect continuum. Indeed, based on the available descriptions, it seems that they are mostly (though not exclusively) concentrated in three areas of northern China, each of which has distinctive features in this respect: three-way systems based on an opposition of past, present, and future are generally found in the Jin and Mandarin dialects of Shanxi and (part of) Shaanxi; dedicated markers of past tense are found in the Mandarin dialects of Hebei; 'hybrid' Mandarin dialects of the Qinghai-Gansu *Sprachbund* seem to have only markers of future tense, with tense–aspect mixed systems. In what follows, we describe separately each of those three clusters.

3.2.1. Three-Way Tense Systems: Shanxi and Shaanxi

Many Jin dialects of Shanxi, as well as some (Central Plains) Mandarin dialects of neighboring Shaanxi, have been described as having sentence-final particles which mark past, present, and future. For instance, Li (2001, p. 67; my glosses and translation) proposes the following minimal pairs for the Yangquan dialect of Shanxi:

(8) a. 你 干 啥 来?
NI GAN SHA LAI
2SG do what PST?
'What did you do?'

b. 你 干 啥 嘞?
NI GAN SHA LEI
2SG do what PRES?
'What are you doing?'

c. 你 干 啥 呀?
NI GAN SHA YA
2SG do what FUT?
'What will you do?'

In (8a–c), we have identical predicates, with no overt time expressions, which are interpreted, respectively, as referring to the past, present, and future. The difference in the temporal collocation of the events thus arises only from the different sentence-final particles used: namely, 来 LAI, 嘞 LEI, and 呀 YA. These particles have thus been analyzed as genuine tense markers.

The topic of tense marking in Jin dialects has been most extensively discussed in Xing (2015, 2017, 2020), who also interprets marker cognates as those just seen in Yangquan as tense markers. While he points out that these sentence-final particles also have modal functions, he believes that tense is their dominant meaning. Taking the Shenmu dialect as the representative variety for his analysis, Xing (2015) describes Jin tense–mood particles as summarised in Table 1.

Table 1. Tense marking sentence-final particles in the Shenmu Jin dialect.

Particle	Tense Value	Modal Value
来 [lɛ$^{44/0}$]	past	exhortative
了 [lɛ]	present (already occurred)	emphasis
嘞 [ləʔ]	present (in progress)	declarative
也 [ia]	future	exclamatory

The system of sentence-final particles of Shenmu shown in Table 1 is clearly related to that described by Li (2001) for Yangquan, and it mostly overlaps with that of many other Jin and Mandarin dialects in the area considered here. Xing (2015, 2020) points out several features of these particles which are worth mentioning here:

- They are mostly obligatory for time reference;
- They may express both absolute and relative tense (e.g., 'future in the past' for 也 [ia]);
- They have cooccurrence restrictions with time expressions;
- Being sentence-final particles, they are not necessarily attached to verbs, and they may indeed mark tense even in the absence of a verb (i.e., the verb may be implicit);
- They may cooccur with aspect markers and sentence-final modal particles.
- All of the above points towards an analysis of these sentence-final particles as true tense markers, especially since they appear to be mostly obligatory for time reference, they have cooccurrence restrictions with time expressions (as expected for a tense marker, cp. Eng. **tomorrow I went home*), and they seem to belong to a different functional domain from aspect and mood markers, given that they may cooccur. However, we also believe that this may not necessarily apply to what Xing (2017, 2020) describes as 'present tense markers': indeed, the very fact that he describes 了 [lɛ] as expressing something which has 'already occurred' (已然态 *yǐrántài*), and 嘞 [ləʔ] as expressing a state of affairs 'in progress' (正然态 *zhèngrántài*) suggests that they are probably best analyzed as, respectively, a perfect (just as was described earlier for the SMC cognate 了 *le*) and a progressive marker. Indeed, Xing (2020) himself points out that 了 [lɛ] is compatible with both past and future time reference, and 嘞 [ləʔ] with future time reference (Xing 2020, p. 7; my glosses and translation):

(9)

明年	这会儿	你	做	甚的	嘞
MING-NIAN	ZHE-HUIR	NI	ZUO	SHENDE	[ləʔ]
next-year	this-time	2SG	do	what	PROG

'What will you be doing next year at this time?'

Based on the examples provided in Xing (2020), we may add that 嘞 [ləʔ] is also compatible with past time reference: imperfective states of affairs in the past are marked by a combination of the progressive (/continuous) aspect marker 着 ZHE or the adverb 正 ZHENG and the past tense marker 来 [lɛ$^{44/0}$] (see Xing 2020, p. 6), or also by adding 嘞 [ləʔ]. According to Xing (2020), the difference between the two marking patterns is that when 来 [lɛ$^{44/0}$) is used, it focusses on the relation between event time and speech time, expressing absolute past tense, whereas when 嘞 [ləʔ) is used, it focusses on the relation between event time and topic time, expressing relative past tense. This, again, may be interpreted as evidence of the fact that neither 了 [lɛ] nor 嘞 [ləʔ] are really tense markers, but rather are aspect markers.

Furthermore, note that in Jin dialects, there appear to be restrictions on the cooccurrence of the past tense marker and the experiential (perfective) aspect marker 过 GUO, the function of which is to express that a state of affairs has been experienced in the past, or anyway prior to a reference point. Xing (2017) provides a wide range of contexts, all referring to a past occurrence, in which either 来 LAI or 过 GUO are used: the cooccurrence of the two is uncommon and severely restricted; it is even unacceptable in some Jin dialects. For instance, in Shenmu, 过 GUO, rather than 来 [lɛ$^{44/0}$], is used when a verb has a quantised object; in some other Jin varieties, the past tense marker is allowed only if the perfective marker 咾 LIAO is also present. Thus, there are cases in which 来 [lɛ$^{44/0}$) is ungrammatical, or anyway not commonly used, even though the utterance describes a past state of affairs: according to Xing (2017), the incompatibility of 来 LAI or 过 GUO might be due to the fact that 过 GUO, despite being an aspect marker, has strong past tense semantics (something which has been experienced must be located in the past, or anyway earlier than some other point in time); thus, using both would be redundant. Compare the following examples provided by Xing (2017, p. 47):

(10)	我	见	你	爹	来	了
	WO	JIAN	NI	DIE	LAI	LE
	1SG	see	2SG	dad	PST	PERF

'I saw your father'

(11)	我	见	过	你	爹
	WO	JIAN	GUO	NI	DIE
	1SG	see	EXP	2SG	dad

'I have seen your father'

According to Xing (2017), the difference between (10) and (11) is that the former merely states that something happened at some point in the past, while in the latter the state of affairs is presented as something that has been experienced (at least) once by the utterer. While they are both understood as referring to something that precedes speech time, (11) contains a further semantic/aspectual nuance. Be that as may, examples such as (11) prove that not only is 来 LAI not necessarily found in all sentences with past time references, but indeed its addition may be outright unacceptable.

Compared to the picture painted by Xing, some differences may be found in other Jin dialects of Shanxi which share the same basic system of TAM marking. Shi (2012) discusses tense (/mood) particles in the Yuxian dialect, also based on the same partition as that shown in Table 1 for Shenmu: both the 'already occurred' (i.e., perfect) present marker 咧 LIE and the 'in progress' present marker 哩 LI may be used to refer to the past, present, and future, providing further evidence of a basic function as an aspectual progressive marker for forms such as as Shenmu 嘞 [ləʔ] or Yuxian 哩 LI. In addition, interestingly, in Yuxian there seems to be a split between 来 LAI, the past tense marker, and 咧 LIE, 哩 LI, and 也 YE: according to Shi's (2012) account, while 来 LAI appears to be compatible only with past time references, the remaining markers may be located in the past, present, or future; they thus express relative tense (Shi glosses them as 'simultaneous' and 'posterior', rather than 'present' and 'future'), rather than absolute tense, at least for the future marker 也 YE.

Zhao (2021a) discusses the TAM system of the Ningwu dialect, and proposes that 来 (来) [lɛe^{33} (lɛe^{0})] may be interpreted as a past tense marker (specifically, 'completion before a reference time'), 去呀 QUYA as a future tense marker, and 的哩 DELI as a progressive aspect marker ('what the subject is doing'): all the examples of the use of 的哩 DELI in Zhao (2021a) are located in the present, but he never clarifies whether there actually is a restriction to present tense reference for this particle. Interestingly, we do find examples in Ningwu of the past progressive marked by 来来 [lɛe^{33} lɛe^{0}], rather than 的哩 DELI, similarly to what was stated above for Shenmu (Zhao 2021a, p. 71; my glosses and translation):

(12)	我	做	作业	来来,	么	听见
	WO	ZUO	ZUOYE	[lɛe^{33} lɛe^{0}]	ME	TINGJIAN
	1SG	do	homework	PST	NEG	hear

'I was doing my homework, I didn't hear you'

Thus, Ningwu 来来 [lɛe^{33} lɛe^{0}] too seems to act mainly as a past tense marker. However, when a (-durative) verb is involved, the meaning of 来来 [lɛe^{33} lɛe^{0}] is actually that of an experiential past, a kind of perfective past.

As for 去呀 QUYA, all the examples provided are of deictic future (i.e., indicating that a state of affairs will occur after speech time): it is unclear whether it can be used also for a relative tense. Note that neither Shi (2012) nor Zhao (2021a) explicitly discusses the obligatoriness of tense-marking particles in Yuxian and Ningwu, respectively, and hence we have no way of knowing whether they are always (or mostly) used whenever time reference is required: we already mentioned that Xing (2020) believes that this is generally the case for Jin dialects (with the caveats discussed above), but he does not discuss either Yuxian or Ningwu.

A parallel system of sentence-final particles with a tense-marking function may be found in Central Plains Mandarin dialects of Shaanxi. Among the dialects in our sample, this applies to Shangzhou (Zhang 1997) and to Qishan (Wu and Han 2016). In Shanghzou, according to Zhang's (1997) description, we find 唻 [lai] (with the allomorphs [æ] and [ɛ])

for past tense, 哩 [li] (or 着哩 [tʂuoli]) for present tense, and 呀 [ia] for future tense; in Qishan, we find 来 [le^{21}] for past tense, 哩 [li^{21}] for present tense, and 呀 [ia^{21}] for future tense. The tense-marking systems of the two varieties thus have a perfect overlap, and they seem to follow the same model as the Jin dialects discussed above: however, from the functional point of view, it is unclear whether they are actually analogous. If we follow Zhang's (1997) account, 唻 [lai], 哩 [li], and 呀 [ia] in Shangzhou are absolute tense markers which show strong restrictions when combined with time expressions: namely, 唻 [lai] may appear only in sentences with overt past time references, 哩 [li] only in sentences with overt present time references, etc. Wu and Han (2016) rather describe Qishan's 来 [le^{21}], 哩 [li^{21}], and 呀 [ia^{21}] as both absolute and relative tense markers, which are thus compatible with all sorts of time expressions: absolute tense is the default interpretation, whereas a relative tense reading is available for all three markers, depending on the construction. Compare (Wu and Han 2016, pp. 363–64: my glosses and translation):

(13)

我	去	呀	不？
WO	QU	[ia^{21}]	BU
1SG	go	FUT	NEG

'Shall I go?'

(14)

年时	你	娘	就	说	她	来	呀
NIANSHI	NI	NIANG	JIU	SHUO	TA	LAI	[ia^{21}]
last.year	2SG	mother	just	say	3SG.F	come	FUT

'Last year, your mother said she would come'

While the default reading for 呀 [ia^{21}] (13) is that of an absolute future tense marker, it can be used in a past time context to convey future in the past (14). Indeed, this type of usage is not reported for Shangzhou by Zhang (1997); given the fact that only examples of simple sentences are provided, it is unclear whether a relative tense interpretation may arise in complex sentences for Shangzhou. The default absolute tense reading, with a relative tense reading available in specific constructions, seems to be a feature also of tense-marking sentence-final particles in Jin dialects.

Further, Zhang (1997) hints at the fact that tense-marking sentence-final particles are always used in Shangzhou, whereas Wu and Han (2016) clearly state that they are not necessarily present in Qishan: when they are missing, temporal interpretation follows default principles akin to those discussed above for SMC (Section 2.2). Indeed, a perusal of sample sentences and texts provided in Wu and Han (2016) clearly shows that tense-marking particles are not very common, and that aspect markers are way more frequent.

As for the actual nature of so-called 'present' tense markers in Central Plains Mandarin dialects of Shaanxi, note that Wu and Han (2016) include 哩 [li^{21}] in their discussion of aspect markers: this particle is indeed required in the expression of progressive and continuous aspects, most often (but, crucially, not necessarily) in combination with other markers. Similarly, Zhang (1997) hints at the fact that Shangzhou 哩 [li] might be best understood as a present progressive marker, rather than simply as a pure tense marker.

Finally, differently from what we saw above for Jin dialects, cognates to 呀 (/ 也) YA are not the only possible future tense markers in Central Plains Mandarin. Jia (2007) and Cao (2007) both report the use of a particle, 家 [tɕia], as a future marker, respectively, in the Xinjiang (Shanxi) and in the Puyang (Henan) dialects. In the latter variety, 家 [tɕia] seems to cover pretty much the same functional space as 呀 (/ 也) YA: it is a sentence-final particle, it may combine with overt time expressions, and it is compatible with any main or subordinate sentence, expressing both absolute and relative future tense. 家 [tɕia] appears to be compatible both with planned and unplanned states of affairs, differently from, e.g., SMC 会 *huì* (see Section 3.1), but it has restrictions on the type of predicate: it is generally incompatible with individual-level predicates; it requires a willing agent (hence, * 我生病家 WO SHENG-BING [tɕia] 'I will get sick' is ungrammatical); it is incompatible with negation; it is incompatible with predicates with a quantised object (* 我喝两碗面条家 WO HE LIANG WAN MIANTIAO [tɕia] 'I'll eat two bowls of noodles' is ungrammatical). Interestingly, it combines not only with verb-based predication, but also with adjectives and nouns (e.g.,

嘻，你都大学生家 xi, ni dou daxuesheng [tɕia] 'hey, you're going to be a college student soon'; Cao 2007, p. 57). Note that Jia (2007), in her analysis of Xinjiang 家 [tɕia], points out that a likely cognate was used as a verb suffix in the 17th century novel *The Story of a Marital Fate to Awaken the World* (醒世姻缘传 *Xǐngshì Yīnyuán Zhuàn*), also to indicate future tense: it could thus be a case of retention, rather than innovation.

3.2.2. Past vs. Non-Past: Hebei

A feature of many Mandarin dialects of Hebei is the use of markers of past tense which seem to be related to the SMC recent past marker 来着 *láizhe* (see Section 3.1). Yang and Wang (2006) identified three different shapes for these markers: namely, 来着 LAIZHE, 来 LAI, 着 ZHE. These tense-marking particles are widespread in Hebei, and they tend to cluster areally: 来 LAI is found in the southern and southeastern part of the province (Handan, Shijiazhuang, Hengshui, Cangzhou); dialects spoken in central and northwestern Hebei (Baoding, Zhangjiakou) use either 来 LAI or 来着 LAIZHE; northeastern Hebei dialects (Tangshan, Qinhuangdao) use 着 ZHE or 来着 LAIZHE, but not 来 LAI (Yang and Wang 2006).

According to Yang and Wang (2006), differently from SMC 来着 *láizhe*, these markers may be used to indicate both recent past and remote past, i.e., they are general past tense markers. They are compatible with time expressions referring to the past but, as may be expected, they cannot combine with reference to the present or to the future. Additionally, these markers do not seem to have strong restrictions with respect to grammatical and lexical aspect: they are broadly compatible with perfective and imperfective predicates, with telic and atelic states of affairs, and may combine with aspect markers. See the following Tangshan example (Yang and Wang 2006, p. 159; my glosses and translation):

(15)	他们	正	打	着	着,	警察	就	到	咧
	TA-MEN	ZHENG	DA	ZHE	ZHE	JINGCHA	JIU	DAO	LIE
	3SG-PL	just	hit	PROG	PST	police	just	come	PFV

'While they were fighting, the police came by'

As shown in (15), the (homophonous) progressive/continuous aspect marker 着 ZHE and the past tense marker 着 ZHE may cooccur in the same sentence in Tangshan, yielding a past imperfective interpretation; tense-marking 着 ZHE may also combine with perfective aspect markers to yield a past perfective interpretation. Thus, we may say that 着 ZHE is a dedicated general past tense marker.

However, at least in the Tangshan dialect (for which we have a detailed descriptions of tense marking), 着 ZHE does not appear to be obligatory. Zhang and Zheng (2011) discuss the use of the particle 时的 *shidi*, which is attached to time expressions or frame-setting clauses to convey past meaning. Compare (Zhang and Zheng 2011, p. 8, my glosses and translation):

(16)	我	到	哪儿	他	早	走	咧
	WO	DAO	NAR	TA	ZAO	ZOU	LIE
	1SG	arrive	there	3SG.M	already	leave	PFV

'When I arrived, he was already gone'

'By the time I get there, he'll be gone already'

(17)	我	到	哪儿	时的	他	早	走	咧
	WO	DAO	NAR	SHIDI	TA	ZAO	ZOU	LIE
	1SG	arrive	there	time?	3SG.M	already	leave	PFV

When I arrived, he was already gone'

As shown by the contrast between (16) and (17), when 时的 *shidi* is attached to the frame-setting clause 'when I arrived', only a past tense interpretation is available, whereas in its absence, both a past tense and a future tense interpretation are equally possible, according to Zhang and Zheng (2011). Here, what matters most for our argumentation is that a sentence with clear past reference does not contain 着 ZHE; indeed, of all the example sentences with a past tense setting which may be found in Zhang and Zheng (2011), we

see only a single instance of sentence-final 着 ZHE. This clearly proves that this marker is not obligatory in all past tense contexts.

3.2.3. Future vs. Non-Future: The Qinghai-Gansu *Sprachbund*

The third cluster of proposed tense-marking particles is found in the Qinghai-Gansu (or Amdo) *Sprachbund*. In this area, we find Mandarin dialects which have undergone significant restructuring due to contact with Tibetic, Mongolic, and Turkic languages, developing Tibetan and Altaic-type features to a much greater extent than other northern Sinitic languages (see Slater 2003; Sandman 2016): dialects such as, e.g., Linxia (Dwyer 1992), Tangwang (Xu 2017), and Xining (Bell 2017a, 2017b) thus possess typological features which are unique in the Sinitic context, as in, e.g., verb-final basic word order and postnominal case marking.

When it comes to TAM marking, a common feature in these hybrid varieties is having a mixed tense–aspect system, in which future is the only tense category. In Table 2, we compare the tense and aspect markers of Minhe Gangou (Zhao 2021b), Xining Mandarin (Bell 2017a, 2017b), and Zhoutun (Zhou 2022):[9]

Table 2. Tense and aspect markers in three Qinghai-Gansu Mandarin varieties.

Language	Marker	Value
Gangou	了 [liau]	perfective
Gangou	着哩 [tʂʅ li]	imperfective
Gangou	哩 [li]	irrealis, future
Xining	了 [liɔ]	perfective
Xining	着 [tʂɔ]	imperfective
Xining	俩 [lia]	future, affirmative mood
Zhoutun	了 [lɔ]	perfective
Zhoutun	着 [tʂɤ]	progressive
Zhoutun	哩 [li]	future, affirmative/exclamatory mood

These markers have largely overlapping functions in these three varieties. Basically, the main aspectual distinction is that between perfective and imperfective, similarly (both in form and function) to other northern Sinitic languages; in addition to that, all three dialects have only one marker with a tense (-like) function, 哩 [li], which has also additional modal functions, and shares the same shape as the progressive marker of many of the Jin and Central Plains Mandarin dialects discussed above (Section 3.2.1). Zhao (2021b) describes Gangou 哩 [li] as an irrealis marker, which also developed a function as an exponent of future tense; compare the following examples (Zhao 2021b, pp. 417, 419):

(18)	阿姐们	年年	买	哩	吗
	AJIE-MEN	NIAN~NIAN	MAI	[li]	MA
	sister-PL	year~year	buy	IRR	Q
		''The sisters buy (it) every year?'			
(19)	老张	兵当	去	哩	
	LAO-ZHANG	BINGDANG	QU	[li]	
	old-Zhang	serve	go	FUT	
		'Old Zhang will join the army'			

In (18), 哩 [li] cannot be understood as a future tense marker, since the state of affairs is clearly habitual: incidentally, this is also one of the functions of the above-mentioned SMC future-oriented modal verb 会 *huì* (Section 3.1). In (19), however, 哩 [li] has, indeed, a tense-marking function, as its presence alone suggests a future tense reading for the whole utterance. Here, 哩 [li] marks absolute future (i.e., relative to speech time), but it can also mark relative future, given the appropriate context. Zhao (2021b) analyses the system of TAM marking in Gangou as split between realis and irrealis predicates, at least for (affirmative) declarative and interrogative sentences: 哩 [li] marks irrealis and future, while realis non-future predicates are zero-marked; the opposition between perfective and im-

perfective aspect is overtly marked by 了 [liau] and 着哩 [tʂɿ li], but only on realis (and non-future) predicates. Zhao also hints at the fact that one of the three aspect/tense markers is generally required in Gangou finite sentences (Zhao 2021b, p. 420; my glosses and translation):

(20)	小红	明年	大学	考	哩
	XIAOHONG	MING-NIAN	DAXUE	KAO	[li]
	Xiaohong	next-year	university	take.exam	FUT

'Xiaohong will take the university entrance exam next year'

According to Zhao (2021b), a sentence such as (20) would be incomplete without 哩 [li].

Bell (2017a, 2017b) also describes Xining Mandarin 俩 [lia] as a future tense marker, both absolute and relative, which has also the function of marking affirmative mood. Interestingly, the nature of the meaning conveyed by 俩 [lia] is related to the lexical class of the predicate: it marks future for (+dynamic) predicates, and affirmative mood for stative predicates. He also provides examples of the obligatory use of 俩 [lia] when an utterance refers to the future, and shows that sentences with past time expressions are incompatible with 俩 [lia].

As for Zhoutun, Zhou (2022, p. 34) defines 哩 [li] as a "future aspect" marker, indicating "that an event will occur after the reference point of time"; again, it can be used both for absolute and relative future. Whereas Zhou describes 哩 [li] as an aspect marker, and maintains that "[i]t is mainly used in declarative sentences to express the tone of a statement, exclamation" (Zhou 2022, p. 35), we believe that Zhoutun 哩 [li] is not unlike its Xining cognate: it can express declarative/exclamatory modality, but is also used to locate an event in the future. Compare (Zhou 2022, pp. 94–95; glosses adapted):

(21)	我	学里	去	哩
	ŋɤ	*ɕyɤ=li*	*tɕhi*	*li*
	1SG	school=LOC	go	FUT

'I am going to school'

(22)	我	学里	去了
	ŋɤ	*ɕyɤ=li*	*tɕhi=lɔ*
	1SG	school=LOC	go=PFV

'I went to school'

As shown by the contrast between (21) and (22), the use of 哩 [li] alone, as opposed to the perfective marker 了 (lɔ), locates the event in the future. Interestingly, the examples provided by Zhou (2022) of the use of 哩 [li] to express a declarative/exclamatory mood nearly all involve stative predicates: we suspect that this might be a pattern shared with Xining Mandarin. Note, also, that Xu's (2014, 2017a) description of Tangwang and Chen and Qiu's (2021) discussion of Linxia data both mention a particle 哩 [li] (also 咧 [liɛ] in Tangwang), which are seen as modal particles that also developed the function of markers of future.

A notable exception in the Qinghai-Gansu region in this respect is that of Wutun, a heavily Tibetanised northwestern Mandarin dialect of Tongren County, Qinghai. Sandman (2016) describes Wutun as a tenseless, aspect-prominent language. However, she also mentions that "[t]he division between aspect and tense [. . .] is not sharp and the aspect markers can also imply tense as their secondary meaning" (Sandman 2016, p. 177). Indeed, the most tense-like item she mentions is the prospective aspect marker *zhe* (cognate to SMC 着 *zhe*), which "marks situations that are going to take place in the future or whose effect continues to the future" (Sandman 2016, p. 179). See the following example (Sandman 2016, p. 185):

(23)	*ngu*	*rongbo-li*	*qhi-zhe*
	1SG	Longwu-LOC	go-PROSP

'I am going to Longwu.'

Judging from examples like (23), *zhe* could be analyzed as a future tense marker: differently from the 哩 [li] forms found in the rest of this area, it is a verb suffix, rather than a sentence-final particle. Sandman (2016, p. 185) believes that it is an aspect marker mainly because when it is used "in multiple aspect constructions together with the perfective *-lio*, *-zhe* can also express past situations that have already taken place, but whose effect still continues to the future". See the following example (Sandman 2016, p. 202):

(24) *ni* *mashema* *kuu-lio-zhe*
2SG why cry-PFV-PROSP
'Why did you start crying (you started crying and you are still crying)?''

According to Sandman's analysis, "the status of *-zhe* as an aspect marker rather than future tense marker is evident from its use in past contexts" (Sandman 2016, p. 202). However, we dare suggest that the two uses of *-zhe* should be kept distinct. Examples such as (23), based on a predicate without any time-oriented item, and in which future tense interpretation relies on the use of the prospective marker, are functionally and structurally analogous to the many other examples we saw earlier in other Sinitic varieties from different areas (8c, 13, 19, 21). The fact that the combination of *zhe* and perfective *lio* leads to a different interpretation is given by the interaction of the meanings of the two markers, leading to a perfect-like interpretation.

4. Discussion

The data presented in this paper show that the grammatical exponents of tense proposed in the literature on Sinitic are indeed very diverse. However, there are also several strong tendencies that emerge from our analysis.

Firstly, as for the *locus* of tense marking, we may remark that items which may be analyzed as expressing tense in Sinitic languages seem to be mostly sentence-final particles: this entails that they apply to sentences, rather than to individual verbs, and may even be used for non-verbal predication (see Section 3.2.1). Secondly, while the expression of tense is often intertwined with aspect, as pointed out earlier (Section 2.1), tense particles in Sinitic may have some connection with modal meaning: we argue that this could be related to the fact that they are sentence-final particles, which in Sinitic (and, generally speaking, in East and Mainland Southeast Asia) typically have a modal function, while aspect is mostly expressed by postverbal items. This, however, does not entail that there is little interaction between tense and aspect in the varieties surveyed here: tense-marking particles often cooccur with aspect markers to determine the interpretation of the clause (see Ex. 15), a fact that further suggests that the two domains (tense and aspect) are expressed independently. We also saw that there may be constraints on the cooccurrence of past tense markers with aspect markers with a strong temporal component, as shown for 来 [lᴇ$^{44/0}$] and 过 GUO in Jin dialects. In addition, we do find 'hybrid' tense–aspect markers, such as Ningwu 来来 [lᴇᴇ^{33} lᴇᴇ^{0}], which acts as an experiential past marker with (-durative) verbs (see Section 3.2.1). Interestingly, the TAM system of Sinitic languages of the Qinghai-Gansu area, such as in Gangou and Xining, seems to be based on a mixed tense–aspect paradigm, depending on the reality status of the predicate.

Moreover, another aspect of the interaction between tense and aspect which emerges from our data is that it appears that the present tense markers proposed in the literature are basically aspect markers, mostly conveying progressive semantics. Specifically, items found in Jin and Central Plains dialects of Shanxi and Shaanxi such as Shenmu 嘞 [ləʔ] or Qishan 哩 [li^{21}] (see Section 3.2.1) are not restricted to present tense reference (see Ex. 9), and may overlap with the marking patterns of the progressive (/continuous) aspect (especially, Qishan 哩 [li^{21}] and Shangzhou 哩 [li]. Additionally, so-called 'already occurred' present tense markers, such as 了 [lɛ] in Shenmu and other Jin dialects, are, again, compatible with all types of time reference (past, present, and future), showing features of a perfect, rather than a present tense marker. Thus, in the varieties surveyed, it appears that past tense markers are most grammaticalised as dedicated tense markers (although interaction with the perfective aspect is also possible, as in the Ningwu case mentioned above),

while future markers overlap to some degree with modality and reality status, which is a common trait in the world's languages (as pointed out in Section 2.1); as for the present tense, it appears that we could not find true tense markers, suggesting that present tense is arguably mostly zero-marked.

A common feature of the tense markers in our survey is that they mostly express both absolute and relative tense, depending on the sentential context: the general principle seems to be that the default interpretation is that of absolute tense, while relative tense may be found in complex sentences in which a reference point different from speech time is established (see Ex. 14). Further, they seem to possess different degrees of generality: for instance, we mentioned the fact that the future tense marker 俩 [lia] in Xining Mandarin is available only for (+dynamic) predicates, which implies that there may be no grammatical future tense marking for stative predicates, and 来 LAI-type markers in Jin dialects may lead to ungrammaticality in some contexts, even though they have past time references (see Section 3.2.1).

As for the obligatoriness of tense marking, this is claimed for Jin dialects by Xing (2020), and for Gangou and Xining by Zhao (2021b) and Bell (2017a, 2017b). Tense markers are definitely optional in the Central Plains Mandarin dialects of Shaanxi seen here (with the possible exception of Shangzhou) and in Tangshan; their status in other Hebei dialects is unclear. Thus, if we apply the typology of tense marking introduced earlier (Section 2.2), some Jin dialects could be analyzed as tensed, since at least past tense and future tense marking are reportedly obligatory (although past tense marking may not be possible in all sentences with past time references, as pointed out above); the same goes at least for some Qinghai-Gansu hybrid Mandarin varieties, although, in that case, the only real tense value which is expressed is that of future tense. As for Central Plains Mandarin dialects such as Qishan, and past-marking Hebei dialects like Tangshan, they seem to fit in the mixed-temporal type, given that tense marking appears to be generally optional. However, in order to offer a more definite assessment of the obligatoriness of different tense markers in different contexts (and in different types of sentences, including complex sentences with embedded clauses), more data on naturally occurring language use are needed.

Finally, our survey shows that there are strong areal trends in the distribution of tense markers, which begs the question of how they developed. Since the history of these markers is not the focus of the present research, due to constraints of space and opportunity, here we shall just offer a few concise remarks on the origin of these markers, a topic which would undoubtedly deserve a separate paper.

The most striking feature of the varieties in our sample is the use of a marker apparently related to the SMC (recent) past marker 来着 *láizhe* (Yang and Wang 2006; Xing 2017; see Section 3.2.1) in a broad range of Jin and Mandarin dialects spread over Shanxi (and Inner Mongolia; see Xing 2017), Shaanxi and Hebei. While in Shanxi and Shaanxi we apparently find only 来 LAI or 来来 (lɛe^{33} lɛe^{0}) (in Ningwu), we mentioned earlier (Section 3.2.2) that in Hebei we find all the three possible combinations of 来 LAI and 着 ZHE: interestingly, the use of 着 ZHE only is found only in northeastern Hebei, while the dialects closer to the border with Shanxi all use either 来 LAI only, or both 来 LAI and 来着 LAIZHE; in Beijing, which is located between northeastern and central Hebei, 来着 *láizhe* is the form in general use. In addition, Yang and Wang (2006) show that 来 *lái* was used as a past tense marking particle already in Tang dynasty texts, and it had indeed broad compatibility with aspect markers and different *Aktionsarten*; it was substituted by 来着 *láizhe* with the same function at the beginning of the Qing period in written Chinese. These are likely to be the forms from which not only SMC 来着 *láizhe* derived, but also the past tense markers discussed here. The distribution of their forms follows a clear areal pattern, with 来 LAI only (the oldest form) found to the west, 着 ZHE only found to the east, and 来着 LAIZHE in between. Thus, in short, all the evidence points towards an internal development for past tense markers in these areas of northern Sinitic: the use of 来着 LAIZHE (or 来 LAI, 着 ZHE) as a general past tense marker seems to be an instance of retention, rather than innovation.[10]

As for the origin of the two other shared markers of tense (/aspect) in the Shanxi–Shaanxi region, namely progressive 哩 LI and future 呀/ 也 YA, we leave this for further research.

As for the use of 哩 [li]/ 俩 [lia] for future tense and mood marking, it has already been pointed out by several scholars in the literature that it is most likely the product of Mongolic influence on Amdo Sinitic (Bell 2017a, 2017b; Chen and Qiu 2021; Zhao 2021b). For instance, Chen and Qiu (2021, p. 520) highlight that the shape of the non-past marker in many Mongolic languages is most often *-na*, *-nə*, or *-n*, and they argue that markers with the form 哩 [li] (and 呢 NE) in northwestern China are likely to have been created under the influence of those Mongolic languages. Bell (2017a) even proposes that the source material for the grammaticalisation of 哩 [li]/ 俩 [lia] is the Early Mandarin modal sentence final particle 哩 *li*, the function of which was marking states, which was reanalyzed as a declarative mood and future marker following the model of the Mongolic state/future marker (e.g., Monguor *-m*), through grammatical replication.

5. Conclusions

In this paper, we tried to show that a tenseless analysis might not apply to the whole Sinitic family, given that there appear to be dedicated grammatical markers for the expression of tense, which may even be obligatory in some varieties (and/or constructions). While there is indeed a broad degree of diversity in the TAM systems of the dialects considered here, we pointed out that nearly all exponents of tense are sentence-final particles, which tend to be used both for absolute and for relative tense. Furthermore, despite the claims in the literature, we could not find 'genuine' present tense markers, which could be argued to be zero-marked values: all the exponents with a dominant (or exclusive) tense meaning in our survey mark either past or future.

The distribution of tense markers follows clear areal patterns, related also to their origins. Past tense markers arguably related to SMC 来着 *láizhe* are found in an area spanning Shanxi, Shaanxi and Hebei, and they appear to retain functions and uses which have been mostly lost in SMC. Future markers of the 呀/ 也 YA-type are found in Jin dialects and in Central Plains dialects of Shaanxi, while the Qinghai-Gansu Mandarin dialects (with the notable exception of Wutun) all seem to have the same mood/future marker 哩 [li], which is very likely to be a case of grammatical replication of a Mongolic marker with those functions.

The fact that dedicated tense markers, even obligatory ones, seem to be concentrated in parts of northern China once again shows that, just as for many other defining features of the East and Mainland Southeast Asian Area, the prominence of aspect, as well as the general indeterminatedness of utterances, seems to be less evident in northern Sinitic, compared to southern China (on the areal typology of Sinitic, see Szeto and Yurayong 2021). Note, also, that Chen and Qiu (2021) provide an interesting survey of markers of future in Sinitic, and they argue that they are decreasingly grammaticalised from west to east, and from north to south; thus, northern and northwestern Sinitic languages are said to have the grammatical markers which are closest to a genuine future tense. Indeed, the varieties surveyed in this paper could be argued to belong to the mixed-temporal type, or even to the tensed type: however, as stated earlier, more data are needed to be able to provide a proper assessment. We leave this for further research.

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Notes

1 We use the term 'Standard Mandarin Chinese' to indicate the standard language of the People's Republic of China, also known as 普通话 *Pǔtōnghuà* (lit. 'common language'). We avoid the use of the term 'Chinese' only as it could also refer to other, non-standardised Sinitic languages (the so-called 'Chinese dialects'), such as, e.g., Cantonese. We also chose not to use 'Mandarin' by itself since, in principle, it could refer to any Sinitic variety belonging to the Mandarin subgroup. Finally, we use 'Sinitic languages' when referring to the group as a whole, but we use 'dialect(s)' when referring to branches of Sinitic or individual varieties, since this appears to be the dominant use in English-language scholarship.

2 In this paper, we use *Hanyu Pinyin* for the transcription of Standard Mandarin Chinese; for all other languages, we use the transcriptions provided by the sources. When no transcription is provided, we use smallcaps (toneless) *Pinyin* transcriptions following the SMC reading of the characters. When present, superscript numbers indicate tone height on a 1–5 scale (see Chao 1968, pp. 25–26). The nonstandard phonetic symbol (ɛ) is used in Chinese linguistics to represent the mid-front unrounded vowel. We use simplified Chinese characters as a default; however, traditional characters are also used when necessary for consistency with the source. The glosses follow the general guidelines of the Lepizig Glossing Rules. Additional glosses include: EXP = experiential aspect; MOD = marker of modification; PROSP = prospective aspect; SFP = sentence-final particle.

3 "Topic time" is defined by Klein (1994, p. 4) as "the time span to which the speaker's claim on this occasion is confined". Thus, for instance, in the utterance *I took a cab back to the hotel. The cab driver was Latvian* (Michaelis 2021, p. 164), the use of the past tense form *was* does not imply that the cab driver is no longer Latvian. It merely states that 'being Latvian' was true at the Topic time (established by *I took a cab back to the hotel*).

4 Filip (2012) remarks that, strictly speaking, 'lexical aspect' and '*Aktionsart*' are not synonymous. In the narrow sense, lexical aspect refers to properties of the verb only, whereas *Aktionsart* (also 'aspectual class') may be a property of the whole sentence: indeed, the very same verb may be used in a telic sentence ("[a]t the turtle race, the winning turtle crossed the finish line in 76 s") or in an atelic sentence ("[a]t the turtle race, turtles crossed the finish line for hours"; Filip 2012, p. 725). For the sake of simplicity, in this paper we use 'lexical aspect' and '*Aktionsart*' interchangeably, to refer to the broader phenomenon of the aspectual class of verbs and sentences.

5 Uuikoski's sampling of tense markers is based on the following working definition (Uusikoski 2016, p. 38): "[a] tense marker—as one of its primary meanings—locates (examines, locates or points to the direction of) something (an event, a time span or a point or a region) with regard to time and thus forms (whether by a static configuration or by a dynamic process) a temporal relation (a relation or a vector) between two entities (time points or spans, situations or regions, which either can or cannot expand infinitely)".

6 Lin (2012) lists some syntactic properties of SMC which, in his view, could be related to its tenseless nature, and that may be shared by other tenseless languages. These include the existence of bare nominal predicates, the lack of expletive subjects, the lack of a finite/non-finite distinction, and the lack of case-motivated movement. However, as Lin himself points out, the lack of an expletive subject is found also in tensed languages, as e.g., in 'pro-drop' Romance languages such as Italian or Spanish.

7 Unfortunately, Smith et al. (2007) do not provide morpheme boundaries in the Navajo text. Further, they do not clarify the meaning of the gloss 'areal'. Thompson (1993, p. 328) defines it as "a subject prefix which is used either to refer to an entire area or to act as a dummy subject". While its use in (4) does not seem to reflect either of the above, we shall not discuss the issue here as it is irrelevant for our argumentation.

8 URL: oversea.cnki.net (last access: 28 February 2023).

9 For Zhoutun, here we include only the three aspect markers which are needed for our comparison with the other varieties considered here. For a full description of aspect markers in Zhoutun, see Zhou (2022, pp. 33–38).

10 Actually, markers cognate to 来 *lái* have been reported in the literature also for dialects from other areas of China, including both Mandarin and non-Mandarin dialects: for instance, in Fengtai, a Central Plains Mandarin of Anhui (Sun 2018), and in Cantonese (Lai 2014). Our own preliminary research suggests that, in dialects outside the area we focus on in this paper, cognates of 来 *lái* retain a strong sense of recency, and can thus be considered to be further from a general past tense marker (hence, arguably less grammaticalised), and closer to the premodern uses of 来 *lái*.

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The Dative Markers and Their Developments in Hunan Sinitic Languages

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Abstract: This study is based on a sample of 30 Sinitic languages spoken in the Hunan Province. Its first objective is to explore the types of dative markers, comparing the form of the dative with allative, passive, benefactive, and differential object markers in these languages. Five patterns are identified: (I) DAT = ALL (II) DAT = GIVE = OM ≠ PASS; (III) DAT = GIVE = OM = PASS; (VI) DAT = GIVE = PASS ≠ OM; (V) DAT = BEN. Then, we reveal three main possible grammaticalization pathways that motivate the five synchronic patterns: (a) Allative > Dative; (b) (TAKE >) GIVE > Dative; (c) Benefactive > Dative. It concerns two distinct developments for the second pathway. Based on the areal distribution of the various types of dative markers, we can observe how the dative markers are developed in Hunan Sinitic languages.

Keywords: dative; allative; GIVE; ditransitive construction; Sinitic; Hunan

1. Introduction

This paper discusses the dative (recipient) markers in the Sinitic languages spoken in the Hunan Province.

Before embarking on the examination of the dative markers, it is pertinent to offer a brief introduction to the languages spoken in the Hunan Province. Hunan is located in the south-central region of China. According to Bao and Li (1985), the Hunan Sinitic languages can be classified into five broad areas: Xiang varieties spoken in the center of Hunan; Southwestern Mandarin varieties spoken in the west and south; Gan and Hakka varieties spoken in the east; Waxiang spoken in the west; and Tuhua[1] spoken in the south (both within the Mandarin-speaking regions). Additionally, there are several non-Sinitic languages spoken in Hunan: Tujia in the northwest; Miao in the west; Dong in the southwest; and Yao in the south. Of these languages, Tujia exhibits SOV word order, while other languages use SVO order. Hunan is classified as a transitional zone for Sinitic languages in Chappell (2015), such that an examination of the Sinitic languages in Hunan can shed light on the refinement of this linguistic area and contribute to a better understanding of the linguistic development within Sinitic languages.

Dative usually refers to a morphological case that prototypically marks the recipient or indirect object in a ditransitive construction (cf. Haspelmath 2016). In this paper, we use *dative marker* to indicate the element that introduces the recipient argument, as the morpheme *to* in *I gave a pen to Paul* in English. Most studies on the Sinitic ditransitive constructions focus on the sentence structures, especially on the relative word order between the recipient and the theme (see Hashimoto 1976; Zhu 1979; Yue-Hashimoto 1993, for example). Chin (2010) firstly identified two types of dative markers in Sinitic languages (i.e., the *go-type* and the *give-type*) and discussed the chronological development of the two types of dative markers. See also Li and Wu (2015) for the development of dative markers in Yichun Gan.

In this paper, we present five types of dative markers from a synchronic perspective on the one hand, and we explore four grammaticalization pathways underlying these var-

ious types of dative markers on the other. Grammaticalization is defined as the development from lexical to grammatical forms and from grammatical to even more grammatical forms (Kuteva et al. 2019, p. 3). Cross-linguistically, the dative markers are frequently derived from allative markers, GIVE verbs, and benefactive markers (Kuteva et al. 2019).

In the languages that we investigated, we observe all these three patterns: namely, the dative marker shares the same form as either the allative marker, the GIVE verb, or the benefactive marker in each language. However, in order to clarify how the dative use was developed from these sources, especially for the GIVE verbs which are generally TAKE verbs in origin, we take the passive markers and differential object markers which are closely related to GIVE/TAKE verbs into consideration and refine the three main patterns into five: DAT = ALL; DAT = GIVE = OM $\neq$ PASS; DAT = GIVE = OM = PASS; DAT = GIVE = PASS $\neq$ OM; DAT = BEN. The detail of our methodology is presented in Section 2.

The layout of this article is as follows: this introduction leads into Section 2, which presents our definitions for the markers and relevant constructions, our terminology and methodology. We take allative markers, GIVE verbs, benefactive markers, passive markers, and differential object markers into consideration, and classify the 30 languages into five types. They will be discussed in detail in Section 3 with a map showing their areal distribution. The relevant diachronic developments of dative markers are found in Section 4 and are followed by a conclusion in Section 5.

2. Methodology and Definitions

The sample of 30 languages spoken in the Hunan Province covers the five groups of Sinitic languages (i.e., Xiang, Gan, Southwestern Mandarin, Hakka, and Tuhua) and one unclassified one (i.e., Waxiang). Both fieldwork data and data from descriptive grammars and journal articles are used. Data are glossed and translated by the author when not provided in the original literature. The locations of all the languages can be found in Figure 1.



Figure 1. The locations of the sample languages.

In this paper, only the dative marker in the main[2] ditransitive construction of the language is considered. As indicated in Zhang (2011), the Southern Sinitic languages[3] use the postverbal dative construction[4] [V + T(heme) + DAT + R(ecipient)] to encode transfer. This

is the case for most of our sample languages. However, the preverbal dative construction [DAT + R+V + T] is also attested as the main type in some languages spoken in northwestern Hunan, such as in Waxiang. For the languages that use postverbal dative markers, we can identify two primary patterns: DAT = ALL and DAT = GIVE; for the languages that use preverbal dative markers, we can find a third pattern: DAT = BEN.

The dative markers that are related to allative markers and benefactive markers are relatively straightforward to identify and analyze, but when the dative marker shares the same form as the GIVE verb, we need to further confirm how the dative use is developed from the GIVE verb. Regarding the GIVE verbs, it refers to the general-purpose verb of giving in this paper, such as *gěi* 给 in Standard Mandarin or *give* in English. GIVE verbs have been extensively discussed in the literature due to their polyfunctionality in Sinitic languages (see Lai 2001; Chin 2011; Ngai 2015; Lu and Szeto 2023). For instance, in Standard Mandarin, *gěi* can act as a benefactive marker, dative marker, causative verb, passive marker, and differential object marker. However, in the Southern Sinitic languages, the GIVE verbs are more diverse in forms, such as pa^{41} 把 in Changsha, te^{22} 得 in Hengyang, and $lɛ^{44}$ 拿 in Lianyuan from our sample, and they are TAKE[5] verbs in origin. Furthermore, in most cases, they manifest different syntactic behaviors from *gěi* in Northern Sinitic languages. See the two example sentences below in Standard Mandarin and in Huarong.

(1) Standard Mandarin (Zhu 2009, p. 170)

给	我	一	枝	笔。
gěi	wǒ	yì	zhī	bǐ
give	1SG	one	CLF	pen

'Give me a pen.'

(2) Huarong (SWM; own fieldwork)

把	本	书	得	我。
$pɑ^{21}$	$pən^{21}$	$ɕy^{53}$	$tɛ^{13}$	$ŋo^{21}$
give	CLF	book	DAT	1SG

'Give me a book.'

The GIVE verbs which can take an R argument (in addition to a T argument) will be considered as a genuine GIVE verb in this analysis (cf. Zhang 2011), like the case in Standard Mandarin; while some GIVE verbs can only take a T argument but not an R argument, they solely have the semantic meaning of giving, like the case in Huarong[6]. When we consider that a dative marker is grammaticalized from a GIVE verb, it is generally the genuine GIVE verbs that we talk about, since it can precede an R argument and can be easily reanalyzed as a dative marker from V_2 position in a serial verb construction, as illustrated by (3).

(3) Standard Mandarin (Zhu 1979, p. 83)

我	送	一	张	票	**给**	小李。
wǒ	song	yì	zhāng	piào	**gěi**	Xiǎolǐ
1SG	offer	one	CLF	ticket	**DAT**	Xiaoli

'I offered a ticket to Xiaoli.'

In Hunan, most GIVE verbs are originally TAKE verbs, and they form postverbal dative constructions but not double object constructions, which means they take a T argument but not R argument. However, some of these $GIVE_{<TAKE}$ verbs can also be used as a dative marker. Take Changsha, for example: the $GIVE_{<TAKE}$ verb and the dative marker are both pa^{41} 把. The process of how the dative marker is developed from a $GIVE_{<TAKE}$ verb will be discussed in detail in Section 4.2.

Zhang (2011) claims Southern Sinitic languages lack genuine GIVE verbs, and the ditransitive constructions in Southern Sinitic languages are formed by the combination of TAKE verbs and a directional element which can be templated as [TAKE + T + ALL + R]. It is exactly in this construction that TAKE verbs obtained the semantic meaning of giving. On the basis of this construction, when the T argument shows preverbally (could be topi-

calized or marked by an object marker) or simply mentioned in the previous context, we have [TAKE + ALL + R], and according to Zhang (2011), [TAKE-ALL] becomes a genuine GIVE verb, which can precede the R argument directly, and form a serial verb construction with the $GIVE_{<TAKE}$ verb in ditransitive constructions, whence it can be reanalyzed as a compound dative marker: [$GIVE_{<TAKE}$ + T + $DAT_{<[TAKE\text{-}ALL]}$ + R]. Then, due to the frequent use, the allative marker might be omitted from the compound form, leaving the TAKE verb in the language as a dative marker alone: [$GIVE_{<TAKE}$ + T + $DAT_{<TAKE}$ + R].

These developmental stages can still be observed in many Southern Sinitic languages, such as in Shanghai Wu (Qian 1997), Yichun Gan (Li and Wu 2015), and Liancheng Hakka (Ye 2023). Take Yichun as an example. At first, the directional element *ku*^{42} 过 is used to mark the recipient:

(4) Yichun (Gan; Li and Wu 2015)

我	把	本	书	**过**	你。	[$GIVE_{<TAKE}$ + T + **ALL** + R]
ŋo^{34}	pa^{42}	pun^{42}	ɕy^{34}	**ku^{42}**	ȵi^{34}	
1SG	give	CLF	book	**DAT**	2SG	

'I gave a book to you.'

Then, the $GIVE_{<TAKE}$ verb combines with the directional element and forms a compound genuine GIVE verb as *pa*^{42}*-ku*^{42} 把过 which can take a recipient as its argument. This compound form is then reanalyzed as a dative marker in a serial verb construction:

(5)

我	把	本	书	**把过**	你。	[$GIVE_{<TAKE}$ + T + **$DAT_{<[TAKE\text{-}ALL]}$** + R]
ŋo^{34}	pa^{42}	pun^{42}	ɕy^{34}	**pa^{42}-ku^{42}**	ȵi^{34}	
1SG	give	CLF	book	**DAT**	2SG	

'I gave a book to you.'

Finally, the directional element dropped off and the $GIVE_{<TAKE}$ verb alone becomes a new dative marker in Yichun:

(6)

把	本	书	**把**	你。	[$GIVE_{<TAKE}$ + T + **$DAT_{<TAKE}$** + R]
pa^{42}	pun^{42}	ɕy^{34}	**pa^{42}**	ȵi^{34}	
give	CLF	book	**DAT**	2SG	

'Give a book to you.'

This is the first possible diachronic development for the dative markers that have the same form as the $GIVE_{<TAKE}$ verbs. Note that although the dative marker has the same form as the $GIVE_{<TAKE}$ verb in the language, it does not mean the $GIVE_{<TAKE}$ has become a genuine GIVE verb, because the dative marker is developed by dropping off the allative element from a genuine compound GIVE verb, but is not developed from the $GIVE_{<TAKE}$ verb itself. (Nevertheless, it is possible for the $GIVE_{<TAKE}$ verb to develops further into a genuine GIVE verb on this basis.)

The second possible explanation for a dative marker sharing the same form as the $GIVE_{<TAKE}$ verbs is the that $GIVE_{<TAKE}$ verb becomes a genuine GIVE verb through *relexicalization* (Güldemann 2012), and the dative use is developed from the genuine GIVE verb. This is a case mentioned in Shaowu (Ngai 2015; 2021, p. 384).

To help us tell if the $GIVE_{<TAKE}$ has become a genuine GIVE verb in the language, we need to take two other makers into consideration: passive markers and differential object makers.

Chappell and Peyraube (2006) argued "GIVE > permissive causative > passive" is a common grammaticalization pathway in Sinitic languages, such as *gěi* in Beijing Mandarin or 俾 *pei*^{35} in Cantonese. Below is an example of the bridging stage for the reanalysis. In (7), *gěi* can actually be interpreted as 'to give' in a pivot construction, a permissive causative marker, or a passive marker.

(7) Beijing Mandarin (Xu 1992)

车	**给**	小王	修好	了。
chē	**gěi**	Xiǎowáng	xiū-hǎo	le
car	**give/let/PASS**	Xiaowang	repair-be.good	CRS

'(Someone) gave the car to Xiaowang (and he) repaired it.'
or '(Someone) let Xiaowang have the car repaired.'
or 'The car was repaired by Xiaowang.'

The key point for the reanalysis is that the argument after the GIVE verb has to be an R argument, which can be considered as a causee in the causative construction or an agent in the passive construction. If the GIVE$_{<\text{TAKE}}$ verb in a language can be used as a passive marker, we can consider that the GIVE$_{<\text{TAKE}}$ verb in this language is a genuine GIVE verb, thus making it also possible to develop a dative use. On the contrary, if the GIVE$_{<\text{TAKE}}$ verb in a language cannot be used as a passive marker, we can consider that it might still stay as a TAKE verb, or at least its GIVE use is not yet well developed.

As for the differential object marker, Chappell (2007) outlines two common grammaticalization pathways for the object markers in Sinitic languages: (i) TAKE (>instrumental) > OM; (ii) GIVE > benefactive > OM. If an object marker is developed from the GIVE verb, generally it has to undergo an intermediate stage as a benefactive marker. While the pathway from TAKE to object marker is much more common, such as *bǎ* 把 in many Northern Sinitic languages. For the languages in Hunan, if the object marker has the same form as the GIVE$_{<\text{TAKE}}$ verb, and we cannot find an identical benefactive marker, then we can consider the object marker in these languages to be more likely to be developed from the TAKE use of their GIVE$_{<\text{TAKE}}$ verbs in the history.

In summary, we take passive makers and differential object markers into consideration to help us decide whether the GIVE$_{<\text{TAKE}}$ verbs in our sample are genuine GIVE verbs that can develop a dative use, or they are still a TAKE verb that has gained a dative use by dropping off the allative element in a compound GIVE verb. When DAT = GIVE = PASS $\neq$ OM, it is more likely to be the former case; when DAT = GIVE = OM $\neq$ PASS, it is perhaps the latter case especially when a compound GIVE verb form can be found in the language; finally for the syncretism DAT = GIVE = PASS = OM, both cases are possible. All the grammaticalization pathways will be explained in detail in Section 4.

Therefore, in this paper, we investigate six elements: dative markers, allative markers, benefactive markers, passive markers, differential object markers, and GIVE verbs. According to the data, we can classify the languages in our sample into five types: DAT = ALL; DAT = GIVE = OM $\neq$ PASS; DAT = GIVE = PASS = OM; DAT = GIVE = PASS $\neq$ OM; DAT = BEN.

The definitions for the five grammatical markers are given in the following part.

A dative marker or an indirect object marker marks the recipient in a ditransitive construction. It can be a postverbal marker, as in (8), or a preverbal marker, as in (9).

(8) Ningyuan (SWM; Y. Wu 2009, p. 321)

他	送	一	杆	笔	**给**	我。
tʻa^{33}	soŋ^{213}	i^{21}	kan^{45}	pi^{21}	kə^{45}	ŋo^{213}
3SG	offer	one	CLF	pen	**DAT**	1SG

'He offered a pen to me.'

(9) Ningyuan (SWM; Zhang 2009)

有	话	就	**和**	牛	讲。
iəu^{45}	fa^{213}	tɕiəu^{213}	**xo^{21}**	liəu^{21}	tɕiaŋ^{45}
have	speech	then	**DAT**	buffalo	say

'(He) talks to the buffalo when (he) has something to say.'

In (8), the dative marker is *kə*^{45} 给, whereas in (9), the dative marker is *xo*^{21} 和. Note that the preverbal *xo*^{21} can have other interpretations as well, such as being a benefactive marker, as demonstrated by an example in (10).

(10) Ningyuan (SWM; Zhang 2009)

这里	景子	好，	你	**和**	我	照	个	相。
tɕi^{213}li^{45}	tɕin^{45}tsɿ^{45}	xau^{45}	li^{45}	**xo^{21}**	ŋo^{45}	tɕiau^{213}	ko^{213}	ɕiaŋ^{213}
here	view	good	2SG	**BEN**	1SG	take	CLF	photo

'The view is great here, take a photo for me.'

A benefactive marker is a preverbal marker, which marks the beneficiary. In this paper, we consider it as a distinct class of markers from dative markers. However, it is worth noting that a benefactive marker can develop into a preverbal dative marker, as is the case in Ningyuan.

An allative marker expresses "the meaning of motion 'to' or 'towards' a place" (Crystal 2003, p. 19). As such, it marks the goal in a theme-goal construction, for example, as *tau^{45}* in Ningyuan.

(11) Ningyuan (SWM; Y. Wu 2009, p. 321)

我	给	毛毛崽	给	**倒**	床	高头	要	不	要得?
ŋo^{45}	kə^{45}	mau^{21}mau^{21}tsæ^{45}	kə^{45}	**tau^{45}**	ts'uan^{21}	kau^{33}t'əu^{21}	iau^{213}	pu^{21}	iau^{213}tə^{21}
1SG	OM	baby	put	**ALL**	bed	on	ok	NEG	ok

'Is it ok that I put the baby on the bed?'

A passive marker is used to mark the agent in a passive construction. Sometimes, the passive marker shares the same form as the dative marker in the Sinitic languages. For instance, the dative marker *kə^{45}* can also be used as a passive marker.

(12) Ningyuan (SWM; Y. Wu 2009, p. 321)

杯子	**给**	他	打烂	呱	了。
pei^{33}tsɿ^{45}	**kə^{45}**	t'a^{33}	ta^{45}-lan^{213}	kua^{21}	liau^{45}
cup	**PASS**	3SG	hit-be.broken	CMPL	CRS

'The cup was broken by him.'

A differential object marker or disposal marker marks the object in a transitive sentence or the T argument in a ditransitive or theme-goal sentence. It might also share the same form as the dative marker. In Ningyuan, *kə^{45}* is also used as a differential object marker, as already shown in (11). Another example is given in (13).

(13) Ningyuan (SWM; Zhang 2009)

给	那	本	书	拿	过来。
kə^{45}	la^{213}	pən^{45}	ɕy^{33}	la^{21}	ko^{213}-læi^{21}
OM	that	CLF	book	take	pass-come

'Bring that book over here.'

The forms of the dative markers of the 30 Hunan Sinitic languages are listed in Table 1. Except for the GIVE verbs, the other elements examined in this paper, namely benefactive, allative, object, and passive markers, generally have several forms that developed from different sources. Since we are investigating the dative markers in this paper, we only list the forms that are identical or related to the dative markers. However, note that an empty cell may also indicate that we have not found the relevant form in the literature.

Table 1. Dative, benefactive, allative, passive, and object markers and GIVE verbs in the sample of 30 languages.

		DAT	BEN	ALL	OM	PASS	V_{GIVE}	
1.	Huarong SWM	tɛ^{13} 得		tɛ^{13} 得		pɑ^{21}tɛ^{33} 把得	pɑ^{21} 把	Own field notes
2.	Changde SWM	kən^{55} 跟	kən^{55} 跟				pa^{21} 把	Yi (2007); Zheng (1999)
3.	Yueyang Xiang	tə 得		得 tə		把得pa^{52}tə	pa^{52} 把	Fang (1999)
4.	Linxiang Gan	teʔ^{55} 得		得 teʔ^{55}			pa^{31} 把	Li (2016)
5.	Cenchuan Xiang	pɑ^{3} 把			pɑ^{3} 把		pɑ^{3} 把	Peng (2022)
6.	Yiyang Xiang	pa^{41} 把			pa^{41} 把	pa^{41} 把 pa^{41}tə^{45} 把得	pa^{41} 把	Cui (2009)

Table 1. *Cont.*

		DAT	BEN	ALL	OM	PASS	V_{GIVE}	
7.	Pingjiang Gan	pa^{35} 把			pa^{35} 把		pa^{35} 把	Z. Wang (2009)
8.	Changsha Xiang	pa^{21} 把			pa^{21} 把	pa^{41} tɤ^{24} 把得	pa^{21} 把	Y. Wu (2009); Wu (2011)
9.	Xiangxiang Xiang	xa^{4} 给			xa^{4} 给	xa^{4} 给	pɔ^{21} 把	F. Wang (2009)
10.	Liuyang Gan	pa^{24} 把			pa^{24} 把	pa^{24} 把	pa^{24} 把	Bei and Xiang (2009)
11.	Xinhua Xiang	læ^{13} 来					lɔ^{21} 拿	Luo and Zou (2009)
12.	Lianyuan Xiang	xɑ^{45} 哈			xɑ^{45} 哈	xɑ^{45} 哈	lɛ^{44} 拿	Chen (2002, 2009)
13.	Loudi Xiang	sɿ^{5} 赐				nõ^{44} sɿ^{5} 拿赐	nõ^{44} 拿	F. Peng (2009)
14.	Longhui Xiang	bɑ^{13} 把			pɑ^{13} 把	bɑ^{13} 把 bɑ^{13} te^{55} 把得	bɑ^{13} 把	Ding (2009)
15.	Shaoyang Xiang	pa^{42} 把			pa^{42} 把	pa^{42} 把	pa^{42} 把	G. Li (2009)
16.	Shaodong Xiang	pa^{31} 把			pa^{31} 把	pa^{31} 把	pa^{31} 把	Sun (2009)
17.	Hengyang Xiang	te^{22} 得				te^{22} 得	te^{22} 得	Peng (2005); Peng (2009)
18.	Hengshan Xiang	tæ^{24} 得				tæ^{24} 得	tæ^{24} 得	Mao (2009)
19.	Youxian Gan	te^{44} 得				te^{44} 得	te^{44} 得	Dong (2009)
20.	Changning Gan	te^{33} 得			te^{33} 得	te^{33} 得	te^{33} 得	Q. Wu (2009)
21.	Xintian Tuhua	kəu^{35} □^{7}		kəu^{35} □			oŋ^{35} 安	Q. Xie (2009)
22.	Guiyang Tuhua	ta^{45} 带	ta^{45} 带		ta^{45} 带		uã^{33} 弯	Deng (2009)
23.	Rucheng Hakka	nɔ^{44} 拿			nɔ^{44} 拿	nɔ^{44} 拿	nɔ^{44} 拿	Zeng (2006)
24.	Ningyuan SWM	kə^{45} 给			kə^{45} 给	kə^{45} 给	kə^{45} 给	Zhang (2009)
25.	Suining SWM	pa^{55} 把				pa^{55} 把	pa^{55} 把	Zeng and Li (2009)
26.	Chenxi Xiang	ko^{324} 过					ko^{324} 过	B. Xie (2009)
27.	Fenghuang SWM	paŋ^{55} 帮kən^{55} 跟	paŋ^{55} 帮kən^{55} 跟		paŋ^{55} 帮kən^{55} 跟		fən^{55} 分	Q. Li (2009)
28.	Jishou SWM	paŋ^{55} 帮	paŋ^{55} 帮 kən^{55} 跟		paŋ^{55} 帮		fən^{55} 分	Li (2002)
29.	Waxiang Unclassified	kai^{55} 跟	kai^{55} 跟		kai^{55} 跟		tɤ^{55} 得	Chappell et al. (2011)
30.	Tasha SWM	ke^{53} 给	ke^{53} 给				ko^{24} 过	Own Field notes

In the next section, we discuss the five different types of dative markers and their distribution.

3. The Five Types of Dative Markers and Their Areal Distribution

Based on the analysis of 30 Sinitic languages spoken in Hunan, which include Xiang, Gan, Southwestern Mandarin, Hakka, and one unclassified Sinitic language, we identify five patterns for the dative markers, as detailed in Table 2. The dative markers are given after each language. Following this table, the areal distribution of these four types is presented in Figure 2.

Table 2. Five types of dative markers.

	Patterns	Languages	Number of Languages
I	DAT = ALL	Huarong (*tɛ* ^{13} 得), Yueyang (*tə* 得), Linxiang (*teʔ*^{55} 得), Xintian (*kəu*^{35} □)	4
II	DAT = GIVE = OM ≠ PASS	Cenchuan (*pa*^{3} 把), Pingjiang (*pa*^{41} 把), Changsha (*pa*^{21} 把)	3
III	DAT = GIVE = PASS = OM	Longhui (*pa*^{13} 把), Liuyang (*pa*^{24} 把), Shaoyang (*pa*^{42} 把), Shaodong (*pa*^{31} 把), Yiyang (*pa*^{41} 把), Ningyuan (*kə*^{45} 给), Rucheng (*nɔ*^{44} 拿), Changning (*te*^{33} 得)	8
IV	DAT = GIVE = PASS ≠ OM	Hengyang (*te*^{22} 得), Hengshan (*tæ*^{24} 得), Youxian (*te*^{44} 得), Suining (*pa*^{55} 把)	4
V	DAT = BEN	Guiyang (*ta*^{45} 带), Fenghuang (*paŋ*^{55} 帮/ *kən*^{55} 跟), Jishou (*paŋ*^{55} 帮/ *kən*^{55} 跟), Waxiang (*kai*^{55} 跟), Tasha (*ke*^{53} 给), Changde (*kən*^{55} 跟)	6

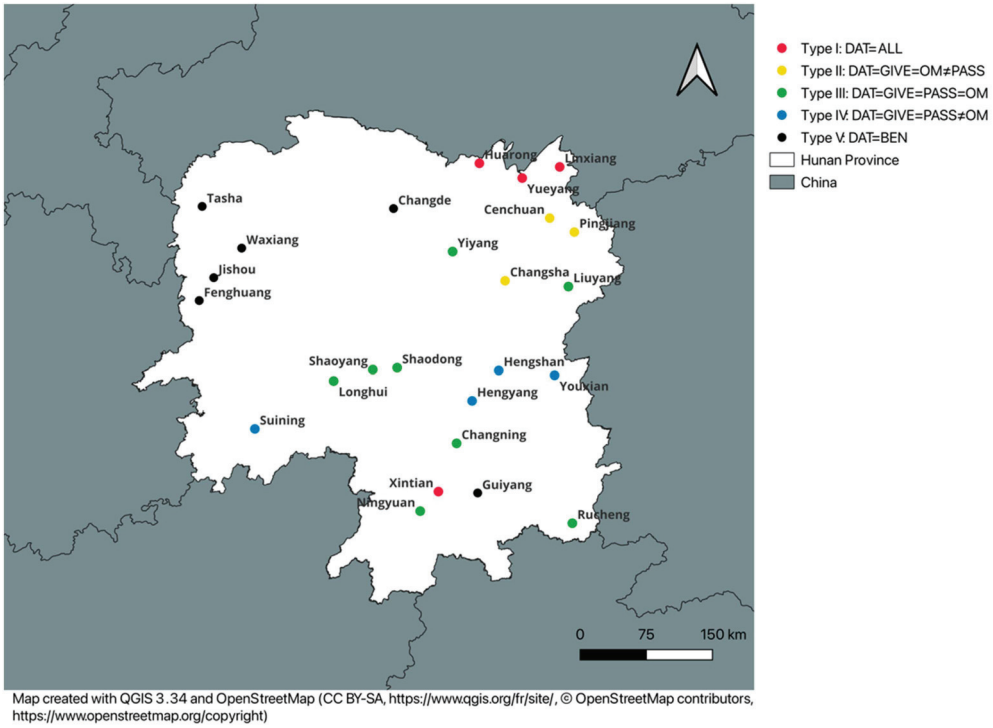


Figure 2. The distribution for the different types of dative markers.

3.1. Type I: DAT = ALL (4/30)

In Type I languages, the dative marker is the same as allative marker. In our sample, this type is mainly found in the northeast of Hunan: Huarong (SWM), Yueyang (Xiang), Linxiang (Gan), apart from Xintian (Tuhua) in the south. Take Huarong, for example.

(14) Huarong (SWM; own field work)
Dative construction

买	哒	个	褂子	**得**	我。
mai^{21}	ta^{21}	ko^{33}	kuɑ^{24}tsɿ^{33}	**tɛ^{13}**	ŋo^{21}
buy	PFV	CLF	coat	**DAT**	1SG

'(He) bought me a coat.'

(15) Allative construction

我	挂	哒	一	张	全家福	得	客厅	的
ŋo^{21}	kuɑ^{24}	tɑ^{21}	i^{45}	tsɑŋ^{53}	tɕ^{ɦ}yn^{13}tɕia^{53}fu^{13}	**tɛ^{13}**	k^{ɦ}ɛ^{24}t^{ɦ}iɛn^{53}	ti^{33}
1SG	hang	PFV	one	CLF	family.photo	**ALL**	living.room	POSS

墙上。
tɕ^{ɦ}iɑŋ^{13} = sɑŋ^{21}
wall = on
'I hung a family photo on the wall in the living room.'

In this type of language, the GIVE verb is always *BA* 把, and three of the four languages use *DE* 得 as the dative marker, while one language (i.e., Xintian) uses *kəu*^{35} whose etymological source is not clear. In Section 4.1, we will discuss the developmental path of *DE* as a dative marker in this type of language, using Huarong as an example.

3.2. Type II: DAT = GIVE = OM ≠ PASS (3/30)

There are three languages of Type II in our sample, they are Cenchuan (Xiang), Changsha (Xiang), and Pingjiang (Gan) which are in the north central region of the Hunan Province. They use *BA* 把 as the GIVE verb as well as the dative marker. Take Changsha as an example.

(16) Changsha (Xiang; Wu 2011, p. 188; Y. Wu 2009, p. 309)
Dative construction

他	送	哒	三	只	鸡	**把**	我。
t^ha^{33}	sən^{45}	ta^{21}	san^{33}	tsa^{24}	tɕi^{33}	**pa^{41}**	ŋo^{41}
3SG	offer	PFV	three	CLF	chicken	**DAT**	1SG

'He gave me three chickens as a gift.'

(17) Differential object marking construction

把	窗户	打开。
pa^{41}	tɕ^{h}yan^{33}fu	ta^{41}-k^{h}ai^{33}
OM	window	make-open

'Open the window.'

(18) Passive construction

杯子	**把得/捞/听**	他	打烂	哒。
pei^{33}tsɿ	**pa^{41}tɤ^{24}/lau^{33}/t'in^{45}**	t'a^{33}	ta^{41}-lan^{21}	ta^{21}
glass	**PASS**	3SG	hit-be.broken	CRS

'The glass was broken by him.'

Note that, as shown in (18), the compound form *pa^{41}tɤ^{24}* can be used as the passive marker, and *tɤ^{24}* 得 is exactly the allative marker in Changsha. We can consider the dative use of *pa^{41}* 把 is based on the compound GIVE verb *pa^{41}tɤ^{24}*, which gradually lost its allative element in it, hence *pa^{41}* alone is used as the dative marker. In Cenchuan and Pingjiang, we do not have the necessary data to tell if they have or had a compound form.

3.3. Type III: DAT = GIVE = PASS = OM (8/30)

The dative markers of the Type III languages are the same as their passive markers and differential object markers. In our sample, there are actually 10 languages mostly spoken in the central and south of Hunan that share the pattern. Nonetheless, as introduced in Section 2, the Type II, III, and IV languages are refined from the pattern: DAT = GIVE, so, for this reason, we exclude Xiangxiang and Lianyuan, which use the same marker for dative, passive, and object marking but have a distinct verb form for GIVE. As a result, we can only classify eight languages into this type. These are three Xiang varieties: Shaoyang, Shaodong, and Lianyuan; one Southwestern Mandarin variety: Ningyuan; two Gan varieties: Liuyang and Changning; and one Hakka variety: Rucheng. Take Shaodong, for example.

(19) Shaodong (Xiang; Sun 2009, pp. 105–12)
Dative construction

咯	只	衣衫	其	送	**把**	小明	哩。
ko^{31}	tɕia$^{55\text{-}31}$	iɛn^{55}san^{31}	tɕi^{31}	səŋ^{35}	**pa^{31}**	ɕio^{31}min^{12}	li
this	CLF	clothes	3SG	offer	**DAT**	Xiaoming$_{NAME}$	SFP

'He gave this clothing to Xiaoming.'

(20) Passive construction

其	只	脚	**把**	车子	闯	哩，	现唧	还	在
tɕi^{31}	tɕia$^{55\text{-}31}$	to^{55}	**pa^{31}**	t'ei^{55}tsɿ	ts'aŋ^{31}	li	ɣiɛn^{12}·tɕi	ɣa^{12}	dzei^{12}
3SG	CLF	foot	**PASS**	car	hit	SFP	now	still	LOC
医院里			诊。						
i^{55}yɛn$^{35\text{-}55}$ = li^{31}			taŋ^{3}						
hospital = inside			treat						

'His foot was hit by a car, and he is still in the hospital.'

(21) Differential object marking construction

要	妹妹	**把**	屋	扫	一	下
io^{35}	mei^{35}·mei	**pa^{31}**	u^{55}	sau^{35}	i^{55}	ɣa^{24}
make	little.sister	**OM**	house	sweep	one	VCL

'Make little sister to clean up the house.'

Generally speaking, the dative marker in Type III languages also shares the same form as the GIVE verb. The GIVE verbs in this type are not limited to the types that are originally TAKE verbs (e.g., *pa*^{31} 把 in Shaodong or *te*^{33} 得 in Changning). In Ningyuan, it is *kə*^{45} 给 (which shares the same etymology as *gěi* in Standard Mandarin) that is used as the GIVE verb, and it can also be used as a dative marker, a passive marker and a differential object marker.

For this type of language, there are three possibilities. The dative marker could be developed from a genuine GIVE verb, like the case of Ningyuan just mentioned; or either the GIVE$_{<\text{TAKE}}$ verbs have been shifted to genuine GIVE verbs, and then developed a dative use; or the GIVE$_{<\text{TAKE}}$ verb combines an allative form and becomes a compound genuine GIVE verb, then the compound form loses the allative element and, subsequently, the GIVE$_{<\text{TAKE}}$ verb itself becomes the dative marker.

3.4. Type IV: DAT = GIVE = PASS ≠ OM (4/30)

In Type IV languages, the dative markers are the same as passive markers, but different from the object markers. This type is mainly found in southern Hunan, such as in Hengshan (Xiang), Hengyang (Xiang), Youxian (Gan), Changning (Gan), and Suining (SWM).

(22) Youxian (Gan; Dong 2009, pp. 36–38; Y. Wu 2009, p. 313)
Dative construction

其	送	支	笔	**得**	我。
tɕi^{51}	səŋ^{11}	tsɿ	pi^{44}	**te^{44}**	ŋo^{11}
3sg	offer	CLF	pen	DAT	1sg

'He offered me a pen.'

(23) Passive construction

小芳	**得**	爱婆	接走	哩。
ɕiau^{51}faŋ^{44}	**te^{44}**	ŋəø^{11}p'o^{213}	tɕie^{44}-tsei^{51}	li
Xiaofang$_{\text{NAME}}$	**PASS**	grandmother	pick.up-be.away	SFP

'Xiaofang was picked up by her grandmother.'

(24) Differential object marking construction

我	**把**	毛毛	放	到	床上	要得	不?
ŋo^{11}	**pa^{51}**	mau^{213}mau	faŋ^{11}	tau	t'aŋ^{213}=ɕiaŋ	iau^{11}te	pu
1SG	**OM**	baby	put	ALL	bed=on	ok	NEG

'Is it okay if I put the baby on the bed?'

In all the six languages of this type, the GIVE$_{<\text{TAKE}}$ verbs have developed both dative and passive uses. In this group, except for Suining, which uses *pa*^{55} 把 as a verb of giving, the other seven languages all use *DE* 得. Both the dative marker and the passive marker share the same form with the GIVE$_{<\text{TAKE}}$ verb. In Section 4.2.2, we will take Hengyang as an example to discuss how *DE* develops into a dative marker from GIVE$_{<\text{TAKE}}$ in this type of languages.

3.5. Type V: DAT = BEN (6/30)

This type of language is very easy to differentiate from the other types because it uses a preverbal dative construction. Note that, for some of these languages, the dative marker may also have the same form as the object marker, but since it is a preverbal marker, and it is not derived from the GIVE verb, we do not classify these languages into Type II languages. There are six languages in our sample that share this pattern, and they are found in the northwest of Hunan. Their GIVE verbs are more diversified, and sometimes the etymological sources for the GIVE verbs are not so clear. For instance, Guiyang (Tuhua) uses *ta*^{45} 带 or *uɑ̃*^{33} 弯 as the GIVE verb, but when it forms a ditransitive construction, it has to use [*ta*^{45} + R + *uɑ̃*^{33} + T]; Fenghuang (SWM) and Jishou (SWM) use fən^{55} 分 as the GIVE verb, Waxiang (unclassified) uses *tɤ*^{55} 得, Tasha (SWM) uses *ko*^{24} 过, and Changde (SWM) uses *pa*^{21} 把.

For the six languages of Type V, the dative markers have not developed from the GIVE verbs. The main ditransitive constructions for them are formed on the basis of the benefactive construction. Take Jishou, for instance.

(25) Jishou (SWM; Li 2002, p. 318)
Benefactive construction

医生	倒	**帮**	他	看	病？
i^{55}sən^{55}	tau	**paŋ^{55}**	t'a^{55}	k'an^{35}	pin^{35}
doctor	PROG	**BEN**	3SG	see	illness

'The doctor is treating him.'

(26) Dative construction

我	一	到	学校，	就	**帮**	屋里	打
ŋo^{42}	i^{11}	tau^{35}	ɕio^{11}ɕiau^{35}	tɕiəu^{35}	**paŋ^{5}**	u^{11}li	ta^{42}
1SG	once	arrive	school	then	DAT	home	make
了	个	电话。					
lə	ko	tian^{35}xua^{3}					
PFV	CLF	phone.call					

'As soon as I got to school, I called home.'

The verbs that are used in the benefactive construction are transitive verbs, but they do not necessarily indicate transfer (Zhu 1979). The argument introduced by the benefactive marker is a beneficiary. As we can see from (25), the verb is 'to see (the patient), to treat (the illness)', and 3rd person singular is the beneficiary, while for the dative construction, the verbs are either intrinsically ditransitive verbs that express transfer or verbs of saying that concern an addressee. As shown in (26), the verb is 'to call', and the preverbal argument is an addressee.

In this group of languages, dative markers are developed from preverbal benefactive markers and have little to do with GIVE verbs in the given language. Four of these languages can use *GEN* 跟 as a preverbal dative marker, and one uses *GEI* 给. In Section 4.3, we will discuss the grammaticalization path of *kai^{55}* 跟 in Waxiang as an example.

3.6. Interim Summary: The Areal Distribution

Except for Xiangxiang and Lianyuan, which we exclude from the Type III languages, there are other three languages in our sample that do not fit into any types that we have classified. They are three Xiang varieties: Loudi, Xinhua, and Chenxi. In Loudi, the dative marker is another verb of giving *sŋ^{5}* 赐, while the GIVE$_{<\text{TAKE}}$ verb that is used in the ditransitive construction is *nõ^{44}* 拿, which can also be used as a differential object marker. The postverbal dative construction in Loudi can be templated as [*nõ^{44}* + T+ *sŋ^{5}* + R], and the passive marker is the compound form *nõ^{44}sŋ^{5}*. Note that in Modern Chinese, the compound form *bǎyǔ*把与 which combines a TAKE verb and a former GIVE verb has also existed (Mao 2022). *sŋ^{5}* no longer has a verbal use in Loudi, which suggests that it is probably a GIVE verb belonging to an older layer. In Xinhua at an earlier stage, the dative marker is *læ^{13}* 来, and it is different from the GIVE verb *lɔ^{21}* 拿or the allative marker *tɔ^{45}* 到. In some varieties of Wu, 来 is identical to the allative marker that is also used as dative marker (Chin 2010). It is possible that *læ^{13}* was the allative marker in Xinhua before, but since we do not have any record in the literature, we cannot include Xinhua into Type I language. In Chenxi, the GIVE verb and the dative marker are both *ko^{324}* 过, producing the dative construction is [*ko^{324}* + T+ *ko^{324}* + R]. At the same time, the double object construction is also attested in Chenxi as [*ko^{324}* + R + T], but the detailed uses of *ko^{324}* and its developments cannot be found in the literature, meaning that we cannot draw a credible conclusion as to how it developed the dative use. So, in our discussion, we exclude these three languages.

To conclude, we classify the languages in our sample into five main groups according to the dative constructions and the polyfunctionality of dative markers. The Type I languages have a dative marker that is identical to the allative marker, and they are mainly found in northeastern Hunan. In the Type II, III, and IV languages, the dative markers have the same form as the GIVE verbs. The dative markers in Type II languages are iden-

tical to their differential object makers. There was probably a compound GIVE verb in the history for these languages. As for the Type III languages, they are spread over central and southern Hunan. Their dative markers share the same form as the passive markers and the differential object markers. This pattern can be explained by two possible grammaticalization pathways. The type IV languages are mostly found in southern Hunan, and their dative markers are the same as the passive markers but different from the object markers. The Type V languages have various sources for GIVE verbs, and their main type of ditransitive constructions is the preverbal dative constructions. They are found in northwestern Hunan.

4. Diachronic Sources and Developments for the Dative Markers

In this section, we discuss the pathways of development for dative markers. There are three main grammaticalization pathways behind the synchronic distribution of different patterns of dative markers, as shown below. We will discuss these pathways with a language in our sample one by one.

a. Allative > Dative
b. (TAKE >) GIVE > Dative
   i. [TAKE-ALL] > GIVE > Dative; TAKE > Dative
   ii. (TAKE >) GIVE > Dative
c. Benefactive > Dative

4.1. ALL > DAT

Using the allative marker to mark the recipient is common in the languages across the world (Kuteva et al. 2019; Rice and Kabata 2007), such as *to* in English or à in French. Malchukov et al. (2010, p. 52) also show that the theme-goal construction and the ditransitive construction often overlap in a semantic map for many languages, such as in Finnish. Allative markers being the source for the dative markers in Sinitic languages has already been discussed in the literature. For example, Chin (2010) claimed there are two types of indirect object marker (i.e., dative marker) in Chinese: the go-type and the give-type. He mentioned that *YU* 于 in the oracle-bone inscriptions, *LAI* 来 in 17th century Wu, *DU* 度 in 16th century Min and *GUO* 过 in 19th century Yue are all directional verbs that can be used as dative markers. Li and Wu (2015) also mentioned that the directional element *ku*^{42} 过 can be used as a dative marker in Yichun Gan. For some languages spoken in northeastern Hunan, the theme-goal construction and the ditransitive construction can both be realized with the same syntactic template and share a same marker. What the literature lacks is an exploration of the developmental stages through which an allative marker acquires a dative use.

We take Huarong as an example and show how the allative *tɛ*^{13} 得 developed its dative use. In Huarong, *tɛ*^{13} can be used as a verb which means 'get, obtain', see an example in (27).

(27) Huarong (SWM; own fieldwork)

他	**得**	哒	头名。	(GET)
lɑ^{33}	**tɛ^{13}**	tɑ^{21}	ɣou^{13}miɛn^{13}	
3SG	**get**	PFV	first.rank	

'He won the first place.'

It can be used as an allative or dative marker either directly after the verb or after the T argument. The former case is more frequently found in my corpus of Huarong and in the literature of other languages using *DE* 得 as an allative/dative marker.

(28)

他	把	车	停	**得**	路	边上	哒。	(Allative)
lɑ^{33}	pɑ^{21}	ts^{ɦ}ɛ^{53}	t^{ɦ}iɛn^{13}	**tɛ ^{33}**	lou^{33}	pin^{53}sɑŋ^{21}	tɑ^{21}	
3SG	OM	car	park	**ALL**	road	side	CRS	

'He parked the car on the side of the road.'

(29) 他 捡 哒 两 百 块 钱 **得** 枕头
lɑ^{33} tɕin^{21} tɑ^{21} liɑŋ^{21} pɛ^{45} kʰuai^{21} tɕʰin^{13} **tɛ^{13}** tsən^{21}lou^{33}
3SG hide PFV two hundred CURRENCY.UNIT money **ALL** pillow
下头。
ɕia^{33}lou^{21}
below
'He hid two hundred yuan under the pillow.' (Allative)

(30) 他 书 把 **得** 我 哒。 (Dative)
lɑ^{33} ɕy^{53} pɑ^{21} **tɛ^{33}** ŋo^{21} tɑ^{21}
3SG book give **DAT** 1SG CRS
'He gave the book to me.'

(31) 他 送 哒 一 包 烟 **得** 爷。 (Dative)
lɑ^{33} sʏŋ^{24} tɑ^{21} i^{45} pɑu^{53} iɛn^{53} **tɛ ^{13}** ia^{13}
3SG offer PFV one packet cigarette **DAT** father
'He offered a packet of cigarette to father.'

In the diachronic data, *DE* firstly appeared after the verbs having the meaning 'to get' in the Western Han Dynasty (202BC-8AD), as in (32). Then, it is found after the verbs which do not have the GET meaning; it can be analyzed as a phase complement which expresses the phase of an action in the first verb (Chao 1968), see (33).

(32) 赵 使 人 微 捕**得** 李牧
zhào shǐ rén wēi bǔ-**dé** Lǐ Mù
Zhao order people secretly catch-**get** Li Mu
'Zhao ordered people to secretly arrest Li Mu.'
(史记·廉颇蔺相如列传 *[Records of the Grand Historian: Biography of Lian Po and Lin Xiangru]*, cited from Ma 2003, p. 20, glossing is mine)

(33) 武丁 夜 梦**得** 圣人
Wǔ Dīng yè mèng-**dé** Shèngrén
Wu Ding night dream-**get** saint
'Wu Ding dreamed of a saint at night.'
(史记·殷本纪 *[Records of the Grand Historian: Biography of Yin Ben]*, cited from Ma 2003, p. 22, glossing is mine)

Note that in the historical documents for Mandarin, *DE* has not developed an allative use to mark a goal. However, Lamarre (2009) discussed the goal marker in the Northern Sinitic languages, such as *de* 的 in Beijing Mandarin (Zhu 2009, p. 115; Xu 1994), *təʔ^{4}* 得 in the Jin variety of Shenmu (Xing 2000; 2002, p. 596), or *DE* 得 in the Xiang variety of Changsha (Wu 2011, pp. 231–48). The origin of these goal markers is difficult to identify. Xu (1994) argues that *de* in Beijing Mandarin comes from *ZHE* 着, which is used as a preposition in the Dunhuang Variant Texts Collection (*Dūnhuáng biàn wén*敦煌变文), while Xing (2000, 2002) and Wu (2011) suggest that the source of the goal marker in Shenmu and Changsha is *DE* 得. Regardless of the etymological source, what these analyses have in common is that the goal marker comes from a *bounded marker* (*yǒujiè biāojì*有界标记 in Lamarre 2009) in the language. This is consistent with the use of *DE* 得as a phase complement that we mentioned in (33).

In fact, Wu (2001, pp. 53–54) proposed several phases for the diachronic development of the locative marker *tɤ ^{24}* 得 in Changsha:

i. it was used as a main verb meaning 'get', 'catch'.
ii. it was used as the second verb after a main verb with a meaning similar to 'get', such as 'buy', 'have'.
iii. it was used as a verb complement to indicate the result or completion of an action. In this phase, it often took a locative noun as its object, as [V + *DE* + Place], and it could be reanalyzed as a preposition or an aspectual marker.

We agree with this analysis. We propose that from the phase complement in [V-*DE*], when *DE* is followed by a place, it is reanalyzed as an allative marker. Then, through metaphorical extension *DE* can be considered as a dative marker when it precedes a person instead of a place (a parallel development for 于 *yú* in Old Chinese is discussed in Ye 2020).

4.2. (TAKE >) GIVE > DAT

Dative markers developing from a genuine GIVE verb is a very common pathway described in the literature, but as we mentioned before, the GIVE verbs in the Northern and Southern Sinitic languages are different from a syntactic perspective. Hashimoto (1976) has pointed out that the northern GIVE verbs form double object constructions of the form: [GIVE + R + T], while the Southern GIVE verbs generally form inverted double object construction: [GIVE + T + R]. Zhang (2011) claims that the main difference for ditransitive constructions between Northern and Southern Sinitic languages is that the Northern Sinitic languages use double object construction, while the Southern Sinitic languages use postverbal dative construction [GIVE + T + DAT + R], and the inverted double object construction is developed on the basis of the postverbal dative construction with the dative marker omitted.

We discuss how a $\text{GIVE}_{<\text{TAKE}}$ verb which can only precede the T argument in the ditransitive constructions becomes a dative marker which introduces the R argument. We propose that the dative marker is developed from the $\text{GIVE}_{<\text{TAKE}}$ verb that appears in the second position of a serial verb construction [$\text{GIVE}_{<\text{TAKE}}$ + T+GIVE + R]. It concerns two possible developments.

4.2.1. Allative Element Dropping off from the Compound $\text{GIVE}_{<[\text{TAKE-ALL}]}$

This development has been discussed by Li and Wu (2015) in Gan languages, as already shown in Section 2. For this pathway, the GIVE verbs are TAKE verbs in origin. The TAKE verb can only take a theme argument and cannot precede the recipient directly. When it forms a ditransitive construction, it borrows the allative marker as a dative to introduce the recipient, as in [TAKE + T + ALL + R]. Next, the TAKE verb combines with the allative marker and becomes a compound GIVE verb [TAKE-ALL] which can be further reanalyzed as a dative marker in V_2 position of a serial verb construction. Then, the compound GIVE verb loses the allative element after a long period of frequent use and leaves the TAKE verb itself to become a dative marker.

We cannot present all the stages with our data of Type II languages. As we can see in (18), a compound form $pa^{41}tɤ^{24}$ 把得 exists in Changsha, but we cannot find an example with $pa^{41}tɤ^{24}$ being a genuine GIVE verb or a dative marker. Only its use as a passive marker suggests that it was probably a genuine GIVE verb before.

Nevertheless, we can observe this development with the data in Yueyang. The primary dative marker is *tə* 得, as shown in (34). $pa^{42}tə$ 把得 can be used as a GIVE verb, as shown in (35). In fact, according to my own fieldwork, among the young speakers of Yueyang, pa^{42} 把 is also accepted as a dative marker, as shown in (36).

(34) Yueyang (Xiang; Fang 1999, pp. 222–24, own field work)

拿	件	衣	**得**	我。	[*tə* + R]
na^{55}	$tɕ'ian^{33}$	i^{45}	**tə**	$ŋo^{42}$	
take	CLF	clothes	**DAT**	1SG	

'Give me a shirt.'

(35)

橘子	**把得**	他	哒。	[$pa^{42}tə$ + R]
$tɕy^{55}tsɿ$	**pa^{42}tə**	la^{33}	ta	
clementine	**give**	3SG	CRS	

'(Someone) gave the clementine to him.'

(36) 借 本 书 **把** 我。 [pa^{42} + R]
tɕia^{324} pən^{42} ɕy^{45} **pa^{42}** ŋo^{42}
lend CLF book **DAT** 1SG
'Lend a book to me.'

Changsha, Cenchuan, and Pingjiang probably share this pathway for their dative marker 把 *BA*, based on the geographic location of the languages and possible development.

4.2.2. Relexicalization

In this pathway, the TAKE verb gained a GIVE meaning through relexicalization. Güldemann (2012) discussed the polysemy of a 'take/give' verb in Tuu languages spoken in southern Africa. See two examples from Taa (Güldemann 2012, p. 73) with the verb */uM~!ãM* (regularly followed by the dative preposition *n/aM*)[8].

(37) Taa (Tuu languages; southern Africa)
Si */**oe*** *si n//au* */'ang* *ʘuru*
1P.E **hold.s**:3> problem.3 COM:1s offspring.p
'We get/have problems with my children.'

(38) *suu* *si* */**u**i* *tuu*
feed.first.time IPFV **?GIVE~TO**:1> people.1
'Purifying the people' [lit.: feed to the people]

He proposed that the 'obtainment-possession' meaning is the original one, and the 'give' reading of the 'take' verb is triggered by its recurrent use in the ditransitive construction with a dative element. In other words, it is induced by a syntactically coerced semantic re-analysis.

Newman (1996, pp. 50–60) also demonstrated that TAKE and GIVE verbs are semantically close from a cognitive perspective: the participants (i.e., Giver, Theme, Recipient) for TAKE and GIVE remain the same within the same spatio-temporal domain.

From TAKE to GIVE has been reported in Sinitic languages, such as Shaowu (Ngai 2015, 2021), and Hengyang (Yang and Peng 2021). Take Hengyang, for example. *te*^{22} 得 can be used as a verb of GET or GIVE, dative marker, causative verb, and passive marker.

(39) Hengyang (Xiang; Peng 2005, pp. 143–45)
我 **得** 哒 一 百 块 钱 奖。 (GET)
ŋo^{33} **te^{22}** ta^{22} i^{22} pe^{22} k'uai^{33} tɕien^{11} tɕian^{33}
1SG **get** PFV one hundred CURRENCY.UNIT money prize
'I won a prize of one hundred yuan.'

(40) 冇 **得** 一 分 钱 **得** 我。 (GIVE and Dative)
mau^{213} **te^{22}** i^{22} fən^{45} tɕien^{11} **te^{22}** ŋo^{33}
NEG **give** one CURRENCY.UNIT money **DAT** 1sg
'(Someone) didn't give me a penny.'

(41) 你 就 **得** 其 骂 也 冇得 关系 吵。 (Causative)
ni^{33} tɕiu^{213}**te^{22}** tɕi^{33} ma^{213} ia^{33} mau^{213}te^{22} kuen^{45}·ɕi sa^{11}
2SG just **let** 3SG scold also not.have affect SFP
'It is fine to just let him scold you.'

(42) 我 走 箇 来 冇 两 天 就 **得** 你
ŋo^{33} tsəu^{33} ko^{33} lai^{11} mau^{213} lian^{33} t'ien^{45} tɕiu^{213} **te^{22}** ni^{33}
1SG walk here come NEG two day then **PASS** 2SG
骂 一 顿, 我 还 不 如 不 来。
ma^{33} i^{22} tən^{24} ŋo^{33} xai^{11} pu^{22} ɕy^{11} pu^{22} lai^{11}
scold one VCL 1SG rather NEG as NEG come
'I haven't even been here two days and you've scolded me. I might as well not have come.'
(Passive)

Since there is no compound form mentioned in Hengyang from the literature, it is less likely that *te*^{22} develops a dative use through a compound GIVE verb, and the object marker in Hengyang is another verb of taking (i.e., *lau*^{45} 拢), which means *te*^{22} is more likely to turn into GIVE before developing an object marking use based on TAKE. We consider

that *te*^{22} first became a genuine GIVE verb then developed the dative use from GIVE. Most languages that share this pathway use *DE* 得 as their GIVE verb.

4.3. BEN > DAT

Zhang (2011) mentioned that in some Sinitic languages spoken in Hunan and Hubei, instead of using the postverbal dative construction that commonly used in Southern Sinitic languages, they tend to use preverbal dative construction to express transfer. Huang (2021) investigated the sources for the preverbal dative markers in Sinitic languages, and she indicates that a common developmental chain for Southern Sinitic languages is: Comitative > Benefactive > Dative. From Map 96 of *Linguistic Atlas of Chinese Dialects (Grammar Volume)* (Cao 2008), we can also observe this tendency.

In our data, the Type V languages: Fenghuang, Jishou, Waxiang, Tasha, and Changde all share this pathway. Take Waxiang, for example.

(43) Waxiang (Unclassified; Chappell et al. 2011)

是	□	**跟**	我	担	的	水。	(Benefactive)
$ts^hɛ^{25}$	$zɤ^{13}$	**kai^{55}**	u^{25}	$toŋ^{55}$	ti	tsu^{25}	
be	3SG	**BEN**	1SG	carry	SP	water	

'He's the one who carried the water for me.'

(44)

□	**跟**	我	得	件	衣。	(Dative)
$zɤ^{13}$	**kai^{55}**	u^{25}	$tɤ^{55}$	$tɕ^hia^{41}$	i^{55}	
3SG	**DAT**	1SG	give	CLF	clothes	

'He gave me a shirt.'

Preverbal dative constructions are very commonly used in the northwest of China, as shown in Map 96, such as in Lanzhou, Xining. There is a famous linguistic area in the northwest China, i.e., 'Qinghai-Gansu Sprachbund', and the Sinitic languages in this region have been influenced by Mongolian, Turkic, and other non-Han languages with SOV word order; as a result, some of the varieties of Sinitic languages have also shifted to SOV order and have even developed case markers (Xu 2015). Preverbal adpositional phrase is in harmony with OV word order (Dryer 1992). The use of preverbal dative construction in this region is reasonable. Zhang (2011) also tried to explain the similar situation in Hunan and Hubei by language contact, he indicated that these Sinitic languages with preverbal dative constructions are probably influenced historically by a Tibeto-Birman language with OV order, i.e., Tujia. It is possible that there existed a substratum of Tujia in Hunan, Hubei, and Guizhou. The Tujia people have lived in this area throughout many centuries, and many of the historical and cultural customs of the Tujia people have spread to the neighboring Han Chinese communities, but this remains to be proved by subsequent research.

4.4. Areal Distribution According to the Diachronic Developments

We can make three observations from the data. First of all, looking at the various types of patterns, we can note two different directions of development. From north to south, Type I languages can develop into Type II languages, and the dative markers of Type II languages are formed by the loss of allative element on the basis of a compound GIVE verb: [TAKE-ALL]. This process can actually be observed in Yueyang, as shown in Section 4.2.1. On the basis of Type II, the GIVE$_{<\text{TAKE}}$ can further develop into a genuine GIVE verb which may subsequently develop into a passive marker, as the case of some Type III languages, such as in Yiyang (Shi and Wang 2009) and Longhui (Ding 2006, p. 84), a compound dative form *ba*^{13}*te*^{55} 把得 is reported. From the south to the north, the GIVE$_{<\text{TAKE}}$ verbs of Type IV languages are directly transformed into genuine GIVE verbs through relexicalization, and further develop the dative and passive use. We note that most of the GIVE verbs in these languages are *DE* 得, only Suining uses *pa*^{55} 把. Type IV languages may also develop further into Type III languages in the north, having object marker grammaticalized from

the GIVE verb through the intermediate stage of benefactive. It might be the case that for Changning, the GIVE verb *te*^{33} 得 is attested as a dative marker, a passive marker, a benefactive marker, and an object marker.

Another interesting phenomenon that we can observe is about the GIVE$_{<\text{TAKE}}$ verb *BA* 把 is that from north to south, from the syntactic perspective, the TAKE use of *BA* is gradually weakened, while the GIVE use is gradually strengthened. For example, in Type I languages, e.g., Huarong, *pa*^{21} 把 can only be followed by the T argument, which has neither dative nor passive use, and the genuine GIVE verb is *pa*^{21}*tɛ*^{33} 把得, whereas in Type IV languages, e.g., Suining, *pa*^{55} 把 is more like a GIVE verb, as it can act as both a dative and a passive marker, and the object marker is developed from another TAKE verb *tan*^{55} 担.

Finally, we can find that *DE* 得 as a dative marker actually involves two different evolutionary pathways; one is represented by Type I languages, where the dative use is based on the allative use, and the other is represented by Type III languages, where the dative use is derived from *DE* being a genuine GIVE verb.

5. Conclusions

In this paper, we investigated the dative markers of 30 Sinitic languages in the Hunan Province, including 14 Xiang varieties, five Gan varieties, seven SWM varieties, one Hakka variety, two Tuhua varieties, and one unclassified Sinitic language in the Hunan Province. Five patterns have been observed, and the patterns show a regular distribution according to their geographic locations instead of the affiliations. We also identified three main grammaticalization pathways behind the patterns. See Table 3 for the summary of the pathways behind each type of pattern.

Table 3. The types and developments of dative markers in Hunan.

<table>
<tr><td>Type I</td><td>DAT = ALL</td><td colspan="2">a. ALL > DAT</td></tr>
<tr><td>Type II</td><td>DAT = GIVE = OM ≠ PASS</td><td rowspan="3">b. GIVE > DAT</td><td>(i) [TAKE-ALL] > GIVE > DAT; TAKE > DAT</td></tr>
<tr><td>Type III</td><td>DAT = GIVE = PASS = OM</td><td rowspan="2">(ii) (TAKE >) GIVE > DAT</td></tr>
<tr><td>Type IV</td><td>DAT = GIVE = PASS ≠ OM</td></tr>
<tr><td>Type V</td><td>DAT = BEN</td><td colspan="2">c. BEN > DAT</td></tr>
</table>

For the Type II, III, and IV languages, the dative markers have the same form as their GIVE$_{<\text{TAKE}}$ verbs, but it concerns two different grammaticalization pathways. One is that the original TAKE verb combines with an allative element and this compound form becomes a genuine GIVE verb, which can become a dative marker to introduce the R argument, then the allative dropped from the compound form and left the original TAKE verb as a dative marker. The second pathway is that the TAKE verb first became a genuine GIVE verb through relexicalization, then the dative use was developed from the genuine GIVE verb. Type III languages may involve these two different pathways.

We can see that the most used dative marker is *DE* 得 (attested in seven languages) and *BA* 把 (found in nine languages). The dative use of *DE* in northern Hunan is developed from its allative use, while in southern Hunan, *DE* grammaticalized into dative marker from the GIVE verb use. *BA* as a GIVE verb is widely spread in Hunan, but in northern Hunan, *BA* only gained the semantic meaning of giving and cannot be really considered as a GIVE verb which can take an R argument; however, in the south, the GIVE use of *BA* becomes mature: it can not only be used as a dative marker to introduce the recipient, but also develops a passive use. We claim that in the Hunan Province, from north to south, *BA* is gradually shifting from TAKE to GIVE.

Finally, we remarked on a pattern that might be induced by language contact from Tujia, i.e., in northwestern Hunan; different from other Sinitic languages spoken in Hunan,

four languages in our data tend to use a preverbal dative construction to encode transfer, and the source for the dative marker is the benefactive marker.

Hunan has been regarded as a transitional zone in Chappell (2015) by three constructions: differential object marking, passive, and comparative constructions. How to refine the linguistic areas there relies on other features. Our examination of the distribution and origin of patterns with dative markers helps the further finer classification of the Sinitic languages in Hunan, as well as to probe the historical layers and developments for those languages. In addition, double object constructions as well as GIVE verbs have long been important in the research for linguistic geography, e.g., (Hashimoto 1976; Szeto 2019). However, the literature has not explored much the development of the dative markers. We hope this paper will be an important addition to the exploration of dative marking patterns by combining dative markers with GIVE verbs, allative markers, passive markers, and differential object markers.

Further extensive inquiry and investigation into the patterns of dative markers will undoubtedly serve to rigorously test and refine the grammaticalization chains outlined in our analysis, not only for other Sinitic languages and regions but also for broader linguistic contexts.

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Abbreviations

1	First person
2	Second person
3	Third person
ALL	Allative
BEN	Benefactive
CLF	Classifier
COM	Comitative
CRS	Currently relevant state
DAT	Dative
E	Exclusive
EXP	Experiencer marker
IPFV	Imperfective
LOC	Locative
NEG	Negation
OM	Object marker
P	Plural
PASS	Passive
PFV	Perfective
POSS	Possessive
PROG	Progressive
S	Singular
SFP	Sentence final particle
SG	Singular

SP	Structural particle
VCL	Verbal classifier
Arabic number	Agreement class

Notes

1 The Tuhua of shouthern Hunan (or 'Xiāngnán tǔhuà 湘南土话' in Chinese) is mainly found in the Chenzhou 郴州 and Yongzhou 永州 regions. It is very different from both the neighboring Xiang and Mandarin varieties, and its affiliation is still controversial. It is categorized in the *Language Atlas of China* (Institute of Linguistics, Chinese Academy of Social Sciences 2012, p. 3) with Pinghua 平话 as one of the ten major groups of Sinitic languages. Refer to the *Language Atlas of China* (Institute of Linguistics, Chinese Academy of Social Sciences 2012) for more information on the Sinitic languages and their classification.

2 Usually, there is more than one type of ditransitive construction in a language, and the 'main ditransitive construction' here refers to the most commonly used, or the least restricted one. For instance, in Ningyuan, as can be seen in the examples (8) and (9) mentioned later, the construction with a postverbal dative marker $kə^{45}$ is more commonly used, while the construction with a preverbal dative marker xo^{21} is only found with verbs denoting a mental transfer, such as 'tell'. In this case, $kə^{45}$ is the marker that we deal with in this paper.

3 In this paper, we use the definition in Zhang (2011) for Southern and Northern Sinitic languages: Southern Sinitic languages refer to the languages of eastern and southern China, the 'Southern Mandarin'varieties (i.e., Jiang-Huai Mandarin and Southwestern Mandarin), and the Tuhua (or Pinghua) of the southern regions of China whose affiliation is not yet clear; Northern Sinitic languages refer to the Mandarin (other than Jiang-huai Mandarin and Southwestern Mandarin) and Jin varieties.

4 Zhang (2011) uses the terminology *Jiè bīn bǔyǔshì shuāng jí wù jiégòu* 介宾补语式双及物结构 in Chinese to indicate this type of ditransitive construction, but it is difficult to find an appropriate English term to translate it. Considering the dative prepositional phrase appears postverbally, and it is the dative marker or the dative phrase that is of interest in this paper, we opt for using *postverbal dative construction* to refer to it. For similar reason, *preverbal dative construction* is used to refer to *Jiè bīn zhuàngyǔ shì shuāng jí wù jiégòu* 介宾状语式双及物结构 in Min Zhang (2011).

5 In this paper, TAKE verbs represent those verbs meaning 'to take', 'to grasp', 'to get', and they are monotransitive in nature.

6 Note that in Huarong, the inverted double-object construction [pa^{42} + T + R] exists, and it may seem that the pa^{42} can also take two arguments. However, if pa^{42} has to take an R argument, a compound form 把得 $pa^{42}tə$ is used.

7 The symble □ is used for any syllable of uncertain etymological source.

8 The lexeme is sensitive to the number of its object by means of stem suppletion; hence, it has two forms. In addition, as a transitive verb, it has to agree with the first nominal of its object pharse or incorporte the object pronoun (depending on that element, */uM* can change to */oM*).

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Article

Contact-Induced Layering and Diffusion in Yuè Chinese Varieties—The *-iun/iut and *-un/ut Merger Reconsidered

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Abstract: This study re-investigates the merger of *-iun/iut and *-un/ut in 46 Yuè Chinese varieties, which lacks explanatory treatment, from the variant derivative patterns of *-iun/iut > [yn]/[yt] and *-un/ut > [yn]/[yt]. The historical-comparative method was employed as the frame to analyze spatial (geographic) variation obtained from QGIS. The data showed that the merger of the reflexes of *-iun/iut and *-un/ut does not prevail in the majority of Yuè varieties, while mergers of *-iun/iut with *-in/it and *-iun/iut with *-on/ot or *-ion/iot are dominant. The spatial patterns of *-iun/iut and *-un/ut suggest different diffusion patterns and background factors.

Keywords: Yue Chinese; Pearl River Delta; Nanning; dialect geography; QGIS; geographic pattern; historical-comparative linguistics; historical demography

1. Introduction

This paper examines the spatial (geographic) variation patterns of *-iun/iut > [yn]/[yt] and *-un/ut > [yn]/[yt] in *Yuè* Chinese 粵語.[1] In *Yuè*, the pronunciations of reflexes of *-iun/iut and *-un/ut following alveolar initials are complex.[2] For example, the main vowel of the reflexes is mainly [œ] for *-iun/iut and [y] for *-un/ut in *Guǎngzhōu Yuè* 廣州粵語 (with some exceptions), which generally retained the rounded features and the distinction between *-iun/iut and *-un/ut that are seen in the reconstructed ancestral forms. Far to the west in *Nánníng* 南寧, the main vowel of the reflexes of *-un/ut is mainly [y], that of *-iun/iut is either [y] or [ɐ] depending on the correspondence set, but sometimes even co-existing as two variants for a single reflex. For instance, *tshun^{1} "村" 'village' and *chiun^{1} "春" 'spring' are [ts^{h}yn^{1}] and [ts'œn^{1}], respectively, in *Guǎngzhōu Yuè*, while they are [ts^{h}yn^{1}] and [ts^{h}ɐn^{1}]/[ts^{h}yn^{1}] in *Nánníng Yuè*. However, in other *Yuè* varieties, the main vowel [ɐ] is predominant in the reflexes. The rise and spread of [y] among forms with [ɐ] is of great significance.

In the *Qièyùn* 切韻 phonological system represented in the *Qièyùn* rime dictionary compiled in 601 CE and its successors, *-iun/iut and *-un/ut were assigned to the *Zhēnshè Hékǒu* 臻攝合口 rime group, due to their shared combination of dental coda and rounded main vowel. The former was sorted into *Zhēnshè hékǒu* division III while the latter was assigned to *Zhēnshè hékǒu* division I on the basis of the difference in rime onset (medial). Given that the *Qièyùn* system is generally cited to explain contemporary changes in Chinese dialects, previous studies simply note that the *Zhēnshè hékǒu* division III had lost the medial and thus *Zhēnshè Hékǒu* rime divisions have merged together in the specific *Yuè* varieties affected by the change, such as *Liánzhōu* 廉州 (Zhang 2012), *Xīnhùi* 新會 (Tang 2004), *Dōngguǎn* 東莞 (Li 2010) and *Nánníng* (Lin and Qin 2008). Some studies also state that *Zhēnshè Hékǒu* rimes have lost the rounded feature and merged with *Zhēnshè kāikǒu* 臻攝開口 (*-en/et, *-in/it), which is the corresponding rime group of *Zhēnshè Hékǒu* with an unrounded main vowel, for example in *Gāozhoū* 高州, *Xìnyí* 信宜, *Liánjiāng* 廉江, *Wúchuān* 吳川, *Zhànjiāng* 湛江 and *Yángjiāng* 陽江 (Weng 2012), with similar observation also recorded for *Zēngchéng* 增城 (Liang 2016), *Yángchūn* 陽春 (Weng 2012; Liu 2019) and

Hèzhoū 賀州 (Wei 2019). However, these are merely descriptions of the matter and not explanations or detailed studies. Therefore, this study re-examines the merger of *-iun/iut and *-un/ut from the variant patterns of *-iun/iut > [yn]/[yt] and *-un/ut > [yn]/[yt] using a historical-comparative linguistic methodology and a dialect geography-based analysis. This approach reveals that the reflexes of *-iun/iut and *-un/ut are not merged in the vast majority of *Yuè* varieties and are not inseparable as these two groups of reflexes have different diffusion patterns across the linguistic map. The discussion below focuses on three research questions:

1. Is *-iun/iut and *-un/ut a common merger in *Yuè* Chinese?
2. What are the diffusion patterns of *-iun/iut > [yn]/[yt] and *-un/ut > [yn]/[yt] and related merger with other group(s) of reflexes (if any), respectively?
3. What are the factors that affect the patterns?

2. Background Regarding *Yuè* Chinese

As one of the dialect groups of the Sinitic languages in China, *Yuè* is widely spoken in *Guǎngdōng* 廣東省 and *Guǎngxī* Province 廣西省of China, Hong Kong and Macau (Zhan 2004, p. 1). As with other Chinese dialect groups, many studies have approached the classification issue for different *Yuè* varieties, yet a consensus has not been reached. The *Language Atlas of China* (Li 1987) categorized *Yuè* into seven subgroups: *Guǎngfǔ* 廣府, *Sìyì* 四邑, *Gāoyáng* 高陽, *Gōulòu* 勾漏, *Wúhuà* 吳化, *Yōngxún* 邕潯and *Qīnlián* 欽廉. Yue-Hashimoto (1991) classified it into five major subgroups with four micro-groups, including *Guǎngfǔ*, *Sìyì*, *Liǎngyáng* 兩陽, *Běi sānjiǎozhōu* 北三角洲 (*Nèilù* 內陸 & *Sānyì Zhàoqìng* 三邑肇慶) and *Nán sānjiǎozhōu* 南三角洲 (*Qīnlián* & *Zhōngshān* 中山). Zhan et al. (2002) and Zhan (2004) classified *Yuè* into *Guǎngfǔ*, *Sìyì*, *Xiāngshān* 香山, *Gwǎnbǎo* 莞寶, *Gāoléi* 高雷and *Guìnán* 桂南. Apart from the name of the subgroups, many varieties have different groupings among these three classifications (See Table 1).

Table 1. Classification of Yuè dialects in the *Language Atlas of China* (Li 1987); Yue-Hashimoto (1991); Zhan et al. (2002) and Zhan (2004), with date sites selected for this study (underlined) #.

***Yuè* Varieties (Examples)**	***Language Atlas of China* (Li 1987)**	**Yue-Hashimoto (1991)**	**Zhan et al. (2002) and Zhan (2004)**
Dōngguǎn and Bǎoān 寶安	*Guǎngfǔ*	*Nán sānjiǎozhōu- Qīnlián*	*Gwǎnbǎo*
Zhōngshān and Zhūhǎi 珠海		*Nán sānjiǎozhōu-Zhōngshān*	*Xiāngshān*
Fóshān 佛山, *Gāomíng* 高明, *Shùndé* 順德, *Nánhǎi* 南海, *Sānshuǐ* 三水, *Zhàoqìng*, *Zhàoqìng (Gāoyào* 高要*)*		*Běi sānjiǎozhōu- SānyìZhàoqìng*	*Guǎngfǔ*
Sháoguān 韶關		*Běi sānjiǎozhōu- Nèilù*	
Yúnfú 雲浮, *Lèchāng* 樂昌, *Qīngyuǎn*, *Fógāng* 佛岡, *Yīngdé* 英德, *Shēnzhèn* 深圳		No data	
Guǎngzhōu, Macau, *Pānyú* 番禺, *Huādū* 花都 *, *Cónghuà* 從化, *Zēngchéng*		*Guǎngfǔ*	
Nánníng, *Guipíng* 桂平	*Yōngxún*		*Guìnán*
Yōngníng 邕寧, *Héngzhoū* 橫州 *		*Běi sānjiǎozhōu- Nèilù*	
Táishān 台山, *Jiāngmén* 江門, *Dǒumén* 斗門, *Kāipíng* 開平, *Xīnhuì*, *Ēnpíng* 恩平, *Hèshān* 鶴山	*Sìyì*	*Sìyì*	*Sìyì*
Yángjiāng and Yángchūn	*Gāoyáng*	*Liǎngyáng*	*Gāoléi*
Gāozhoū, *Xìnyí*		*Guǎngfǔ*	

Table 1. *Cont.*

***Yuè* Varieties (Examples)**	***Language Atlas of China* (Li 1987)**	**Yue-Hashimoto (1991)**	**Zhan et al. (2002) and Zhan (2004)**
Sìhuì 四會, *Guǎngníng* 廣寧, *Déqìng* 德慶, *Fēngkāi* 封開, *Luódìng* 羅定, *Huáijí* 懷集, *Yángshān* 陽山, *Liánzhōu* 連州 *, *Liánshān* 連山	*Gōulòu*	No data	*Guǎngfǔ*
Guìgǎng 貴港 *			*Guìnán*
Yùlín 玉林, *Běiliú* 北流		*Běi sānjiǎozhōu- Nèilù*	
Wúzhōu 梧州	*Guǎngfǔ*		
Huàzhōu 化州, *Wúchuān*	*Wúhuà/Gāoyáng*		*Gāoléi*
Zhànjiāng		No data	
Liánjiāng		*Nán sānjiǎozhōu- Qīnlián*	
Liánzhōu 廉州	*Qīnlián*		*Guìnán*
Língshān 靈山			Not mentioned

* *Huādū*, *Héngzhōu*, *Liánzhōu* and *Guìgǎng* previously named as *Huāxiàn* 花縣, *Héngxiàn* 橫縣, *Liánxiàn* 連縣 and *Guìxiàn* 貴縣, respectively, which were also employed in the three studies. # *Qūjiāng* (*Mābà*), *Xīnxīng* and *Língmíng* were not included in Yue-Hashimoto (1991); Zhan et al. (2002) and Zhan (2004), while in *Language Atlas of China*, *Qūjiāng* (*Mābà*) was classified as *Guǎngfǔ* with *Xīnxīng*, and *Língmíng* was grouped as *Yōngxún*.

3. Methods and Materials

3.1. Methods

3.1.1. Historical-Comparative Method

This study employs Common Dialectal Chinese (CDC), a phonological system reconstructed by (Norman 2006, 2011, forthcoming), as the framework for the historical-comparative analysis. Unlike the works of Karlgren (1940), Pulleyblank (1984), Baxter and Sagart (2014)[3] as well as Proto-Yue of McCoy (1966), which heavily relied on *Qièyùn* or its successors for reconstruction, thus maintaining non-phonemic differences in their system, CDC was developed on the basis of a comparative treatment of the phonological systems of contemporary Chinese dialects with the *Qièyùn* primarily as a supplement only.[4] It adjusted the categories of *Qièyùn* with reference to modern dialects, excluding the *Mǐn* dialects 閩語 (Norman 2006). Therefore, CDC is more powerful in reflecting the actual common phonological system of the dialects as well as their differing phonological developments.

3.1.2. Dialect Geography

Dialect geography, also known as dialectology, is the study of the geographical patterns of dialects or language variations on linguistic maps, considering the evidence not only in geographic perspective but also in economic, political and social cultural perspectives (Chambers and Trudgill 1998, p. 14; Lauder 2006 as cited in Saddhono and Hartanto 2021). There are two types of linguistic maps used in dialect geography, namely display maps and interpretive maps. The former simply lists the results obtained from interviews onto a map, while the latter is developed based on primary sources together with comparative representation (Chambers and Trudgill 1998, pp. 25–27). Although display maps can be seen in various studies on Sinitic dialects, such as *Linguistic Atlas of Chinese Dialects* (Cao 2008), the use of interpretive maps with dialect geography-based analysis has not been widely adopted in the field of Sinitic dialectology.

For the purpose of visualizing the spatial variations in linguistic data and developing interpretive maps, this study makes use of QGIS (QGIS Development Team 2023). The base map of the maps is Open Street Map available in the QGIS's plugin "QuickMapServices". Unless otherwise specified, the syllables selected for map production are commonly spoken colloquial words.

3.2. Materials

3.2.1. Data Source and Sites

The dataset of this study includes 46 *Yuè* varieties (Supplementary Material). Sites with [yn]/[yt] in the reflexes of either *-iun/iut or *-un/ut or both were selected from *A Survey of Dialects in the Pearl River Delta* (Zhan and Cheung 1987), *A Survey of Yue Dialects in North Guangdong* (Zhan and Cheung 1994), *Guǎngxī Tōngzhì: Hànyǔ Fāngyánzhì* 广西通志● 汉语方言志 [Compilation of Chinese Dialects in Chronicles of Guangxi] (Guangxi Local Records Compilation Committee 1998), *A Survey of Yue Dialects in West Guangdong* (Zhan and Cheung 1998) and *Guǎngxī Hànyǔ Fāngyán Yánjiū* 广西汉语方言研究 [A Study on Chinese Dialects in Guangxi] (Xie 2007). Thereby, the dataset of this study included *Guǎngzhōu* (Urban), Macau (Urban), *Pānyú* (*Shìqiáo* 市橋), *Huādū* (*Huāshān* 花山), *Cónghuà* (Urban), *Fóshān* (Urban), *Nánhǎi* (*Shātóu* 沙頭), *Shùndé* (*Dàliáng* 大良), *Sānshuǐ* (*Xīnán* 西南), *Gāomíng* (*Míngchéng* 明城), *Zhōngshān* (*Shíqí* 石岐), *Zhūhǎi* (*Qiánshān* 前山), *Qīngyuǎn*, *Fógāng*, *Yīngdé* (*Hánguāng* 涬洸), *Yángshān*, *Liánzhōu* 連州 (*Qīngshuǐ* 清水), *Sháoguān*, *Qūjiāng* (*Mǎbà*) 曲江 (馬壩), *Lèchāng*, *Nánníng*, *Yùlín*, *Wúzhoū*, *Zhàoqìng* (*Gāoyào*), *Sìhuì*, *Guǎngníng*, *Huáijí*, *Fēngkāi* (*Nánfēng* 南豐), *Yúnfú* (*Yúnchéng* 雲城), *Xīnxīng* 新興, *Luódìng*, *Guipíng* (County seat), *Héngzhōu* (County seat), *Guìgǎng* (*Nánjiāng* 南江), *Běiliú* (*Tángliáo* 唐僚), *Língshān* (County seat) and *Língmíng* (County seat).[5] *Dōngguǎn* (*Guǎnchéng* 莞城), *Táishān* (*Táichéng* 台城), *Kāipíng* (*Chìkǎn* 赤坎), *Ēnpíng* (*Niújiāng* 牛江) and *Liánzhōu* 廉州 were also taken into the dataset to cover more *Yuè* subgroups and facilitate spatial distribution analysis of *-un/ut or *-iun/iut, although [yn]/[yt] are not reflected in the reflexes of these two groups in these sites. For the same reasons, *Huàzhōu* (*Xiàjiāng* 下江), *Yángjiāng*, *Yángchūn* (*Hékǒu* 河口) and *Xìnyí* were chosen as well from *Huàzhōu Yuèyǔ Gàishuō* 化州粵语概说 [An outline of Huazhou Yue] (Li 1996), *Study of Yangjiang Dialect in Guangdong Province China* (Huang 2018), *The Phonological Study on Yue Dialect of Hekou in Yangchun City* (Liu 2019) and *Xìnyí Fāngyánzhì* 信宜方言志 [Compilation of Chinese Dialects in Xinyi] (Luo and Ye 1987). All 46 data sites as well as their given classification are shown in Table 1 (underlined).

The geographic location of the sites is provided in Figure 1. According to the *Language Atlas of China* (Li 1987), *Lèchāng*, *Sháoguān* and *Qūjiāng* are *Yuè* exclaves surrounded by Hakka Chinese, additionally *Língmíng* and *Liánzhōu*, two other exclaves, are encircled by Zhuang languages and lu Mien languages, respectively. *Nánníng*, *Guìgǎng*, *Guipíng*, *Huáijí*, *Yángshān*, *Liánzhōu*, *Fógāng* and *Dōngguǎn* are located in the boundary of *Yuè*. North or northwest of *Nánníng*, *Héngzhoū*, *Guìgǎng*, *Guipíng* and *Huáijí* are within the domain of Southwestern Mandarin and Hakka. Finally, *Yángshān*, *Liánzhōu*, *Fógāng* and *Dōngguǎn* are adjacent to Hakka.

3.2.2. Data Selection

The reflexes of *-iun/iut and *-un/ut following alveolar affricates, fricatives and an approximant in CDC (*ts-, *tsh-, *dz-, *c-, *ch-, *j-, *s-, *z-, *sh-, *zh-, *l-) comprise the dataset of this study. This selection of initials is consistent with the environment of *-iun/iut which only occurs with alveolar affricates, fricatives and approximants. This selection is also congruent with the restricted environment of *-iun/iut, *-un/ut > [yn]/[yt], as it is a conditioned sound change that is not observed following labial consonants (Table 2).

Table 2. Examples of the reflexes of *-un/ut following labial and alveolar consonants.

Sites	***phun^{1}/phun^{5} “噴” ‘spray’**	***tshun^{5} “寸” ‘inch’**
Guǎngzhōu	$p^{h}ɐn^{5}$	$ts^{h}yn^{5}$
Zhōngshān	$p^{h}ɐn^{5}$	$ts^{h}yn^{5}$
Yùlín	$p^{h}an^{5}$	$t^{h}yn^{5}$
Nánníng	$p^{h}ɐn^{5}$	$ts^{h}yn^{5}$

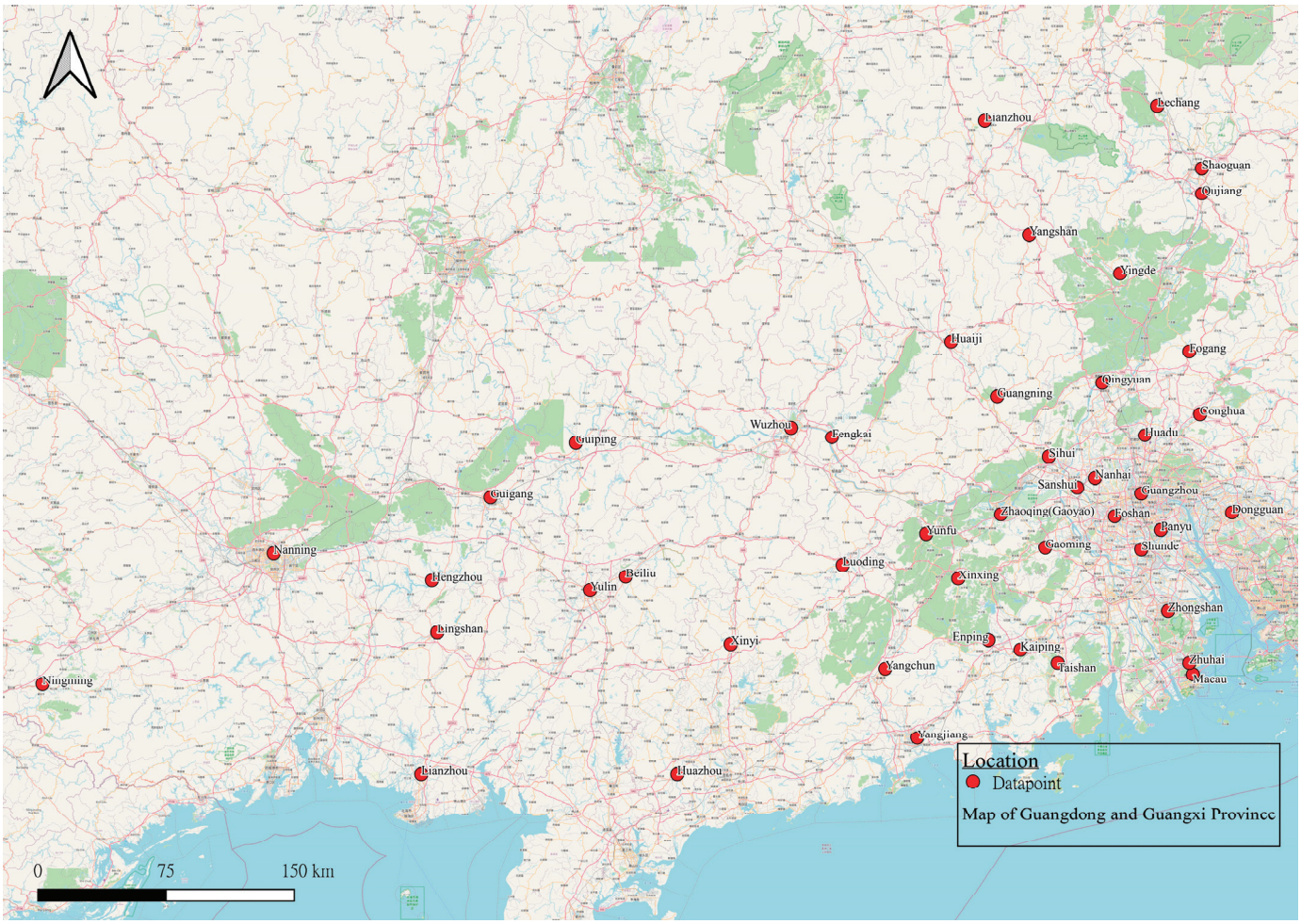


Figure 1. Map of the data sites.

3.3. Representation of Data

Unless otherwise specified, the International Phonetic Alphabet (IPA) presented in the data of this study is the same as stated in the data sources, for example [œ] of *Guǎngzhōu Yuè* is maintained as the transcription of Zhan and Cheung (1987), although it is probably [ɵ] preceding [-n] or [-t], same as Hong Kong, as stated in the *Handbook of the International Phonetic Association* (The International Phonetic Association 1999, p. 59). Additionally, the aspiration "ʻ " employed in the data sources is transcribed as "ʰ " in this study.

Tones are denoted by a numerical system (Table 3) that is commonly used in Chinese dialectology and is also adopted by CDC. In addition to the eight tones of common Chinese phonology, this study also distinguishes upper *Yīnrù* 陰入 = 7A, lower *Yīnrù* = 7B, upper *Yángrù* 陽入 = 8A, lower *Yángrù* = 8B.

Table 3. Numerical system of tonal representation.

Number	Tone
1	*Yīnpíng* 陰平
2	*Yángpíng* 陽平
3	*Yīnshǎng* 陰上
4	*Yángshǎng* 陽上
5	*Yīnqù* 陰去
6	*Yángqù* 陽去
7	*Yīnrù*
8	*Yángrù*

4. Results and Discussion

*4.1. Merger of *-iun/iut and *-un/ut in Yuè Chinese*

Figure 2 presents the merger or contrast of *-iun/iut and *-un/ut in *Yuè* using *tshun^{1} “村” ‘village’ and *chiun^{1} “春” ‘spring’ as an example. Although *tsh- has merged with *ch- in many *Yuè* varieties, *tshun^{1} and *chiun^{1} retain the contrast not only in the sites which have [yn]/[yt] in the reflexes of *-un/ut or *-iun/iut, but indeed in the majority of the varieties. With the exception of *Fēngkāi* and *Kāipíng*, it seems that the merger of *-iun/iut and *-un/ut happens randomly in *Yuè*. However, if the pronunciations of *tshun^{1} “村” and *chiun^{1} “春” are closely examined (Table 4), it can be observed that *Kāipíng* retains the contrast between *tshun^{1} and *chiun^{1} not by rime but by initials only. A similar situation can be discerned in *Táishān* and *Ēnpíng*, which retain the distinction by initials and tone, respectively, but not by rime. Indeed, the change *-iun/iut, *-un/ut > [un]/[ut] occurred in *Táishān*, *Kāipíng* and *Ēnpíng*, varieties under the *Sìyì* subgroup (Table 5; also see Table 4). Therefore, it is obvious that the merger of *-iun/iut and *-un/ut is not a common characteristic in *Yuè* Chinese, though it is in the *Sìyì* subgroup. A separate analysis of *-iun/iut > [yn]/[yt] and *-un/ut > [yn]/[yt] will be made to examine their geographical distributions and diffusion patterns.

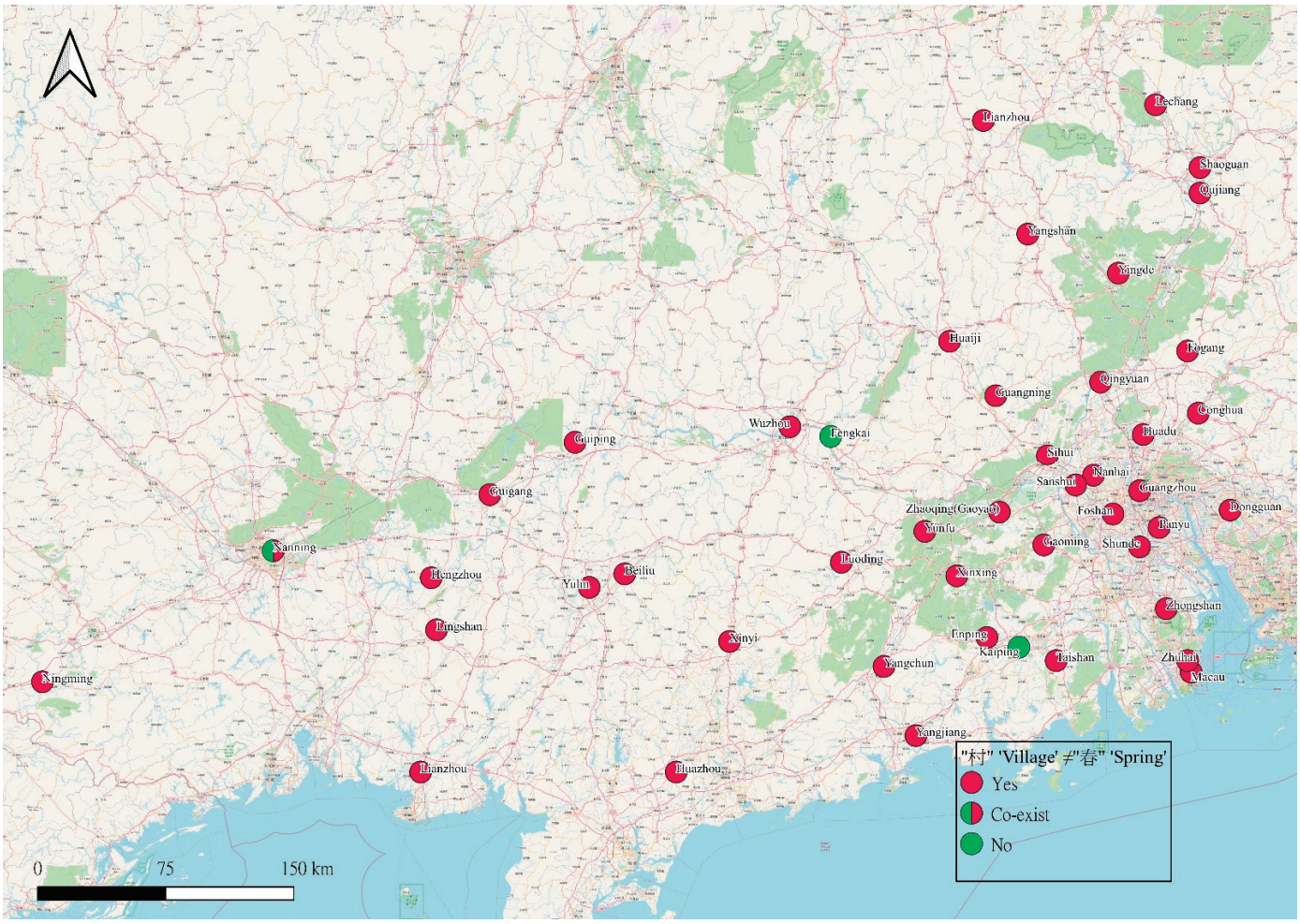


Figure 2. Contrast of *tshun^{1} “村” and *chiun^{1} “春” in the data sites.

Table 4. Pronunciations of "村" and "春" in the data sites (examples).

Sites	*tshun^1 "村" 'village'	*chiun^1 "春" 'spring'
Guǎngzhōu	tsʰyn^1	tsʰœn^1
Huàzhōu	tʰin^1	tʃʰɐn^1
Yángjiāng	tʃʰun^1	tʃʰɐn^1
Nánníng	tsʰyn^1	tsʰɐn^1/ tsʰyn^1
Yùlín	tʰyn^1	tɕʰan^1
Liánzhōu 廉州	tʃʰun^1	tʃʰɐn^1
Héngzhoū	tʃʰun^1	tʃʰɐn^1
Xìnyí	tsʰyn^1	tsʰɐn^1
Fēngkāi	tsʰɐn^1	tsʰɐn^1
Kāipíng	tʰun^4	tsʰun^1
Táishān	tʰun^1	tsʰun^1
Ēnpíng	tsʰun^5	tsʰun^1

Table 5. Pronunciations of *sun^3 "損" and *siun^3 "筍" in *Kāipíng*, *Táishān* and *Ēnpíng*.

Sites	*sun^3 "損" 'hurt/loss'	*siun^3 "筍" 'bamboo shoots'
Kāipíng	ɬun^3	ɬun^1
Táishān	ɬun^3	ɬun^3
Ēnpíng	sun^3	sun^3

*4.2. Diffusion Pattern of *-iun/iut > [yn]/[yt] and Related Mergers*

Before examining the geographical distribution of *-iun/iut > [yn]/[yt], it is worth noting that a correspondence between [œ] and [ɐ] exists regularly in the reflexes of *-iun/iut, despite the presences of a few abnormalities, such as is seen in *Guǎngzhōu* (Table 6). Previous research on this correspondence revealed that [œ] changed to [ɐ] in the majority of *Yuè* varieties aside from *Guǎngzhōu* and the adjacent varieties (Sung and Hui 2022). This suggests that reflexes of *-iun/iut have merged with *-en/et and *-in/it in a branch of *Yuè* varieties.[6] Figure 3 depicts the merger or contrast between *-iun/iut and *-in/it in *chiut^7 "出" 'out' and *tshit^7 "七" 'seven'. Similar to [œ] > [ɐ] in which *Guǎngzhōu* and the adjacent varieties stand out, *Guǎngzhōu* and other varieties near the Pearl River Delta (such as Macau, *Fóshān*, *Nánhǎi*, *Shùndé* and *Sānshuǐ*) retained the contrast on the rime between *-iun/iut and *-in/it, as well as the varieties in the north of *Guǎngdōng* Province (*Yīngdé*, *Sháoguān*, *Qūjiāng* and *Lèchāng*) and *Nánníng*. This pattern brings up the two following questions:

- Is there any relationship in the contrast situation between the Pearl River Delta, the north of *Guǎngdōng* Province and *Nánníng*?
- If yes, what is/are the factors behind it?

Table 6. Pronunciations of *jiun^2 "唇" in the data sites (examples).

Sites	*jiun^2 "唇" 'Lip'
Guǎngzhōu	sœn^2
Huàzhōu	ʃɐn^2
Yángjiāng	ʃɐn^2
Yùlín	ʃɐn^2
Liánzhōu	ʃɐn^2
Héngzhoū	ʃɐn^2
Xìnyí	sɐn^2
Fēngkāi	tsɐn^2

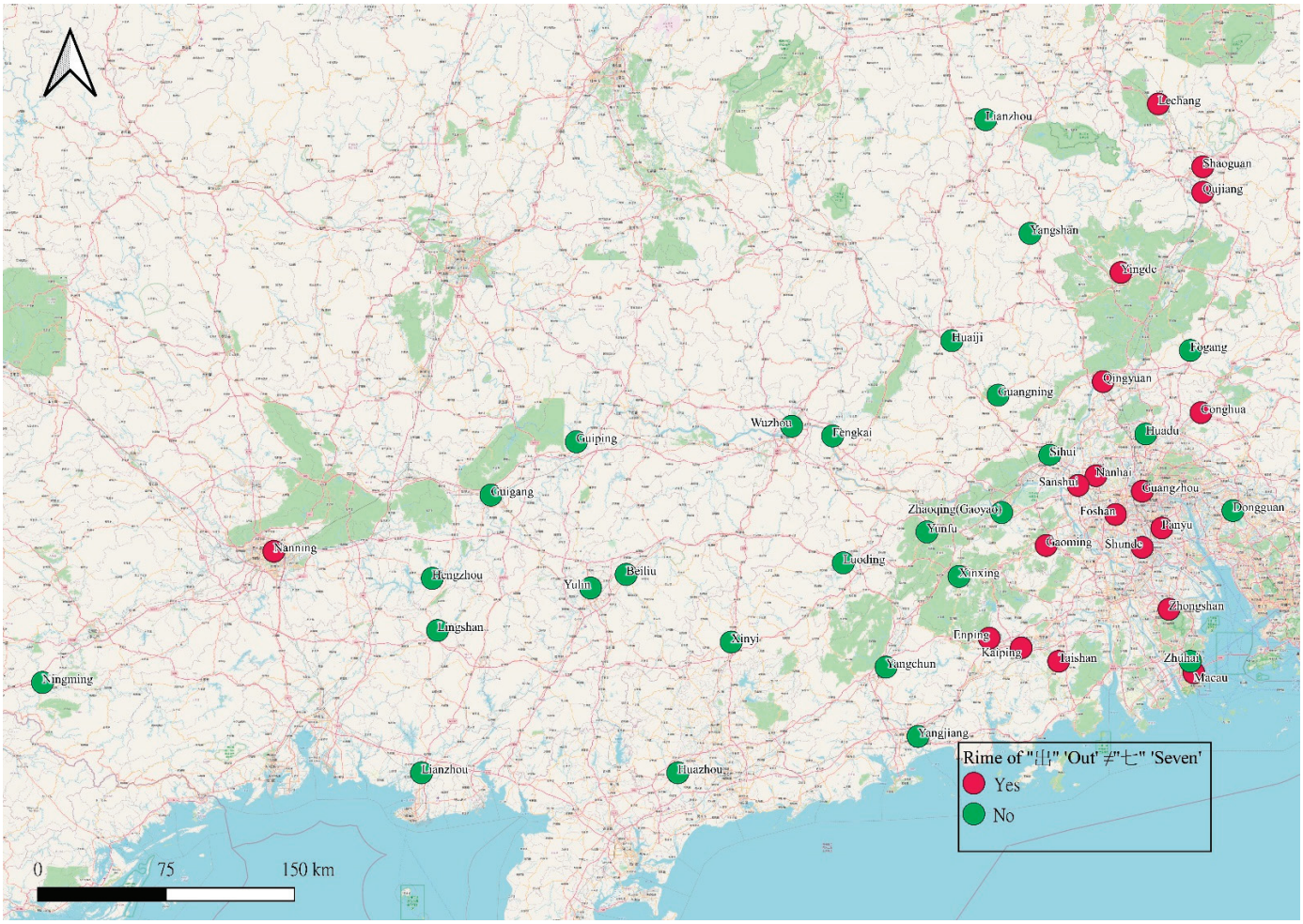


Figure 3. Contrast of the rime between *chiut^{7} "出" and *tshit^{7} "七" in the data sites.

The systematic contrast between *-iun/iut and *-in/it as well as in the rime of "出" in the data sites suggests a relationship between the Pearl River Delta, northern *Guǎngdōng* and *Nánníng* (Figures 3 and 4). The morpheme "出" with [yt] is recorded in *Nánhǎi*, *Qīngyuǎn*, *Lèchāng* and far west—*Nánníng*. In *Guǎngzhōu*, *Lìwān* 荔灣 (the rural of old *Guǎngzhōu* city), *Tiānhé Shípái* 天河石牌 (the oldest urban village in *Guǎngzhōu*) and *Huángpǔ Luógāng* 黃埔蘿崗 (suburban of *Guǎngzhōu*) additionally have the same circumstance (Project for the Protection of Language Resources of China 2022; Liang 2016). Zhuang (2004, p. 16) pointed out that *Guǎngzhōu* accent as well as *Guǎngfǔ Yuè* have prevailed in *Sháoguān*, *Qūjiāng* and *Lèchāng* after World War II, due to the temporary relocation of the *Guǎngdōng* provincial capital from *Guǎngzhōu* to *Sháoguān* during World War II and the commission of the Beijing–Guangzhou railway. The Guangzhou–Hankou railway, the precursor of the Beijing–Guangzhou railway, has connected *Guǎngzhōu* with *Qīngyuǎn*, *Yīngdé* and *Sháoguān* with *Lèchāng* (*Qīngyuǎnshì Dìfāngzhì Biānzuǎn Bàngōngshì* 清遠市地方志編纂辦公室 'Qingyuan Chronicles Compilation Committee' (Qingyuanshi Difangzhi Bianzuan Bangongshi 1995, p. 370; Construction Administration Chu-Shao Section Canton-Hankow Railway 1935); *Lèchāngxiàn Dìfāngzhì Biānzuǎn Bàngōngshì* 樂昌縣地方志編纂辦公室 'Lechang Chronicles Compilation Committee' (Lechangxian Difangzhi Bianzuan Bangongshi 1994, p. 222); also see Figure 5). The influence from *Yuè* varieties in the Pearl River Delta as well as the phonological characteristics might thus travel along the rail line to northern *Guǎngdōng* and leave a trail parallel to the railway, which would also be the case with the contrast between *-iun/iut and *-in/it as well as the rime of "出" as [yt] and [œt] or [øt] (Figures 3 and 4). It is worth noting that that the rime of "出" in northern *Guǎngdōng* is

unlikely to be influenced by *Tǔhuà* 土話 and Hakka in the same region, which pronounce "出" as either [ut] or [-ʔ], over even as an open syllable (Zhuang 2004, p. 99; Zhuang and Bei 2022, pp. 824–25); migrants from the Pearl River Delta and *Qīngyuǎn* settled into *Lèchāng* after World War II (*Lèchāngxiàn Dìfāngzhì Biānzuǎn Bàngōngshì* 樂昌縣地方志編纂辦公室 'Lechang Chronicles Compilation Committee' (Lechangxian Difangzhi Bianzuan Bangongshi 1994)), and they probably brought the phonological characteristics of the *Yuè* varieties in the Pearl River Delta to *Lèchāng*. Therefore, the distribution of "出" with [yt] in the Pearl River Delta, *Qīngyuǎn* and *Lèchāng* is not a random coincidence, but an effect of migration. However, comprehensive studies on modern demographic history, genealogy, as well as the relationship between [yt] and [œt] or [øt] are necessary to thoroughly scrutinize and verify the distribution of "出" as [yt] and [œt] or [øt] in northern *Guǎngdōng*.

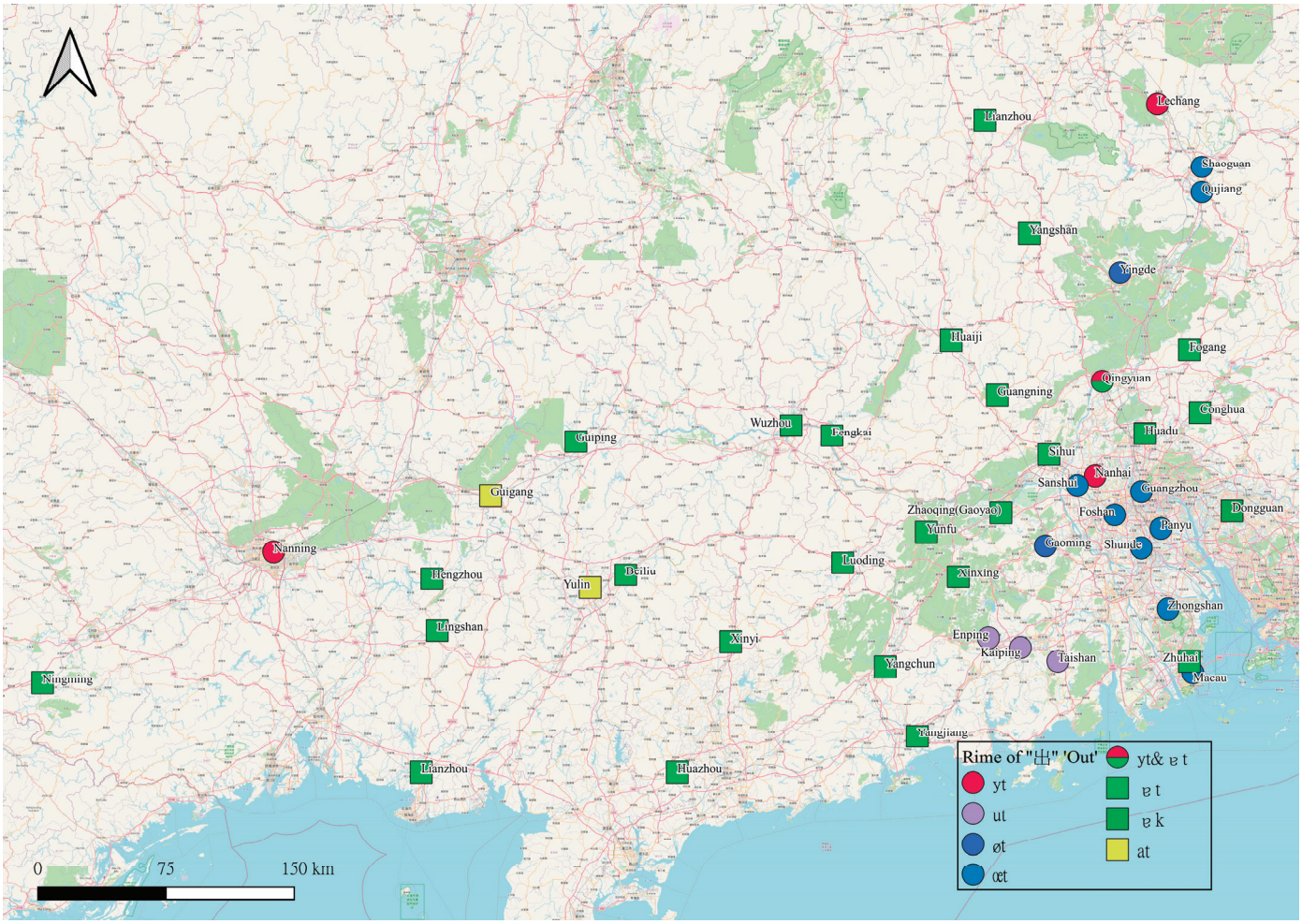


Figure 4. Rime of *chiut[7] "出" in each site.

Similar to the case with *Lèchāng*, the contrast between *-iun/iut and *-in/it, as well as the pronunciation of "出" with final [yt] in *Nánníng* might have been brought by migrants. Migration to *Guǎngxī* Province from the Pearl River Delta following the lifting of maritime prohibitions after the First Opium War (1839–1842), as well as that by people escaping the effects of World War II in later times, led to the formation of the large *Yōngxún Yuè* community in *Nánníng*. The language of that community is difficult to distinguish from that of *Guǎngfǔ Yuè* (de Sousa 2022; Kwok 2019, pp. 10–11). This situation provides a plausible explanation for the differing classifications of *Nánníng Yuè* in the *Language Atlas of China* and Zhan et al. (2002); Zhan (2004) (Table 1). In light of the phonological features shared between *Nánníng* and the Pearl River Delta, even with geographical constraints

(illustrated in Figures 3 and 4), it is conceivable that the contrast between *-iun/iut and *-in/it, as well as the pronunciation of "出" with [yt] were brought by migrants from the Pearl River Delta to *Nánníng*.

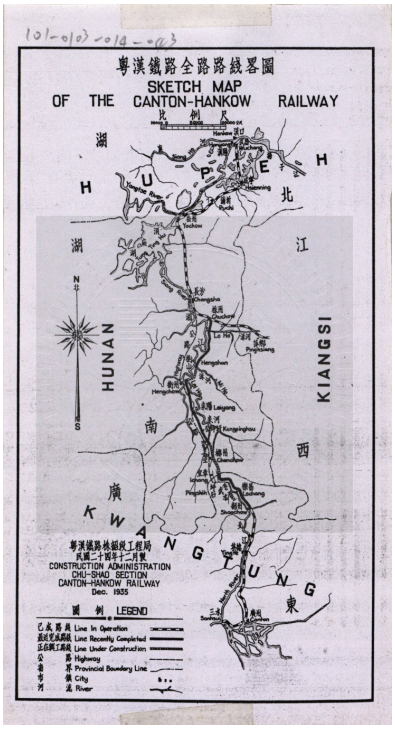


Figure 5. Map of the Canton (Guangzhou)–Hankou Railway (Construction Administration Chu-Shao Section Canton-Hankow Railway 1935).

Considering the demographic history of *Nánníng*, one may wonder why distinctive distributional patterns are found in *Nánníng* and the Pearl River Delta in the reflexes of *-iun/iut and *-un/ut (Figure 2). The relationships between the variants [yn]/[yt] and [ɐn]/[ɐt] in *Nánníng* may help shed some light on this problem. The reflexes of *-iun/iut following alveolar initials such as in *chiun[1] "春" 'spring' are pronounced as [yn]/[yt] in old *Nánníng Yuè*, while they are pronounced as [ɐn]/[ɐt] in new *Nánníng Yuè* (Lin and Qin 2008, pp. 83–84). This leveling may be influenced by contact with adjacent *Yuè* varieties in *Guǎngxī* (Figure 6), which is a type of regional dialect leveling proposed by Kerswill (2003). Considering the reflexes of *-iun/iut and *-un/ut in the Pearl River Delta and northern *Guǎngdōng*, it is possible that *-iun/iut and *-un/ut were merged as [yn]/[yt] in these varieties and in *Nánníng;* but these reflexes of *-iun/iut and *-un/ut have now been splitting due to contact influences. This assumption cannot be completely verified in this paper, however, in part because [ɐn]/[ɐt] in the reflexes of *-iun/iut might not be the product of internal regular sound change from [yn]/[yt] in *Nánníng*, since [yn]/[yt] in the *Nánníng* reflexes of *-on/ot and *-ion/iot are unaffected and show no variation between [yn]/[yt] and [ɐn]/[ɐt]. To further examine this assumption, intensive fieldwork is needed to obtain more data in the Pearl River Delta as well as for *Nánníng*. What is certain, however, is that the merger of *-iun/iut and *-un/ut is not a common characteristic in *Yuè*, as noted earlier in Section 4.1.

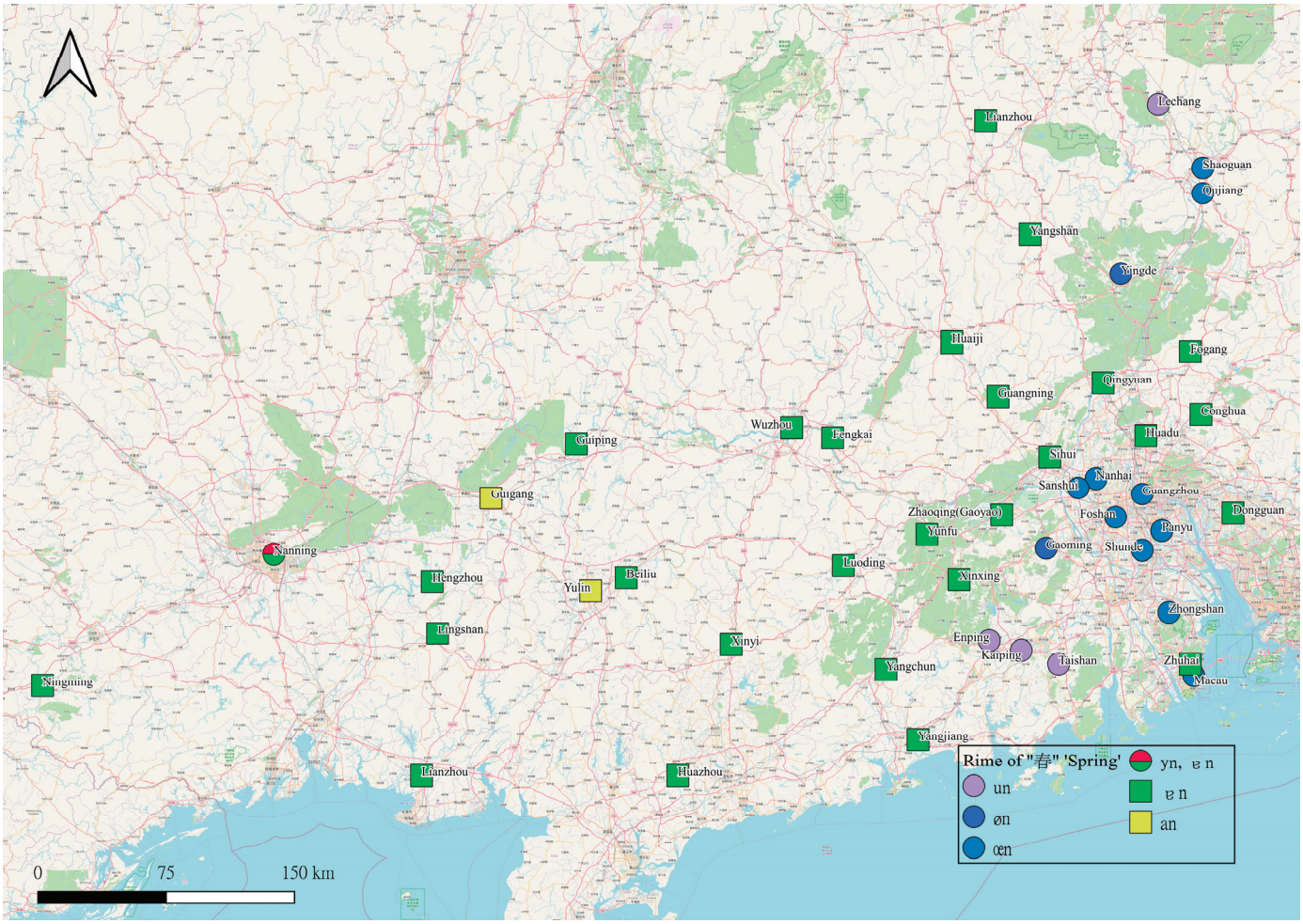


Figure 6. Rime of *chiun[1] "春" in each site.

*4.3. Diffusion Pattern of *-un/ut > [yn]/[yt] and Related Mergers*

As shown in Figure 7, the reflexes of *-un/ut following alveolar initials are [yn]/[yt] in the majority of the data sites. This contrasts with the reflexes of *-iun/iut (Figures 4 and 6), again suggesting that different processes led to *-un/ut > [yn]/[yt] and related merger(s).

The reflexes of *-on/ot and *-ion/iot are [yn]/[yt] in some sites such as *Guǎngzhōu*, *Yùlín*, *Héngzhoū*, *Xìnyí* and *Fēngkāi* (Table 7). Yet that is not an influence from the initials, as can be inferred from the comparison between *son[1] "酸" and *sun[1] "孫". Plotting the contrast between *-on/ot with *-un/ut (Figure 8) as well as *-ion/iot with *-un/ut (Figure 9), it is clear that these mergers are prevalent in *Yuè* varieties, although they were reported by only a few researchers, including Liu (2015), Li (2010), Weng (2012) and Xu (2013).[7] It is also noteworthy that *Yángjiāng*, *Yángchūn* and *Héngzhoū* maintain the distinction between *-un/ut and *-ion/iot, while the *Sìyì* subgroup, *Huàzhōu*, *Fēngkāi* and *Língshān*, retain both distinctions between *-on/ot with *-un/ut and *-ion/iot with *-un/ut. These are the varieties located in the southwest of the Pearl River Delta or near the boundary of *Yuè*, whilst the mergers and *-un/ut > [yn]/[yt] (see also Figure 7) spread from the Pearl River Delta not only to northern *Guǎngdōng* but also along the *Xījiāng* 西江 river to *Xúnjiāng* 潯江 and *Yùjiāng* 郁江 (*Zhàoqìng*, *Yúnfú*, *Wúzhoū*, *Guipíng*, *Guìgǎng* and *Nánníng)* as well as their branches (*Xīnxīng*, *Luódìng*, *Xìnyí*, *Běiliú* and *Yùlín*). Given the higher cultural and economic prestige of the Pearl River Delta in *Guǎngdōng* and *Guǎngxī* Province, it is plausible that the mergers and *-un/ut > [yn]/[yt] were diffused westward by a mobile population and their contacts along the river routes.

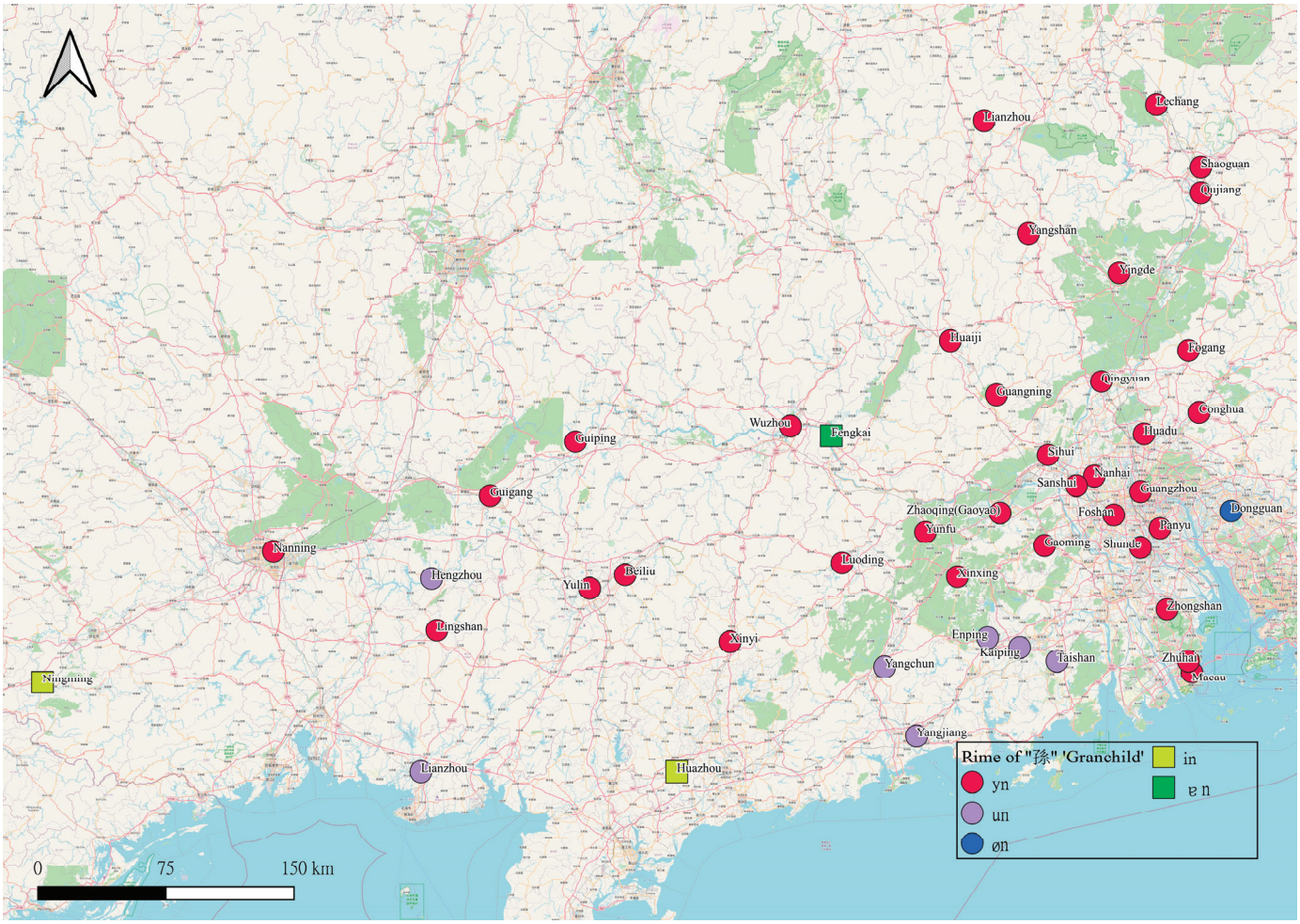


Figure 7. Rime of *sun[1] "孫" in each site.

Table 7. Pronunciations of *son[1] "酸", *sun[1] "孫", *cion[1] "磚" and *tshun[1] "村" in the data sites (examples). #

Sites	*son[1] "酸" 'Sour'	*sun[1] "孫" 'Grandchild'	*cion[1] "磚" 'Brick' #	*tshun[1] "村" 'Village'
Guǎngzhōu	syn[1]	syn[1]	tsyn[1]	tsʰyn[1]
Huàzhōu	ɬin[1] ɬun[1]	ɬin[1]	tʃin[1] tʃun[1]	tʰin[1]
Yángjiāng	ɬun[1]	ɬun[1]	tʃin[1]	tʃʰun[1]
Yùlín	ɬyn[1]	ɬyn[1]	tɕyn[1]	tʰyn[1]
Liánzhōu	ɬun[1]	ɬun[1]	tʃun[1]	tʃʰun[1]
Héngzhoū	ɬun[1]	ɬun[1]	tʃyn[1]	tʃʰun[1]
Xìnyí	ɬyn[1]	ɬyn[1]	tsyn[1]	tsʰyn[1]
Fēngkāi	syn[1]	sɐn[1]	tsyn[1]	tsʰɐn[1]

There are no vernacular words which can form a minimal pair from the reflexes of *-ion/iot and *-un/ut. Thus, the relevant contrast is illustrated here with a comparison between *cion[1] "磚" and *tshun[1] "村", which both have voiceless affricate initials and the same tone in CDC in addition to their shared final.

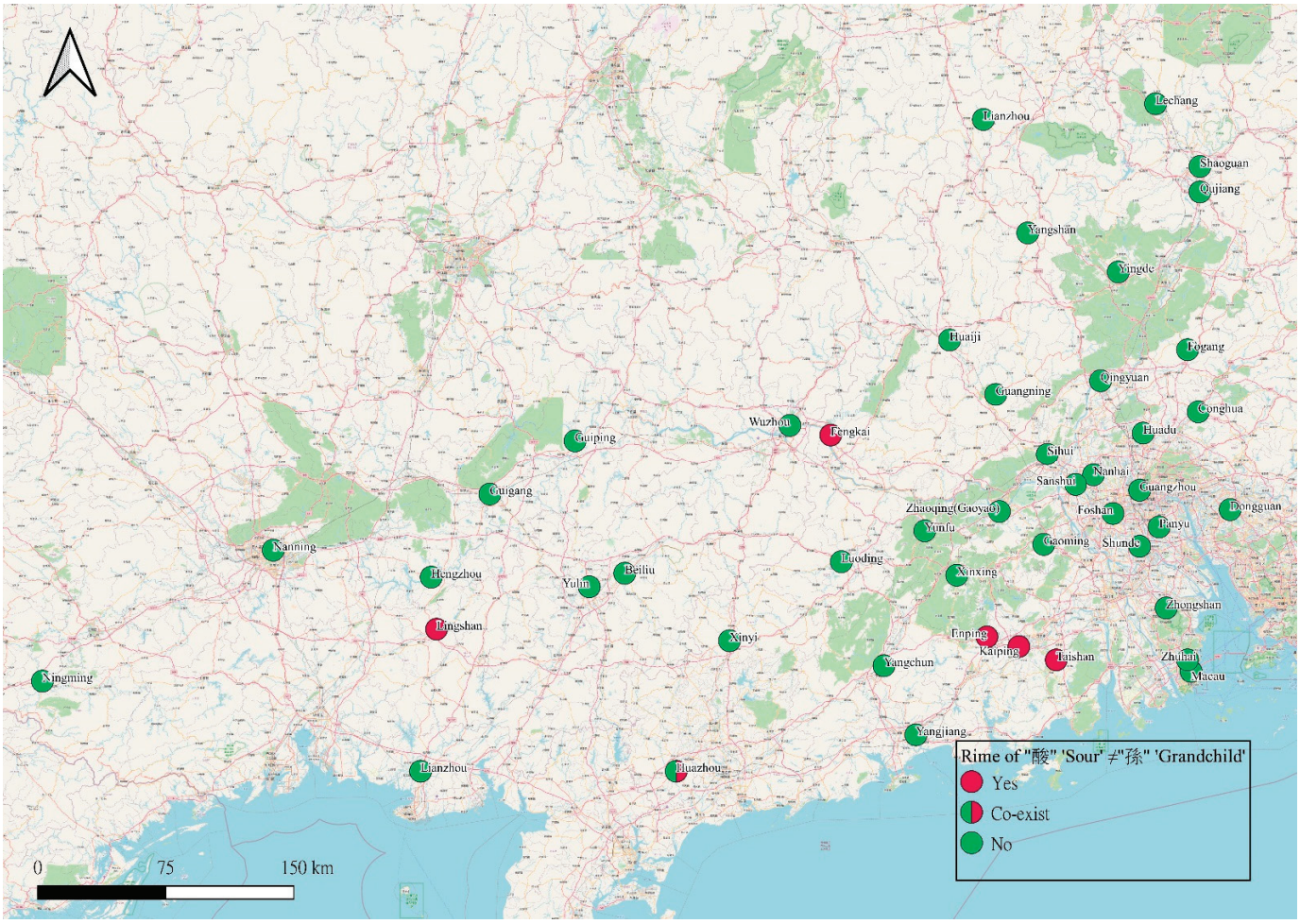


Figure 8. Contrast of the rime between *son[1] “酸” and *sun[1] “孫” in the data sites.

In the mergers of *-on/ot with *-un/ut as well as *-ion/iot with *-un/ut, literary words show different distribution patterns from vernacular words, revealing a possible diffusion pattern from the center of culture. Figure 10 displays the geographical distribution of the contrast between *-on/ot and *-un/ut, using *son[5] “算” ‘count’ and *sun[3] “損” ’hurt/loss’ as examples of literary words.[8] The merger of *-on/ot with *-un/ut is slightly more prevalent than in vernacular words (Figure 8). Furthermore, it is the same case with the merger of *-ion/iot and *-un/ut if literary words (Figure 11) are compared with vernacular words (Figure 9). In these comparisons between literary words and vernacular words, it can be seen that some sites maintain the contrast in vernacular words but lose it in literary words, including *Héngzhoū* and *Fēngkāi*. Ongoing sound changes related to [yn]/[yt] in these two sites can be seen if the dataset of this study is compared with two studies from the late 2010s. In *Héngzhoū* (Table 8), data from Xie (2007) showed that only three reflexes of *-un/ut and *-on/ot were pronounced as [yn]/[yt], including *tshot[7] “撮” ‘to assemble’ ‘tuft of’, *sun[3] “損” ’hurt/loss’ and *tshun[5] “寸” ‘inch’, of which “撮” and “損” are literary words. For those reflexes which were [un]/[ut] in Xie (2007), Mo (2019) recorded as [yn]/[yt]. In other words, *-un/ut and *-on/ot have changed from [un]/[ut] to [yn]/[yt] in both literary and vernacular words, thus merging with the reflexes of *-ion/iot. Although this change may be led by internal or local factors in *Héngzhoū Yuè*, it could also be influenced by the contact with adjoining varieties as shown in Figure 7, given the fact that geographical diffusion follows the regularity of sound change (Labov 1994, p. 501; Hui 2022). During a similar time frame in *Fēngkāi*, data from Zhan and Cheung (1998) reported a literary word *sun[5] “遜” ‘inferior/modest’ as [sin[5]], while it is [ʃyn[5]] in Hou (2016)[9], thus merging with *son[5] “算” ‘count’ and *son[5] “蒜” ‘garlic’ as well as sharing the same rime with the

reflexes of *-ion/iot (Table 9). Comparison of Zhan and Cheung (1998) with Hou (2016) supports the finding of a merger of *-un/ut, *-on/ot and *-ion/iot, and the change [in] > [yn] in *Fēngkāi*. This merger and change might be affected by adjacent *Yuè* varieties such as *Guǎngníng*, *Luódìng* and *Zhàoqìng*, but given that *tshiun^{5} “俊” ‘handsome’ was affected by [in] > [yn] at the same time and this syllable is [ɐn] in those adjacent *Yuè* varieties, this merger and change was probably influenced by *Guǎngzhōu* (Table 10), which has a higher cultural and economic prestige, as previously mentioned in Section 4.3, in a skewed copy of the [œn] of *Guǎngzhōu*. Future studies are needed to confirm the source of [in] > [yn] in *Fēngkāi*, especially a record of *siun^{5} “迅” ‘speedy’, which is recorded as [yn] in Hou (2016). However, what can be inferred from the details of *Fēngkāi* is that the source of the aforementioned merger and change is contact with *Yuè* varieties from the east, rather than with *Wúzhoū* which retains the contrast between *tshion^{5} and *son^{5} as shown in Table 10.

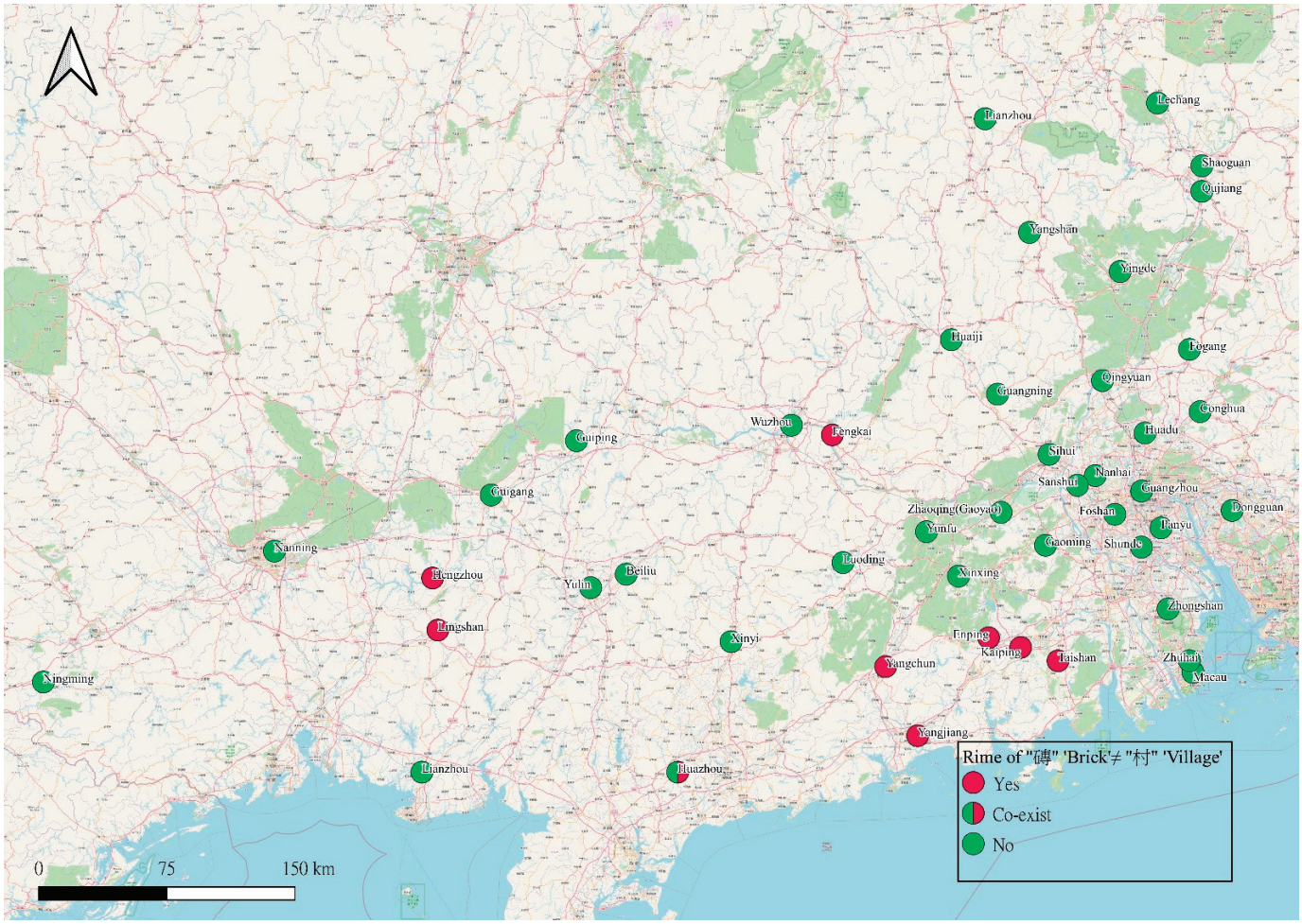


Figure 9. Contrast of the rime between *cion^{1} “磚” and *tshun^{1} “村” in the data sites.

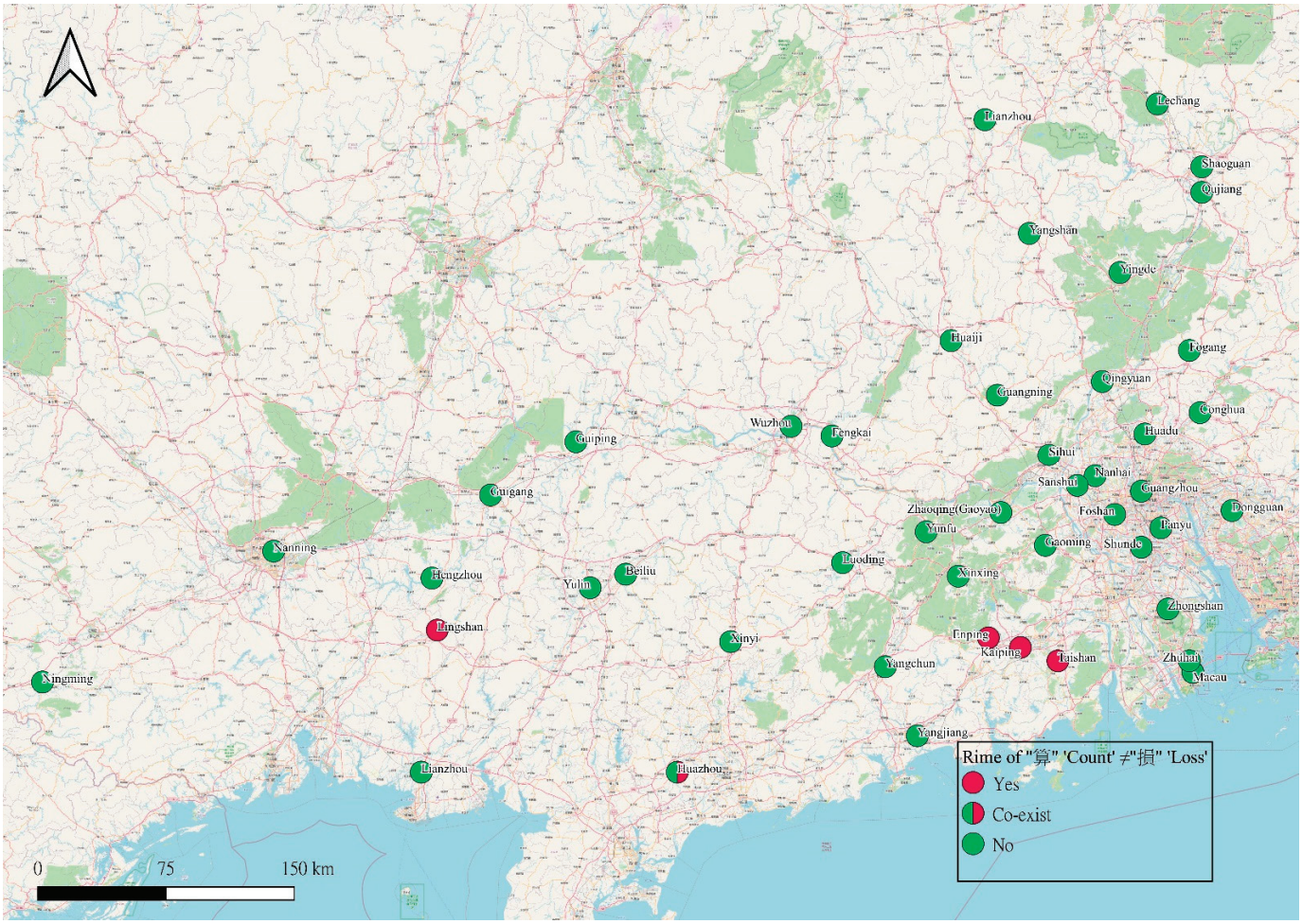


Figure 10. Contrast of the rime between *son^{5} “算” and *sun^{3} “損” in the data sites.

Table 8. The reflexes of *-ion/iot and [un]/[ut] > [yn]/[yt] in *Héngzhoū*.

Word	*Héngzhoū* (Xie 2007)	*Héngzhoū* (Mo 2019)
*tshot^{7} “撮” ‘to assemble’ ‘tuft of’	tʃyt^{7B}	tʃyt^{7B}
*sun^{3} “損” ‘loss’	ɬyn^{3}	ɬyn^{3}
*tshun^{5} “寸” ‘inch’	tʃʰyn^{5}	tʃʰyn^{5}
*tson^{1} “鑽” ‘to bore’	tʃun^{5}	tʃyn^{1}
*tson^{5} “鑽” ‘drill’	tʃun^{5}	tʃyn^{5}
*son^{1} “酸” ‘sour’	ɬun^{1}	ɬyn^{1}
*son^{5} “算” ‘count’	ɬun^{5}	ɬyn^{5}
*son^{5} “蒜” ‘garlic’	ɬun^{5}	ɬyn^{5}
*tsun^{1} “尊” ‘respect’	tʃun^{1}	tʃyn^{1}
*dzun^{2} “存” ‘save’	tʃʰun^{2}	tʃʰyn^{2}
*tshun^{1} “村” ‘village’	tʃʰun^{1}	tʃʰyn^{1}
*sun^{1} “孫” ‘grandchild’	ɬun^{1}	ɬyn^{1}
*dzion^{2} “全” ‘all’	tʃʰyn^{2}	tʃʰyn^{2}
*chion^{1} “川” ‘stream’	tʃʰyn^{1}	tʃʰyn^{1}
*chion^{5} “串” ‘string’	tʃʰyn^{5}	tʃʰyn^{5}

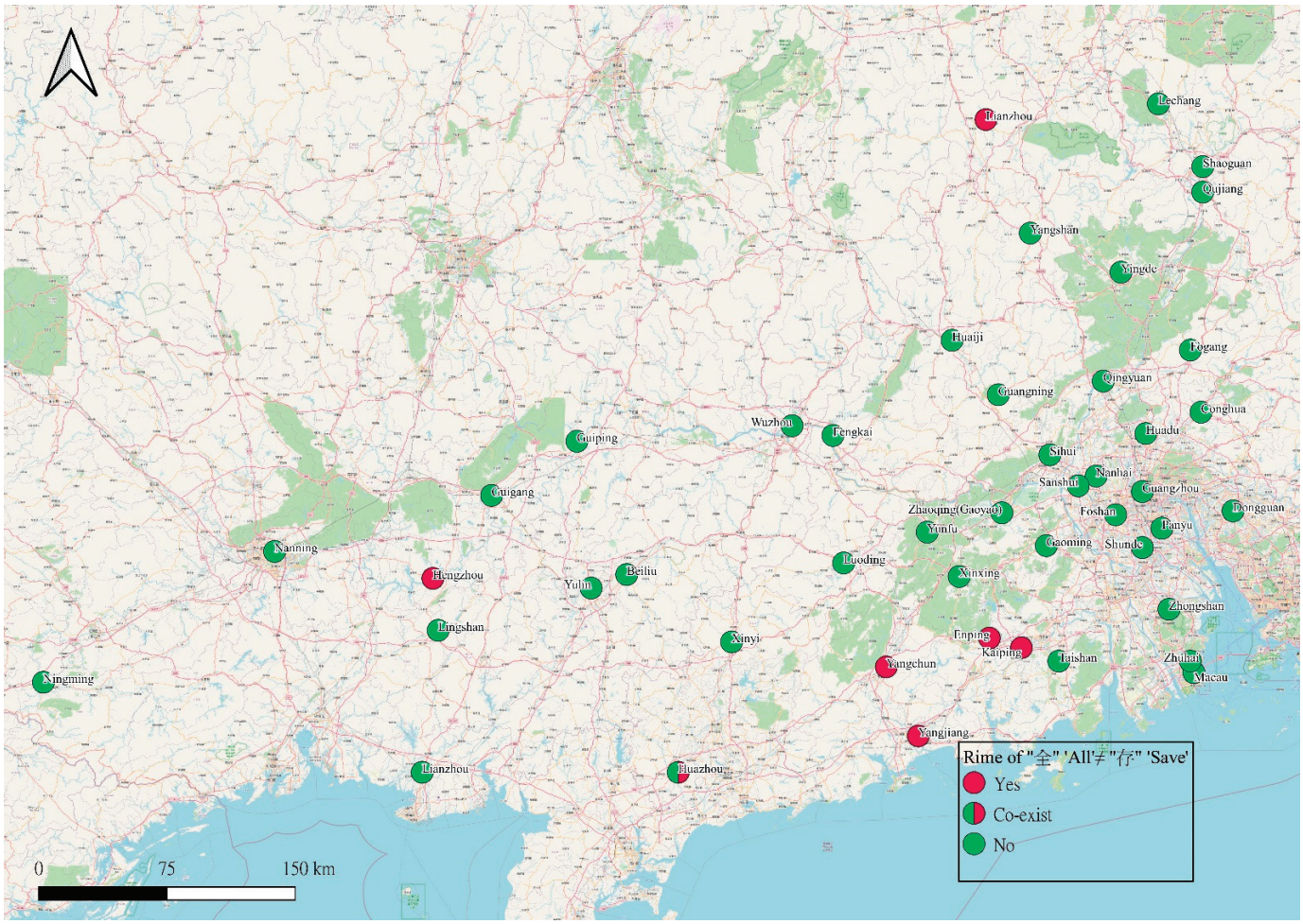


Figure 11. Contrast of the rime between *dzion^2 “全” and *dzun^2 “存” in the data sites.

Table 9. The reflexes of *-on/ot, *-ion/iot and [in] > [yn] in *Fēngkāi*.

Word	*Fēngkāi* (Zhan and Cheung 1998)	*Fēngkāi* (Hou 2016)
*sun^5 “遜” ‘inferior/modest’	sin^5	ʃyn^5
*son^5 “算” ‘count’	syn^5	ʃyn^5
*son^5 “蒜” ‘garlic’	syn^5	ʃyn^5
*chion^5 “串” ‘string’	ts^{h}yn^5	tʃ^{h}yn^5

Table 10. The reflexes of *-on/ot, *-ion/iot and [in] > [yn] in *Guǎngzhōu*, *Fēngkāi* with its adjacent sites.

Word	*Fēngkāi* (Zhan and Cheung 1998)	*Fēngkāi* (Hou 2016)	*Guǎngníng*	*Luódìng*	*Zhàoqìng*	*Wúzhoū*	*Guǎngzhōu*
*sun^5 “遜” ‘inferior/modest’	sin^5	ʃyn^5	syn^6	syn^5	syn^6	ɕɐn^5	sœn^5
*son^5 “算” ‘count’	syn^5	ʃyn^5	syn^5	syn^5	syn^5	ɕyn^5	syn^5
*son^5 “蒜” ‘garlic’	syn^5	ʃyn^5	syn^5	syn^5	syn^5	ɕyn^5	syn^5
*tshiun^5” 俊” ‘handsome’	tsin^5	tʃyn^5	tsɐn^5	tsɐn^5	tsɐn^5	tɕɐn^5	tsœn^5
*siun^5 “迅” ‘speedy’	sin^5	ʃin^5	sɐn^3	sɐn^5	sɐn^5	ɕɐn^5	sœn^5

5. Conclusions

The pronunciations of reflexes of *-iun/iut and *-un/ut following alveolar initials are complex in *Yuè* Chinese, although previous studies did not examine the situation in detail

or offer an explanation. This study reveals that the mergers of the reflexes of *-iun/iut and *-un/ut do not prevail in the vast majority of *Yuè* varieties and are only seen in the *Sìyì Yuè* subgroup. It was also found that the mergers of *-un/ut > [yn]/[yt] and *-iun/iut > [yn]/[yt] have different diffusion patterns across the linguistic map.

With respect to *-iun/iut, *Yuè* varieties in the Pearl River Delta, in the north of *Guǎngdōng* and in *Nánníng* stand out with the retention of the contrast in the reflexes of *-iun/iut and *-in/-it that is seen in the ancestral forms. Considering the shared development of *-iun/iut > [yn]/[yt] with the historical demography and transportation patterns in these three places, a possible explanation for the coexisting variants and non-variants would be the arrival of immigrants from the Pearl River Delta and the ensuing linguistic contact between speakers of the different varieties.

For *-un/ut, the reflexes of *-un/ut have merged with *-on/ot and *-ion/iot in the majority of *Yuè* varieties, with the exception of the *Sìyì* subgroup. In light of the natural geographic environment, the different geographical distribution patterns between literary words and vernacular words suggest that the *-un/ut > [yn]/[yt] merger is ongoing from the Pearl River Delta westward. This is consistent with the fact that the Pearl River Delta has higher cultural and economic prestige.

With these observations, this study provides a methodological contribution to the field of Sinitic dialectology. It highlights the feasibility of applying dialect geography and the historical-comparative linguistic method to scrutinize the phonetic and phonological developments of dialects. However, this study also raises new questions, such as whether or not *-iun/iut and *-un/ut following alveolar initials used to be merged in the Pearl River Delta, and the exact source of [in] > [yn] in *Fēngkāi*. To uncover the possible answers to these questions, intensive fieldwork with a sociolinguistics base and acoustic analysis is needed to obtain more data for analysis in future studies.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/languages8020146/s1, Table S1: Wordlist of 46 sites.

Author Contributions: Conceptualization, M.-S.H. and R.V.S.; methodology, M.-S.H.; validation, M.-S.H. and R.V.S.; formal analysis, M.-S.H.; resources, M.-S.H.; data curation, M.-S.H.; writing—original draft preparation, M.-S.H.; writing—review and editing, R.V.S.; visualization, M.-S.H.; supervision, R.V.S. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest: The authors declare no conflict of interest.

Notes

1 This study employs " > " to represent "change(s) to" in sound changes.

2 "Reflex(es)" means "modern reflex(es)" in this study.

3 Baxter and Sagart (2014) provide a reconstruction of Old Chinese, but a 'transcription' of Middle Chinese is included.

4 The reflexes of *-iun/iut and *-un/ut from CDC following alveolar initials remain the consistent differences as rimes in Karlgren (1940), Pulleyblank (1984), Baxter and Sagart (2014) and McCoy (1966) with a different form of reconstruction. For instance, these are *-win/*wit and *-won/wot in Baxter and Sagart (2014) as well as *-uon/uot and *-uan/uat in McCoy (1966), correspondingly.

5 *Guǎngzhōu Yuè* is prevailing in Hong Kong (Zhan 2004, p. 7), so Hong Kong (Urban) is not included in the dataset.

6 The reflexes of *-en/et following alveolar initials are solely based on literary words, such as *cen^{1} "臻" 'to reach/to be full'. Although *shet^{7} "蝨" 'louse' seems to be comparable with *shiut^{7} "蟀" 'gryllidae', the interviewees of the data sources as well as Zhan and Cheung (1988) gave different pronunciations including but not limited to the data of *Luódìng* and *Yúnfú*; some sources even had different words, for example "土狗" (literally "local dog") for 'gryllidae' when vocabulary lists were used instead of reading word lists in *Língshān* and various data sites. This indicates that the reflex of *shiut^{7} from the data is a literary word, and it should not be compared with the reflex of *shet^{7}. Thus this study only uses the examples from *-in/it to show the merger

of *-iun/iut with other groups of reflexes. The reflexes of *-en/et indeed are pronounced as [ɐn]/[ɐt] or its correspondent, thus overlapping with those of *-in/it (for examples see Table S1).

7 In Liu (2015), Li (2010), Weng (2012) and Xu (2013) used *Shānshè Hékǒu* I 山攝合口一等 and *Shānshè Hékǒu* III 山攝合口三等, the terms from *Qièyùn* system, to designate the reflexes of *-on/ot and *-ion/iot.

8 There are no literary words that can form a minimal pair from the reflexes of *-ion/iot and *-un/ut. Thus, the only solution was to compare *son^5 "算" and *sun^3 "損", which both have the same initial in CDC. Furthermore, while *sun^3 "損" is widely used to say 'hurt' in *Guǎngzhōu Yuè*, other *Yuè* varieties tend to use other forms of lexicon to express the same meaning, which is the case in *Nánníng* (Lin and Qin 2008, p. 172), *Yùlín* and Qīnzhōu (Guangxi Local Records Compilation Committee 1998, pp. 166, 223). This suggests that the same syllable can be classified differently as a "literary word" or "vernacular word" depending on the variety. However, it is challenging to determine the feature of *sun^3 "損" in the data sites because 'hurt' is not always included in the questionnaires of the sources. What can be inferred is that the frequency of *sun^3 "損" may not be as high as that of *son^1 "酸", *sun^1 "孫", *cion^1 "磚" and *tshun^1 "村" in general *Yuè*. Therefore, this study treats *sun^3 "損" as a literary word in comparison to the other four syllables.

9 *Kāijiàn* 開建 (*Nánfēng*) or *Fēngkāi* (*Kāijiàn*) were employed by Hou (2016) to represent *Fēngkāi* (*Nánfēng*) in (Zhan and Cheung 1998).

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Some Observations on the Cantonese Lexical Suprafixes

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Abstract: Suprafixation (more specifically, tonal affixation) is a word-building strategy that is somewhat frequently employed in Cantonese. This article explores the development of the lexical suprafixes in Standard Cantonese from three perspectives: (a) earlier descriptions of the Cantonese suprafixes and the behaviour of the lexical suprafixes in some older Romanised Cantonese texts; (b) the behaviour of the lexical suprafixes in some non-standard Cantonese varieties; and (c) the behaviour of the suprafixes and diminutives in Yuè and Pínghuà dialects in general. A definite answer cannot be found to the question of what the origin of the Cantonese suprafixes is. Nonetheless, the theory that the Cantonese lexical suprafixes stem from the diminutive suffix **ɲi* 兒 (Cantonese *ji4*, Mandarin *ér*) remains the most convincing.

Keywords: Cantonese; Yue; Pinghua; suprafixation; tone change; tonal affixation; morphological derivation

1. Introduction and Preliminaries

Affixes do not necessarily involve segments; some affixes consist of only suprasegmental features. An affix of which the form only includes suprasegments is a *suprafix*. One type of suprasegment is tone, and tonal affixes are not uncommon amongst Sinitic languages (Chappell 2023). Suprafixes (tonal affixes in this case) are reasonably common in Cantonese, especially lexical suprafixes (see Section 1.2 on 'lexical' versus 'non-lexical' suprafixes). This article looks at the development of the Cantonese lexical suprafixes from different perspectives.

Section 2 looks at what happened within Cantonese itself. Section 2.1 discusses some properties of the lexical suprafixes in modern Standard Cantonese. Section 2.2 looks at the history of the lexical suprafixes in older documents: explicit linguistic descriptions of their phonetics and phonology, and the behaviour of them in older tone-marked Romanised Cantonese texts. Section 2.3 discusses the situation with the lexical suprafixes in some non-standard Cantonese varieties. The data show that the lexical suprafixes on many words do not have a long history. Words can gain or lose suprafixes, although there are more cases of the former. Sections 2.2 and 2.3 represent original research.

Section 3 looks at what other Yuè dialects and the Pínghuà dialects might tell us about the origin of the Cantonese lexical suprafixes. Section 3.1 discusses briefly the range of diminutive suffixes in Yuè and Pínghuà, Section 3.2 discusses the *-ɲi*^{A} and *-ɲi*^{H} diminutive suffixes, and Section 3.3 reviews the various opinions on the relationship between the diminutive suffixes and the Cantonese lexical suprafixes. Ultimately, an undisputable answer cannot be found to the question of where the Cantonese lexical suprafixes originated. Nonetheless, the popular theory that the Cantonese lexical suprafixes have the diminutive suffix **ɲi* 兒 as their origin (e.g., Whitaker 1955–1956; Kwok 2016) is still the most-plausible.

Section 3 is mainly a summary of opinions, especially that of Kwok (2016)'s theory on the development of Yuè lexical suprafixes. It is one of the aims of this article to bring (snapshots of) excellent Chinese articles on this topic—like Kwok (2016), Kao (2007), and Shào (2005)—to the Anglophone audience. In Section 3.2, new data from Pínghuà dialects and some extreme-western Yuè dialects are presented, and a proposal is made for a small

extension to Kwok (2016)'s theory: before a high-toned *-ɲi*^{H} diminutive suffix is developed, there is a preceding step of a *-ɲi*^{A} diminutive suffix in its citation tone (see the discussions in Section 3.2).

1.1. 'Cantonese', and Some Transcription/Presentation Issues

Yuè is a dialect group within the Sinitic language family. Cantonese is the representative of the Yuè dialect group. What is considered 'Cantonese' varies greatly; different people use the term 'Cantonese' to cover different ranges of Yuè dialects. A somewhat-narrow definition of 'Cantonese' is adopted here: Cantonese is the language of Canton (i.e., Guǎngzhōu) and its derivatives (e.g., de Sousa 2022). Since the First Opium War (1839–1842), there have been massive waves of migration in all sorts of directions from the Pearl River Delta region. Migrants from the Canton area were particularly successful in making their version of the Yuè language the dominant speech in many towns and cities in Far Southern China (and also in many Chinatowns overseas). Many Cantonese enclaves can be found throughout Far Southern China. Some examples are Hong Kong, Macau, Zhànjiāng, Běihǎi, and Nánníng. Cantonese pushed the pre-existing Yuè, Hakka, Mǐn, Pínghuà, Southwestern Mandarin and/or Zhuàng varieties in those places away from the town or city centre. The various Cantonese varieties are slightly different from each other, due to, for instance, the difference in the language contact environment, and having preserved different features of earlier Cantonese. Nonetheless, they have remained fairly mutually intelligible, given the short history of divergence, and the (various degrees of) interactions that the different Cantonese enclaves have with each other.

Nowadays, there are two 'standard' varieties of Cantonese: Canton and Hong Kong Cantonese. ('Standard' is in quotation marks here, as there are only informal standards used for, e.g., broadcast. In the Hong Kong education system, only a small part of Cantonese is codified, namely the pronunciation used for reading Written Chinese. The suprafixes used in colloquial Cantonese are not standardised, although there are strong norms.) Given that Canton and Hong Kong are (traditionally) the two most important commercial centres in the Cantonese world, and that they are geographically not very far away from each other, Canton and Hong Kong have maintained strong contacts with each other, and the difference between these two Cantonese standards is very small (especially in comparison with the other Cantonese varieties). The Cantonese data presented in this article are from Hong Kong Cantonese by default, spoken by speakers under 50 years old or so. For the Hong Kong Cantonese data, consultations have been made with Bauer (2020)'s dictionary and the online dictionary *words.hk* 粵典.

Broad-phonetic IPA transcription (i.e., phonemes with their 'main' allophones) is used for the data provided by the author. When quoting from published sources, non-IPA transcriptions are converted to IPA, except with sources that are more than one hundred years old (see Section 2.2.3). Tonal categories (tonemes, allotones) are notated using full-sized numbers (e.g., *nɵ y5* 女 'female' is in 'tone 5'), while tone values (phonetic realisations) are notated using superscript numbers, with [^{5}] being the highest pitch (in modal register) and [^{1}] being the lowest pitch (e.g., *nɵ y*^{13} 女 'female' has a low-rising tone, i.e., Standard Cantonese tone 5 is a low-rising tone). Suprafixes in Yuè and Pínghuà dialects are usually substitutive, i.e., the suprafix tone replaces the citation tone (the underlying tone) of the host syllable. They are separated by a hyphen; before the hyphen is the citation tone that is not pronounced, and after the hyphen is the suprafix. For instance, *nɵ y5-2*/*nɵ y*$^{13–25}$ 女 'daughter' has a tone 2 suprafix, which is a high-rising tone. (Other than substitutive suprafixes, there are also additive suprafixes, e.g., Cantonese described by Chán (1900) (Section 2.2.2) and modern Toishanese (Section 3.2). Additive suprafixes are those where both the citation tone and the suprafix tone are pronounced on a lengthened host syllable.) In older Cantonese, there was a distinction between the suprafix version and the ordinary version of tone 2 and tone 1. When there is a contrast, the suprafix version is notated with a star, e.g., 'tone 2*' and 'tone 1*', while the ordinary version lacks a star, e.g., 'tone 2' and 'tone 1'.

Modern Standard Cantonese has six tonemes (Section 2.1). Unlike the Sidney Lau Romanisation and Jyutping, which number the tones 1, 2, 3, 4, 5 and 6, this article follows the S. L. Wong Romanisation and Cantonese Pinyin in numbering the tones of obstruent-ending syllables as 7, 8 and 9, while reserving 1, 2, 3, 4, 5 and 6 for sonorant-ending syllables. (When an obstruent-ending syllable takes a tone 2 or 1 suprafix, it is notated as in *tip9-2* 碟 'plate'.) This separation is primarily for philological reasons: the late-nineteenth/early-twentieth century Romanised Cantonese texts transcribed the tones on obstruent-ending versus sonorant-ending syllables separately, following Chinese linguistic traditions. In addition, sometimes they can behave differently. For instance, tones 1 and 7, both high level in pitch, behaved differently in the 1960s Hong Kong Cantonese tone sandhi rules (Section 2.2.1).

Lexical suprafixes are very rarely reflected in the Chinese script. For instance, both *nø y5* 'female' and *nø y5-2* 'daughter' are written 女. (Nonetheless, *nø y5-1* 'queen (playing card)' may be written with a separate character 囡, and *nø y5-4 nø y5-2* or *nø y5-4 nø y5-1* 'darling daughter/girlfriend' may be written 囡囡 or 女女.) Instead, the study of Cantonese suprafixes primarily relies on Romanised texts that are tone-marked.

The glossing in this article basically follows the Leipzig glossing rules (see also Chén et al. (2014) for the application of the Leipzig glossing rules with Sinitic languages). Two 'non-Leipzig' abbreviations that are frequently used in this article are SUPR for suprafix and DIM for diminutive.

1.2. Suprafixation versus Tone Sandhi, and Non-Lexical vs. Lexical Suprafixation

The Cantonese suprafixes can cause a change in meaning and/or word class. Cantonese suprafixation is also known in the literature by terms like *tone change* (e.g., Matthews and Yip 2011, chap. 1.4.2), *changed tone* (e.g., Jurafsky 1988; Liu 2016; Alderete et al. 2022), *morphological tone* (e.g., Alan Yu 2007), *pin3 jɐm1/binyam/biànyīn* 變音 (lit. 'changed sound'; e.g., Bauer and Benedict 1997, chap. 2.11; Kwok 2016), and *pin3 tiu6/biàndiào* 變調 (lit. 'changed tune' or 'changed tone'; e.g., Cheung 2000; Yiu 2010). The last term, *pin3 tiu6/biàndiào* 變調, is also used to mean tone sandhi. It is important to note the difference between tone sandhi and suprafixation. Tone sandhi is a largely automatic phonological process where one tone transforms into another tone under the conditioning of another tone in the vicinity. (Sometimes there can be morphosyntactic constraints involved.) The Yuè dialects tend to be poor in tone sandhi. Modern Standard Cantonese has no tone sandhi. (However, see Section 2.2.1 for the tone sandhi rules in the 1960s involving tones 1 and 1*.) On the other hand, suprafixation is not triggered by the tones or other phonological features in the vicinity. Suprafixes are just like other affixes; whether one uses a suprafix or not depends on lexical, morphosyntactic, semantic and/or pragmatic considerations. (Although sometimes there can be phonological constraints.)[1]

The Cantonese suprafixes are here divided into 'non-lexical' and 'lexical' suprafixes. 'Non-lexical' and 'lexical' refer to the lexical identity of the base. Non-lexical suprafixes are not constrained by the lexical identity of the base. They often convey grammatical functions. For instance, there is a tone 2 (high-rising) suprafix that signifies the perfective aspect (a contraction of the perfective particle *tsɔ2* 咗). There are constraints such as a) this suprafix cannot be at the end of an utterance, and b) the host syllable cannot be in tone 1/7 (high level) (e.g., *fei1* 飛 'fly' → **fei1-2* 'flew', *tɪk7* 剔 'tick' → **tɪk7-2* 'ticked'). Otherwise, the host can be any verb (or verby adjective), e.g., *fɐn3 kau3* 瞓覺 'sleep' → *fɐn3-2 kau3* 'slept/fell asleep', *ji4mɐn4* 移民 'migrate' → *ji4-2mɐn4* 'migrated'. (In Cantonese, *fɐn3* 瞓 and *ji4* 移 are the verb, cf. *ji4 tsɔ2 mɐn4* 移咗民 'migrated'.) Other examples of non-lexical suprafixes include the following: (a) the *-tei2* 哋 '-ish' construction, which involves the reduplication of a monosyllabic adjective, a tone 2 suprafix on the copy, and a suffix *-tei2*, e.g., *lam4 lam4-2 -tei2* 藍藍哋 'bluish'; and (b) the contraction of *jɐt1* 一 'one', e.g., *mat8 jɐt1 mat8 kʰø y5* 抹一抹佢 (wipe one wipe 3SG) → *mat8-2 mat8 kʰø y5* 'wipe it a bit' (signifying the delimitative aspect in this case).

On the other hand, lexical suprafixes depend on the lexical identity of the base. Whether it is applied to a base or not is mostly unpredictable. For instance, *ji5 wan4-2* 耳環 'ear ring' has a tone 2 suprafix, but *pei6 wan4* 鼻環 'nose ring' does not. The use of the lexical suprafix in *ji5 wan4-2* 耳環 'earring' has nothing to do with the phonological environment. As is sometimes the case with derivational morphology, the application of the lexical suprafix in *ji5 wan4-2* 耳環 'earring' is not entirely explainable. (The explainable part is that 'earring' is a more-familiar concept than 'nose ring' and other piercing/accessorial rings. However, being familiar does not guarantee a lexical suprafix.)

The Cantonese lexical suprafixes are quite often considered diminutives (e.g., Chén 2002; Kao 2007; Kwok 2016). While the lexical suprafixes most probably stem from diminutive suffixes (Section 3), in the majority of cases, the lexical suprafixes no longer have any diminutive-type meaning in Cantonese (Section 2). This article refrains from calling the Cantonese lexical suprafixes diminutives, but it is acknowledged they are at least derivatives of diminutives, regardless of meaning.

2. Lexical Suprafixes in Cantonese

Section 2.1 describes some aspects of the lexical suprafixes in modern Hong Kong Cantonese. Section 2.2 takes a diachronic look at the suprafixes in Standard Cantonese. Sections 2.2.1 and 2.2.2 look at how there used to be separate suprafix and ordinary versions of tones 1 and 2, respectively, in the twentieth century. Section 2.2.3 looks at how words in modern Cantonese have gained, maintained, lost, or changed suprafixes in comparison with those in Ball (1888, 1894). Section 2.3 looks at the use of lexical suprafixes in some non-standard Cantonese varieties. Section 2.4 is an interim summary.

2.1. Modern Standard Cantonese

Some basic properties of the lexical suprafixes in modern Standard Cantonese are outlined in this section. For fuller accounts, please see the studies quoted in this section.

Table 1 shows the inventory of tones in modern Hong Kong Cantonese, arranged in relation to Middle Chinese categories.[2] (The Middle Chinese categories are not essential for the understanding of this article. They are provided here only for the convenience of historical phonologists.)

Table 1. Tones in modern Standard Cantonese in relation to Middle Chinese categories (tone values from Matthews and Yip 2011, p. 28).

	A	**B**	**C**	**D(L)**	**D(S)**
*voiceless	1 [^{55}]	2 [$^{25\sim35}$]	3 [^{33}]	8 [^{33}] (=3)	7 [^{55}] (=1)
*voiced	4 [$^{21\sim11}$]	5 [$^{23\sim13}$]	6 [^{22}]	9 [^{22}] (=6)	

There are two lexical suprafixes in modern Standard Cantonese: the tone 2 (high-rising) suprafix and the rarer tone 1 (high-level) suprafix.[3] They replace the citation tone of the host syllable. Like some other derivational affixes, whether a lexical suprafix can be used or not, which one is used, and what effects it has on the base are not quite predictable. The following are examples of these two lexical suprafixes applied to the noun root *mui6* 妹 (< Middle Chinese *mwoj*^{C}) 'younger sister'. First of all, in citation tone, the root *mui6* 'younger sister' is a bound morpheme; most usually it occurs in a compound, e.g.,

(1) a. *mui6* *fu1* 妹夫
y.sis husband
'younger sister's husband'

b. *hɯŋ1* *tɐi6* *tsi2* *mui6* 兄弟姊妹
o.bro y.bro o.sis y.sis
'siblings'

To say 'younger sister' on its own, *mui6-2* 妹 is used, with a tone 2 suprafix. The tone 2 suprafix is also applied in some other cases unpredictably, e.g., example (2b) below.

(2) a. *ŋɔ5* *kɔ3* *mui6-2* 我個妹
1SG CLF y.sis\SUPR
'my younger sister'

b. *tsi2* *mui6-2* 姊妹
o.sis y.sis\SUPR
'sisters' (cf. (1b) above)

With a tone 1 suprafix, *-mui6-1* 妹 is a suffix meaning '-girl'. The tone 1 suprafix is also applied to the root *mui6* 妹 unpredictably in some nouns, e.g., example (3c) below.

(3) a. *lœŋ4 -mui6-1* 聾妹
deaf -y.sis\SUPR
'deaf girl'

b. *ma5lai1 -mui6-1* 馬拉妹
Malay -y.sis\SUPR
'Malay girl'

c. *mui6-1 -tsɐi2* 妹仔
y.sis\SUPR -DIM
'young female servant'

With the suffix *-mui6-1* 'girl', suprafixation is applied at the morpheme level (i.e., *-1* is applied to *-mui6*, and then *-mui6-1* is suffixed to a base). However, suprafixation is often applied at the word level instead. For instance, with the suffix *-pʰɔ4* 婆 '-woman', while *kʷɐi2 -pʰɔ4* 鬼婆 'European woman' and *pat3 -pʰɔ4* 八婆 'bitchy woman' do not take a lexical suprafix, *tin1 -pʰɔ4-2* 癲婆 'crazy woman' and *jɐu5 tsʰin4-2 -pʰɔ4-2* (have money\SUPR -woman\SUPR) 有錢婆 'rich woman' do, for no apparent reason. This arbitrariness can also be demonstrated using place names. The place name *ou3mun4-2* 澳門 'Macau' is most usually pronounced with a lexical suprafix tone 2 (see also Section 2.3). On the other hand, most other *-mun4* 門 'door' place names do not carry a suprafix, e.g., *tʰyn4 mun4* 屯門 'Tuen Mun (suburb of Hong Kong)', *tɐu2 mun4* 斗門 'Dǒumén (district of Zhūhǎi), *kɔŋ1 mun4* 江門 'Kongmoon/Jiāngmén', and *ha6 mun4* 廈門 'Amoy/Xiàmén'. The place name *hɔ4 lan4-1* 荷蘭 'Holland' has the rare tone 1 suprafix, but the other *-lan4* 蘭 place names do not, e.g., *fɐn1 lan4* 芬蘭 'Finland' and *nɐu2 sɐi1 lan4* 紐西蘭 'New Zealand'.

Only words that depict familiar concepts have a lexical suprafix. For instance, in Canton, *hɔ4 nam4-2* 河南 (river south), with a lexical suprafix, is the suburbs of Canton south of the river (basically Hǎizhū District), whereas *hɔ4 nam4* 河南, without a lexical suprafix, is the relatively unfamiliar Hénán province in northern China. In another example, 'Vancouver' is *wɐn1 kɔ1 wa4* 溫哥華 in Cantonese, but a 'true' Cantonese Vancouverite calls their city *wɐn1 kɔ1 wa4-2*, with a tone 2 suprafix.

Historically, the lexical suprafixes probably came from a diminutive suffix (Section 3). In modern Standard Cantonese, lexical suprafixes can sometimes still have diminutive-type meanings. For instance, while *lɔ4* 籮 is a basket of any size, *lɔ4-1* is a basket that is not very big. Some names habitually carry a lexical suprafix (primarily involving tone 4 becoming tone 2), and this clearly has an endearment meaning, e.g., *hɔ4-2 pak8* 何伯 (Ho\SUPR old.man) 'Uncle Ho' and *lɪŋ4 lɪŋ4-2* 玲玲 'Ling Ling'. Nonetheless, most lexical suprafixes do not have any diminutive-type meaning. For instance, *lœŋ4 tʰɪŋ4-2* 涼亭 is a gazebo of whatever size, and **lœŋ4 tʰɪŋ4* is not a valid word in colloquial Cantonese (in Hong Kong/Canton). Nouns depicting small things do not necessarily carry a lexical suprafix. For example, looking at two similarly small-sized fruits, while *wɔŋ4 pʰei4-2* 黃皮 'wampi' carries a lexical suprafix tone 2, *lœŋ4 ŋan5* 龍眼 'longan' does not, and cannot, carry a lexical suprafix. Similarly, while *pɛ1 lei4-2* 啤梨 'Western pear' carries a lexical suprafix, *syt8 lei4* 雪梨 'Chinese pear' does not.

Correlating with the fact that diminutives are suffixes in Cantonese, the host syllable that obtains a suprafix is often at the end of a word. However, the suprafixed syllable is not necessarily word-final. For instance, a suprafixed base can be followed by a suffix, e.g., *tip9-2 -tsɐi2* 碟仔 (plate\SUPR -DIM) 'little plate'. One example that is harder to explain is the

name of the suburb of *jœŋ4-2 kei1* 楊箕 (Yángjī) in Canton; *jœŋ4* 楊 came from *jœŋ4 tʰou4-2* 楊桃 'star fruit', i.e., *jœŋ4* 楊 was not even word-final to begin with.

The citation tone of a suprafixed syllable is usually known by people, as the syllable (morpheme) in citation tone is usually found in some other environments. For instance, 'egg' is *tan6-2* 蛋, and 'fowl egg' is *kɐi1 tan6-2* 雞蛋. The citation-tone morpheme *tan6* 蛋 is still known by people, as it appears in words like *tan6 gou1* 蛋糕 'cake' and *kɐi1 tan6 -tsɐi2* 雞蛋仔 (fowl egg -DIM) 'egg waffle'. (With a lexical suprafix, *kɐi1 tan6-2 -tsɐi2* (fowl egg\SUPR -DIM) would be literally 'little fowl egg'.) However, with some morphemes, the original citation-tone form is lost. One example is *tsʰaŋ2* 橙 'orange'; this morpheme 橙 is now pronounced *tsʰaŋ2* in all environments. Very few people know that 橙 is meant to have a citation-tone pronunciation of *tsʰaŋ4* (< Middle Chinese *dẹŋ*^{A}). (The root 橙 'orange' has remained in tone 4 in most other Yuè dialects. One could also figure this citation tone 4 out through cognates in other Sinitic languages, e.g., Mandarin *chéng* 橙.) In another example, the highest mountain in Hong Kong, *tai6 mou6 san1*, is sometimes written incorrectly as 大霧山 (big fog mountain), as the pronunciation suggests. Nonetheless, *mou6* is actually the citation-tone pronunciation of *mou6-2* 帽 'hat' (i.e., 大帽山 (big hat mountain))—a fact that is often not consciously known by younger speakers in Hong Kong (unlike, e.g., older speakers in Macau, many of whom still say *mou6* for 'hat'; see Section 2.3.).

With some words, the citation tone and suprafixed versions are in free variation. One example is *ap8 ~ ap8-2* 鴨 'duck'. (However, the diminutive form does not take a suprafix: *ap8-tsɐi2* 鴨仔 'duckling'. There is also the slang *ap8-2* 鴨 'male prostitute', always with a suprafix.) In some cases, a citation-tone syllable and a suprafixed syllable are both morphologically free words, with different semantics. One example is *tʰɔŋ4* 糖 'sugar' vs. *tʰɔŋ4-2* 糖 'lolly/candy'. (Cf. one common function of diminutives is denoting a delineated part of a mass (Jurafsky 1996)). With polysyllabic (and polymorphemic) words, not uncommonly the suprafixed version is an established compound with a less-transparent meaning, while the citation-tone version has the literal meaning. For instance, *wɔŋ4 pʰei4-2* 黃皮 is the fruit 'wampi', while *wɔŋ4 pʰei4* 黃皮 is literally 'yellow skin'. (The aforementioned *kɐi1 tan6 -tsɐi2* 雞蛋仔 'egg waffle' versus *kɐi1 tan6-2 -tsɐi2* 雞蛋仔 'little fowl egg' are counter-examples.)

Occasionally, lexical suprafixes are found with non-noun bases. For instance, 大 *tai6* is 'big', but *tai6-1* is unexpectedly small. (This usage of *tai6-1* is now perhaps slightly dated. The distinction is not expressed in the Chinese script.)

(4) *nei5* *tsɛk8* *kɐu2* *kɐm3* *dai6-1* *tsɛk8* *kɛ2?* 你隻狗咁大隻嘅?
2SG CLF dog SO big\SUPR CLF SURPRISE
'Your dog is so small?!'

For non-noun bases, often they become nouns when a lexical suprafix is applied. For instance, verb *tsʰat8* 刷 'to brush' vs. noun *tsʰat8 ~ tsʰat8-2* 刷 'brush'; classifier *tʰʊŋ4* 筒 for small cylindrical objects vs. noun *tʰʊŋ4-2* 筒 'tube-shaped object'; and numeral *lœŋ5* 兩 'two' vs. noun (or unit classifier) *lœŋ5-2* 兩/両 'tael'.

The tone 2 lexical suprafix can be applied to a host syllable in any tone other than tone 1/7 (high level). As for host syllables that are in tone 2 (high rising), there would be no perceptible difference if a tone 2 lexical suprafix is applied to it, and I remain agnostic as to whether a tone 2 host syllable can take a tone 2 suprafix or not in modern Cantonese. (There are no data that suggest that middle-aged and younger speakers produce and perceive a difference between an ordinary tone 2 and a suprafix tone 2 (Section 2.2.2). In the late-nineteenth century when there was such a contrast, on rare occasions, a suprafix tone 2* could be applied to a tone 2 syllable (Section 2.2.3).) In the following (modern) examples, the suprafixed forms can function as independent nouns, while the citation-tone forms cannot, except (5e) *ap8* 鴨 'duck' and (5d) *tɔi6* 袋 in the sense of 'scrotum'. The citation-tone forms can function as bound noun roots, and sometimes as independent words in other word classes.

(5)	citation tone	lexical suprafix tone 2
a.	片 *pʰin3* classifier ‘slice’noun, e.g., 片面 *pʰin3 min6* ‘one-sided’	片 *pʰin3-2* noun ‘film’, ‘slice’
b.	房 *fɔŋ4* classifier ‘wing of family’noun, e.g., 心房 *sɐm1 fɔŋ4* ‘heart atrium’	房 *fɔŋ4-2* noun ‘room’
c.	女 *nɵ y5* noun, e.g., 女性 *nɵ y5 sɪŋ3* ‘female sex’	女 *nɵ y5-2* noun ‘daughter’
d.	袋 *tɔi6* classifier ‘bag’ verb ‘to (put into a) bag’ noun, e.g., (春)袋 *(tsʰɵ n1) tɔi6* ‘scrotum’	袋 *tɔi6-2* noun ‘bag’
e.	鴨 *ap8* noun, e.g., 鴨 *ap8* ‘duck’, 鴨屎 *ap8 si2* ‘duck faeces’	鴨 *ap8-2* noun ‘duck’, ‘male prostitute’
f.	碟 *tip9* classifier ‘plate’ noun, e.g., 碟頭飯 *tip9 tʰau4-2 fan6* ‘rice dish’	碟 *tip9-2* noun ‘plate’, ‘disc’

The tone 1 suprafix is much rarer. The tone 1 suprafix can be applied to a host syllable in any tone. (Similarly, I remain agnostic as to whether a tone 1 suprafix can be added to a host syllable in tone 1/7 (high level). Examples of tone 8 taking the tone 1 suprafix cannot be found; maybe this is an accidental gap, given the rarity of the tone 1 suprafix, and the relative rarity of tone 8 syllables.) In the following examples, in citation tone, only (6d) *mei5* 尾 ‘tail’ can function as an independent noun.

(6)	citation tone	lexical suprafix tone 1
a.	己 *kei2* noun, e.g., 私己錢 *si1 kei2 tsʰin4-2* ‘(secret) personal money’	自己 *tsi6kei2 ~ tsi6kei2-1* pronoun ‘self’
b.	派 *pʰai3* verb ‘distribute’, ‘hand out’ noun ‘faction,’ e.g., 門派 *mun4 pʰai3* ‘sect’	派 *-pʰai3 ~ -pʰai3-1* ‘-faction,’ e.g., 左派 *tsɔ2 pʰai3~1* ‘left faction’
c.	欄 *lan4* noun, e.g., 圍欄 *wɐi4 lan4* ‘fence’	欄 *lan4-1* noun ‘animal pen’, ‘vegetable market’
d.	尾 *mei5* noun ‘tail’	尾 *-mei5-1* e.g., 第尾 *tɐi6 -mei5-1* ‘final, last’
e.	妹 *mui6* noun, e.g., 妹夫 *mui6 fu1* ‘younger sister’s husband’	妹 *-mui6-1* e.g., 泰妹 *tʰai3 -mui6-1* ‘Thai girl’
f.	掠 *lœk9* verb, e.g., 搶掠 *tsʰœŋ2 lœk9* ‘rob’	掠水 *lœk9-1 sø y2* ‘rob money’

2.2. Earlier Cantonese

In modern Cantonese, the suprafix tone 2 is indistinguishable from the ordinary tone 2 (the tone 2 of syllables that inherently have a tone 2), and for the vast majority of speakers, the suprafix tone 1 is indistinguishable from the ordinary tone 1. On the other hand, in earlier Cantonese, they were different. (When there is a contrast, the suprafix versions are notated as 2*/1*, and the ordinary versions as 2/1. Nonetheless, in the past, there were rare cases where the suprafix was tone 2/1 and not tone 2*/1*; see Section 2.2.3.) Nowadays, a distinction between tones 1 and 1* can still be observed in the speech of some older speakers, but in the last forty years or so, there has been no report of speakers perceiving two different versions of tone 2.

In Section 2.2.1, we shall look at some earlier descriptions of tone 1 and tone 1*, and in Section 2.2.2, some earlier descriptions of tone 2 and tone 2* will be visited. In Section 2.2.3, we shall look at the use of the lexical suprafixes in the late-nineteenth/early-twentieth century.

2.2.1. Tone 1*

The loss of tone 1* as a distinct toneme in Standard Cantonese is rather recent. In fact, impressionistically, there are still older speakers in Canton, Hong Kong, and Macau who maintain a clear contrast between tones 1 and 1*. The following are some descriptions of tone 1 and tone 1* in the literature.

Matthews and Yip (1994, pp. 21–22; 2011, pp. 27–28) describe modern Hong Kong Cantonese tone 1 as a high-level tone. There is only one tone 1. They made a side comment that high falling is an infrequently encountered free variation of tone 1. The side comment was made in the main text in (1994) and in an endnote in (2013). This decrease in prominence impressionistically correlates with an actual decrease in the occurrence of the high-falling realisation. Tang (2015, p. 359) basically agrees that the high-falling tone has largely disappeared in the speech of younger speakers in Hong Kong, and high falling is not contrastive with high level. Nonetheless, he lists two remaining minimal pairs: noun *ts^{h}ɛ^{55}* 車 'vehicle' vs. interjection *ts^{h}ɛ^{53}* 嗆 (expressing disdain), and adverb *sin^{55}* 先 'first, prior' vs. question particle *sin^{53}* 先 'actually…?', e.g., *pin^{55}kɔ^{33} hɵ y^{33} sin^{55} sin^{53}* 邊個去先先 (who go first actually.Q) 'actually who goes first?'

Zhān et al. (2002, p. 10) mention that in Canton, tone 1 has the free variations of high level and high falling. They also mention that while high level is the norm, in some situations, tone 1 has to be pronounced as high falling. They offer the examples of verb *ʃɐi^{53}* 篩 'to sieve, to filter' vs. noun *ʃɐi^{55}* 篩 'sieve' and verb *pau^{53}* 包 'to include' vs. noun *pau^{55}* 包 'bag'.

Bauer and Benedict (1997, p. 117) mention that amongst their participants from Hong Kong, only three had a high-falling tone: one had high falling and high level as free variations, one used the high-falling tone in 'certain syntactic environments', and one used the two tones contrastively, similar to their three participants from Canton.

Samuel Hung-nin Cheung ([1972] 2007) claims that high level and high falling are free variations of one toneme (p. 5) but then shows minimal pairs (p. 6). Perhaps speakers who made the distinction, and speakers who did not, were both commonly encountered in Hong Kong in the 1970s.

Yat-Shing Cheung (1969) presents Hong Kong Cantonese as clearly distinguishing tone 1 and tone 1*. In isolation, tone 1 was high falling, and tone 1* was high level. Cheung presents tens of minimal pairs; the following are three examples:

Hong Kong Cantonese in the 1960s (Yat-Shing Cheung 1969, p. 84).

(7)		Tone 1 [^{53}] (ordinary tone)	Tone 1* [^{55}] (suprafix tone)
	a.	鞭 *pin1* 'whip' (noun/verb)	辮 *pin1** 'braid'
	b.	忠 *tʃʊŋ1* 'loyal(ty)'	鐘 *tʃʊŋ1** 'clock'
	c.	燒 *ʃiu1* 'burn'	簫 *ʃiu1** 'flute'

Other than being the realisation of suprafix tone 1*, high level could also be a sandhi tone of ordinary tone 1. The rules in Hong Kong were as follows (Yat-Shing Cheung 1969, pp. 94–95):

(8) a. ^{53} (tone 1) + ^{5} (tone 7) → ^{53} + ^{5} [no change]
e.g., *ʃan^{53} + kʊk^{5} → ʃan^{53} kʊk^{5}* 山谷 'mountain valley'

b. ^{53} (tone 1) + ^{55} (tone 1*) → ^{55} + ^{55}
e.g., *ʃan^{53} + lʊŋ^{55} → ʃan^{55} lʊŋ^{55}* 山窿 (mountain hole) 'cave'

c. ^{53} (tone 1) + ^{53} (tone 1)
→ ^{55} + ^{55} in colloquial context, ^{53} + ^{53} in literary context
e.g., *hœŋ^{53} + tʃ^{h}yn^{53} → hœŋ^{55} tʃ^{h}yn^{55} ~ hœŋ^{53} tʃ^{h}yn^{53}* 鄉村 'rural village'

These 1960s Hong Kong sandhi rules contrasted with those in Canton, where the first syllable became high level in all three cases (rule c: ^{53} + ^{53} → ^{55} + ^{53}; Yat-Shing Cheung 1969, p. 94, quoting Zōng 1964).

Tone 1* is here considered a suprafix tone, as it behaves like the modern-day tone 2 suprafix. With a modern tone 2 suprafix (high rising), (a) the resulting base is usually a noun (e.g., verb *sou3* 掃 'brush, sweep' vs. noun *kɐi1 mou4 sou3-2* 雞毛掃 (fowl hair brush\SUPR) 'feather duster'), and (b) some roots must take a tone 2 suprafix (e.g., *ts^{h}aŋ4-2* 橙 'orange'), some roots must not take a suprafix tone 2 (e.g., *t^{h}ou4* 圖 'diagram'), and some roots vary, depending on the word (e.g., *ap8* 鴨 'duck' in *siu1 ap8 ~ siu1 ap8-2* 燒鴨 'roast duck' vs. *ts^{h}ɐu2 siu2 ap8* 醜小鴨 (ugly little duck) 'ugly duckling'). The situation with the 1960s tone 1* (high level) was the same: a) the resulting base is usually a noun (e.g., adjective *hɔn4 ʃyn1* 寒酸 (cold sour) 'poverty-stricken' vs. noun *jim4 ʃyn1-1** 鹽酸 (salt sour\SUPR) 'hydrochloric acid', verb *ʃan1* 閂 'close (e.g., door)' vs. noun *mun4 ʃan1-1** 門閂 (door close\SUPR) 'door lock'), and b) some roots must take a suprafix tone 1* (e.g., *mau4-1** 貓 'cat'), some roots (in a non-sandhi environment) must not have a high-level tone (e.g., *t^{h}in1* 天 'sky'), and some roots vary, depending on the word (e.g., *fɔŋ1* 崯 'peak' in *kou1 + fɔŋ1 → kou^{55} fɔŋ^{55} ~ kou^{53} fɔŋ^{53}* 高崯 'tall peak' (sandhi rule 8c) vs. *ʃan1 + fɔŋ1-1** → *ʃan$^{53\text{-}55}$ fɔŋ^{55}* 山崯 'mountain peak' (sandhi rule 8b)).

Nonetheless, Yat-Shing Cheung (1969) analyses tones 1 and 1* as two ordinary tones in Hong Kong Cantonese. Lǐ et al. (1995) have a similar stance for Canton Cantonese. While they acknowledge that tone 1* started off as a diminutive suprafix, the use of tone 1* had become so ubiquitous that people no longer had a sense that tone 1* was a derivative of tone 1, so it is better to treat them as two ordinary tones.

Shī (2004) looks at the situation with tones 1 and 1* in Ball (1883) and Ball (1912). The situation was similar. Ball (1888) (a newer edition of Ball 1883) offers minimal pairs like *shí1* 尸 'corpse' vs. *shí1** 詩 'hymn' and *tsz1* 貲 'wealth' vs. *tsz1** 資 'postage' (p. xxxiii). One difference with later descriptions is that, in Ball (1888), suprafix tone 1* syllables could only have citation tone 1, and occasionally tone 4 (see Section 2.2.3), whereas in Yat-Shing Cheung (1969), a wider range of citation tones were possible (although the citation tone was still predominantly tone 1).

There are also descriptions that describe tone 1* as an extra-high-level tone. Gāo (1980, p. 7) mentions that in Canton, tone 1 could be high falling or high level, while the high-level suprafix (tone 1*) was even higher than the normal high-level tone. Wong ([1941] 1997) also describes the suprafix tone 1* as extra-high level. (Wong was from Canton and moved to Hong Kong in the early 1950s.)

2.2.2. Tone 2*

There has been no report of speakers perceiving two different types of tone 2 in the last forty years or so. However, there have been some rather-recent reports of speakers still producing such a distinction.

Liu (2016) measures the speech of a 77-year-old native speaker 'born in the Province of Guangdong', and the length of suprafixed tone 2 syllables (i.e., tone 2 syllables with a different citation tone) were on average double that of ordinary tone 2 syllables. (In contrast, with the ten subjects aged 20 to 25 years old, the difference was minimal.) Also quoted by Liu (2016) is Yu (2007)'s study: although the subjects produced the two types of high-rising tone (tone 2) with subtle differences, they were not able to perceive the difference between the two types of high-rising tone.

Both Matthews and Yip (1994, pp. 21–22; 2011, pp. 27–28) and Bauer and Benedict (1997, p. 116) mention that there is only one high-rising tone (tone 2) in Hong Kong.

Gāo (1980, p. 7) mentions that in Canton, the high-rising suprafix tone (tone 2*) rose even higher than the ordinary high-rising tone (tone 2).

Chao (1947, pp. 34–35) describes tone 2* as having a larger rise [^{25}] than tone 2 [^{35}]. Bauer and Benedict (1997, p. 170) mention that Benedict (1942) came to a similar con-

clusion. They also mention Søren Egerod's personal communication with Robert Bauer, where Egerod observed this difference while learning Cantonese in Canton in 1949/1950.

Kwok (2009), in his article on the Cantonese grammatical suprafixes (a type of non-lexical suprafixes), quotes the phonetic descriptions in Ch'an Chan Sene (1900) (also quoted by Ball 1907).[4] In Chán (1900)'s description, except for the suprafix version (^{55}) of tone 1 (^{53}), the high-tone suprafix was an additive suprafix: the citation tone was pronounced, and then the pitch rose. The syllable as a whole was lengthened. (This is similar to the modern day Toishanese high-rising suprafixes; see Section 3.2.) For Cantonese, this represents an intermediate stage in which the tone merger had not yet completed.

Ball (1888, p. xxxi) describes the 'third rising tone' as 'a longer tone than the other two Rising Tones [tones 2 and 5], banning lower and ascending higher than either of them'. In other words, tone 2* was a 'dramatic' dip, something like [^{315}]. Ball (1888) provides minimal pairs like *fong2* 訪 'inquire' vs. *fong2** 房 'room' and *yöng2* 抉 'shake (e.g., cloth)' vs. *yöng2** 樣 'pattern'.

2.2.3. Suprafixes in Ball's Cantonese Textbooks

James Dyer Ball (1847–1919) was born in Canton. He grew up in Canton and spoke Canton Cantonese natively. He worked as a civil servant in Hong Kong between the 1870s and the 1900s. Ball was considered the most-knowledgable Westerner on Cantonese at the time. Amongst his many publications were descriptions of Cantonese, some other Yuè dialects (e.g., pre-Cantonesised Macau), and Hakka. (He has also published on a wide range of other topics.) The language publications include Chinese characters, Romanisations that are fully tone-marked, glossing, and translations. In this section, we will discuss some similarities and differences in the usage of suprafixes in some of Ball's Cantonese publications versus usage in modern-day Standard Cantonese.

Probably the best known amongst Ball's language publications are his *Cantonese Made Easy* textbooks; the first to third editions were published in 1883, 1888, and 1907, and a fourth edition was published posthumously (Ball 1924). In this section, we will primarily look at the second edition (Ball 1888). Also discussed in this section is *Readings in Cantonese Colloquial* (Ball 1894, fourth edition). In the data presented below, his Romanisation is used for the segments, while the tones are notated using numerals like the rest of this article.[5]

Looking at Ball (1888), host syllables with suprafix tone 1* most usually had tone 1 as the citation tone, and rarely tone 4.[6] (Kwok (2016, p. 291) makes the observation that, amongst the cases of suprafix tone 1* syllables with a non-tone-1 citation tone listed by Mài (1995, p. 267), the onset is most usually sonorant. In other words, most usually, only non-tone-1 syllables with a sonorant onset can take either suprafix tone 1* or tone 2*. Otherwise, there is usually only one choice, with tone 1/7 taking tone 1* and tones 3/8, 4, 5, and 6/9 taking tone 2*.) In Ball (1888), there were some cases where the suprafix was tone 1 (high falling) and not tone 1* (high level), e.g., *sz1 nái5-1* 師奶 'lady' and *man4-1* 蚊 'mosquito'.

With the suprafix tone 2*, the citation tone was one of the low tones—usually tone 4 or 6, sometimes tone 5, and there was one case of tone 9: *ts'ak9-2* 賊 'thief'. (This last case was so rare that Ball (1888) had a footnote about it (p. 31).) Importantly, the suprafix tone 2* did not have tone 2 as its citation tone. (With one exception: the verb *ts'ui2-2** 娶 'get wife'. This was a lexical suprafix, as *ts'ui2-2** 娶 had a suprafix in isolation and in whatever aspect-mood. That this is a verb perhaps also explains why this tone 2 could take a suprafix tone 2* unexpectedly; perhaps this was originally a non-lexical suprafix, and non-lexical suprafixes did not have this constraint.) Other than suprafix tone 2*, there were cases where the suprafix was tone 2 (see Table A4 in Appendix A). While there are discussions in the literature on tones 1* and 2* as suprafixes, there do not seem to be discussions on tones 1 and 2 being lexical suprafixes during times when tones 1/2 and 1*/2* were distinguished.

In comparison with Ball (1888), Ball (1907) sees more cases of tone 1*. The following are some examples.

(9)			Ball (1888)	Ball (1907)
	a.	師奶 'lady'	*sz1 nái4-1*	*sz1 nái4-1~1**
	b.	蚊 'mosquito'	*man4-1*	*man4-1**
	c.	啲 (mass classifier, comparative)	*ti1 ~ tí1*	*ti1* ~ tí1**
	d.	都 ('all')	*tò1*	*tò1~1**
	e.	資 'postage'	*tsz1~1**	*tsz1**
	f.	艙 'cabin/hold'	*ch'ong1 ~ ts'ong1**	*ts'ong1**

(See also Shī (2004)'s study comparing tones 1 and 1* in Ball (1883) and another textbook (Ball 1912), with the same conclusion that there was an increase in tone 1*.) Yiu (2010) (which, in a sense, is a follow up of Cheung (2000)) looks at Romanised Cantonese texts in different time periods, and shows that cases of tone 1* (high level) have continuously increased, at the expense of tone 1 (high falling). In other words, tone 1 [^{53}] has merged into tone 1* [^{55}]. The high-falling tone [^{53}] has now basically disappeared; at most, it is a rarely used free variation of a tone that we now call tone 1. With differences,[7] tone 2 [^{35}] has also merged into tone 2* [^{25}] (using Chao (1947)'s tone values), becoming what we now call tone 2 [^{25}].

Comparing the lexical items in Ball (1888, 1894) with their modern equivalents, one can see that many words that had a lexical suprafix back in the late-nineteenth century still have a lexical suprafix nowadays. Some words have since gained a suprafix. Importantly, the opposite has also occurred: some words have lost their suprafixes, usually reverting back to their citation-tone pronunciation. The Tables 2 and 3 show the number of unique lexical items in Ball (1888, 1894) that have gained, maintained, lost, or changed lexical suprafixes in comparison with modern Cantonese. The lexical items themselves are shown in Tables A1–A6 for Ball (1888) and Tables A7–A11 for Ball (1894) in the appendix. (Some lexical items are shown in more than one table, e.g., free variations. Cases of non-lexical suprafixes are ignored. Some verbs and adjectives always carried a lexical suprafix, regardless of the grammatical environment.)

Table 2. Number of unique lexical items in Ball (1888) that have gained, maintained, lost, or changed a lexical suprafix (see Tables A1–A6 for the lexical items involved).

Items Shown in Table:	Tone in Ball (1888)	Tone in Modern Cantonese	Suprafix:	Number of Items
A1	citation tone	suprafix tone 2	gained	33
A2	suprafix tone 2*	suprafix tone 2	maintained	34
A3	suprafix tone 2*	citation tone	lost	19
A3	suprafix tone 2*	suprafix tone 1	changed	2
A4	suprafix tone 2	suprafix tone 2	maintained	2
A4	suprafix tone 2	citation tone	lost	2
A5	suprafix tone 1*	suprafix tone 1	maintained	28
A5	suprafix tone 1	suprafix tone 1	maintained	1
A6	suprafix	(word is now obsolete)	?	11

Obviously, textbooks only demonstrate a small portion of the vocabulary used during a particular time period. One cannot conclude from simply comparing the suprafixed words in old textbooks versus modern language that the number of suprafixed words overall has increased or decreased. Nonetheless, that there are more gains than losses within each textbook (here in Section 2.2.3), and the lower prevalence of lexical suprafixation in other Cantonese varieties (Section 2.3 below), strongly suggests that, on average, there has been an increase in the number of suprafixed words in Standard Cantonese.

Table 3. Number of unique lexical items in Ball (1894) that have gained, maintained, or lost a lexical suprafix (see Tables A7–A11 for the lexical items involved).

Items Shown in Table:	Tone in Ball (1894)	Tone in Modern Cantonese	Suprafix:	Number of Items
A7	citation tone	suprafix tone 2	gained	14
A8	suprafix tone 2*	suprafix tone 2	maintained	27
A9	suprafix tone 2*	citation tone	lost	6
A10	suprafix tone 2	suprafix tone 2	maintained	1
A10	suprafix tone 2	citation tone	lost	1
A11	citation tone	suprafix tone 1	gained	1
A11	suprafix tone 1*	suprafix tone 1	maintained	7
A11	suprafix tone 1*	citation tone	lost	1
A11	suprafix tone 1	suprafix tone 1	maintained	1

(As discussed in Yiu (2010, pp. 24–25), prior to Ball (1883), the earliest publications with Romanised texts of Cantonese which displayed suprafixation were Dennys (1874) and Eitel (1877). Earlier publications with Romanised texts were either not tone-marked or documented only literary language, where suprafixation either did not occur or was not recorded.)

2.3. Other Cantonese Varieties

(See Section 1.1 above for a definition of 'Cantonese'.) There is another perspective that enables us to look into the development of the lexical suprafixes in Standard Cantonese, albeit somewhat indirectly: the behaviour of the lexical suprafixes in other Cantonese varieties. There are many enclaves of Cantonese speakers outside the Canton area (e.g., de Sousa 2022). Except the Wúzhōu and Hèzhōu Cantonese enclaves, the Cantonese enclaves started developing after the First Opium War (1839–1842). The city centre of Hong Kong became Cantonese-dominant relatively early, in the last decades of the 19th century (e.g., Ball 1883). Most other cities became Cantonese-dominant later. For instance, Cantonese migrants started arriving in Tsamkong 湛江 (Zhànjiāng/Fort-Bayard) after the start of French colonisation in 1898.[8] Macau (Zhān et al. 2002, pp. 201–2) and the city centre of Nánníng (Lì 2008) did not become Cantonese-dominant until the 1940s. Canton and Hong Kong Cantonese are at the forefront of the development of lexical suprafixes; there are no reports of Cantonese varieties that have more suprafixed words than Canton and Hong Kong Cantonese. The following are quotes commenting on the lower number of suprafixed words in the Cantonese of Macau, Nánníng, and Běihǎi.

> [In Macau Cantonese, in contrast to Hong Kong Cantonese:]
>
> 人们戏称，说 [ɔu^{33} mun^{11} jan^{11}] 者是真正的澳门人，说 [ɔu^{33} mun^{35} jan^{11}] 者是假冒的澳门人。不过这种差别正在缩小。
>
> 'People joke that, one who says *ou3 mun4 jɐn4* is a real Macau person, one who says *ou3 mun4-2 jɐn4* is a fake Macau person. But this type of difference is narrowing.' (Wong 2007, p. 91)
>
> [In Nánníng Cantonese, the high-rising (tone 2) suprafix:]
>
> 使用远无广州、香港白话那么普遍，基本可以穷尽。
>
> 'The usage is far less common than in Canton and Hong Kong Cantonese, [examples of suprafixed words] can basically be exhaustively listed.' (Lín and Qín 2008, p. 90)
>
> [In Běihǎi Cantonese, the high-level (tone 1) and high-rising (tone 2) suprafixes:]
>
> 例子很少，在我们的词汇表里，我们一共记录了七个有变调的词。
>
> 'There are very few examples, in our vocabulary list [of 2179 items], we have recorded seven items with a suprafix in total.' (Chén and Chén 2005, p. 26)

The following is a small sample of words in three varieties of Cantonese that the author has some familiarity with: (a) Nánníng Cantonese (exposure in tandem with fieldwork on Nánníng Pínghuà; data here are from Lín and Qín 2008); (b) 'Older Macau Cantonese' (the speech of the author's parents, born around the wars in the 1940s); and (c) Hong Kong Cantonese (exposure since birth). Traditionally, Nánníng and Macau Cantonese have far fewer suprafixed words than Hong Kong Cantonese. (Although Macau Cantonese is quickly 'catching up' due to the strong influence of nearby Hong Kong.) Most words in the 'Older Macau Cantonese' list below are still commonly used amongst older speakers in Macau. In comparison, the Macau-type of suprafix-less-ness is very rare in Hong Kong and Canton. The data below demonstrate some suprafixed words (nouns) in Hong Kong Cantonese, as well as their equivalents in Nánníng and Older Macau Cantonese. Nánníng and/or Macau have the same nouns in citation tone, except (10j) *hɐt7-ji4-1* 乞兒 'beggar'.

(10)	nouns:	Nánníng Canto.	Older Macau Canto.	Hong Kong Canto.
a.	繩 'string'	*ʃeŋ*^{21} (4)	*sɪŋ*^{21} (4)	*sɪŋ*^{25} (4-2)
b.	鉗 'pliers'	*k*^{h}*ɛm*^{21} (4)	*k*^{h}*im*^{21} (4)	*k*^{h}*im*^{25} (4-2)
c.	碟 'plate'	*tip*^{2} (9)	*tip*^{2} (9)	*tip*^{25} (9-2)
d.	澳門 'Macau'	*u*^{33} *mun*^{21} (4)	*ou*^{33} *mun*$^{21\sim25}$ (4 ~ 2)	*ou*^{33} *mun*^{25} (4-2)
e.	名 'name'	*mɛŋ*^{21} (4)	*mɛŋ*$^{21\sim25}$ (4 ~ 2)	*mɛŋ*^{25} (4-2)
f.	帽 'hat'	*mu*^{22} (6)	*mou*^{22} (6)	*mou*^{25} (6-2)
g.	枱 'table'	*t*^{h}*ɔi*^{21} (4)	*t*^{h}*ɔi*$^{21\sim25}$ (4 ~ 2)	*t*^{h}*ɔi*^{25} (4-2)
h.	枱布 'table cloth'	*t*^{h}*ɔi*^{21} (4) *pu*^{33}	*t*^{h}*ɔi*^{21} (4) *pou*^{33}	*t*^{h}*ɔi*^{25} (4-2) *pou*^{33}
i.	-話 '-speech'	*-wa*^{22} (6)	*-wa*^{25} (6-2)	*-wa*^{25} (6-2)
j.	乞兒 'beggar'	*hɐt*^{5}*-ji*^{55} (4-1)	*hat*^{5}*-ji*^{55} (4-1)	*hɐt*^{5}*-ji*^{55} (4-1)
k.	乞兒仔 'little beggar'	?	*hat*^{5}*-ji*^{21} (4) *-tsɐi*^{25} (beg-DIM-DIM)	*hɐt*^{5}*-ji*^{55} (4-1) *-tsɐi*^{25}
l.	眼鏡 'eye glasses'	*ŋɐn*^{24} *kɛŋ*^{33} (3)	*ŋan*^{13} *kɛŋ*^{33} (3)	*ŋan*^{13} *kɛŋ*^{25} (3-2)
m.	袋 'bag'	*tɔi*^{22} (6)	*tɔi*^{22} (6)	*tɔi*^{25} (6-2)
n.	-文 '-script/-language'	*-mɐn*^{21} (4)	*-mɐn*^{21} (~^{25}) (4 (~2))	*-mɐn*$^{(21\sim}$) ^{25} ((4~) 2)

There are two probable reasons why non-standard Cantonese varieties have fewer suprafixed words than Standard Cantonese. Firstly, when comparing with the late-nineteenth century data (Section 2.2.3), in many cases, the non-standard Cantonese varieties have preserved the older citation-tone version of the words used in Canton (or the less-urban parts of the Canton area where many migrants came from). Secondly, the Sinitic languages originally spoken in these new locations, with far fewer cases of lexical suprafixes, would have helped with the preservation of the citation-tone version of the Cantonese words to some degree. Perhaps there were also cases of superfixed words reverting back to their citation-tone pronunciations in these newer Cantonese varieties, due to many people applying sound correspondence rules from their first language to Cantonese. Comparing the words in (10) with those in Ball (1888) (see Section 2.2.3 above), (a) to (d)—繩 'string', 鉗 'pliers', 碟 'plate', and 澳門 'Macau'—did not have a suprafix in Ball (1888), while (e) to (j)—名 'name', 帽 'hat', 枱 'table', 枱布 'table cloth', -話 '-language', and 乞兒 'beggar'—did. (Examples (k) to (n)—乞兒仔 'little beggar', 眼鏡 'eye glasses', 袋 'bag', and -文 '-script'—are not found in Ball (1888).) Given that Nánníng and Macau did not become Cantonese-dominant until the 1940s (see above), this suggests that many words that have a suprafix nowadays in Canton (or the less-urban parts of the Canton area, where many of the migrants came from) did not have a suprafix as late as the 1940s or slightly prior. (On the other hand, Hong Kong's city centre became Cantonesised more than 50 years prior and always had stronger commercial contacts with Canton. This caused Canton and Hong Kong Cantonese to remain linguistically very close to each other, including having a very similar range of suprafixed words.)

That the lexical suprafixes in Hong Kong Cantonese are older than those in Older Macau Cantonese is also reflected in the morphological level where they are applied. In Hong Kong Cantonese, the lexical suprafixes are often applied at the morpheme level. For example ('>2' here indicates the step where the suprafixation of tone 2 is applied),

Hong Kong Cantonese

(11)	*i.*	*tʰɔi4>2*	table 枱
		'table'	
(12)	*i.*	*tʰɔi4>2*	table 枱
	ii.	*mat8 tʰɔi2*	wipe table 抹枱
	iii.	*mat8 tʰɔi2 pou3*	wipe table cloth 抹枱布
		'table-cleaning cloth'	

(The Standard Cantonese in Ball (1888) was similar: *tʰɔi4-2** 'table' (p. xlii), *tʰɔi4-2* pou3* 'table cloth' (p. 17). But 'on the table' could be *tʰɔi4 min2** or *tʰɔi4-2* min2** (p. 11).) On the other hand, in Older Macau Cantonese, the lexical suprafix is often applied at a later step, typically at the word level. In example (13), the tone 2 suprafix can be applied to the word *tʰɔi4* 'table' optionally. (The verb phrase 'wipe table' would be *mat8 tʰɔi4* or *mat8 tʰɔi4-2*.) In example (14), in the noun compound *mat8 tʰɔi4 pou3* 'table-cleaning cloth', the lexical suprafix did not have a chance of being applied to *tʰɔi4* 'table' at the morpheme level, and at the word level, the head *pou3* 'cloth' is not a morpheme that can take a lexical suprafix.

Older Macau Cantonese

(13)	*i.*	*tʰɔi4 ~ tʰɔi4>2*	table 枱
		'table'	
(14)	*i.*	*tʰɔi4*	table 枱
	ii.	*mat8 tʰɔi4*	wipe table 抹枱
	iii.	*mat8 tʰɔi4 pou3 (*>2)*	wipe table cloth 抹枱布
		'table-cleaning cloth'	

Similarly, in Hong Kong Cantonese, 'Macau' is usually *ou3 mun4-2* 澳門, and noun compounds containing *ou3 mun4-2* 'Macau' also have a lexical suprafix on the morpheme *mun4-2* (unless they are imitating a Macau accent), e.g., *ou3 mun4-2 tsɪŋ3 fu2* 澳門政府 'Macau government', *ou3 mun4-2 jɐt9 bou3* 澳門日報 'Macao Daily News', *ou3 mun4-2 tai6 hɔk9* 澳門大學 'Universidade de Macau', and *pʰou4-sʊk9 ou3 mun4-2* 葡屬澳門 'Portuguese Macau'. On the other hand, in Older Macau Cantonese, 'Macau' is *ou3 mun4* or *ou3 mun4-2* 澳門, but the lexical suprafix cannot apply to *ou3 mun4* 'Macau' in compounds, unless it is at the end of a compound: *ou3 mun4 tsɪŋ3 fu2* 澳門政府 'Macau government', *ou3 mun4 jɐt9 bou3* 澳門日報 'Macao Daily News', *ou3 mun4 tai6 hɔk9* 澳門大學 'Universidade de Macau', and *pʰou4-sʊk9 ou3 mun4(-2)* 葡屬澳門 'Portuguese Macau'. Examples (10j) and (10k) above demonstrate the same point, but with a tone 1 suprafix: in Hong Kong Cantonese—*hɐt1 -ji4-1* 乞兒 (beg -DIM\SUPR) 'beggar' and *hɐt1 -ji4-1 -tsɐi2* 乞兒仔 (beg -DIM\SUPR -DIM) 'little beggar'; in Older Macau Cantonese—*hat1 -ji4-1* 乞兒 (beg -DIM\SUPR) 'beggar' and *hat1 -ji4 -tsɐi2* 乞兒仔 (beg -DIM -DIM) 'little beggar'.

Looking back at Wong (2007)'s quote above, which says that one who says *ou3mun4 jɐn4* (Macau person) is a real Macau person and one who says *ou3mun4-2 jɐn4* (Macau\SUPR person) is a 'fake' Macau person, this indeed used to be the case. Nevertheless, the Hong Kong-type suprafix patterns are becoming more and more common in Macau these days. For instance, my impressionistic observation as a native speaker is that *ou3mun4-2 jɐn4* is more common than *ou3mun4 jɐn4* in Macau these days.

Lastly, one interesting fact is that there are a few words that are suprafixed in Nánníng Cantonese but not in Standard Cantonese. In other words, the non-standard Cantonese varieties do not always follow the lead of Standard Cantonese in terms of suprafixation. Examples of this are Nánníng Cantonese *pu*^{35} *ly*$^{24-55}$ 堡壘 'fortress' and *ʃaŋ*^{33} *ŋaŋ*$^{22-35}$ 生硬 'stiff, unnatural' (Lín and Qín (2008, p. 90); the tones in 壘 *ly*^{55}, 生 *ʃaŋ*^{33} and 硬 *ŋaŋ*^{35} are probably influenced by the cognates in Old Nánníng Mandarin, a type of Southwestern Mandarin), versus Standard Cantonese *pou*^{25} *lø y*^{13} 堡壘 'fortress' and *saŋ*^{55} *ŋaŋ*^{22} 生硬 'still, unnatural'. These examples further exemplify the fact that the suprafixes in some words do not have a very long history (Sections 2.2.3, 2.3 and 2.4), given the short time of divergence between Canton Cantonese and Nánníng Cantonese.

2.4. Interim Summary

In Section 2.1, some properties of the lexical suprafixes in modern Standard Cantonese—the tone 2 suprafix [^{25}] and the rarer tone 1 suprafix [^{55}]—are discussed. There is no difference between the suprafix tones 2/1 and the ordinary tones 2/1, respectively. In Section 2.2.1, the distinction between ordinary tone 1 [^{53}] and suprafix tone 1* [^{55}] in earlier Cantonese is discussed. In Section 2.2.2, the earlier distinction between ordinary tone 2 [^{35}] and suprafix tone 2* ([^{25}] in the 1940s and [^{315}] in the 1900s) is discussed. In Section 2.2.3, we look at the use of lexical suprafixes in some late-nineteenth century Cantonese textbooks. Many suprafixed words back then have remained suprafixed in modern Standard Cantonese. Some non-suprafixed words have since gained a suprafix, and some suprafixed words reverted back to their citation-tone pronunciation in modern Cantonese. Section 2.3 discusses how non-standard Cantonese varieties like Nánníng Cantonese and Older Macau Cantonese have far fewer suprafixed words than the Standard Cantonese in Canton and Hong Kong. The facts demonstrated in Sections 2.2 and 2.3 strongly suggest that Canton and Hong Kong Cantonese had considerably fewer suprafixed words one century ago.

The Cantonese lexical suprafixes probably came from diminutives (Section 3). Maybe the Cantonese lexical suprafixes developed independently within Cantonese, or maybe they have the same origin as the diminutives in some other Sinitic varieties—for instance, the rhotacisation (*ér-huà* 兒化) in Northern Mandarin. It is beyond the scope of this article to address this question properly. Obviously, this is an important research topic. If one were to pursue this line of inquiry (e.g., Simmons Forthcoming), one needs to compare the range of suprafixed words in Cantonese with the range of suprafixed and/or diminutive words in other Sinitic varieties. However, as we have seen above, the suprafixes in many words in modern Cantonese do not have a long history, and words can gain or lose suprafixes rather quickly. If suitable historical material is available, it would be more useful to look at the range of suprafixed/diminutive words in earlier periods of a speech variety. It would also be useful to look into the range of words in which the suprafixation/diminutivisation is more stable and compare these across Sinitic varieties. (This would be particularly difficult for suprafixation, as suprafixation is rarely reflected in Chinese script, and not many Sinitic varieties have tone-marked written records that are 'premodern'.)

3. Lexical Suprafixes and Diminutives in Yuè and Pínghuà Dialects

3.1. Yuè and Pínghuà Diminutives

We note in Section 2.2.2 that tone 2* in Cantonese was a long dipping tone in the late-nineteenth century/early-twentieth century. The citation tone of a lexical suprafix tone 2* syllable was most usually a low tone (tone 4 [^{21}], 5 [^{13}], 6 [^{22}], or 9 [^{2}]). With tone 1*, we know that at least the suprafixed version of tone 7 [^{5}] had to be long (see endnote 6). The extra length and high pitch at the end of a suprafixed syllable suggest that such syllables were originally two syllables, made up of a host syllable in citation tone followed by a suffix syllable in high tone. The segments of the suffix disappeared, leaving a high tone at the end of a compensatory-lengthened host syllable. Given the diminutive-type meaning that Cantonese lexical suprafixes sometimes have, most theories hypothesise that the high-toned suffix was a diminutive suffix (e.g., Chen 1999; Chén 2002), with most hypothesising that this was a high-tone version of Middle Chinese *ȵe*^{A} 兒 (Cantonese ji4, Mandarin ér, e.g., Whitaker 1955–1956; Chao 1959; Mài 1995; Wang 1995; Zhōu 2002, pp. 154–71; Kao 2007; Kwok 2016). The morpheme 兒 (Old Chinese **ŋe*, Middle Chinese *ȵe*^{A})[9] originally meant 'male child' and then later broadened to 'child'. Looking at the reflexes in Yuè and Pínghuà dialects, the lexical word 兒 can be reconstructed as **ȵi*^{A}. In the discussions below, when the tone is immaterial, this morpheme is referred to as '**ȵi* 兒'. When 兒 in citation tone (tone A) is referred to, this is rendered '**ȵi*^{A} 兒'. When it has a high-tone suprafix (usually high level or high falling), this is rendered '**ȵi*^{H} 兒'.

The various versions of the **ɲi* 兒 theory hinge on the behaviour of the diminutives in the western Yuè dialects. Standard Cantonese is spoken close to the eastern edge of the Yuè-speaking territory. In Standard Cantonese, there are many cases of lexical suprafixation, and the default diminutive suffix is **tsVj* 仔 (see below). The old **ɲi*^{H} 兒 suffix is only found in some fossilised expressions. As one heads towards the west, starting from approximately Guǎngxī and southwestern Guǎngdōng (Màomíng and Zhànjiāng Prefectures), **ɲi* 兒 becomes the dominant diminutive suffix. Below, we will base our discussions on Kwok (2016)'s cline of grammaticalisation from **ɲi*^{H} 兒 to the Cantonese lexical suprafixes. (Obviously I do not cover everything mentioned in Kwok (2016); the reader is encouraged to read Kwok (2016). Kwok (2016) surveys nineteen varieties of Yuè, and their **ɲi*^{H} 兒 suffixes always occur with a high-tone suprafix. I expanded the search westward and found some Yuè dialects further to the west, and many Pínghuà dialects, with an unsuprafixed **ɲi*^{A} 兒 diminutive suffix (in their citation tone, Lower tone A). The Pínghuà dialects, as defined by the *Language Atlas of China* (Wurm and Li 1987; Zhāng et al. 2012), are basically western continuations of the Pearl-River Yuè dialect chain. Ignoring the Cantonese enclaves in Guǎngxī and western Guǎngdōng (which are relatively recent transplants from the Canton area), as one travels west from the heart of the Pearl River Delta, Cantonese/Guǎngfǔ Yuè gradually becomes Gōulòu Yuè in Guǎngdōng and Guǎngxī, and Gōulòu Yuè in Guǎngxī gradually becomes Southern Pínghuà. (On the other hand, 'Northern Pínghuà' presents other complications, but this is not something we need to elaborate here. See, e.g., (de Sousa Forthcoming). In this article, only data from the core 'undisputed' Northern Pínghuà dialects are presented.) My proposal of a small extension to Kwok (2016)'s theory is that these unsuprafixed **ɲi*^{A} 兒 diminutives represent one step prior to Kwok (2016)'s grammaticalisation cline, which begins with the suprafixed **ɲi*^{H} 兒 diminutives.

There are three diminutive suffixes that are commonly found amongst Yuè dialects (e.g., Wang 1995; Kao 2007) and Pínghuà dialects. They all grammaticalised from words that meant something like 'child'. 'Child' is a very common source of diminutives (e.g., Jurafsky 1996; Heine and Kuteva 2002, pp. 65–67). The first suffix is the **ɲi*$^{A/H}$ 兒 '(male) child' suffix introduced above. This diminutive suffix is only found in very few fossilised expressions in Standard Cantonese in the east, but **ɲi*$^{A/H}$ 兒 diminutives are still very commonly used amongst the western Yuè and Pínghuà dialects in the west. The second suffix is 仔 'child' (maybe etymologically the same as 崽 'young animal', Middle Chinese *sɐ(y)*^{A}). Looking at the reflexes in Yuè dialects, the proto-form of 仔 in Yuè would be something like **tsaj*^{B} (e.g., Cantonese *tsɐi*^{25}) or **tsoj*^{B} (e.g., Toishanese *t*^{u}*ɔi*^{55}). The **tsVj*^{B} 仔 suffix is a newer eastern innovation, and it is now the dominant diminutive suffix in the east (e.g., Zhān et al. 2002, pp. 183–84). Nonetheless, due to the strong influence of Cantonese, the **tsVj*^{B} 仔 suffix is also borrowed into a great number of Yuè and Pínghuà dialects in the west (coexisting with the older **ɲi*$^{A/H}$ 兒 suffix). The third suffix is 子 'child' (Old Chinese **tsəʔ*, Middle Chinese *tsi*^{B}). As a suffix, **tsi*^{B} 子 is rarely used in Standard Cantonese. There are Yuè and Pínghuà dialects where the **tsi*^{B} 子 suffix is commonly used, e.g., Yángjiāng Yuè (Kao 2007, p. 238; Zhān et al. 2002, p. 210), Běihǎi Cantonese (Chén and Chén 2005, pp. 390–91), and Nánníng Pínghuà (de Sousa Forthcoming). However, there is no obvious geographical pattern for where the **tsi*^{B} 子 suffix is more prevalent amongst Yuè and Pínghuà dialects. (Except in some cases where the **tsi*^{B} 子 suffix is an obvious Hakka influence, e.g., the Yuè dialects around Wúchuān and Huàzhōu (Kwok 2016, p. 285).) The discussions below mostly revolve around **ɲi* 兒, while **tsVj*^{B} 仔 is also discussed to a small degree. The **tsi*^{B} 子 suffix is only discussed briefly towards the end of Section 3.3.

*3.2. The *ɲi*^{A} *and *ɲi*^{H} *Diminutives*

In the west, many Pínghuà dialects have a diminutive suffix **ɲi*^{A} 兒 in its citation tone, Lower tone A (*yáng píng*, i.e., Cantonese tone 4, normal cases of Mandarin tone 2). This also occurs in some extreme-western Yuè dialects. (Middle Chinese tones A, B, C and D have usually developed an 'Upper' (*yīn*) and a 'Lower' (*yáng*) variant, which may or may

not become phonemicised in the modern Sinitic languages. Usually the Upper tones occur with syllables with a voiceless onset in Middle Chinese, and Lower tones occur with a voiced onset in Middle Chinese.) The norm amongst Pínghuà and Yuè dialects is that all their Lower tones are lower in pitch than their Upper counterparts, i.e., the tone in the *$ɲi^{A}$ 兒 suffix is relatively low in pitch. Table 4 shows some Pínghuà and Yuè dialects with a citation-tone *$ɲi^{A}$ 兒 diminutive suffix.

Table 4. Examples of Pínghuà and Yuè dialects with a diminutive suffix *$ɲi^{A}$ 兒.

Dialect Group	Locality/Name of Dialect	Form of Suffix	Tone Category
Pínghuà, Northern	臨桂五通 Línguì Wǔtōng	兒 -$ɲi^{31}$	Lower tone A
Pínghuà, Northern	永福桃城 Yǒngfú Táochéng	兒 -$ɲi^{23}$	Lower tone A
Yuè, Gōulòu	平樂本地話 Pínglè 'Běndìhuà'	兒 -$ɲi^{31}$	Lower tone A
Yuè, Gōulòu	鍾山本地話 Zhōngshān 'Běndìhuà'	兒 -$ɲi^{23}$	Lower tone A
Pínghuà, Southern	三江六甲話Sānjiāng 'Liùjiǎhuà'	兒 -$ɲi^{31}$	Lower tone A
Pínghuà, Southern	宜州得勝 Yízhōu Déshèng	兒 -$ŋi^{31}$	Lower tone A
Pínghuà, Southern	百色那畢 Bǎisè Nàbì	兒 -$ɲi^{31}$	Lower tone A
Pínghuà, Southern	崇左江州 Chóngzuǒ Jiāngzhōu	兒 -$ɲi^{32}$	Lower tone A
Pínghuà, Southern	崇左新和 Chóngzuǒ Xīnhé	兒 -$ɲi^{21}$	Lower tone A
Yuè, Qīnlián	合浦(廉州) Hépǔ (Liánzhōu)	兒 -$ŋi^{44}$	Lower tone A

Some comments are needed for the Yuè varieties. As argued convincingly by Qín (2019), the Běndìhuà 本地話 'local language' varieties in places like Pínglè and Zhōngshān in Guǎngxī are Gōulòu Yuè varieties that are recently Mandarinised, and not Northern Pínghuà as per the *Language Atlas of China*. In Hépǔ (Liánzhōu), the Lower tone A [^{44}] sounds rather high, but it is already lower than the Upper tone A [^{45}].

The localities listed in Table 4 above are relatively peripheral (north, west, and south) in Guǎngxī. In mid-southern Guǎngxī, there are speech varieties like Nánníng Pínghuà (spoken in the suburbs of Nánníng, the capital of Guǎngxī) and Héngzhōu Cantonese (spoken in the city centre of Héngzhōu) where one finds a *$ɲi^{A}$ 兒 suffix in its citation tone, Lower tone A, and also a *$ɲi^{H}$ 兒 suffix in a high-tone suprafix. These are shown in Table 5.

Table 5. Examples of Pínghuà and Yuè dialects with diminutive suffixes *$ɲi^{A}$ 兒 and *$ɲi^{H}$ 兒.

Dialect Group	Locality/Lect Name	Form of Suffix	Tone Category
Pínghuà, Southern	南寧位子碌 Nánníng Wèizǐlù	兒 -$ɲi^{21}$	Lower tone A
		兒 -$ɲi^{21\text{-}53}$	Upper tone A
Yuè, Yōngxún	橫洲白話 Héngzhōu Cantonese	兒 -$ɲi^{232}$	Lower tone A
		兒 -$ɲi^{232\text{-}55}$	Upper tone A

Why would a diminutive suffix develop a high-tone pronunciation? One observation that is relevant is that diminutive affixes are especially susceptible to developing a high-tone pronunciation (e.g., Nichols 1971; Zhū 2004). This is perhaps due to the iconicity link between high pitch and smallness (e.g., Ultan 1978; Perlman and Cain 2014). One related point of discussion is that suprafixes are normally understood as having developed from the tone of an affix that has its segments deleted (e.g., Chappell 2023). On the other hand, at least in a speech variety with both -$ɲi^{A}$ and -$ɲi^{H}$ diminutives, the -$ɲi^{H}$ suffix can be analysed as -$ɲi^{A}$ plus a suprafix H. There is no evidence that this suprafix H came from another suffix. This would be a non-typical case of a suprafix not having developed from a segmental affix.

In Nánníng Wèizǐlù Pínghuà, whether a diminutive suffix can be used or not, and which diminutive suffix is used with what noun, are not quite predictable. Some nouns are compatible with more than one diminutive suffix (free variation). The citation tone -$ɲi^{21}$ 兒 is more commonly used with animal nouns, e.g., $kɐi^{53}$ -$ɲi^{21}$ 雞兒 (fowl -DIM) 'chick' and $jɐŋ^{21}$ -$ɲi^{21}$ 羊兒 (goat -DIM) 'kid', but some inanimate nouns can also take -$ɲi^{21}$ 兒, e.g.,

tʃʰɛ^{53} *-ɲi*^{21} 車兒 (car -DIM) 'little car' and *tau*^{53} *-ɲi*^{21} 刀兒 (knife -DIM) 'little knife'. The suprafixed *-ɲi*$^{21-53}$ 兒 is primarily used with inanimate nouns, e.g., *tʃʰɛ*^{53} *-ɲi*$^{21-53}$ 車兒 (car -DIM\SUPR) 'little car', *ɔk*^{3} *-ɲi*$^{21-53}$ 屋兒 (house -DIM\SUPR) 'little house', and *tʃʰɛŋ*^{53} *-ɲi*^{53} 鐺兒 (wok -DIM\SUPR) 'little wok', but *-ɲi*$^{21-53}$ 兒 can also be used with some animal nouns, e.g., *kɐu*^{33} *-ɲi*$^{21-53}$ 狗兒 (dog -DIM\SUPR) 'puppy' (although *kɐu*^{33} *-ɲi*^{21} 狗兒 (dog -DIM) 'puppy' is more common). There is also a newer diminutive suffix, *-tʃai*^{33} 仔, inspired by Nánníng Cantonese *-tʃɐi*^{35} 仔, e.g., Nánníng Wèizǐlù Pínghuà *kɐi*^{53} *-tʃai*^{33} 雞仔 (fowl -DIM) 'chick', *tʃəi*^{53} *-tʃai*^{33} 豬仔 (pig -DIM) 'piglet', *tau*^{53} *-tʃai*^{33} 刀仔 (knife -DIM) 'little knife', and *un*^{33} *-tʃai*^{33} 碗仔 (bowl -DIM) 'little bowl'.

Nánníng Wèizǐlù Pínghuà also has some cases of suprafixes being applied directly on roots. The suprafix is usually a high-falling tone (Upper tone A, like that in the *-ɲi*$^{21-53}$ 兒 suffix), e.g., *mɐn*$^{21-53}$ 文 'Yuán' (cf. Cantonese *mɐn*$^{21-55}$ 文 'Yuán/dollar') and *lau*^{13} *nɛŋ*$^{21-53}$ 老娘 (old lady \SUPR) 'mother'. There are also rare cases of a high-level suprafix (unaspirated Upper tone C), e.g., *həi*^{21} *nɛŋ*$^{21-55}$ 姨娘 (aunt lady\SUPR) 'mother's younger sister' and *nai*$^{13-55}$ *nai*$^{13-55}$ 奶奶 'paternal grandmother' (inspired by Old Nánníng Mandarin *nai*^{35} *nai*^{35} 奶奶 'paternal grandmother'), and a high-rising suprafix (aspirated Upper tone C) in Cantonese loanwords (phonetically the same as the Cantonese Upper tone B/tone 2 suprafix), e.g., *jɛ*^{21} *jɛ*$^{21-35}$ 爺爺 'paternal grandfather'. (See de Sousa Forthcoming, for further discussions on the suprafixes and diminutive suffixes in Nánníng Wèizǐlù Pínghuà).

East of Nánníng are Pínghuà and Yuè dialects that have a suprafixed **ɲi*^{H} 兒 suffix but no citation tone **ɲi*^{A} 兒 suffix. (The citation-tone pronunciation of **ɲi*^{A} 兒 is still found in literary lexical words in these dialects, e.g., Cantonese *ji*^{21} *tʰʊŋ*^{21} 兒童 'juvenile'.) Also belonging to this type is Hèzhōu Guìlǐng Yuè in the northeastern corner of Guǎngxī (near the tripoint with Guǎngdōng and Húnán). Examples of these are shown in Table 6. This step is where Kwok (2016)'s cline of grammaticalisation begins.

Table 6. Examples of Pínghuà and Yuè dialects with a diminutive suffix **ɲi*^{H} 兒.

Dialect Group	Locality/Lect Name	Form of Suffix	Tone Category
Yuè, Gōulòu	賀州桂嶺 Hèzhōu Guìlǐng	兒 *-ŋi*^{52}	Upper tone A
Pínghuà, Southern	賓陽新橋 Bīnyáng Xīnqiáo	兒 *-ŋi*^{55}	Upper tone C
Pínghuà, Southern	橫洲嶺鶇 Héngzhōu Lǐngliáo	兒 *-ji*^{24}	Upper tone A
Yuè, Gōulòu	貴港 Guìgǎng	兒 *-ŋi*^{55} ~ *-ɲi*^{55}	Upper tone A
Yuè, Yōngxún	桂平白話 Guìpíng Cantonese	兒 *-ŋi*^{55}	Upper tone A

According to the **ɲi* 兒 theory, the idea of having a high-tone suprafix has to develop in the **ɲi*^{H} 兒 diminutive suffix first. After the step of having a **ɲi*^{H} 兒 diminutive suffix, there are two main types of development: 'nasal rise' and applying a suprafix directly on the root. Nasal rise involves cases where the segments of **ɲi*^{H} 兒 are eroded to only a nasal segment or a nasal feature, which is then attached to the host syllable, and the host syllable has some sort of rising tone. Examples of nasal rise can be found in southwestern Guǎngdōng and neighbouring southeastern Guǎngxī. For instance, in Màomíng 茂名 Yuè (Guǎngdōng), there are some nouns that freely alternate between a **ɲi*^{H} 兒 suffix and a nasal rise, e.g., *ʃiak*^{2} *-ɲi*^{55} 勺兒 ~ *ʃiaŋ*↗ 'little spoon' (Shào and Gān 2007, p. 21). (↗ signifies an extra-high rise; it rises to above the pitch of a normal high-level tone, often falsetto.) The case in nearby Xìnyí 信宜 Yuè is oft-quoted: a. zero-coda syllables add *-n* and an ↗ suprafix; b. plosive-coda syllables add [+nasal] to the coda and an ↗ suprafix; and c. nasal-coda syllables and glide-coda syllables (*-j -w*, here rendered *-i -u* as per the norm in Chinese linguistics) add only an ↗ suprafix (c. is not nasal rising).

Xìnyí Yuè (Shào and Gān 2007, p. 21)

(15)		citation form	diminutive	
	a*i*.	*tʃʰœ*^{23}	*tʃʰœn*↗	坐 'sit'
	a*ii*.	*tʃy*^{53}	*tʃyn*↗	豬 'pig'
	a*iii*.	*ku*^{53}	*kun*↗	姑 'aunt'
	b*i*.	*ap*^{3}	*am*↗	鴨 'duck'
	b*ii*.	*fut*^{3}	*fun*↗	闊 'wide'
	b*iii*.	*kiak*^{3}	*kiaŋ*↗	脚 'foot/leg'
	c*i*.	*pʰiɛn*^{33}	*pʰiɛn*↗	片 'slice'
	c*ii*.	*pui*^{53}	*pui*↗	杯 'cup'
	c*iii*.	*tʰɐu*^{23}	*tʰɐu*↗	頭 'head'

Xìnyí Yuè also has other diminutives—for instance, a *-ɲi*^{53} 兒 suffix for animal newborns, e.g., *tʃy*^{53} *-ɲi*^{53} 豬兒 'newborn piglet'. (There is also *tʃy*^{53} *-ɲin*↗ (pig -ᴅɪᴍ\ᴅɪᴍ) 'tiny weeny newborn piglet'.)

A preceding step can be shown in some words in nearby Huàzhōu Liángguāng 化州良光 Yuè. There, the **ɲi*^{H} 兒 suffix is usually still a separate syllable, but in the form of a syllabic nasal *-ŋ*$^{23–53}$. The coda of the preceding syllable is then nasal-assimilated, and the tone of that syllable becomes high rising or high level, e.g., *dit*^{2} *-ŋ*$^{23–53}$ → *diŋ*^{35} *-ŋ*$^{23–53}$ 碟兒 'little plate' (Kwok 2016, p. 300; see also Lǐ 2014). Presumably, Xìnyí Yuè experienced something similar, and the suffix was later deleted.

The rules of nasal rising are slightly different in the various Yuè varieties in this southwestern Guǎngdōng/southeastern Guǎngxī region. For instance, the rules in nearby Róng County 容縣 (Róngxiàn; Guǎngxī) Yuè is similar to those in Xìnyí Yuè, except that a nasal segment is not added to vowel-ending host syllables (Zhōu 1987). In Yùlín 玉林 (Guǎngxī) Yuè, the situation with their nasal rising and suprafixes (and also tone sandhi) are rather complicated (see Zhōu 2002, pp. 148–54).

It seems that the Yuè dialects that have nasal rising also have cases where they apply suprafixes directly on the root (e.g., (15c) above for Xìnyí Yuè). However, having suprafixes on roots does not infer having nasal rising. To the east of the nasal-rising area, the **ɲi*^{H} 兒 diminutive is only found in some fossilised expressions,[10] and the **tsVj*^{B} 仔 diminutive dominates.

Suprafixes can be applied on lexical roots in the vast majority of Yuè dialects, although in many of these dialects, suprafixes are only used sparingly. For instance, to the east of the nasal-rising area, Zhān et al. (2002, pp. 179–80, 98) mention that lexical suprafixes are not used very often in the following Yuè dialects in mid-western and central Guǎngdōng: Luódìng 羅定, Yúnfú 雲浮, Xīnxīng 新興, Guǎngníng 廣寧, Sìhuì 四會, and Zhōngshān 中山. Standard Cantonese in the east peaks in the prevalence of lexical suprafixation.

There are some scholars, e.g., Wáng (2005, p. 177) and Chén (2007), who argue that the grammaticalisation pathway is **ɲi*^{H} 兒 → nasal rising → suprafix directly on the root. On the other hand, Kwok (2016, pp. 305–6) argues that the two latter steps are independent of each other, i.e., X-*ɲi*^{H} can develop into X$_{N}$↗, and X-*ɲi*^{H} can develop directly into X↗ or X^{H}. Nasal rising cannot be a prerequisite of suprafixing directly on the root in Yuè dialects because the regular deletion of a nasal coda, or denasalisation of another sort, is exceedingly rare amongst Yuè dialects. In other words, if X$_{N}$↗ has developed, in the vast majority of Yuè dialects, there are no general sound change rules that delete the nasal coda in a X$_{N}$↗ syllable to become X↗ or denasalise a X$_{N}$↗ syllable to become X$_{T}$↗.

Amongst the nineteen Yuè varieties surveyed by Kwok (2016), lexical suprafixation is found in nearly all of them (albeit lexical suprafixation is rare in some varieties). From a phonetic point of view, the lexical suprafixes can be divided into two types. (Some dialects have one, and some, like Cantonese, have both.) One type is the high-level or high-falling suprafixes. It is the same high-level or high-falling tone that the suprafixed **ɲi*^{H} 兒 diminutive suffix has, and no Yuè dialect is found to have both a high-level and a high-falling suprafix (see also Section 3.3). The segments of the diminutive suffix were deleted, and its tone replaces that of the preceding host syllable. Another type is the high-rising suprafix. The situation in Toishanese (Táishān Yuè) probably shows how the substitutive

high-rising suprafixes in the other Yuè dialects were developed. Toishanese has additive suprafixes: the citation tone of the host syllable is pronounced, and then the tone rises to a high end point. The high pitch at the end is the tone of what used to be a diminutive suffix. Toishanese has the rise and dip-rise suprafixes of [^{35}], [^{25}], [^{115}] and [^{315}]; these are the suprafixed versions of the four tonemes [^{33}], [^{22}], [^{11}] and [^{31}] (the remaining fifth toneme, [^{55}], cannot take a high suprafix; Kwok 2016, p. 289, quoting Gān 2010). Chán (1900) also describes similar additive suprafixes in earlier Cantonese. Presumably, other Yuè dialects with high-rising suprafixes have gone through the same path, and they have later simplified the rising suprafixes into one or two rising contours.

3.3. Possible Origins of the Cantonese Lexical Suprafixes

Amongst the theories on the origin of the Cantonese lexical suprafixes,[11] the most-common theory is that they developed from a **ɲi* 兒 diminutive suffix (e.g., Whitaker 1955–1956; Chao 1959; Mài 1995; Wang 1995; Zhōu 2002, pp. 154–71; Kao 2007; Kwok 2016). It seems that none of the studies on the Yuè diminutives and suprafixes extended their investigation to include the Pínghuà dialects. Here, the Pínghuà dialects are included, as Pínghuà, Gōulòu Yuè, and Guǎngfǔ Yuè (including Standard Cantonese) lie on the same dialect continuum. In fact, the majority opinion amongst Chinese dialectologists these days is that at least Southern Pínghuà is part of the Yuè dialect group (e.g., Qín 2000; Xiè 2007; Hóu 2015; Liú 2015; see also de Sousa Forthcoming). With additional data from Pínghuà and some western Yuè dialects, Kwok (2016)'s cline of grammaticalisation, and other characterisations of the diminutives and suprafixes in Yuè, are still mostly valid. One small difference with Kwok (2016), as shown in Section 3.2, is that a preceding step of having an unsuprafixed **ɲi^{A}* 兒 diminutive suffix is proposed here (Kwok (2016)'s grammaticalisation cline starts with a suprafixed **ɲi^{H}* 兒). The following two of Kwok (2016)'s characterisations for Yuè dialects also largely hold: (a) a speech variety can have a high-level or a high-falling suprafix, but not both, and (b) the high-level or high-falling suprafix that can be used on roots is the same as the high-level or high-falling suprafix that is used on the **ɲi^{H}* 兒 diminutive suffix. As discussed in Section 3.2, Nánníng Wèizǐlù Pínghuà has both a high-falling and a high-level suprafix. Nonetheless, to be fair, the high-level suprafix is rare, and the more commonly used high-falling suprafix is indeed the same as that in the *-ɲi$^{21\text{–}53}$* 兒 diminutive suffix. Given that the vast majority of Pínghuà speakers live in places where they are the minority, and the much higher linguistic diversity in Guǎngxī (than e.g., Guǎngdōng), the language contact situation that Pínghuà dialects face are on average much more complex than that faced by Yuè dialects. That Nánníng Wèizǐlù Pínghuà has a high-level suprafix (in addition to the expected high-falling suprafix) could be due to the influences from the other Nánníng languages, especially Nánníng Cantonese (see de Sousa 2015 on the language contact situation in Nánníng).

The theory here that the unsuprafixed **ɲi^{A}* 兒 suffix develops into the suprafixed **ɲi^{H}* 兒 suffix faces one slight problem. This theory predicts that speech varieties that have not developed a suprafixed **ɲi^{H}* 兒 suffix would not have developed lexical suprafixes that can be used directly on the root (i.e., the **ɲi^{H}* 兒 step would be skipped). There are indeed counterexamples. For instance, in the Southern Pínghuà of Chóngzuǒ Jiāngzhōu, there are a few cases of human nouns having a high-level suprafix that expresses affection (Lǐ and Zhū 2009, p. 16). In nearby Chóngzuǒ Xīnhé (Liáng and Lín 2009, pp. 152–53), one finds examples of a suprafixed *tʃɛk$^{3\text{–}35}$* or *tʃʰɛk$^{3\text{–}35}$* 雀 'bird' in, e.g., *tʃʰɛk$^{3\text{–}35}$ -ɲi^{21} tɐu^{35}* 雀兒竇 (bird\SUPR -DIM nest) 'bird nest', and *ma^{31} tʃɛk$^{3\text{–}35}$* 麻雀 'sparrow' (cf. the citation-tone pronunciation in *kʰoŋ^{33} tʃʰɛk^{3}* 孔雀 'peacock'). Nonetheless, it is true that these speech varieties, which have not developed a suprafix in the **ɲi^{A}* 兒 suffix, are very poor in lexical suprafixation in general (based on data seen so far). Speakers of Chóngzuǒ Pínghuà would have come across the suprafixes in the Cantonese and Zhuàng varieties spoken in Chóngzuǒ. The (limited amount of) lexical suprafixes in Chóngzuǒ Pínghuà could easily be a contact-induced phenomenon. In addition, the Chóngzuǒ Pínghuà varieties are in contact with other Pínghuà varieties spoken along the Left River, all the way downriver

to at least the western suburbs of Nánníng, where their ancestors came from. (In Nánníng Wèizǐlù Pínghuà, similarly, there are the suprafixed *tʃɛk*$^{3-5}$ *-ɲi*^{21} 雀兒 (bird -ᴅɪᴍ) 'little bird' and *ma*^{21} *tʃɛk*$^{3-5}$ 麻雀 'sparrow', and the unsuprafixed *kʰoŋ*^{33} *tʃʰɛk*^{3} 孔雀 'peacock'.) Kwok (2016)'s arguments for the Yuè dialects are still largely applicable to the Pínghuà dialects.

Countering the common theory that the Cantonese lexical suprafixes came from an earlier *ɲi*^{H} 兒 diminutive suffix, Shào Huìjūn (e.g., 2005; Shào and Gān 2007) argues that the Cantonese lexical suprafixes are not related to the **ɲi*^{H} 兒 diminutives and nasal rising found in the western Yuè dialects. Her first main argument is that, if the Cantonese lexical suprafixes came from a **ɲi*^{H} 兒 suffix, one would see a gradual decrease in the use of **ɲi*^{H} 兒 diminutives as one heads east from Guǎngxī and southwestern Guǎngdōng. However, east of the **ɲi*^{H} 兒/nasal-rising area in Guǎngxī and southwestern Guǎngdōng, there is a sudden disappearance of a productive *ɲi*^{H} 兒 suffix. Her second main argument is that the range of suprafixed words in Standard Cantonese does not match well with those in the Yuè dialects in southwestern Guǎngdōng (in which Shào is an expert).

Both of these are facts that need to be addressed. Shào's first point perhaps simply reflects the fact that the influence of Cantonese is extraordinarily strong. The eastern Yuè dialects have developed a newer diminutive suffix, **tsVj*^{B} 仔, e.g., Cantonese *tsɐi*^{25}. Theoretically, the influence from the heart of the Pearl River Delta is so strong that **tsVj*^{B} 仔 has become the dominant diminutive suffix in most Guǎngdōng Yuè dialects, causing the obsolescence of the earlier *ɲi*^{H} 兒 suffix in these dialects. Hence, one sees a large area without a productive *ɲi*^{H} 兒 suffix. As for Shào's second point, while having highly similar ranges of suprafixed words can indicate a high level of relatedness (e.g., Canton and Hong Kong Cantonese), not having similar ranges of suprafixed words cannot be used to demonstrate non-relatedness, cf. the case of Hong Kong and Macau Cantonese demonstrated in Section 2.3. Canton, Hong Kong, and Macau Cantonese are highly similar to each other. One cannot draw meaningful conclusions on the level of (un)relatedness from just the differences in the modern range of suprafixed words, as both the gaining and losing of suprafix can happen rather quickly.

Nonetheless, there are reasons to be skeptical like Shào. There is no *a priori* reason why the eastern Yuè dialects must have gone through the same grammaticalisation pathway as the western Yuè dialects. Also, it is indeed hard to prove that the eastern Yuè dialects had an earlier stage when the *ɲi*^{H} 兒 suffix was prevalent. Looking at older Romanised Cantonese texts like Ball (1888) (Section 2.2.3), with non-lexical suprafixes, we know which grammatical morpheme a high-rising suprafix alternated with. For instance, it was clearly stated (p. 15) that the non-lexical suprafix in *ká2** 'married' (woman getting a husband) was in free variation with the perfective marker *cho2* in *ká3 cho2* 嫁咀 'married'. On the other hand, with lexical suprafixes, while we know that suprafix tone 2* was a long tone, and the extra length must have come from a suffix, there is no evidence of what the identity of this suffix was.

There are two other diminutive suffixes that are commonly found amongst Yuè dialects: **tsVj*^{B} 仔 and **tsi*^{B} 子. The **tsVj*^{B} 仔 suffix (e.g., Cantonese *tsɐi*^{25}) is now the dominant diminutive suffix in the eastern Yuè dialects. While Kwok (2016) primarily argues for the **ɲi*^{H} 兒 theory, he has nonetheless also presented some arguments for and against **tsVj*^{B} 仔 being the origin of the Cantonese lexical suprafixes. In a footnote (p. 307), some alternating pairs were presented, e.g., *ma*$^{21-35}$ 麻 and *ma*^{21}*-tʃɐi*^{35} 麻仔 'measles'. These suggest that *-tʃɐi*^{35} 仔 could be the source of the Cantonese high-rising lexical suprafix, in at least some words. One argument against the **tsVj*^{B} 仔 theory is that, while the high-rising tone in **tsVj*^{B} 仔 explains the high-rising suprafixes well, it does not explain the high-level and high-falling suprafixes. Also, looking at the Yuè varieties listed in Kwok (2016)'s Table 4 (p. 288), they all have high-level or high-falling suprafixes but not necessarily high-rising suprafixes. This further lowers the explanatory power of the **tsVj*^{B} 仔 theory. (Nonetheless, the suprafixes amongst Yuè dialects do not need to all stem from one single source; the **ɲi*^{H} 兒 theory and the **tsVj*^{B} 仔 theory need not be mutually exclusive.)

There is also Maurice Wong (1982; quoted by Alan Yu 2007, p. 202), who argues that the Cantonese lexical suprafixes came from the **tsi^{B}* 子 suffix. He offers alternating pairs like *min$^{22-35}$* 面 and *min^{22}-tsi^{35}* 面子 'face, honour' as examples. While there are Yuè (e.g., Kao 2007) and Pínghuà dialects (e.g., Nánníng Pínghuà; de Sousa Forthcoming) where the **tsi^{B}* 子 suffix is commonly used, the **tsi^{B}* 子 suffix is infrequently used in Standard Cantonese and other Yuè dialects in the Pearl River Delta. In the Pearl River Delta Yuè dialects, the **tsi^{B}* 子 suffix is largely restricted to literary expressions, and there are very few alternating pairs between a high-rising suprafix and a **tsi^{B}* 子 suffix. In addition, the **tsi^{B}* 子 theory suffers the same problem as the **tsVj^{B}* 仔 theory, given its high-rising tone.

Looking at the Cantonese data in Ball (1888), only one word had the **ɲi^{H}* 兒 suffix: *hat7 -yi4-1** 乞兒 (beg -DIM\SUPR) 'beggar'. The **ɲi^{H}* 兒 theory argues that the old *-ɲi^{H}* suffix had already transformed into the lexical suprafixes in Cantonese; the *-yi4-1** 兒 suffix in *hat7 -yi4-1** 乞兒 (beg -DIM\SUPR) 'beggar' is a very rare remnant of the old *-ɲi^{H}* suffix. At the time of Ball (1888), the lexical suprafixes had already lost most of their diminutive meanings, and the primary diminutive suffix was already *-tsai2* 仔. There were no cases of lexical suprafixes freely alternating with *-tsai2* 仔, and *-tsai2* 仔 could be suffixed to suprafixed roots, e.g., *t'oi4-2* tsai2* 檯仔 'small table' and *pò6-2* tsai2* 部仔 'small manuscript book' (p. 41). This testifies that *-tsai2* 仔 was not the source of the lexical suprafixes in Cantonese at the time of Ball (1888). (However, this does not preclude the possibility that *-tsɐi^{25}* 仔 caused more words to acquire a high-rising suprafix in later Cantonese.)

It is notable that *-tsai2* 仔 did not have a suprafix in Ball (1888). Nonetheless, this is not a problem for the **tsVj^{B}* 仔 theory, as the perfective marker *cho2* 咀 also did not have a suprafix, and it alternated with the (non-lexical) high-rising suprafix.

The *-tsz2* 子 suffix was rarely used in Ball (1888). There were no examples of *-tsz2*子 alternating with a suprafix. The *-tsz2* 子 suffix was most probably not the source of the lexical suprafixes in Ball (1888).

Based on all the points presented above, despite the flaws of the **ɲi* 兒 theory, the **ɲi* 兒 suffix remains the most likely source of the Cantonese lexical suprafixes.

4. Conclusions

This article discussed some synchronic and diachronic aspects of the Cantonese lexical suprafixes. We began by looking at the definitions of 'Cantonese' (Section 1.1) and the difference between non-lexical and lexical suprafixes. Lexical suprafixes are derivational tonal affixes that are lexically determined (Section 1.2).

The lexical suprafixes most likely originated from diminutive suffixes. Sometimes, the lexical suprafixes still have diminutive-type meanings, but usually there is no diminutive-type meaning left. They are 'just there' and may change the meaning and/or word class. In modern Cantonese, there is a tone 2 (high-rising) suprafix and a rarer tone 1 (high-level) suprafix (Section 2.1). Looking at descriptions in the twentieth century and late-nineteenth century, there used to be a distinction between suprafix tone 1* (high level) and ordinary tone 1 (high falling) (Section 2.2.1) and a distinction between suprafix tone 2* ([^{25}] in the 1940s and [^{315}] in the late-nineteenth century) and ordinary tone 2 [^{35}] (Section 2.2.2). We looked at the lexical items in some late-nineteenth century Cantonese textbooks. In comparison with modern Cantonese, some words that had a lexical suprafix back then are still suprafixed nowadays, some words have gained a suprafix, and some words have lost a suprafix (usually reverting back to their citation-tone pronunciation). Looking at just the words found in these texts, there has been an increase in the number of suprafixed words (Section 2.2.3). In Section 2.3, we looked at the use of suprafixes in some non-standard Cantonese varieties like Nánníng Cantonese and Older Macau Cantonese. They developed later than Canton and Hong Kong Cantonese (the standard varieties of Cantonese), and they have far fewer suprafixed words than Standard Cantonese. The facts discussed in Sections 2.2 and 2.3 strongly suggest that in Standard Cantonese, overall, there has been an increase in the number of suprafixed words, and that in many words, their lexical suprafixes do not have a long history.

In Section 3.1, we looked at the three most-commonly used diminutive suffixes amongst Pínghuà and Yuè dialects: **ɲi$^{A/H}$* 兒, **tsVj^{B}* 仔, and **tsi^{B}* 子. (Pínghuà and Yuè basically lie on a dialect continuum, with Pínghuà in the west and Standard Cantonese close to the eastern edge of the dialect continuum.) The majority opinion is that the lexical suprafixes in Standard Cantonese came from a **ɲi^{H}* 兒 diminutive suffix. In Section 3.2, based on Kwok (2016)'s grammaticalisation cline from **ɲi^{H}* 兒 to the lexical suprafixes in Yuè dialects, this study expands westward and includes data from some Pínghuà and some extreme-western Yuè dialects. Many Pínghuà dialects and some extreme-western Yuè dialects only have an unsuprafixed **ɲi^{A}* 兒 diminutive suffix in its citation tone—Lower tone A. Then, in mid-southern Guǎngxī, one finds speech varieties like Nánníng Wèizǐlù Pínghuà and Héngzhōu Cantonese; other than the unsuprafixed **ɲi^{A}* 兒 suffix, they have also developed a suprafixed **ɲi^{H}* 兒 diminutive suffix. Some Pínghuà and Yuè dialects further east only have a suprafixed **ɲi^{H}* 兒 diminutive suffix. From **ɲi^{H}* 兒, there are two independent development pathways: 'nasal rising' (a nasal coda or nasal feature attached to a root, plus a rising tone) and suprafixing directly on a root. It seems that speech varieties with the former also have cases of the latter, but having the latter does not infer the former. Geographically, nasal rising is only found in southwestern Guǎngdōng and neighbouring southeastern Guǎngxī. On the other hand, suprafixing directly on a root is found in the vast majority of Yuè dialects, and also in some Pínghuà dialects. Nonetheless, in many Yuè and Pínghuà dialects, the use of lexical suprafixes is rather marginal. Lexical suprafixation is the most developed in Standard Cantonese.

Ultimately, an undisputable answer cannot be found to the question of the origin of the Cantonese lexical suprafixes. With non-lexical suprafixes, we have textual evidence of what grammatical particles they alternated with. On the other hand, with lexical suprafixes, there is no such textual evidence. Section 3.3 discusses the merits and flaws of the **ɲi^{A}* 兒, **tsVj^{B}* 仔, and **tsi^{B}* 子 origin theories. Out of these three (types of) theories, the **ɲi^{A}* 兒 theory remains the most promising.[12]

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Appendix A

In the tables below, words with lexical suprafixes in Ball (1888, 1894) and words in Ball (1888, 1894) that have since gained a lexical suprafix are shown. The pronunciations shown are the pronunciations of those words in isolation. Some words/roots are featured in more than one table.

Unless a word is specified as being a classifier, the pronunciation of a word listed here does not included cases where the word is used as a classifier (classifiers rarely carry suprafixes). Some verbs and adjectives in Ball (1888, 1894) had a lexical suprafix; this means that they were always in that suprafix tone, unlike most other verbs and adjectives, which could be in their citation tone or take a non-lexical suprafix.

The non-parenthesised glosses and Chinese characters used are those in Ball (1888, 1894). They can be slightly different from modern usage or understanding.

In the transcription of tones below, (a) '*x*-*y*' means that *x* is the unpronounced citation tone, and *y* is the surface suprafix tone; (b) '*x*/*y*' means that the pronunciations in citation tone *x* and suprafix tone *y* are in free variation; and c) '*(x/)y*' means that the pronunciations in citation tone *x* and suprafix tone *y* are in free variation, but the citation-tone pronunciation is less common.

Tables A1–A6 list words from Ball (1888). Tables A7–A11 list words from Ball (1894). Words/characters/syllables in Ball (1888) can be searched at 'Early Cantonese Colloquial Texts: A Database' (https://database.shss.hkust.edu.hk/Candbase/).

Table A1. Words that were pronounced in citation tone in Ball (1888) but are now usually pronounced in suprafix tone 2 ('suprafix gain').

	Ball (1888)		**Modern Cantonese**		**Ball (1888)**		**Modern Cantonese**
bangle	鈪	*ák8*	*(ŋ)ak8-2*	probably	約嘆	*yök8 mok8*	*jœk8 mɔk8-2*
duck	鴨	*áp8*	*ap8/2*	bear	熊人	*hung4 yan4* [A23]	*huŋ4 jɒn4-2*
tongs	鉗	*k'im4*	*k^him4-2*	share (n.)	股份	*kwú2 fan6* [A2]	*ku2 fɐn6-2*
case	案件	*òn3 kín6*	*ɔn3 kin6-2*	jest	笑話	*síú3 wá6* [A2]	*siu3 wa6-2*
daughter	女	*nui5*	*nɵ y5-2*	sister	姊妹	*tsz2 múi6* [A2]	*tsi2 mui(6/)2*
old woman	伯爺婆	*pák8 ye4-1* p'o4*	*pak8 jɛ4-1 p^hɔ4-2*	domino	骨牌	*kwat7 p'ái4/2*A2*	*k^wɐt1 p^hai4-2*
building site	盤	*p'un4*	*p^hun4-2*	(playing) cards	紙牌	*chí p'ái4/2**	*tsi2 p^hai4-2*
string	繩	*shing4*	*sɪŋ4-2*	Yamen	衙門	*ngá4 mún4/2**	*ŋa4 mun4-2*
sail	行船	*háng4 shún4*	*haŋ4 syn4-2*	thief	賊	*ts'ák9/2**	*ts^hak9-2*
plate	碟	*tip9*	*tip9-2*	home country	鄉吓	*höng1 há5/2**	*hœŋ1 ha5-2*
peach	桃	*t'ò4*	*t^hou(4/)2*	chess	碁	*k'éi4/2**	*k^hei4-2*
sheep	綿羊	*min4 yöng4*	*min4 jœŋ4-2*	temple	廟	*míú6/2**	*miu6-2*
mattress	牀褥	*ch'ong4 yuk9*	*ts^hɔŋ4 jʊk9-2*	pill	丸	*yün4/2**	*jyn4-2*
Macao	澳門	*Ò3 mún4*	*ou3 mun(4/)2*	table	檯/臺	*t'oi4/2**	*t^hɔi4-2*
B.A.	秀才	*sau3 ts'oi4*	*sau3 ts^hɔi(4/)2*	city	城	*sheng4/2**	*sɛŋ4-2*
general assistant	打雜	*tá2 tsáp9*	*ta2 tsap9-2*	dollars	銀	*ngan4/2**	*ŋɐn4-2*
monastery	祠堂	*ts'z4 t'ong4*	*ts^hi4 t^hɔŋ4-2*				

[A23] This root is also featured in another word in Tables A2 and A3. [A2] This root is also featured in another word in Table A2. *yök8 mok8* 約嘆 'probably': one would expect *yök8 mok9* from usual sound-change rules from Middle Chinese; perhaps the tone in *mok9* was assimilated by the tone of *yök8*.

Table A2. Words that were pronounced in suprafix tone 2* in Ball (1888) but are now usually pronounced in suprafix tone 2 ('suprafix maintained').

	Ball (1888)		**Modern Cantonese**		**Ball (1888)**		**Modern Cantonese**
man	人	*yan4-2** [A13]	*jɒn4/2*	compradore	買辦	*mái5 pán6-2**	*mai5 pan6-2*
share (n.)	份	*fan6-2** [A1]	*fɐn6-2*	priest	和尚	*wo4 shöng6-2**	*wɔ4 sœŋ6-2*
(-language)	話	*-wá6-2** [A1]	*-wa6-2*	who	乜誰	*mi1 shui4-2**	*mɐt1 sɵ y4-2*
younger sister	妹	*múi6-2** [A1]	*mui6-2*	egg	蛋	*tán6-2**	*tan6-2*
card	牌	*p'ái4-2** [A1]	*p^{h}ai4-2*	master	事頭	*sz6 t'au4-2**	*si6 t^{h}ɐu4-2*
Yamen	衙門	*ngá4 mún4/2**	*ŋa4 mun4-2*	sun	熱頭	*yit9 t'au4-2**	*jit6 t^{h}ɐu4-2*
thief	賊	*ts'ák9/2**	*ts^{h}ak9-2*	peach	桃	*t'ò4-2**	*t^{h}ou4-2*
home country	鄉下	*höng1 há5/2**	*hœŋ1 ha5-2*	persimmon	柿	*ts'z5-2**	*ts^{h}i5-2*
chess	碁	*k'éi4/2**	*k^{h}ei4-2*	vase, pot	壺	*ú4-2**	*wu4-2*
temple	廟	*míú6/2**	*miu6-2*	picture	畫	*wá6-2**	*wa6-2*
pill	丸	*yün4/2**	*jyn4-2*	kite	鳶	*yíú6-2**	*-jiu6-2*
table	檯/臺	*t'oi4/2**	*t^{h}ɔi4-2*	pattern	樣	*yöng6-2**	*jœŋ6-2*
city	城	*sheng4/2**	*sɛŋ4-2*	fish	魚	*yü4-2**	*jy4-2*
orange	橙	*ch'ang4-2**	*ts^{h}aŋ4-2*	garden	園	*yün4-2**	*jyn4-2*
prisoner	犯	*fán6-2**	*fan6-2*	college	院	*yün6-2**	*jyn6-2*
room	房	*fong4-2**	*fɔŋ4-2*	commission	用	*yung6-2**	*jʊŋ6-2*
hong	行	*hong4-2**	*hɔŋ4-2*	ferry	渡	*tò6-2**	*-tou6/2*
plan	計	*kai3-2**	*kɒi3-2*	(be a) cook		*tsò6 ch'ü4-2**	*tsou6 ts^{h}y4-2*
sedan	轎	*kíú6-2**	*k$^{(h)}$iu6-2*	(that time)	嗰陣時	*ko3 chan6 shí4-2**	*kɔ2 tsɐn6 si4/2*
accountant	掌櫃	*chöng2 kwai6-2**	*tsœŋ2 k^{w}ɐi6-2*	(CLF)	位	*wai6-2**	*wɐi6-2*
basket	籃	*lám4-2**	*lam4-2*	about	度	*tò?-2**	*tou2*
fox	狸	*léi4-2**	*-lei4-2*	get wife	娶	*ts'ui2-2**	*ts^{h}ɵ y2*
blinds	幃	*lím4-2**	*lim4-2*	allow	由	*yau4-2**	*jɐu4-2*
name	名	*meng4-2**	*mɛŋ4-2*	certain	定	*ting6-2**	*tɪŋ6-2*
face, top	面	*min6-2**	*min6-2*	cook (n.)	火頭	*fo2 t'au4-2** [A3]	*fɔ2 t^{h}ɐu4-2*
hat	帽	*mò6-2**	*mou6-2*	house	樓	*lau4-2** [A3]	*lɐu4-2*
pass book	部	*pò6-2**	*pou6-2*	money	銀	*ngan4-2** [A3]	*ŋɐn4-2*

[A13] This root is also featured in another word in Tables A1 and A3. [A1] This root is also featured in another word in Table A1. [A3] This root is also featured in another word in Table A3. *tɪŋ6-2* 定 'certain' sounds slightly old, but it is still used.

Table A3. Words that were pronounced in suprafix tone 2* in Ball (1888) but are now usually pronounced in another tone ('suprafix loss' or 'suprafix changed').

	Ball (1888)		**Modern Cantonese**		Ball (1888)		**Modern Cantonese**
who	乜人	*mi1 yan4-2** [A12]	*mɐt1 jɐn4*	together	一齊	*yat7 ts'ai4-2**	*jɐt7 ts^{h}ɐi4*
beginning	起頭	*héi2 t'au4-2** [A2]	*hei2 t^{h}ɐu4*	rope	纜	*lám6-2**	*lam6*
upstairs	樓上	*lau4-2* shöng6* [A2]	*lɐu4 sœŋ6*	shanty	寮	*líú4-2**	*liu4*
money	銀錢	*ngan4/2* ts'ín4-2** [A2]	*ŋɐn4 ts^{h}in4-2*	pineapple	波羅	*po1 lo4-2**	*pɔ1 lɔ4*
ferry	渡	*tò6-2**	*-tou6/2*	furnace	爐	*lò4-2**	*lou4*
(that time)	嗰陣時	*ko3 chan6 shí4-2**	*kɔ2 tsɐn6 si4/2*	bridge of nose	鼻梁	*pei6 löng4-2**	*pei6 lœŋ4*
now	呢陣	*ni1 chan6-2**	*ni1 tsɐn6/2*	place	定	*teng6-2**	*tɛŋ6*
how long (time)	幾耐	*kéi2 noi6-2**	*kei2 nɔi6*	rhyme	韻	*wan5-2**	*wɐn5*
(verb CLF)	吓	*há5/2**	*ha5*	tonight	今晚	*kam1 mán5-2**	*kɐm1 man5/1*
sit	坐	*ts'o5-2**	*ts^{h}ɔ5*				
heavy	重	*ch'ung5-2**	*ts^{h}ʊŋ5*	sister-in-law	姨	*yí4-2**	*ji4-1*

[A12] This root is also featured in another word in Tables A1 and A2. [A2] This root is also featured in another word in Table A2.

Table A4. Words that were pronounced in suprafix tone 2 in Ball (1888) and are now pronounced in suprafix tone 2 or another tone ('suprafix maintained' or 'suprafix lost').

Ball (1888)			Modern Cantonese	Ball (1888)			Modern Cantonese
tael	両	*löng5-2*	*lœŋ5-2*	cess-pool	氹	*t'am5-2*	*tʰɐm5*
antithetical sentence	對	*tui3-2*	*tɵ y3-2*	coiffure	髻	*kai3-2*	*kɐi3*

Table A5. Words that were pronounced in suprafix tone 1* (or 1) in Ball (1888) but are now usually pronounced in suprafix tone 1 ('suprafix maintained').

Ball (1888)			Modern Cantonese	Ball (1888)			Modern Cantonese
tetter	瘡	*chong1/1**	*tsʰɔŋ1*	cloves	丁香	*ting1-1** *höng1-1**	*tɪŋ1 hœŋ1*
plaster	膏	*kò1-1**	*kou1*	colour of nature	青	*ts'ing1-1**	*tsʰɪŋ1*
market	欄	*lán4-1**	*lan4-1*	salad	英	*yíng1-1**	*jɪŋ1*
dollar	文	*man4-1**	*mɐn4-1*	hold/cabin	艙	*ts'ong1-1*/ch'ong1*	*tsʰɔŋ1*
cat	貓	*máu4-1/1**	*mau4-1*	go-down	貨倉	*fɔ3 ts'ong1-1**	*fɔ3 tsʰɔŋ1*
thirty	卅	*sá1/1**	*sa1*	note paper	箋	*tsín1-1**	*tsin1*
star	星	*seng1/1**	*sɪŋ1*	old man	伯爺公	*pák8 ye4-1* *kung1*	*pak8 jɛ4-1* *kʊŋ1*
hymn	詩	*shí1/1**	*si1*	old woman	伯爺婆	*pák8 ye4-1* *p'o4*	*pak8 jɛ4-1* *pʰɔ4-2*
court	廳	*t'eng1/1**	*tʰɛŋ1*	beggar	乞兒	*hat7 yí4-1**	*hɐt1 ji4-1*
gun	鎗	*ts'öng1/1**	*tsʰœŋ1*	hawk	鷹	*ying1-1**	*jɪŋ1*
postage	(信)資	*(sun3) tsz1/1**	*sɵn3 tsi1*	fly	烏蠅	*wú1 ying4-1**	*wu1 jɪŋ4-1*
jingling	玎	*ting1/1**	*tɪŋ1*	slight rain	雨微	*yü5 méi4-1**	*jy5 mei4-1*
throughout	通	*t'ung1/1**	*tʰʊŋ1*	scorch	燻	*nung?-1**	*nʊŋ1*
cent	仙	*sin1* *(loanword)*	*sin1*				
hand gong	玎璫	*ting1-1* *tong1-1**	*tɪŋ1 tɔŋ1*	mosquito	蚊	*man4-1*	*mɐn4-1*

*ts'ing1** 青 'colour of nature' was different from *ts'eng1* 青 '(dark) blue' in Ball (1888). 英 'salad' can perhaps be considered obsolete; in *words.hk*, 英 'salad' can be found in the entry *kʷa1 jɪŋ1* 瓜英 'papaya slices preserved by sugaring'.

Table A6. Words with lexical suprafixes in Ball (1888) that are now too dated.

Ball (1888)			Ball (1888)		
tetter	火疔瘡	*fo2 teng1-1** *chong1-1**	cash	X個錢	*X ko3 ts'ín4-2**
posts of a certain frame	文簹	*man4 kui6-2**	dollar	X個銀	*X ko3 ngan4-2**
capital	本銀	*pún2 ngan4-2**	pò-tsz	寶字	*pò2 tsz6-2**
ingot	錠	*ting3-2**	six-barrelled revolver	六口連	*lúk9 hau2* *lín~m4-2**
shop-coolie		*kún2-tím3/2**	sailing ship	桅棒船	*wai4 p'ang5-2* *shün4*
mistress	東家婆	*tung1 ká1 p'o4-2**			

Table A7. Words that were pronounced in citation tone in Ball (1894) but are now usually pronounced in suprafix tone 2 ('suprafix gain').

	Ball (1894)		Modern Cantonese		Ball (1894)		Modern Cantonese
mother	老母	*lòo5 mò5*	*lou5 mou5-2*	mother-in-law	家婆	*ká1 pʻo4*	*ka1 pʰɔ(4/)2*
pear	沙梨	*shá1 léi4*	*sa1 lei4/2*	granny	婆婆	*pʻo4 pʻo4*	*pʰɔ4 pʰɔ4-2~1*
jasmine	茉莉花	*mút9 léi4 fá1*	*mut9 lei4-2 fa1*	oppress	難為	*nán4 waí6*	*nan4 wɐi4/2*
daughter	女	*nuí5*	*nø y5-2*	bear	熊人	*hung4 yan4* [A89]	*huŋ4 jɐn4-2*
city	城	*sheng4*	*sɛŋ4-2*	money	錢銀	*ts'ín4ngan4-2** [A89]	*tsʰin4-2ŋɐn4-2*
church	教會	*káu3 wúi6*	*kau3 wui(6/)2*	such as	之類	*chí1 luí6/2**	*tsi1 lø y6/2*
holy church	聖公會	*shing3 kung1 wúi6*	*sɪŋ3 kɔŋ1 wui6-2*	spice	香料	*höng1 líu6/2*	*hœŋ1 liu6-2*

[A89] This root is also featured in another word in Tables A8 and A9.

Table A8. Words that were pronounced in suprafix tone 2* in Ball (1894) but are now usually pronounced in suprafix tone 2 ('suprafix maintained').

	Ball (1894)		Modern Cantonese		Ball (1894)		Modern Cantonese
man	人	*yan4-2** [A79]	*jɐn4-2*	room	房	*fong4-2**	*fɔŋ4-2*
money	錢	*ts'ín4-2** [A79]	*tsʰin4-2*	money	錢銀	*ts'ín4 ngan4-2**	*tsʰin4-2 ŋɐn4-2*
spice	香料	*höng1 líu6/2**	*hœŋ1 liu6-2*	and be done with	罷	*pá6-2**	*pa6-2*
peach	桃	*t'ò4-2**	*tʰou4-2*	court	衙門	*ngá4 mún4/2**	*ŋa4 mun4-2*
bean	豆	*tau6-2**	*tɐu6-2*	disorderly	亂	*lün6-2**	*lyn6-2*
flower garden	花園	*fá1 yün4-2**	*fa1 jyn4-2*	a little	略略	*lök9 lök9-2**	*lœk9 lœk9-2*
not (very) long	冇(幾)耐	*mò5 (kéi2) noí6-2**	*mou5 (kei2) nɔi6-2~1*	pattern	樣	*yöng6-2** [A9]	*jœŋ6-2*
sun	熱頭	*yit9 t'au4-2**	*jit9 tʰɐu4-2*	name	名	*meng4-2** [A9]	*mɛŋ4-2*
who	乜誰	*mat7 shui4-2**	*mɐt7 sø y4-2*	potato	薯	*shü4-2** [A9]	*-sy4/2*
widow	寡母婆	*kwá2 mò5 pʻo4-2**	*kʷa2 mou5 pʰɔ4-2*	such as	之類	*chí1 luí6/2** [A9]	*tsi1 lø y6/2*
thing	物件	*mat9 kín6-2**	*mɐt6 kin6-2*	probably	大概	*táai6 kʻoi3-2** [A9]	*tai6 kʰɔi3/2*
old (man)	老大	*lòo5 táai6-2**	*lou5 tai6-2*	once	一排	*yat7 pʻái4-2** [A9]	*jɐt1 pʰai4/2*
(classifier)	位	*waí6-2**	*wɐi6-2*	gradually	漸漸	*tsím6 tsím6-2** [A9]	*tsim6 tsim6/2*
				that (CLF) time	個陣時	*ko3 chan6 shí4-2** [A9]	*kɔ2 tsɐn6 si4/2*

[A79] This root is also featured in another word in Tables A7 and A9. [A9] This root is also featured in another word in Table A9.

Table A9. Words that were pronounced in suprafix tone 2* in Ball (1894) but are now usually pronounced in another tone ('suprafix loss').

	Ball (1894)		Modern Cantonese		Ball (1894)		Modern Cantonese
who	乜人	*mi1 yan4-2** [A78]	*mɐt1 jɐn4*	probably	大概	*táai6 kʻoi3-2** [A8]	*tai6 kʰɔi3/2*
wages	工錢	*kung1 ts'ín4-2** [A78]	*kɔŋ1 tsʰin4*	once	一排	*yat7 pʻái4-2** [A8]	*jɐt1 pʰai4/2*
appearance	樣子	*yöng6-2* tsz2* [A8]	*jœŋ6 tsi2*	gradually	漸漸	*tsím6 tsím6-2** [A8]	*tsim6 tsim6/2*
Lord's holy name	主之聖名	*chü chí1 shing3 meng4-2** [A8]	*tsy2 tsi1 sɪŋ3 mɪŋ4*	that (CLF) time	個陣時	*ko3 chan6 shí4-2** [A8]	*kɔ2 tsɐn6 si4/2*
potato	薯	*shü4-2** [A8]	*-sy4/2*	constantly	常常	*shöng6 shöng4-2**	*sœŋ4 sœŋ4*
such as	之類	*chí1 luí6/2** [A8]	*tsi1 lø y6/2*	sit	坐	*tsʻo5-2**	*tsʰɔ5*

[A78] This root is also featured in another word in Tables A7 and A8. [A8] This root is also featured in another word in Table A8.

Table A10. Words that were pronounced in suprafix tone 2 in Ball (1894) but are now pronounced in suprafix tone 2 or another tone ('suprafix maintained' or 'suprafix lost').

Ball (1894)			Modern Cantonese	Ball (1894)			Modern Cantonese
cross	十字架	*shap9 tsz6 ká3/2*	*sɐp6 tsi6 ka3/2*	stomach	肚	*t'ò5-2*	*t^hou5*

Table A11. Words that were pronounced in suprafix tone 1* (or 1) in Ball (1894) and are now pronounced in suprafix tone 1 or citation tone ('suprafix maintained', 'suprafix lost'), or words that have gained a suprafix tone 1 ('suprafix gained').

	Ball (1894)		Modern Cantonese		Ball (1894)		Modern Cantonese
eh?	呢	*ni1**	*nɛ1*	bend down head	垂低頭	*shuí4 tai1-1* *t'au4*	*sɵ y4 tɐi1 t^hɐu4*
descendent	子/仔孫	*tsz/tsaí 2 sün1-1**	*tsi2 syn1*	finally	收尾	*shau1 méi5-1**	*sɐu1 mei(5/)1*
side	側邊	*chak7 pín1-1**	*tsɐk7 pin1*	mosquito net	蚊帳	*man4-1 chöng3*	*mɐn4-1 tsœŋ3*
which-spear	邊鎗	*pín1-1*- ts'öng1/1**	*pin1- ts^hœŋ1*	evening	挨晚	*ái1 mán5*	*ai1 man5-1*

Source of Data Not Referenced in the Main Text
Mandarin, Southwestern:

- Old Nánníng Mandarin 南寧(邕州官話): Zhōu et al. (2006).

Pínghuà, Northern:

- Línguì Wǔtōng 臨桂五通: Zhōu (2005).
- Yǒngfú Táochéng 永福桃城: Xiè (2007).

Pínghuà, Southern:

- Bǎisè Nàbì 百色那畢: Xiè (2007).
- Bīnyáng Xīnqiáo 賓陽新橋: Qín et al. (2016).
- Chóngzuǒ Jiāngzhōu (Zhèyuánhuà) 崇左江州(蔗園話): Lǐ and Zhū (2009).
- Chóngzuǒ Xīnhé (Zhèyuánhuà) 崇左新和(蔗園話): Liáng and Lín (2009).
- Héngzhōu Lǐngliáo 橫洲嶺鷚: Bì (2003).
- Nánníng Wèizīlù 南寧位子碌: author's fieldwork.
- Sānjiāng (Liùjiǎhuà) 三江(六甲話): Wéi (2007).
- Yízhōu Déshèng (Bǎixìnghuà) 宜州得勝(百姓話): Xiè (2007).

Yuè, Cantonese (Guǎngfǔ):

- Standard (Hong Kong) Cantonese: general knowledge, words.hk.
- 'Older' Macau Cantonese: author's parents' speech.

Yuè, Cantonese (Yōngxún):

- Guìpíng Cantonese 桂平(白话): Chén and Wēng (2010).
- Héngzhōu Cantonese 橫洲(白話): Xiè (2007).
- Nánníng Cantonese 南寧(白話): Lín and Qín (2008), general knowledge.

Yuè, Gōulòu:

- Guìgǎng 貴港: Chén and Wēng (2010).
- Hèzhōu Guìlǐng 賀州桂嶺: Chén (2007).
- Pínglè (Běndìhuà) 平樂(本地話): Xiè (2007).
- Zhōngshān, Guǎngxī (Běndìhuà) 鍾山(本地話): Xiè (2007).

Yuè, Qīnlián:

- Hépǔ (Liánzhōu) 合浦(廉州): Chén and Chén (2005).

Notes

1 Another phenomenon that needs to be distinguished is the change of tone in a normal historical linguistic sense. A change of tone can simply be a regular or irregular historical sound change, without suprafixation or (regular) tone sandhi being involved. For instance, *kau5 fu6-2* 舅父 'mother's brother' is nowadays often pronounced *kau3 fu6-2* by younger speakers in Hong Kong. This change from *kau5* to *kau3* does not involve affixation (e.g., it is not a regular occurrence to change to tone 3 for a specific meaning or function), and this is also not tone sandhi (i.e., there is no sandhi rule that says that tone 5 has to change to tone 3 before tone 6 or 2). This is just a sound change in a historical linguistic sense.

2 The categories are as follows: (a) voicing of the initial (i.e., non-glide onset) in Middle Chinese; (b) tones A, B, C and D in Middle Chinese, with tones A, B and C being tones on sonorant-ending syllables and tone D signifying that the syllable is obstruent-ending; (c) 'L' and 'S' are sets of Middle Chinese vowels that correspond with the long and short vowels in Cantonese (Middle Chinese is not thought of as having a vowel-length distinction).

3 There is also a tone 4 (low-falling) suprafix, but this is very rare. A tone 4 suprafix is most usually next to a tone 2 or 1 syllable (so perhaps the suprafix is the entire melody and not just the tone 4), but this is not always the case. The tone 4 suprafix used with address terms clearly has an endearment meaning. For instance, from the roots *kɔ1* 哥 'elder brother' and *mui6* 妹 'younger sister' are the words *kɔ1-4 kɔ1* 哥哥 'elder brother' and *mui6-4 mui6-2* 妹妹 'younger sister, little girl'. There are also nicknames (here using nicknames of deceased Hong Kong celebrities as examples) like *mui4-1 tsɛ2-4* 梅姐 (Mui\SUPR elder.sister\SUPR) for Anita Mui Yim-fong, and *tat6 kɔ1-4* 達哥 (Tat elder.brother\SUPR) for Richard Ng Man-tat. When used in place names, it is harder to argue that endearment is involved, but at least it is still the case that only familiar place names obtain a tone 4 suprafix. For instance, *wan1-4* 灣 'bay' can be found in place names like *nam4 wan1-4* 南灣 (south bay) 'Praia Grande' in Macau, and *tʰɔŋ4 lɔ4 wan1-4 ~ tʰɔŋ4 lɔ4 wan1* 銅鑼灣 (copper gong bay) 'Causeway Bay' in Hong Kong (see Lau and Tang 2020 on Hong Kong 灣 'bay' placenames). Applying suprafixes correctly to local place names is a shibboleth.

4 This name is rendered Ch'au Chan Sene in Ball (1907, p. xxxiii). In other publications, this name is rendered Ch'an Chan Sene.

5 Ball (1888) marks tones using a modified version of the Chinese 'four-corner' system (using the syllables *fan* and *chit* as examples): tone 1 ◻*fan*, tone 1*◦*fan* or ◻*fan**, tone 2 ◻*fan*, tone 2*⌊*fan**, tone 3 *fan*◻, tone 4 ◻*fan*, tone 5 ◻*fan*, tone 6 *fan*◻, tone 7 *chit*◻, tone 8 *chit*◦, and tone 9 *chit*◻. The ways that tones are marked are slightly different in the various editions of *Cantonese Made Easy*.

6 Tone 7 syllables with a suprafix are described in Ball (1907, p. xxxii) as a prolongation of tone 7. (He calls this suprafix tone the 'variant Upper Entering Tone'). In other words, tone 7* was the same, or at least in complementary distribution, with tone 1*. However, there are only two examples of this in Ball (1907), and both raise some questions: (a) *shik7-7** 識 'to know' (p. 1) comes in isolation with no further explanations (i.e., it is impossible to tell whether this is a lexical or non-lexical suprafix); and (b) *hák8-7** 客 'visitor' (p. 59), with citation tone 8, would normally have a suprafix tone 2 in modern day understanding. Cases of the tone 7* suprafix are not further discussed in this article.

7 While Yiu (2010) is correct in pointing out that there are differences in these two mergers, she has perhaps not explained the differences in the best way. With the 1-to-1* merger, it was indeed the case that it was caused by an increase in the amount of tone 1 (high-falling) syllables being pronounced in suprafix tone 1* (high level). In more than 95% of cases, tone 1* syllables had tone 1 as their citation tone; 1-1* was the default pathway for both 1→ and →1*. In addition, high level was also a sandhi realisation of tone 1 (Section 2.2.1). High level and high falling are phonetically not that similar; it was the variation in the same syllables/morphemes being pronounced high level or high falling (by different people, and also in the speech of the same person) that the contrastiveness between high level and high falling began to collapse. The situation was different with the 2-to-2* merger. The change in the number of morphemes having the tone 2* suprafix is immaterial in this case. (There has been an increase from my point of view, but Yiu (2010) argues that the opposite is true.) When there was a contrast between tones 2 and 2*, it was not the case that tone 2 morphemes started gaining a suprafix and became suprafix tone 2*; in fact, in nearly 0% of cases, tone 2* morphemes had tone 2 as their citation tone in Ball (1888). The one exception known to me is the verb *tsʻui2-2** 娶 'get wife', with a lexical suprafix tone 2*. This was still largely the case in later publications that distinguished tones 2 and 2*. For instance, Chao (1947, p. 35) offers examples of words in suprafix tone 2* with the citation tones 3, 4, 5, 6, 7, 8 and 9, but citation tone 2 was specifically crossed out. In Gāo (1980), amongst the many cases of →2*, there were only two cases of 2-2*: *fan2 tɐu2-2** 反斗 'naughty' and *tʰɔŋ2-2** 桶 'bucket'. So, the 2-to-2* merger was not caused by tone 2 syllables gaining a suprafix and becoming tone 2*. The merger was simply a case of tones 2* and 2 having very similar phonetic realisations: tone 2* [^{25}] and tone 2 [^{35}] according to Chao (1947, pp. 34–35).

8 湛江市霞山区志, 宗教方言民俗. http://www.zjxs.gov.cn/zlxs/zjxs/xsqz/content/post_482997.html; accessed 17 June 2024.

9 Romanised Middle Chinese forms are usually not 'starred', as they are transcriptions of the phonology system of the *Qièyùn* 切韻 (601 CE), not a reconstruction. On the other hand, the non-attested earlier Yuè/Pínghuà forms like **ɲiᴬ* 兒 are starred, as they are the hypothesised earlier forms that existed in these Yuè/Pínghuà varieties. They do not necessarily have the same form as Middle Chinese forms like *ɲeᴬ* 兒.

10 In Standard Cantonese, the fossilised cases of *-ɲiᴴ* 兒 that I know of are a) *hɐt^{5} -ji$^{21-55}$* 乞兒 (beg -DIM\SUPR) 'beggar'; b) *tsɔk^{5} -ji$^{21-55}$ jɐn$^{21-55}$* 捉兒人 (catch -DIM\SUPR person\SUPR) 'hide and seek'; and c) *mau^{55} -ji$^{21-55}$* 貓兒 (cat -DIM\SUPR) 'kitten' (found in sayings like the rhyming proverb 老狗嫩貓兒，食死冇人知 *lou^{13} kɐu^{25} nyn^{22} mau^{55} -ji$^{21-55}$, sɪk^{2} sei^{25} mou^{13} jɐn^{21} tsi^{55}* (old dog

immature cat -DIM\SUPR, eat be.dead NEG.exist person know) 'Old dog and young kitten [meats are so toxic that if you] eat [the meat you] will be dead before anyone knows').

11 Probably also valid is Zhū (2004)'s proposal that child-directed speech is the origin of suprafixes.

12 Not discussed in this article is the low-tone suprafix that is very common amongst Szeyap/Sìyì Yuè dialects. See, e.g., Gān (2010, pp. 35–39) and (Tan 2010; Tán 2011). This low-tone suprafix coincides with their Lower tone B. Kwok (2016, pp. 307–8) observes that in a number of geographically peripheral and non-contiguous Szeyap varieties, their Lower tone B is a high tone instead. Based on this, Kwok hypothesises that the Lower tone B was a high tone in Proto-Szeyap; the low-tone suprafix in the modern-day Szeyap dialects is an older suprafix that existed in Proto-Szeyap, and it was originally a high-tone suprafix.

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Article

Vowel Quality in Xiang Non-Lexical Hesitation Markers: New Forms of Typological Evidence?

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Abstract: Xiang (hsn) remains a poorly understood grouping within Sinitic, with no satisfactory conclusions on how to demarcate its boundaries or define its subgroupings. One general observation is that there is a rough typological split between the Northeast and Southwest related to contact from northern- and southern-type Sinitic varieties, respectively, which can be supported with phonological, lexical, and syntactic evidence. It is predicted here that an additional source of evidence can be found in the phonetic features of hesitation markers (HMs; 'fillers', 'speech disfluencies', etc.), which tend towards the central area of the vowel space (approaching [ə], [ɤ], [e], etc.) but still conform to the phonologies of the languages in which they occur. This study introduces a novel three-way division of Xiang in terms of phonemic central vowels found in open syllables (either [ə/ɤ], [e/ɛ], or both) which is then evaluated against the vocalic quality found in HMs to determine whether they can be used as evidence for Xiang internal typology. Data are gathered from 47 speakers representing 16 Xiang localities, distributed across Hunan province, recorded performing the Pear Stories paradigm, with 304 hesitation markers extracted. Features reported on include vowel quality (F1-F2), tonal contour (F0), and duration (ms). It is found that Xiang HMs demonstrate four distinct vowel qualities, but that their distribution does not neatly fit established taxonomic schemes; however, the evidence does support the transitional status of Xiang varieties as a site of mixture of northern and southern Sinitic features.

Keywords: hesitation markers; Xiang; phonetics-phonology; typology

1. Introduction

The use of hesitation markers (HMs; fillers, filled pauses, disfluencies, etc.) as evidence of crosslinguistic typological trends has been explored in the past (Candea et al. 2005; Vasilescu et al. 2005; Wieling et al. 2016; Dingemanse 2017; Dingemanse and Woensdregt 2020), but few if any studies have been conducted on whether or not they can inform existing typological[1] classificatory models. Particularly within Sinitic, HMs have received little attention, with the exception of a few key studies (Zhao and Jurafsky 2005; Yuan et al. 2016) all dealing with Mandarin. Meanwhile, within Sinitic the Xiang group has often not been provided the same amount of attention as other, better-known varieties such as Yue or Min. The general consensus seems to be to divide Xiang into northeastern and southwestern areas (Yuan 1960; Wu 2005), but the features these two areas share to the exclusion of others is rather small. In order to further understanding on the typological subgrouping of Xiang, as well as contribute to understanding on the vocalic quality of hesitation markers, the present study seeks to explore the plausibility of using the vowel quality of hesitation markers as evidence for the internal typological taxonomy of Xiang.

Xiang has been the focus of much work in Sinitic dialectology, with many studies being dedicated to the precise classification of the grouping, both within Sinitic generally and in terms of its constituent subgroups (Yuan 1960; Language Atlas of China 1988, 2012; Zhou and You 1988; Chen and Bao 2007; Coblin 2011; Bao 2017; among others). A lot of this work (Coblin 2011 being a key exception) toes the line between historico-comparative

classification, used to determine closer genetic affiliations, and typological classification, which aims to define groups based on bundles of shared features, and it can be often unclear on which side a particular study lies. For instance, Yuan (1960) originally defined the Southwestern Xiang subgroup ('Old' Xiang in his terminology) as any variety of Chinese which retained the Middle Chinese voiced plosives in all tones. However, as preservation of voiced plosives is a retention rather than an innovation, it provides insufficient grounds upon which to motivate a genetic classification. In addition, Xiang as a whole and many of the subgroups defined for Xiang lack a substantial list of uniquely shared features, whether retentions or innovations. One of the factors contributing to this lack of shared features is the 'transitional' (Wu 1999; Chappell 2001; Szeto and Yurayong 2021) status of Xiang, where southern and northern Sinitic features are mixed. Across all of these studies (again, with Coblin 2011 as the exception), one general consensus is apparent: Xiang can be divided into two large typological[2] areas, a northeastern, innovative one, and a southwestern, conservative one. Modifications on this schema have added additional groupings, but the number of shared features remains rather small (see Chen and Bao 2007, 2012).

Hesitation markers are still often not thought of as 'words' in the usual sense, often labelled 'disfluencies' (Shriberg 2001; McDougall and Duckworth 2017) or 'filled pauses' (Gick et al. 2004) given their primary function as placeholders while one formulates the rest of an utterance. Two broad types of HMs are distinguished in the present piece: one having a lexical source and therefore a dual function, such as the English 'like' or 'so' (hence, 'lexical HM'), and another having no such source, such as the English 'uh' or 'um' (hence, 'non-lexical HM'). While few would argue that the former type do not consist of 'words', the latter has a somewhat more ambiguous status. The high incidence of non-lexical HMs in natural speech and their conventionalized form in different languages (Clark and Fox Tree 2002) has led to a renewed appraisal of their status as words, specifically as discourse markers (following definitions in Maschler and Schiffrin 2015). However, unlike lexical HMs, it is also clear that non-lexical HMs have a special status which differentiates them from regular vocabulary; this is evidenced by how remarkably similar non-lexical HMs are across languages (Candea et al. 2005; Dingemanse and Woensdregt 2020), tending to cluster towards vowels in the mid-to-low acoustic space. Meanwhile, the language-specific quality non-lexical HMs[3] have, as evidenced by a better-than-chance ability to identify languages by HM acoustic quality (Vasilescu et al. 2005), are also predicted to represent viable ground for typological research. This is particularly true for Xiang, given that it is precisely in the mid-vowels that divisions can be drawn in terms of which vowels are contrastive in open syllables.

Given these facts, the following questions are raised: what segmental/suprasegmental patterns can be observed for HMs in the transitional Xiang grouping, which represents a typological link between the Northern and Southern Sinitic languages? Will vowel quality demonstrate northern characteristics, southern characteristics, or reflect some third paradigm? Can HM vowel quality serve as an additional piece of evidence for the internal typological affiliation of a particular dialect?

Through analysis of a corpus of 47 narratives from 16 Xiang-speaking localities, this study aims to explore the vocalic quality of hesitation markers as they vary across the grouping. A novel, three-way division of Xiang dialects based on mid-vowel contrasts in open syllables is introduced. In so doing, the present research seeks to explore whether sub-lexical vocabulary like hesitation markers can be used to expand the number of features used in defining typological splits among dialects in Xiang. Findings suggest that while division into discrete, categorical groupings is unlikely given the variability of HMs and other confounding factors, more gradient divisions can be established. In addition, the present research has implications for our understanding of how hesitation markers manifest in naturalistic speech, including an exploration of how HM acoustics succeed or fail to reveal more general phonological patterns.

2. Background

Sinitic can be divided into two large typological areas: a northern area and a southern area (Yue-Hashimoto 1976; Norman 1988; Chappell 2001, 2015; Szeto 2019; Szeto and Yurayong 2021), representatives of which can be found in Mandarin and Cantonese, respectively.[4] Following Norman (1988), the northern area includes varieties of Mandarin, and the southern area includes varieties of Yue, Hakka, and Min. These regions can be defined at many levels of linguistic description, including phonology (complexity of the tonal system, treatment of Middle Chinese voiced plosives, loss of coda consonants, etc.), syntax-morphology (complexity of the classifier system, type of comparative construction, modifier-head ordering, etc.), and lexicon (choice and variety of negation particles, degree of monosyllabicity, origin of the comparative marker, etc.). In between these two areal regions lie the remaining three traditional groupings of Sinitic: Wu, Gan, and Xiang. This central region is thought to share features of both the north and the south, which contributes to the 'transitional' characterization of the Sinitic varieties spoken in these regions (Wu 2005; Chappell 2015; Szeto and Yurayong 2021).

While this areal typology has traditionally been defined in terms of well-established grammatical, phonological, and lexical features, the question this study seeks to answer is whether our understanding of this typological scheme and the notion of a 'transitional' Xiang can be enriched through exploration of acoustic features associated with hesitation markers, in particular the feature of hesitation marker vowel quality. HMs are small, discourse-moderating particles that signal a pause in speech, often composed of a mid-central vowel or nasal consonant with low pitch (Candea et al. 2005; Zhao and Jurafsky 2005; Yuan et al. 2016; Dingemanse and Woensdregt 2020), and the exact quality of the vowel in question is usually determined by language-specific phonological patterns, such as which vowels a language allows in open syllables. Returning to Sinitic, in open syllables Mandarin and other northern varieties restrict central vowels to mid-back [ɤ] (or mid-central [ə]), while Cantonese restricts them to mid-front [ɛ] and its rounded counterpart (Shi et al. 2015),[5] but it is unclear how these vowels pattern in Xiang, and, by extension, how they manifest in HMs (the typology of HMs will be further discussed in Section 2.3). The exact quality seen for these items in Xiang can potentially tell us something about the relative clustering of northern versus southern features in a particular dialect.

Central Sinitic languages are predicted to lie somewhere between the north and south in terms of their typological features; in particular, Xiang varieties have vocalic systems which display features of both. For instance, the Chengbu dialect has an open syllable contrast between mid-central and mid-front vowels (Bao 2017, pp. 152–174), the Yiyang dialect has only a mid-central vowel (Cui 1998), and Xiangtan (Wang 2013) has only a mid-front vowel. This mix of features raises questions as to where the form of HMs cluster in Xiang and whether they can in some way illuminate its internal typological subgrouping.

2.1. Classificatory Overview of Xiang

The area where 'Xiang' is spoken covers most of central Hunan province and parts of northern Guangxi, primarily following the Xiang River, which gives the grouping its name. The most common linguistic definition refers to those dialects which have uniform treatment of the Middle Chinese voiced plosives as either voiced or voiceless unaspirated (Yuan 1960; Norman 1988; Ho 2015). It is surrounded on most sides (to the north, west, and south) by varieties of Southwestern Mandarin, as well as varieties of Gan and Kejia in the east. There is also a small, poorly researched 'Waxiang' area in the west (Wu 2005, p. 375). Much work has focused on better defining the group and its subgroups (Yuan 1960; Bao 1985; Language Atlas of China 1988, 2012; Zhou and You 1988; Wu 2005; Chen and Bao 2007; Coblin 2011). It is important to stress that what will be covered in what follows are not genetic, but rather typological, conceptualizations in the strict sense (although some authors may not agree with this assessment); as work by Zhou and You (1988) and Coblin (2011) show, the genetic tenability of the Xiang family is suspect, and the term 'Xiang' here is thus used as an areal or typological convention.

Yuan (1960) originally divided the grouping into two main dialect areas, roughly corresponding to a north-south split: a 'New' and an 'Old' group, based on loss or retention of the Middle Chinese voiced obstruents, respectively. This simple taxonomy is complicated by the fact that Old dialects have varying degrees of voicing preserved; for instance, some may have a fully voiced three way contrast between /b d g/, others only /b d/, while others only have /d/ (Norman 1988). Another complication is the fact that voiced plosive preservation is not unique to Xiang, as it is found in Wu dialects as well (Kurpaska 2010; Ho 2015). This original taxonomy is expanded on by the first edition of the Language Atlas of China (1988), which defines Xiang as those varieties which have unaspirated reflexes of the Middle Chinese voiced obstruents in all tones by adding the 'Jixu' grouping (made up of western Xiang dialects originally of the Old Xiang grouping) and by renaming the Old and New families 'Loushao' and 'Changyi', respectively.[6] The definitional criteria for these three groupings are: Changyi has unaspirated voiceless reflexes of the MC voiced obstruents, Loushao has fully voiced reflexes, and Jixu has voiced reflexes in syllables in the level tone category, but voiceless ones in the oblique tone category. Another change includes the incorporation of Anhua into the Loushao group, despite its lack of voiced plosive initials in all its varieties (Zhou 2016). In addition, the atlas notes that there are exceptions to the loss of voiced plosives in Changyi, namely Hengdong and Hengshan (more on these problematic cases later).

Other classificatory models use a wider variety of criteria to determine groupings, of which Chen and Bao (2007) is a good example (repeated in Bao 2017, pp. 22–36). This scheme includes five groupings: Changyi (northeast), Loushao (southwest), Hengzhou (central), Chenxu (west), and Yongquan (south), which is summarized in Figure 1 ("Dialects of Hunan per Chen and Bao (2007)" by Alan Tsukuba under: https://creativecommons.org/licenses/by-sa/4.0/deed.en, accessed 21 November 2021). Bao (2017, pp. 22–36) lists the phonological criteria used for the classification, which once again include voiced plosives and tonal contrasts as a major feature, but with the novel addition of vocabulary as a diagnostic feature. For instance, features treated as unique for Hengyang (a subgroup within Hengzhou) include (unsurprisingly) the voiceless unaspirated reflexes of Middle Chinese voiced obstruents; a series of six lexical tones with pitch values similar to Shaoyang; and unique lexical items for the third person pronoun [tɕi33], 'son' [lai33 tɕi33], and 'what' [ma33 ko22]. What is particularly interesting is the choice to group Hengyang, Hengdong, and Hengshan into their own 'Hengzhou' grouping, as well as Yongzhou into its own 'Yongquan' grouping, due to their perceived transitional status between the better-known Loushao and Changyi groupings.

The updated second edition of the Language Atlas of China (2012, p. 19) also adopts this five-way classificatory scheme. It appears this was done in response to Chen and Bao's (2007) findings, as the updated version of the Atlas also includes an article detailing their criteria (Chen and Bao 2012). Therefore, Chen and Bao's approach represents the most up-to-date understanding of the internal classification of Xiang, as far as the author is aware.

What is clear about Xiang, through all of these revisions, is that there appears to be some typological north(east)-south(west) divide (typified by Changsha and Shaoyang, respectively), with certain central transitional areas which breed complications (such as Hengyang and Yongzhou). Hengyang (and environs) is divergent to the point of requiring its own grouping (Chen and Bao 2007, 2012). This is analogous to the typological situation in the Sinitic family as a whole, with well-established (or comparatively better-established) northern and southern groupings (typified by Mandarin and Yue, respectively) and with certain central varieties complicating matters (such as Xiang). This general trend has also been found in more recent typological research such as that of Szeto and Yurayong (2021), who find a general north-south divide in Xiang as well.

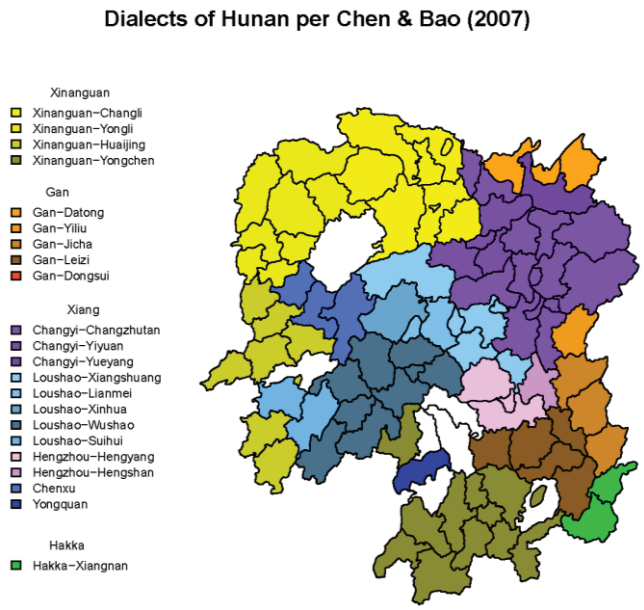


Figure 1. Classification of Xiang varieties (shades of blue = Loushao, Chenxu, Yongquan; purple = Changyi; pink = Hengzhou), following Chen and Bao (2007).

2.2. Comparison of Vowel Inventories

One overarching typological feature in Sinitic which has not received much attention is the distribution of unrounded mid-vowels in open CV syllables. We know, for instance, that in Putonghua (PTH; Standard Mandarin) only mid-back [ɤ] occurs in open syllables without an accompanying glide (Duanmu 2007, p. 37), and that Cantonese (Matthews and Yip 2013) allows only mid-front lax [ɛ], but the trend is more widespread.

Lee and Zee (2014) mention that in their survey of 70 Sinitic varieties, 52 had vocalic systems with either [e] or [ɛ] as the only contrastive unrounded mid-vowel in open CV syllables, while 14 had [ɤ] and 12 had [ə] (although presumably not both). If one goes over Sinitic varieties by their relative northern or southern affiliation following Norman (1988, pp. 181–3), we can observe a general north-south divide. In the UPSID database (Maddieson and Precoda 2018), one can see that Min varieties like Fuzhou and Xiamen, as well as 'Hakka' (one assumes Meixian) have only [ɛ] or [e]. In Norman's (1988) overview of Mandarin, one can see that while geographically central varieties like Yangzhou have [ɤ], southern ones like Chengdu have [e]. Xi'an and Wuhan both have [ɤ] (Sun 2007; Zhang 2015). Shanghai Wu (Zee and Xu 2017) has both [ɛ] and [ə], while Suzhou has [e] (Handel 2017). Nanchang Gan (Coblin 2015) has both [e] and [ə]. Finally, as will be shown for Xiang, Changsha has only [ɤ], Shaoyang has [ɛ], and Hengyang has both. We therefore see the familiar three-way division portrayed once more: northern and southern extremes with a central transitional zone (see Figure 2).[7] Unsurprisingly, Xiang can be seen to reflect all three.

All of the Xiang dialect areas surveyed have several features in common, one of which is a vocalic inventory of six to seven distinct vowel qualities in open CV syllables (Li 1986 for Hengyang; Wu 2005 for Changsha; Cui 1998 for Yiyang; Zhang et al. 1988 for Taojiang; Chu 1998 and Bao 2017, pp. 130–31 for Shaoyang; Fang 1999 for Yueyang; Lu 2001 for Zhuzhou; Sun 2002 for Shaodong; Song 2006 for Xiangyin; Bei and Shi 2011 and Zhang and Chen 2015 for Shuangfeng; Huang 2012 for Ningxiang; Wang 2013 for Xiangtan; Bao 2017 for Chengbu; Wang 2020 for Yongzhou). The major source of variation in terms of vowel quality is treatment of mid-central/back v. mid-front vowels. As one moves toward the southwest, mid-central and mid-back vowels (primarily schwa) tend to be lost in favor of mid-front vowels (namely [e] or [ɛ]) and vice-versa;[8] this is roughly correlated with the Changyi-Loushao (New-Old) division. There are several exceptions: Xiangtan, Zhuzhou, and Taojiang (New) have only a mid-front vowel, while Ningxiang (New), Shuangfeng

(Old), and Chengbu (Old) have both a contrastive mid-front and mid-central vowel (see Table 1).



Figure 2. Open syllable unrounded mid-vowel contrasts.

Table 1. Vowel inventories in open monophthongal syllables in Xiang varieties (north-to-south)[9].

Dialect Area	High Front	Mid-Front	Low	Mid-Central	High Back	Back
岳阳Yueyang	[i], [y]	0	[a]	[ə]	[u]	[ɤ], [o]
湘阴Xiangyin	[i], [y]	0	[a]	[ə]	[u]	[o]
益阳Yiyang	[i], [y]	0	[a]	[ə]	[u]	[o]
桃江 Taojiang	[i], [y]	[ɛ]	[a]	0	[ɯ], [u]	[o], [ɔ]
宁乡Ningxiang	[i], [y]	[ɛ]	[a], [æ]	[ə]	[u]	[ɔ]
长沙Changsha	[i], [y]	0	[a]	[ɤ]	[u]	[o]
株洲Zhuzhou	[i], [y]	[e]	[æ], [ɒ]	0	[u]	[o]
湘潭Xiangtan	[i], [y]	[e]	[æ]	0	[u]	[o], [ɔ]
衡阳Hengyang	[i], [y]	[e]	[a]	[ə]	[u]	[o]
邵阳Shaoyang	[i], [y]	[ɛ]	[a]	0	[u]	[o]
邵东Shaodong	[i], [y]	[ɛ]	[a]	0	[ɯ]	[o]
双峰Shuangfeng	[i], [y]	[e]	[a]	[ə ~ ɤ]	[u]	[o]
永州Yongzhou	[i], [y]	[e]	[æ], [a]	0	[u]	[o], [ɔ]
城步Chengbu	[i], [y]	[ɛ]	[a]	[ə]	[u]	[o]

Hengyang, which is a representative member of Chen and Bao's (2007) transitional Hengzhou grouping, resembles Shuangfeng and Chengbu in having both qualities contrasted. We can see that the distribution of vowels is not entirely reflective of the traditional Changyi-Loushao (or New-Old) split, although it is correlated somewhat. The Chen and Bao typology is perhaps a better fit, but it is also not entirely sufficient. We can therefore define three groups of dialects based on presence of contrastive mid-front and mid-central vowels: dialects which have only a central vowel and no mid-front vowel (Changsha, Yiyang, Xiangyin, and Yueyang); dialects which have only a mid-front vowel and no central vowel (Yongzhou, Shaodong, Shaoyang, Xiangtan, Zhuzhou, and Taojiang); and dialects which have both (Ningxiang, Hengyang, Shuangfeng, and Chengbu). These groups will be henceforth referred to as Northeastern (Group 1), Southwestern (Group 2),

and Transitional (Group 3), respectively. These facts are summarized in Figure 3;[10] Group 1 in red, Group 2 in blue, and Group 3 in green, [e] and [ə] also standing in for [ɛ] and [ɤ], respectively.

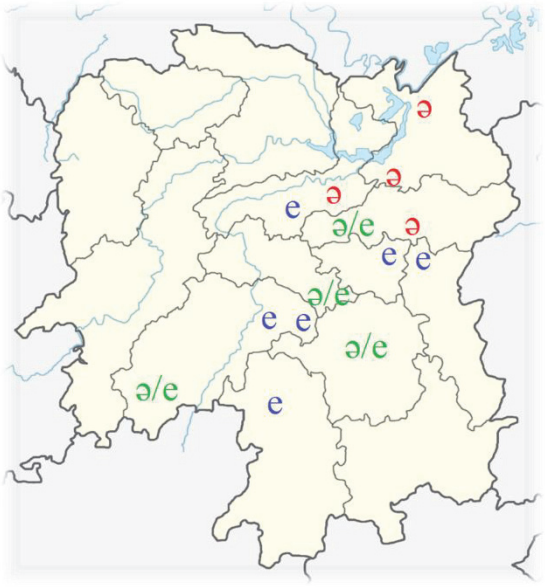


Figure 3. Contrastive open syllable mid-vowels by dialect.

The choice to focus on mid vowels as a source of typological variation has two motivations: on the one hand, these are reflective of larger northern (Group 1), southern (Group 2), and central (Group 3) phonological trends in the lexical vocabulary of Sinitic and are predicted in some way to reflect larger influences on Xiang. On the other hand, these vowels are particularly important for hesitation markers, which tend toward these vowel qualities across languages (Candea et al. 2005; Dingemanse and Woensdregt 2020); these patterns will be covered in the following section.

2.3. Hesitation Markers: Usage and Insights

Hesitation markers are an integral, yet often misunderstood, facet of human language. They have clear, essential functions in maintaining naturalistic flow in conversation (Clark and Fox Tree 2002; Dingemanse 2017), but the most common terms for them, disfluencies (e.g., Shriberg 2001; McDougall and Duckworth 2017) and filled pauses (e.g., Gick et al. 2004; Zhao and Jurafsky 2005), seem to indicate that they are sub-linguistic in some sense. The argument made here is that these items are more than simply speech errors or sounds filling empty space and can provide insights into the organization of a language's linguistic system.

For the purposes of this study, hesitation markers are defined as minimal discourse markers which serve the primary function of marking a pause in speech (Clark and Fox Tree 2002). This research makes a distinction between 'lexical' and 'non-lexical' hesitation markers; the former includes items which have dual functions as both full lexical items and as discourse markers indicating pauses (English 'like' and 'so'; Cantonese 咁 *gam2* and 就 *zau6*; Ecuadorian Spanish 'y' and 'bueno'; etc.),[11] while the latter includes items which do not have other lexical functions other than indicating pauses (English 'uh' and 'um'; Cantonese 欸 *e6* or 嗯 *m6*; Spanish 'eh'; etc.). One will notice the lack of overt similarities in the former group, contrasted with the form similarities present in the latter group: they are primarily composed of monophthongal vowels and bilabial nasals. The present study is concerned only with the latter non-lexical group, given its strong form correspondences, since the lexical variants are predicted to have largely arbitrary forms, given their dual functions in the lexicon. It is of course very likely that lexical HMs have other types of

form convergence at the suprasegmental level, especially relating to duration and F0, but these will not be addressed in the present piece.

While it is currently understood that non-lexical hesitation markers can tell us a good deal about language, this has not always been the case. Historically these items were often treated as purely non-linguistic (Müller 1861; Chomsky 1965), akin to non-linguistic sounds like grunts. Research by Clark and Fox Tree (2002), however, has shown that far from being non-linguistic, HMs are in fact words of the languages in which they occur, with an identifiable form and clearly defined functions in moderating discourse; Clark and Fox Tree even find that English HMs have different conventionalized forms based on whether they mark a longer or a shorter pause. HMs are in many ways comparable to discourse markers (Maschler and Schiffrin 2015) in that their main function is to facilitate communication. In addition, their status as words means that they have a form that is specific to the language in which they occur; for instance, there is evidence that speakers can identify a language by its HMs (Vasilescu et al. 2005). Fromkin et al. (2014) write, 'Even conversational fillers [HMs] . . . are constrained by the language in which they occur.' This quote indicates two things: on the one hand, that HMs are language-specific rather than identical across languages; and, through use of the word 'even', that they are perceived as having a special status relative to other types of vocabulary.

Despite their language-specific form, hesitation markers are not as arbitrary as most lexical vocabulary. Research on the phonetic form of HMs has shown that these items display a certain degree of convergence across languages (Candea et al. 2005; Dingemanse and Woensdregt 2020), born from environmental pressures in facilitating communication (Dingemanse 2017). These pressures are believed to optimize HMs along several dimensions, including a preference for minimal and non-salient form (monosyllabicity, low pitch), long duration (easily extendable sounds like vowels and nasals), and effort-preservation (bilabial nasals and mid-vowels, as those sounds are most reflective of the vocal tract at rest). These features can be seen to stem from HM functions: they are used to fill pauses in speech without adding to the semantic content of the utterance and need to be easily distinguishable from regular vocabulary without disrupting the flow of communication (Dingemanse 2017; Dingemanse and Woensdregt 2020). A pause is most easily filled with long segments requiring little effort, which would ideally be marked as non-meaningful elements by way of their reduced form, reducing disruption to communication.

Given all of these constraints on optimal HM form, all that is really left to variation is the precise quality of the vowel in question. In a study looking at hesitation marker acoustics in seven languages, Candea et al. (2005) show that languages have a strong preference for mid vowels in HMs, but in each language there is a clustering towards a contrastive quality in said language's phonological inventory. For instance, in English the vowels cluster around [ʌ] (when stressed), but in Spanish they cluster around [e]; while both fall under the mid-vowel category, the precise quality in terms of fronting is a source of variation. The preponderance of mid vowels is believed to be related to pressures of least effort, but the precise quality is expected to be language-specific.

One may wonder at this point why we should focus on HMs and not regular vocabulary which unambiguously reflects the contrastive vowel phonemes of a language. It would be simpler to test the above typology using a lexical item like 车 'vehicle' for instance (which has a mid-vowel in most of the dialects covered here), since one does not have to first prove that 车 is a word or representative of Sinitic phonology. The short answer is that while the mid-vowel split in Sinitic can be proven using lexical vocabulary, whether this can be done with hesitation markers (or other potential sub-lexical material) has not been established. The purpose of the present piece is not to prove mid-vowel variation in Sinitic, which is readily observable, but to explore whether this type of variation can or cannot be expanded to sub-lexical vocabulary like HMs, which are relatively unexplored in Sinitic. In addition, the ultimate goal is to determine whether HMs can or cannot be used as evidence for typological splits, despite their special status. It will be seen in Section 4.2 that

while equivalent lexical vowels and HM vowels do differ in systematic ways, they display comparable acoustic correlates for contrasts.

An additional concern still unaddressed is that many of the studies above address HM trends for a limited set of languages (e.g., Candea et al. 2005; Vasilescu et al. 2005; Dingemanse and Woensdregt 2020), meaning there is insufficient evidence to assume that varieties of Xiang will display similar patterns. For instance, while we may be able to determine a consistent vocalic quality for Mandarin hesitation markers, as Candea et al. (2005) do, this does not necessarily prove that we should be able to do this for Xiang (or any other language not addressed by the authors), despite its close genetic relationship with Mandarin. However, by the same token, there is no reason to assume Xiang is unique in this respect, as the existing evidence seems to point towards there being identifiable qualities in HM vowels, which can be distinguished from language to language, and there does not appear to be evidence of a language employing exclusively non-inventory vowels in its HMs (as of yet).

Given the variation in terms of Xiang contrastive mid vowels covered in Section 2.2, and the tendency towards centrality that HM vowels display, one wonders whether HMs will reflect the typological split of mid vowels in Xiang. This then leads to the question: based on what we know about cross-Sinitic and cross-Xiang typology and phonological features, can the phonetic/phonological form of hesitation markers serve as additional evidence for traditional boundaries? Or will they perhaps indicate a different kind of divide, or no divide at all? An attempt at addressing these questions will be conducted through the study covered in the following section.

3. Methodology

The data for this research were gathered through an online experimental platform called Gorilla (www.gorilla.sc, first accessed 16 May 2021), which allows experimental procedures to be conducted through an online link (Anwyl-Irvine et al. 2019). Speakers were recruited through WeChat (Tencent Holdings Limited 2022) and word of mouth. Speakers were required to perform the Pear Stories Paradigm (Chafe 1980; Erbaugh 2001, 2013), wherein a speaker relates the events of a video about a child stealing pears. The speaker was instructed to record themselves on a built-in laptop or smartphone microphone at the following website: https://addpipe.com/simple-recorderjs-demo/ (first accessed 5 January 2021), and then return the recording to the researcher. All phonetic analysis was conducted in Praat (Boersma and Weenink 2022) by hand. This included taking F1 and F2 from the steady-state portion of the vowel as an average; F0 and duration were extracted as well. Datasets associated with this project can be found at either of the following links: https://doi.org/10.25442/hku.20652330 (created 21 August 2022) or Supplementary Materials.

The experimental paradigm defined above is predicted to effectively elicit HMs, since it involves cognitive effort and information retrieval. The highest number of self-initiated hesitation markers are predicted to surface as informants attempt to recall the events of the video they have just watched; Erbaugh (2001, 2013; http://www.pearstories.org/, accessed on 21 January 2021), for instance, manages to elicit these items in abundance in her own application of this paradigm to Sinitic.

One potential issue with this type of methodology is the proliferation of different recording devices used by speakers to record themselves, which can cause issues of comparability across devices (Sanker et al. 2021). The recordings took place on three types of devices: laptop microphones (n = 24), smartphones (n = 21), an iPad (n =1), and the HKU sound booth (n =1). Of particular concern here is the potential effect of file compression on the resulting recordings, relevant for smartphones and iPads. For laptops, this is avoided by instructing the informant to record themselves on non-compressing software (https://addpipe.com/simple-recorderjs-demo/, first accessed on 5 January 2021), which outputs WAV files. However, Freeman and DeDecker (2021) and Zhang et al. (2021) recommend usage of smartphones for remote research, as these devices (as well as iPads)

tend to use lossless compression of audio files in order to avoid unnecessary distortion and are therefore often reliable. It should be noted that there is still some lossless compression relative to WAV files, but that they are still much preferred to MP3 files, for instance. An additional concern might be the difference in quality between microphones (especially laptop-internal v. external microphones; see Calder et al. 2022), which cannot be verified with this particular methodology. However, it should also be mentioned that no systematic differences could be observed on vowels recorded on smartphones vs. laptops. While Sanker et al. (2021) recommend against comparing across different device types, they also point out that smartphones and iPads do not seem to alter vowel formants in significant ways, and they point out that acoustic correlates of phonological contrasts are still recoverable from the signal, despite certain inconsistencies.

3.1. Xiang Varieties in the Sample

The present sample gathers data from 47 speakers representing 16 Xiang varieties; this is summarized in Figure 4 (outline of Hunan: "Location Map of Hunan, China", Wikimedia Foundation. 2014. Location Map of Hunan, China, https://creativecommons.org/licenses/by/4.0/deed.en, accessed on 21 November 2021); locations and names added by author).

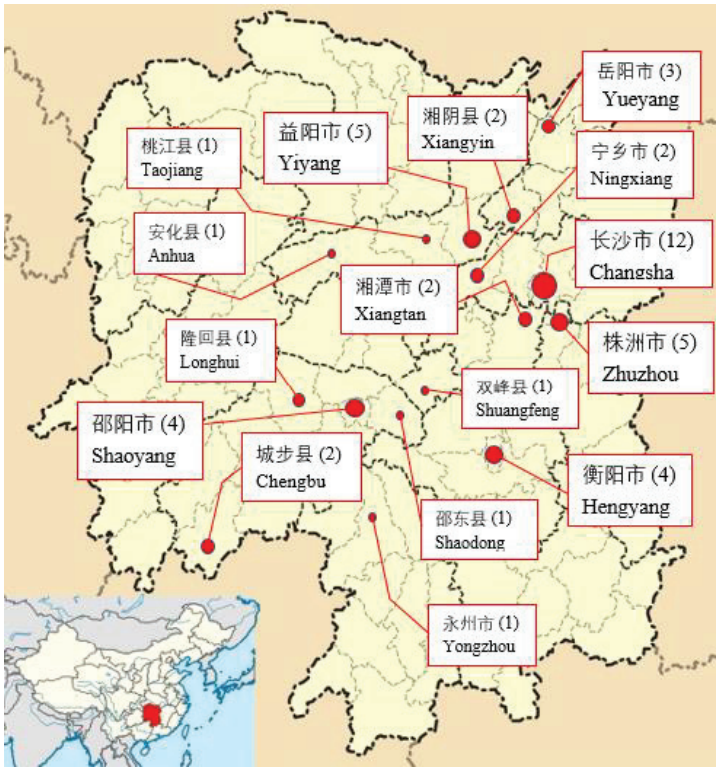


Figure 4. Dialect areas represented by the sample (no. of speakers in parentheses).

In terms of the traditional classification, eight of the dialects are New Xiang (36 speakers) and seven are Old Xiang (11 speakers). Following Chen and Bao's (2007) classification, the dialects fall into four groups: seven are Changyi (32 speakers), six are Loushao (10 speakers), one is Yongquan (1 speaker), and one is Hengzhou (4 speakers). If any of the dialects in the sample lacked hesitation markers, they were excluded from the analysis; see Table 2.

Table 2. Speakers and Dialect Areas in the Sample.

Dialect Area	No. of Speakers	Typo. Affiliation	Chen and Bao (2007)	No. of HMs
岳阳市Yueyang	3	Changyi-New	CY	41
湘阴县Xiangyin	2	Changyi-New	CY	21
益阳市Yiyang	5	Changyi-New	CY	35
桃江县Taojiang	1	Changyi-New	CY	4
宁乡市Ningxiang	2	Changyi-New	CY	9
长沙市Changsha	12	Changyi-New	CY	92
株洲市Zhuzhou	5	Changyi-New	CY	4
湘潭市Xiangtan	2	Changyi-New	CY	4
衡阳市Hengyang	4	Changyi-New	HZ	21
安化县Anhua	1	Loushao-Old	LS	0
邵阳市Shaoyang	4	Loushao-Old	LS	31
隆回县Longhui	1	Loushao-Old	LS	0
邵东县Shaodong	1	Loushao-Old	LS	3
双峰县Shuangfeng	1	Loushao-Old	LS	20
永州市Yongzhou	1	Loushao-Old	YQ	3
城步县Chengbu	2	Loushao-Old	LS	5

Two dialect locations, Anhua and Longhui, were excluded for lack of HM tokens (each with only a speaker apiece), bringing the total number of dialects analyzed down to 14. Given the low number of speakers per dialect location, analysis is done by subgroup (see Sections 2.1 and 2.2), rather than by individual dialect. Demographic information for all speakers is covered in the following section.

3.2. Demographic Information

The female-to-male ratio is 33/14, and the average length of recordings is 128 seconds (37–264 s). The average age of the informants is 26.5, with a range between 18–53. In terms of education, 27 of the respondents had a master's degree or above, 19 had a bachelor's degree, and only 1 had a high school diploma. The informants are generally younger and more extensively educated than what would be considered ideal for dialect research; younger and highly educated speakers are often more mobile and may be more influenced by Putonghua (Kurpaska 2010, p. 134). All speakers are in fact bilingual in PTH; however, all participants purport to be speakers of the dialects in question, with varying degrees of self-reported fluency coded on seven levels: Native, Near-Native, Fluent, Conversational, Average, Basic, and None. No respondents replied below 'Conversational'; speakers who self-reported below 'Near-Native' were placed in a 'heritage speaker' category, which is assumed to be heavily PTH influenced (n = 9). The PTH vowel paradigm in this case is identical to the Northeastern or Changsha paradigm, with only a mid-back or central quality distinguished in open syllables. The ubiquitous presence of PTH bilingualism is predicted here to lead not only to the adoption of PTH features in the heritage group, but also to result in possible interference in higher fluency speakers, and the potential overgeneralization of the NE or Changsha paradigm. This is discussed as a potential confounding factor in Section 5.

There was a wide divergence in terms of how many hesitations each speaker produced, which is in line with previous research on the high speaker-specificity of rate of HM usage (Braun and Rosin 2015; McDougall and Duckworth 2017). The average of 6.5 HMs per respondent hides the fact that there was a range of 0 to 39 hesitations; 7 speakers had no hesitations whatsoever, and one speaker had only syllabic nasal hesitations; both groups were removed from the analysis.

It should be mentioned as well that many speakers are multilingual not just in PTH, but also in other varieties of Xiang. At least six speakers report some degree of fluency in another variety of Xiang, usually from regions that border their hometown. For instance, XT1 (Xiangtan) is also fluent in the Zhuzhou and Changsha dialects, which are only sepa-

rated by a few kilometers. Others are proficient in more distant varieties; CB2 (Chengbu) is proficient in the Shaoyang and Changsha dialects, which are far removed. This is only predicted to result in complications when the varieties a speaker is proficient in have a different mid-vowel paradigm than their native dialect. For CB2 and most other multi-dialectal speakers this is unproblematic, as most contiguous varieties have similar paradigms and Chengbu distinguishes both qualities analyzed here. However, for XT1 for instance, who reports fluency in Changsha, this may lead to interference; this will be discussed further in Section 5.

4. Results

This section covers descriptive statistics including HM syllable structure and average F0 (Section 4.1) and then moves on to describe HM vowel quality (Section 4.2) and compare its distribution against the two proposed dialect groupings (Section 4.3). Finally, a look at the distribution of HMs within each grouping is presented in Section 4.4.

4.1. Overview

The recordings resulted in a collection of 304 hesitation markers (167 from females), which came in a variety of syllabic formats, although the majority (n = 215) were simple monophthongs. The second most common were VN (n = 35) and N (n = 23). In total, there were 10 different recorded syllabic formats (see Figure 5). The only syllable type excluded from the analysis was N, since the focus is on vocalic formant structure. HMs were largely isolated from surrounding speech, with a pause between the HM and an utterance either preceding (158), following (7), or both (130). Only a very small number (9) occurred in connected speech.

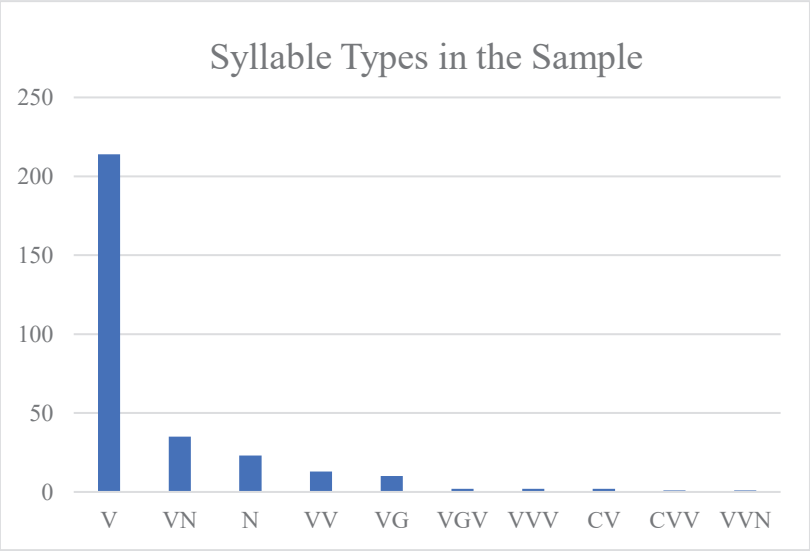


Figure 5. HM syllable types.

In addition to the commonly seen N and VN formats (most often approaching [ŋ:] and [ə:m]), HMs can sometimes be followed by an offglide (both palatal and labio-velar, approaching [ə:j] or [ə:w]) or be diphthongs with changing vocalic quality by the end of the syllable (approaching [a:ə] or [e:ə], for instance). Since HMs can be very long (average duration = 435.93 ms), it is reasonable that a single vocalic quality is not maintained throughout the entire syllable; there were even two instances of triphthongs (approaching [a:ə:a]). There were at least three instances of initial consonants in the sample, all of which were laryngeal fricatives (approaching [ha:]). The only constant, it seems, is that all HMs were composed of a single syllable. However, it should be clear from Figure 5 why the choice has been to focus on monophthongal vowels: they are by far the most common

type of HM, accounting for two-thirds of the sample. If more than one vowel quality was identified in a token, only the first vowel in the sequence was retained for analysis.

In terms of F0, the sample was generally in line with crosslinguistic trends for low fundamental frequencies in HMs (Shriberg 2001; Braun and Rosin 2015; Yuan et al. 2016). The average female F0 was 169.3 Hz (standard deviation = 32.7), with a range between 67.1–223.1 Hz, while the average male F0 was 111.2 Hz (standard deviation = 18.9), with a range between 53.2–148.5 Hz. HM F0 contours were extracted at 12 equidistant points using a Praat script written by Jon Havenhill, and are plotted below in Figure 6.[12]

The female F0 data represent a steady contour averaging around 170Hz throughout, sloping slightly downward near the end of the syllable; the average is below the predicted overall average F0 of 220 Hz for females (Reetz and Jongman 2020). The male contour represents more movement, due to the high level of variation in this group,[13] and averages about 125–130 Hz, which is about the overall F0 average for males (Reetz and Jongman 2020).

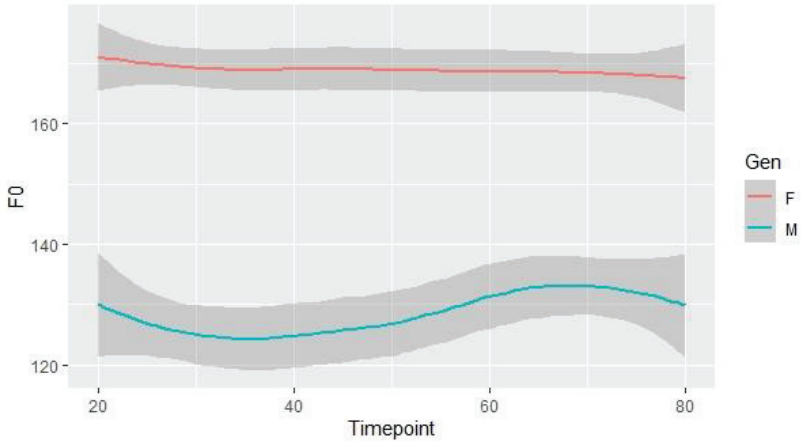


Figure 6. HM F0 contours (female = red, male = blue).

4.2. Vowel Quality

Four distinct HM vowel qualities were identified in the sample, coded as: front (40), central (115), back (69), or low (57), based on the author's transcription. The choice to group HMs into these particular categories is based on observations summarized in Table 1: most varieties have six contrastive qualities (ignoring rounding), reduced to four when high vowels are removed (note below the general absence of high vowels in the sample). This assumes that an HM vowel is at least analogous to an acoustic equivalent in the phonemic vowel inventory (following work in Candea et al. 2005); for instance, that a front-quality HM vowel is comparable (if not perhaps identical) to a Xiang variety's /e/ ([ɛ] or [e]). This assumption is not entirely without issue; as will be seen below, there are some acoustic divergences between lexical and HM vowels.

F1 and F2 were taken as means across the steady-state portion of each vowel, with each selection between 99 and 50 ms. It was observed that HMs tended to fall within the mid-to-low acoustic space (overall mean = F1 657.2 Hz, F2 1470 Hz), rarely rising above the mid height or being excessively fronted (with only two HMs below an F1 of 350 Hz, and two above an F2 of 2250 Hz); this is summarized in Figure 7.

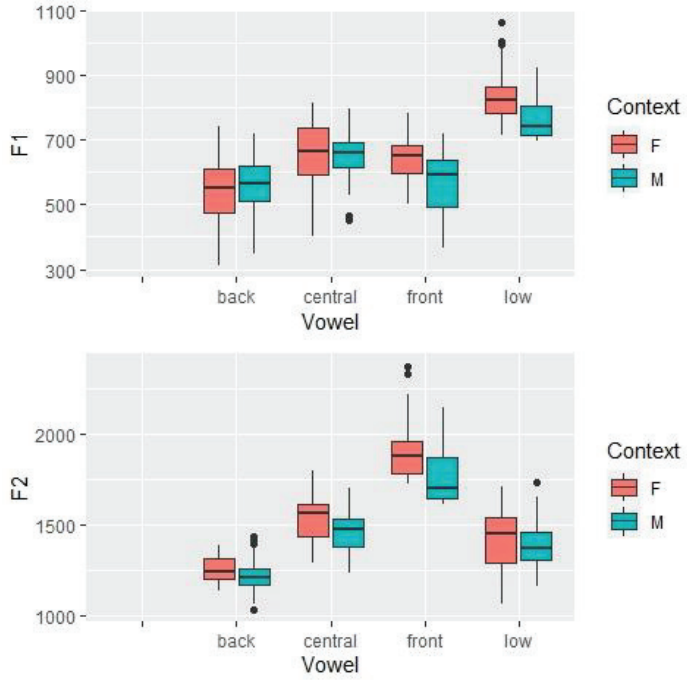


Figure 7. Average F1 and F2 of sampled vowel qualities (female = red; male = blue).

Average F1 and F2 by the different vowel qualities identified can be summarized in Figure 7. There were no instances of HM vowel quality outside of the mid-to-low range; that is to say, there were no high vowels in the sample. These assumptions can also be corroborated quantifiably, as seen in Figure 8.

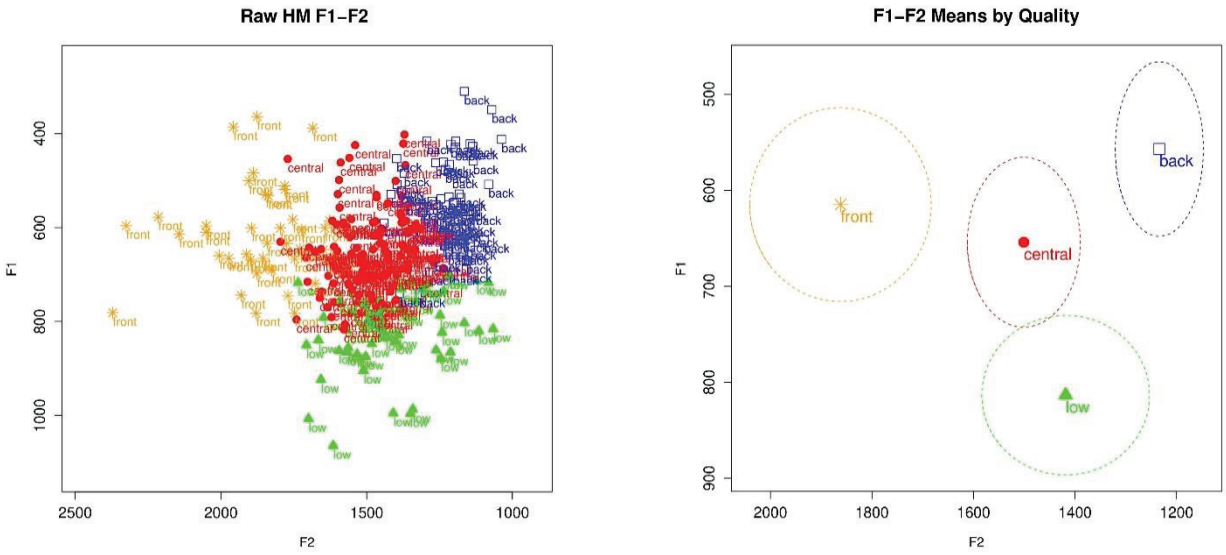


Figure 8. Vowel tokens (**left**) and means (**right**) in the sample (all speakers).

The mid-back quality is most likely a variant of the central quality, and was distinguished primarily based on the author's transcription, considering that only Yueyang has a phonemic contrast between the two (Fang 1999). Since Yueyang contributes the second most HMs to the sample (n = 41), it is perhaps unsurprising that this quality was discernible. For varieties that do not distinguish these, it is possible that one quality or the other is prioritized in each dialect in open syllables, as, for instance, is the case for Changsha (Wu 2005, pp. 371–72) or Putonghua (Duanmu 2007, p. 37), where the mid-back quality is restricted to open syllables and the central quality to nasal-final syllables(e.g., [+vocalic, +mid] →

[+central]_N$; [+vocalic, +mid] → [+back]_$). In reading these data, therefore, these two should be treated as largely interchangeable, or at least as constituting a diffuse boundary in the vast majority of dialects.

If all speakers in the sample are pooled together, one can get an idea of the distribution of HMs in terms of F1 and F2 (see Figure 8).[14] As pointed out above, HMs were grouped into four main qualities, under the assumption that they are analogous to phonemic qualities in the varieties in questions.

As Figure 8 shows, there is a division of the vowel space between the four qualities identified, although there is a degree of overlap between the 'central' and 'low' qualities. It is important to note that only Yueyang (Fang 1999) makes a phonemic distinction between mid-central [ə] and mid-back [ɤ], and that dialects like Changsha (which contributes the most HMs to the sample) have these qualities as contextually conditioned allophones. It is also worth pointing out that low fluency heritage speakers in the sample are assumed to pattern more closely with PTH, which has [ɤ] as the only permissible quality in open syllables (Duanmu 2007, p. 37).[15] The mid-front and mid-central/back qualities, as the focus of the present study, will be discussed further below.

Since the front and central HM qualities are the ones crucial to the analysis, they were also compared to lexical vowels extracted from the root 车 'vehicle' (pronounced either [ts^{h}e] or [ts^{h}ɤ]/[ts^{h}ə] depending on the contrast active in a variety), which occurs often (37 speakers have at least one instance) in the narratives in reference to a bicycle occurring onscreen in the video. This was done in order to test whether this contrast in the HMs could also be recovered from the lexical vocabulary. The results can be observed in Figure 9; the central and back qualities are combined in the 'hmc' category, as these are likewise not distinguished in the lexical vocabulary, and the low quality is excluded as it is not a direct focus of the present study.

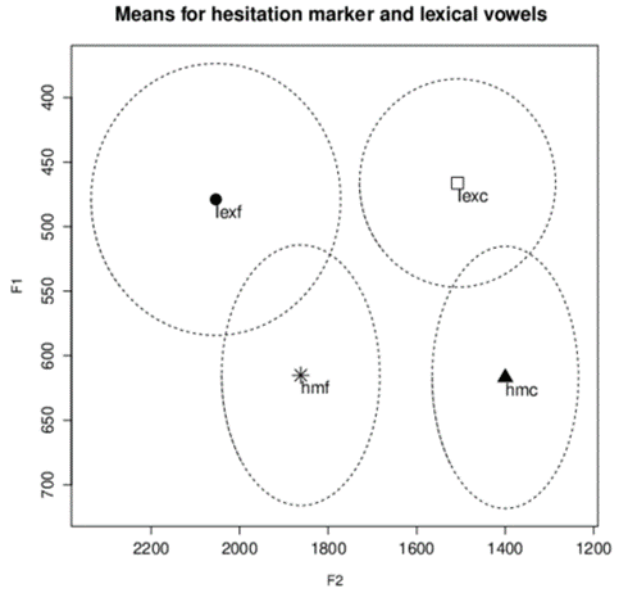


Figure 9. Means for front and central quality vowels, for both lexical and hesitation marker vowels ('lexf' = front lexical vowels; 'lexc' = central/back lexical vowels; 'hmf' = HM front vowels; 'hmc' = HM central/back vowels).

The means in Figure 9 do not overlap, with lexical vowels from 车 being considerably higher and more fronted on average, unlike in previous findings on HM vowels (Sevilla 2021), which found rather direct overlap between vowel categories. The difference may be due to differing contexts: the lexical vowels used here occur after a coronal affricate in every instance, while HMs occur in isolation. T-tests on the means indicate substantial differences between the two sets, with all p-values highly significant (see Appendix A

Tables A1 and A2); HM vowels appear to be consistently less fronted and lower than their lexical counterparts. This raises questions about the tenability of comparison across lexical and hesitation marker vowels: are they really instances of the same phonological vowel? However, Dingemanse (2017) and Dingemanse and Woensdregt (2020) mention that HMs are particularly susceptible to ease of articulation considerations in ways in which lexical vocabulary is not; that HMs should be considerably more centralized than their lexical equivalents is therefore perhaps not surprising. What is key to the present study is that in each case, despite the lack of direct overlap, the acoustic correlate of the contrast is maintained in each pair: a front quality can be distinguished from a central quality through an increase in F2, and both qualities are comparable in terms of F1 within each pair. A front-quality HM is therefore predicted to be perceived by speakers as more [e]-like than a central-quality one, if not identical.

4.3. Vowel Quality by Typological Affiliation

Turning now to typological affiliation, three groups are analyzed following Chen and Bao's (2007) classification: Changyi, Loushao, and Hengzhou. The data for Yongzhou (which would fall under the fourth group of Yongquan) are incorporated into Hengzhou for lack of tokens. A fourth 'Heritage' grouping is also included, composed of speakers with low self-reported proficiency (see Section 3.2). This does not represent any sort of typological region but is rather included for comparison. The dialects represented by the nine speakers in this group are as follows: Changsha (n = 4), Xiangyin (n = 2), Hengyang (n = 2), Zhuzhou (n = 1); Chen and Bao: Changyi (n = 7), Hengzhou (n = 2). The results can be observed in Figure 10.

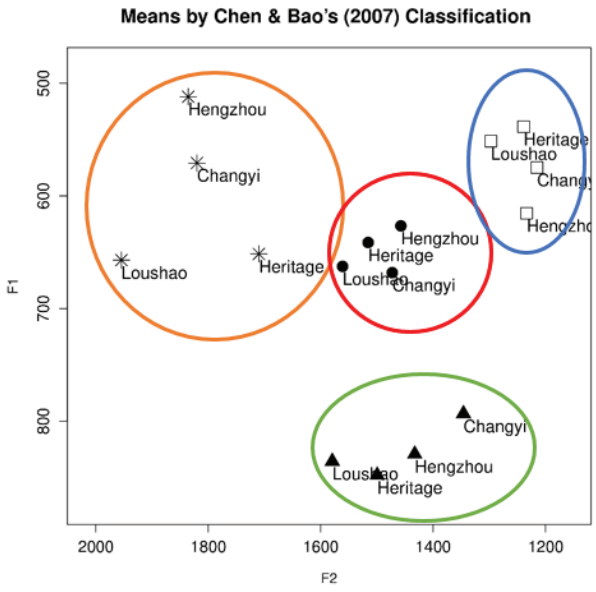


Figure 10. Mean F1-F2 by affiliation in Chen and Bao (2007), incl. heritage speakers.

In Figure 10 the different shapes, as well as the colored circles, represent different vowel qualities identified in the sample. The star represents the 'front' vowel quality (approaching [e] or [ɛ]); the filled dot represents the central quality (approaching [ə]); the empty square represents the back quality (approaching [ɤ]); the filled triangle represents the low quality (approaching [a]). Figure 10, based on the work of Chen and Bao (2007), shows that HM vowels do not display any particular taxonomic clustering; this can be seen from the fact that all groupings have both mid-front and mid-central qualities, and in fact have all four qualities represented. However, the fact that all of the Chen and Bao groupings have a mix of qualities is in line with the status of Xiang as transitional between larger northern and southern Sinitic groups, which more clearly pattern one way or the other.

It is noteworthy that compared to the other three qualities, which cluster very closely together, the front quality demonstrates a larger variation in values. For instance, the front quality for Heritage is further back than the other three groups (avg. F2 1710 Hz), while Loushao is dramatically fronted (avg. F2 of 1954Hz), although the small number of items for the former (n = 5) makes it difficult to conclude anything on this point. At the same time, there is also the unexplained exaggerated height of the Hengzhou and Changyi groups (avg. F1 of 512 and 570 Hz), further highlighting the differences between the four groupings. However, this range of values still falls roughly within the expected range for a mid-front vowel (using Cantonese [ɛ] and [œ] as references; Shi et al. 2015), so it is unclear whether this variation is not simply due the averages being influenced by idiolectal variation or a gender imbalance between the two groups. For instance, Loushao has a higher proportion of female speakers (7/9) compared to Changyi (15/22), which is predicted to result in higher frequencies (Hillenbrand et al. 1995).

The failure of HM vowel quality to support the original typological scheme is unsurprising given the variability within each group in terms of mid vowels in CV syllables. If we instead consider the alternative typology based on mid vowel quality (proposed in Section 2.2), we can re-organize the dialects into three groups:

1. Northeastern (Group 1): mid-central vowel only (Changsha, Yiyang, Xiangyin, Yueyang)
2. Southwestern (Group 2): mid-front vowel only (Yongzhou, Shaodong, Shaoyang, Xiangtan, Taojiang, Zhuzhou)
3. Transitional (Group 3): both mid-central and mid-front vowels (Ningxiang, Hengyang, Shuangfeng, Chengbu)

To these are added the previous heritage (HT) group as well; the nine speakers here are split into NE (n = 6), TR (n = 2), and SW (n = 1). As all speakers are native speakers of Mandarin only, the HT group is expected to pattern most closely with the NE pattern (which Mandarin shares). However, non-Mandarin patterns were observed to emerge for one of the HY speakers (see below).

The results are summarized in Table 3. The key point of note is that once again, all three of the proposed groupings share all four of the observed HM vocalic qualities; while some may have more or fewer (for instance, NE and HT have many fewer instances of 'front' HMs and SW has many fewer instances of 'back' HMs), it is not possible to discern any clear division between the groups (but see Section 5.1 for discussion).

Table 3. Summary of results by alternative grouping.[16]

Area	Quality	No. of Tokens	Average F1	Average F2
NE	central	44	667.5	1473.8
NE	back	27	570.9	1213.9
NE	low	23	770.0	1370.7
NE	front	12	551.1	1814.8
SW	central	13	661.7	1551.3
SW	back	2	628.6	1233.5
SW	low	16	816.8	1451.9
SW	front	12	652.1	1933.5
TR	central	25	644.2	1502.8
TR	back	8	567.4	1281.4
TR	low	5	914.8	1319.6
TR	front	10	625.9	1923.8
HT	central	33	641.4	1515.7
HT	back	32	538.6	1239.0
HT	low	13	848.0	1499.6
HT	front	6	651.5	1710.0

These results can be more easily observed in Figure 11, which shows the position of the averages relative to each other. One should keep in mind that the imbalanced nature of

the number of tokens (given the small sample size) is a confounding factor here. However, once again as in Figure 10, we have a clustering of vocalic qualities into four groups.

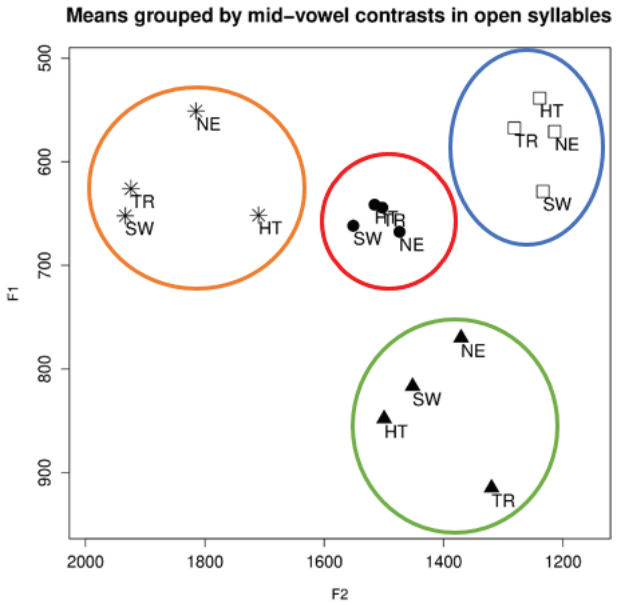


Figure 11. HM vowel means grouped by mid-vowel contrasts, incl. heritage speakers (star = front; filled dot = central; empty square = back; filled triangle = low).

Particular differences between Figures 10 and 11, the most conspicuous of which is the low quality (represented with a black triangle) being somewhat higher in Figure 11, are largely unexplained. Meanwhile, the wide divergence between the groups in terms of the front quality is still apparent (with NE still higher than other groupings), although the TR and SW groups now share a more fronted quality than the other two. Once again, these fall within the expected range for a mid-front vowel and can be potentially attributed to gender imbalances in the data.

4.4. A Closer Look at HM Incidence by Grouping

While the results in Section 4.3 show that the groupings cannot be distinguished in a categorical way using HMs, a closer look at the incidence of each vowel quality within each group suggests that an approach looking at gradient distinctions may be more successful. Consider the data presented in Table 4, which show the proportions of each vowel quality by group.

Table 4. Vowel quality proportions by group (open syllable mid-vowel contrasts).

	No. of Items	Northeast	Southwest	Transitional	Heritage
Front	40	0.11	0.28	0.21	0.07
Central	115	0.42	0.30	0.52	0.39
Back	69	0.25	0.05	0.17	0.38
Low	57	0.22	0.37	0.10	0.15
Overall	281	0.38	0.15	0.17	0.30

By far, the most common quality is central, which is perhaps unsurprising given potential least-effort considerations in HMs, which might prioritize central quality as that diverging the least from the articulators at rest. The Northeast or NE group provides the highest proportion of HMs overall at 0.38 of the sample, while the smallest proportion belongs to the Southwest or SW grouping at 0.15.

It is telling that the proportion of front-quality HMs is smaller for the NE group than for the SW and TR groups, despite NE hesitations making up about 0.38 of the entire sam-

ple. This distribution is attributed to the fact that front vowels are in any case much less common in this group generally as they do not occur as a distinctive open syllable quality (the fact that they occur at all is what is surprising). Front-quality HMs make up only 0.11 of the NE sample (the smallest of all four qualities for this grouping), while they make up 0.28 and 0.21 of the SW and TR samples, respectively (consider that these two groups together making up only 0.32 of the total HM sample). It is no surprise that SW, with front quality mid-vowels as the only contrastive (un-rounded) mid-vowel allowed in open syllables, has the highest proportion of front quality HMs of any of the other groupings. At the same time, again unsurprisingly given its high input from Putonghua, the HT grouping also has the lowest number of front quality HMs at 0.07, and the only front items provided here were all from a heritage speaker of Hengyang (a TR variety). For front-quality HMs, the direction of all of these incidences is in line with previous assumptions about the phonologies of the dialects making up these groupings, although they are not absolute as would be expected.

On the other hand, however, central-quality HMs make up a comparable proportion when compared to front-quality HMs in the SW group, which is completely unexpected in a group where this quality is not found in open syllables; this can be potentially attributed to crosslinguistic HM pressure to converge on schwa or to influence from other dialects (particularly Mandarin). Central-quality vowels are the most common quality for NE at 0.42, which is unsurprising given that central vowels are the only contrastive unrounded mid-vowel occurring in non-HM open syllables for this grouping.

The back quality is particularly compelling as it betrays significant Mandarin influence, given that this variety only allows the back quality vowel in open syllables (Duanmu 2007, p. 37). The back quality was much less common in the SW/TR groups (0.05/0.17) compared to the NE/HT groups (0.25/0.38), which is expected if these first two groups can be thought of as evincing the least Mandarin influence. In fact, the HT group has the highest proportion of back-quality HMs of any grouping, which is expected given these speakers' first language is PTH.

As we can see, for the most part, the relative incidence of the different qualities is in line with the assumptions gleaned from the literature in Sections 2.2 and 4.2 and does allow one to draw approximate distinctions. The sole exception seems to be the central-quality being over-represented in the SW grouping, despite its non-contrastive status in dialects making up this grouping; this remains unexplained, but may be related to interference from other varieties of Sinitic (PTH or otherwise). These results, the non-categorical nature of the distinctions between groups, and the finding that all four qualities can be found in all three investigated groupings can be interpreted in various ways; some of the most relevant are discussed in following sections.

5. Discussion and Conclusions

Of the four HM vowel qualities identified in Section 4.2, all four can be identified in each of the groups outlined above in Section 4.3, which questions the usability of hesitation marker vowel quality as a criterium for a classificatory framework for Xiang. This applies regardless of whether one explores Chen and Bao's (2007) classification or the alternative classification based on the mid-front v. central contrast.[17] However, if one looks at the proportions of the different qualities by grouping (based on mid-vowel contrasts in open syllables), the picture becomes a bit more complex, indicating that distinguishing between the four groups based on vowel quality should be based on more gradient than categorical criteria.

This section discusses different directions from which to analyze the results obtained in Section 4; Section 5.1 through Section 5.4 discuss potential confounding factors which may have contributed to the results, including (in order): the high idiolectal variation HMs display (Section 5.1), hesitation markers and their relationship to default articulatory setting (Section 5.2), the transitional status of Xiang (Section 5.3), and issues relating to phonology or bilingualism (Section 5.4). The section ends with a brief conclusion (Section 5.5).

5.1. High Variability in Hesitation Markers

Certain studies have found that hesitation markers have a high degree of speaker-specificity (Braun and Rosin 2015; McDougall and Duckworth 2017), both in usage patterns as well as phonetic form, which may complicate interpretation of the data. In the sample, this is evidenced primarily by the differing rates of HM usage by speaker (with a range of 0–39 despite performing the same elicitation task), but it is also reflected in the choice of vowel quality by speaker. While the former may be simply a matter of differing lexical selection or cognitive constraints on information retrieval, the latter is somewhat more surprising, and points to another factor which separates HMs from general lexical vocabulary. While pronunciational variations displayed by a single lexical item can usually be attributed to some extraneous factor (contextual changes, regional variation, variation in register, etc.), it is often unclear whether differing vocalic quality in HMs is conditioned by variation displayed by a single lexical item or if it instead represents different lexical items under the HM heading.

In the sample, certain speakers seem to employ a wide variety of vowel qualities; for instance, Speaker CS11 has three vowel qualities represented despite only having six HMs in their recording. Does this mean that speaker CS11 has three different HMs, or are these variations of the same HM? Arguably, if these do represent different lexical items, one should be able to discern different functions for them, as Clark and Fox Tree (2002) do for the English uh and um, but these remain elusive at present. Conversely to the case for CS11, some speakers overwhelmingly prioritize one quality over another. For example, speaker NX2 has only instances of syllabic bilabial nasals, speakers NX1 and YZ1 have only 'low' quality vowels, XY1 and CS12 have only 'back' quality vowels despite having 23 HMs between the two of them, etc. Of course, given the short length of the recordings, it is hard to tell whether these trends for each speaker would hold under increased scrutiny, but they do reflect some of the difficulties in speaker cross-comparability.

Speaker-specific effects may mean that a larger sample of speakers may be required to understand central tendencies, or that speakers should be recorded for longer periods of time to see if trends are consistent. In addition, it is not always clear what the lexical status of HMs is, i.e., whether vocalic variants are variations on the same item or represent different items. However, that these central tendencies exist seems to be corroborated by evidence that speakers can identify a language based on the phonetic properties of its HMs (Vasilescu et al. 2005). In addition, despite the high degree of speaker-specificity, HMs are still restrained by more general cross-linguistic constraints, as seen by the limitation to just four identifiable vowel qualities. Precisely how sharply defined these boundaries are remains to be explored.

5.2. Phonemic Vowel Quality or Default Articulatory Setting?

In exploring the quality of HMs, one could perhaps wonder, given their status as items given minimal physical effort in production, whether what we are measuring is phonemic vowel quality or what Honikman (1964) terms 'articulatory setting'. In her terms, this is 'the overall arrangement and manoeuvring of the speech organs necessary for the facile accomplishment of natural utterance', the defaults for which differ from language to language (Gick et al. 2004). One could imagine that HMs represent a default 'rest' position for vowels, which would overlap with the most centralized vowel in a language's inventory. If this were the case, it would invalidate the search for discreet divisions among dialects based on vowel quality, since it is unlikely that each dialect will have a different default setting.

However, findings in Gick et al. (2004) indicate that while articulatory setting may influence the production of HMs (in their terms, 'filled pauses'), they also claim that 'it cannot be the case that filled pauses are simply vocalizations of a language's AS [articulatory setting]'. This finding agrees with the data presented here in that Xiang HMs can have a variety of vocalic realizations within each dialect, rather than a default (such as schwa, for instance). In addition, this agrees with the observation in Clark and Fox Tree (2002)

which sees differing acoustic qualities for English HMs fulfilling different discourse functions. Since HMs have both the status of words as discourse markers, and can have variable form, it seems unlikely that they are simply a function of a default articulatory setting.

5.3. Transitional Status of Xiang

The status of Xiang as transitional between northern and southern Sinitic has been well-established (Norman 1988; Wu 2005; Chappell 2015; Szeto and Yurayong 2021), so perhaps it is no surprise that a discreet division between the dialects cannot be identified; certain features might well be diffused across dialect boundaries, especially in items as vulnerable to speaker-specific effects as hesitation markers. For instance, many grammatical features such as Xiang classifier systems (Sevilla 2023), disposal and passive constructions (Wu 2005), or aspect marking Wu (1999) display influences from both the north and south and do not cluster into clearly delineated regions. The traditional view of Xiang as neatly divided into northern and southern regions is based on a handful of linguistic features or a single phonological feature, as in the case of Yuan (1960). It is therefore possible that the attempt at exploring these neat divisions was flawed from the beginning.

In a larger sense, what is most remarkable about the quality of Xiang HMs is how they reflect the 'transitionality' of the grouping, with its mixture of northern and southern features and the resulting linguistic diversity of the grouping. This diversity is evidenced by the observation that Putonghua[18] and Cantonese tend to have at most one or two primary HM qualities (Candea et al. 2005; Yuan et al. 2016; Sevilla 2021), whereas Xiang has four. Hunan province, as an area of contact and convergence between typologically distinct varieties of Sinitic, can be seen to exhibit a high degree of diversity, even in its sub-lexical vocabulary.

As mentioned in Section 2.2, it is important to note that the mid vowels explored in this study do appear to reflect larger trends in Sinitic, even if they do not reflect smaller divisions in Xiang. This could be shown not only by consulting grammars of the varieties in question, but also by exploring the phonetic quality of lexical items, such as 车 'car, vehicle' for instance. The mid vowel split between Cantonese and Mandarin presented in Shi et al. (2015) may prove a further area for exploration of typological variation outside of Xiang. In any case, while HMs may be subject to too many extraneous factors (e.g., least-effort pressures, language-specific phonotactic/phonological restrictions, speaker-specific effects) to serve efficiently as bearers of typological variation, this does not necessarily mean that the distribution of mid vowels in the lexical vocabulary cannot inform Sinitic typology, although this would require a more extensive study.

5.4. Residual Issues

One of the core assumptions of the present piece is that hesitation marker vowels are comparable to acoustically equivalent phonemic vowels from the lexical vocabulary. As mentioned in Section 4.2, there are reasons to question this view, as HM vowels were consistently less fronted and lower than their equivalents. As mentioned, this can potentially be attributed to ease of articulation considerations (Dingemanse 2017; Dingemanse and Woensdregt 2020). In the view of the author, the most clear-cut way to determine whether HM vowels do in fact latch on to phonemic equivalents is to conduct a perceptual study where informants are requested to match HM vowels to their own phonemic categories; this is beyond the scope of the present piece but presents fertile ground for further research.

While it is the case that these dialects display the aforementioned restrictions on mid-vowels in open syllables, the image is considerably murkier if one ignores phonotactic restrictions. For instance, while Changsha has [ɤ] in open syllables, it also allows [ɛ] as long as it is preceded by a palatal glide (Wu 2005, pp. 371–72). Therefore, while this vocalic quality has contextual restrictions on its appearance which might theoretically exclude it from occurring in HMs (assuming HMs are subject to similar phonological restrictions as other vocabulary), this vocalic quality is still found in the Changsha dialect and might therefore occur. The reverse situation holds in Shaoyang (Chu 1998), for instance, with

schwa occurring in nasal final syllables and [ɛ] occurring elsewhere. This raises questions as to whether or not HMs display the same sorts of phonotactic restrictions as lexical vocabulary, or if they have special status; for the purposes of this study, they are assumed to have the same sorts of phonotactic restrictions as lexical vocabulary, minus their convergence in form due to communicative constraints (Dingemanse 2017), but this view may be complicated through future studies.

An additional issue of some concern which may have influenced the results is the amount of Putonghua exposure of the speakers. As mentioned, nine of the speakers fell below the benchmark to be considered fully native speakers of the dialects in question and were in fact only native speakers of PTH. Compounding this issue is the fact that all of the native Xiang speakers are either balanced bilinguals in PTH or consider it an additional mother tongue; given that all speakers have high familiarity with Putonghua, it is perhaps no surprise that their hesitations are comparable across dialect boundaries. At the same time, at least six speakers reported fluency in other varieties of Xiang, which may further complicate matters. It may be that when switching from one dialect to another, speakers actually change their hesitations; if, for instance, they have a PTH-like accent when speaking Xiang, their HMs may appear more PTH-like, or they may consciously alter their HMs based on the variety used in discourse (for instance, consider the non-Mandarin, front-quality hesitations used by the HY heritage speaker). A possible extension to the present study could involve an exploration of code-switching as it relates to HMs, although this would require a more precise definition of HM form within each individual dialect, rather than across an entire subgroup as was done in the present study.

5.5. Final Remarks

The present study has been an attempt at using the feature of HM vowel quality for defining typological regions in the Xiang grouping of Sinitic. The motivations for this research are born out of two deficiencies: a lack of research on HMs in Sinitic and a lack of experimental research on the Xiang grouping outside of traditional dialectology or reading tasks. To this end, a novel three-way typology was introduced based on contrastive mid vowels in open syllables, which divided dialects into those with only mid-front, those with only mid-central/back, and those with both qualities, which is also partially reflective of larger regional tendencies in Sinitic. This was done to test whether HM vowel quality could be mapped onto the groups defined in this way. While the results do not support existing or novel regional divisions in an absolute, categorical way, the relative incidence of HM qualities does seem to support the novel taxonomy, albeit somewhat harried by a host of potential confounding factors.

In addition to the above, the present research contributes to our understanding of the place HMs occupy in the phonological system; specifically, this research queried whether HM acoustic qualities can be mapped onto phonological categories. It was noted that while the front and central contrast was preserved in both cases, there was not a direct overlap between the categories (unlike what was found in Sevilla 2021 for Cantonese). Further research into the space between phonetics and phonology that HMs occupy may help elucidate this disconnect between the two findings.

One potential area of further interest is the distribution of mid vowels in open syllables across Sinitic generally. Future research could address the distribution of these vowels in items with a less controversial lexical status, as well as pursue exploration of Sinitic hesitation markers with a larger sample of speakers to avoid the confounding effect of high idiolectal variation. It is hoped that this study will provide fertile ground for the continued exploration of hesitation markers across languages, as well as continued research on Xiang at all levels of analysis.

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Appendix A

Table A1. Means for lexical and hesitation marker front and central/back vowels.

	No of Items	Mean F1	Mean F2
Lex Front	69	478.9	2053.8
HM Front	40	615.1	1861.9
Lex Central	78	466.3	1507.6
HM Central	185	616.8	1399.8

Table A2. Two-sample t-tests for lexical and HM vowels.

	t-Value	*df*	*P*	*Var*
Front F1	−6.6039	107	<0.0001	Equal
Front F2	4.3417	106.08	<0.0001	Unequal
Central F1	−12.758	180.62	<0.0001	Unequal
Central F2	3.8654	114.74	0.0001843	Unequal

Notes

1 In what follows, the terms 'typological classification' or 'typological grouping' are used freely to stress the fact that the present approach does not involve genetic subgrouping; establishing 'typological regions' in Xiang here refers to defining regions by collections of shared features, rather than by establishing descent from a common parent language through a unique linguistic innovation. The former is essentially the traditional approach to Xiang classification (see e.g., Yuan 1960; Chen and Bao 2007), where regions are defined by bundles of shared features, whereas the latter is more recent (see e.g., Coblin 2011), although the two approaches are sometimes confused in Sinitic taxonomical studies.

2 For the purposes of this study, these subgroupings are treated as such, although some of the authors of the classificatory schemes may disagree.

3 Henceforth, just 'HMs' or 'hesitation markers' will be used to refer *only* to non-lexical HMs.

4 One may wonder if it is realistic to consider Cantonese representative of the form of hesitation markers in the Southern group, given that this group is quite diverse. However, in terms of the mid-vowel contrasts considered here, southern Sinitic varieties behave similarly; see Figure 2. Therefore, any other southern Sinitic variety of those mentioned in the discussion of Figure 2 could just as easily serve as a representative.

5 Shi et al. (2015) mention that Mandarin has a mid-front vowel approaching [ɛ] 'used only as an interjection' but have no instances of it in their corpus and do not provide an example.

6 The naming convention is to take the first syllable from the name of two dialects considered representative of the grouping; Changsha and Yiyang for Changyi, Loudi and Shaoyang for Loushao, and Jishou and Xupu for Jixu.

7 Map from: https://commons.wikimedia.org/wiki/File:China_blank_map_grey.svg (accessed on 21 November 2021).

8 This should not be interpreted as a claim that most northern dialects do not have a mid-front vowel *anywhere* in their inventories, or that southern dialects do not have mid-central vowels at all, only that they do not possess them contrastively in open CV syllables. For instance, some dialects may have one of these qualities obligatorily accompanied by an offglide or a final nasal,

and others may reduce vowels to schwa in fast speech; however, the current focus is on vowel qualities that have no such contextual restrictions.

[9] Each pair of brackets (separated by a comma if occupying the same square) represents a contrastive vowel quality in the dialect in question; if two qualities are within the same pair and are separated by a tilde <~>, this means the two qualities are in free variation.

[10] Map outline from: https://commons.wikimedia.org/wiki/File:Map_Hunan_adm.png (accessed on 21 November 2021).

[11] Strictly speaking, any lexical item can be lengthened to fill a pause, so any item from the lexical vocabulary might in theory serve an HM function. The examples provided here are predicted to occur most often as they are often used to introduce speech; neither list is exhaustive.

[12] Figure 6, Figure 7 and all statistical analysis conducted using R (R Core Team 2022).

[13] Standard deviation can be observed in Figure 6 as the dark gray shaded areas above and below the contour lines.

[14] All figures from this point created with Norm (Thomas and Kendall 2007).

[15] Possible exceptions to this generalization are PTH syllables such as [jɛɬ] 'leaf'; however, Duanmu (2007) points out that this vowel must be preceded by a palatal and categorizes the mid-front vowel as an allophone of /ɤ/.

[16] NE = 'northeastern', SW = 'southwestern', TR = 'transitional', HT = 'heritage'.

[17] By extension, the traditional Old-New classification (Yuan 1960) likewise cannot be supported by HM vowel data, even though this was not overtly explored in the study. This should follow from the high degree of similarity between Chen and Bao's (2007) classification and the traditional classification.

[18] An in-depth acoustic analysis, focusing solely on Mandarin HM vowels (restricted by location, e.g., Beijing), is necessary before the exact number can be determined. The observations of the two cited studies are too broad, as the analyzed regions in China are not restricted geographically, subsumed under the 'Mandarin' heading; however, even here, the number of vowel qualities seems more restricted than in the comparatively smaller Xiang-speaking region.

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The Contrastive and Referential Function of Specific Classifiers in Xiamen Southern Min—Evidence from a Cognitive Experimental Study

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Abstract: Southern Min is generally known for not using classifiers [CL] for expressing definiteness/indefiniteness as it is associated with the bare classifier construction [CL N]. This paper offers evidence from Xiamen Southern Min (XSM) that the use of a specific classifier vs. the general classifier *é* contributes to referentiality in an alternative way by supporting object identification as it is due to the semantic specificity present in specific classifiers and absent in the general classifier. In a dialogic cognitive experiment adapted from the "Hidden color-chips" task (Enfield and Bohnemeyer 2001), 18 participants had to manipulate their addressees' attention toward various objects situated in their immediate physical space through language as well as deictic gestures. The objects were associated with different specific classifiers or with the general classifier, and they were arranged according to the factors of (a) distance from speaker, (b) visibility for speaker, and (c) uniqueness (adjacency of similar items). The results show, among other things, that there is a higher tendency to use the specific CL in the [demonstrative CL N] construction if adjacent similar objects [−unique] are too far away from the speaker for clear identification by a demonstrative or a pointing gesture. This is seen as a last-resort strategy for creating contrast. Further corroboration comes from the use of specific classifiers in later mentions after the general CL failed to achieve clear identification. These findings can be situated in the broader context of other languages with classifiers in contrastive function (Thai, Vietnamese, and Ponapean) and they show the relevance of using dialogic texts for modeling classifier selection in contrast to narrative texts. Finally, dialogic contexts may serve as bridging contexts for grammaticalization from numeral classifiers to definiteness markers.

Keywords: numeral classifier; contrastive focus; cognitive experiment; Xiamen Southern Min

1. Introduction

In the long-standing research on numeral classifiers, it is widely acknowledged that the most common and fundamental functions of numeral classifiers are individuation and classification. The former means classifiers are used to make count nouns enumerable by individuating (Greenberg 1972) or atomizing (Chierchia 1998) them, while the latter refers to the fact that classifiers form a semantic system to classify nouns according to their semantic properties like animacy, shape, consistency, size, etc. (Aikhenvald 2000; Allan 1977; Denny 1976). As demonstrated in (1), in Mandarin Chinese, the classifier *fēng* 'seal' is used in the context of counting letters, given that letters used to be sealed at the time when that classifier was introduced.

(1) Mandarin [NUM CL N]:

a.	sān	**fēng**	xìn
	three	CL: sealed.item	letter
b.	*sān	xìn	
	three	letter	
	'three letters'		

It is also well-known that numeral classifiers can go beyond the functions of individuation and classification and obtain additional functions in many languages of East and mainland Southeast Asia (EMSEA). According to Bisang (1999, p. 115), "classification can be employed to compare one particular sensory perception and its properties to the properties of other sensory perceptions in order to identify that particular perception by subsuming it under a certain concept". This operation is called identification, and identification forms the point of departure for CLs to take on the function of referentialization. Reference, according to Searle's (1969) definition, is an act of identifying some entity that the speaker intends to talk about. The existing literature shows that numeral classifiers can contribute to the process of referentialization in various ways.

In studies of Sinitic, the referential function of CLs is typically concerned with the marking of (in)definiteness in the bare classifier construction [CL N], which comprises only the CLs and the head noun that follows (for a discussion of the referential functions of CLs in some non-Sinitic languages, cf. Section 4.3). The syntactic position and its semantic interpretation are language-specific, with considerable influence exerted by pragmatic factors and word order. For instance, in Mandarin Chinese (2a), the bare classifier construction [CL N] can exclusively occur in the postverbal position, where it only conveys indefinite interpretation. In contrast, in Wu (2b), the bare classifier construction can be employed on both sides of the verb, with the pre- and postverbal [CL N] exclusively conveying definite and indefinite interpretation, respectively. Cantonese (2c) further complicates the picture as the construction can manifest on both sides of the verb but with different interpretations: the preverbal [CL N] only denotes definiteness, while the postverbal [CL N] can be either definite or indefinite, depending on the context.

(2) Some Sinitic languages: [CL N]

a.	(***ge**)	**laoban**	mai	le	**liang**	**che.**	(Mandarin)
	CL	boss	buy	PFV	CL: vehicle	car	
	'The boss bought a car.'						
b.	**kɣ**	**lɔpan**	ma	lə	**bu**	**ts^{h}ots^{h}ɿ.**	(Wu)
	CL	boss	buy	PFV	CL: vehicle	car	
	'The boss bought a car.'						
c.	**go**	**louban**	maai	zo	**ga**	**ce.**	(Cantonese)
	CL	boss	buy	PFV	CL: vehicle	car	
	'The boss bought a/the car.'						

(Li and Bisang 2012, p. 2)

Wang's (2015) typology of CL systems based on an analysis of 120 Sinitic languages reveals the existence of seven possible types. These types are established with reference to the specific combination of syntactic position relative to the verb and the semantic interpretation of the bare classifier construction in terms of [±definite] (cf. Table 1). According to Wang's categorization, Mandarin is a Type VII language, the Wu dialect of Fuyang aligns with Type IV, and Cantonese belongs to Type III.

Table 1. Seven possible types of bare classifier configurations in Sinitic languages (Wang 2015, p. 115).

Type	Preverbal	Postverbal
I	Def Indef	Def Indef
II	Def Indef	Indef
III	Def	Def Indef
IV	Def	Indef
V	-	Def Indef
VI	-	-
VII	-	Indef

Remarkably, the majority of Min languages, including Xiamen Southern Min (XSM)[1] as the focus of the present study, are classified as Type VI languages, which prohibit the

use of a bare classifier construction, regardless of the position relative to the verb. These languages use [DEM CL N] and ['one' CL N] to denote definiteness (3a) and indefiniteness (3b), respectively. In both constructions, if the referent is identifiable from the context (e.g., through a clear pointing gesture or previous mentions), the DEM and the CL can both be omitted, i.e., a bare noun can be used. Like most Sinitic languages, XSM has a two-term demonstrative system with the proximal demonstrative *zīt* 'this' and the distal demonstrative *hīt* 'that', which generally identify items according to their distance from the speaker (Lien and Chiu 2014).

(3) Xiamen Southern Min:

a. [DEM CL N]

*(**hīt**)	**ziāh**	**ziǎo-ǎ**	bē	kì	lo.
DEM	CL: small.animal	bird-SUF	fly	go	PRT

'The bird flew away.'

b. ['one' CL N]

yī	gâng	gguǎ	gǒng	*(**zít**)	**hâng**	**dâizì.**
3SG	with	1SG	tell	one	CL: matter	thing

'He told me something.'

(Wang 2015, p. 122)[2]

However, this does not mean that referentiality does not manifest itself in the use of CLs in XSM, because the selection of specific vs. general CLs also contributes to referentiality. Specific CLs are selected according to semantic properties of nouns and are limited to a specific and often small set of nouns, while general CLs can basically co-occur with any count noun and are the only possible CL for many nouns. In XSM, the general CL is *é*. It is often written with the Chinese character 個, even though its lexical source is still controversial (cf. Chappell 2018; Li 2007). An example of the substitution of a specific CL by the general CL is given in (4a) and (4b).

(4) Xiamen Southern Min:

a.

zít	**kiā**	cēhbāo
one	CL: bag	schoolbag

b.

zít	**é**	cēhbāo
one	CL: gen	schoolbag

'one schoolbag'

(Zhou et al. 2006, p. 236; glossed by us)

According to the fieldwork data of one of the authors, older speakers (over 69) of XSM are actually rather rigid in the assignment of specific CLs and do not allow the substitution of a specific CL by the general CL with some particular nouns. However, young speakers (under 30) of XSM tend to accept the substitution of a specific CL with the general CL, although this is not absolute. Since the data collected in this experiment show that all of the referents are mentioned with the general CL by many of the speakers, we believe that it is justified to claim that at least among young speakers of XSM, the substitution of a specific CL with the general CL is grammatical.

As for the conditions under which that substitution happens, there has been some research by Erbaugh (2002), Erbaugh and Yang (2006), and Erbaugh (2013), indicating that the selection between specific and general CLs is associated with information structure, syntactic function, and number. To be more specific, specific CLs are assumed to be used with the information focus in the postverbal object position, while higher numbers typically appear with the general CL.

While the association of the postverbal position with the information focus follows a universal tendency (Kiss 1998), Erbaugh's (2002, 2013) generalization that specific CLs tend to be used at the first mention of an object may be due to the fact that her analysis is based on endophoric (text-internal) reference, as it is found in her narrative texts based on

the Pear Story (Chafe 1980). Even if her results are statistically significant, it will be seen in our study that this is not replicated in the case of exophoric (text-external) reference, which is characteristic of dialogic texts. Since the exact use of specific CLs vs. the general CL in exophoric reference is largely unknown, this study will investigate the referential function of CLs in an exophoric context. Exophoric or dialogic contexts are generally characterized by the interaction of the speaker and hearer and, in the context of information structure, the assessment of the identifiability or accessibility of a concept in a concrete discourse situation (e.g., Lambrecht 1994). Thus, an utterance made by the speaker includes the hearer in the sense that the speaker tries to assess the degree to which a concept is referentially activated/accessible to the hearer. Given that dialogue is going on through time and is characterized by role change between the speaker and hearer (for a more detailed explanation, cf. Levinson 2016), the assessment of identifiability/accessibility requires permanent updates (cf. Section 3.3.1).

Based on these explanations, we summarize our research questions as follows:

1. How are numeral classifiers in XSM associated with referentiality in exophoric contexts?
2. What are the factors that impact the selection of the following options in exophoric situations?
    a. [DEM CL (N)] or [N];
    b. if [DEM CL (N)] is used, specific or general classifier

The factors that may affect the selection of the options given in question 2 in the experimental setting for identifying objects in space are as follows:

(a) Distance: the distance of the referent from the speaker.
(b) Visibility: the visibility of the referent from the speaker's point of view, i.e., whether the speaker's view of the referent is obstructed by another item, so the speaker cannot see the referent directly from where she/he is.
(c) Uniqueness: the uniqueness of the referent within the speaker's visual scope, i.e., is there only one object associated with the same noun [+unique] or is there more than one adjacent object of the same kind in the speaker's scope [−unique]?

The choice of factors (a) distance and (b) visibility is based on Dixon's (2003) major parameters of reference for demonstratives, as they are common categories encoded in forms which can have a deictic function. As this study will show, such forms include not only DEM, but also CLs. The choice of factor (c) uniqueness is based on the fact that unlike demonstratives, XSM CLs have additional functions of individuation and the marking of singular[3]. Given that CL use is obligatory with demonstratives, we believe that the different semantics of general vs. specific CLs may affect classifier selection depending on [±uniqueness].

Moreover, to understand to what extent the presence of DEM would influence the result of our investigation on CLs, we conducted a binary logistic regression analysis of the potential influence of distance, visibility, and uniqueness on the distribution of the proximal and distal DEM (see Section 3.1 for more information on this type of test). The results show that DEM is sensitive to distance ($p < 0.001$) in XSM, but to neither visibility ($p = 0.659$) nor uniqueness ($p = 0.469$), which further corroborates Lien and Chiu's (2014) observation.

The present study is based on a cognitive experimental approach and involves both quantitative and qualitative analyses. The results will provide significant evidence for the higher probability to use the [DEM CL N] construction if the referent to be identified is visible. As for the probability to use a specific or general CL, it is associated with distance and uniqueness in an intertwining way.

The remainder of this paper is structured as follows: Section 2 presents the research method used for the experiment and is followed by the results and the analysis in Section 3. The discussion is found in Section 4. It presents the cognitive motivations for using the [DEM CL N] construction and the use of a specific CL vs. the general CL in contexts of contrastive focus. In addition, it discusses three other languages in which CLs are used in contrastive contexts (Thai, Vietnamese, and Ponapean). Section 5 will conclude this paper.

2. Materials and Methods

The cognitive experiment used in this study is an adapted version of the "Hidden color-chips" task created by Enfield and Bohnemeyer (2001). Their experiment in the form of a memory test was designed to investigate the use of demonstratives in the exophoric context. It is described as follows by the authors:

> "This task is designed to create a situation in which the speaker is genuinely manipulating the addressee's attention on objects in the immediate physical space in order to solve the task, and without being asked to introspect about which demonstrative they 'would use' in the situation." (p. 21)

We redesigned the experiment by using the factors of distance, visibility, and uniqueness for detecting factors that may affect the selection of the relevant constructions (research question 2a) and the choice between a specific CL and the general CL (research question 2b).

2.1. Participants

The participants are 18 native speakers of XSM, including 9 females and 9 males. All are below the age of 30 and without immigration backgrounds. XSM is one of their family languages, if not the only one. In the questionnaire that the participants filled out before recruitment, they all evaluated their proficiency in XSM as high or relatively high. The participants joined the experiment in pairs, and the study tried to ensure that most participants within each pair were familiar with each other. This facilitated a more natural mode of communication.

2.2. Procedure

A total of 20 target objects were strategically placed in a room among other irrelevant objects. The nouns denoting the items used in the experiment were anticipated to take different CLs, including specific and general ones. In the arrangement of the items, distinctions were made between different levels of distance (close, mid-far, and far), visibility [±visible], and uniqueness [±uniqueness], as illustrated in Figure 1 (for further details, cf. Section 2.3 and Appendix A). Under each target object were hidden small colored chips in one of the following four colors: red, yellow, blue, or green.

The experiment was based on the cooperation of two participants, one of them appointed as "memorizer (M in the following mentions)" and the other one as "checker (C in the following mentions)". M was first brought into the room and was shown where 10 of the colored chips were hidden. M's task was to memorize the location and the color of the 10 chips. After M finished memorizing this information, C was brought into the room and sat opposite to M. C's task was to check M's memory by asking, e.g., 'Under what objects are there red/yellow/blue/green chips?' for one color after another (the reason for using this pattern of questioning is explained in Section 2.3). Following each response from M, C was required to pick up the item referred to and to validate the correctness of the answer. Follow-up dialogic exchanges were not only permitted but even encouraged. After all of the 10 target objects were pointed out by M and checked by C, the first round of the experiment was concluded. After that, the two participants were asked to switch roles, i.e., the participant who was M in the first round was designated as C, while C in the first round transitioned into the role of M. In the second round, they used the other 10 target objects in the room with colored chips underneath them to repeat the task.

The aim of the experiment was to check if the demonstrative construction [DEM CL N] was used, and if so, whether the speakers used a specific CL or the general CL. The limitation to 10 items in each round was the result of adjustments made through pilot studies, which showed that having more than 10 target objects in a test was beyond the memorizing capacity of average speakers. This was also the reason for the relatively small set of objects used in "mid-far".

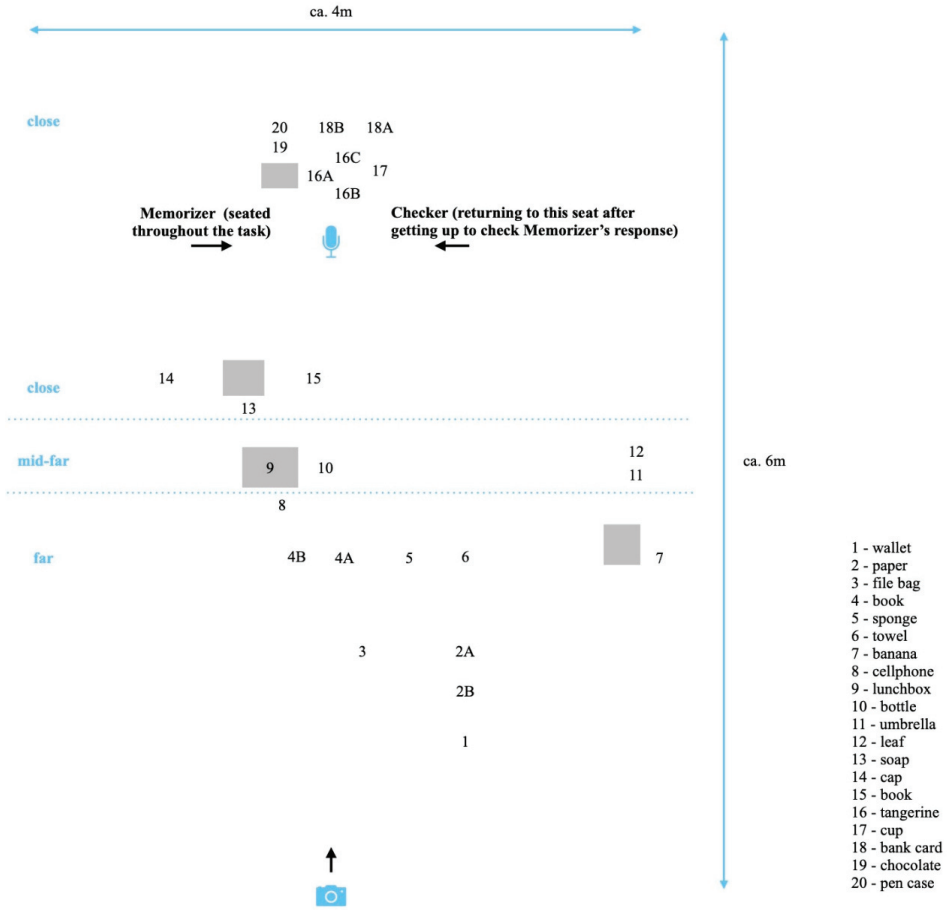


Figure 1. The setting of the "Hidden color-chips" experiment. Each number is an object, as indicated by the legend on the right. Similar items of the same kind (therefore also with the same CL) are marked with different letters ("A", "B", and "C"), among which only "A" is the target object with a colored chip underneath. Gray blocks refer to items that obstruct M's view of the item behind it. For instance, M's view of item 8 (cellphone) is obstructed by item 9 (lunch box), so M cannot see item 8 directly from their seat. Therefore, item 8 has [−visible] in the experimental setting. All of the items are placed on platforms and the asymmetric configuration of the items was carried out with the consideration of facilitating easy movement of C.

2.3. Experimental Set-Up: The Variables

The experiment was conducted to observe the impact of the independent variables of distance (close/mid-far/far), visibility (visible/invisible), and uniqueness (unique/non-unique) on the use of CLs. We selected three levels for distance because it is more gradable than visibility and uniqueness, and because we did not want to take for granted that the selection of a specific CL vs. the general CL followed the binary deictic distinction of proximal vs. distal demonstratives in Sinitic. Additionally, to investigate the potential influence of expected CL types on the decision of whether to use the DEM construction, a distinction between expected CL types was made in the experimental setting (see Appendix A for a list of the items used in the experiment and the variables that their arrangements are associated with). The expected CLs were confirmed by native speakers during the preparation of the experimental setting.

The dependent variables of the experiment, i.e., the variables to be observed in the results, are speakers' selection (a) between [DEM CL (N)] and [N] and (b) between the general CL *é* and a specific CL if a DEM construction is used.

The control variables kept consistent throughout the experiment are the factors influencing the distribution of specific and general CLs (Erbaugh 2002, 2013; Erbaugh and

Yang 2006), i.e., information structure, grammatical relation, and number. These factors are controlled by having C consistently asking questions of this specific pattern:

(5) sîmbbníh bbníhgniâ êduě wû ángsīk e gí-ǎ?
Q thing bottom have red MOD piece-DIM
'Under what objects are there red "pieces (chips)"?'

As in Sinitic languages, interrogative pronouns take the same syntactic position as the corresponding answers, the answers from M would always fall into the slot of the informational focus/subject (*sîmbbníh bbníhgni*â 'what thing') of the given question. In the quantitative analysis, only M's first-mentioned nouns are counted, which assures that they only involve new information. Moreover, since all of the referents in the experiment are singular, there is no occurrence of higher numerals. In this quantitative part of the analysis, M's responses are analyzed through different tests with the software application SPSS (Version 27), and the significance threshold is set to $p \leq 0.05$. Moreover, this study also involves a qualitative analysis, where all of the utterances of both participants in the experiments are carefully observed. The experiments were filmed with the speakers' consent, allowing for the observation of gestures in the process. Table 2 is a summary of the variables in this study.

Table 2. Independent, dependent, and control variables of this study.

Variable Type	Variables
Independent variable	Distance (close/mid-far/far), visibility (visible/invisible), uniqueness (unique/non-unique), and expected CL type (specific/general CL)
Dependent variable	[DEM CL N]/[N] and general/specific CL
Control variable	Information structure, grammatical relation, and number

3. Results and Analysis

3.1. General Results

In an ideal situation, the experiment should collect 180 noun phrases denoting the referents from M (18 memorizers × 10 items), but due to forgetting and occasional use of the existential construction, which are excluded in the quantitative analysis, the experiment obtained 167 tokens of noun phrases. The frequency of different constructions is demonstrated in Table 3. The [DEM CL (N)] construction is exemplified in (6) and (7), and the bare noun construction in (8). Note that XSM does not allow for the strategy of using the general CL in an extra CL position, as is the case in Vietnamese (cf. Section 4.3.2).

Table 3. The frequency of different constructions used by the memorizers in the first-mentioned noun phrases in their responses.

Construction	Count
[DEM CL (N)]	128
[N]	38
[DEM]	1
Sum	167

(6) [DEM CL N]
hīt **gī** hoôsnuà. (Speaker 1)
that CL: stick-like.item umbrella
'That umbrella.'

(7) [DEM CL]

zīt	**é.**	zīt	**é.**	zīt	bnī.	(Speaker 3)
this	CL: gen	this	CL: gen	this	side	

'This. This. This side.'

(8) [N]

zníbāo	êkā	(Speaker 3)
wallet	under	

'Under the wallet.'

The head noun is occasionally omitted (7), albeit infrequently. The infrequency is plausible because the noun phrases are mentioned for the first time. Moreover, in one token, the locative demonstrative pronoun *ziá* 'here' is used. A total of 38 nouns were mentioned without a DEM or a CL, but the nouns sometimes occurred with attributes. Moreover, all speakers used either finger gestures or gaze to point at all of their referents.

A binary logistic regression analysis was conducted to reveal potential correlations between the independent variables and the dichotomous dependent variables. The regression analysis of the distribution of specific and general CLs was limited to tokens involving nouns anticipated to co-occur with a specific CL ($n = 126$). Table 4 provides an overview of the results, which will be introduced with more detail in Sections 3.2 and 3.3.

Table 4. The possibility of correlation (p-value) according to the result of the binary logistic regression (bold: statistically significant ($p \leq 0.05$)).

	Distance	**Visibility**	**Uniqueness**	**Expected CL Type**
[DEM CL (N)]/[N]	0.612	**0.030**	0.194	0.839
general CL/specific CL	0.610	0.177	0.931	-

3.2. When Are the Demonstrative Constructions More Likely to Be Used?

As shown in Table 4, the selection between the [DEM CL (N)] construction and the bare noun is significantly associated with visibility ($p = 0.030$), while distance and uniqueness do not exert a significant influence on this selection. Moreover, the expected CL type does not have any impact on the presence/absence of the DEM construction. Additionally, a Chi-square test of independence further confirms that the use of the [DEM CL (N)] construction differs significantly between different levels of visibility (χ^2 (1, 166) = 9.771, $p = 0.002$), in that the [DEM CL (N)] construction is much more likely to be used if the referent is [+visible] than if it is [−visible], as illustrated in Figure 2.

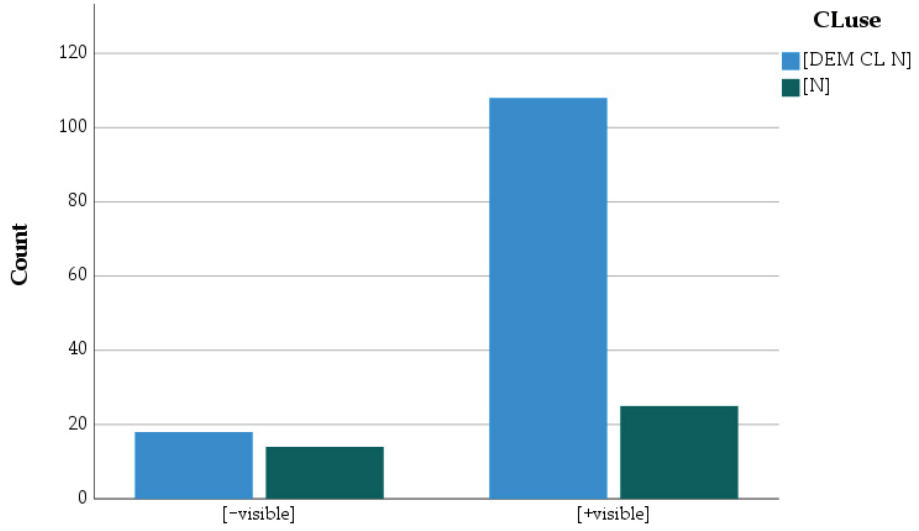


Figure 2. Distribution of [DEM CL (N)] and [N] according to [±visible].

3.3. When Are Specific/General Classifiers Preferred in the Demonstrative Construction?

While the binary logistic regression analysis did not reveal statistically significant correlations between the selection of specific/general CLs and any of the independent variables, the qualitative analysis (cf. Section 3.3.1) uncovered certain subtle associations between them. This is corroborated later by a quantitative analysis (cf. Section 3.3.2).

3.3.1. Qualitative Analysis

In our qualitative analysis, we included not only the first-mentioned noun phrases, but also the ones mentioned later. It is remarkable that if M used the general CL *é* in their first (and sometimes in their first two) responses in the context of [−unique], they tended to later repeat their instructions with a specific CL when their previous answers did not have the desired effect, i.e., when M assumed that C felt unsure about the object to be identified as in (9) and (10), or when C was on the verge of selecting a wrong item as in (11). In other words, specific CLs were frequently used in later mentions for further specification. In our study, we found 36 cases with [−unique], out of which 20 responses were repeated. Among these, the nouns were first mentioned with the general CL *é* in 11 cases, and later, there was a switch from general to specific CL in 8 of them. These tokens were collected from seven different participants. We take this as an indicator of the pervasiveness of such a shift.

(9) hīt **é** zuǎ, táodǐng hīt **é**. (Speaker 6)
that CL: gen paper upper that CL: gen
(C approached the correct paper and asked for confirmation)
ṅg, hīt **dniū** zuǎ.
um that CL: two.dimensional paper
'That pape, the upper one.' 'Um, that paper.'

(10) zīt **é** ggúnhángkǎ… kò gguǎ zīt bnī e
this CL: gen bankcard close.to I this side MOD
hīt **é.** (Speaker 13)
that CL: gen
(C couldn't identify the referent)
kò gguǎ zīt bnī e hīt **é**, hīt
close.to I this side MOD that CL: gen that
dniū.
CL: two.dimension
'This bank card… The one close to my side.' 'That one close to my side, that one.'

(11) zīt **é** ggúnhángkǎ. (Speaker 15)
this CL: gen bankcard
(C approached the wrong card)
ěi, bbó, zīt**dniū**.
eh NEG this CL: two.dimensional
'This bank card.' 'Eh, no, this one.'

Moreover, in the majority of instances where C asked for additional clarification following M's response with a general CL, a specific CL was employed in C's subsequent question. This is illustrated by the following two examples:

(12) M: "oò, oò, zīt **é**, zīt **é**, zīt **é**,
oh oh this CL: gen this CL: gen this CL: gen
ciáng, ciáng, ciáng." (Speaker 4)
tangerine tangerine tangerine
'Oh, oh, this one, this one, this one, tangerine, tangerine, tangerine.'
C: "dǒ zít **liáp**?"
which one CL: round.item
'Which one?'
M: "zīt **liáp**."
this CL: round.item
'This one.'

(13) M: "āhgōh zīt **é**, zīt **é** ciáng, zīt
and this CL: gen this CL: gen tangerine this
é ciáng êkā." (Speaker 12)
CL: gen tangerine under
'And this one, this tangerine, under this tangerine.'
C: "ciáng wû snā **liáp**, dǒ zít
tangerine there.are three CL: round.item which one
liáp?"
CL: round.item
'There are three tangerines. Which one?'
M: "ziû sî kògûn lǐ e zīt **liáp**."
just COP be.close.to you MOD this CL: round.item
'It is just the one close to you.'

This phenomenon is very remarkable because specific CLs do not seem to contribute any semantic clues in contexts of [−unique] that could help C to further narrow down the range of potentially relevant objects. Seen in the light of role change between the speaker and hearer in dialogic exchange (cf. Section 1), one may account for this effect based on the realization of M that C cannot identify the relevant object in (9)–(11), or, in the case of (12) and (13), based on C trying to express their wish for a more specific instruction on which was the intended object and later M trying to specify it more clearly. Given that the grammatically available inventory for identification is exhausted in this situation, an unconventional solution is selected by using the specific CL which, in many situations (but not this one), contributes to the identifiability of an object. Of course, speakers are generally able to just add additional lexical information if needed. But this does not happen in the dialogues in (9) to (13). We take this as an indicator that speakers have a certain "confidence" in the distinctive potential associated with specific CLs and that they try it as a last resort when any other grammatical option fails (also cf. Section 4.2 for additional explanations), which actually looks like a "futile effort". According to the evidence provided by this study, the motivation of M's use of a specific CL in later mentions is pragmatic, which will be further discussed in Section 4.2.

3.3.2. Quantitative Analysis

According to Table 4, in instances where the nouns can co-occur with a specific CL, there is no statistically significant correlation between the variables of distance, visibility, and uniqueness and the selection between a specific CL and the general CL. How-

ever, some subtle correlations manifest themselves when stratification is incorporated into the analysis.

To facilitate the stratified Chi-square test of independence with SPSS, which necessitates binary variables, the categories "mid-far" and "far" were conflated into a category labeled as [+distant], contrasting with [−distant] for near referents. This rearrangement was based on the fact that the use ratio of the distal demonstrative in cases with "mid-far" (83.3%) was similar to that in cases with "far" (93.8%), while it was much lower in cases with "close" (24.1%). This indicates that speakers perceive both "mid-far" and "far" in the experimental setting as contrasting to "close", which further confirms the two-way demonstrative system of XSM.

The results of the stratified Chi-square test of independence show that [±distant] and [±unique] are associated with classifier choice in an intricately intertwined manner.

i. The stratified Chi-square test of independence also reveals that the CL choice in [±distant] significantly differs between [+unique] and [−unique] (χ^2 (1, 86) = 6.367, p = 0.012), and only in the case of [+unique] does the CL choice significantly differ between [+distant] and [−distant] (χ^2 (1, 59) = 4.127, p = 0.042). As demonstrated in Figure 3, if the referent is [+unique], speakers are more likely to use a specific CL for the referents with [−distant] over those with [+distant], while they prefer a general CL for the referents with [+distant] over those with [−distant]. If the referent is [−unique], there is no substantial difference in the distribution of specific and general CLs in the contrast between [±distant] (χ^2 (1, 27) = 2.700, p = 0.100).

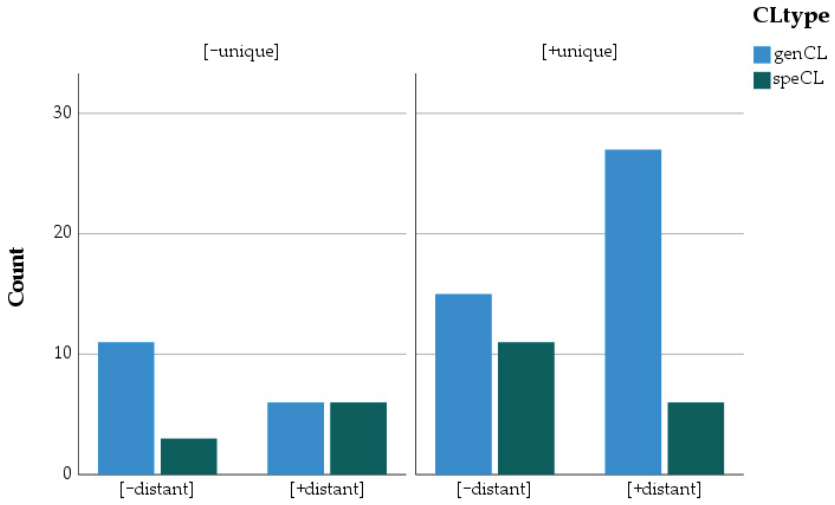


Figure 3. Distribution of specific and general CLs according to [±distant], controlling for [±unique].

ii. The CL choice according to [±unique] significantly differs between [+distant] and [−distant] (χ^2 (1, 86) = 6.391, p = 0.011). Only in cases with [+distant] does the classifier choice significantly contrasts between [+unique] and [−unique] (χ^2 (1, 45) = 4.556, p = 0.033): speakers are more likely to use the general CL for the referents with [+unique] and a specific CL for those with [−unique], as demonstrated in Figure 4. No notable difference is found in the distribution of specific and general CLs in the contrast between [±unique] (χ^2 (1, 41) = 2.105, p = 0.147).

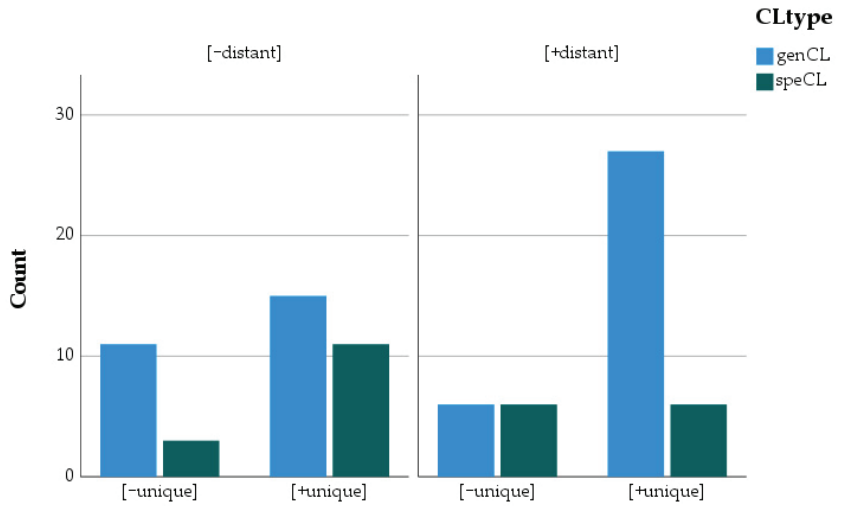


Figure 4. Distribution of specific and general CLs according to [±unique], controlling for [±distant].

iii. A test of homogeneity of the odds ratio was also performed to assess the relationship between [±visible], [±distant], and CL choice. The result shows no remarkable correlation, regardless of whether [±visible] is on the higher layer (χ^2 (1, 86) = 1.677, p = 0.195) or on the lower one (χ^2 (1, 86) = 1.643, p = 0.200).

3.4. Summary

The main effects shown in the quantitative and qualitative analysis can be summarized in four points. Their motivations will be tentatively discussed in Sections 4.1 and 4.2.

I. Compared with a bare noun, the DEM construction is clearly more likely to be used when the object has [+visible], i.e., the speaker's view of the object is not blocked by anything.
II. In cases with [+unique], speakers are significantly more likely to use a specific CL for objects with [−distant] compared to those with [+distant].
III. In cases with [+distant], speakers are significantly more likely to use a specific CL if the referents have [−unique], and a general CL if they have [+unique].
IV. The qualitative analysis shows that in cases with [−unique], if the [DEM CL (N)] construction uses the general CL *é* in the first-mentioned noun phrase but fails to identify the relevant object, speakers frequently switch to a specific CL when they repeat the noun phrase.

The percentage of classifier types according to different levels of [±distant] and [±unique] in first-mentioned noun phrases are illustrated in Table 5, with statistically significant contrasts framed in red.

Table 5. Distribution of specific and general CLs according to [±distant] and [±unique] in first-mentioned noun phrases.

	[−distant]	**[+distant]**
[+unique]	57.7% genCL + 42.3% speCL	81.8% genCL + 18.2% speCL
[−unique]	80.0% genCL + 20.0% speCL	50.0% genCL + 50.0% speCL

4. Discussion

4.1. Effect I and II: Cognitively More Accessible Items Tend to Be Further Specified

Effect I and II arguably reveal that clearly visible and near referents are cognitively more accessible and thus easier and more likely to be further specified. The two effects are discussed below.

The correlation between visibility and the use of the DEM construction as shown in Effect I is not surprising, since the two-term demonstrative system in Southern Min is known for making a distinction in distance, and it is plausible that speakers are more likely to use a DEM only in situations where they can clearly see the objects and easily identify the distance.

Moreover, the higher probability of using a specific CL for a unique and near referent can be explained by a similar motivation: since specific CLs have a classification function, if an item that is usually counted with a specific CL is close to the speaker, it is cognitively easier for the speaker to recognize the item's properties and thus decide on the specific CL that is associated with the specific property. Otherwise, the specific CL would be cognitively less accessible, which thus makes speakers more inclined to use the general CL *é*. This observation agrees with Erbaugh's (1986) claim about CLs in Mandarin Chinese that specific CLs are more likely to be used for near reference. It is also in line with Vittrant and Allassonnière-Tang's (2021) observation that specific CLs tend to be used when the object is prominent in discourse, because near objects are generally more prominent than far-away objects, all other things being equal.

4.2. Effect III and IV: Contrastive Function of Xiamen Southern Min Specific Classifiers

According to Effect III that specific CLs are more likely to be used in contexts with [−unique] and [+distant], we suggest that specific CLs have a contrastive function in this specific context, and this is motivated by the problem that the distal DEM and the speakers' pointing gestures are not distinctive enough to clearly identify the referent within a group of far-away referents. In the experimental situation, contrast can in principle be expressed by a DEM, a gesture, and modifiers. Since modifiers are not used in the majority of first mentions in this study, even in situations with [−unique] (7 out of 32 tokens with [−unique] use a modifier), we will not discuss them in this paper. If the objects were different in terms of distance or both had [−distant], the speakers' gestures and the selection between the proximal vs. the distal DEM would both be effective tools that help the hearer with identification. As illustrated in (14), the referent has [−distant], [−unique], and [+visible]. In the speaker's (M) first reaction, only a bare noun and a gaze were used, but then from the hearer's reaction, M quickly realized that the first instruction was not clear enough for C to identify the exact referent. In order to solve the task, M gave a second instruction, but this time making use of a distal demonstrative and a modifier to indicate that the referent is the one closer to C (and further away from themself), and these tools are effective in this case.

(14)	ciáng	êkā…	kògûn	lǐ	e	hīt	**liáp**
	tangerine	under	be.close.to	you	MOD	that	CL: round.item
	ciáng.						(Speaker 10)
	tangerine						

'(It's) under the tangerine… the tangerine close to you.'

However, in the cases where the object is further away, speakers can only use the distal DEM *hīt*, which is not a sufficient tool for identifying the relevant object anymore if the referent is among a couple of similar items. This means that both strategies generally available (DEM and gesture) are weakened in such a situation and speakers thus need to seek an alternative strategy for conveying contrast within the [DEM CL (N)] construction. Thus, using a specific CL becomes a "last resort" in this case (cf. Section 3.3.1). While the bleached semantics of the general CL *é* prevents it from obtaining deictic referential functions, the more specific semantics of specific CLs enables them to take on the function of marking contrastive focus in the sense of selecting the relevant object out of a presupposed set of objects (Chafe 1976), which is defined in the experiment by spatial adjacency. From the point of view of grammaticalization, this would be the exact bridging context (Heine's (2018) Context Model of Grammaticalization and Traugott and Dasher's (2002) Invited Inference Theory of Semantic Change) where a contrastive inference of specific CLs occurs.

This hypothesis is further corroborated by the observation of Effect IV. In cases of [−unique], if the first mention with the general CL fails to identify the referent, switching to a specific CL in later mentions is for identifying the relevant object by marking contrast. As a result, the specific object is highlighted in discourse, which leads C to take a closer look at M's gesture or pick up one of the other similar item(s) (depending on the situational context).

With these results, Effect IV partially contradicts Erbaugh's (2013) findings that specific CLs tend to be used with first-mentioned nouns and then "downgrade" to the general one in later mentions in Sinitic languages (except for Cantonese). The reason for this contradiction would be the difference in the genre of our research materials: deictic referentiality is much more likely to be attested in exophoric contexts than in endophoric ones. Considering the dialogic situation as highlighted in Section 3.3.1, using a specific CL in later mentions can also be due to permanent updating on the current speaker's assessment of the identifiability of a concept in the hearer's mind. More generally, this difference in our findings also points out the importance of using various types of speech materials in linguistic research or using those that fit best with one's specific research question.

Notably, the DEM construction is not the only environment where XSM specific CLs are used for contrastive purposes. A similar pragmatic function is attested in the [ADJ CL N] construction, as demonstrated in (15), which is taken from an instruction regarding ingredients needed for making rice dumplings.

(15) Xiamen Southern Min [ADJ CL N]:

a.	duâ	**ziāh**	hébbì,	m̂	sî	suè	**ziāh**
	big	CL: animal	dried.shrimp	NEG	COP	small	CL: animal
	hébbì.						
	dried.shrimp						
b.	*duâ	**é**	hébbì,	m̂	sî	suè	**é**
	big	CL: gen	dried.shrimp	NEG	COP	small	CL: gen
	hébbì.						
	dried.shrimp						

'(You will need) big dried shrimps, not small ones.'

(fieldwork data)

As shown in (15b), substituting the specific CL *ziāh* with the general CL *é* is ungrammatical in this context. Interestingly, adjectives that are allowed to occur with specific CLs in the attributive adjective construction are limited to *duâ* 'big' and *suè* 'small'. The reason for this still requires further investigation.

4.3. Contrastive Function of Numeral Classifiers from a Typological Aspect

Contrastive use of CLs is not cross-linguistically common, but it is not unique to XSM either. It is attested in some other languages. This section will illustrate the contrastive function of CLs in Thai (Tai-Kadai), Vietnamese (Austroasiatic), and Ponapean (Austronesian) and discuss differences and similarities to specific CLs in XSM.

4.3.1. Thai

In Thai, with adjectives (ADJ), CLs can express definiteness and specificity. In addition, they can also be used in situations of contrastive focus (Hundius and Kölver 1983, pp. 176–77; Bisang 1999). Thus, the CL in (16) is employed to correct a previously mentioned wrong assumption about the size of the car that the speaker likes:

(16) Thai [N CL ADJ]

chɔ̂ɔp	rót	**khan**	lék	mâj	chɔ̂ɔp	rót	**khan**
like	car	CL: vehicle	small	NEG	like	car	CL: vehicle
jàj.							
big							

'I like the small car. I do not like the big car.'

(Bisang 2008, p. 23)

However, although both XSM and Thai CLs can be used to express contrastive focus with ADJ, there are two notable differences:

First, Thai has very strict lexical rules that assign a CL to a given noun, so it does not have a general CL that can substitute specific CLs, and all Thai CLs can be used for contrastive purposes. In contrast, the boundaries between different noun classes are not absolutely strict in XSM, as one can see from the existence of the general *é* in XSM, since the CL *é* is semantically too general to be able to subsume a certain item under a certain concept, as would be needed to identifying it in terms of reference.

Second, Thai CLs only mark contrast in later mentions after a wrong statement is made or implied by context. However, in XSM, specific CLs are used in both first-mentioned and later-mentioned noun phrases to mark contrast, with the latter being more frequent. In other words, Thai CLs can only make already definite or specific nouns contrastive, which is also the case for XSM specific CLs in the DEM construction. However, XSM specific CLs in the ADJ construction do not need to be definite/specific. As exemplified in (15a), the construction can also be generic.

4.3.2. Vietnamese

Classifier use for contrastive purposes is also observed in Vietnamese, but it is only expressed by the general CL *cái*, which usually occurs with non-living things (Löbel 2011). *Cái* in its contrastive function bears phonological stress and takes a different syntactic slot from the one taken by CLs, as illustrated in (17). For that reason, *cái* in its contrastive function is also called "extra *CÁI*" in the literature.

(17) (Num)—*CÁI*—CL—N—modifier

The use of "extra *CÁI*" is illustrated in (18). (18a) is a simple statement with no contrast, while in (18b), "extra *CÁI*" is used to stress the contrast between "this very book" and any other books that may be potential referents in the discourse situation.

(18) Vietnamese:

a. [CL N DEM]

cuốn	sách	này	hay	thật.
CL: book	book	this	good	real

'This book is really good.'

b. [C*ÁI* CL N DEM]

CÁI	cuốn	sách	này	hay	thật.
CÁI	CL: book	book	this	good	real

'This very book is really good.'

(Nguyen 2004, p. 45)

The use of the Vietnamese general CL *cái* as a contrastive marker indicates that if a classifier language develops a contrastive function in its classifier system, it is not necessarily the specific CLs which will take up that function because of their more specific semantics. Here, the grammaticalization of the CL comes with an extra syntactic position.

4.3.3. Ponapean

Contrast can be marked by CLs in combination with DEMs in Ponapean, an Austronesian language spoken on the Pohnpei island in the Pacific Ocean. According to Rehg (1981),

a CL is obligatory in the [N Num-CL] construction in the context of counting, but it is not obligatory in the DEM construction. Ponapean has a DEM system that distinguishes emphatic and non-emphatic DEM determiners. An emphatic DEM is formed in the singular by combining a CL (e.g., *men-* for animate nouns, as shown in Table 5) with the non-emphatic form of the singular demonstrative. In the case of plural, the non-emphatic plural demonstrative takes the affix *pwu-*, which does not have a classification function. The paradigm of demonstratives is illustrated in Table 6.

Table 6. Emphatic and non-emphatic demonstratives in Ponapean (Diessel 1999, p. 53; Rehg 1981, pp. 144, 149).

	SG		**PL**	
	Non-Emphatic	**Emphatic**	**Non-Emphatic**	**Emphatic**
Near S	*-e(t)*	*mene(t)*	*-ka(t)*	*pwuka(t)*
Near H	*-en*	*menen*	*-kan*	*pwukan*
Away from S + H	*-o*	*meno*	*-kau*	*pwukau*

According to the above table, the unmarked structure of *ohlet* 'this man' takes the form of *ohl menet* 'this man here' if used emphatically. If speakers use an emphatic DEM for selecting the relevant object out of a presupposed set of objects, the CL obtains contrastive function.

Moreover, Ponapean has a general CL *u-* that can be used to count the majority of nouns. There is also a subtle discrepancy between specific CLs and the general CL when it comes to contrast, in that the occurrence of the general CL in emphatic demonstratives is heavily restricted. Only the singular emphatic form for referents near speakers *we(t)* is common. Thus, the general CL *u-* is mostly used with the proximal DEM, while the grammaticality of the emphatic forms for referents near hearers (*wen*) and away from speakers and hearers (*wo*) is questionable (Rehg 1981, p. 149). Thus, the distribution of specific vs. general CLs in contrastive contexts in Ponapean looks very much like that of XSM.

4.3.4. Summary

So far, this paper has introduced the contrastive function of CLs in XSM, Thai, Vietnamese, and Ponapean. Table 7 summarizes the different constructions of CL use (both specific and general CLs if the language has both) for individuation, singularity, and contrast marking.

Table 7. Constructions where CLs express different functions in XSM, Thai, Vietnamese, and Ponapean.

Language	**CL Type**	**Individuation**	**Singular**	**Contrastive Focus**
XSM	genCL	[NUM CL N]	[DEM CL N]	[DEM CL N] (less frequent)
	speCL	[NUM CL N]	[DEM CL N]	[DEM CL N] [ADJ CL N]
Thai	speCL	[N NUM CL]	[CL N DEM]	[N CL ADJ]
Vietnamese	genCL	[NUM CL N]	[CL N DEM]	[CAI CL N DEM]
	speCL	[NUM CL N]	[CL N DEM]	-
Ponapean	genCL	[N NUM-CL]		[N CL-DEM] (?)
	speCL	[N NUM-CL]		[N CL-DEM]

As shown in Table 7, the CLs have developed contrastive function in all four languages in either the DEM construction or the DEM plus the ADJ construction (cf. XSM), even though they are from different families, three of which belong to East and mainland Southeast Asia.

In the languages that have a general CL (XSM, Ponapean, and Vietnamese but not Thai), specific and general CLs develop their contrastive function in separate ways because of their different degrees of semantic specificity or generality. In fact, they follow two different, mutually exclusive pathways.

In languages where specific CLs develop a contrastive function (XSM, Ponapean, and Thai), specific CLs obtain their contrastive function through pragmatic inference, while they still occur in the same syntactic position that they take to express other functions (e.g., singular in the XSM and Thai DEM constructions, and emphasis in the Ponapean emphatic DEM construction). The exact interpretation of the specific CL always depends on the concrete context and the objects involved. Thus, the contrastive use of specific CLs is motivated by the classificational function of specific CLs, i.e., their ability to subsume particular perceptions under a certain concept to identify it (Bisang 2008). In other words, specific CLs intrinsically have the potential to develop a contrastive function, and the trigger of this development is a bridging context, as it is met in the exophoric situation given in our experiment with its features [+distant] and [−unique]. This grammaticalization process does not involve semantic bleaching. On the contrary, it is exactly the semantics of specific CLs that enables them to acquire contrastive function.

In contrast, the Vietnamese general CL *cái* is semantically so general that it is able to combine with almost any count noun irrespective of its semantics. This clearly contributes to its frequency, which makes it a forerunner in grammaticalization in the CL system. Thus, it has obtained a contrastive function by a path which is not available to specific CLs, i.e., it has entered a new syntactic slot.

Though much research is required to fully understand the exact mechanisms of grammaticalization from CL to contrastive marker in different languages, one can already see at this stage that grammaticalization in the languages discussed in this paper does not necessarily involve continuous semantic bleaching. Instead, the process that a CL undergoes largely depends on whether it is a general or specific CL. Which type of CLs would process further largely depends on the context and the constructions that they are in. In spite of this, the contrastive function of CLs is found in various languages, including three EMSEA languages.

5. Conclusions

This study started out from the question of whether CLs in Xiamen Southern Min can be associated with reference if they have no bare classifier construction [CL N] associated with definiteness/indefiniteness. To test this, we looked at the difference between specific CLs and general CLs and their referential potential in an exophoric context provided by the "Hidden color-chips" task in an environment characterized by the three factors of distance, visibility, and uniqueness. This method contrasts with previous studies based on endophoric contexts as they are found in narratives (Erbaugh 2002, 2013; Erbaugh and Yang 2006). Our quantitative and qualitative analyses showed that the use of specific vs. general CLs is associated with reference in the following specific pragmatic contexts:

I. Compared with using a bare noun, speakers are clearly more likely to use the DEM construction when the object is clearly visible to the speaker.
II. In cases with [+unique], speakers are significantly more likely to use a specific CL when the object has [−distant] than when it has [+distant].
III. In cases with [+distant], speakers are significantly more likely to use a specific CL if the referents have [−unique], and a general CL if they have [+unique].

Additionally, the qualitative analysis shows that if the object has [−unique] and the first reference with a general CL is not sufficient to identify it, a specific CL is much more likely to be used in later mentions (Effect IV).

Effects I and II can be explained by the fact that referents which are cognitively more accessible (i.e., close and visible) tend to be further specified. Effect III and the qualitative analysis reveal that specific CLs can deictically mark contrast in the cases of [−unique] and [+distant]. The functional extension from specific CL to contrastive marker is arguably

motivated by the insufficiency of referential clues in the demonstrative construction in the specific context with [+distant] and [−unique].

Moreover, this paper briefly introduced another environment [ADJ CL N] where specific CLs are used for contrast in XSM and illustrated the contrastive use of CLs in three other languages, i.e., Thai, Vietnamese, and Ponapean. This illustration shows that both specific and general CLs are potential sources of contrastive markers, but their grammaticalization follows two mutually exclusive pathways.

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Appendix A

Table A1. Items used in the experiment and parameters they are associated with.

First Round:						
Item Number	**Distance**	**Visibility**	**Uniqueness**	**Expected CL Type**	**Item**	**Expected CL**
1	close	unblocked	unique	general	pen case	*é*
2	close	blocked	unique	specific	soap	*dě*
3	close	unblocked	unique	specific	cap	*dǐng*
4	close	unblocked	non-unique	specific	card	*dniū*
5	mid-far	unblocked	unique	specific	umbrella	*gī*
6	mid-far	unblocked	unique	general	box	*é*
7	far	blocked	unique	specific	cellphone	*dě*
8	far	unblocked	unique	specific	towel	*dě*
9	far	unblocked	non-unique	specific	book	*bǔn*
10	far	unblocked	unique	general	wallet	*é*
Second Round:						
Item Number	**Distance**	**Visibility**	**Uniqueness**	**Expected CL Type**	**Item**	**Expected CL**
1	close	unblocked	unique	general	cup	*é*
2	close	blocked	unique	specific	chocolate	*dě*
3	close	unblocked	unique	specific	book	*bǔn*

Table A1. *Cont.*

Second Round:						
Item Number	**Distance**	**Visibility**	**Uniqueness**	**Expected CL Type**	**Item**	**Expected CL**
4	close	unblocked	non-unique	specific	tangerine	*liáp*
5	mid-far	unblocked	unique	specific	leaf	*hióh*
6	mid-far	unblocked	unique	general	flask	*é*
7	far	blocked	unique	specific	banana	*tiáu*
8	far	unblocked	unique	specific	sponge	*dě*
9	far	unblocked	non-unique	specific	paper	*dniū*
10	far	unblocked	unique	general	paper bag	*é*

Notes

[1] Southern Min is a Sinitic language that is mainly spoken in Fujian, Guangdong, Hainan, and Taiwan and generally has 30 to 40 CLs in use (Chappell 2018).

[2] The romanization is adapted by the authors, using the Minnan Dialect Phonetic Alphabet introduced in Lin (2007).

[3] Given that nouns in classifier languages are often interpreted as transnumeral, which need either individuation (Greenberg 1972) or atomization (Chierchia 1998), their use as explicit markers of singular in the context of demonstratives is typologically remarkable. It remains an open question as to what extent this could be seen as another type of singulative (Corbett 2000), which is not based on singling out individuals from collectives but rather individual items from transnumeral nouns.

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Rethinking the Description and Typology of Cantonese Causative–Resultative Constructions: A Dynamic Constructionist Lens

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Abstract: This article proposes a new description of Cantonese causative–resultative constructions (CRCs), constructions with two verbal elements relevant to the cause and the effect of an event respectively. We present a constructional schema for the CRC with three argument types and without using traditional categories—such as subject, object and pseudo-passivation, present various syntactic and semantic properties, and subsume constructions such as the comparative construction and numerous particle constructions under this banner. We then argue against traditional approaches to CRCs with two lexical verbs that treat the argument structure of the CRC as composed from argument structures of individual verbs (the decompositional approach); instead, CRC arguments belong to the entire construction and have only semantic orientation-based relationships with individual verbs (the holistic approach). We show how our account can shed light on Sinitic typology and the grammaticalisation mechanism of verbal particles within CRCs, particularly the extension of result verbs into a broader range of contexts to become particles. We also argue that Cantonese CRCs challenge many assumptions of serial verb typology, which typically ignore the existence of multiple layers of constructional abstraction and assume decompositional descriptions, and urge for methodological advancements in this field.

Keywords: Cantonese; syntax; construction grammar; resultatives; causatives; argument structure

1. Introduction

This paper presents a novel approach to Cantonese causative–resultative constructions (CRCs) (terminology from Yue-Hashimoto (2003)), with implications for both Sinitic and worldwide typology. An example of the construction is (1):

(1)	喊	濕-咗	幾多	包	紙巾？
	haam3	sap1-zo2	gei2do1	baau1	zi2gan1
	cry	wet-PFV	how many	packet	tissue

'How many packets of tissue did (he) wet by crying?' [SEA112].

This example (1) is a single clause with two predicative components: the first verb, *cry*, is the cause of the second verb, *wet*. 'Typical' CRC examples such as (1) put together one dynamic and one stative verb, but our definition of CRCs encompasses a myriad of other construction types, such as the following directional particle (2) and causative verb (3) constructions:

(2)	落	低	個	窗簾
	lok6	dai1	go3	coeng1lim2
	descend	low	CLF	curtain

'Lower the curtains.' (Yiu 2013).

(3)	成	個	電影	業	俾	你	搞	輾	晒
	seng4	go3	din6jing2	jip6	bei2	nei5	gaau2	waang1	saai3
	whole	CLF	film	industry	AGT	2SG	make	ruined	all

'The entire film industry has been ruined by you.' [SEA159].

In Chinese linguistics, the structure and semantics of these constructions have been an evergreen topic. In China, the resultative component of such constructions is typically known as a 'complement', and there are detailed investigations of syntacto-semantic properties of lexical items appearing in this slot in different varieties of Chinese across time and space (e.g., Yue-Hashimoto 1993, 2003; Cheung 1972; Wú 2003, 2005). In Western traditions, these constructions have been explored for their insights on argument structure (e.g., Cheng and Huang 1994; Cheng et al. 1997; Wang 2001; Lau and Lee 2015, 2021) and their role in the grammaticalisation of verbal particles (e.g., Yiu 2013; Chor 2010, 2013, 2018).

Outside Chinese linguistics, these constructions have received less attention. For example, Chappell et al. (2007) wrote that, 'an area in which the study of Sinitic languages can afford a rich contribution to typology is that of verb complementation . . . These structures show great diversity across the dialect spectrum in China yet are little known outside of Chinese linguistic circles.' Nonetheless, at least two strands of worldwide typological research have examined this construction: Talmyan verbal semantics (e.g., F. Li 1997; Lamarre 2003) and serial verb typology (Aikhenvald and Dixon 2006; Haspelmath 2016).

These traditions differ substantially in assumptions, terminology, framing and research foci. In this paper, we present and defend our own approach to CRCs which draws from many of these approaches but departs substantially from all of them. Our general approach, while eclectic, is mainly inspired by Western dynamic constructionist approaches that view syntax as an inventory of signs at various levels of abstraction (e.g., Croft 2007; Diessel 2019), and supplemented with Chinese-origin notions, particularly *semantic orientation*, which has received scant attention in the West.

This paper has two main goals. The first is to argue that the constructions under our banner of *causative–resultative construction* (CRC) form a coherent category. Most traditions do not recognise this exact constructional level; they use only terms that are either supersets (e.g., *complement, secondary predicate*, *serial verb*) or subsets (e.g., *resultative compound/complement*, *directional complement*) of the CRC. We propose a construction schema for the CRC with various semantic and syntactic properties. Dispensing with traditional notions such as 'subject', 'object' and 'pseudo-passive', our schema accounts for a wide variety of constructions under a single schema, including such subconstructions as resultative, directional, phase and causative constructions. Although the CRC is not without precedents in the literature, we believe our account contains the most explicit definition of and argumentation for this constructional level.

The second purpose is to argue against traditional views, commonplace in most contemporary Western descriptions and typology, that the causative–resultative is composed of two separate argument structures (the *decompositional* approach). After presenting a range of examples not amenable to the decompositional analysis, we argue that a single *argument structure construction* (Goldberg 1995; Goldberg and Jackendoff 2004) suffices to describe the Cantonese CRC (the *holistic* approach). We show that phenomena previously described in terms of individual argument structures can be captured by our approach with the notion of *semantic orientation*, and finally present a typology of Cantonese CRC argument structures that capture all constructions previously described in compositional approaches such as Lau and Lee (2021), while also successfully accommodating argument structure configurations *not* captured in previous typologies.

As we will argue, these two points pose substantial difficulty for typology but also open new avenues for investigation. Methodologically, the higher-level CRC construction's existence urges typologists to rethink what constitutes a 'construction' in typology, which often prides itself on having developed from whole language typology to typologies of constructions (Bickel 2007). The difficulties faced by the decompositional approach

also call into question some definitions and proposed universals of serial verb constructions. However, the higher-level CRC construction also provides evidence to distinguish between the two competing accounts of the relationship between SVC symmetry and grammaticalisation in Bisang (2009) and Aikhenvald and Dixon (2006). Semantic orientation analysis also sheds light on the grammaticalisation mechanism of some verbal particles in Chinese, and our work has potential implications for synchronic comparison across Sinitic varieties.

This paper is structured as follows. In Section 2, we will review several research traditions and how they have traditionally dealt with the construction that we discuss in this paper. In Section 3, we define the causative–resultative construction in Cantonese and discuss how it applies to various subconstructions described in the literature. In Section 4, we discuss the challenges that the Cantonese causative–resultative construction poses for decompositional accounts of argument structure. Section 5 discusses the consequences of the results of Sections 3 and 4 and expands the analysis to sketch how the constructional schema discussed in Sections 3 and 4 may apply to other varieties of Chinese and aid in the comparison of differences between varieties. Section 6 concludes.

In contrast to most previous approaches relying on elicited data, our paper uses exclusively natural discourse data to provide a more comprehensive picture, especially as some examples are difficult to understand without context.[1] Examples are mainly taken from the Cantonese Universal Dependencies corpus (Wong et al. 2019) and Google Search, which allows us to locate rarer constructions, many of which are crucial to our analysis.[2] Universal Dependencies sentences are accompanied by a code of the form [UDXXXX], where XXXX indicates sentence number in the corpus, while those from Google are accompanied by a code [SEAXXX] pointing to the relevant line in a spreadsheet given as Supplementary Materials. Premodern examples are taken from the Chinese Basic Ancient Texts Database (Beijing Erudition Digital Research Center 2017).

2. The Chinese Causative–Resultative Construction in Different Linguistic Traditions

In this section, we will review several research traditions that have examined the causative–resultative construction, particularly in regard to our two main points: whether they posit a CRC-like category, and whether they gravitate towards the holistic or decompositional approach to argument structure for resultatives with two lexical verbs.

2.1. The Chinese Structuralist Tradition

Most linguists in the Chinese structuralist tradition consider V1s in CRCs as the (main) verb. The V2 is known as 補語 *bǔyǔ* ('complement'). Originally a translation of *complement* as used for post-verbal adjectival predicates in English linguistics (e.g., Quirk et al. 1985), it has since expanded to refer to any post-verbal element other than the 'object' 賓語 *bīnyǔ* (Jīn 2009). Thus, *bǔyǔ* is typically much wider than CRC. Cheung (1972) exemplifies this tradition in Cantonese.

Within this tradition, some proposals have proposed subsets of complements that resemble our CRC. Rejecting *bǔyǔ* altogether, Jīn (2009) considers 'complements' that depend semantically on the subject or object as 'secondary predicates', including most constructions under our CRC. Takahashi's (2021) *kinōsei hogo* 機能性補語 'functional complement' is even closer; though Takahashi only explicitly includes resultative and directional complements, the definition can easily encompass the other constructions under our CRC. In addition, many Chinese structuralists treat the potential structure (see Section 3.1) as a separate construction, e.g., Zhū's (1982) 'potential complex verb-complement structure'. We consider the potential resultative construction a *form*, i.e., subconstruction, of the CRC, so studies on these constructions are about the CRC, minus the non-potential form.

With some exceptions (e.g., Yuán 2001; Jīn 2009), the Chinese structuralist tradition typically does not regard *bǔyǔ* as verbs with their own argument structure, thus following the holistic approach.

2.2. The Talmyan Tradition in Worldwide and Sinitic Typology

The Talmyan tradition of verb lexicalization patterns (Talmy 1985) resembles the Chinese structuralist tradition in treating V1 as the main verb and V2 as the *satellite*.[3] Originally focused on motion verbs, it has come to encompass other verbal semantic properties such as cause, result and phase (Talmy 2000), similar to Goldberg and Jackendoff (2004), who regard English directional phrases as resultative. Thus, Talmyan studies frequently regard directional, phase and resultative 'satellite' constructions in Chinese as subsets of a single construction resembling our CRC. This approach is adopted in many diachronic and typological approaches in Chinese linguistics (F. Li 1997; Lamarre 2003). Yiu (2005, 2013) represents this tradition in Cantonese, though she does not extend her discussion to non-directional verbs.

As this tradition focuses on the verb, there is no explicit position on argument structure, though most seem to adopt a holistic approach implicitly.

2.3. Contemporary Western Descriptive Traditions

Contemporary Western and Western-influenced descriptions, both generative and functional-cognitive, tend to regard Chinese resultative constructions as compositionally formed VV compounds (e.g., Thompson 1973), whereas phase and directional complements are treated as particles modifying verbs with simple argument structures. Matthews and Yip (2011) influentially adopt this approach. Therefore, there is typically no unified CRC, a position explicitly defended by Huang (2007).

The exact details of the argument structure composition differ. In the 'morphological' or 'lexical' approach, the thematic role structures of the verbs are composed (e.g., Huang 2007); in the 'syntactic' approach, it is grammatical relations, i.e., subject and object (e.g., Her 2007; Matthews 2006; Lau and Lee 2015).[4] Some authors seem to compose on multiple levels (e.g., Chow 2011, 2012). Many authors adopt a hybrid of the holistic and decompositional approaches; they supplement the two verbs' individual argument structures with a construction-level argument structure that is not simply a sum of individual ones. For Chang (2003) and, in Cantonese, Lau and Lee (2021), referents have *thematic roles* assigned by the individual verbs and *event roles* in the wider resultative construction. Similarly, Huang (2007) argues that referents are *event participants* of individual verbs and *constructional participants* of the wider construction. Similar positions are widespread in 21st-century accounts (e.g., C. Li 2013; Fong 2018). Cheng and Huang (1994) come closest to the holistic approach. For them, arguments of the resultative construction may be required by the composite event structure even if they are not arguments of the individual verbs.

2.4. Serial Verb Constructions in Worldwide Typology

The literature on serial verb constructions in worldwide typology and descriptions based on this tradition often discusses Chinese SVCs. The definitions of SVCs vary, ranging from very wide (e.g., Li and Thompson 2009), moderately wide (Matthews 2006), to fairly narrow (e.g., Chor 2018), but they always require that a clause denote a single event (or some formal correlate of single eventhood), and that the two verbs have no explicit marking of coordination or subordination, which CRCs satisfy. Major works include Aikhenvald and Dixon (2006) (including Matthews' (2006) chapter on Cantonese), Durie (1997), Bisang (2009) and Haspelmath (2016).

Works in this tradition typically assume each language variety has a finite, countable number of SVCs. They first identify the SVCs in each language and then classify them using formal and semantic properties. Generally, this tradition only recognises a category far wider than the CRC, i.e., the SVC (which encompasses many other construction types in Chinese), plus much narrower constructions such as causative and cause-effect SVCs (which fall under our CRCs in Cantonese).

A recurring theme of this tradition is *argument sharing*—how arguments simultaneously belong to the argument structures of the two verbs involved. It is frequently noted

that the vast majority of SVCs exhibit some argument sharing; in fact, some authors define SVCs to exhibit argument sharing (e.g., Foley and Van Valin 1984) or even a certain type thereof (e.g., Ameka 2005). Thus, this tradition falls squarely into the decompositional approach. Lovestrand (2021) reviews this tradition and additionally details several conceptual difficulties it faces, including some that interlock with our arguments.

3. Properties and Scope of the Causative–Resultative Construction

3.1. Definition and Terminology

Before introducing our constructional schema for the CRC, we define it as follows:

> A *causative–resultative construction* is a construction with two verbal elements that has an affirmative and a negative potential form. In the affirmative potential form, 得 *dak1* appears between the two elements, indicating the possibility of the event expressed by the clause. In the negative one, 唔 *m4* appears between the two elements, indicating impossibility.[5]

Example (4) shows, for example, that the construction with the two verbal elements 追 *zeoi1* 'chase' and 到 *dou2* 'accomplishment' is a CRC:

(4) a.

怪	唔	之	得	追	唔	到	女仔	啦！
gwaai3	m4	zi1	dak1	zeoi1	m4	dou2	neoi5zai2	laa1
blame	NEG	ASSOC	POT	chase	NEG	DOU	girl	SFP

'No wonder why (you) can't successfully court any girls!' [UD605]

b.

佢	追	得	到	女仔 . . .
keoi5	zeoi1	dak1	dou2	neoi5zai2
3sg	chase	POT	DOU	girl

'He managed to court a girl successfully . . . ' [SEA122].

The term *causative–resultative construction* references the roles of the two verbal elements; one is relevant to the cause of the event, and the other to the result. Our label and definition sidestep two hot-button issues in the literature: wordhood and headedness. We use the word *construction* in the CxG sense of any conventional form-meaning pairing (Croft 2007) and remain equivocal on whether the two verbal elements form a word, unlike terms such as *resultative compound*. Moreover, unlike terms such as *secondary predicate*, *complement* or *satellite,* we do not imply that the first verbal element is the head, which is hotly debated (e.g., Tai 2003; C. Li 2009).

The term *verbal element* indicates only that the form exhibits verb-like properties *when used in this construction*; the element may not be classified as a verb in traditional word-class systems. In dynamic constructionist approaches (Croft 2007), categories such as 'noun' and 'verb' are not inherent to the forms, but emergent from patterns in which constructional slots the forms may appear. Nevertheless, the rest of the paper will use *verb* for brevity.

To qualify as a CRC, *both* positive and negative potential forms must exist, since, in Cantonese, the affirmative potential form exists outside of the CRC (cf. Chappell and Peyraube 2015).[6] In the following example, (a) is not a causative–resultative construction, since it only has the affirmative potential form. Although (c) is an acceptable sentence in Cantonese, it *cannot* be interpreted as the negative potential form of (a):[7]

(5) a.

係	咪	叫	佢	讀書	就	可以	解決	所有	問題?
hai6	mai6	giu3	keoi5	duk6syu1	zau6	ho2ji5	gaai2kyut3	so2jau5	man6tai4
COP	NEG.COP	tell	3sg	study	then	can	solve	all	problem

'Can telling them to study solve all problems?' [SEA001]

b.

諗	落	佢	老竇	叫	得	佢	讀書 ...
nam2	lok6	keoi5	lou5dau6	giu3	dak1	keoi5	duk6syu1
think	down	3sg	dad	tell	POT	3sg	study

'Thinking along these lines, if his dad felt like it was necessary to tell him to study ... ' [SEA002]

c.

叫	佢	唔	讀書	就	出	去	搵	工作
giu3	keoi5	m4	duk6syu1	zau6	coet1	heoi3	wan2	gung1zok3
tell	3sg	NEG	study	then	go out	go	find	work

'to tell him to get a job if he doesn't study/
*If you can't manage to tell him to study, go out and get a job.' [SEA003].

Under this definition, the CRC includes prototypical resultatives in Cantonese, many verb-particle constructions (including resultative, directional and some quantifying particles), some causative constructions, and the comparative construction. Details of each construction will be discussed in Section 3.3. Supplementary Materials discusses constructions that apparently resemble the CRC but are excluded from it.

3.2. The General Schema and Basic Properties

The range of constructions considered CRCs under our definition in Section 3.1 exhibit a cluster of shared syntactic and semantic properties, which makes the CRC a useful category for description. This section summarises these properties, which will be elaborated on in Section 3.1. The CRC's form may be summarised by the following constructional schema, and by Figure 1 (note that the positions of ArgA and ArgN are flexible rather than fixed in their positions within this schema, as will be described later):

(ArgC) V1 (*m4*) (*dak1*) V2 [ArgA]* (V3) (V4) (ArgN)

a. ArgC (ArgCause) is the referent most relevant to the cause of the event;

b. ArgA (ArgAffectee) is the referent most affected by the event, i.e., the affectee;

c. V2, V3 and V4 are verbs relevant to the result of V1, which is the cause of the event (cf. Y. Li 1995). Note that the numbers, such as most conventions, denote the sequence of appearance;

d. ArgN (ArgNeither-Cause-Nor-Affectee) is a referent that is non-cause, non-affectee;

e. Brackets indicate optionality (*note: [] is used around ArgA because it is rarely absent. See Section 4.4.4 for an example where no arguments are present).

For 'typical' resultatives, rough equivalents to V1/V2/ArgC/ArgA are widely used in Western descriptive traditions under different names, such as 'causer'/'causee' and 'initiator'/'target of action' (e.g., Y. Li 1995; Cheng and Huang 1994; Her 2007; C. Li 2013; Lau and Lee 2021).[8] The applicability of these notions to other constructions under the CRC will be justified in Section 3.3. The following examples illustrate the notation:

(6)

其他	同事	呢，	都係	返	返	埋	去
[kei4taa1	tung4si6	ne1],	dou1hai6	faan1	faan1	maai4	heoi3
[ArgC=ArgA]				V1	V2	V3	V4
other	colleague	TOP	still	return	return	approach	go
自己	個	座位	嗰	度			
[zi6gei1	go3	zo6wai2	go2	dou6]			
[ArgN]							
REFL	CLF	seat	DEM	place			

'Other colleagues, please do return to your seats anyway ... ' [UD0673].

(7)	阿爺	大家樂	見	唔	倒	我哋	呢
	aa3je4	Daai6gaa1lok6	gin3	m4	dou2	ngo5dei6	ne1
	ArgC		V1	*m*	V2	ArgA	
	grandpa	Café.de.Coral	see	NEG	DOU	us	SFP

'Grandpa could not see us at Café de Coral.' [UD0234]

(8)	就	搵	返	嗰	橛	出	嚟
	zau6	wan2	faan1	[go2	gyut6]	ceot1	lai4
		V1	V2	[ArgA]		V3	V4
	then	search	return	DEM	CLF	exit	come

'then find that piece out!' [UD0186].

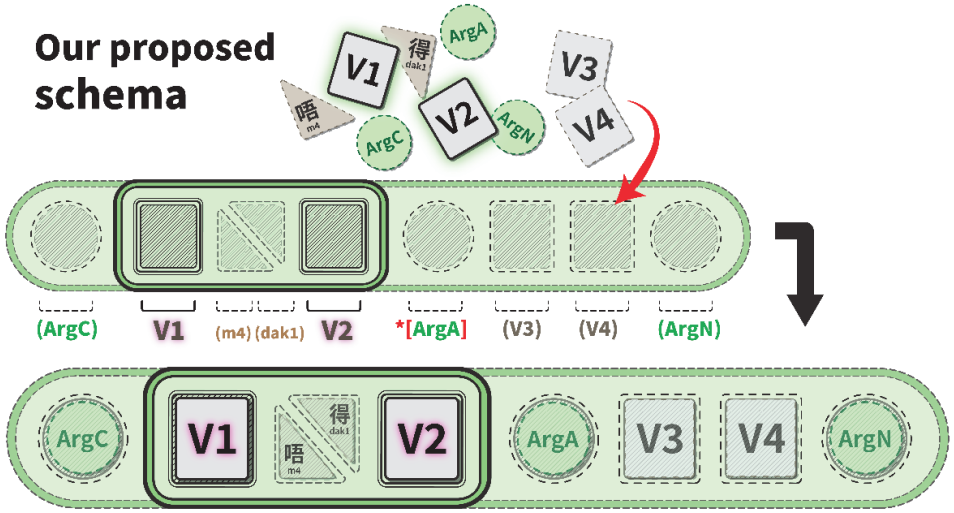


Figure 1. This is a visual representation of our proposed schema as "slotboards". All elements in our schema are items 'slotted into' one 'slotboard' (to be further explained in Section 4). Slots and respective items in a solid line denote mandatory items in a CRC, while those in dotted lines are optional. The words 得 *dak1* and 唔 *m4* are the markers for the affirmative and negative potential forms respectively. As depicted in the diagram, the minimal CRC is "V1 V2", while the maximal CRC is "Arg 1 V1 m4 dak1 V2 ArgA V3 V4 ArgN". (*note: [] is used around ArgA because it is rarely absent. See Section 4.4.4 for an example where no arguments are present).

In (6), the other colleagues are both the cause and main affectee of the act of returning. The fact that the colleagues have approached and returned to their own seats is an effect of their act of returning. In (7), the would-be cause is the grandfather, and the affectees 'us'; however, the negated V2 *dou2* suggests that V1 was unsuccessful, and thus its effect (i.e., 'our' location being known to Grandpa) is absent.

Using the above schema and terminology, some formal properties of the construction noted in the literature (e.g., Cheung 1972; Matthews 2006; Matthews and Yip 2011; Wú 2003, 2005; Yiu 2005, 2013; Yue-Hashimoto 2003; Lai 2018) are as follows:

Modification properties:

a. V1 may take adverbial modifiers or, in directional constructions, aspect markers. Occasionally, V1 may even take additional result verbs before the *dak1*/*m4* (these are not labelled with numbers to ensure that the first result verb after *dak1*/*m4* is always labelled identically);

b. V2 may take aspect markers if V3 and V4 are absent. However, V3/V4 do not, and none of these can be modified by adverbial modifiers.

Word order properties:[9]

a. ArgC is always placed before the verb;

b. ArgA may be placed in various positions in the clause. The placement of ArgA depends on information structure, pronominal vs. full noun phrase and possibly other factors. The only positions where it never appears are between V1 and *dak1*, and between *m4* and V2. Moreover, outside of path resultatives, it is rarely between V1 and V2 in non-potential forms, and it is never between V1 and V2 when ArgN is present;[10]

c. ArgN may also be placed before ArgC or between ArgC and V1, but not between V1 and V2;

d. ArgC and ArgA may be the same argument; in that case, the ArgC=ArgA must be placed before V1.

In addition, CRCs also have the following semantic properties:

Relational-semantic properties:

a. The verb series is culturally construed as a coherent event (Matthews 2006; see also Section 5.1);

b. V2+ are semantically dichotomous: either affirmative or negative, with no degrees;

c. Because V1 describes a cause and V2 is relevant to the effect of V1, the CRC must describe a dynamic event rather than a state (see Section 3.3 for how certain CRCs describing states are interpreted metaphorically as dynamic). This is unless *m4* or *dak1* are present, i.e., the construction is in the potential form, in which case the construction is stative since it expresses potential (or lack thereof);

d. V1 semantically orients to ArgC, V2+ semantically orients to ArgA and/or V1, and all verbs semantically orient to ArgN (see Section 4.3).

Of these properties, (b) follows from the fact that V2+ cannot be modified by degree adverbs. CRC-like constructions with degree adverbs modifying V2 lack negative potential forms, in conflict with the definition in Section 3.1 (see Supplementary Materials for examples). (d) will be explained and justified in Section 4.3.

It should be noted that this schema only describes facts that hold for all subconstructions of the CRC and does not aim to account for all facts of subconstructions, such as why particular V1–V2 combinations are only attested in the potential form, i.e., with *dak1* or *m4*, and never outside of it. This is consistent with a network-based constructionist approach (e.g., Diessel 2019; Croft 2007), where constructions of varying abstraction and schematicity are represented, and concrete lower-level constructions can have specific properties and co-occurrence restrictions not observed with the higher-level construction. We leave it to future research to examine the subconstructions and delineate what exactly leads some elements of the construction to co-occur more frequently with others.

The rest of this section will clarify and justify two aspects of our account diverging from virtually all previous ones: the lack of grammatical relations and the addition of ArgN.

3.2.1. Lack of Grammatical Relations and Voice Operations

This description departs from virtually all previous accounts in making no reference to traditional grammatical relation-related notions such as subject, object or passivation. While ArgC/ArgA-like categories are widely known and used in many Western accounts, those accounts still map them to subject/object and word order is described in subject/object terms. We reject this approach, presenting word-order properties of ArgC/ArgA directly.

In most previous accounts, the 'subject' is preverbal, and the 'object' is always described as being placed after V1 and usually after V2. However, when the 'object' precedes all the verbs, this is either a 'pseudo-passive' (sometimes also known as a 'middle construction' in studies on Mandarin, e.g., Xiong 2018), with the 'object' becoming the 'subject' and 'subject' suppressed, or 'object fronting' (e.g., Lau and Lee 2015). Some examples are (9–11); by Lau and Lee's definitions, (9) is pseudo-passive while (11) and (10) are object fronting:

(9)

中國	製	玻璃	「打	唔	爛」
zung1gwok3	zai3	bo1lei1	daa2	m4	laan6
China	made	glass	hit	NEG	break

'The China-made glass could not be broken.' [SEA125].

(10)

呢	啲	我	搞	掂	啦！
ni1	di1	ngo5	gaau2	dim6	laa1
DEM	CLF	1sg	do	well	SFP

'Let me finish these up!' [SEA049].

(11)

佢	晚餐	食	唔	落
keoi5	maan5caan1	sik6	m4	lok6
3sg	dinner	eat	NEG	down

'She cannot manage to eat dinner (i.e., doesn't have the appetite).' [SEA054].

However, in topic-prominent languages such as Chinese, word order can be adequately described in topic-comment terms without grammatical relations, so there is little motivation for fronting or pseudo-passive processes couched in grammatical relations (LaPolla 1990, 1993, 2009; Li and Thompson 1976). In fact, for certain V1-V2 combinations, especially in potential forms, the 'pseudo-passive' can be *more* common than the 'active' form. We conducted a mini study of the negative potential form 打唔爛 *daa2 m4 laan6* (hit NEG break, 'cannot break'). Out of 51 results on Google (excluding duplicates and examples from Cantonese textbooks and linguistic research), only 11 (21.7%) turned out to have ArgCs, explicit or implicit (95% Clopper-Pearson CI: (0.113, 0.353)). It is unnecessarily complicated to posit an underlying two-argument clause from which a single-argument pseudo-passive is then derived.

Our schema and properties above can describe these phenomena without any grammatical relations or syntactic operations. 'Pseudo-passive'[11] and 'object fronting' simply occur when ArgA appears before V1, as opposed to between V1 and V2 (12a) and after V2 (12b), with 'pseudo-passives' additionally requiring that ArgC be semantically absent (not just implicit):

(12) a.

堆	黑	煙	入面	躝-咗		
deoi1	hak1	jin1	jap6min6	laan1-zo2		
pile	black	smoke	interior	crawl-PFV		
個	成	身	白	色	嘅	人
go3	seng4	san1	baak6	sik1	ge3	jan4
CLF	whole	body	white	colour	ASSOC	person
出	嚟					
ceot1	lai4					
out	come					

'From inside the pile of black smoke crawled out
a person whose entire body was white.' [SEA060].

b.

做	咩	嘢	都	好，	
zou6	me1	je5	dou1	hou2,	
do	what	thing	also	good	
都	需要	真心	做	好	佢
dou1	seoi1jiu3	zan1sam1	zou6	hou2	keoi5
all	need	sincere	do	well	3sg

'Whatever you do, you need to do it well sincerely.' [SEA053].

Under our account, we may simply state that ArgA precedes the V1 when it is the topic (e.g., (9–10)) or the secondary topic (e.g., (11)), and follows the V1 otherwise (12); no "fronting" operation is needed. An additional advantage of our account is that it predicts the existence of cases where ArgC is absent, but ArgA remains post-V1, which we will show in Section 4.4.1.

One may ask why we do not simply redefine 'subject' and 'object' as ArgC and ArgA. We return to this question in Section 3.3 when discussing 'inverted' resultatives.

3.2.2. The ArgN

Our distinction between ArgA (affectee) and ArgN (non-cause, non-affectee) is fully novel; both, most of the time, are traditionally 'objects'.[12] The ArgN 'your seats' in (6) is the goal of a directional verb. More examples are as follows:

(13) a.

當	你	學	識	釣	魚	後
dong1	nei5	hok6	sik1	diu3	jyu2	hau6
	ArgC	V1	V2	ArgN		
when	you	learn	know	hook	fish	after

'once you have learnt to fish' [SEA047].

b.

你	中文	學	唔	好，		
nei5	zung1man2	hok6	m4	hou2		
ArgC	ArgN	V1	*m4*	V2		
you	Chinese	learn	NEG	good		
唔	代表	你	英文	學	唔	到
m4	doi6biu2	nei5	jing1man4*2	hok6	m4	dou2
		ArgC	ArgN	V1	*m4*	V2
NEG	represent	you	English	learn	NEG	DOU

'Just because you can't learn Chinese well doesn't mean you won't manage to learn English.' [SEA048].

c.

找	返	你	三十
zaau2	faan1	nei5	saam1sap6
V1	V2	ArgA	ArgN
give change	return	you	thirty

'give you thirty dollars back as change' [UD0050].

Generally, when ArgN is present, ArgA does not appear between the verbs:

(14) a.

不過	我	用	佢	醫	返	好	隻	手
bat1gwo3	ngo5	jung6	keoi5	ji1	faan1	hou2	zek3	sau2
but	1sg	use	3sg	cure	go back	well	CLF	arm

'But I used it to cure my arm.' [SEA155].

b.

* 醫	我	唔	返	隻	手
ji1	ngo5	m4	faan1	zek3	sau2
cure	1sg	NEG	go.back	CLF	arm

'cannot cure my arm' (unattested regardless of ArgC presence, ArgA and ArgN identity).

The only exception is *gu2 dou2* ('guess achieve'; Lai 2018):

(15)

估	佢	唔	到	係	乜水
gu2	keoi5	m4	dou2	[hai6	mat1seoi2]
V1	ArgA	m4	V2	[ArgN]	
guess	3sg	NEG	DOU	COP	who

'cannot guess who they are' [SEA036].

V2-ArgN sequences are often conventionalised sequences with a non-referential ArgN (note that in (16), the CRC is within a relative clause relativised on the ArgA, and hence we have labelled the lexical head as ArgA):

(16) a.

有	種	講	唔	出	口	嘅	失望
jau5	zung2	gong2	m4	ceot1	hau2	ge3	sat1mong6
		V1	m4	V2	ArgN		ArgA
EXST	type	say	NEG	exit	mouth	ASSOC	disappointment

'I have an unspeakable disappointment
(lit. a kind of disappointment that cannot be verbalized out of my mouth).'
[SEA037].

b.

聽	完	返	唔	轉	頭
teng1	jyun4	faan1	m4	zyun3	tau4
		V1	m4	V2	ArgN
listen	finish	return	NEG	turn	head

'After listening to it, you can't turn back!' [SEA038].

The ArgA–ArgN distinction is a matter of pragmatics and construal, and not always predictable from thematic roles. Consider the following pair:

(17) a.

朋友	話	俾	我	知	**水塘**	**滿**	**瀉**	**水**
pang4jau5	waa6	bei2	ngo5	zi1	**seoi2tong4**	**mun5**	**se2**	**seoi2**
friend	tell	give	me	know	**reservoir**	**be full**	**spill**	**water**

'My friend informed me that the reservoir filled up, causing water to spill.' [SEA138].

b.

如果	你	個	浴缸	啲	水	滿	瀉
jyu4gwo2	nei5	go3	juk6gong1	di1	seoi2	mun5	se2
if	you	CLF	bathtub	CLF	water	full	spill

'If your bathtub's water fills up (the bathtub) and spills . . . ' [SEA139].

(17a) is about the environmental impacts of continuous rain, so the affectee is not the water, but the reservoir that can no longer hold any excess water. However, (17b) is taken from a passage on saving water, so the affectee refers to the water that went to waste.

Sometimes, when a human argument is ArgA, the item they possess is ArgN, whereas if an item appears alone, it would be ArgA:

(18) a.

跑	渣	馬	畀	人	撞	跌-咗	隻	airpod
paau2	zaa1	ma5	bei2	jan4	zong6	dit3-zo2	zek3	airpod
run	Chartered	Marathon	AGT	person	bump	fall-PFV	CLF	airpod

'I was running in the Hong Kong Marathon (sponsored by Standard Chartered) when someone bumped into (me), causing my airpods to drop.' [SEA145].

b.

但	老人家	唔	小心	撞	跌-咗	個	痰罐
daan6	lou5jan4gaa1	m4	siu2sam1	zong6	dit3-zo2	go3	taam4gun3
but	elder	NEG	careful	hit	fall-PFV	CLF	spittoon

'But the elder carelessly knocked down the spittoon.' [SEA146].

The fact that the space between the two verbs is reserved for ArgAs and disallowed for ArgNs can be seen in the following contrast:

(19) a.

五十	盒	食	佢	唔	死	仲	奇怪
ng5sap6	hap6	sik6	keoi5	m4	sei2	zung6	kei4gwaai3
fifty	box	eat	3sg	NEG	die	even more	strange

'It would be even stranger if fifty boxes aren't enough to make her die from eating.' [SEA148]

b.

唯有	同	個	通粉	say	sorry，
wai4jau5	tung4	go3	tung1fan2	say	sorry
can only	to	CLF	macaroni	say	sorry

因為	**食**	**佢**	**唔**	**晒**
jan1wai6	**sik6**	**keoi5**	**m4**	**saai3**
because	**eat**	**3sg**	**NEG**	**all**

'All I could do was to say sorry to the macaroni, because I could not eat it all.' [SEA147]

In (a), the affectee is the eater since the effect is about death (an 'inverted resultative'—see Section 3.3.1). In (b), the affectee is the macaroni, since the V2 quantifies the food (see Section 3.3.4). Never do we find cases such as (19a) where the food is between the verbs, or cases such as (19b) where the eater is.

3.3. Subconstructions of the CRC

This section will discuss seven subconstructions of the CRC, particularly with respect to the properties discussed in Section 3.2. Section 3.3.1 will discuss 'typical' resultatives with two lexical verbs, focusing on 'inverted' constructions, which we account for much more readily than traditional approaches. The rest of the section examines other subconstructions typically not analysed together with CRCs and shows that they are compatible with the definitions and properties in Sections 3.1 and 3.2, which shows the value of our CRC category; it allows us to draw generalisations about a broad class of constructions.

3.3.1. Regular and 'Inverted' Resultative Constructions

Prototypical resultatives with two verbs that can stand alone as verbs in monoverbal predicates, such as (1), are part of the CRC. However, one specific type of resultative is rel-

atively challenging to describe in traditional accounts using grammatical relations. Those are traditionally called 'causative' (Cheng et al. 1997; Lau and Lee 2015) or 'inverted'/'flip-flop' resultative constructions (e.g., Matthews and Yip 2011, p. 177; Chow 2011, 2012). In either case, the original 'subject' of the V1 is typically said to become the 'object' of the resultative construction, and the original 'object' of the V2 becomes the 'subject' of the resultative construction:

(20)

都係	貪	外國	牌子		
dou1hai6	taam1	ngoi6gwok3	paai4zi2		
also	greedy	foreign country	brand		
冇	咁	易	**食**	**死**	**人**
mou5	gam3	ji6	**sik6**	**sei2**	**jan4**
NEG	so	easy	**smoke**	**die**	**person**

'I'm just taking advantage of the fact that foreign brands don't smoke people to death so easily.' [SEA031].

Here, the 'original subject' is 'foreign brands (of electronic cigarettes)', whereas the 'original object' is 'people'; their roles then flip to become object and subject.

As our account does not assume any grammatical relations associated with particular syntactic positions, we do not need an inversion process.[13] This has multiple advantages over traditional inversion-based approaches, which face several empirical difficulties.

Firstly, 'inverted' resultatives have no actual 'non-inverted' equivalent. For example, (20) cannot be expressed in an un-inverted way:

(21)

* 你	食	死-咗	煙
nei5	sik6	sei2-zo2	jin1
2sg	smoke	die-PFV	tobacco

'smoke tobacco to death' [unattested regardless of ArgC].

The idea in (21) can only be expressed with a verb-copying construction, thereby distributing the 'tobacco' argument to a regular single-verb clause:

(22)

食	煙	食	死	你
sik6	jin1	sik6	sei2	nei5
smoke	tobacco	smoke	die	you

'smoking tobacco, smoking you to death' [SEA032]

In the above example, the 'you' and 'tobacco' can at least be the agent and patient arguments of 'eat' in monoverbal contexts. There are cases where even this does not work:

(23)

鉛芯筆	寫	壞	手勢。
jyun4sam1bat1	se2	waai6	sau2sai3
mechanical pencil	write	bad	gesture

'Writing with mechanical pencils makes your writing gestures bad.' [SEA112]

In monoverbal contexts, 'gesture' and 'mechanical pencil' cannot be the agent and patient arguments of 'write'—one is a manner, and the other is an instrument of writing.[14]

In our account, (20) and (23) simply have ArgC (foreign brands, mechanical pencils) as the cause and ArgA (people, gestures) as the affectee, similar to any other causative–resultative construction. There is no requirement that ArgC be agentive or ArgA non-agentive. In addition, (21) is unattested because the tobacco is not affected by the event and hence cannot be ArgA, nor can it be ArgN since death does not semantically orient to it (Section 4.3.3).

Second, when we look at actual discourse examples, we often find cases with no ArgC, either explicit or context-implied, and thus nothing for the ArgA to 'flip' with:[15]

(24)

唔	好	咩	都	想-着	食	好	唔	好？	
m4	hou2	me1	dou1	soeng2-zoek6	sik6	hou2	m4	hou2	
NEG	good	what	no matter	think-CONT	eat	good	NEG	good	
大哥，	咩	都	食	好	易	**食**	**死**	**人**	㗎。
daai6go1	me1	dou1	sik6	hou2	ji6	**sik6**	**sei2**	**jan4**	gaa3
big brother	what	no matter	eat	very	easy	**eat**	**die**	**person**	SFP

'Don't just think of eating all the time, okay? Dude, if you eat anything and everything, you'll easily eat yourself to death.' [SEA030].[16]

These are unproblematic in our account; there is simply a postverbal ArgA with no ArgC.

Finally, the traditional account fails to explain the absence of 'inverted' constructions such as (25), derived from (13b):

(25)

~[英文]	學	你	唔	到
jing1man4*2	hok6	nei5	m4	dou2
English	learn	2sg	NEG	DOU

'*You cannot manage to learn English.'[17]

Under traditional approaches, it is unclear why *jing1man4**2 'English', an object in sentences such as (13b), cannot be 'inverted' to become the subject of the clause. However, in our account, 'English' is not a cause in this situation, and hence cannot be ArgC.

One may argue that we may still define our ArgC and ArgA as language-specific, construction-specific 'Resultative Subject' and 'Resultative Object', thus retaining continuity to traditional categories. However, we believe these labels are misleading, given how divergent they are from the definition of 'subject' and 'object' in typology and other descriptive traditions. Generally, transitive subjects are more agentive than objects, and common criteria for relative agency (e.g., Witzlack-Makarevich and Bickel 2013) clearly show that the ArgC is less agentive in 'inverted' constructions. ArgC and ArgA do not have agency-related baggage.

3.3.2. Most Resultative and Phase Particle Constructions

Matthews and Yip (2011, p. 243) list a number of resultative particles in Cantonese, such as 好 *hou2* 'completion' (glossed 'good' in this paper), 掂 *dim6* 'decisively', 到 *dou2* 'accomplishment' (glossed DOU in this paper) and 完 *jyun4* 'to the end'. For Matthews and Yip (2011, p. 245), the possibility of the potential constructions is a defining characteristic of resultative particles, so constructions involving these particles count as CRCs in our definition:

(26) a.

睇	到	睇	唔	到	唔	係	靠	彩數
tai2	dou2	tai2	m4	dou2	m4	hai6	kaau3	coi2sou3
see	DOU	see	NEG	DOU	NEG	COP	depend	luck

'Whether you can see it or not does not depend on luck.' [SEA006].

b.

睇	得	到	外邊	係	金	黃	色
tai2	dak1	dou2	ngoi6bin6	hai6	gam1	wong4	sik1
see	POT	DOU	outside	COP	gold	yellow	colour

'I can see that the exterior is golden yellow.' [SEA007].

The adversative particle 親 *can1*, sometimes regarded as resultative (Gu and Yip 2004) and sometimes a *sui generis* particle class (Matthews and Yip 2011), also participates in CRCs:[18]

(27) a.

餓	佢	唔	親	就	得	啦
ngo6	keoi5	m4	can1	zau6	dak1	laa1
hungry	3sg	NEG	ADV	then	okay	SFP

'As long as he doesn't go hungry
(lit. he's not so hungry that it hurts him), it's fine!' [SEA008].

b.

點	會	餓	得	親	啊
dim2	wui5	ngo6	dak1	can1	aa3
how	IRR	hungry	POT	ADV	SFP

'How would one manage to go hungry?' [SEA009].

Resultative particles not listed by Matthews and Yip include 著 *zoek6* 'asleep/alight/etc.,' 通 *tung1* 'get through', 切 *cit3* 'on time', 真 *zan1* 'to achieve better result', etc.

Many resultative particles fall in what Chinese structuralists such as Cheung (1972) classify as *phase complements*, which express the degree to which the V1 was actualized rather than the actual result and might *prima facie* constitute exceptions to our statement that V2 is relevant to the result. Some of these are straightforwardly result-expressing if we refine our understanding of the V1. Take 着 *zoek6*:

(28)

點解	我	飲	完	酒		
dim2gaai2	ngo5	jam2	jyun4	zau2		
why	1sg	drink	finish	alcohol		
會	易	啲	瞓	得	着	嘅?
wui5	ji6	di1	fan3	dak1	zoek6	ge2
IRR	easy	a bit	sleep	POT	ZOEK	SFP

'Why can I go to sleep more easily after having drunk alcohol?' [SEA044].

At first, this seems to constitute a counterexample to our claim that V2 is always relevant to the result since *zoek6* tells us that the action of sleeping is ongoing, not effects of sleep such as gaining energy. However, we have evidence that *fan3* in such contexts has a meaning closer to 'get oneself to sleep'. Consider the following example:

(29)

又	失眠，	瞓	極	都	瞓	唔	著
jau6	sat1min4	fan3	gik6	dou1	fan3	m4	zoek6
again	insomnia	sleep	limit	still	sleep	NEG	ZOEK

'I have insomnia again—no matter how hard I (try to) sleep, I cannot fall asleep.' [SEA045].

The first *fan3* is *not* negated even though the writer never went asleep. Thus, reaching the state of being asleep is still the result of 瞓 *fan3*. This is an example of *coercion*: a verb gains a meaning (here, lack of actualisation) by virtue of being in a constructional environment. This is similar to F. Li's (1997) description of the word 殺 *shā* 'kill' in Mandarin, which originally implied the death of the patient in Old Chinese, but was gradually 'leached' of this meaning by participating in the CRC 殺死 *shā sǐ*.

Other phase complements denote that the event has reached a phase that produces certain results, such as 到 *dou2* and 成 *seng4* 'succeed'. Recall that in the constructional schema, we only define V2 to be *related to* the result, not necessarily the result itself; such phase complements are good examples. For example, *dou2* and *seng4* indicate that V1 was successfully performed, which is a precondition for the event's result to take place:

(30)

做	唔	成	戀人	做	唔	做	到	朋友?
zou6	m4	seng4	lyun2jan4	zou6	m4	zou6	dou2	pang4jau5
do	NEG	succeed	lover	do	NEG	do	DOU	friend

'If we cannot be lovers, can we be friends?' [SEA161].

Quite often, V1 is static, in which cases the 'result' is a *standard* that the property denoted by the stative verb achieves or not. In these constructions, V1 and V2 satisfy the semantic requirement metaphorically. If we think of the static verb as dynamic, e.g., think of 'red' as 'becoming red', then the standard expressed by V2 can be conceptualised as the result of this becoming—another example of coercion. We see this in phase complements and even conventional resultatives:

(31) a.

男朋友	話	我	襯	佢	唔	起
naam4pang4jau5	waa6	ngo5	can3	keoi5	m4	hei2
boyfriend	say	1sg	suit	3sg	NEG	HEI

'My boyfriend said I was not in his league.' [SEA046].

b.

開心	死	喇!
hoi1sam1	sei2	laa5
happy	die	SFP

'I am so happy I could die!' [SEA082].

One may ask why *dou2* is seen as a V2, but the affirmative potential form marker *dak1* is not seen as a V2 but is treated as a syntactic marker in the construction. Syntactically, one cannot have a construction that consists of V1 + *m4* + *dak1* but no other V2 (though one could in Middle Chinese), e.g., *做唔得朋友 *zou6 m4 dak1 pang4jau6* 'cannot be friends'. Semantically, when *dak1* occurs with a V2, it does not convey the success of the implied end-state of V1 but states V2 as possible. For example, 食得死 *sik6 dak1 sei2* 'eat DAK die' means that the ArgC can kill people who eat it. *Dak1* here indicates the possibility of dying, not of completing the process of eating; *dou2* cannot be used this way. Finally, *dak1* implies potentiality, whereas *dou2* does not.

3.3.3. The Comparative Construction

The comparative construction in Cantonese, which uses the V2 過 *gwo3* 'exceed', also satisfies our CRC definition:

(32) a.

有	咩	開心	得	過	買	得	抵?
jau5	me1	hoi1sam1	dak1	gwo3	maai5	dak1	dai2
EXST	what	happy	POT	COMP	buy	DAK	good value

'What can be happier than buying (things) with good value?' [SEA034].

b.

點	食	都	開心	唔	過
dim2	sik6	dou1	hoi1sam1	m4	gwo3
how	eat	FOC	happy	NEG	COMP
同	一	大	班	同事	食
tung4	jat1	daai6	baan1	tung4si6	sik6
with	one	big	group	colleague	eat

'No matter how (we) eat, it can't be as joyous as eating with a big group of colleagues.' [SEA035].

The comparative construction can be seen as a special case of the resultative, again with the V1 coerced from stative to dynamic. This is a metaphorical extension of *gwo3* 'pass' as a directional particle; however, the comparative construction patterns with non-directional resultatives syntactically (V1s cannot take aspect markers, and ArgA does not fall between V1 and V2 outside potential forms).

3.3.4. Some Quantifying Particle Constructions

Two of Matthews and Yip's (2011, p. 243) quantifying particles, 哂 *saai3* 'all' and 埋 *maai4* 'also', participate in CRCs. Examples with *saai3* are shown below:

(33) a.

點解	啲	tasks	做	極	都	做	唔	哂?
dim2gaai2	di1	taas1	zou6	gik6	dou1	zou6	m4	saai3
why	CLF	task	do	extreme	also	do	NEG	all

'Why can't I finish all the tasks no matter how much I do them?' [SEA010].

b.

唔	會	話	一	個	人
m4	wui5	waa6	jat1	go3	jan4
NEG	IRR	say	one	CLF	person
做	得	哂	所有	野	既
zou6	dak1	saai3	so2jau5	je5	ge3
do	POT	all	all	thing	SFP

'It's not like one person can finish all the stuff.' [SEA011] .

Other V2s include 夠 *gau3* 'enough', 足 *zuk1* 'enough' and 齊 *cai4* 'complete'.

These quantifying particles may quantify different elements of a sentence but are, in all cases, relevant to the result. For example, when it quantifies an argument, that argument is always the affected ArgA, such as 'tasks' in (33a). When it quantifies the V1, this quantification gives information about the result. An example is (34), again with the metaphorical extension mentioned for resultatives and comparatives:

(34)

兩	個	仔	都	似	哂	阿媽
loeng5	go3	zai2	dou1	ci5	saai3	aa3maa1
two	CLF	son	all	resemble	all	mother

'Both sons look completely like their mother.' [SEA126] (cf. Wong 2008, (21)).

Thus, quantifying results are result-related either way.

3.3.5. Some Causatives

Causatives in Matthews and Yip's (2011) sense have V1s roughly translating to 'cause' or 'make' in English.[19] Some causatives involving 整 *zing2* and 搞 *gaau2* fall into this category:

(35) a.

老豆	咁	高	lv	都	整	得	喊
lou5dau6	gam3	gou1	le1fou2	dou1	zing2	dak1	haam3
dad	so	high	level	even	CAUS	POT	cry

'You could even make someone as high-level (i.e., hard to touch) as your Dad cry?' [SEA020].

b.

無論	歌	定	戲	都	整	唔	喊	我
mou4leon6	go1	ding6	hei3	dou1	zing2	m4	haam3	ngo5
no matter	song	or	film	also	CAUS	NEG	cry	1sg

'Neither songs nor films can make me cry.' [SEA021].

Other causatives take a full clausal complement rather than a V2 and do not fall into the CRC (Supplementary Materials).

3.3.6. Some Manner Constructions

Some manner 'complements' have both potential forms and qualify as CRCs, generally when the manner can be characterised as the goal of the V1:

(36) a.

感覺	點	用	力	都	跑	唔	快
gam2gok3	dim2	jung6	lik6	dou1	paau2	m4	faai3
feel	how	use	force	still	run	NEG	fast

'I feel that no matter how much energy I use, I still can't run quickly.' [SEA126].

b.

你	跳	唔	齊	跳	唔	靚
nei5	tiu3	m4	cai4	tiu3	m4	leng3
2sg	jump	NEG	in sync	jump	NEG	pretty
就	無	得	出道			
zau6	mou5	dai1	ceot1dou6			
then	NEG	can	debut			

'You can't debut if you can't dance in sync and beautifully'. [SEA127].

Here, 'fast' is the writer's goal when running, and 'in sync' and 'pretty' are the dancers' goals when dancing. The lack of such manners can be conceptualised as the failed realisation of the desired result. The same construction in (36a) is unattested with 煮 *zyu2*, presumably because speed is seldom seen as a desired outcome of cooking.

3.3.7. Most Directional Particle Constructions

Cantonese verbs may be accompanied by up to three directional particles. The inventory of directional particles is in Table 1 (Cheung 1972; Yiu 2005, 2013).

Table 1. Directional particle paradigms in Cantonese.

a. Return	b. Location-Oriented	c. Speaker-Oriented
返 faan1 'return'	上 soeng5 'ascend' 落 lok6 'descend' 出 ceot1 'exit 入 jap6 'enter' 開 hoi1 'depart' 埋 maai4 'approach' 過 gwo3 'pass' 起 hei2 'rise' 到 dou3 'arrive'	嚟 lai4 'come' 去 heoi3 'go'

Here are some examples:

(37) a.

會	唔	會	走	得	返	埋	一齊？
wui5	m4	wui5	zau2	dak1	faan1	maai4	jat1cai4
IRR	NEG	IRR	walk	POT	return	approach	together

'Will they be able to get back together?' (i.e., be a couple again) [SEA013].

b.

心痛	得	喫	唔	落	去
sam1tung3	dak1	jaak3	m4	lok6	heoi3
heart bleed	POT	eat	NEG	descend	go

'My heart bled so much that I could not continue eating.'
(Context: The meal cost over $100.) [SEA014].

Though Yiu (2013) writes that the combination 返起嚟 *faan1 hei2 lai4* (return rise come) has no potential form, we do find examples on the Internet:

(38)

治療	中	企	得	返	起	嚟
zi6liu4	zung1	kei5	dak1	faan1	hei5	lai6
therapy	duration	stand	POT	return	rise	come

'to be able to stand back up during therapy [SEA012].

We thus still consider constructions with *faan1 hei2 lai4* to be CRCs.

Directional particles, such as those in (37a), though literally indicating direction (the celebrities metaphorically approaching each other), are strongly indicative of the resultant end state—the two celebrities becoming a couple again, and hence still highly relevant to the result. As Yiu (2013) shows, this is the case for physical directions as well. She gives the following example:

(39)

嗰	啲	嘢	放	落	檯	上
go2	di1	je5	fong3	lok6	toi2	soeng6
that	CL	thing	put	descend	table	on

'to drop those things down on the table' (O'Melia 1941, cited by Yiu (2013, p. 171)).

Notice that although *lok6* 'descend' is still used, the ArgN is the destination of descent.

Formally, directional particle constructions constitute a clear subclass of the CRC, as they differ in at least three respects mentioned in Section 3.2: aspect marker placement, ArgA placement and ArgN appearance. Nevertheless, there is still good reason to treat it with other CRCs under one construction. For example, under accounts that treat the directionals as modifiers to the verbal structure, it is unclear how to account for examples such as the following:

(40)

啲	香料	爆-咗	啲	味	出	嚟
di1	hoeng1liu2	baau3-zo2	di1	mei6	ceot1	lai4
CLF	spice	burst-PFV	CLF	aroma	go out	come

'Some aroma came out as the spice burst.' [SEA144].

In the absence of directionals, 爆 *baau3* 'burst' generally takes the thing that burst as its sole argument, so it is not clear what the spices are doing. However, if we consider this a CRC, this can be easily explained; the spice is the ArgC, and the aroma is the ArgA.

3.4. Interim Conclusion

This section gave a clear description of the sense and extension of the causative–resultative construction. The CRC label is shown to be useful because its members share numerous semantic and syntactic properties. Furthermore, directional and non-directional CRCs may be seen as two major subgroups under the CRC, since directional CRCs have clearly distinctive properties within CRCs. The next section will zero in on one aspect of our schema, the holistic approach to argument structure, which is a departure from most Western approaches, and elaborate on the semantic relationships briefly touched on in Section 4.2.

4. The Holistic Approach to Argument Structure

As mentioned above, most Western approaches approach 'regular' resultatives with two lexical verbs, such as those discussed in Section 3.3, decompositionally. Clauses or argument structures of individual verbs are thought to combine to form the entire construction's argument structure:

(41)	佢	剪	短-咗	頭髮
	koei5	zin2	dyun2-zo2	tau4faat3
	3sg	cut	short-PFV	hair

'He cut his hair short' (Lau and Lee 2021).

Lau and Lee (2021) break this construction down as follows:

NP_1	+	V_1	+	NP_2
佢		剪		頭髮
3sg		cut		hair
+				
NP_2	+	V2		
頭髮		短-咗		
hair		short-PFV		

This approach of decomposing the construction into two monoverbal constructions works well where the following properties coincide:

1. A verb is attracted to the V1 slot of the CRC as well as the sole V slot of either a simple transitive or an intransitive construction (not both). Moreover, one or both of the arguments of the CRC are attracted to this verb in both the CRC and the (in)transitive construction, and the semantic relation between the verb and the arguments is the same in the CRC and in the (in)transitive construction;
2. The above also applies to the V2 slot;
3. The CRC has no arguments other than those in 1–2;
4. The V1 and V2 have the same meaning in the CRC as in monoverbal clauses.

However, there are empirically many CRCs in Cantonese that do not fulfil these criteria (to be illustrated in Sections 4.1.1–4.1.4). In contrast, we adopt a holistic approach with no composition (or decomposition). This section will first discuss various empirical difficulties with the decompositional approach (Section 4.1), explain how our approach dispels these problems (Section 4.2), and then explain how our account can explain and extend previous findings about CRCs couched in decompositional terms (Sections 4.3 and 4.4). Figure 2a,b show a side-by-side comparison of the decompositional and holistic approaches as slotboards, and how different CRCs are respectively analysed in the two approaches.

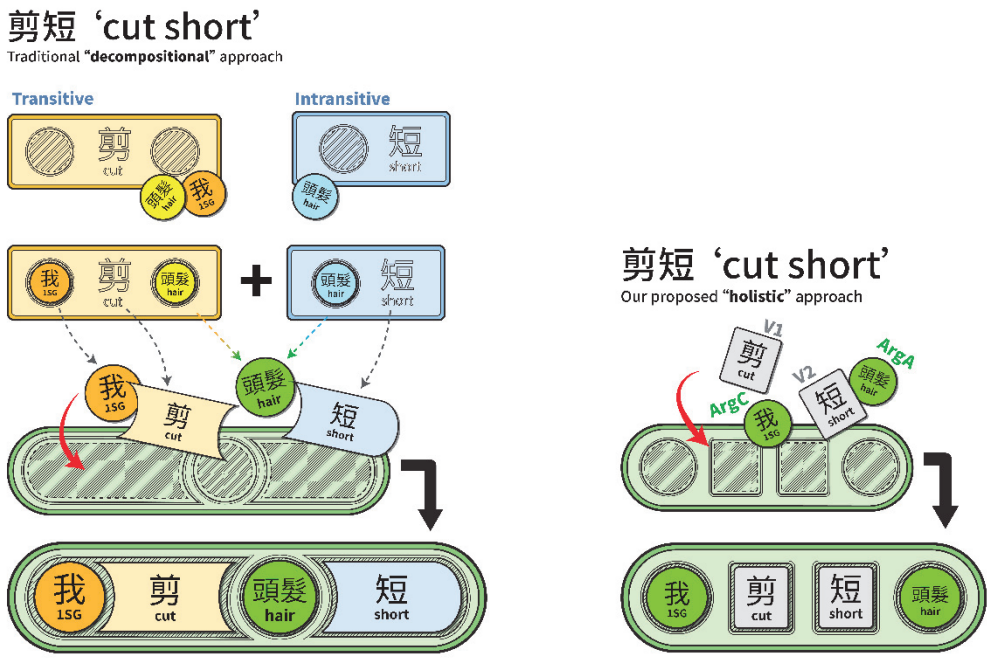


Figure 2. (**a**) The decompositional argument structure is expressed as slotting different pieces into 'slotboards': a CRC is semantically complete when all the slots on the 'slotboard' are filled with the correct pieces. The CRC 我剪短頭髮 'I cut my hair short', drawing from example (41), is decomposed into two separate argument structures of the individual verbs. Hence an orange 'slotboard' with the transitive V1 剪 *zin2* 'cut' and a blue one with the intransitive 短 *dyun2* 'short' are assembled with their respective arguments. On the CRC level, they are combined into a green 'slotboard' that accommodates the arguments and verbs in their presupposed argument positions, though not necessarily reflective of the final word order; (**b**) in our holistic approach, all elements belong to the CRC level, and the only distinctions between the elements are verbs vs. arguments.

4.1. Problems with the Decompositional Approach

4.1.1. Ambitransitive Verbs

Cantonese has many *ambitransitive verbs*, which may take one or two arguments. When they are involved in CRCs, it is indeterminate whether the 'pre-composition' clause contains one or two arguments. For example, consider 濕 *sap1* 'wet':

(42) a.

媽咪	同	我地	兩	個	**淋**	**濕-咗**	**個**	**身**	先
maa1mi4	tung4	ngo5dei6	loeng5	go3	**lam4**	**sap1-zo2**	**go3**	**san1**	sin1
mummy	BEN	1pl	two	CLF	**soak**	**wet-PFV**	**CLF**	**body**	first

'Mummy drenched both of our bodies first.' [SEA074].

b.

書包	濕-咗，	個	身	濕-咗	一	半
syu1baau1	sap1-zo2	go3	san1	sap1-zo2	jat1	bun3
bookbag	wet-PFV	CLF	body	wet-PFV	one	half

'The bookbag got wet, and my body was half wet.' [SEA075].

c.

無幾耐，	呢	個	傻佬	已經	濕-咗	身	喇
mou5gei2noi1	ni1	go3	so4lou2	ji5ging2	sap1-zo2	san1	laa3
before long	DEM	CLF	fool	already	wet-PFV	body	SFP

'Before long, this fool had already wet his body.' [SEA076].

In (42a), 淋 *lam4* is transitive, so in the decompositional approach, it must be that 媽咪 *maa1mi4* 'mummy' is its 'subject' and 個身 *go3 san1* 'the bodies' is its 'object'. However, the ambitransitive *sap1* is less clear. It may be intransitive with 個身 *go3 san1* as its 'subject' (cf. 42b), or transitive with *maa1mi4* 'mum' as its 'subject' and *go3 san1* 'the bodies' as its 'object' (cf. 42c). Most accounts assume that *sap1* is intransitive (e.g., Matthews

2006; Lau and Lee 2021), but without arguing against the alternative.[20] On the other hand, the (ambi)transitivity of V2 *sap1* does not interfere with our holistic account; the non-verb elements are simply arguments of the entire CRC construction. Figure 3 shows another side-by-side comparison of both approaches.

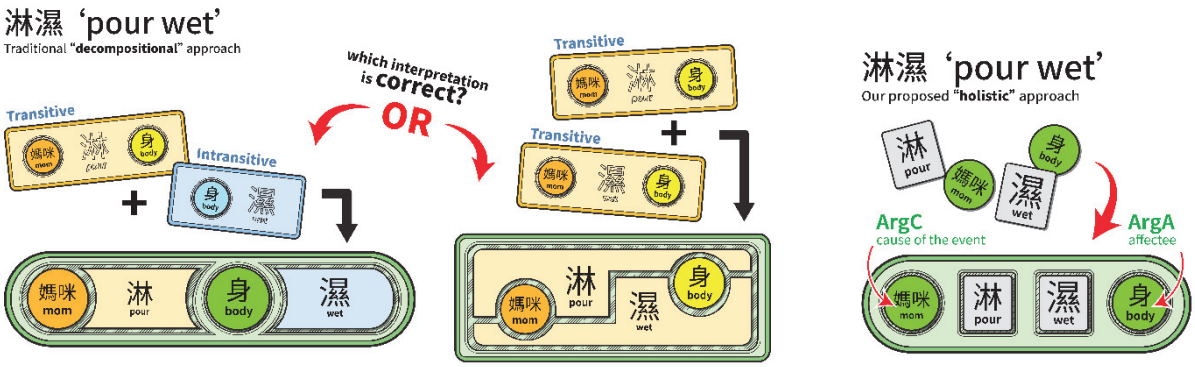


Figure 3. (**a**) In the decompositional approach, the ambitransitive V2 濕 *sap1* 'wet' gives rise to two possible analyses of argument structure. While both green 'slotboards' are complete in the end, the question of which is the correct interpretation (or rather, which interpretation to take) is unresolved; (**b**) in our holistic approach, the ambitransitivity of 濕 *sap1* does not pose any challenges as it is simply another element in the final CRC slotboard.

In our approach, the ambitransitive nature of this and other verbs is unproblematic because it is unnecessary to 'pick and choose' the transitivity of the V2.

4.1.2. Idiomatic Constructions with No Corresponding Simple Clauses

In (43), two idiomatic constructions are presented with V1 睇 *tai2* and ArgN 眼 *ngaan5*, meaning that ArgC harbours some resentment towards ArgA.[21] No second clause may be separated with the V2 as the verb:

(43) a.

有	好	多	事	我	都	**睇**	**佢**	**唔**	**過**	**眼。**
jau5	hou2	do1	si6	ngo5	dou1	**tai2**	**keoi5**	**m4**	**gwo3**	**ngaan5**
EXST	very	many	matter	1sg	all	**see**	**3sg**	**NEG**	**pass**	**eye**

'there are many matters on which I could not bear to see her.'
('Many matters' is a hanging topic). [SEA058].

b.

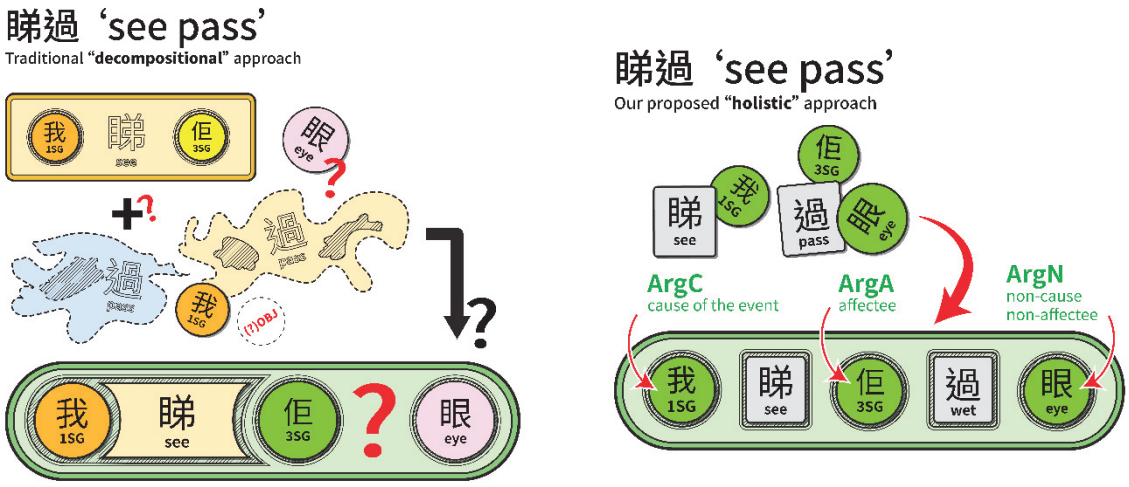
點	會	**睇**	**得**	**佢**	**順**	**眼**	直頭	想	即時	處決
dim2	wui5	**tai2**	**dak1**	**keoi5**	**seon6**	**ngaan5**	zik6tau4	soeng2	zik1si4	cyu5kyut3
how	IRR	**look**	**POT**	**3sg**	**be along**	**eye**	in fact	want	at once	execute

'How would I bear looking at it? In fact, I would want to execute it at once.'
(humorous sentence on ugly fingernails). [SEA059].

c.

~* 佢	過	/	順	眼	
keoi5	gwo3	/	seon6	ngaan5	
3sg	pass	/	be along	eye	[unattested, meaning unclear]

Again, complications arising from the treatment of V2 in the decompositional approach become irrelevant when considering the arguments at the holistic CRC level, as seen in Figure 4.



(**a**) (**b**)

Figure 4. (**a**) The V2 過 *gwo3* 'pass' is semantically fragmented when separated as a monoverbal clause, arriving at no meaningful analysis. The role of ArgN 'eye' in this analysis is also unclear; (**b**) all the elements are unambiguously slotted into our holistic approach slotboard without a need to interpret V1 睇 *tai2* and V2 過 *gwo3* separately.

There are also some idiomatic constructions where one of the verbs has a metaphorical meaning restricted to the CRC. Similar cases have been noted in SVC typology, where a verb has a different meaning inside and outside of biverbal clauses (e.g., Enfield 2009; Lovestrand 2021, pp. 9–10). Consider the following:

(44)	嗰	度	係	私人	地方,	**告**	**佢**	**唔**	**入**	嘅	喎
	go2	dou6	hai6	si1jan4	dei6fong1	**gou3**	**keoi5**	**m4**	**jap6**	ge3	wo3
	DEM	place	COP	private	place	**sue**	**3sg**	**NEG**	**enter**	SFP	SFP

'That's a private place—you can't sue him successfully!' [SEA061].

Though one can say 佢唔入 *keoi5 m4 jap6* 'he does not enter', this does not mean 'he cannot be sued successfully.' Another example is as follows:

(45)	但係	最終	你	都	係	**走**	**唔**	**甩**
	daan6hai6	zeoi3zung1	nei5	dou1	hai6	**zau2**	**m4**	**lat1**
	but	eventually	2sg	still	COP	**run**	**NEG**	**loose**

'But eventually you can't escape.' [SEA095].

In monoverbal clauses, 甩 *lat1* 'loose' either refers to an inanimate object (e.g., chips of paint) coming loose in intransitive clauses, or dumping a romantic partner in transitive ones. It cannot refer to *people* being free in intransitive clauses. We searched for 佢甩咗 *keoi5 lat1-zo2* (3sg loose-PFV) online, and there were no examples where the 'loose' thing was animate, despite the third-person pronoun *keoi5* skewing animate in Cantonese, especially outside of 'objects' (Matthews and Yip 2011, p. 95).

A particularly extreme example is (46). This special phrase means that ArgC cannot do anything to affect ArgA, with minimal semantic contribution from the lexemes in the two verbal slots:

(46)	連	阿sir	都	奈	佢	唔	何
	lin4	aa3soe4	dou1	noi6	keoi5	m4	ho4
	even	male police officer	also	NOI	3sg	NEG	HO

'Even the male police officers could not do anything about him.' [SEA072].

Here, 奈 *noi6* and 何 *ho4* have no meaning on their own. This construction is derived from an Old Chinese construction, where 奈何 on its own means 'what can we do', and when included in negative constructions with two arguments, the meaning is similar to

the Cantonese CRC. The potential form was not yet developed in Old Chinese, and the negation would come before the 奈:

(47)

無	奈	秦	何	矣
NEG.EXST	NOI	Qín	HO	SFP

'They (Hán) will not be able to do anything about Qín.'
(lit. 'There will be nothing that Hán can do about Qín.') (*Zhàn Guó Cè* 4.10).

This original construction was seemingly forced into the mould of the Cantonese CRC, with the 奈 *noi6* taken to mean any generic action, and the 何 *ho4* any generic desired result. This coercion can be elegantly described with our holistic CRC schema, which does not require that *noi6* and *ho4* be usable in monoverbal constructions.

4.1.3. Semantic Dependence between Verbs

Some more schematic and productive constructions are not idiomatic, but because the interpretation of the two verbs is very interdependent, they cannot be readily separated, even though the V1 and V2 can both normally appear in single-verb constructions. The causative construction (Section 3.3.5) is a good example, but this problem appears in 'typical' resultatives too.

Consider the construction with the V2 齊 *cai4*. It can be paired with different verbs and optionally the quantifying 哂 *saai3* as V3; the resultant meaning is that the action performed by V1 was performed on *all* of the ArgA (a–b):

(48) a.

今	次	仲	唔		
gam1	ci3	zung6	m4		
this	time	still	NEG		
食	齊	哂	啲	口味？	
sik6	cai4	saai3	di1	hau2mei6	
eat	complete	all	CLF	flavour	

'Won't you taste all the flavours this time?' (i.e., They finally get to taste all the flavours this time round). [SEA064].

b.

今年	先	識	自動自覺	做	齊	啲	功課
gam1nin4*2	sin1	sik1	zi6dung6zi6gok3	zou6	cai4	di1	gung1fo3
this year	only	know	self-consciously	do	complete	DEM	homework

'Only this year did he start completing all his homework self-consciously.' [SEA062]

c.

當	佢哋	嘅	食物	齊	哂
dong1	keoi5dei6	ge3	sik6mat6	cai4	saai3
when	3pl	ASSOC	food	complete	all

'When all of their food was there (i.e., was served).' [SEA065].

d.

佢	係	齊	晒	六	粒	石	喎
keoi5	hai6	cai4	saai3	luk6	lap1	sek6	wo3
3sg	COP	complete	all	six	CLF	stone	SFP

'But he (Thanos) has all six (stones).' [SEA156].

Although 齊*cai4* can be used as a V1 with no verb before it and with *saai3* as V2, as in (48c), the meaning is not consistent with a story where sentences such as (48ab) contain such a clause, because *cai4* only indicates that the ArgA all *exists*, not that an action was performed on all of ArgA. In the intransitive (48c), it is not that an action (say, eating) was completed on all of the food; rather, the sentence means that all the food exists (i.e., was served). Similarly, in the transitive (48d), it only means that Thanos has all six stones in his possession and cannot mean that he performed some action on all six stones.[22] Thus, we cannot say that sentences such as (a–b) contain a clause with *cai4* independent of the V1s 食 *sik6* and 做 *zou6*.

A similar argument may be applied to 完 *jyun4*:

(49) a.

食	完	生果	成日	唔	舒服？
sik6	jyun4	saang1gwo2	seng4jat6	m4	syu1fuk6
eat	finish	fruit	always	NEG	comfortable

'Always feeling unwell after eating fruit?' [SEA066].

b.

~* 生果	完
saang1gwo2	jyun4
fruit	finish

'The fruit has been eaten (lit. the fruit is over)' [unattested].

One may classify these V2s as particles, declare them non-verbal, and exclude them from consideration. Yet there are also cases where the interpretation of V1 depends on V2. Consider the verb 放 *fong3* 'put':

(50)

成	程	車	都	要	屈-住
seng4	cing4	ce1	dou1	jiu3	wat1-zyu6
whole	CLF	car	all	need	bend-CONT
/	放	歪	對	腳	
waak6ze2	fong3	me2	deoi3	goek3	
or	put	in unnatural position	CLF	leg	

'(They) had to keep bending their legs or putting them in an unnatural position throughout the ride.' [SEA077].

While 放 *fong3* can be used in a single-verb construction, it is unnatural to use it in such a construction without *some* specification of manner or position, whether that specification comes from a V2 or not. We looked up the phrase '放對腳' (put CLF foot) in Google, and in all of the cases, there is a manner or position specified.[23] Thus, we cannot extract a monocausal *fong3* clause from this CRC.

Another example, also observed in Igbo (Lord 1975), is with the verb 打 *daa2* 'hit', which does not apply to inanimate objects outside of CRCs:

(51)

媽媽	唔	小心	打	爛-咗	隻	碟。
maa4maa1	m4	siu2sam1	daa2	laan6-zo2	zek3	dip2
mum	NEG	careful	hit	break-PFV	CLF	plate

'Mum carelessly hit and broke the plate.' [SEA154].

In monoverbal constructions, *daa2* 'hit' does not apply to plates; the only examples we found on the Internet of 打隻碟 *daa2 zek3 dip2* 'hit CLF plate' were about burning CDs.

4.1.4. Missing and 'Wrong' Arguments

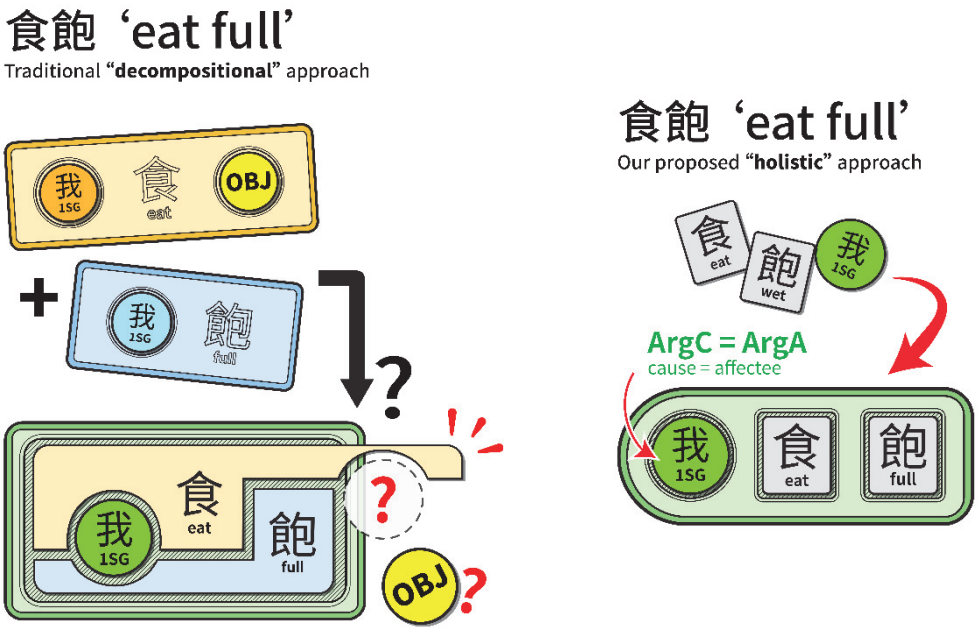
There are also problems with 'missing' arguments. Consider the following example:

(52)

食	**飽**	先	有	力	減	肥
sik6	**baau2**	sin1	jau5	lik6	gaam2	fei4
eat	**full**	only	have	strength	reduce	fat

'I don't have the strength to lose weight until I have eaten myself full!' [SEA092].

In (52), there is no specific food implied. Yet in Cantonese, 食 *sik6* 'eat' is strictly transitive (Matthews 2006). Even if no specific patient is explicitly present, there must be a contextually inferable one. So, the V1 is 'missing' a patient in the decompositional approach. Again, this issue can be dealt with by taking the holistic approach, as shown in Figure 5.



(**a**) (**b**)

Figure 5. (**a**) The transitive V1 食 *sik6* 'eat' calls for a patient, 'missing' in the final CRC slotboard. (**b**) This 'missing argument' problem can be completely avoided in the holistic approach, where the argument structure of the CRC does not have to be the sum of individual verbs' argument structures.

Sometimes, V2s may have no arguments at all:

(53)	電話	打	唔	通
	din6waa2	daa2	m4	tung1
	phone	hit	NEG	come through

'The telephone (number) could not be reached.' [SEA151].

In monoverbal clauses, 通 *tung1* takes a channel (e.g., intestines, pipes) as its argument, but there is nothing channel-like in this example.

Missing arguments are not unknown in SVC literature (e.g., Lord 1975, pp. 33–34; Aikhenvald and Dixon 2006, p. 13), and decompositional approaches can allow for argument 'suppression' (e.g., Her 2007), so decompositional accounts are not *incompatible* with missing arguments. However, they still handle these phenomena less elegantly than our holistic approach with no suppression.

'Wrong' arguments pose the biggest problem for decompositional approaches. Consider the following example:

(54)	人生	都	無	意義	啦,		
	jan4sang1	dou1	mou5	ji3ji6	laa1,		
	life	FOC	NEG.EXST	meaning	SFP		
	咪	**食**	**煙**	**食**	**死**	**佢**	囉
	mai6	**sik6**	**jin1**	**sik6**	**sei2**	**keoi5**	lo1
	so	**smoke**	**tobacco**	**smoke**	**die**	**3sg**	SFP

'Since life is meaningless anyway, let me smoke it to death.' [SEA033].

Here, the ArgA refers to the speaker's life, not the speaker themselves, as it is in the third person. However, in Cantonese, humans, not lives, are the argument of 死 *sei2* 'die'.

Alternatively, consider the following pair:

(55) a.

夏天	洗	乾淨	塊	面	好	重要
haa6tin1	sai2	gon1zeng6	faai3	min6	hou2	zung6jiu3
summer	wash	clean	CLF	face	very	important

'In summer it is important to wash your face clean.' [SEA067].

b.

請教	點樣	可以	洗	乾淨	啲	橙	汁	漬
cing2gaau3	dim2joeng2	ho2ji5	sai2	gon1zeng6	di1	caang2	zap1	zik1
HON	how	can	wash	clean	CLF	orange	juice	stain

'May I be enlightened as to how to wash the orange juice stain clean?' [SEA068].

Example (55a) is straightforward: We wash our face, and our face becomes clean, hence 面 *min6* 'face' is simultaneously the patient of 洗 *sai2* 'wash' and sole argument of 乾淨 *gon1zeng6* 'clean'. However, in (b), an 'orange juice stain' does not become clean after washing—it simply disappears! The theme of 'clean' is still whatever surface was washed—which is not mentioned at all. This mismatch poses another difficulty for the decompositional approach, where both verbs are expected to share at least one argument, as reflected in Figure 6a. Similarly, our approach provides an uncomplicated resolution to the decompositional approach's conundrums without compromising the semantic integrity of the construction, as shown in Figure 6b.

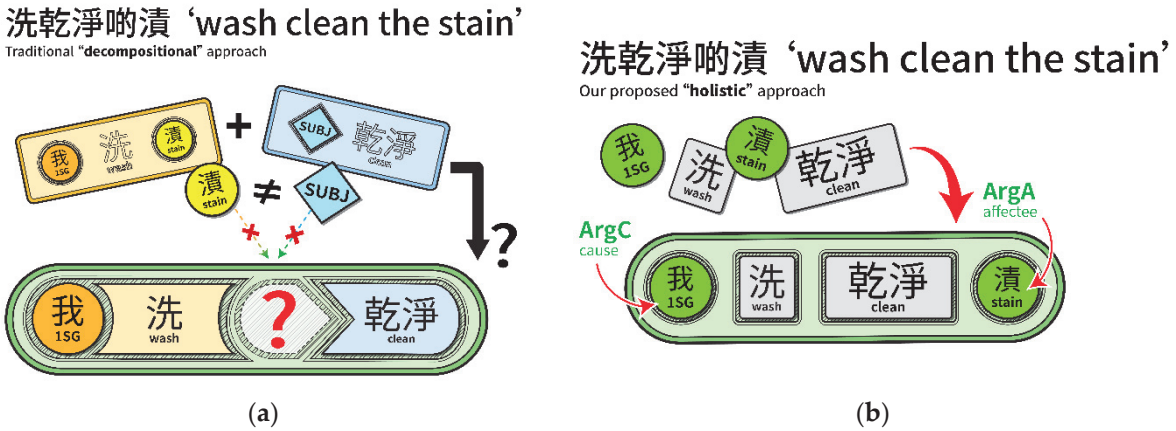


Figure 6. (**a**) In the decompositional approach, 洗 *sai2* 'wash' takes 漬 zik1 '(orange juice) stain' as the patient, while 乾淨 *gon1zeng6* 'clean' does ***not*** take 'stain' as the theme, leading to an argument mismatch/missing argument. (**b**) The argument issue is once again straightforwardly resolved with the holistic approach, where 'stain' is treated as an ArgA.

In (56), the stamps are not what become 'full'; the stamp card is:

(56)

儲	滿	3	個	印花
cou5	mun5	saam1	go3	jan3faa1
collect	full	three	CLF	stamp

'Once you've collected three stamps . . . ' [SEA158].

Perhaps the most convincing evidence is when two constructions differ minimally semantically, but the decompositional analysis works in one case but not the other. Any attempt to 'save' the composite approach by excluding problematic constructions from the resultative would have to argue, inelegantly, that the two sentences are different constructions. Consider (57):

(57) a.

擰	實	個	蓋
ning2	sat6	go3	goi3
screw	tight	CLF	lid

'screw the lid tight' [SEA069].

b.

即係	唔	洗	**綁**	**實**	**個**	**人**
zek1hai6	m4	sai2	**bong2**	**sat6**	**go3**	**jan4**
that is	NEG	need	**tie**	**tight**	**CLF**	**person**

'that is, you don't need to tie the person tight' [SEA070].

c.

唔該	**睇**	**實**	**個**	**細路**	啦！
m4goi1	**tai2**	**sat6**	**go3**	**sai3lou6**	laa1
please	**watch**	**tight**	**CLF**	**kid**	SFP

'Please watch the kid tight!' [SEA071].

Example (57a) can be straightforwardly analysed in decompositional terms: the lid is the patient of 擰 *ning2* 'screw' and sole argument of 實 *sat6* 'tight'. However, this analysis would be strange for (57b), since people cannot be tight (only tied tightly), and impossible for (57c), where being watched does not render the child 'tighter'. However, the three are semantically very similar; all involve constraints on ArgA's movement.

Similarly, in the example below, *his bad stuff* can be an argument of 爆 *baau3* 'expose', but *him* cannot:

(58) a.

一於	就	**督**	**爆**	**佢**	**啲**	**衰**	**野**
jat1jyu1	zau6	**duk1**	**baau3**	**keoi5**	**di1**	**seoi1**	**je5**
let me	then	**rat out**	**expose**	**3sg**	**CLF**	**bad**	**thing**
同	佢	離	婚				
tung4	keoi5	lei4	fan1				
with	him	leave	marriage				

'Then let me expose his bad stuff and divorce him.' [SEA140].

b.

不過	我	自己	都	唔	會	**督**	**爆**	**佢**
bat1gwo3	ngo5	zi6gei1	dou1	m4	wui5	**duk1**	**baau3**	**keoi5**
but	1sg	REFL	also	NEG	will	**rat out**	**expose**	**3sg**

'But I won't rat him out myself either.' [SEA141].

A more metaphorical version is as follows:

(59) a.

一早	**睇**	**穿**	**你**	**啲**	**手法**	啦	老屈	成	性
jat1zou2	**tai2**	**cyun1**	**nei5**	**di1**	**sau2faat3**	laa1	lou5wat1	sing4	sing3
long ago	**see**	**pierce**	**you**	**CLF**	**method**	SFP	slander	become	nature

'I have seen through your methods long ago, you chronic slanderer.' [SEA142].

b.

瀟	姐	一早	**睇**	**穿**	**你**	**啲**	**衰**	**嘢**
siu1	ze1	jat1zou2	**tai2**	**cyun1**	**nei5**	**di1**	**seoi1**	**je5**
Siu	Sister	long ago	**see**	**pierce**	**you**	**CLF**	**bad**	**thing**

'Sister Siu has seen through you and found out about your bad stuff long ago.' [SEA143]

One can see *through* the methods in (59a), but not the 'bad things' in (59b); they are what one sees *after* seeing through someone's façade!

4.2. Interim Conclusion of the Holistic Approach

Our holistic approach offers an uncomplicated and elegant way to account for CRC while preserving the semantic structures of the construction. Of course, numerous CRCs remain amenable to the decompositional analysis, since: (1) the transitivity of the verbs is unambiguous; (2) the semantic structure of the verbs is complete and the same, whether analysed independently or integrated as a CRC; and (3) the argument structure of the individual verbs are compatible and remain the same when pieced together. However, under our holistic approach, *all* the aforementioned constructions that do not adhere to these properties can be straightforwardly described with the CRC schema. Arguments for our holistic approach thus far can be summarised as follows:

1. The CRCs covered in Section 4.1 all have an ArgA construable as *affectee*, even if they are 'arguments' of neither verb. Quite often, affectee status can be further supported by constructions such as the disposal construction with 將 *zoeng1*:[24]

(60) a.

用	洗潔精	就	可以	將	啲	污跡	洗	乾淨
jung6	sai2git3zing1	zau6	ho2ji5	zoeng1	di1	wu1zik1	sai2	gon1zeng6
use	washing liquid	then	can	DISP	CLF	stain	wash	clean

'You can wash the stains clean just with dishwashing liquid.' (cf. 48b). [SEA130].

b.

我	將	佢地	集	齊	響	屋企	再	影	相	啦。
ngo5	zoeng1	keoi5dei6	zaap6	cai4	hoeng2	uk1kei2	zoi3	jing2	soeng2	laa1.
1sg	DISP	3pl	collect	complete	be at	home	again	take	picture	SFP

'I'll collect them all at home and take a picture again.' [SEA131].

2. In all of the examples, V2 is construed as relevant to V1's result, sometimes resulting in a verb meaning distinct from the meaning in monoverbal clauses, e.g., 齊 *cai4* 'complete' described above.

By removing the requirement that resultatives be decomposable into individual clauses, our approach also allows particles with no independent existence in monoverbal sentences, such as the quantifying 哂 *saai3* or adversative 親 *can1*, to be included in the CRC; the lack of a corresponding monoverbal construction is no reason to exclude them.

Nevertheless, some valid generalisations about CRC phenomena have been made in the literature before, couched in decompositional terms. The next two sections will explain how we account for them. Section 4.3 will explain *semantic orientation*, mentioned without explanation in Section 3.2, and Section 4.4 will give a valency typology under our approach.

4.3. Semantic Orientation: An Alternative to Argument Linking

In most contemporary Western approaches to typical Chinese resultatives assuming a decompositional or hybrid holistic-decompositional approach, verbs possess an inherent set of grammatical or thematic roles, and descriptions of resultatives focus on how these roles are mapped onto the construction-level grammatical and/or thematic relations, i.e., *argument linking* or *argument realisation*. This applies to generativists/formalists (e.g., Cheng and Huang 1994; Cheng et al. 1997; Her 2004; C. Li 2007, 2013; Lau and Lee 2015, 2021), constructionists/functionalists (e.g., Matthews 2006; Huang 2007; Fong 2018; Liu 2020), and mixed approaches (Chow 2011, 2012; Lee and Ackerman 2011).

A sceptic may claim that, by dispensing of single verb-level argument structures, our account fails to exclude logically possible examples such as (61):

(61)

~* 我	撞	爛-咗	啲	水
ngo5	zong6	laan6-zo2	di1	seoi2
1sg	bump into	break-PFV	CLF	water

'Intended: I bumped into and broke the teapot) and the water (spilled).'
[Unattested regardless of ArgC, classifier presence, and aspect marker presence]

Although the water is affected by teapot breaking, it is not permissible in this construction. In the traditional argument linking approach, this example would be excluded because 'water' cannot be an argument of 'break'. While we will not be adopting argument linking in our approach, we still need a mechanism to express the relationship between individual verbs (e.g., break) and arguments (e.g., water), and in particular, why certain combinations such as (61) are not permissible. To resolve this query, we suggest that *semantic orientation analysis*, an alternative approach developed in China, is a better fit since it can account for facts about the semantic relationship between different elements of the CRC without requiring the CRC to be decomposed into component argument structures.

Similar to argument linking, semantic orientation grew out of Fillmore's Case Grammar (Ài 2022). It describes semantic relationships between elements of a sentence that are not necessarily directly syntactically dependent. For example, in the English sentence, "*They have all gone*", "*all*" is semantically oriented towards "*they*", despite syntactically modifying "*gone*.".

An element is typically said to be semantically oriented to another element if it explains or illuminates it in some way. We define semantic orientation more explicitly as follows: if a verb is *semantically oriented* towards an argument or another verb, then the situation evoked by the verb must logically involve the role played by said argument or other verb. Taking (55b) as an example, V2 describes something becoming clean. This implies there must have been some dirtiness before that is now gone—in this case, the orange juice stains—even though the stains are not normally an argument of 'clean'.

Semantic orientation analysis has been extensively applied to Mandarin CRCs (e.g., Kāng 2008; Zhāng 2008; Liú 2022), but we depart from these accounts somewhat. Since these accounts assume V1 as the head, arguments of the CRC are assumed arguments of V1, and semantic orientation analysis applies only towards V2. Descriptions of V2's semantic orientation are thus couched in terms of which arguments (or non-arguments) of V1 they orient towards. By contrast, our approach does not assume V1 as the head. Thus, we extend semantic orientation analysis to V1 too. We make three generalisations:

1. V1s must be semantically oriented towards ArgCs;
2. V2s must be semantically oriented towards ArgAs when ArgA is present; otherwise, they must be semantically oriented towards V1;
3. Where an ArgN is present, outside of directional constructions and certain non-referential ArgNs, *all* verbs must be semantically oriented towards the ArgN.

The following sections explain how these generalisations apply in different situations, including to account for patterns previously described decompositionally.

4.3.1. Generalisation 1: On V1 Orienting to ArgC

The requirement for V1 to be semantically oriented towards ArgCs explains Cheng and Huang's (1994) observation for Mandarin, which is also valid for Cantonese, that non-'inverted' two-argument resultatives cannot be interpreted as having indirect causers as ArgCs. For example, in the following example, the zero ArgC cannot be interpreted as causing someone else to cry on the tissue:

(62)	喊	濕-咗	幾多	包	紙巾？
	haam3	sap1-zo2	gei2do1	baau1	zi2gan1
	cry	wet-PFV	how many	packet	tissue

'How many packets of tissue did (he) wet by crying? /
*How many packets of tissue did he cause to be wet be crying?' [SEA112].

The use of semantic orientation instead of clausal decomposition easily explains cases such as the following, where the ArgC 'mechanical pencil' is not usually an argument of V1 'write' in monoverbal contexts:

(63)	鉛芯筆	寫	壞	手勢。
	jyun4sam1bat1	se2	waai6	sau2sai3
	mechanical pencil	write	bad	gesture

'Writing with mechanical pencils makes your writing gestures bad.' [SEA153].

Since writing necessarily involves a writing implement, 'write' semantically orients to 'mechanical pencil'. This is advantageous over traditional inversion-based accounts, where 'gesture' and 'mechanical pencil' cannot normally be the two arguments of 'write' (see Figure 7).

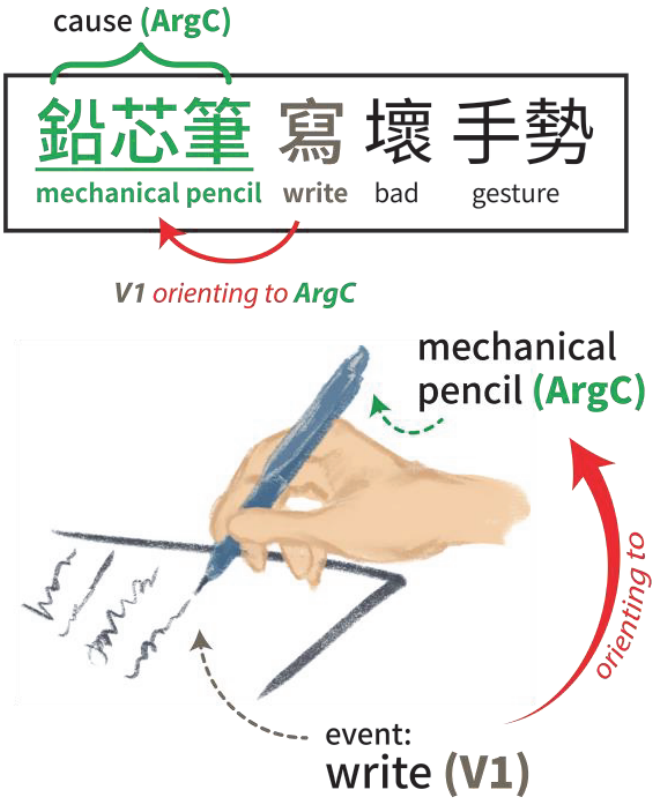


Figure 7. Writing necessarily involves an instrument, the role played by the mechanical pencil. Thus 'write' can orient to the mechanical pencil, and the mechanical pencil can be the ArgC under our account.

4.3.2. Generalisation 2: On V2 Orienting to ArgA (and V1)

As mentioned above, V2s of CRCs still orient towards the ArgAs, even when those ArgAs are not arguments of the V2 in monoverbal contexts. Consider (64) again:

(64)	請教	點樣	可以	**洗**	**乾淨**	**啲**	**橙**	**汁**	**漬**
	cing2gaau3	dim2joeng2	ho2ji5	**sai2**	**gon1zeng6**	**di1**	**caang2**	**zap1**	**zik1**
	HON	how	can	**wash**	**clean**	**CLF**	**orange**	**juice**	**stain**

'May I be enlightened as to how to wash the orange juice stains clean?' [SEA068].

V2 describes something becoming clean. This implies there must have been some dirtiness before that is now gone—in this case, the orange juice stains—even though the stains are not normally an argument of 'clean' (see Figure 8).

By abandoning grammatical relations, our account is much simpler than previous semantic orientation accounts of Mandarin (e.g., Kāng 2008; Zhāng 2008; Liú 2022), which typically describe three to six types of orientation. 'Subjects' and 'objects' that V2 orient to are both ArgAs in our account, though such 'subjects' are also simultaneously ArgCs while 'objects' are not. Non-'subject', non-'object' arguments are also ArgAs:

(65) a.

朱	智賢	出	街	跑	步	**仆**	**損**	**手**	**腳**
zyu1	zi3jin4	ceot1	gaai1	paau2	bou6	**puk1**	**syun2**	**sau2**	**goek3**
Chu	Chi yin	go out	street	run	step	**fall**	**injure**	**arm**	**leg**

'Ashley Chu went out to the streets to run and fell and injured her limbs.' [SEA132]. [Part of subject].

b.

大家	行	爛-咗	幾	多	對	鞋
daai6gaa1	haang4	laan6-zo2	gei2	do1	deoi3	haai4
everyone	walk	break-PFV	how	many	pair	show

'How many pairs of shoes has everyone ripped by walking?' [SEA129] [Quasi-instrument].

c.

喺	店	內	既	牆身	**寫**	**滿-咗**
hai2	dim3	noi6	ge3	coeng4san1	**se2**	**mun5-zo2**
be at	shop	inside	ASSOC	wall surface	**write**	**full-PFV**

一	**堆**	**奇怪**	**既**	**日文**
jat1	**deoi1**	**kei4gwaai3**	**ge3**	**jat6man2**
one	**CLF**	**strange**	**ASSOC**	**Japanese**

'The wall surface in the shop was filled with a pile of strange Japanese writing.' [SEA133] [Location].



Figure 8. Cleaning necessarily involves some source of dirtiness that previously existed, which in this case is the stain. Thus, the verb can semantically orient to the stain.

Zhāng or Liú would classify 'limbs', 'how many pairs of shoes' and 'the wall surface in the shop' as non-subject, non-object arguments that V2 orient to; for us, they are all ArgAs.

Phase, quantifying and comparative V2s are oriented towards both V1 and ArgA. For example, in (28), successfully falling asleep implies that a person (ArgA) has gone (V1) to sleep, and the different examples of 晒 *saai3* 'all' all involve some situation (V1) applying to all of something or group of things (ArgA). Manner V2s are always oriented towards V1, and also towards ArgA when it is present (see example (66) and Figure 9):

(66)

好好地	**跳**	**靚**	**隻**	**舞**	咪	算	囉
hou2.dei6.dei6	**tiu3**	**leng3**	**zek3**	**mou5**	mai6	syun3	lo1
well	**jump**	**pretty**	**CLF**	**dance**	then	count	SFP

'If only he would just (stay in their lane and) dance nicely!' [SEA134].

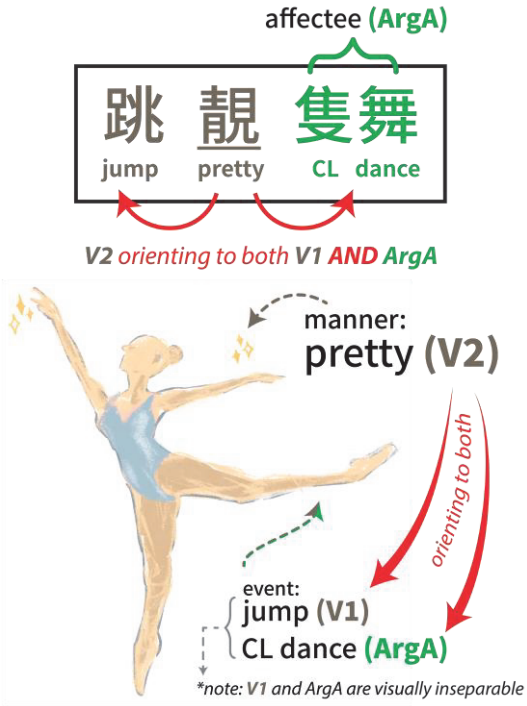


Figure 9. 'Pretty' must involve something that is pretty, in this case, the dance, which is referred to by both the V1 'jump' and ArgA 'dance'.

4.3.3. Generalisation 3: On All Verbs Orienting to ArgN When Present

Outside of the directional construction, ArgNs must be semantically linked to *all* the verbs, unlike ArgC or ArgA. So, for example, under our definition, in (65), the two verbs are also semantically oriented towards the ArgN, *Japanese*. This is because writing implies something being written, and if something is full, then it must be full *of something*—in this case, Japanese writing (even though in Cantonese, 滿 *mun5* 'full' cannot take *Japanese* as an argument in monoverbal clauses).

For phase complement constructions (Section 3.3) such as (28–30), V2 simply discusses the extent to which V1 is carried out, so ArgN is semantically related to phase V2 by virtue of being strongly associated with V1.

Generalisation three can capture the following generalisation by Lau and Lee (2021), which is originally stated in decompositional terms:

> For active resultative sentences with two arguments, the NP argument with the *target of activity* role [but not the *locus of affect* role] is linked to the position immediately following the second verb only if the V2 is transitive.

L&L's *locus of affect* roughly corresponds to our ArgA, and *target of activity* roughly refers to a patientive argument. The 'NP argument' in this paragraph is thus a non-ArgA patientive argument, i.e., ArgN. Generalisation three states that ArgNs must be semantically related to *all* verbs in the construction. When V2 is 'intransitive' in L&L's account, that means only ArgA is semantically related to V2—ArgN is *not*. Here is an example:

(67)	*佢	寫	攰-咗	小說
	keoi5	se2	gui6-zo2	siu2syut3
	3sg	write	tired-PFV	novel

'He got tired from writing novels.' (=L&L's (19b)).

For L&L, the unacceptability is because 'tired' is intransitive. For us, it is because 'tired' does not semantically orient to 'novel'. Thus, such constructions are also ruled out by our approach (Figure 10).

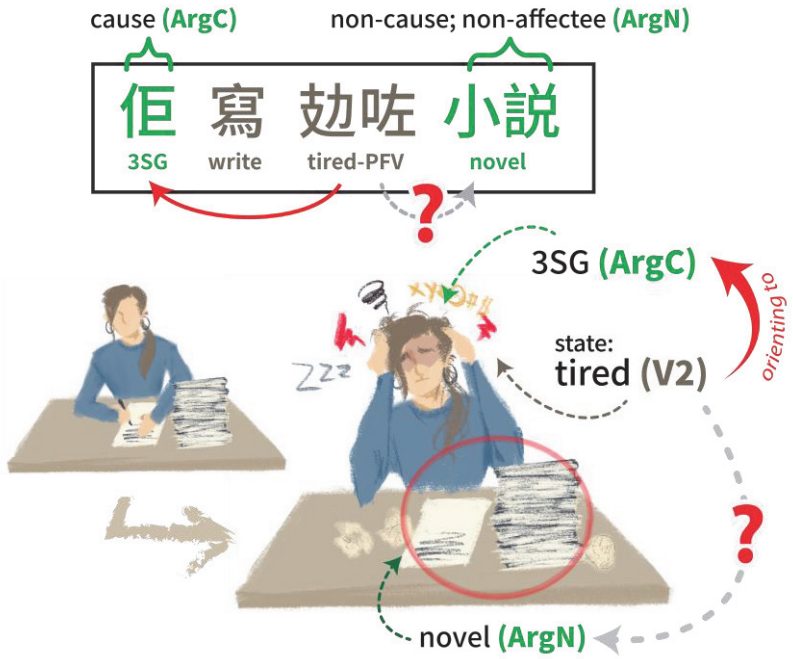


Figure 10. A novel does not clearly play any role necessitated by a state of tiredness. Thus, 'tired' cannot semantically orient to 'novel', explaining why (67) is odd in our account.

In some cases, V2 only tenuously invokes ArgN. For example, 飽 *baau2* 'full' may invoke 'food', but one might also feel full for other reasons without food (e.g., illness). If ArgN does appear in these cases, it involves generic, non-referential ArgNs. In the following, (a) is attested, but (b) is unattested because 啲飯 *di1 faan6* 'rice' is referential:[25]

(68) a.

食	飽-咗	飯，	我	今日	cosplay，	勝	新太郎！
sik6	baau2-zo2	faan6	ngo5	gam1jat6	kos1plei1	sing3	san1taai3long4
eat	full-PFV	rice	1sg	today	cosplay	Katsu	Shintarou

'Having eaten, I will now cosplay as Katsu Shintarou!' [SEA102].

b.

~*食	飽-咗	啲	飯
sik6	baau2-zo2	di1	faan6
eat	full-PFV	CLF	rice

'I ate some rice and got full' [unattested].

These cases may suggest that semantic orientation is gradient, and weaker orientations, such as *full-rice,* place more restrictions on the information status of the ArgN. Note that *eat-full-rice* (and *drink-drunk-alcohol*) are well-known sources of exceptions in other varieties of Chinese such as Mandarin (Cheng and Huang 1994; Shi 2002) and Southern Min (Lin 2015).

4.3.4. Marrying Semantic Orientation to the Decompositional Approach?

A sceptic may argue that the decompositional approach can simply be *modified* by introducing argument structures where the relation is one of semantic orientation, rather than the usual argument-structural relationship. This allows us to retain the decompositional approach while accounting for most, perhaps all, of the examples in Section 4.1. However, we believe this account is far less elegant and plausible.

Firstly, the main advantage of the traditional decompositional account is that individual CRCs are built up by existing argument structures that are used elsewhere in the grammar (i.e., in monoverbal clauses), reducing the inventory of signs needed in the language. Yet in the modified decompositional account, the semantic orientation-based argument structures for individual verbs would be akin to cranberry morphemes, since they do not appear alone, but must be in a CRC, just as the morpheme *cran-* is restricted to the context *__berry* in English. However, this is much less justified in the CRC context than for *cran-*.

Firstly, examples such as (63) would have to be composed by putting two cranberries together (since 壞 *waai6* is usually not used predicatively with 手勢 *sau2sai3* 'gesture'). More generally, while there is no clearly plausible alternative for *cran-*, the holistic approach can describe CRCs without resorting to syntactic cranberries, making it a more elegant option.

Secondly, many of the component argument structures would be semantically weird in such a modified decompositional account, making it less plausible. For example, one of the component argument structures of (50) would consist of the verb 'put', plus a person and their legs. Such an argument structure is not clearly meaningful, since 'put' inherently requires a position. For these reasons, we believe the holistic account is preferable to this modified decompositional account.

4.4. Valency Patterns

Previous decompositional accounts, especially Lau and Lee (2021), established typologies of resultatives according to the argument structures of the individual verbs and entire construction. Our holistic approach can also produce an argument structure typology. It collapses some of L&L's categories by doing away with individual argument structures, while successfully covering rarer argument structure types missed by other approaches.

Table 2 shows the possible argument structures of CRCs: six common types and two rare types. For cross-reference, these are compared to L&L's typology.

Table 2. Our valency typology of Cantonese CRCs, compared to L&L's. ✓ indicates that an argument is present. * indicates situations where ArgC and ArgA are the same argument.

Type	ArgC	ArgA	ArgN	L&L Type
I		✓		Type 1 Pseudo-passive of Type 3 [Pseudo-passive of Type 6]
II	✓*			Type 1
III	✓	✓		Type 2 Type 3 [Type 6][26]
IV		✓	✓	Type 4 Pseudo-passive of Type 5
V	✓*		✓	Type 4
VI	✓	✓	✓	Type 5
VII				/
VIII	✓			/

We now describe each of the types in detail.

4.4.1. Types I (ArgA Only) and IV (ArgA + ArgN)

This includes all cases where the sole argument is an affected party that is *not* the cause. This includes constructions typically described as shared-subject constructions with two intransitives (a), as well as 'pseudo-passives' with no ArgN (b):

(69) a.

小編	開心	死	喇！！！
siu2pin1	hoi1sam1	sei2	laa3
editor.HUM	happy	die	SFP

'I (the editor) am so happy I could die!!!' [SEA082]

b.

Hall	啲	野食	食	晒	未	啊？
ho1	di1	je5sik6	sik6	saai3	mei6	aa3
hall	DEM	food	eat	all	NEG.PERF	SFP

'Has all the food in the hall been eaten yet?' [SEA081].

The constructions in (69) have preverbal ArgAs. Unlike traditional pseudo–passive analyses, however, our Type I also accounts for cases with postverbal ArgA, which are missed in analyses such as L&L's:

(70) a.

開心	死	我	喇	…
hoi1sam1	sei2	ngo5	laa3	
happy	die	me	SFP	

'I am so happy I could die . . . .' [SEA083].

b.

落	雨	**潟**	**濕**	**個**	**袋**
lok6	jyu5	**dap6**	**sap1**	**go3**	**doi2**
fall	rain	**hit**	**wet**	**CLF**	**bag**
都	唔	好	**潟**	**濕**	**自己**
dou1	m4	hou2	**dap6**	**sap1**	**zi6gei1**
even if	NEG	good	**hit**	**wet**	**self'**

'When raining, better your bag gets (hit) wet than you get (hit) wet.' [SEA078].[27]

c.

唔該	Ethan	爸爸	揸	機，			
m4goi1	Ethan	baa4baa1	zaa1	gei1			
ask	Ethan	dad	hold	camera			
呢	幅	相	**見**	**唔**	**到**	**佢**	嘞
ni1	fuk1	soeng2	**gin3**	**m4**	**dou2**	**keoi5**	laa3
DEM	CLF	photo	**see**	**NEG**	**DOU**	**3sg**	SFP

'I asked Ethan's dad to hold the camera, so (one) cannot see him in this photo.' [SEA157].

Example (24) was another example of Type I where ArgA is in a postverbal position; note that in the example, V1 is the volitional verb 食 *sik6* 'eat', but because the listener is not construed as the intentional causer of the V2 死 *sei2* 'die', they are simply ArgA, not ArgC.

Type IV is similar, but with an additional ArgN:

(71)

條	數	啲	錢	入-咗	落	別人	個	袋	裏面
tiu4	sou3	di1	cin2	jap6-zo2	lok6	bit6jan4	go3	doi2	leoi5min6
CLF	sum	DEM	money	enter-PFV	go down	other	CLF	bag	inside

'The money involved went down someone else's pocket.' [SEA085].

Some CRCs involve a preverbal argument that is the possessor of the postverbal argument. The preverbal argument is clearly not a cause. It may be analysed two ways: it can be construed as a hanging topic, in which case the postverbal argument is ArgA and the construction is Type I, or it may be construed as an ArgA, in which case the postverbal argument is ArgN and the construction is Type IV. Consider the following example:

(72)

屋企人	係	好	想	佢	**醫**	**好**	**個**	**病**
uk1kei2jan4	hai6	hou2	soeng2	keoi5	**ji1**	**hou2**	**go3**	**beng6**
family member	COP	very	want	3sg	**cure**	**good**	**CLF**	**illness**

'His family members want him to get well from the illness.' [SEA079].

4.4.2. Types II (ArgC=ArgA Only) and V (ArgC=ArgA + ArgN)

This includes all CRCs where ArgC=ArgA, both without ArgNs (60a, Type II) and with them (60b, Type V):

(73) a.

我	食	飽	喇，	你哋	慢慢	食。
ngo5	sik6	baau2	laa3	nei5dei6	maan6maan1	sik6
1sg	eat	full	SFP	2pl	slowly	eat

'I'm full; you guys take your time to eat!' [SEA089].

b.

我	學	識-咗	好	多	嘢
ngo5	hok6	sik1-zo2	hou2	do1	je5
1sg	learn	know-PFV	very	many	thing

'I have learnt very many things.' [SEA088].

Yiu's (2013) self-agentive directional complements may also fall into either Type II (a) or V (b):

(74) a.

開	船	後，	我	行-咗	出	去	影	相。
hoi1	syun4	hau6	ngo5	haang4-zo2	ceot1	heoi3	jing2	soeng2
open	ship	after	1sg	walk-PFV	go out	go	take	picture

'After the ship took off, I walked out to take pictures.' [SEA090].

b.

然後	我	行-咗	入	去	中央	公園
jin4hau6	ngo5	haang4-zo2	jap6	heoi3	zung1joeng1	gung1jyun2
and then	1sg	walk-PFV	enter	go	Central	Park

'And then I walked into Central Park.' [SEA091].

Other particle constructions can also fall into this category; (75) exemplifies a resultative particle construction:

(75)

想	逃走	都	逃走	唔	到
soeng2	tou4zau2	dou1	tou4zau2	m4	dou2
want	escape	also	escape	NEG	DOU

'Even if I wanted to escape, I could not.' [SEA096].

4.4.3. Types III (ArgC + ArgA) and VI (ArgC + ArgA + ArgN)

This includes all sentences where the cause and affectee are different arguments. For example, this includes Lau and Lee's (2015) cross-referential accusatives (a) and causatives (b), and Yiu's (2013) agentive directional complements (c):

(76) a.

幻覺	嚟	嘅	啫，	嚇	我	唔	到	嘅！
waan6gok3	lai4	ge3	ze1	haak3	ngo5	m4	dou2	ge3
illusion	come	SFP	SFP	scare	1sg	NEG	DOU	SFP

'It's just an illusion—it can't scare me!' [SEA094].

b.

睇	M	club，	陸	永	笑	死	我！
tai2	em1	kab1	luk6	wing5	siu3	sei2	ngo5
watch	M	Club	Luk	Wing	laugh	die	me

'Watching the M Club, Billy Luk made me laugh to death!' [SEA096] .

c.

放-咗	個	袋	入	locker	度
fong3-zo2	go3	doi2	jap6	lok1kaa2	dou6
put-PFV	CLF	bag	enter	locker	place

'I put the bag in the locker.' [SEA116].

Many cases that do not fit into the clause concatenation paradigm because ArgA cannot be construed as an argument of V2, such as (54, 55b, 57bc), also belong here, as do resultative particle constructions with affected Ps and comparative constructions:

(77)

頭先	又	搵	唔	到	門匙。
tau4sin1	jau6	wan2	m4	dou2	mun4si4
just now	also	find	NEG	DOU	door key

'I could not find my door key just now either.' [SEA097].

Even in these types, the causer *referent* can be an affectee; ArgC (causer) and ArgA (affectee) can be **separate, coreferential forms**, e.g. ArgA being reflexive (a), or a possessee of ArgC (in which case ArgC is also affected by the situation) (b):

(78) a.

最近	太	過於	博，	死	博	爛	博，
zeoi3gan6	taai3	gwo3jyu1	bok3	sei2	bok3	laan6	bok3
recently	too	excessively	work hard	die	work hard	broken	work hard
最後	**病**	**親**	**自己**				
zeoi3hau6	**beng6**	**can1**	**zi6gei1**				
finally	**sick**	**ADV**	**self**				

'Recently, I have been working too hard, working far too hard, finally making myself sick.' [SEA084].

b.

唔係	真係	要	食	飽	個	肚
m4hai6	zan1hai6	jiu3	sik6	baau2	go3	tou5
NEG.COP	really	want	eat	full	CLF	stomach

'I do not really want to eat my stomach full.' [SEA093].

4.4.4. Types VII (No Arguments) and VIII (ArgC Only)

Type VII refers to constructions with no arguments at all, largely ignored in the literature:

(79)	光	返	喇
	gwong1	faan1	laa3
	bright	return	SFP

'it's bright again' [SEA029].

Type VIII also lacks ArgA and ArgN, but does have an ArgC, which is an implicit first-person:

(80)	感覺	點	用	力	都	跑	唔	快
	gam2gok3	dim2	jung6	lik6	dou1	paau2	m4	faai3
	feel	how	use	force	still	run	NEG	fast

'I feel that no matter how much energy I use, I still can't run quickly.' [SEA128].

4.5. Interim Conclusion

In Section 4, we have shown that Western descriptions of CRC argument structure as the composition of the argument structures of individual verbs are often untrue for the Cantonese CRC, motivating our holistic approach where only the entire construction, not individual verbs, has arguments. The relationship between individual verbs and arguments is instead in terms of semantic orientation, which successfully accounts for phenomena previously described in decompositional terms. Our approach also results in a typology of CRC valences encompassing structures not captured by previous typologies.

5. Typological Implications

Although our discussion so far focuses on Cantonese, we believe similar ideas can apply to other Chinese varieties. Section 5.1 extends our framework to Cantonese–Mandarin comparison and Section 5.2 describes how it might be useful for comparing with other Chinese varieties. Section 5.3 examines the methodological implications of our two main points for worldwide typology, and Section 5.4 examines theoretical implications for diachronic typology and grammaticalisation.

5.1. Cantonese-Mandarin Comparison

Recall that for L&L, in CRCs with two arguments, an argument that is the *target of activity* role but not the *locus of affect* can only be the postverbal argument (traditional 'object') when V2 is transitive:

(81)	* 佢	寫	攰-咗	小說
	keoi5	se2	gui6-zo2	siu2 syut3
	3sg	write	tired-PFV	novel

'He got tired from writing novels.' (=L&L's (19b)).

For us, (81) is explained by 'tired' not orienting semantically to 'novel'.

L&L contrast their generalisation on Cantonese with Mandarin, where one can have an identical initiator and affectee, a separate target of action argument, and intransitive V2 simultaneously:

(82)	我	寫	累-了	小說
	Wǒ	xiě	lèi-le	xiǎoshuō
	1sg	write	tired-PFV	novel

'I got tired writing the book.' (Mandarin, =L&L's (19a)).

For Mandarin, we modify our semantic orientation restriction. Only V2 needs to be semantically oriented towards ArgN; V1 does not.

L&L mention two other differences with Mandarin; however, we believe those are mistaken. They write that, unlike Mandarin, Cantonese does not allow (a) 'inverted' resultatives and (b) structures where both Vs are intransitive and the initiator and affectee are distinct (also noted by Chow 2012). The first generalisation is inconsistent with well-

documented examples in the literature (Matthews and Yip 2011; Chow 2012) and this paper (e.g., Section 3.3.1). The second claim is invalidated by examples such as these:

(83)	你	無視	我	喊	紅-咗	雙	眼
	nei5	mou4si6	ngo5	haam3	hung4-zo2	soeng1	ngaan5
	2sg	neglect	1sg	cry	red-PFV	pair	eye

'You neglected my crying my eyes red.' [SEA042].

However, this leaves open the question of why the Cantonese examples that L&L contrasted with acceptable Mandarin equivalents in support of (b) are unacceptable. We believe Lau and Lee's earlier (2015) account, based on semantics rather than argument structure and applying it to all argument structure types, was more appropriate. L&L use Washio's (1997) distinction between 'strong' and 'weak' resultatives to explain the unacceptability of these constructions in Cantonese (whose cognate-for-cognate equivalents are possible in Mandarin):

(84)	a.	* 我	跑	跌-咗	張	車飛
		ngo5	paau2	dit3-zo2	zoeng1	ce1fei1
		1sg	run	fall-ASP	CLF	ticket

'I ran, dropping my ticket.' (=L&L's (2)).

	b.	* 佢	對	眼	喊	紅-咗
		keoi5	deoi3	ngaan5	haam3	hung4-zo2
		3sg	pair	eye	cry	red-PFV

'He cried his eyes red.' (=L&L's (15c)).

They claim that Mandarin has both 'strong' resultatives, where the meaning of V1 and V2 are completely independent, and 'weak' resultatives, where the V2 is the purpose or conventional result of V1. Cantonese lacks the latter, explaining (84). Yet most 'strong' V1–V2 combinations that L&L deem impossible are attested on the Internet. We searched for examples of all nine strong resultatives L&L deemed impossible in Cantonese, adding the perfective marker *-zo2* to ensure examples are in Cantonese, and found examples of seven of these. One example was (83), as are the following:

(85)	a.	我	反而	係	覺得	個	男	嘅	追	攰-咗
		ngo5	faan2ji4	hai6	gok3dak1	go3	naam4	ge3	zeoi1	gui6-zo2
		1sg	on the contrary	COP	feel	CLF	male	ASSOC	chase	tired-PFV

'I, on the contrary, feel that the male got tired of chasing women.' [SEA040].

	b.	真係	驚	隻	碟	俾	我	睇	花-咗
		zan1hai6	geng1	zek3	dip2	bei2	ngo5	tai2	faa1-zo2
		really	fear	CLF	disc	AGT	1sg	watch	scratched-PFV

'I really fear I'm watching so much that the disc gets scratched.' [SEA041].

Rather than dichotomising between strong and weak resultatives, we believe these combinatorial restrictions are gradient collocational patterns, not structural ungrammaticality. Since semantics and usage frequencies affect collocational strength, when V2 is not the purpose or conventional result of V1, verbs are more likely to be collocated. The acceptability of Mandarin CRCs, then, is simply *less* sensitive to such effects than Cantonese, i.e., unusual V1–V2 fit less easily into Cantonese CRCs than Mandarin ones.

As a preliminary investigation of this hypothesis, for each of L&L's 'strong' resultatives, we obtained, as a proxy for semantics, FastText word vectors (Grave et al. 2018) for the translational equivalents of the two verbs in Mandarin, then calculated their Euclidean distance. Figure 11 relates the number of tokens on Google search with semantic distance.[28] This very small sample shows suggestive though inconclusive evidence that frequency is negatively correlated with semantic distance (Spearman's rho = -0.622, $p = 0.0738$). We leave it to later work to investigate this issue with more rigorous measurements.

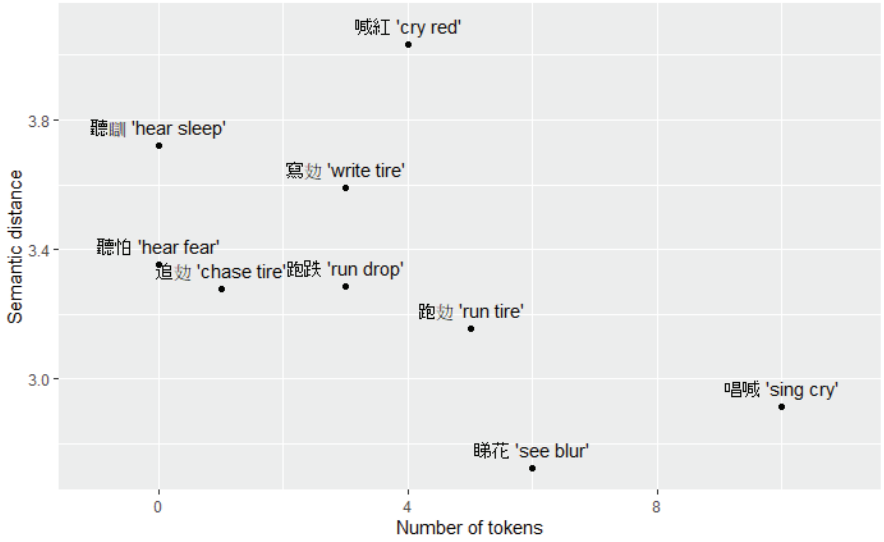


Figure 11. The *x*-axis is the number of tokens found for each of the V1–V2 combinations that L&L claimed as impossible. The *y*-axis is the semantic distance, as calculated by FastText word vectors using Mandarin translational equivalents as a proxy for meaning. A potential negative correlation is visible from the graph.

5.2. Potential Contributions to Dialectological Comparison

As mentioned in Section 2, most Sinitic dialectologists implicitly follow a holistic argument structure approach, albeit slightly different from ours, and many have some notion roughly corresponding to our CRC, especially when investigating potential forms. However, our ArgC–ArgA–ArgN reframing of the CRC template still diverges significantly from current typology practice retaining notions such as subject and object, and can potentially be fruitful in dialectological research.

For example, much comparative research in Sinitic typology examines the positions of the object relative to the verbs and potential form markers (Wú 2003, 2005; Lín 2006). The traditional 'object' corresponds to a postverbal ArgA or an ArgN in our framework. Most typological work cites examples with arguments corresponding to our ArgC and ArgA, with few ArgNs. Nevertheless, the few examples of ArgN cited in the literature may shed light on the difference between Cantonese and other varieties.

Even within the Yuè family, there is significant variation in word order. For example, Kwok (2010) discusses the Nánníng variety, which is much more permissive of arguments between V1 and V2. It is not limited to the potential form and is frequent even with full NP objects. Strikingly, this applies to both ArgAs and ArgNs:

(86) a.

食	飯	飽	去	啊！
sik6	faan6	beu2	hyu3	aa1
eat	rice	full	go	SFP

'Eat yourself full with rice, then go!' (Nánníng, =Kwok's (8)).

b.

* 你	食	佢	唔	飽
nei5	sik6	keoi5	m4	baau2
2sg	eat	3sg	NEG	full

Intended: 'You couldn't get full by eating it.' (Cantonese).

As shown in (14), (86b) is not possible in Cantonese, even if *rice* were replaced by a pronoun and the whole construction became potential. The possibility of ArgN between V1 and V2 is thus another difference between Cantonese and Nánníng.

Shèng and Zhū (2020, p. 313) cite a variety of examples with ArgNs in the Shàoxìng Wú. However, one difference with Cantonese is that even when ArgNs are present, ArgAs can be between V1 and V2 (a), which is largely unattested in Cantonese (b), as mentioned in Section 3.2:

(87) a.

个	苹果	我	想	喫	伽	患
koh4	bin1ku2	ngo2	shian2	chieh4	noh4	waen3
CLF	apple	1sg	want	eat	you	COMPL

'I want to eat up your apple.' (Shàoxìng, =Shèng and Zhū's (15)).

b.

* 我	食	你	唔	到	個	蘋果
ngo5	sik6	nei5	m4	dou2	go3	ping4guo2
1sg	eat	2sg	NEG	achieve	CLF	apple

'I can't eat your apple.' [Unattested regardless of ArgC and ArgN].

Because most comparative dialectological work in Chinese is framed in subject-object terms and uses mainly ArgA objects in examples, the extent of diversity regarding non-cause, non-affectee elements is currently unclear. We hope that future work will shed more light on this diversity by investigating ArgN-type objects in addition to ArgA.

5.3. Methodological Implications on Worldwide Typology

5.3.1. The Need for Explicitly Defining Constructional Levels

The existence of the schematically abstract causative–resultative construction poses serious challenges to worldwide typology. As mentioned above, typologists typically assume that each variety has a finite, enumerable set of serial verb constructions. In practice, constructions such as those listed in the headers of Section 3.3—resultative, comparative, causative, etc.—are assumed to be the relevant 'constructions' (e.g., Aikhenvald and Dixon 2006; Matthews 2006; Luke and Bodomo 2000). However, as construction grammarians have long argued (e.g., Diessel 2019; Croft 2007), 'constructions' are arranged into numerous levels of abstraction, from maximally concrete to highly abstract. How do we know that the level traditionally investigated is the 'right' one?

This has important consequences. For example, Matthews (2006), following Aikhenvald and Dixon (2006), states that the Cantonese causative SVC is asymmetric (with one of the verbs coming from a closed class) and the cause-effect SVC is symmetric (with both of the verbs coming from an open class). Yet, if we look at the CRC level, it is just symmetric. If we look at the directional vs. non-directional CRC level, then the directionals remain asymmetric, but the CRCs are still all symmetric. In the future, we hope typology can better specify the level of abstraction desired in analysis to ensure better comparability between languages investigated.

5.3.2. Rethinking Argument-Sharing Typology

The problems with the decompositional approach pose serious problems to typology, especially in approaches that do not separate language description and comparison. For example, Aikhenvald and Dixon (2006) set up several types of SVCs, giving both semantic and syntactic (in terms of component argument structure) characterisations. Those relevant to CRCs are shown in Table 3.

Table 3. Aikhenvald and Dixon's SVC categories relevant to Cantonese CRC.

Type	Shared Argument	Component Transitivity	Corresponds to Our Subconstruction
Cause-effect Causative	O of V1 = S/A of V2	V1-transitive, V2-intransitive or occasionally transitive	Typical resultatives Causatives
Event-argument	/	One V transitive/intransitive, Other V intransitive	Manner constructions
Resultative	/	Both intransitive	Typical resultatives

Even without the results of this paper, this schema is highly problematic. For example, our Type IV CRCs (ArgA + ArgN) such as (13ab) are semantically cause-effect, but 'share' both A and O, rather than the O of V1 being the A of V2. However, even if the table were expanded to include every combination of individual argument structures possible,

the examples in Section 4.1, which cannot be easily separated into individual argument structures, still cannot be included.

Since the language of argument structure composition and argument sharing cannot be applied to all SVCs, one possible way to improve upon the typology of serial verb constructions is to take the multivariate approach (Bickel 2010) and decompose traditional concepts into smaller features. For example, traditional statement formats such as 'The O of V1 is shared with the S of V2' may be decomposed step-by-step into:

1. Is it possible for V1 to appear in a monoverbal clause with one of the arguments of the SVC as the O?
2. Is it possible for V2 to appear in a monoverbal clause with one of the arguments of the SVC as the S?
3. If 1 is possible, is there no change in verbal semantics? How about 2?
4. Are the NP targeted by 1 and 2 the same?

If, in traditional terms, 'the O of V1 is shared with the S of V2', then the answers are 'yes' to all four. The exceptions discussed in Section 3.3 all have 'no' to at least one of these answers. These variables can describe both 'straightforward' SVCs capturable by the decompositional approach, and more unusual constructions.

In approaches such as Haspelmath (2016), which strictly demarcate language-internal descriptive categories and comparative concepts for typology, one may continue using the decompositional approach if the comparative concept is carefully defined to *exclude* examples not amenable to decomposition. Indeed, Haspelmath already excludes our causative and perhaps manner CRCs (using his *no predicate-argument structure between verbs* criterion), and CRCs where one of the Vs is absent from monoverbal constructions (using his *independent verb* criterion). However, he does not go far enough; his *independent verb* does not guarantee that the verb has identical semantics in monoverbal and multiverbal contexts, nor that all and only arguments that would appear with the individual verbs show up in the SVC. Thus, Haspelmath's definition needs to be further tightened to test generalisations hinging on decomposition (Generalisations 7–10) against Cantonese. Once tightened, Generalisation 7 (all SVCs share arguments) still seems unsupported:

(88)	但	好	驚	行	爛	對	鞋
	daan6	hou2	geng1	haang4	laan6	deoi3	haai4
	but	very	afraid	walk	wear	pair	shoe

'But (I)'m really afraid I'll wear out the shoes by walking.' [SEA162].

Here, the shoe would be the sole argument of *wear out* in a monoverbal clause, and the unexpressed *I* would be the sole argument of *walk*. Thus, there is no argument sharing despite the decompositional approach working.

5.4. Theoretical Implications on Constructional Change

5.4.1. Constructional Levels, SVC Symmetry and Grammaticalisation

As mentioned above, the existence of multiple levels of CRCs poses a challenge to Aikhenvald and Dixon's symmetric-asymmetric typology, since the CRC level is symmetric while specific subconstructions may be symmetric or asymmetric. This raises the question of how to reconcile with our approach to A&D's generalisation that asymmetric SVCs are sites for grammaticalisation (while symmetric SVCs are lexicalization sites). For example, in the A&D account, in Cantonese asymmetric causative CRCs (Section 3.3.5), the cause verbs are semantically light and grammaticalising into causative markers. However, if the higher-level construction, CRCs, is symmetric, aren't causatives simultaneously favourable and unfavourable for grammaticalisation?

In fact, our approach is in concert with Bisang's (2009) modification of A&D's generalisation. Adopting a definition of *grammaticalisation* as the process where an originally open-class form becomes the marker for a construction, Bisang restates the diachronic statement as follows: symmetric SVCs are starting points of grammaticalisation, and as certain verbs in the symmetric SVC come to be grammaticalised as markers for a specific con-

struction, they become members of a closed class, *creating* asymmetric SVCs. Thus, rather than asymmetric SVCs favouring grammaticalisation, it is grammaticalisation that leads to asymmetric SVCs. The asymmetric causative CRC, then, was formed with the (symmetric) CRC as the starting point and came into being as the causer verb became a semantically light constructional marker.[29]

As this grammaticalisation process progresses, some verbs take on meanings much more abstract and general than their lexical sources, which the literature has typically referred to as (resultative, phase, directional, etc.) 'particles'. The tail end of this process can result in the construction dropping out of the CRC altogether. For example, consider the directional V2 返 *faan1* 'result', which has been grammaticalised into a stance marker (Chor 2013) and is no longer indicative of the result:

(89)

沖	返	個	靚	涼
cung1	faan1	go3	leng3	loeng4
flush	return	CLF	pretty	shower

'Let me take a nice shower.' (Chor 2013).

Expressions using this sense of *faan1* no longer have potential forms, and so are not CRCs.

5.4.2. Semantic Orientation as Potential Initiator of the Grammaticalisation of Verbal Particles

Our holistic approach to argument structure also sheds light on the mechanisms involved in some grammaticalisation pathways whereby asymmetric SVCs are created. Since the V2 only has to be semantically oriented towards ArgA and does not need to have a predicate-argument relationship with it, the V2 can appear with more types of ArgAs, widening the range of contexts the V2 appears in and therefore favouring its grammaticalisation (cf. Himmelmann 2004) as a verbal particle relevant to the result of V1. This section will focus on Mandarin, where examples where ArgA is not an argument of V2 are also easily found, and historical texts are easily available.

Consider Mandarin 光 *guāng* 'bare' (J. Wáng 2010), which has been grammaticalised into a quantifying particle meaning all of ArgA was removed. Before grammaticalisation, we see uses where *guāng* as V2 clearly means 'bare':

(90)

誠	恐	他	吃	光-了	世界
chéng	kǒng	tā	chī	guāng-le	shìjiè
honest	fear	3sg	eat	bare-PFV	world

'She sincerely feared that it would eat the world bare.' [*Sānbǎo Tàijiàn Xīyángjì* 43].

Later, bridging constructions such as the following began to arise:

(91)

怎的	把	一	盤	肉	包子	通	吃	光-了
zěnde	bǎ	yì	pán	ròu	bāozǐ	tōng	chī	guāng-le
how	DISP	one	tray	meat	bun	all	eat	bare-PFV

'How did he eat a whole tray of met buns bare?' [*Sūn Páng Dòuzhì Yǎnyì* 20].

Here, if the classifier (i.e., tray) is seen as the head of ArgA, then it is an argument of *bare*. However, in our approach, CRCs allow V2s to only semantically orient towards ArgAs, and *meat* satisfies this condition. So, if *meat* is treated as the head of ArgA, it still fits into the construction.

This process eventually gave rise to constructions with only the latter interpretation, i.e., the present quantifying use, which is now most common, and can no longer be decomposed into two clauses with *guāng* meaning 'bare':

(92)

如果	蟲子	把	樹葉	都	吃	光-了
rúguǒ	chóngzǐ	bǎ	shùyè	dōu	chī	guāng-le
if	bugs	DISP	leaf	all	eat	all-PFV

'If bugs eat up all the leaves . . . ' [SEA149].

Mandarin constructions with V2s such as 破 *pò* 'break', 穿 *chuān* 'pierce', or 透 tòu 'pass through' followed a similar path. They are often used metaphorically when the ArgC

sees *through* some incorrect or deceptive thing, e.g., a façade or illusion. One frequent collocation is 看破 *kàn pò* 'look break', frequently used when the ArgC has seen through the empty and transient nature of worldly matters:

(93)

把	興	亡	看	破
bǎ	xīng	wáng	kàn	pò
DISP	prosperity	vanquishment	look	break

'(I) saw through prosperity and vanquishment (i.e., am no longer bothered by them).' [*Jīnzhǎnzǐ, Sì Shí Huái Gǔ Qiū Cí* from *Běn Táng Jí*].

Such worldly matters are generally the implied affectee even when there is no affectee made explicit. In these examples, the affectee is unproblematically an argument of 'break,' since they were demolished in the eyes of the ArgC. Quoting nun and Buddhologist Fat Yan, 'In Buddhism we always say *kàn pò*—what are we 'breaking'? Our wrong concepts.'[30]

Again, as the construction developed, ArgAs began appearing that cannot be direct arguments of 'break' in monoverbal clauses. Sometimes, the affectee may be the *person* putting up a façade or act:

(94)

我	已	三	五	日	前	看	破	他	了
wǒ	yǐ	sān	wǔ	rì	qián	kàn	pò	tā	le
1sg	already	three	five	day	before	see	break	3sg	ASP

'I have already seen through him three to five days ago.' [*Sānbǎo Tàijiàn Xīyángjì* 82]

Alternatively, the affectee may be the truth revealed *after* breaking through the illusion. Consider (95):

(95)

如	曾	點	卻	被	他	超然	看	破	這	意思
rú	Zēng	Diǎn	què	bèi	tā	chāorán	kàn	pò	zhè	yìsi
like	Zēng	Diǎn	but	AGT	3sg	transcendently	see	break	this	meaning

'Yet as for Zēng Diǎn, he transcendently realised this meaning.' [*Zhūzǐ Yǔlèi* 40].

Here, the meaning is not what is 'broken'—rather, what 'broke' was the reasons (discussed in the preceding context) that make the meaning *difficult* to understand. Z. Wáng (2016)'s example (40) resembles this, though he did not appear to notice that the ArgA was not actually broken.

Thus, by virtue of the fact that ArgAs do not have to be 'arguments' of V2 in monoverbal predicates, V2s such as *pò* seem to be grammaticalising into a resultative particle, indicating that the preceding verb results in dispelling an illusion, rather than necessarily 'breaking'.

In the Dàjīnggǎng variety of Southwestern Mandarin, 破 [p^ho] has been further grammaticalised into a general completive marker, and this change may have involved similar processes. [p^ho] is not restricted to situations that involve breaking, literally or metaphorically, but can be used in any situation where something disappears, diminishes or is destroyed, or even changes state (Chén and Zhōng 2021). An example where the affectee is destroyed is as follows:

(96)

他	把	我	作业	烧	破	哒。
3sg	DISP	1sg	homework	burn	break	ASP

'He burnt up my homework.' (Chén and Zhōng 2021, p. 103).

A change-of-state example is as follows:

(97)

我	要	去	把	衣服	洗	破。
1sg	want	go	DISP	clothes	wash	break

'I want to go wash up the clothes.' (Chén and Zhōng 2021, p. 103).

The jump from examples such as (96) to change-of-state examples such as (97) may be motivated by the same principle. The clothes did not diminish or get damaged, but rather the stains on them disappeared. However, the clothes remain *affected* by the stain's disappearance.

6. Conclusions

In this paper, we provide a new account of the Cantonese causative–resultative construction, a broadly defined notion covering a variety of constructions with a range of similarities across syntactic and semantic domains. Though our account is constructionist-inspired, we dispense with traditional notions common to most previous accounts, such as subject, object, pseudo-passives and inversion. Instead, we directly describe the order of ArgC (cause), ArgA (affectee) and ArgN (non-cause non-affectee) without recourse to these notions. Thus, our analysis falls in line with framework-free grammatical theory (Haspelmath 2009), assuming no a priori syntactic categories, in response to criticism (e.g., Stern 2019) that construction grammar still relies excessively on traditional categories.

We also show that the decompositional approach to resultative argument structure is empirically untenable, compared to our holistic account, where arguments belong only to the whole construction, and where the relationships between individual verbs and referents are expressed with semantic orientation instead of traditional predicate-argument terminology. This clearly shows that when two historically distinct clauses are combined, the resulting construction can become crystallised as a construction *per se* rather than derivative of the biclausal source, even when neither of the verbs is clearly grammaticalised; and that, *pace* Foley and Olson (1985), this process is *not* limited to constructions where the two verbs are contiguous: the verbs in Cantonese CRCs are separable by potential markers and ArgAs.

Finally, as a personal remark, although our paper, of course, benefited greatly from existing theoretical knowledge, we could not have arrived at our conclusions without starting our investigation by observing interesting phenomena in natural language use, which led us to document a host of phenomena that appear erratic in traditional approaches. We believe a bottom-up, observational approach can enrich traditional theoretical approaches and take us further.

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Abbreviations

ADV	adversative particle
AGT	agent marker
ASSOC	associative marker
BEN	benefactive coverb
CAUS	causative verb

CLF	classifier
COMP	comparative particle
COMPL	completive
CONT	continuous
COP	copula
DISP	disposal marker
DME	demonstrative
DOU	achievement particle 到
EXST	existential verb
FOC	focus
HEI	phase particle 起 hei2
HO	form 何 ho4
IRR	irrealis
NEG	negation marker
NOI	form 奈 noi6
PERF	perfect
PFV	perfective
POT	potential marker
REFL	reflexive
SFP	sentence-final particle
sg	singular
ZOEK	particle 著 zoek6

Notes

1 As native speakers, we have sometimes found decontextualised examples in previous work strange-sounding.

2 Most of the data in this paper comes from Hong Kong Cantonese, which is overrepresented on the Internet; however, we also include examples from other regions, especially Mainland China.

3 Slobin (2004) is an exception in the Talmyan tradition that better resembles the serial verb tradition described in Section 2.4.

4 In the literature, thematic role-based accounts are called 'morphological' or 'lexical'; grammatical relation-based accounts are 'syntactic'.

5 This definition includes constructions with *only* potential forms and no non-potential forms. The definition is not new; it is often used as a test for the 'complement' in Chinese linguistics (e.g., Chor 2018, p. 40; Thompson 1973).

6 This is unlike Mandarin, where the negative potential form may seem discardable.

7 In all examples in this paper, the portions of the causative–resultative construction, *excluding* all preverbal elements, will be in boldface, except where the entire sentence belongs to the causative–resultative or where the CRC is otherwise clear.

8 Some authors use 'causer'/'causee'. We prefer cause/affectee since ArgCs are frequently non-agentive.

9 These properties are applied to most CRCs, but some positions—in particular ArgAs between *m4* and *dak4*—are subject to a large number of lexical and semantic restrictions (Yue-Hashimoto 2003; Lai 2018).

10 Traditionally, it is said that only pronouns may be between in non-directional CRCs (e.g., Yue-Hashimoto 1993; Kwok 2010). However, occasional exceptions do exist; see Lai (2018).

11 The analysis in C. Li (2013, p. 106) also implicitly does away with pseudo-passivation; however, he still maps the ArgA to the subject position, whereas we reject the subject position altogether.

12 Cheung (1972, p. 133) is one structuralist account that makes a distinction like our ArgA-ArgN. He frames the distinction in constituent-structural terms. For Cheung, in the case of ArgA, the V1 and V2 (which he calls a complement) form one predicator constituent, of which ArgA is an 'object'. In the case of ArgN, V2 and ArgN form a complement, which modifies the V1, which is the head. Cheung does not offer a clear explanation of this distinction. In our constructionist framework, constituency is viewed as an emergent phenomenon, and we can explain Cheung's intuition about constituency in terms of contiguity and semantic dependence. Langacker (1997) notes that the intuition behind constituency can be captured as follows: a constituent is an expression that is (a) contiguous and (b) connected by 'valence links' (i.e., strong conceptual connections). Since ArgN is typically a participant of and adjacent to V2, V2-ArgN can be considered a classical constituent. ArgA often appears in places not adjacent to the verbs, whereas the verbs are strongly conceptually connected and, in Cheung's examples, contiguous and thus constitute a constituent too. Our description is thus compatible with and provides a semantic basis for Cheung's account.

13 Our account is similar to Liu's (2020) Mandarin analysis but without the layer of grammatical relations.

14 In Cantonese, 'mechanical pencil' can be an argument of 'write', but the agent, in that case, would still be a person—not the bad gesture as in the 'inversion' analysis.

15 Lee and Ackerman's (2011) explanation does not work for Cantonese, as it requires that 'eat' be ambitransitive, which is not the case for Cantonese (Matthews 2006).

16 Because of the half-written, half-spoken style of this sentence, it includes the Mandarin chunk 想着 soeng2-zoek6; the Cantonese equivalent is 掛住 gwaa3-zyu6.

17 The sentence may be interpreted as 'English does not manage to imitate you', in which case it would not be an inverted construction. However, this only makes sense if *jing1man4* 'English' is an entity capable of learning and hence the agent, such as Tsai Ing-wen, the current leader of Taiwan.

18 Matthews and Yip distinguish verb-particle constructions from the usual resultative on the grounds that some of the particles do not appear alone as verbs. Although we regard resultative verb-particle constructions as belonging to the causative–resultative construction, we note that this does not conflict with their classification of resultative particles as a separate part of speech from verbs, since the V2 slot of the resultative construction may be filled by particles. As an analogy, argument positions in Chinese can always be occupied by verbs with no derivation. We do note, however, that the possibility of the potential construction means V2 particles can be negated, which *is* a verb-like property. Thus, it is reasonable to continue calling the V2 slot of the causative–resultative construction 'V2', with the understanding that this includes verbal particles.

19 The word 'causative' is used in at least two other ways in the literature on Cantonese. Some authors use it to refer to what other authors called 'inverted' resultatives, as mentioned above. Others use it to refer to almost all the constructions we consider CRCs, except perhaps for those involving particles (K. Li 2002).

20 Some early accounts of Chinese resultatives assumed that V2 is always intransitive (e.g., Thompson 1973; Méi 1991). However, given clear evidence to the contrary (Lau and Lee 2021, or our examples like (11ab)), this does not constitute evidence against analysing 濕 *sap1* 'wet' as transitive.

21 Note that this construction only appears in the potential forms. This is likely because the idiom expresses a stative meaning, whereas the CRC must be dynamic since it involves a cause and result.

22 The only example we could find of 齊 cai4 may be being used intransitively to refer to a specific action being completed is as follows: 認真 做 功課 齊 jing6zan1 zou6 gung1fo3 cai4 'serious do homework complete' ('Do seriously, homework complete.' [SEA063]) However, it comes from a half-Cantonese half-Mandarin slogan and sounds rather awkward: The clause seemed to be worded in this strange way because the slogan had to be broken down into three-syllable intonation units. Moreover, it can still be interpreted as existence if the intended meaning is that the child brings all the homework to school, rather than doing all the homework.

23 There were several examples where there was no manner or position explicitly specified. However, this is a special construction used on the Internet to refer to the act of posting something on the current discussion board: those examples were talking about posting pictures of legs or feet onto the discussion board. Thus, there was still an implicit location.

24 The *bei2* 畀 'passive' construction is harder to interpret this way, since, unlike Mandarin *bèi* 被-constructions, it has other meanings, such as causatives, that do not imply affectedness on the pre-verbal argument's part.

25 'Rice' cannot be an ArgC since it is postverbal.

26 Type 6 is the 'inverted' construction; Lau and Lee claim these do not exist in Cantonese and only use Type 6 for Mandarin, but as we have seen above, this is not true.

27 The sentence was taken from an advertisement for a waterproof bag; rain was never mentioned in the context before this sentence. Thus, it cannot be taken as an implicit ArgC. Furthermore, the 'rain' in the example itself is nonreferential.

28 These are manually counted tokens, not Google hits, as Google turns up many duplicates.

29 Aikhenvald (2018) seems to move closer to Bisang's position, with a section on the simultaneous grammaticalisation of V2s and the formation of asymmetric SVCs, though it is still not clear whether she accepts that the asymmetric SVCs start from symmetric ones.

30 https://www.youtube.com/watch?v=u9c2MeOuSiY (accessed on 3 February 2023).

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Article

Polyfunctionality of 'Give' in Hui Varieties of Chinese: A Typological and Areal Perspective

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Abstract: The morpheme 'give' is among the most well-studied lexical items in the realm of grammaticalization. This study sets out to provide a typological and areal analysis of the distinct forms and multiple functions of 'give' in 27 varieties of Hui Chinese, a lesser-known group of Sinitic languages. Making use of both primary and secondary data, we have identified ten different functions of GIVE, namely (i) lexical verb 'give', (ii) recipient marker 'to', (iii) benefactive marker 'for', (iv) purpose marker, (v) permissive marker, (vi) passive marker, (vii) pretransitive disposal marker, (viii) allative marker, (ix) locative marker 'at/in', and (x) temporal marker 'till'. The Hui varieties covered in this study generally showcase the syncretism of a minimum of five of the functions above simultaneously. Semantic extension, polygrammaticalization, and cooptation are shown to be the major mechanisms behind the polyfunctionality or polysemy sharing of the morpheme 'give'. Our study contributes to the understanding of the role that grammaticalization, especially contact-induced grammaticalization, plays in forming linguistic areas. In addition, it casts doubt on the basicness of 'give' in assessing the genetic relatedness of languages in the world.

Keywords: give; polygrammaticalizaion; Hui Chinese; semantic extension; areal typology; linguistic areas

1. Introduction

Grammaticalization is conventionally defined as 'the change whereby lexical items and constructions come in certain linguistic contexts to serve grammatical functions, and, once grammaticalized, continue to develop new grammatical functions' (Hopper and Traugott 2003, p. 18). Although grammaticalization is traditionally studied as a language-internal phenomenon, new findings from a number of fields, particularly areal typology (Bisang 1996; Matisoff 1991; Ansaldo 1999; Dahl 2004; Enfield 2003; Heine and Kuteva 2003, 2005), bilingual development (Matthews and Yip 2009; Szeto et al. 2017, 2019), and creole studies (Arends et al. 1994), have provided abundant evidence to demonstrate that grammaticalization could result from language-external factors such as geographical clustering and substrate influence. In their seminal work on grammaticalization, Hopper and Traugott (2003, p. 230) also acknowledge the significant connection between language contact and grammaticalization, concluding that 'Contact has been an important factor for most languages, and a strictly monogenetic view of grammaticalization is ultimately inappropriate'.

The morpheme GIVE is among the most well-studied lexical items in the realm of grammaticalization. Cross-linguistically, the lexical verb 'give' exhibits an array of distinctive functions, as identified in Kuteva et al. (2019, pp. 192–203) (Table 1).

Table 1. The multiple functions of 'give' in the world's languages (Kuteva et al. 2019, pp. 192–203).

		Functions
give >	(1)	benefactive
	(2)	causative
	(3)	cause
	(4)	concern
	(5)	imperative
	(6)	passive
	(7)	patient
	(8)	permission
	(9)	purpose
	(10)	recipient

More relevantly, Bisang (2015, pp. 137–39) identifies four different functions of *ʔaoy* 'give' in Khmer as a coverb, a causative verb, an adverbial subordinator for purpose or manner, and a complementizer. Yap and Iwasaki (2003) focus on a particular grammaticalization cline of the lexical verb 'give', from the permissive–causative function to the passive function in many East and Southeast Asian languages, and identify a case of contact-induced grammaticalization in Kedah Malay. Matthews and Yip (2009) further confirm the high likelihood of this case of contact-induced grammaticalization, with data from Cantonese–English bilingual acquisition of the different functions of the lexical verb 'give', and the areality of such a pathway in Southern Sinitic varieties.

Regarding Sinitic languages, Tsao (1988), Lai (2001), Chin (2011), Ngai (2015), and Lu and Hui (2023), among others, have provided comprehensive insights into the polyfuncationality of the morpheme GIVE in varieties south of the Yangtze River, namely Taiwanese Southern Min, Hakka, Cantonese, Shaowu, and Tunxi Hui, respectively. These studies reveal that the morpheme GIVE serves six to nine concomitant functions in these Sinitic varieties, with all of them sharing the function of a passive marker, suggesting a pattern of areal distribution induced by language contact.

In light of the complexity and the possibility of areal distribution of functions of the morpheme GIVE, this paper sets out to provide a micro-typological study on a group of lesser-known Sinitic languages situated in the central transitional region of China (Chappell 2015; Szeto and Yurayong 2021). By investigating the forms and functions of the morpheme GIVE in 27 datapoints of Hui Chinese, we aim to find out the following:

(i) What are the forms of the lexical verb 'give' in each of the datapoints? Why should they differ so greatly from each other?

(ii) What are the functions of the morpheme GIVE in each datapoint of Hui Chinese? What is the mechanism of such radical polyfunctionality of 'give'?

By answering these questions, we hope to shed light on the mechanism of grammaticalization of GIVE cross-linguistically, and further enrich our understanding of the lexeme GIVE, one of the most 'basic' lexical items in human cognition.

2. Data Collection and Hui Chinese

In this study, 27 samples of Hui Chinese (Figure 1)[1] are assembled, including primary and secondary data, covering all the five subgroups of Hui scattering over Southern Anhui Province, Northeastern Jiangxi Province, and Western Zhejiang Province (Figure 2) south of the Yangtze River. In collecting primary data, both linguistic elicitation and natural linguistic recordings are used. Unless otherwise indicated, all examples presented in this study are primary data collected from the field. Data from the literature are glossed and translated by the authors if no such gloss or translation is given in the original work.

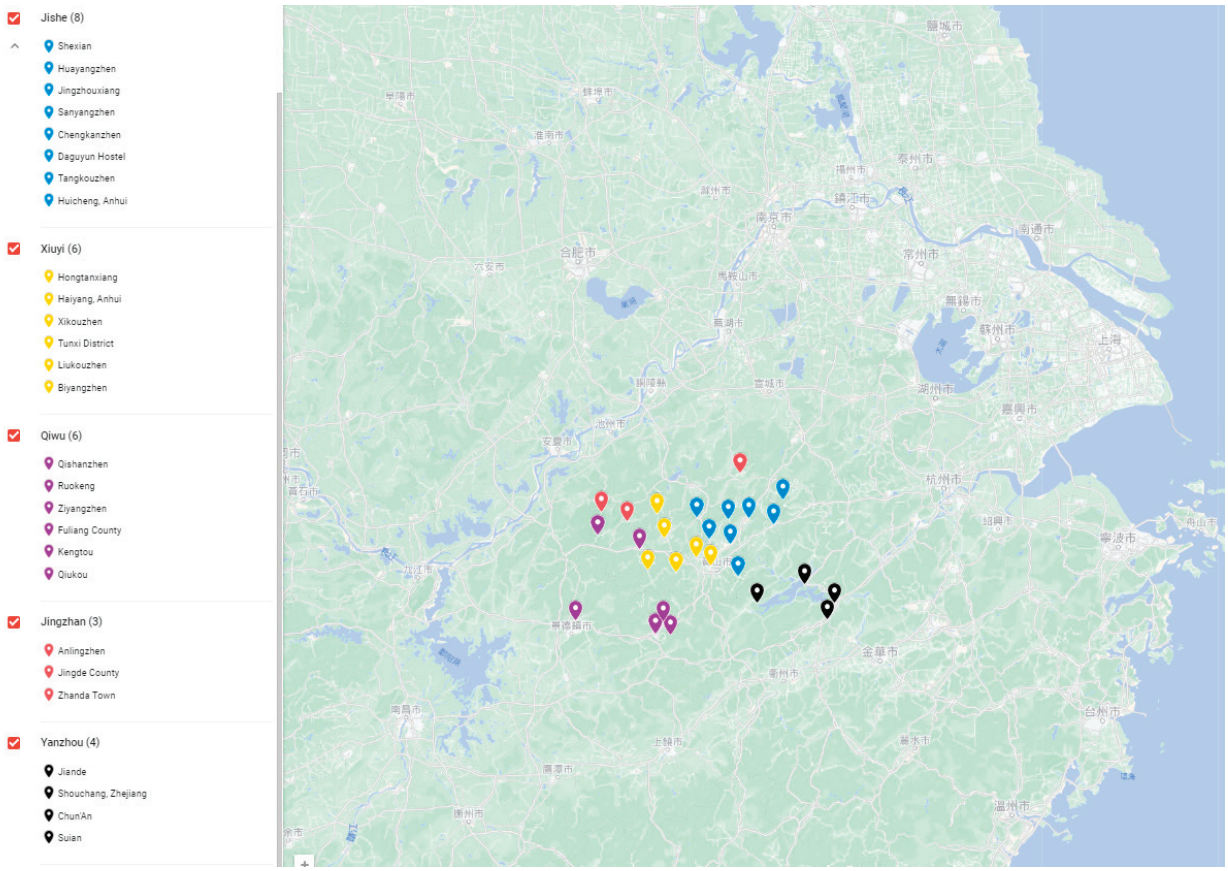


Figure 1. Twenty-seven Datapoints of Hui Chinese.

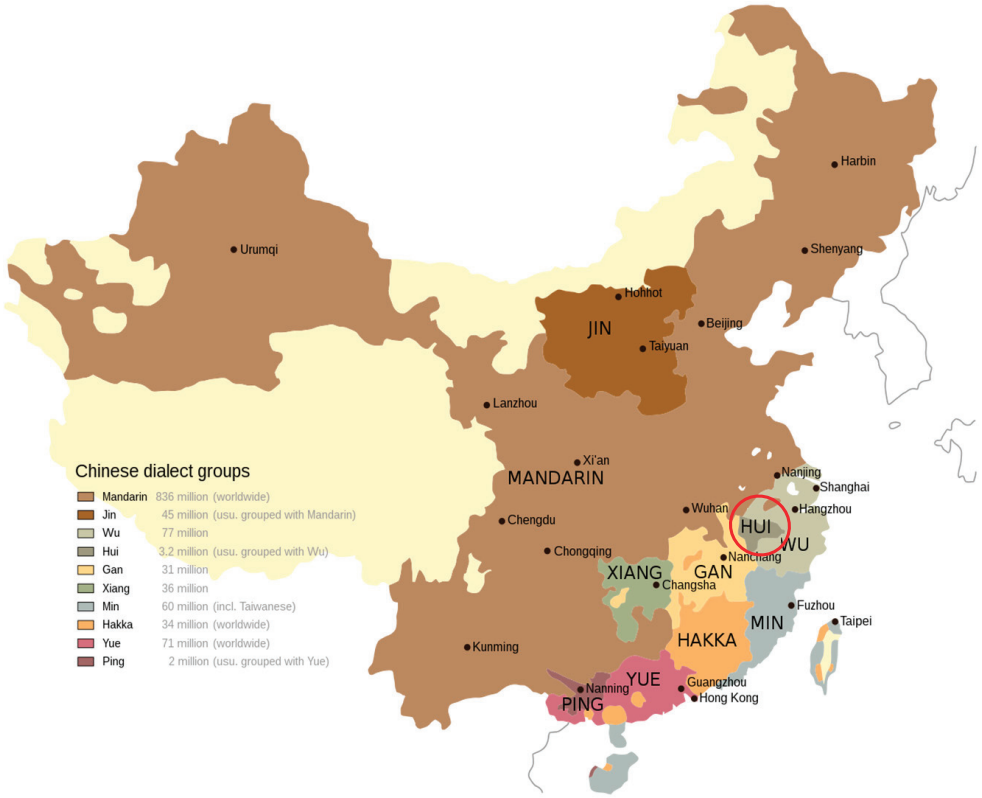


Figure 2. Map of Sinitic languages. (Source: Wikimedia Commons n.d.)

Before delving into the study of the morpheme GIVE, we would like to provide a brief introduction to Hui Chinese. As one of the least-studied groups of Sinitic languages, Hui Chinese varieties (circled in red in Figure 2) are mainly spoken in the Lower Yangtze River area of China, including Southern Anhui Province, Northeastern Jiangxi Province, and part of Western Zhejiang Province, with approximately 3.2 million speakers (Zhao 2005). In the literature, Hui 'dialects' used to be classified either as a subgroup of Mandarin, e.g., Xiajiang Mandarin (Li [1937] 1973), Huining Mandarin (Wang 1955), or Jianghuai Mandarin (Zhan 1981), or a subgroup of Wu Chinese (Cao 2002; Zhao 2004). It was not until the first edition of the *Language Atlas of China* (Wurm et al. 1987) that Hui Chinese was categorized as an independent group of Sinitic with five subgroups. In the second edition of the *Language Atlas of China* (Zhang 2012), Hui Chinese retains its status as an independent group of Sinitic languages, albeit with a refined grouping of subgroups, namely Xiu-yi, Ji-she, Jing-zhan, Xi-wu, and Yanzhou (Figure 3).

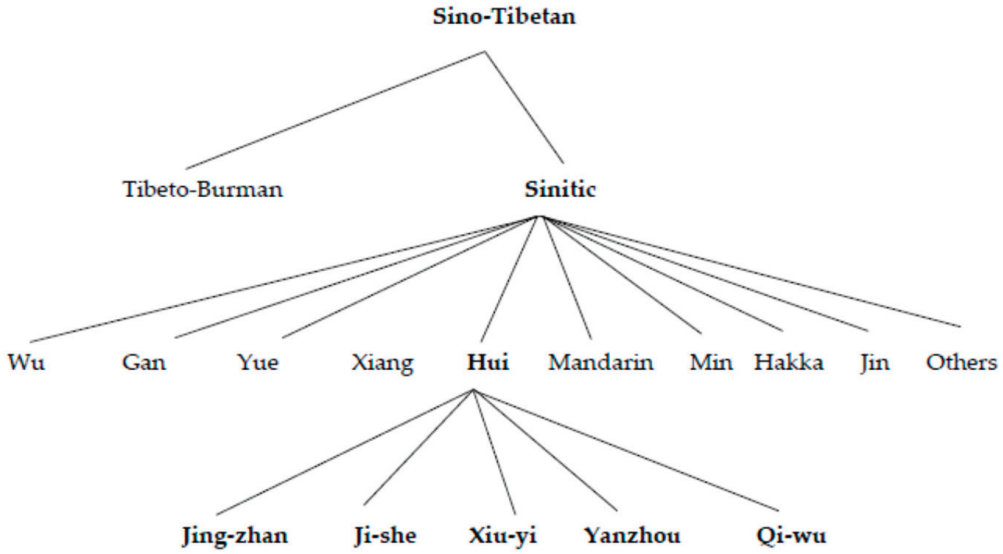


Figure 3. Phylogenetic affiliation of Hui Chinese (adapted from Lu 2018, p. 5).

The history of Hui Chinese can be traced back to *bai-yue* 百越 'hundreds of Yue tribes'. In Chinese historiography, *bai-yue* conventionally refers to non-Sinitic tribes who are believed to be ancestral to the present-day speakers of Tai-Kadai, Hmong-Mien, and Austroasiatic languages (Li 1994; Meacham 1996; LaPolla 2001). The ancient residents of the present-day Hui region belonged to a particular branch of *bai-yue* known as *shan-yue* 山越 'mountain Yue tribes'; they were probably either ancestral inhabitants of the Hui regions or had reached northward from the Far South to the Yangtze River and resided in the chains of undulating hills in the Hui regions in ancient times. Such a hilly geographical condition contributes to the substantial level of internal diversity observed between subgroups, which is further reinforced by continuous waves of war-induced, disaster-driven, or government-initiated migrations since the West Jin Dynasty, especially from the Central Plains proper (Coblin 2002; Meng 2005). It was manifested in *Huizhou Fuzhi* 徽州府志 'A history of the Huizhou Provincial Capital' in the Ming Dynasty that 六邑之語不能相通 'The languages of the six counties under the Huizhou Provincial Capital are mutually unintelligible'.

Despite the observable diversity, there are still features that 'unite' Hui varieties as a group and distinguish themselves as transitional varieties, with both intermediate features between Northern and Southern Sinitic languages, as well as unique features found only in Hui Chinese. Zhengzhang (1986, pp. 13–14) and Zhao (2005, pp. 279–82) summarize the phonological characteristics of Hui varieties that categorize themselves as distinct from neighboring groups of Chinese as follows. Firstly, all voiced consonants in Medieval Chinese have become devoiced. A two-way contrast is present between voiced and voiceless

aspirated and voiceless unaspirated affricates and stops in most varieties of Hui. In other words, the three-term distinction between voiced aspirated, voiceless aspirated, and voiceless unaspirated affricates and stops, as demonstrated in the adjacent Wu Chinese varieties, is not shown. Secondly, rhymes with the nasal coda /ŋ/ or with the nucleus ending with /i/ or /u/ have gradually dropped their codas. Thirdly, rising tones with voiced initials have tended to gradually change into lower rising tones with voiceless initials. Finally, regarding tones, Hui varieties record an average of six tones, mostly with a glottalized checked tone, albeit somehow weakened. Among these features, the number of tones demonstrates the transitionality of Hui Chinese, as Northern Sinitic languages generally have three to four tones, except for some extreme cases, e.g., Wutun, a radically restructured variety of Northwest Mandarin, which has lost all of its tones due to contact with Amdo Tibetan and Bonan (Sandman 2016); meanwhile, Southern Sinitic languages generally have six to nine tones, including checked tones, as in varieties of Yue and Min. The existence and distribution of checked tones are yet another indication of Hui's transitionality. The checked tones, literally syllables ending with stops /p/, /t/, and /k/ in Medieval Chinese, are fully preserved in Southern varieties like Yue and Hakka, but totally lost in Northern Mandarin. Hui Chinese, on the other hand, generally manages to preserve a merged version of the final stops, a glottalized /ʔ/, although the degree to which it is preserved varies across different varieties.

Morpho-syntactically, Hui Chinese displays 'transitional' features intermediate between Northern and Southern Sinitic languages, as well as features unique to itself. On the one hand, regarding the comparative constructions, Hui varieties generally take after the Northern type of the 'Compare' comparative constructions, i.e., [Marker-Standard-Adjective], in contrast with the Southern type of what Ansaldo (1999) terms as the 'Surpass' type, or in Chappell's (2015) term the 'Action' type. On the other hand, unlike Northern Mandarin varieties, Hui has retained a remarkable number of monosyllabic words from Medieval Chinese, e.g., *ɕi*^{11} 'play' and *uʔ*^{5} 'house' in Tunxi Hui, which are either no longer used, or have been disyllabicized in Standard Mandarin. A head-initial word order tendency is widely observed with respect to the relative word order of animal names and their genders [animal + gender], as well as the verb and the modifying adverb [verb + adverb], resembling those of many Southern Sinitic languages, e.g., Cantonese. Nevertheless, this tendency has been gradually replaced in recent years with the opposite head-final tendency, in co-existing patterns [animal + gender] or [gender + animal], or double-marking constructions, e.g., [*tsə*^{42} 'again' *tɕʰiʔ*^{5} 'eat' *i*$^{11\text{-}5}$ 'one' *u:ə*^{31} 'bowl' *tʰiɛ*^{11} 'again'], under the overwhelming influence of Standard Mandarin. In addition, as has been pointed out in Lu (2018) and Lu and Hui (2023), some Hui Chinese varieties such as Tunxi Hui employs the 'give'-passive, generally regarded as a feature of many Southern Sinitic and Mainland Southeast Asian languages (Hashimoto 1988; Yap and Iwasaki 2007; Chappell 2015; Szeto 2019, among others). However, given the complexity and internal diversity of Hui Chinese, it is worthwhile to explore more Hui varieties on the lexical sources of passive markers.

After having provided a sketch of the typology of Hui Chinese, our attention will shift to examining the unique forms and functions of a specific morpheme, namely GIVE, in various varieties of Hui Chinese.

3. The Distinct Forms of GIVE in Hui Chinese

Although belonging to the same 'dialect group' of Sinitic languages, the 'basic' morpheme GIVE of different varieties of Hui Chinese varies considerably from each other. Their forms are listed below in Table 2.

Table 2. Forms of 'give' in varieties of Hui Chinese[2].

Datapoint of Hui Varieties	Subgroup	Forms of GIVE	Reconstructed Etymon
Xianggao 向杲	Jishe	$kɤ^{35}$ *or* kei^{35}	**kuo1* or **kuo5* 'give' 過
Huayang 華陽	Jishe	$xɑ̃^{53}$	?
Jingzhou 荆州	Jishe	$xɛ^{35}$	?
Sanyang 三陽	Jishe	$xɐ^{33}$ *or* $xɑn^{33}$	?
Chengkan 呈坎	Jishe	$xɛ^{42}$	?
Daguyun 大穀運	Jishe	$xɤ^{31}$	?
Tangkou 湯口	Jishe	$xɑ^{31}$	?
Huicheng 徽城	Jishe	xe^{31}	?
Hongtan 宏潭	Xiuyi	$xɐ^{55}$	?
Haiyang 海陽	Xiuyi	te^{55}	**diai6* 'pass' 遞
Xikou 溪口	Xiuyi	ti^{55}	**diai6* 'pass' 遞
Tunxi 屯溪	Xiuyi	ti^{42}	**diai6* 'pass' 遞
Liukou 流口	Xiuyi	$pɤ^{33}$	**pi3* 'give' 畀 or **pi6* 'have' 比
Biyang 碧陽	Xiuyi	$pɛi^{31}$	**pi3* 'give' 畀 or **pi6* 'have' 比
Qishan 祁山	Qiwu	$fɑ̃^{11}$	**fun1* 'distribute' 分
Ruokeng 箬坑	Qiwu	$fÃ^{11}$	**fun1* 'distribute' 分
Ziyang 紫陽	Qiwu	tom^{44}	*ton1 'hold' 端
Jiuchengcun 舊城村	Qiwu	to^{55}	*ton1 'hold' 端
Kengtou 坑頭	Qiwu	kA^{52}	*kip7 'give' 給
Qiukou 秋口	Qiwu	$kɑ^{55}$	*kip7 'give' 給
Anling 安淩	Jingzhan	$xɛ^{21}$	?
Jingde 旌德	Jingzhan	$pæ^{213}$	**pa3* 'hold' 把
Zhanda 占大	Jingzhan	$pɔ^{35}$	**pa3* 'hold' 把
Suian 遂安	Yanzhou	n^{422}	**in4* 'stretch' 引
Jiande 建德	Yanzhou	po^{55}	**pa3* 'hold' 把
Shouchang 壽昌	Yanzhou	$nuə^{11}$	**na2* 'take' 拿
Chun'an 淳安	Yanzhou	$lɑ^{53}$	**na2* 'take' 拿

Note: * suggests reconstructed form in historical linguistics.

When examining the forms of 'give' in these Hui varieties, we can identify no fewer than ten distinct forms of the lexical verb 'give' in the field (refer to the column 'Forms of GIVE' in Table 2), despite the relatively small size of the Hui region (around 25,000 km^2) (Zhao 2012), plus the genetic and geographical proximity of these varieties. It is indeed striking because the lexical item GIVE is conventionally used to evaluate the genetic relatedness of languages, which is included not only in the intuition-based Swadesh 100- and 200-word lists (Swadesh 1951, 1955), but also the empirically-based Leipzig-Jakarta list (Tadmor 2009). Therefore, why should these genetically closely related languages of Hui Chinese differ extensively from each other with regard to such a basic lexical item? What is the nature of this variation within the class of these GIVE verbs?

While Hui Chinese lacks a writing system, Hui and Lu (2023) have conducted phonological reconstructions based on the Common Dialectal Chinese (CDC) proposed by Norman (2006) to restore the etymons of these so-alleged GIVE verbs. Based on their findings, we are able to classify these ten different forms of GIVE into three types of etymon verbs (refer to the column 'Reconstructed Etymon' in Table 2), which are all closely related to the prototypical ditransitive verb 'give', according to Malchukov et al.'s (2010, p. 55) semantic map of ditransitive verbs:

(i) GIVE-type verb of caused possession, such as **kuo1* or **kuo5* 'give' [+give, + manner], **fun1* 'distribute' [+give, +manner], **pi6* 'give' [+give, -manner] or *kip7* 'give' [+give, -manner];
(ii) SEND-type verbs of caused motion in an 'allative path' (Malchukov et al. 2010, p. 54), such as **diai6* 'pass' [+send, +manner];

(iii) TAKE-type verbs in an 'instrumental path' (Malchukov et al. 2010, p. 54), such as **pa3* 'hold' [+take, +manner], **na1* 'take' [+take, +manner] and **in4* 'stretch' [+take, +manner].

The distinctive etymons of modern Hui varieties play an important role in explaining such radical cases of polygrammaticalization or grammaticalization chains (Craig 1991; Heine et al. 1991) of 'give', according to the 'persistence' principle of grammaticalization, when some reminiscence of the original forms is likely to retain (Hopper 1991). We will discuss this point further in Section 5.

Having looked at its forms, we will now turn to the functional distribution of the lexical verb 'give' in these datapoints.

4. The Polyfunctionality of GIVE in Hui Chinese

One of the features of Sinitic grammaticalization lies in the syncretism of different grammatical functions (Matthews and Yip 2009; Ansaldo et al. 2018). In our investigation, the lexical verb 'give' in these Hui varieties also co-exists with all of its grammaticalized forms. Aside from semantic bleaching, phonological reduction is sometimes observed, although it may be more evident in some grammaticalized forms than others in certain Hui varieties.

In sum, we identify a total of ten concomitant functions of the lexical verb GIVE in 27 varieties of Hui Chinese (The Supplementary Material Table S1, namely (i) the lexical verb 'give', (ii) recipient marker 'to', (iii) benefactive marker 'for', (iv) purpose marker, (v) permissive marker, (vi) passive marker, (vii) pretransitive disposal marker, (viii) allative marker, (ix) locative marker 'at/in', and (x) temporal marker 'till'. Among these functions, the last three functions are little discussed in the literature. Given the density of 'polysemy sharing' (Chappell and Lü 2022) in a comparatively small geographical area, we cannot help but wonder what the relationships between these distinctive functions are and why some functions are missing in certain Hui varieties. We will start with a descriptive analysis of these functions, before providing explanations.

4.1. Lexical Verb GIVE

The morphemes of GIVE listed in Table 2 can all be used in an unmarked double object construction [SUBJ give OBJ_{Rpt} OBJ_{Th}] in Example (1)[3]. An alternation in a marked indirect ditransitive construction, equivalent to the 'dative shift' in English, is attested in most Hui varieties, too, as illustrated in Example (2).

(1) Shexian (Daguyun) Hui (Chen 2013, p. 155)

***xɣ*^{31}**	*ɑ*^{35}	*i*^{42}	*pəŋ*^{35}	*ɕy*^{31}.
give	1SG	one	CLF	book

'Give me a book.'

(2) Tunxi Hui

ɑ^{24}	*tɕ*^{h}*iu*^{5}*iɑ*^{44}	*ʦ*^{h}*o*$^{11-21}$*ŋ̍ie*^{11}	***ti*^{42}-*tɕ*^{h}*io***	*liɑu*^{24}	*lɔ*^{44}	*tɕie*^{11}-*ʦ*$_{l}^{31}$
1.SG	uncle	yesterday	give-PFV	two	CLF	chick-egg

'My uncle (on my mom's side) gave two baskets of eggs…'

***ti*^{42}**	*ɑ*^{24}*iɑn*^{44}.
RPT	1PL

'…to me yesterday.'

What is worth pointing out is that while most Hui varieties in our investigation adopt the Standard Mandarin type of unmarked double object construction [SUBJ give OBJ_{Rpt} OBJ_{Th}] in Example (1), some Hui varieties, like Shouchang Hui, showcase an opposite word order of the recipient and the theme in Example (3b) like the Cantonese type [SUBJ give OBJ_{Th} OBJ_{Rpt}] (Chin 2011; Matthews and Yip 2011), in addition to the type shown in Example (3a). The relative word order of these two variants of the double object construction, i.e., the IO-DO order in ditransitives, is conventionally regarded as a parameter

of the North–South division between Sinitic languages (Hashimoto 1976). The fact that Shouchang Hui allows flexible linear word order of the recipient and the theme in Examples (3a) and (3b) suggests possible language contact in its historical development.

(3) Shouchang Hui (Cao 1997, p. 320–21)

a.	***nuə^{11}***	*ʦɑ^{52}*	*iəʔ^{3}*	*pen^{24}*	*ɕy$^{112!}$*
	give	1SG	one	CLF	book
	'Give me a book.'				
	Or				
b.	***nuə^{11}***	*iəʔ^{3}*	*pen^{24}*	*ɕy^{112}*	*ʦɑ^{52}*.
	give	one	CLF	book	1SG
	'Give me a book.'				

4.2. GIVE as a Recipient Marker

The recipient function of the lexical verb 'give' is one of the most commonly attested instances of the semantic shift of GIVE. In our study, the GIVE morpheme in all Hui varieties has a recipient marking function, too, exemplified by the morpheme *fɑ̃^{11}* 'give/RPT' in Qimen Hui (Example (4)). Besides Sinitic languages, this function is documented in West African languages such as Akan (Example (5)), Ewe, and Yoruba, and Mainland Southeast Asian languages like Thai, Malay, and Vietnamese (Lord et al. 2002).

(4) Qimen Hui (Hirata 1998, p. 300)

fɑ̃^{11}	*nɔ^{35}*	*kɔ^{0}*	*mɑ^{33}*	*nɑ̃ ^{11}*	***fɑ̃^{11}***	***ʂɯːə^{42}*.**
DIS	that	CLF	thing	bring	RPT	1SG

'Bring that to me.'

(5) Akan (Lord et al. 2002, p. 219)

me-tɔ-ɔ	*bɔɔl*	*no*	***ma**-a*	*no.*
I-throw-PST	Ball	DEF	give-PST	him

'I threw the ball at him'.

4.3. GIVE as a Benefactive Marker

The benefactive function of GIVE is sometimes discussed together with the recipient function in the literature. Newman (1996) and Lord et al. (2002) account for their relevance in that the recipient can potentially benefit from the act of giving; thus, a 'benefactive' reading can sometimes apply to a recipient. Example (6) (Lord et al. 2002, p. 220) demonstrates such a case in Thai, in which the morpheme GIVE can be interpreted both as a recipient and a benefactive marker.

(6) Thai (Lord et al. 2002, p. 220)

chán	*khĭan*	*cotmăay*	*hâ̂y*	*kháw*	([4])
I	write	letter	give	he	

'I wrote a letter for him/to him.'

Despite a difference in terminology, what we would like to refer to as a 'benefactive marker' in this study is not the post-verbal recipient/benefactive marker, but the pre-verbal benefactive marker in the construction [NP_1 BEN NP_2 VP], like *yu* 'give' in Medieval Chinese (Example (7)).

(7) Medieval Chinese *yu* 'BEN' (Sun 1996, p. 22)

yu	*lao*	*seng*	*guo*	*jing*	*shui-ping*
for	old	monk	pass	clean	water-bottle

'(Someone) rinsed the bottle clean for the old monk.'

This type of pre-verbal benefactive construction is commonly observed in peripheral Hui varieties, i.e., the Jing-zhan and Yanzhou subgroups of Hui, e.g., Jingde Hui, Zhanda Hui, Suian Hui, Jiande Hui, and Chun'an Hui. It is also possible in one central Hui variety, namely Biyang Hui of the Xiyi Group. An example from Jiande Hui is shown below.

(8) Jiande Hui (Cao 2017, p. 280)

***po*^{55}**	*aŋ*^{213}	*ɕie*^{55}	*faom*^{423}	*ɕin*^{334}.
BEN	1SG	write	CLF	letter

'Write a letter for me.' (*po*^{55} = 'give')

4.4. Give as a Purpose Marker

Another function pertinent to the recipient marker is the purpose function. It is sometimes termed a complementizer (Bisang 1996; Lai 2001). Due to the fact that Hui varieties generally lack overt morphological marking for syntactic relationships, we opt to use the term 'purpose marker' instead of 'complementizer' to emphasize its cognitive schema.

Since the recipient phrase 'to somebody' naturally represents the goal of a giving act, which can then be further extended from a person ('to somebody') to an event ('for somebody to do something'), it is not surprising that the same GIVE morpheme for the recipient can also be employed to mark purpose by way of verb serialization, a highly productive strategy in West African languages and Mainland Southeast Asian languages, including Sinitic languages. Although our investigation and the existing literature only offer concrete examples of purpose marking in Tunxi Hui (9) and Wuyuan Hui, we can reasonably infer that this function is likely present in all Hui varieties based on comparative linguistic data from other Sinitic languages like Hakka (Lai 2001) and Cantonese (Chin 2011).

(9) Tunxi Hui

pu$^{11\text{-}21}$	*in* ^{11}	*lən*^{24}	*fuə*^{11}	***ti*^{42}**	*a*^{24}	*tɕʰi?*^{5},
NEG	need	make	rice	PURP	1SG	eat

'No need to cook for me.'

a^{24}	*tɕiau*^{24}*mi*ε^{11}	*tɕʰi?*^{5}	*liu*^{24}	*tɕʰio.*
1SG	just now	eat	ANT	SFP

'I just had something.'

4.5. GIVE as a Permissive Marker

Permission is another widely adopted function of the morpheme GIVE in Hui Chinese. Out of 27 datapoints, the GIVE morphemes in 24 Hui varieties share the identical form with their permissive markers, except for Suian Hui, Chun'an Hui, and Shouchang Hui of the Yanzhou subgroup. An example in Tunxi Hui is demonstrated in Example (10).

(10) Tunxi Hui

n$_{,}^{44}$	*pa* ^{24}	*pu*^{11}	***ti*^{42}**	*a* ^{24}	*kə?*^{5}	*n*$_{,}^{44}$	*ka u*^{42}.
2SG	dad	NEG	PERM	1SG	COV.with	2SG	talk

'Your dad doesn't allow me to tell you.' (*ti*^{42} = 'give')

4.6. GIVE as a Passive Marker

A related function of permission in Hui Chinese is the passives. The distribution of passive markers showcases an areal pattern that overlaps with that of the permissive marker mentioned above (Figure 4)[5]. In other words, a polysemy 'split' (Stassen 1997; Koch 2012; Chappell and Lü 2022) is attested in 27 Hui varieties, where the majority (24/27) make use of the same morpheme for GIVE, PERMISSIVE and PASSIVE, whereas among the three exceptions, Chun'an Hui and Suian Hui employ the SUFFER-type passives *iə*^{24}/*tsʰə*^{31} 'meet, suffer' and *fɑ̃*^{422} 'attack/suffer', respectively, and Shouchang Hui adopts the CAUSATIVE-type of passives *iɑ̃33* 'causative'.

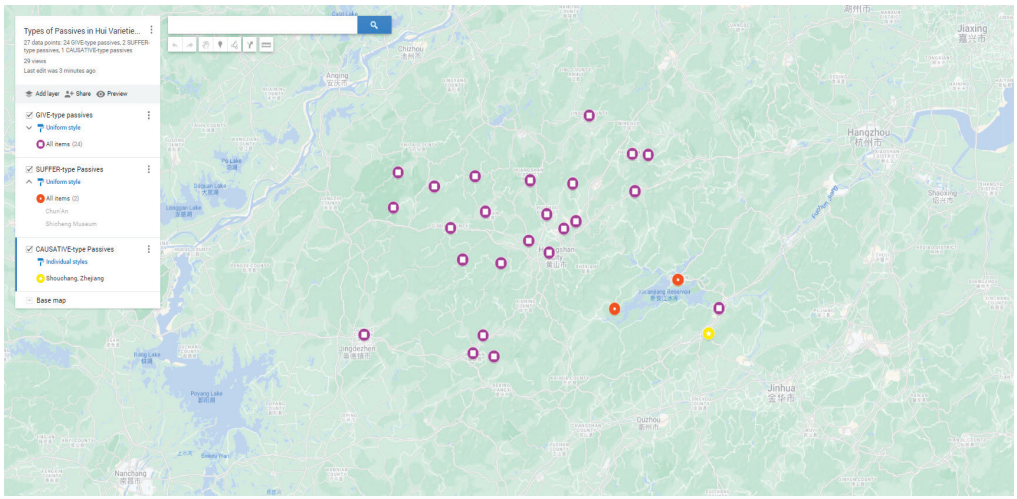


Figure 4. Distribution of passive markers in Hui Varieties of Sinitic languages.

Examples (11) to (15) demonstrate the GIVE-passive, SUFFER-passive, and CAUSA TIVE-passive in four different Hui datapoints.

(11) Daguyun Hui (GIVE-passive) (Chen 2013, p. 158)

nɑ^{33}	*tɕi*^{42}	*uɑ*^{35}	***xɤ*^{31}**	*kei*^{55}
that	CLF	bowl	PASS	3SG

'That bowl was broken…'

tɑ$^{35\text{-}55}$	*pʰo*^{214}	*tʰɑ*^{42}	*li.*
hit	broken	RVC	SFP

'…by him/her.' (*xɤ*^{31} = 'give')

(12) Jiande Hui (GIVE-passive) (Cao 2017, p. 330)

məʔ^{2}	*tsaa* ^{55}	*uɛ* ^{213}	***po*^{55}**	*ki*^{334}	*kɔ*^{42}	*pʰa* ^{213}	*p ə ʔ*^{5}.
that	CLF	bowl	PASS	3SG	hit	RVC	SFP

'That bowl was broken by him/her'. (*po*^{55} = 'give')

(13) Chun'an Hui (SUFFER-passive) (Cao 2017, p. 330)

len^{24}	*ka*^{0}	*uɑ̃*^{55}	***tsʰə*^{31}/*iə*^{24}**	*kʰɯ*^{445}	*tɑʔ*^{5}	*pʰɑ*^{24}	*pa*^{0}.
that	CLF	bowl	PASS	3SG	break	RVC	SFP

'That bowl was broken by him/her'. (*tsʰə*^{31}/*iə*^{24} = 'suffer')

(14) Suian Hui (SUFFER-passive) (Cao 2017, p. 330)

i^{33}	*kɛ*^{422}	*uɑ̃*^{213}	***fɑ̃*^{422}**	*kʰɯ*^{33}	*tɑ*^{24}	*pʰɑ*^{55}	*lɛ*^{0}.
that	CLF	bowl	PASS	3SG	break	RVC	SFP

'That bowl was broken by him/her'. (*fɑ̃*^{422} = 'suffer')

(15) Shouchang Hui (CAUSATIVE-passive) (Cao 2017, p. 330)

mi^{24}	*kɑ*^{33}	*ŋuə*^{24}	***iɑ̃*^{33}**	*kəɯ*^{52}	*kʰɤ*^{11}	*pʰɑ*^{33}	*pa*^{0}.
that	CLF	bowl	PASS	3SG	break	RVC	SFP

'That bowl was broken by him/her'. (*iɑ̃*^{33} = 'causative')

The isolated cases of the SUFFER-passives in Chun'an *iə*^{24}/*tsʰə*^{31} 'meet, suffer' and Suian Hui *fɑ̃*^{422} 'attack/suffer' are likely attributable to government-initiated migration. According to Cao (2002), government-led migration of the Xin'anjiang Reservoir area in Zhejiang Province has resulted in language enclaves of the original inhabitants, for instance, in Chun'an and Sui'an counties, who used to live near the present-day Xin'anjiang Reservoir and the Thousand Islands Lake and had to emigrate to and scatter in neighboring provinces, Jiangxi in particular. As an exemplification, Cao (1997) postulates that the geographical and eco-cultural factors of the Suian Hui account for such an isolated case, namely mountainous areas, self-contained transportation, and economy, as well as lack of

education. The CAUSATIVE-passive in Shouchang Hui, on the other hand, may be due to language contact with Northern Mandarin varieties, the 'base camp' of this type of passive.

We will provide further analysis of the source of agent markers in Hui varieties from the perspective of language contact and micro-areal typology in Section 5.

4.7. GIVE as a Pretransitive Disposal Marker

Though the Hui languages under investigation exhibit a canonical SVO word order, the SOV word order is also plausible via secondary topicalization or a 'pretransitive construction', in which the overly marked object precedes the main verb (Chao 1968; Matthews and Yip 2008). Pretransitive constructions can be further categorized into the disposal type and the causative type. A much-discussed case in Standard Mandarin is bǎ 'PRET', marking either a disposal construction stating how an entity is affected or manipulated (Wang 1947; Li and Thompson 1981), or a causative construction causing an experiencer to experience some emotions[6]. In this study, by disposal marker, we refer to the overt object marker for the subtype of pretransitive constructions with the semantics of disposal, as compared to those with the semantics of causation. It is also conventionally termed as the 'object marker' in Chappell (2015). Like the permissive–passive function, we have also observed a geographical clustering of the distinct semantic sources of pretransitive disposal marker (Figure 5)[7].

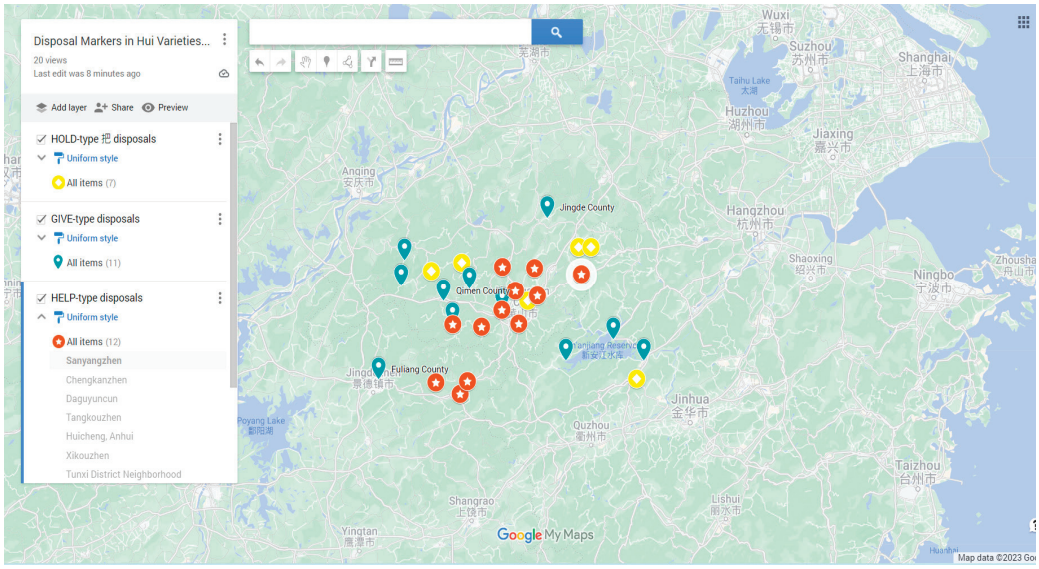


Figure 5. Areal distribution of distinct sources of the pretransitive disposal marker.

Three distinct sources of pretransitive disposal markers are found in 27 Hui varieties, namely GIVE-disposals in Example (16), HELP-disposals in Example (17), and HOLD/TAKE-disposals in Example (18). Indigenous Hui groups such as Xiu-yi and Ji-she Hui varieties tend to employ the pretransitive disposal marker grammaticalized from the lexical verb 'help', whereas peripheral Hui groups such as Qi-wu and Jing-zhan commonly make use of grammatical markers developed from the lexical verb 'give'. Sporadic HOLD-type pretransitive markers are also attested in some Hui varieties, especially in the Ji-she and Yanzhou Hui subgroups. Notice that the simultaneous use of pretransitive disposal markers with two or more sources is identified in some varieties, too. For instance, Qishan Hui, Suian Hui, and Chun'an Hui utilize both GIVE and HOLD disposals, and Liukou Hui allows both GIVE and HELP disposals, whereas Sanyang Hui and Huicheng Hui employ both HELP and HOLD disposals. In the extreme case of Haiyang Hui, three lexical sources co-exist as pretransitive disposal markers. Chappell (2015) observes a similar phenomenon in her pan-Sinitic study on object markers and categorized the GIVE and HELP disposals as an areal feature for Central Transitional Sinitic languages, including Hui. Our data further

support her observation that the GIVE and HELP disposals may indeed be an innovation unique to Central Transitional and Southeastern Sinitic languages, including some typical Hui languages. The co-occurrence of two or more disposal markers in some varieties, on the other hand, provides another piece of evidence that the HOLD-type disposals in these varieties are likely a 'borrowed' form modeled on Standard Mandarin, in competition with the indigenous pretransitive disposal markers grammaticalized from HELP or GIVE verbs, as in Qishan Hui, Suian Hui, Chun'an Hui, Liukou Hui, and Haiyang Hui.

(16) Fuliang Hui (GIVE-disposal) (Xie 2012, p. 104)

$n_{,}{}^{21}$	to^{55}	$mən^{24}$	ko^{55}	tau^{21}.
2SG	DIS	door	close	RVC

'(You) please close the door!' (to^{55} = GIVE)

(17) Daguyun Hui (HELP-disposal) (Chen 2013, p. 156)

pa^{31}	na^{33}	*ko*	$mɣ^{33}s\ ɣ^{33}$	$tɑ^{31}$	$xɣ^{31}$	$ɑ^{35}$	$nɣ$.
DIS	that	CLF	thing	take	RPT	1SG	SFP

'(Please) take that thing to me.' (pa^{31} = HELP)

(18) Hongtan Hui (HOLD-disposal) (Yuan 2009, p. 117)

n^{45}	$nɐ^{55}$	$\boldsymbol{pA^{55}}$	$ʃiE^{33}$	$k^hɔ̃^{213}$	$xʌ^{31}$,
2SG	need	DIS	money	put	RVC

'(You) Need to put away your money,' (pA^{55} = HOLD)

$pʌ^{45}$	io^{213}	$tE^{45}/t^hʌ^{45}$	tio^{213}	lA^0.
NEG	let	fall/take.off	RVC	SFP

'Don't let it drop.'

4.8. GIVE as an Allative Marker

The allative function of GIVE indicating directionality is observed in Tunxi Hui in our own fieldwork, although this function is presumed to exist in the two adjacent datapoints of Haiyang Hui and Xikou Hui[8] as well, with a shared etymon reconstructed as **diai6* (See Table 2). An example is given in Example (19).

(19) Tunxi Hui

$n_{,}{}^{44}iɑn^{44}$	$tɕ^hiu^{11}$-$ŋiɛ^{44}$	$\boldsymbol{ti^{42}}$	$tu\ ə^{11\text{-}21}$-$tɕ^hie^{11}$	$ɕi^{11}$	$mɔ^{31}$	$tɕiɑn^{42}$	$ɕi^{44}$,
2PL	last-year	ALL	Tunxi	play	that	CLF	time

'When you came to Shanghai for sightseeing last year,'

$ɑ^{24}$	$tɕiɛ^{42}xə^{31}$	pu^{11}	$ɕi^{24}$	$kɔ^{11}$	li^{24}.
1SG	right	NEG	COV.at	home	in

'I happened to be not at home.'

4.9. GIVE as a Locative Marker

Another related function of the allative, i.e., locative function is also evident in Tunxi Hui in Example (20).

(20) Tunxi Hui

A:	$xɛ^{44}$-*le*	$tɕy^{11}$	$\boldsymbol{ti^{42}}$	$lɑʔ^{31\text{-}5}li$	*a?*
	PN.red-DIM	live	LOC	where	Q
	'Where does Little Red live?'				
B:	$k^hə^{44}$	$tɕy^{11}$	ti^{42}	$ləʔ^{24\text{-}5}$-$kɑ^{11}$	$mo^{42}li$.
	3SG	live	LOC	old-street	there
	'She lives near the Old Street.'				

A bridging context (Evans and Wilkins 2000; Heine 2002) of the allative and locative functions is found in Example (21), which can express either the allative function 'to' or the locative function 'at/in'. However, given a disambiguating context, e.g., whether this conversation suggests a habitual event with some shared knowledge as in Example (22) or a specific event, e.g., heading for school in Example (23), both the speaker and hearer

will be able to tell apart the intended function of ti^{42}, which shares the same form with the lexical verb 'give'.

(21) Tunxi Hui ti^{42} 'ALL/LOC'

n^{44}	$\boldsymbol{ti^{42}}$	$xo\text{ʔ}^{11\text{-}5}tau^{44}$	tso^{42}	$tə\text{ʔ}^{5}\text{-}mə^{11}\text{?}$
2SG	ALL/LOC	school	do	what

'What are you going to school for?' or 'What are you doing at school?'

(22) Tunxi Hui ti^{42} 'LOC'

A:	$n_{,}{}^{44}$	$\boldsymbol{ti^{42}}$	$\boldsymbol{la}\text{ʔ}^{24\text{-}5}li^{11}$	tso^{42}	$s\ ɿ^{11}$	$a\text{?}$	
	2SG	LOC	where	do	thing	Q	
	'Where do you work?'						
B:	a^{24}	$\boldsymbol{ti^{42}}$	$xo^{11}tau^{44}$	tso^{42}	$s\ ɿ^{11}$		
	1SG	LOC	school	do	thing		
	'I'm working at school.'						
A:	$n_{,}{}^{44}$	$\boldsymbol{ti^{42}}$	$xo\text{ʔ}^{11\text{-}5}tau^{44}$	tso^{42}	$tə\text{ʔ}^{5}\text{-}mə^{11}$	$s\ ɿ^{11}$	$a\text{?}$
	2SG	LOC	school	do	what	thing	Q
	'What do you do at school?'						
B:	ko^{24}	$ue\text{ʔ}^{11\text{-}5}ɐiɛ^{11}$	$ua^{11}!$				
	do	hygiene	SFP				
	'(I'm) cleaning (at school).' ('I am a janitor at school.')						

(23) Tunxi Hui ti^{42} 'ALL'

A:	n^{44}	$\boldsymbol{ti^{42}}$	$xo\text{ʔ}^{11\text{-}5}tau^{44}$	tso^{42}	$tə\text{ʔ}^{5}\text{-}mə^{11}\text{?}$
	2SG	ALL	school	do	what
	'What are you going to school for?'				
B:	$tɔ^{11}$	$mə^{11\text{-}21}\text{-}s\ ɿ^{11}$	$ua^{11}!$		
	take	thing	SFP		
	'To retrieve something.'				

4.10. Give as a Temporal Marker 'Till'

Like the allative and locative functions, the temporal marking function of the morpheme GIVE is only attested in Tunxi Hui, as shown in Example (24).

(24) Tunxi Hui

$\boldsymbol{ti^{42}}$	$mɛ^{44}\text{-}niɛ^{44}$	$ʦ\ə^{31}$	kau^{31}	$uɛ^{31}!$
ALL	next-year	again	talk	SFP

'(Let's) talk about it next year!'

Another morpheme $tɛ^{31}$ 'wait' is competing with ti^{42} 'pass/give' for the same function of temporal marking for future events, as shown in Example (25).

(25) Tunxi Hui

$\boldsymbol{tɛ^{31}}$	$mɛ^{44}\text{-}niɛ^{44}$	$ʦ\ə^{31}$	kau^{31}	$uɛ^{31}!$
wait	next-year	again	talk	SFP

'(Let's) talk about it next year!'

Although both constructions are found in natural recordings, there is an observed tendency for speakers to prefer $tɛ^{31}$ 'wait' to ti^{42} 'pass/give' in marking this temporal relationship.

For detailed analyses of the allative, locative, and temporal functions of GIVE in Tunxi Hui, please refer to Lu and Hui (2023).

4.11. Give as an Imperative Marker

The last co-existing function of GIVE involves six datapoints in our investigation. When it occurs, it is largely accompanied by the first-person singular pronoun '1.SG', i.e., 'give-me', normally with the subject being the second-person pronoun, as in Examples (26) and (27).

(26) Xianggao Hui (Shen 2012, p. 123)

(n˧˩³⁵)	*(**kɤ³⁵**-ŋɔ³⁵)*	*tɕʰi³²*	*kɒ⁵²tsʰin²²*	*n˧˩²²*	*uɒ³⁵*	*fɒ²²!*
2SG	IMP-1SG	eat	clean	this	CLF	rice

'(You) please finish this bowl of rice!'

(27) Jixi Hui (Zhao 2003, p. 139)

(n²¹³)	*(**po²¹³**-ɔ²¹³)*	*kuɑ²¹³*	*tsʰɣʔ³²*	*kʰi³⁵!*
2SG	IMP-1SG	roll	out	go

'(You) get out of here!'

The imperative use of GIVE is not a novel invention of Hui Chinese. As a matter of fact, it is also present in Mandarin varieties (28), as well as genetically unrelated languages like Russian (29) and Italian (Kuteva et al. 2019).

(28) Xuzhou varieties of Central Plains Mandarin (Kuteva et al. 2019, p. 198)

***ke**⁵⁵*	*uo²¹³*	*i²¹³tɕi³⁵tɕʰy⁵¹.*
IMP	1SG	stand.up

'Stand up!'

(29) Russian (Kuteva et al. 2019, p. 197)

Davaj	*pojdjom*	*v*	*kino!*	(9)
give.IMP.SG	go.1PL	in	movies	

'Let's go to the movies!'

In this section, we have provided a descriptive analysis of a multitude of functions associated with the morpheme GIVE, as well as their distributions in 27 varieties of Hui Chinese. In the next section, we aim to account for such radical polyfunctionality from the perspective of semantic extension, polygrammaticalization, and cooptation.

5. Explanation for Polysemy Sharing of GIVE

Semantic extension, polygrammaticalization, and cooptation join hands in shaping the multiplicity of functions found in the Hui varieties in our study. We will address these mechanisms one by one.

5.1. Semantic Extension

The distinctive forms of the morphemes for 'give' are a notable characteristic in Hui varieties of Sinitic languages (Table 2). It is unusual to observe such a significant divergence in closely related and geographically adjacent language varieties for a presumably basic concept 'give'. As an explanation, Zhang (2011) suggests that the 'give' verbs in modern Sinitic languages may not have originated as the prototypical ditransitive verb 'give', but as verbs meaning 'send', 'take', 'hold', etc. Fortunately, phonological reconstructions of relevant verbs in Hui varieties (Hui and Lu 2023) shed light on their etymons, confirming their origin as verbs for SEND, TAKE, and HOLD. These verbs have likely extended to 'give' both semantically and functionally from a peripheral 'give' verb to the prototypical ditransitive 'give' verb, based on a route proposed by Malchukov et al. (2010, p. 55) on ditransitive verbs.

Parallel to the difference in forms, there are three functions of GIVE (namely allative, locative, temporal) that are only observed in Tunxi Hui, and possibly in its neighboring varieties of Hui Chinese with cognates of *ti*^{42}. These functions, however, are explicable only if they were grammaticalized not from GIVE, but from a SEND-type verb 'pass', the etymon of which Tunxi Hui *ti*^{42}, Xikou Hui *ti*^{55}, and Haiyang Hui *te*^{55} can be traced back to. This is because directionality and the sense of 'goal' are inherently embedded in the semantics of *ti*^{42} 'pass'. By extending the concept of goal from a human recipient to a location, PASS grammaticalizes into an allative marker. From the allative [+location, +direction] function, a locative function of *ti*^{42} 'at/in' is developed by losing its semantic feature [+direction]. Lastly, the temporal marking of *ti*^{42} 'to, till' can be explained with the 'ubiquity of conceptual transfer from time to space' (Haspelmath 1997, p. 140) attested cross-linguistically, as

ti^{42} 'to, towards', an allative in location, can be extended to *ti*^{42} 'to, till', an allative in time. A detailed analysis of this grammaticalization chain can be found in Lu and Hui (2023).

To summarize, the lexical verb corresponding to the sense of GIVE may have been missing in Hui Chinese. Instead, SEND-type verbs like *ti*^{42}, *te*^{55}, and *ti*^{55} with the etymon **diai6* 'pass' [+send, +manner], and TAKE-type verbs like *tom*^{44}, *to*^{55}, *n*^{422}, *nuə*^{11}, and *la*^{53} with the etymons **ton1* 'hold', **pa3* 'hold', **in4* 'stretch', and **na*2 'take' may have emerged as winners in the competition against other verbs with similar semantics. Through semantic extension, these verbs gradually took over both the meaning and the function of the prototypical ditransitive verb 'give' in each of the Hui varieties.

Following this semantic extension from SEND or TAKE to GIVE, separate grammaticalization pathways emerge, including one grammaticalization cline starting from SEND and leading to the development of an allative marker before further evolving into locative or temporal markers, and the multiple grammaticalization clines in relation to GIVE. In the next section, we will discuss the mechanism of these grammaticalization pathways in greater detail.

5.2. Polygrammaticalization

Besides semantic extension, grammaticalization can account for the majority of the multiple functions of GIVE in our study of Hui varieties. There are five separate grammaticalization clines that can be identified among the ten functions of 'give' in this study:

1. Lexical verb 'give' > Benefactive 'for'
2. Lexical verb 'give' > Recipient 'to'
3. Lexical verb 'give' > Recipient 'to' > Purpose marker
4. Lexical verb 'give' > Recipient 'to' > Pretransitive disposal marker
5. Lexical verb 'give' > Causative-Permissive > Passive

To begin with, the lexical verb 'give' can also function as a benefactive marker, as discussed in Newman's (1996) cognitive analysis of 'give'. This function becomes apparent when 'give' collocates with 'donary verbs', as the prototypical sense of giving inherently carries a nuance of benefiting (Newman 1996, pp. 218–19). This grammaticalization pathway is also reported in the *World Lexicon of Grammaticalization* (Kuteva et al. 2019).

The next grammaticalization cline (ii) from the lexical verb 'give' to the recipient 'to' is also widely attested cross-linguistically. It is not only a pan-Sinitic phenomenon, but is also well-established in languages of West Africa and East and Southeast Asia (Lord et al. 2002). During this process, the semantics of the lexical verb 'give' are bleached. Hence, the lexical verb 'give' is decategorized into a functional category, i.e., a 'coverb' (Matthews and Yip 2011) or preposition by reanalysis via serial verb constructions [give NPth RPT marker NPrpt].

From the recipient marker, the morpheme 'give' then develops two new functions, (iii) the purpose marker and (iv) the pretransitive disposal marker. Although both are outcomes of grammaticalization, they differ in each other in that the purpose marker cline is a case of cognitive-driven language-internal grammaticalization, whereas the pretransitive disposal marker pathway is an instantiation of contact-induced replica grammaticalization (Heine and Kuteva 2003, 2005; Matthews and Yip 2009). Such a difference in grammaticalization mechanisms also results in a divergence in the distribution of these two functions. The purpose marker function is fairly common in many Sinitic languages, by extending the goal of the action of giving from a recipient 'RPT' [+ human being] to an event 'PURP' (Lai 2001; Lu and Hui 2023). The pretranstive disposal marker function of 'give', however, is scarcely recorded in the literature, except for a few works, e.g., on Central Transitional Sinitic languages in Chappell's (2015) investigation as well as this study. Besides, this lexical–functional sharing displays geographical clustering not only within Hui varieties (Figure 5), but also in Chappell's (2015) pan-Sinitic study on disposal markers as an area-specific feature of Central Transitional Sinitic languages. Its scarcity and areal convergence point to the likelihood of a type of contact-induced grammaticalization known as replica grammaticalization, in which the grammaticalization process that has taken place in the

model language is transferred to the replica language (Heine and Kuteva 2003, 2005). What makes the transfer of this grammaticalization process from 'give' to pretransitive disposal marker possible is probably the underlying etymology of GIVE in the replica language. Many varieties of Hui displaying the 'give'-disposal grammaticalization cline happen to possess a GIVE verb that originated as TAKE or HOLD verbs (see Table 3). TAKE and HOLD verbs are natural sources for disposal markers in Sinitic languages, e.g., bǎ 把 'hold' in Standard Mandarin. In the case of Hui Chinese, the reminiscence of the etymological meaning of HOLD or TAKE of the current GIVE verbs facilitates the polysemy sharing between 'give' and the disposal marker. At first, grammaticalization from HOLD or TAKE to disposal marker took place via the bridging context [Vtake/DISP marker NP_{th} Vgive NP_{rpt}]. Later on, after these verbs of HOLD and TAKE were extended to function as the prototypical ditransitive GIVE, adjacent languages likely borrowed this grammaticalization pathway via replica grammaticalization with the synchronic lexical–functional parallel of 'give' and the disposal marker. To this end, semantic extension, language-internal grammaticalization, and replica grammaticalization join hands in shaping the concurrent use of 'give' and the pretransitive disposal marker in varieties of Hui Chinese.

Table 3. GIVE as pretransitive disposal markers in Hui varieties.

Datapoint	Subgroup	GIVE	Reconstructed Etymon	Types of Verbs	GIVE as DISP
Haiyang (Xiuning)	Xiuyi	te^{55}	**diai6* 'pass' 遞	PASS	+
Liukou (Xiuing)	Xiuyi	$pɤ^{33}$	**pi3* 比or **pi6* 'give'畀	GIVE	+
Biyang (Yixian)	Xiuyi	$pɛi^{31}$	**pi3* 比or **pi6* 'give'畀	GIVE	+
Qishan (Qimen)	Qiwu	$fɑ̃^{11}$	**fun1* 'distribute' 分	GIVE	+
Fuliang	Qiwu	to^{55}	*ton1 'hold' 端	TAKE/HOLD	+
Jingde	Jingzhan	$pæ^{213}$	**pa3* 'hold' 把	TAKE/HOLD	+
Zhanda	Jingzhan	$pɔ^{35}$	**pa3* 'hold' 把	TAKE/HOLD	+
Suian (Yanzhou)	Yanzhou	n^{422}	**in4* 'stretch' 引	TAKE/HOLD	+
Jiande (Yanzhou)	Yanzhou	po^{55}	**pa3* 'hold' 把	TAKE/HOLD	+
Chun'an (Yanzhou)	Yanzhou	$lɑ^{53}$	**na2* 'take' 拿	TAKE/HOLD	+

In addition to the grammaticalization pathway from 'give' to disposal marking, another noteworthy path (v) demonstrating areal convergence is the one leading from the lexical verb 'give' through permissive to the passive marker[10]. There is a comparatively rich body of literature on this contact-induced grammaticalization process in specific geographical regions, including Sinitic languages spoken south of the Yangtze River, encompassing Central Transitional, Southeastern, and Far Southern Sinitic varieties like Hui, Wu, Min, Yue, Hakka, and Gan (Lai 2001; Matthews et al. 2005; Chen 2009; Chin 2011; Chappell 2015; Ngai 2015). This process is also observed in some Mainland Southeast Asian languages such as Tai and Austroasiatic languages, along with colloquial Malay (Yap and Iwasaki 2007). The initial transition from the lexical verb 'give' to causative/permissive can be explained by the inherent notion of causation within the semantics of GIVE as 'caused possession' (Jackendoff 1990). The next stage from causative to passive becomes possible through the concept of 'unwilling permissives' (Chang 2006, p. 139) or 'reflexive' causatives (Haspelmath 1990, p. 48; Yap and Iwasaki 2007, p. 200), where an agent is made to act unwillingly, resulting in a passive interpretation. Features unique to the 'give'-passives include the obligatory requirement of the agent phrase and the adversative reading of the event. While the compulsory presence of the agent phrase of 'give'-passives results from the syntactic configuration of 'give' as a three-argument verb, the adversity embedded in 'give'-passives can be attributed to the intermediate stage of the 'involuntary' permissive connotation. Both features demonstrate the principle of 'persistence' in grammaticalization (Hopper 1991), in which remnants of the original lexical form, both semantically and syntactically, are preserved in the grammaticalized form.

5.3. Cooptation

The final function of 'give' which our study identifies is imperative marking. Unlike the functions discussed above, this imperative use of 'GIVE-1SG' represents a discourse marker, the mechanism of which can be explained by cooptation, a process related to but distinct from grammaticalization (Heine 2013; Heine et al. 2017, among others). The operation of cooptation occurs when 'information units such as clauses, phrases, or words are transferred from the domain of sentence grammar to that of discourse organization' (Heine 2013, p. 1205). According to Heine (2013), cooptation is characterized by a series of features that set it apart from grammaticalization, e.g., spontaneity, increased scope, syntactic independence from the sentence structure it appears in, metacommunicative meaning, and unrestrictive word order. Many instances of the discourse marker 'GIVE-1SG' in Hui Chinese exhibit most of these features.

To begin with, the instantiations of 'GIVE-me' occur mostly in spontaneous data, i.e., common in colloquial language instead of written texts. Apart from Hui varieties, this imperative marker is also witnessed in dialogue recordings of many Mandarin varieties, e.g., Jinan, Liuzhou, Nanjing, Xi'an, and Wanrong. An example is shown in Example (30).

(30) Nanjing Mandarin (Li 2002, p. 4643)

kuɑe^{31}	*(ki*$^{11\text{-}12}$*-uo*^{11}*)*	*tʂ*^{h} *ɿʔ*^{5}	*ɕiɑ*^{44}	*k*^{h}*i* ^{44}	(^{11})
fast	give-1SG	eat	down	go	

'(You) Eat it, quick!'

Besides, this discourse marker is independent of the syntagmatic configuration of the sentence it occurs in. In other words, deleting the discourse marker will not affect the grammaticality of the sentence. For instance, without the phrase *kɤ*^{35}*-ŋɔ*^{35} 'GIVE-1SG' in Example (26) of Xianggao Hui or *po*^{213}*-ɔ*^{213} 'GIVE-1SG' in Example (27) of Jixi Hui above, the original sentences remain intact.

In addition, the pragmaticalized 'GIVE-1SG' focuses on the speaker–hearer relationship, as it is usually recruited in an imperative sentence with an explicitly expressed or sometimes omitted second-person subject 'you', i.e., the hearer, instead of the first- or third-person forms. The inclusion of the first-person singular morpheme into the formation of the discourse marker itself in 'GIVE-1SG', on the other hand, is suggestive of the illocution of the speaker–hearer relationship as a command 'for me'. In contrast, a related discourse marker *kei*^{33}*-ʨ*^{h}*i*^{a24} 'GIVE-1PL.INCL' found in Wanrong Mandarin, which fuses the first person plural morpheme into the formation of the marker, denotes negotiation 'for us'. Compare:

(31) Wanrong Mandarin (Li 2002, p. 4643)

ŋɣ^{55}	*kei*^{33}	*ʨ*^{h}*iɑ*^{24}	*ʦ ɔu*^{33}	*fæ*^{33},	(^{12})
1SG	BEN	me	do	rice	

'I will do the cooking for us,'

ŋi^{55}	*(kei*^{33}*-ʨ*^{h} *ia*^{24}*)*	*pɑ*^{51}	*ŋɑu*^{55}	*ɕi*^{55}	*lɑu!*
2SG	GIVE-1PL	DISP	coat	wash	SFP

'Could you please do the laundry?'

Lastly, the discourse marker 'GIVE-1SG' allows relatively free word order. Although 'GIVE-1SG' appears pre-verbally at large, it is also acceptable when placed post-verbally at the end of the sentence, albeit far less commonly, as demonstrated in Example (32b) below:

(32) Colloquial Putonghua

a.	*(nǐ)*	*(gěi-ɯǒ)*	*gǔn*	*chū*	*qù!*
	2SG	give-1SG	roll	out	go
	'(You) get out of here!'				
b.	*(nǐ)*	*gǔn*	*chū-qù*	*(gěi-ɯǒ)!*	
	2SG	roll	out-go	give-1SG	
	'(You) get out of here!'				

In summary, cooptation is the mechanism responsible for the use of the discourse marker 'GIVE-1SG', which serves to issue a command for the hearer to do something for the speaker. This marker does not participate in the constituent structure of the sentence, thus allowing for a relatively flexible word order.

5.4. A Summary of the Polyfunctionality of GIVE in Hui Chinese

In this section, we have offered an explanation for all the functions of 'give' observed in our study of the 27 varieties of Hui Chinese. The relationships among these multiple functions are schematically represented below in Figure 6:

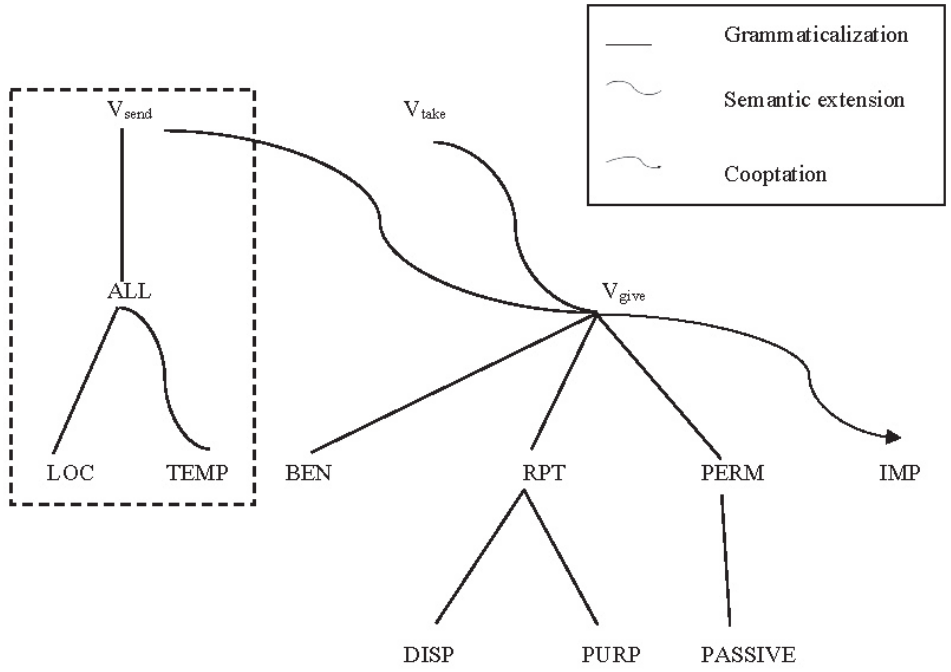


Figure 6. Polyfunctionality of GIVE in Hui Chinese.

6. Areal and Typological Implications

Analysis of the polyfunctionality and polygrammaticalization of 'give' in Hui Chinese not only deepens our understanding of this under-investigated group of Sinitic languages but also makes a valuable contribution to Chinese linguistics as a whole. Before wrapping up this study, we would like to highlight a couple of topics that warrant further research.

6.1. Central China as a Grammaticalization Area

Analyzing the disposal, passive and comparative constructions across the Sinitic branch, Chappell (2015) classifies Sinitic into five principal 'linguistic areas', where Hui (alongside Wu, Gan, Xiang, Jianghuai Mandarin, some subgroups of Southwest Mandarin and enclaves of Hakka) belongs to the Central Transitional areal group. Before we delve further, it is worth discussing Chappell's (2015) classification scheme in more detail. First, Chappell uses the term 'linguistic areas' to refer to the areal groups identified in the study. Given that only Sinitic varieties are taken into account, the use of this term deviates from its generally accepted meaning within areal linguistics, where languages of different families (or at least of distinct branches within a family) have to be involved[13] (Campbell 1985; Thomason 2001; Stolz 2002). Second, the proposed areal groups are established based on the lexical sources of the disposal markers, passive markers, and comparative markers of various Sinitic varieties; although the structural type of the comparative construction is also considered, it is strongly interrelated with the lexical sources thereof. In other words, grammaticalization pathways are effectively the sole criteria for determining the areal groups. While grammaticalization pathways are often taken into account

when defining linguistic areas[14], all firmly established linguistic areas around the globe share features from various domains of grammar (Thomason 2001; Campbell 2020), and those determined exclusively by grammaticalization patterns are sometimes referred to as 'grammaticalization areas' instead (Heine 1994; Heine and Kuteva 2005; Huang and Wu 2018). Regardless of the terminological difference, the present study can contribute to our understanding of the convergence phenomena in the Central China Transitional region.

Given their geographical location, it comes as no surprise that Sinitic varieties in Central China feature a mix of Northern and Southern traits. However, what makes this areal group of scholarly interest is the widespread occurrence of grammaticalization patterns which are rare or even unattested in Sinitic varieties spoken elsewhere. As Chappell (2015) observes, such area-specific patterns include the development of 'give' and 'help' into disposal markers, as well as 'take' and 'wait' into passive markers. In this study, we demonstrate that the polygrammaticalization of 'give' in Hui Chinese is related to its multiple sources of 'give' verbs (Table 2). Since this polygrammaticalization phenomenon consists of a series of cognitively driven language-internal grammaticalization pathways (Section 5), a possible explanation for some of the area-specific grammaticalization patterns (e.g., 'take' passives) in Central China might be that they originated from Hui Chinese and spread to other Sinitic varieties in the region via replica grammaticalization, where the grammaticalization processes which occurred in Hui Chinese were transferred to other Sinitic varieties in Central China[15]. Nonetheless, although the geographical location of Hui Chinese makes it a plausible source of these grammaticalization patterns, in order to provide stronger support for this hypothesis, we need to investigate the functions and etymons of 'give' in other Sinitic languages in the Central China Transitional area.

6.2. Multiple Lexical Sources of Pretransitive Disposal Markers

As we mentioned in Section 4.7, Hui Chinese varieties commonly employ two pretransitive disposal markers of different lexical sources, with Haiyang Hui representing the most extreme case, where three different disposal markers are used. While this is a rare phenomenon in Sinitic languages as a whole, the co-existence of three or more disposal markers is pervasive in the Chaoshan subgroup of Southern Min, whose division of labor appears to be conditioned by certain semantic and pragmatic factors (Lin and Szeto 2023). Given the multiple lexical sources of disposal markers in Hui Chinese, it holds promise to investigate the functional range of these markers and analyze whether it is affected by their lexical sources (and hence grammaticalization pathways). This research direction can shed new light on the potential effect of a disposal marker's lexical source on its functional scope, e.g., whether it can pair up only with resultative verbs (e.g., 'to break') or also with other transitive verbs that are placed lower on Tsunoda's (1985) Affectedness Hierarchy (e.g., 'to hit', 'to see'). This remains an important yet inadequately addressed issue in the study of Chinese disposal constructions.

6.3. Diachronic Stability of 'Give'

The diverse origins of 'give' in different varieties of Hui Chinese raise questions about the suitability of this seemingly 'basic' verb for assessing genetic relatedness between languages[16]. The semantic links between 'give' and a wide array of concepts (Malchukov et al. 2010; Rzymski et al. 2020) also suggest that it may be prone to semantic shifts and lexical replacements. Interestingly, though, when compiling the Leipzig-Jakarta list based on data from 41 languages around the world, Tadmor (2009) finds that 'give' is not only resistant to borrowing but also remarkably stable over time. In fact, 'give' appears to be a highly stable lexical item across many well-studied language branches. For instance, the 'give' verbs in Germanic languages (e.g., English: *give*, Dutch: *gevan*, German: *geben*, Danish: *give*, Swedish: *giva*, Icelandic: *gefa*) all trace their roots back to Proto-Germanic *gebaną; likewise, those of Tai languages (e.g., Thai: *hâi*, Lao: *hai5*, Tai Lü: *hɯ3*, Tai Nüa: *haɯ3*, Nùng: *h*ù:, Zhuang: *haw3*, Bouyei: *haec*) are uniformly descended from Proto-Tai **haɯʃ*. With over 20 distinct etymons of 'give' in its language varieties (Cao 2008, L151),

Sinitic appears to represent a theoretically reasonable yet cross-linguistically rare case in which 'give' has undergone numerous series of lexical replacements throughout its history. The presence of a broad range of GIVE, SEND, TAKE, and HOLD verbs in Old Chinese[17] may have contributed to such developmental patterns (see Section 5.1); further studies on the functions and sources of GIVE in other groups of Sinitic can help account for this intriguing phenomenon. What gave rise to the rich diversity of GIVE-related verbs in the first place calls for another line of future research, possibly necessitating cross-disciplinary collaboration.

6.4. Conclusions

This study has provided an areal and typological analysis of the multiple forms and functions of GIVE in 27 datapoints of Hui Chinese, a little-studied group of Sinitic languages. The Hui Chinese varieties examined in this study generally demonstrate the syncretism of at least five functions associated with the morpheme GIVE synchronically. Semantic extension, polygrammaticalization, and cooptation are shown to be the major mechanisms behind the polyfunctionality or polysemy sharing of the morpheme GIVE. Our study contributes to our understanding of the role that grammaticalization, particularly contact-induced grammaticalization, plays in the formation of linguistic areas. Furthermore, it raises questions regarding the suitability of 'give' for assessing the genetic relatedness of languages worldwide.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/languages8030217/s1, Table S1: Polyfunctionality of 'give' in Hui Chinese.

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Notes

1 The locality of the datapoints can be viewed in https://www.google.com/maps/d/edit?mid=1RFRV5a9WaGALJV58acp0SxHffDI5mU4&ll=29.807937312115087%2C118.24822000000002&z=9 (accessed on 12 March 2023).

2 An anonymous reviewer pointed out that the forms without known etymons in Table 2 bear a resemblance to the dative case markers found in Northwestern Mandarin contact varieties, such as -ha in Wutun and -xa in Zhoutun. However, it is essential to consider the geographical distance between Hui Chinese and Northwestern Mandarin, along with the fact that xa^{53} and its

variants in Hui Chinese varieties do not serve the same function as the object/disposal marker, as is the case with -ha/-xa in Wutun and Zhoutun. Therefore, it is likely that these morphemes coincidentally share a similar form.

3 Examples are glossed in accordance with the Leipzig Glossing Rules where applicable; additional glosses include COV 'coverb', DIM 'diminutive', DIS 'disposal', EXP 'experiential', PERM 'permissive', PN 'proper noun', RPT 'recipient', RVC 'resultative verbal complement', SFP 'sentence-final particle'.

4 We thank an anonymous reviewer for pointing out that the correct tones for the Thai morpheme 'letter', 'I', and 'he' should be còtmăay, chăn, and khăw, respectively.

5 Available online at https://www.google.com/maps/d/edit?mid=12PW6k3MqK2B530BZnDqp6jIQJQrw5lc&ll=29.807305845757867%2C118.24822000000002&z=9 (accessed on 12 March 2023).

6 Two examples of the Mandarin morpheme *bǎ* marking the disposal and the causative constructions, respectively, are illustrated below:

a.	*bǎ*	*yán*	*ná*	*guò*	*lái!*
	DISP	salt	bring	pass	come
	'(You) bring the salt over!'				
b.	*bǎ*	*wǒ*	*xià*	*yí (yī)*	*tiào!*
	CAUS	1.SG	frighten	one	jump
	'Frighten me to jump'				

7 Available online at https://www.google.com/maps/d/u/0/edit?mid=1cW3bBBCPcmtL_bBzfrWEZg7mpiEQ6NE&ll=29.952175793065734%2C118.52294203479197&z=8 (accessed on 12 March 2023).

8 The reason why this function is not explicitly mentioned in related literature of Haiyang Hui and Xikou Hui is due to the linguistic elicitation approach widely adopted in Sinitic 'dialectology' with a questionnaire with around one hundred sentences modeled on Standard Mandarin. Therefore, we are not sure if the allative function can be realized by markers grammaticalized from the etymon **diai6* 'pass' in these two datapoints.

9 We thank an anonymous reviewer for pointing out the polysemy sharing between permissive and passives in Japanese (Hasegawa 1964; McCawley 1972; Kubo 1992; Pylkkänen 2008). As a matter of fact, the grammaticalization cline from permissive/causative to passive is well attested cross-linguistically, e.g., German, Korean (Keenan 1985), and Manchu-Tungusic languages (Knott 1995), among others. It is the concomitant use of GIVE, permissive/causative and passive, i.e., the 'give'-passive that is contact-induced, which demonstrates an areal distribution in Mainland Southeastern Asian languages.

10 We thank an anonymous reviewer for pointing out that the more common transcription (ISO) of the Russian verb '(we) go) is pojdëm.

11 The original sentence is demonstrated in Chinese characters in Li (2002). We transcribe it according to Liu (1995)'s Nanjiang Fangyan Cidian (a dictionary of Nanjing Dialect).

12 The original sentence is demonstrated in Chinese characters in Li (2002). We transcribe it according to Wu and Zhao (1997)'s Wanrong Fangyan Cidian (a dictionary of Wanrong Dialect).

13 This serves as a note of reminder rather than criticism—Chappell (2015) does acknowledge that the term is used in a broadened sense. Regardless of whether the areal groups should be called 'linguistic areas', the study succeeds in identifying several areal features within Sinitic which transcend the 'dialect group' boundaries; See Szeto (2023) for an overview of two well-established linguistic areas in China.

14 Notable examples include the recurrent grammaticalization patterns in Mainland Southeast Asian languages (Matisoff 1991; Bisang 1996), the 'want' future in the Balkans (Joseph 2020), as well as the 'say' quotative in the Ethiopian highlands (Ferguson 1976).

15 This does not imply that transfer in the opposite direction is impossible for other grammaticalization processes; as we discussed in Section 5.2, Hui Chinese was probably the replica language in the case of 'give' disposals.

16 Measuring the genetic relatedness between languages by comparing their basic vocabulary items, a method known as lexicostatistics, is a heavily criticized approach in itself. See Bowern (2018) for an overview.

17 Examples taken from Baxter and Sagart (2014)—GIVE: 畀 **pi[t]-s*, 施 ***l̥aj*, 付 **p(r)o-s*, 予 **laʔ*; SEND: 發 **Cə.pa*, 賚 **[r]ˤək-s*, 送 **[s]ˤoŋ-s*; TAKE: 取 **tsʰoʔ*, 以 **ləʔ*; HOLD: 持 **[d]rə*, 捫 **[m]ʕ[ə][n]*, 奉 **pʰ(r)oŋʔ*.

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Article

'Good' Is 'Possible': A Case Study of the Modal Uses of 'Good' in Shaoxing

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Abstract: This paper sets out to investigate the modal uses of the lexeme *hʊ*^{3} 'good' in the Jidong Shaoxing variety of Wu and to reconstruct its grammaticalization pathway. Modal meanings of *hʊ*^{3} include circumstantial possibility, deontic possibility and necessity, and epistemic possibility. These meanings can be summarized as 'can', 'may', and 'should', respectively. The modal meanings of *hʊ*^{3} are derived from its meaning of 'fit to' rather than 'good'. We propose here that *hʊ*^{3} first extended to express circumstantial possibility, and then further extended to denote deontic modality and participant-internal possibility in two separate directions: (i) circumstantial possibility > deontic modality, and (ii) circumstantial possibility > participant-internal possibility. The epistemic use of *hʊ*^{3} is proposed as the final stage of the lexeme's modal extension.

Keywords: GOOD; circumstantial possibility; deontic; epistemic; Shaoxing Wu; grammaticalization; extension

1. Introduction

Modality is a semantic domain concerning how languages code possibility and necessity. Languages may adopt different strategies to express modality, such as auxiliary verbs, morphological devices of mood, modal affixes, lexical means, modal adverbs and adjectives, modal tags, modal particles, and modal case (de Hann 2006). While Sinitic languages are well known for lacking morphological mood, modality is expressed by auxiliary verbs, adverbs, and potential constructions, as well as particles. Among these devices, auxiliary verbs are the most common means of expressing possibility and necessity in Sinitic languages (Chappell and Peyraube 2016).

Modal auxiliaries in Standard Mandarin can be divided into necessity and possibility modal verbs. Possibility modal verbs include *hui*^{4} 会 'can < know, comprehend', *ke*^{3}*yi*^{3} 可以 'can, may < fit so as to', and *neng*^{2} 能 'can < capable', while necessity modal verbs include *dei*^{3} 得 'must < obtain', *gai*^{1} 该 'should < owe', and *yao*^{4} 要 'need, must'. According to a survey by Fan (2014, pp. 15–187), these are common modal verbs in Sinitic languages. Different Sinitic languages or dialects have developed various lexical sources into modal auxiliaries, for example, *kuan*^{44} 管 'can < manage, supply' in Fangcheng Central Plains Mandarin (L. Wang 2013), *iəɯ*^{22}*fɐʔ*^{5} 有法 'can < have methods' and *ua*^{51} 话 'can < say' in Liujiang Jinde Hakka (Y. Wang 2019), *tɕ*^{h}*ieʔ*$^{5-33}$*teʔ*$^{5-33}$*loʔ*$^{2-53}$ 吃得落 'can < can eat' in Shaoxing Wu (Sheng 2021, p. 416), and HAO 好 'can < good' in Jieyang Min (Xu 2007, pp. 234–37) and Hakka (Huang 1995, p. 116; Yeh 2012; Zhuang and Huang 2014, pp. 223–24). In fact, HAO 'good' has been adapted as a modal auxiliary in a contiguous area around the Yangtze River Delta. This phenomenon might be considered as a micro-areal phenomenon.

This paper will offer a case study on the modal uses of *hʊ*^{3} 好 'good' in the Jidong variety of Shaoxing Wu. First, a detailed synchronic description of the modal uses of *hʊ*^{3} 'good'

in Jidong Shaoxing is given. This is followed by a diachronic reconstruction of the pathway of grammaticalization from 'good' to 'can, may, should' of *hɒ*^{3}. Observation of *hɒ*^{3}'s distribution indicates that its modal uses are derived from the auxiliary use of its meaning 'fit to' rather than directly from its meaning 'good'. We find that in a grammatical sentence containing *hɒ*^{3}, the situation expressed by the matrix VP is often enabled by an external or an internal condition. It is from this circumstantial possibility that the participant-internal possibility of *hɒ*^{3} is derived. Our finding contributes some new evidence in support of Narrog's (2012, pp. 187–90, 202–9) findings that circumstantial possibility may develop into participant-internal possibility and deontic possibility may extend to deontic necessity. The bidirectional developments 'circumstantial ↔ participant-internal' and 'deontic possibility ↔ deontic necessity' hold (Narrog 2012, pp. 185–221). We also propose that the epistemic use of *hɒ*^{3} is derived from the uses of both circumstantial and participant-internal possibility. The semantic connection between the deontic and epistemic uses of *hɒ*^{3} is not obvious in Jidong Shaoxing, unlike the well-known deontic–epistemic polysemy of English *must* (Traugott and Dasher 2001, pp. 120–21).

Section 2 discusses the modality types distinguished in this paper. Section 3 presents background information and basic linguistic features of the target language. Section 4 introduces the polysemy of the lexeme *hɒ*^{3}. Section 5 sets out to illustrate the modal uses of *hɒ*^{3}. Section 6 aims to reconstruct the grammaticalization pathway of *hɒ*^{3} and offers a comparison with the diachrony of *hao*^{3} 'good' in the history of Chinese. Section 7 is a general conclusion.

2. Modality Types and Terminology

The domain of modality can be organized in several ways. Deontic, dynamic, and epistemic are the most broadly accepted concepts. Coates (1983, p. 10) contrasts root modality, which comprises both dynamic and deontic, and epistemic modality. van der Auwera and Plungian (1998) oppose epistemic and non-epistemic (later revised as situational (van der Auwera and Ammann 2013a)), with the latter subdivided into participant-internal and participant-external. Palmer (2001) proposes an opposition of event modality (deontic and dynamic) and propositional modality (epistemic and evidential). Narrog (2012, p. 46) suggests volitive modal categories opposed to non-volitive modal categories. Given that a reorganization of our understandings of modality is not an aim of the current paper, here we adopt subcategories of modality solely on the basis of their relevance in describing the polysemy of *hɒ*^{3}. Relevant modal concepts include:

Circumstantial possibility

Circumstantial possibility refers to a proposition enabled by certain external circumstances (Narrog 2012, p. 10). It can also be interpreted as a possibility allowed by external conditions, as in (1).

(1) *You can get to University City by taking subway line 9.*

Permission and weak obligation

Both permission and obligation belong to deontic modality, also known as deontic possibility and necessity. Deontic modality refers to possibility or necessity determined by certain social norms, expectations, or a speaker's desire or command (see Palmer 2001, p. 10; van der Auwera and Plungian 1998, p. 81). Permission denotes that a participant is allowed to complete an action (Bybee et al. 1994, p. 320), as in (2), while weak obligation means that a participant was advised to complete an action (Bybee et al. 1994, p. 320). In English, weak obligation is usually expressed by *should* and *ought*, as in (3).

(2) *You may leave now.*
(3) *You should leave now.*

Participant-internal possibility

Participant-internal possibility refers to "a kind of possibility [. . .] internal to a participant engaged in the state of affairs" and it covers dynamic possibility, ability, and capacity (van der Auwera and Plungian 1998, pp. 80, 82), as in (4).

(4) *She can lift that heavy stone.*

Epistemic possibility
Epistemic possibility refers to a speaker's degree of certainty about a proposition (van der Auwera and Ammann 2013b); see (5). Epistemic modality is generally relevant to knowledge, belief, and related notions.

(5) *The bus may be late (due to the snow).*

3. Jidong Shaoxing and Some Basic Features

3.1. Variety under Investigation

Shaoxing 绍兴话 is a Northern Wu dialect of Sinitic belonging to the Linshao subdivision 临绍小片 of the Taihu division 太湖片 (Wang and Cao 2012, p. 104). The variety under investigation, Jidong 稽东, is spoken in Jidong Town in the southern suburb of Shaoxing Prefecture and is classified as belonging to the Southern Suburb variety of Shaoxing (Tao et al. 2014).

The data presented in this paper were collected with four native speakers from 2022 to 2023. Our consultants represented three generations within the same family. They were Mr. Huang Tangfu 黄汤富 (born in 1955), Mrs. Huang Xingqin 黄杏琴 (born in 1957), Mr. Huang Yongjiang 黄永江 (born in 1977), and the second author Mr. Huang Xiao 黄骁 (born in 2002). Mr. Huang Yongjiang speaks an innovative variety of Jidong Shaoxing, while the other three speak a conservative variety.

Our corpus included both spontaneous and elicited data. Spontaneous data illustrated in this paper were either extracted from a corpus of six hours of audio material or taken from unrecorded daily conversations which were not part of the corpus. Elicited data comprised about 130 sentences. Elicited data presented in this paper will be indicated as 'elicitation', while the data with unmarked sources were either from our corpus or the unrecorded daily conversations. It is worth mentioning that when performing elicitation we did not simply ask for translations from Standard Mandarin to Jidong Shaoxing. Instead, taking semantic nuances of modals into consideration, we provided different contexts as stimuli for our consultants.

3.2. Basic Features

Shaoxing possesses eight tones: Tone 1/33/, Tone 2/13/, Tone 3/435/, Tone 4/213/, Tone 5/52/, Tone 6/231/, Tone 7/4/, and Tone 8/23/. Tones 7 and 8 are two checked tones. Any syllable bearing Tone 7 or 8 ends with a glottal stop/ʔ/. We will hereafter refer to the tones with a superscript of the number by which the tone is named. Note that tone sandhi is not represented in our transcription. Shaoxing is basically a VO language, especially in dependent clauses and when an object appears with a complex modifier, as shown in (6). Wu languages are characterized by topic prominence (Liu 2001) and constructions with topicalized objects are commonly observed in Shaoxing, as in (7). A topicalized object can occupy either a sentence initial position (7) or can follow the subject and precede the verb. As an analytic language, Shaoxing grammatical relations are realized by prepositions or word order. See example (6) for an example of a dative argument marked by the dative preposition *pə*^{7} 'to'.

(6) 我拨侬讲讲□前头做生活种事体。

ŋo^{4}	pə^{7}	noŋ^{4}	kɒŋ^{3}kɒŋ^{3}	ŋa^{4}	ʑjɛ̃^{2}də^{2}	tso^{5}	saŋ^{1}ɦwo^{8}	tsoŋ^{3}	zɿ^{6}tʰi^{3}.
1SG	DAT	2SG	tell.DLM	1PL	beforetime	do	life	CLF	thing

'I'll tell you something about how (I) made a living before.'

(7) 榧子摘落来要园得好。

fi^{3}tsɪ^{3}	tsa^{7}-lə^{8}lɛ^{2}	ʔjɒ^{5}	kʰɒŋ^{5}-tə^{7}-hɒ^{3}.
Torreya	pick-fall.come	need	store-VCOMP-GOOD

'After picking the Torreya nuts, (they) must be well stored.'

Sheng (2021) provides a detailed description of the Shaoxing grammatical system, though it focuses on the Keqiao 柯桥 variety, i.e., the Western Suburb variety, which is slightly different from the variety under investigation here.

3.3. Modal Auxiliaries and Potential Constructions

We summarize the distributional features of auxiliary verbs in Jidong Shaoxing following Heine (1993, pp. 20–24) and Zhu (1982, p. 122). In Jidong Shaoxing, auxiliary verbs form a closed class of words. They are free elements taking verbal or clausal complements in the form of [AUX VP] which feature reduced verbal behaviors. Auxiliary verbs in Jidong Shaoxing cannot take any aspectual marking as verbs do.

In an auxiliary construction, the strategy V (NEG) V is applied to the auxiliary verb to form a polar question. An auxiliary verb can stand alone to answer a polar question. See the example below for a polar question formed with the auxiliary *ɦwᴇ*^{6} 会 'can' and a positive response.

(8) 侬游水会会游{个□}？会{个□}。

noŋ^{4}	ljɤ^{2}sɿ^{3}	ɦwᴇ^{6}	ɦwᴇ^{6}	ljɤ^{2}	gɒ?	ɦwᴇ^{6}	gɔ^{8}.
2SG	swim	can	can	swim	AFF.PRT	can	AFF.PRT

'Can you swim? (Yes, I) can.' (Elicitation)

Some common Sinitic auxiliary verbs are used in Jidong Shaoxing. *ɦwᴇ*^{6} 'can < know' is used to express possibility, as in (8); *ʔjɒ*^{5} 要 'must, should < need' is used to code necessity; and *ɕjaŋ*^{3} 想 'want' and *k*^{h}*iŋ*^{3} 肯 'be willing' are used to express willingness. While *neng*^{2} and *ke*^{3}*yi*^{3} are used to denote possibility and permission in Standard Mandarin, these meanings are expressed by potential constructions and *hɒ*^{3} 'can < good' in Jidong Shaoxing.[1] For this, see Table 1 and also Sheng (2021, pp. 413–31).

Table 1. Modal auxiliary verbs in Jidong Shaoxing.

Possibility	Necessity	Willingness
hɒ^{3} 好 'can < good'	hɒ^{3} 好 'should < good'	ɕjaŋ^{3} 想 'want'
ɦwᴇ^{6} 会 'can < know'	ʔjɒ^{5} 要 'must, should < need'	k^{h}iŋ^{3} 肯 'be willing'
	(ʔiŋ^{1})kᴇ^{1} （应）该 'should < owe'	

Sinitic languages often adopt potential constructions to express possibility in the form of [V-POT-COMP], with [V-NEG-COMP] as the negated form (Chappell and Peyraube 2016, pp. 312–15). In the negated form, the potential marker and the negator are considered as infixes (Chao 1968, pp. 437–38; Sun 2006, p. 60). In Jidong Shaoxing, potential constructions, *V-tə*^{7}*-COMP*, are also commonly used to express possibility and are relevant to the modal uses of *hɒ*^{3} in Jidong Shaoxing. When denoting 'cannot', it is a negated potential construction that is used rather than the negated *hɒ*^{3} 'can', *fə*^{8} *hɒ*^{3} 'not good'. The most generalized potential construction is *V-tə*^{7}*-lᴇ*^{2} 'V-POT-come', with *V-və*^{8}*-lᴇ*^{2} 'V-NEG-come' as the negated form. Both (9a) and (9b) can denote 'cannot run', with *dɒ*^{2}*-və*^{8}*-lᴇ*^{2} 'run-NEG-come' having an additional meaning of prohibition.

(9) a.

逃不动		
dɒ^{2}-və^{8}-doŋ^{4}		
run-NEG-move		
'cannot run' (Elicitation)		

b.

逃不来		
dɒ^{2}-və^{8}-lᴇ^{2}		
run-NEG-come		
'cannot run' (Elicitation)		

See Section 5 for more details.

4. Polysemy of *hɒ*^{3} in Jidong Shaoxing

In Jidong Shaoxing, the lexeme *hɒ*^{3} 好 is a polysemous and multi-functional word. *hɒ*^{3} can serve as an adjective/adjectival verb 'good, fitting, ready, done, ok', as an auxiliary verb 'fit to, easy to, can, may, should', as a resultative verb complement denoting

a completed action, as an adverb 'quite', and as a complementizer introducing a purposive clause. The mentioned uses of *hɒ*^{3} in Jidong Shaoxing are also attested in Standard Mandarin (Lü [1980] 1999, pp. 256–58), except that *hɒ*^{3} in Jidong Shaoxing possesses more modal uses than *hao*^{3} does in Standard Mandarin.

As an **adjective**, the basic meaning of *hɒ*^{3} is 'good'. Adjectives in Jidong Shaoxing function like intransitive verbs in a way, a common feature for East and Southeast Asian languages. No copula is needed when forming an adjectival predicate, and some adjectives can bear aspectual marking as intransitives do. The two features that distinguish adjectives from intransitive verbs are that (i) adjectives can modify nouns directly and (ii) adverbs can be derived from them. Examples (10) and (11) illustrate the attributive and the predicative uses of *hɒ*^{3} 'good', respectively. Example (12) shows its derivational use as an adverbializer *tɕjɒ*^{5}.

(10) 破剪刀勠用哉，用个把**好**剪刀。

pʰa^{5}	tɕjɛ̃^{3}tɒ^{1}	fjɒ^{3}	ɦjoŋ^{6}	dzᴇ,	ɦjoŋ^{6}	gə^{8}	po^{3}	**hɒ^{3}**	tɕjɛ̃^{3}tɒ^{1}.
broken	scissor	NEG.IMP	use	CRS	use	S_PROXCLF		GOOD	scissor

'Don't use the broken scissors. Use this **good** pair.' (Elicitation)

(11) □个香椹是**好**{个□}。

ŋa^{4}	gə^{8}	ɕiaŋ^{1}fi^{3}	zᴇ^{4}	**hɒ^{3}**	go^{8}.
1PL	POSS	Torreya	indeed	GOOD	AFF.PRT

'Our Torreya nuts are indeed **good**.'

(12) 米**好好**□来□，侬弄渠作啥？

mi^{4}	**hɒ^{3}hɒ^{3}**	tɕjɒ^{5}	lᴇ^{2}doŋ,	noŋ^{4}	loŋ^{6}	ɦi^{4}	tsə^{5}	so^{5}?
rice	well	ADV	be.at	2SG	do	3SG	do	what

'The rice was **fine** there. How come you messed it up?'

The meaning 'good' can imply the meaning 'suitable'. In (13), *hɒ*^{3} denotes 'suitable' or 'better'.

(13) 渠脸盘大，还是留长头发**好**。

ɦi^{4}	ljɛ̃^{4}bə^{2}	do^{6},	ɦwæ^{2}zə^{8}	ljə^{2}	dzaŋ^{2}	də^{2}fa^{7}	**hɒ^{3}**.
3SG	face	big	still	keep	long	hair	GOOD

'She has a big face and long hair **suits** her.'

In (14), marked by the currently relevant state marker *dzᴇ*, *hɒ*^{3} denotes 'ready, done'. *hɒ*^{3} in (15) serves as a resultative complement turning the verb *tɕʰiə*^{7} 'eat' into a telic verb phrase expressing a completed action.

(14) 饭**好**哉。

væ^{6}	**hɒ^{3}**	dzᴇ.
meal	GOOD	CRS

'The meal is **ready**.'

(15) 饭吃**好**哉。

væ^{6}	tɕʰjə^{7}-**hɒ^{3}**	dzᴇ.	
meal	eat-GOOD	CRS	

'(I) finished (my) meal.'

As an **auxiliary**, *hɒ*^{3} takes verbal or clausal complements and can denote 'fit to, be easy to, can, may, should'. *hɒ*^{3} in (16) denotes 'be easy to', while (17) is ambiguous and can be interpreted as either 'fit to' or as 'can'. See Section 5 for more examples of the modal uses of *hɒ*^{3}.

(16) 个道题□坐**好**做□。

gə^{8}	dɒ^{4}	di^{2}	mə^{8}	zo^{4}	**hɒ^{3}**	tso^{5}	jə^{8}.
S_PROX	CLF	question	TOP	sit/extremely	GOOD	do	PRT

'This problem is extremely **easy to** solve.'

(17) 雄花粉埯拢过个半个月**好**打药水□。

ɦjoŋ^{2}hwo^{1}fəŋ^{1}	boŋ^{4}-loŋ^{4}	ku^{5}	gə^{8}	pə̃^{5}	gə^{8}	ɦjo^{8}	**hɒ^{3}**
male.flower.pollen	shake-gather	pass	CLF	half	CLF	month	GOOD
taŋ^{3}	ɦja^{8}sɿ^{3}	ɦa.					
beat	pesticide	PRT					

'A half month after (female Torreya trees) are pollinated manually (with) male pollen,
i. it's the **right time** for spraying pesticide.'
ii. one **can** spray pesticide.'

In terms of syntactic position, the auxiliary *hɒ*^{3} might sometimes be considered as an adverb. This is especially true in an example like (16) where the meaning 'be easy to' could be interpreted as 'easily' modifying the verb *tso*^{5} 'do'. However, auxiliaries and adverbs are characterized by different syntactic behaviors. As mentioned in Section 3.3, when transforming a declarative sentence with an auxiliary into a polar question, the strategy V (NEG) V is applied to the auxiliary instead of to the main verb, as in (18).

(18) 个道题**好（不）好**做□?

gə^{8}	dɒ^{4}	di^{2}	**hɒ^{3}**	**(və^{8})**	**hɒ^{3}**	tso^{5}	ɦa?
S_PROX	CLF	question	GOOD	NEG	GOOD	do	PRT

'Is this problem **easy to** solve?' (Elicitation)

Compare (19) with (16) and (18). The adverb *ŋɛ*^{2} 'very' in (19a) occupies the same preverbal position as *hɒ*^{3} does in (16). To transform (19a) into a polar question, one must apply the strategy V (NEG) V to the predicative adjective *næ*^{2} 'difficult', as in (19b). Yet, this strategy can never be used with an adverb. The form *ŋɛ*^{2} *(və^{8}) ŋɛ*^{2} 'LIT: very not very' in (19c) is ungrammatical.

(19) a. 个道题呆难□。

gə^{8}	dɒ^{4}	di^{2}	ŋɛ^{2}	næ^{2}	da.
S_PROX	CLF	question	very	difficult	PRT

'This problem is very difficult.' (Elicitation)

b. 个道题难（不）难□?

gə^{8}	dɒ^{4}	di^{2}	næ^{2}	(və^{8})	næ^{2}	ɦa?
S_PROX	CLF	question	difficult	NEG	difficult	PRT

'Is this problem difficult?' (Elicitation)

c. *个道题呆（不）呆难□?

*gə^{8}	dɒ^{4}	di^{2}	ŋɛ^{2}	(və^{8})	ŋɛ^{2}	næ^{2}	ɦa?
S_PROX	CLF	question	very	NEG	very	difficult	PRT

Attempted: 'Is this problem very difficult?' (Elicitation)

Beyond its uses as an auxiliary, *hɒ*^{3} also has more grammaticalized uses. Namely, *hɒ*^{3} is used as a complementizer to introduce a purposive clause equivalent to the English counterpart 'so as to'. This function may be closely related to the auxiliary use of *hɒ*^{3}. In the example below, the first clause 'take away the quilt' is uttered in a context in which this action will allow the speaker to put a sheet on the bed. The two clauses are linked by *hɒ*^{3}.

(20) 棉被驮还，**好**让我铺床单方便些。

mjɛ̃^{2}bi^{4}	do^{2}-ɦwæ^{2},	**hɒ^{3}**	nʱjaŋ^{6}	ŋo^{4}	p^{h}u^{1}	dzɒŋ^{2}tæ^{1}	fɒŋ^{1}bjɛ̃^{6}	sə^{7}.
quilt	take-away	GOOD	let	1SG	lay	sheet	convenient	a.bit

'Take away the quilt **so as to** let me easily put the sheet on.' (Elicitation)

Finally, like Standard Mandarin, *hɒ*^{3} in Jidong Shaoxing can serve as an **adverb** meaning 'quite', i.e., a degree intensifier. This use of *hɒ*^{3} is quite limited. The most common case is that *hɒ*^{3} modifies the adjective *ljaŋ*^{4} 'several', as in the following example.

(21) 头歇儿车路里有**好**两个人轧死哉□。

dəˀ⁴ɕjɛ̃	tɕʰjo¹lu⁶	li⁴	ɦjəˀ⁴	**hʊ³**	ljaŋ⁴	gəˀ⁸	nᵑiŋ²	zaˀ⁸-saˀ⁷
just.now	road	inside	there.be	GOOD	several	CLF	person	crush-die
dzᴇ	məˀ⁸.							
CRS	PRT							

'There were easily several people that were crushed to death on the road.'

As can be observed from the examples given above, the modal uses of *hʊ*^{3} 'good' account for a number of its auxiliary uses. The nuances of its modal meanings will be elaborated in the next section.

5. Modal Uses of *hʊ*^{3}

Like English *can* and *may* or Standard Mandarin *neng*^{2} 'can' and *ke*^{3}*yi*^{3} 'may', the modal meaning of *hʊ*^{3} in Jidong Shaoxing is largely dependent on context. This section presents the different types of modality that *hʊ*^{3} can express. In a nutshell, *hʊ*^{3} can denote circumstantial and physical possibility, permission, weak obligation, and epistemic possibility, but cannot denote mental ability or learned skills.

5.1. Circumstantial Possibility

Circumstantial possibility is the most common modal use of *hʊ*^{3} in Jidong Shaoxing and denotes that an action is enabled under certain conditions external to the participant. This use can be easily observed in narratives involving production or treatment processes. Example (22) is one such case. This example concerns how to process Torreya nuts. The procedure of cleaning, expressed with the modal *hʊ*^{3} in (22i), can only be carried out after the peels of the Torreya nuts completely rot off, i.e., the peel's rotting off is the enabling condition for cleaning. Cleaning is, in turn, the enabling condition for the drying process (22ii), which is also realized with the modal *hʊ*^{3}. Both *hʊ*^{3} in (22) denote circumstantial possibility and can be interpreted as 'can'. Note that *ɦwᴇ*^{6} in (22), used along with *hʊ*^{3}, is an adverbial use denoting 'only then' and corresponding to the adverb *cai*^{2} 才 'only then' in Standard Mandarin. This adverbial use of *ɦwᴇ*^{6} differs from its auxiliary use in (24). See also (29) for another instance of the adverbial use.

(22) 烂□过十日会好庴，庴过会**好**晒。

(i)	læ⁶	doŋ	ku⁵	zəˀ⁸	nᵑjəˀ⁸	ɦwᴇ⁶	**hʊ³**	ɸu⁵,
	rot	DUR	pass	ten	day	only.then	GOOD	wash
(ii)	ɸu⁵-ku⁵	ɦwᴇ⁶	**hʊ³**	saˀ⁵.				
	wash-pass	only.then	GOOD	dry.in.the.sun				

'(Let the peels of the Torreya nuts) rot for ten days and only then (you) **can** wash (the Torreya nuts). Only after washing (them), **can** (you) dry them in the sun.'

We have mentioned above that *hʊ*^{3} cannot be used to express mental or learned ability. Thus, the clause (23ii) 'I can speak French' does not express the ability of speaking French but denotes that it is possible to speak French under circumstances in which speaking English is unnecessary. To express mental ability or learned skills, one must use the modal verb *ɦwᴇ*^{6} 'can', as in Standard Mandarin. See examples (24) and (8).

(23) □听不懂英语有啥要紧□，我**好**话法语个□。

(i)	ɦja⁴	tʰiŋ⁵-vəˀ⁸-toŋ³	ʔiŋ¹nᵑy⁴	ɦjəˀ⁴	so⁵	ʔjʊ⁵tɕiŋ³	nəˀ⁸,
	3PL	listen-NEG-understand	English	have	what	importance	PRT
(ii)	ŋo⁴	**hʊ³**	ɦwo⁶	faˀ⁷nᵑy⁴	gəˀ⁸	jæ.	
	1SG	GOOD	speak	French	AFF	PRT	

'It doesn't matter if they can't understand English. I **can** speak French.'

(24) 我**会**话法语个□。

ŋo⁴	**ɦwᴇ⁶**	ɦwo⁶	faˀ⁷nᵑy⁴	gəˀ⁸	jæ.
1SG	can	speak	French	AFF	PRT

'I **can** speak French.' (Elicitation)

In (25), a circumstantial condition is not overtly mentioned, but the sentence implies that there are several ways to get to University City. Taking Line 9 is one possible option.

(25) 侬□大学城**好**坐9号线{个□}。

noŋ^{4}	ta^{5}	da^{6}ɦjo^{8}dzəŋ^{2}	**hʊ^{3}**	zo^{4}	tɕjə^{3}ɦʊ^{6}ɕjɛ̃^{5}	go.
2SG	ALL	university.city	GOOD	sit	number.nine.line	AFF.PRT

'You **can** take Line 9 to go to University City.'

Example (26) is a topic–comment construction. The sentence-initial noun *ka^{7}ŋ^{2} pɛ^{5}* 'turtle shell' is not the agent of the VP *hʊ^{3} tso^{5} ɦja^{8}* 'can make medicine' but the material. Therefore, even though the possibility expressed in (26) is related to the intrinsic property of turtle shells, we still consider this case to be one of circumstantial possibility, as it is the medicinal value of turtle shells that allows them to be made into medicine.

(26) 甲鱼背**好**做药个□。

ka^{7}ŋ^{2}	pɛ^{5}	**hʊ^{3}**	tso^{5}	ɦja^{8}	gə^{8}	jæ.
soft.shell.turtle	back	GOOD	do	medicine	AFF	PRT

'Turtle shells **can** be made into (Chinese traditional) medicine.'

Interestingly, the HAVE-construction, [ɦjə^{4}$_{\text{HAVE}}$ + NP$_{\text{i}}$ + hʊ^{3}$_{\text{GOOD}}$ + VP + ∅$_{\text{i}}$], is often used to express possibility.[2] In this construction, the VP should be a transitive verb with an absent object. The absent object is co-referential with the NP following the verb *ɦjə^{4}* 'have'. See also (30A-ii) and (38) for the same construction denoting permission and dynamic possibility, respectively. The example below is semantically analogous to example (26). The quantity of raw rice determines how much steamed rice one can have.

(27) 三升米**有**五碗**好**烧。

sæ^{1}	səŋ^{1}	mi^{4}	**ɦjə^{4}**	ŋ^{4}	ʔwə^{3}	**hʊ^{3}**	sɒ^{1}.
three	cup	rice	have	five	bowl	GOOD	cook

'Three cups of raw rice **can** be made into five bowls of steamed rice.'

It should be noted that *hʊ^{3}* demonstrates asymmetrical semantic extension in Jidong Shaoxing. The negated *hʊ^{3}* does not denote impossibility or prohibition but denotes 'not suitable' (see (31)–(33) and further discussion in Section 6). Rather, the opposite of a modal proposition formed by *hʊ^{3}* has to be expressed by a negated potential construction [V-NEG-COMP] in which *lɛ^{2}* 'come' is the most frequent lexeme occupying the complement position, as mentioned in Section 3.3. Compare the two clauses in (28). Both (28a) and (28b) can be produced after the clause 'the shop is contaminated with the coronavirus', with (28a) as a clause of contrast and (28b) as a clause of consequence. The impossibility of using the shared bicycles in (28b) cannot be realized by simply negating the modal *hʊ^{3}*, but must be expressed by the negated potential construction *dʑi^{2}-və^{8}-lɛ^{2}* 'cannot ride'.

(28) 后头爿店个个毛病惹牢□,

ɦə^{4}də^{2}	bæ^{6}	tjɛ̃^{5}	gə^{8}	gə^{8}	mɒ^{2}biŋ^{6}	nʱja^{4}-lɒ^{2}	lə^{8},	
back	CLF	shop	S_PROX	CLF	illness	attract-tight	PRT	

a. 前头个共享单车话道照样**好**用□。

ʑjɛ̃^{2}də^{2}	gə^{8}	goŋ^{6}ɕjaŋ^{3}	tæ^{1}tɕ^{h}jo^{1}	ɦwo^{6}dɒ^{4}	tsɒ^{5}ɦjaŋ^{6}	**hʊ^{3}**	ɦjoŋ^{6}	la.	
front	MOD	shared	bicycle	unexpectedly	as.usual	GOOD	use	PRT	

'Even though the shop is contaminated with the coronavirus, the shared bicycles in front of it are still **available** for use.'

b. 前头个共享单车也**骑不来**哉。

ʑjɛ̃^{2}də^{2}	gə^{8}	goŋ^{6}ɕjaŋ^{3}	tæ^{1}tɕ^{h}jo^{1}	ɦa^{4}	**dʑi^{2}-və^{8}-lɛ^{2}**	dzɛ.	
front	MOD	shared	bicycle	also	ride-NEG-come	CRS	

'The shop is contaminated with the coronavirus, (so) the shared bicycles in front of (the shop) aren't **available** for use any more.' (Elicitation)

5.2. Permission and Weak Obligation

In Jidong Shaoxing, *hʊ^{3}* can express both permission and weak obligation, both of which belong to deontic modality. Semantically, these modal types correspond to 'may' and 'should, ought to', respectively. Like circumstantial possibility (van der Auwera and Plungian 1998), the enabling conditions of these two modality types are also participant-

external except that permission and weak obligation are determined by speakers or social or ethical norms.

5.2.1. Permission

Example (29) demonstrates *hʊ*^{3} used to express legal marriage ages in China. (30Q) is a polar question asking for one's permission in which the reduplicated form *hʊ*^{3} *hʊ*^{3} is the contracted form of V (NEG) V when forming a polar question (see also (8) and (19)). A positive answer to (30Q) is given in (30A-i). In (30A-ii), the possessive construction is used to denote permission. *tɕjə*^{5} is the contraction of the adverb *tsə*^{7} 'only' and the possessive verb *ɦjə*^{4} 'have'.[3]

(29) 男个要廿二岁，女个廿岁会**好**结婚□。

nɑ̃^{2}	gə^{8}	ʔjɒ^{5}	ȵjæ^{6}ȵi^{6}	sɛ^{5},	ȵy^{4}	gə^{8}	ȵjæ^{6}	sɛ^{5}
male	NMLZ	need	twenty-two	year	female	NMLZ	twenty	year
ɦwɛ^{6}	**hʊ^{3}**	tɕjə^{7}hwəŋ^{1}	lɛ.					
only.then	GOOD	marry	PRT					

'Men **can** only get married when they attain 22 years of age and the legal age of marriage for women is 20.' (Elicitation)

(30) Q- 个颗糖我**好好**吃？

gə^{8}	k^{h}o^{1}	dɒŋ^{2}	ŋo^{4}	**hʊ^{3}**	**hʊ^{3}**	tɕ^{h}jə^{7}?	
S_PROX	CLF	candy	1SG	GOOD	GOOD	eat	

'**May** I eat this candy?'

A- 吃是**好**吃，介{**只有**}一颗**好**吃。

(i)	tɕ^{h}jə^{7}	zə^{8}	**hʊ^{3}**	tɕ^{h}jə^{7},	(ii)	ka^{7}	**tɕjə^{5}**	ʔjə^{7}		k^{h}o^{1}	**hʊ^{3}**	tɕ^{h}jə^{7}.
	eat	COP	GOOD	eat		but	only.have	one		CLF	GOOD	eat

'Yes, definitely you **may**, but you **can** only eat one.'

As mentioned in Sections 3.3 and 5.1, the negated *hʊ*^{3} may not be used to denote 'cannot, may not, should not'. To express prohibition, one must adopt the negated potential construction [V-NEG-lɛ^{2}] 'cannot, may not'. Compare (31) with (29).

(31) 男个年龄不到廿二岁，婚**结不来**□。

nə̃^{2}	gə^{8}	ȵjɛ̃^{2}liŋ^{2}	fə^{7}	tɒ^{5}	ȵjæ^{6}ȵi^{6}	sɛ^{5},	hwəŋ^{1}
male	NMLZ	age	NEG	attain	twenty-two	year	marriage
tɕjə^{7}-və^{8}-lɛ^{2}	lɛ.						
marry-NEG-come	PRT						

'Men **cannot** get married (legally), if they haven't attained 22 years of age.' (Elicitation)

Similarly, to deny the request in (30Q), the negated potential construction *tɕ^{h}jə^{7}-və^{8}-lɛ^{2}* 'may not eat' is used, as shown in (32).

(32) A- **吃不来**{个□}，看牙齿烂光。

tɕ^{h}jə^{7}-və^{8}-lɛ^{2}	gɔ^{8},	k^{h}ə̃^{5}	ŋɔ^{2}ts^{h}ɿ^{3}	læ^{6}-kwɒŋ^{1}.	
eat-NEG-come	AFF.PRT	look	tooth	rot-finish	

'No, you **may not**. Beware of rotten teeth.'

The semantic asymmetry between *hʊ*^{3} 'can' and *fə*^{8} *hʊ*^{3} 'not good, not suitable' makes Jidong Shaoxing stand out among other Wu dialects in which NOT GOOD is observed to denote 'may not, cannot', such as Shanghainese (B. Huang 1996, p. 295; Qian 1997, p. 132) and Xianju Wu 仙居话.[4] Compare the two sentences from Jidong Shaoxing and Xianju given in (33). To express 'one may not smoke indoors', the negated potential construction *tɕ^{h}jə^{7}-və^{8}-lɛ^{2}* 'cannot eat' is used in Jidong Shaoxing, while *fao*^{42} 'cannot', which is the fusion of the negator *fəʔ*^{2} and *hao*^{32}^{4} 'can < good', is used in Xianju.

(33) Jidong Shaoxing

a. 里头香烟**吃不来**{个□}。

li^{4}də^{2}	ɕjaŋ^{1}ʔjɛ̃^{1}	**tɕ^{h}jə^{7}-və^{8}-lɛ^{2}**	go.
inside	cigarette	eat-NEG-come	AFF.PRT

'(One) **may not** smoke indoors.' (Elicitation)

Xianju Wu 仙居吴语

b. 间里{**不好**}吃香烟。

ka^{33}^{4}li^{32}^{4}	**fao^{42}**	tɕ^{h}oʔ^{5}	ɕia^{55}ie^{42}.
room.inside	NEG.GOOD	eat	cigarette

'(One) **may not** smoke indoors.' (Elicitation)

(Pan Xueyuqing pers. comm.)

5.2.2. Weak Obligation

We have seen permission granted (either by a social norm or a speaker) with the modal *hʊ*^{3} 'good' in previous examples. When expressing weak obligation with *hʊ*^{3}, it is often the case that a speaker offers his or her advice or imposes his or her desire in a delicate way on the participant. Example (34) is a case of giving advice or a command. In this sentence, the topicalized object 'clutch' precedes the verb and follows the subject.

(34) 侬只离合器**好**抬起来哉，再闹落去部车都要拨侬闹破哉。

noŋ^{4}	tsə^{7}	li^{2}ɦə^{8}tɕ^{h}i^{5}	**hʊ^{3}**	dɛ^{2}-tɕ^{h}i^{3}lɛ^{2}	dzɛ,	tsɛ^{5}	nɒ^{6}-lə^{8}tɕ^{h}i^{5}	bu^{6}	tɕ^{h}jo^{1}
2SG	CLF	clutch	GOOD	lift-rise.come	CRS	still	do-fall.down	CLF	car
tu^{1}	ʔjɒ^{5}	pə^{7}	noŋ^{4}	nɒ^{6}-p^{h}a^{5}	dzɛ.				
all	PROSP	PASS	2SG	do-break	CRS				

'You **should** let go of the clutch. Otherwise, you'll wreck the car.'

By way of contrast, the following two examples are more optative. However, if example (35) is a combination of the speaker's advice and wish, the case of (36) certainly only involves the speaker's wish, for a meteorological phenomenon is not an intervenable event.

(35) 侬头发**好**剪剪哉。

noŋ^{4}	də^{2}fa^{7}	**hʊ^{3}**	tɕjɛ̃^{3}tɕjɛ̃^{3}	dzɛ.
2SG	hair	GOOD	cut.DLM	CRS

'You **should** get a haircut.'

(36) 雨落□介许多日数哉，**好**停停哉□。

ɦy^{4}	lo^{8}	lə^{8}	ka^{5}	ɕy^{3}to^{1}	ȵjə^{8}su^{5}	dzɛ,	**hʊ^{3}**	diŋ^{2}diŋ^{2}	dzɛ	jə^{8}.
rain	fall	PRF	so	many	day	CRS	GOOD	stop.DLM	CRS	PRT

'It has been raining for so many days. It **should** stop.'

5.3. Participant-Internal Possibility

Participant-internal possibilities expressed by *hʊ*^{3} are basically restricted to dynamic abilities or possibilities. We reiterate that the domain of mental ability or learned skills excludes the use of *hʊ*^{3}. Unlike the uses of *hʊ*^{3} illustrated in Sections 5.1 and 5.2, the possibilities expressed by *hʊ*^{3} in (37) and (38) are not enabled by external or circumstantial factors but are determined by participants' inherent physical strength.

(37) 我一只肩胛两百斤担**好**挑。

ŋo^{4}	ʔjə^{7}	tsə^{7}	tɕjɛ̃^{1}ka^{7}	ljaŋ^{4}pa^{7}	tɕiŋ^{1}	tæ^{5}	**hɒ^{3}**	t^{h}jɒ^{1}.
1SG	one	CLF	shoulder	two.hundred	a.half.kilo	load	GOOD	carry

'I **can** carry a load of one hundred kilos on one shoulder.'

(38) 侬小辰光脚筋骨好□，我跟□爷爷柴山里走一埭，侬**好**走两三埭□。

noŋ^{4}	ɕjɒ^{3}	zəŋ^{2}kwɒŋ^{1}	tɕja^{7}tɕiŋ^{1}kwə^{7}	hɒ^{3}	lɛ,	ŋo^{4}	kiŋ^{1}	na^{4}
2SG	small	moment	leg.muscles.bones	GOOD	PRT	1SG	and	2SG.POSS.KIN
ɦja^{2}ɦja^{2}		za^{2}	sæ^{1}	li^{4}	tsə^{3}	ʔjə^{7}	da^{6},	noŋ^{4}
grandfather		firewood	hill	inside	walk	one	VCLF	2SG
hɒ^{3}		tsə^{3}	ljaŋ^{4}	sæ^{1}	da^{6}	lɛ.		
GOOD		walk	two	three	VCLF	PRT		

'You were of good leg strength when you were little. Within the time me and your grandfather managed to arrive at the hill (to fetch some firewood), you **could** make several trips.'

Example (39) shows the HAVE-construction used to express physical ability.

(39) □卯做苦力，介几十斤石头，背牢**有**好两十里路**好**走□。

ɦæ^{2}mɒ^{6}	tso^{5}	k^{h}u^{3}ljə^{8},	ka^{5}	tɕi^{3}	zə^{8}	tɕiŋ^{1}	za^{8}də^{2}	pɛ^{5}-lɒ^{2}
before	do	labor	so	several	ten	a.half.kilo	stone	carry-tight
ɦjə^{4}	hɒ^{3}	ljaŋ^{4}	zə^{8}	li^{4}	lu^{6}	**hɒ^{3}**	tsə^{3}	lɛ.
have	GOOD	several	ten	a.half.kilometer	road	GOOD	walk	PRT

'I **could** walk quite a dozen kilometers with a dozen kilos of stones carried on my back, when I was doing hard labor long before.'

Nevertheless, we do observe some marginal examples beyond the domain of physical ability. In (40), the participants 'leaves' are also the subject and are inanimate and cannot initiate an action, but 'floating on the surface (of the water)' is relevant to their inherent physical property of being light.

(40) 树叶片轻飘飘{个□}，水高顶**好**浮个□。

zɪ^{6}ɦjə^{8}bæ^{6}	tɕ^{h}iŋ^{1}-p^{h}jɒ^{1}p^{h}jɒ^{1}	gɔ^{8},	sɪ^{3}	kɒ^{1}təŋ^{3}	**hɒ^{3}**	və^{2}	gə^{8}	la.
leaf	light-VIV	AFF.PRT	water	surface	GOOD	float	AFF	PRT

'Leaves are very light and **can** float on the surface of the water.' (Elicitation)

Note that Sheng (2021, p. 416) claims that *hɒ*^{3} is only used in the modal HAVE-construction to express dynamic possibility in Keqiao Shaoxing.

5.4. Epistemic Possibility

Finally, *hɒ*^{3} can also be used to express presumption in Jidong Shaoxing. Presumption also falls under epistemic possibility since a speaker often makes a presumption based on previous knowledge. As shown in (41), a proposition is made with the knowledge that cherry blossoms usually bloom in late March and early April.

(41) 辰山植物园个樱花**好**开□哉。

dzəŋ^{2}sæ^{1}	dzə^{8}və^{8}ɦjə^{2}	gə^{8}	ʔiŋ^{1}hwo^{1}	**hɒ^{3}**	k^{h}ɛ^{1}	doŋ	dzɛ.
Chenshan$_{\text{PLACENAME}}$	botanical.garden	MOD	cherry.blossom	GOOD	bloom	PRF	CRS

'The cherry blossoms in the Botanical Garden of Chenshan **may** have bloomed.'

The proposition below in (42) can be produced in several contexts, such as a context based on daily routine or one's experiential estimation. Certainly, this sentence possesses a deontic interpretation in certain contexts, such as if the speaker were giving an instruction or order.

(42) 车**好**来□哉。

tɕ^{h}jo^{1}	**hɒ^{3}**	lɛ^{2}	doŋ	dzɛ.
car	GOOD	come	PRF	CRS

'The car/bus **should** be on the way.'

Example (43) is based on known information which is mentioned in the IF-clause. The NP *ɦjə⁴ (sə⁷) su⁵* 'have (some) numbers' in this sentence is metaphorically used to denote 'be sure about something' or 'know something exactly'.

(43) 是话下卯再碰着介种事体，□个对付侬也**好**有些数哉{个□}。

zᴇ⁴ɦwo⁶	ɦo⁴mɒ⁶	tsᴇ⁵	baŋ⁶-dza⁸	ka⁵	tsoŋ³	zɿ⁶tʰi³,	na⁸gə⁸	tᴇ⁵fu⁵
if	next.time	again	run.into-attach	so	kind	thing	how	deal
noŋ⁴	ɦa⁴	**hɒ³**	ɦjə⁴	sə⁷	su⁵	dzᴇ	go⁸.	
2SG	also	GOOD	have	some	number	CRS	AFF.PRT	

'Next time you encounter a similar situation, you **may** know how to handle it.'

In sum, the lexeme *hɒ³* in Jidong Shaoxing has lost its lexical meaning of 'good' when used as a modal auxiliary, as can be seen in all the examples illustrated in Section 5. It can denote circumstantial possibility, deontic modality (permission and weak obligation), dynamic physical ability, and epistemic possibility. Like many modal auxiliaries across languages of the world (see Kuteva et al. 2019 for the entries 'C-POSSIBILITY', 'D-POSSIBILITY', 'D-NECESSITY', Pi-POSSIBILITY, and 'E-POSSIBILITY'), *hɒ³* can be interpreted as 'can', 'may', or 'should' in different contexts. Despite its polysemy as a modal auxiliary, we do observe cases where *hɒ³* cannot be used even within the modality types *hɒ³* denotes. The restrictions on *hɒ³* might be related to its source meaning 'fit to' and its circumstantial uses, which will be elaborated in the next section.

6. Reconstruction

We have shown in Section 4 the polysemy of the lexeme *hɒ³* in Jidong Shaoxing, but from which meaning is the modal *hɒ³* derived? We propose that the modal meaning of *hɒ³* is basically derived from the meaning 'fit to' but not from the primary meaning 'good'. To be exact, the *hɒ³* of 'fit to' has extended to denote first circumstantial and then deontic possibility and necessity. It is from circumstantial possibility that *hɒ³* has extended to express participant-internal possibility. Finally, *hɒ³* has extended to denote epistemic possibility. For this, see Figure 1.

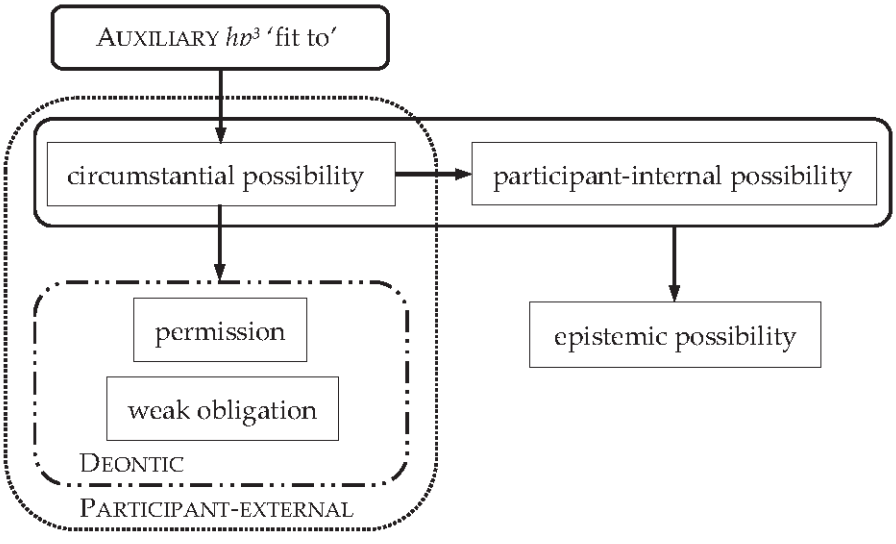


Figure 1. Extension pathways of *hɒ³* in Jidong Shaoxing.

We propose that the extension of *hɒ³* from a non-modal auxiliary to a modal auxiliary is motivated by contextual reanalysis and is a result of grammaticalization. Even though the 'fit' *hɒ³* and the modal *hɒ³* are both auxiliaries, the modal *hɒ³* is more desemanticized than the 'fit' *hɒ³*, with desemanticization being one of the four parameters for identifying grammaticalization (Heine and Narrog 2010, p. 405).

The following subsections will explain the semantic extension of *hɒ³* stage by stage.

6.1. 'Fit to' > Circumstantial Possibility > Deontic Modality

We identify the auxiliary use of *hʊ*^{3} 'fit to' as the source meaning of its modal uses, since the auxiliary uses of *hʊ*^{3} provide the primary syntactic context for its further extension, or grammaticalization, to modal auxiliaries, that is, [AUX VP]. Note that the meaning 'fit to' derives from the meaning 'good', as 'good' can imply the meaning 'suitable, fit to'. See example (13).

Ambiguity between the meaning 'fit to' and the modal meaning 'can, may, should' can be easily observed in Jidong Shaoxing. This kind of ambiguous context is labelled "bridging context"[5] by Heine (2002) and "critical context" by Diewald (2002). We adopt Heine's (2002) context-induced grammaticalization model to illustrate the process from 'fit to' to 'can, may, should' for *hʊ*^{3} in Jidong Shaoxing. Ambiguous contexts play an important role in the process of semantic change and grammaticalization "giving rise to an inference in favor of a new meaning" (Heine 2002, p. 86). They are the environments where the mechanism of reanalysis takes effect. That is to say, a bridging context of 'fit to'-'can' provides a breeding environment where the modal meaning of *hʊ*^{3} can be inferred. A complete process for the emergence of a new meaning is proposed to comprise four stages: (i) initial stage, (ii) bridging context, (iii) switch context, and (iv) conventionalization (Heine 2002).

In the initial stage, 'fit to' is the only reading of *hʊ*^{3}. Although in most cases *hʊ*^{3} 'fit to' can also be interpreted as 'can, may, should', especially in positive sentences, the exclusive meaning of 'fit to' is well preserved in the negated form of *hʊ*^{3}, i.e., [NEG hɒ^{3} VP]. As illustrated in (44), the VP *fə*^{7} *da hʊ*^{3} *ts*^{h}*ə*^{1} can only be interpreted as 'not suitable to wear'. While a Mandarin native speaker or a speaker of other Wu dialects would probably not be convinced by our claim that the negated *hʊ*^{3} cannot be interpreted as 'cannot, may not', as we have mentioned above, the negated *hʊ*^{3} has not yet developed any modal meaning in Jidong Shaoxing. See (31)–(33) above. The meaning of 'cannot, may not, should not' can only be expressed by a negated potential construction.

Initial Stage

(44) 是话下卯十二月里哉，侬个双鞋介薄横不大**好**穿哉。

zᴇ^{4}ɦwo^{6}	ɦo^{4}mɒ^{6}	zə^{8}ɳ̊i^{6}ɦjo^{8}	li^{4}	dzᴇ,	noŋ^{4}	gə^{8}	ɕjɒŋ^{1}	
if	later	December	inside	CRS	2SG	POSS	CLF	
ɦa^{2}	ka^{5}	bo^{8}	ʔwaŋ^{3}	fə^{7}	da	**hɒ^{3}**	ts^{h}ə^{1}	dzᴇ.
shoe	so	thin	after.all	NEG	very	GOOD	wear	CRS

'Your shoes are so thin and by December they won't **be suitable to** wear after all.'

The asymmetrical semantic extension of *hʊ*^{3} 'can' and *fə*^{7} *hʊ*^{3} 'not suitable' in Jidong Shaoxing helps us to locate the lexical source of the modal *hʊ*^{3}. The asymmetry can be explained by the principle of persistence (Hopper 1991), which refers to lexical traces being retained in a grammaticalized form in the process of grammaticalization.

In a bridging context, *hʊ*^{3} is ambiguous and can be interpreted either as 'fit to' or as 'can'. It is in such contexts that the lexeme *hʊ*^{3} 'fit to' is reanalyzed as 'can'. This reanalysis can be seen in example (45), where the clause 'he's not here' provides a suitable condition for the speaker to say something, and for *hʊ*^{3} to be reanalyzed as 'can'.

Bridging Context

(45) 渠人{无有}口，我有两句说话**好**话哉。

ɦi^{4}	ɳ̊iŋ^{2}	ʔɳ̊jə^{3}	mə^{8},	ŋo^{4}	ɦjə^{4}	liaŋ^{4}	tɕy^{5}
3SG	person	NEG.have	PRT	1SG	have	several	CLF
ɕjo^{7}ɦwo^{6}	**hɒ^{3}**	ɦwo^{6}	dzᴇ^{6}.				
speech	GOOD	say	CRS				

'Since he's not here, I have something that **is suitable to** say.'

'Since he's not here, I have something that **can** be uttered.'

In a switch context, the new modal meaning of *hʊ*^{3} is the only interpretation. However, as pointed out by Heine (2002, p. 85), in this stage the target meaning still needs to be supported by a context. In (46), in the context that *ʔjɒ*^{5} *tso*^{5} *gə*^{8} *tu*^{1} *tso*^{5}-*hʊ*^{3} *dzᴇ*^{6} '(I) finish

all that should be done', the *hʊ*^{3} in the following clause *liŋ*^{6}*ŋa*^{6} *zɿ*^{6}*tʰi*^{3} *ʔɳjə*^{3} *so*^{5} *hʊ*^{3} *tso*^{5} *go*^{8} can only be interpreted as a modal verb and the clause denotes 'there's nothing else that (I) can do'. Without this context, the clause *liŋ*^{6}*ŋa*^{6} *zɿ*^{6}*tʰi*^{3} *ʔɳjə*^{3} *so*^{5} *hʊ*^{3} *tso*^{5} *go*^{8} can also be interpreted as 'there's nothing else that fits (me) to do'. Undoubtedly, it is the specific context that helps to rule out the source meaning 'fit to'.

Switch Context

(46) 要做个都做好哉，另外事体{无有}啥**好**做{个□}。

ʔjɒ^{5}	tso^{5}	gə^{8}	tu^{1}	tso^{5}-hʊ^{3}	dzᴇ^{6},	liŋ^{6}ŋa^{6}	zɿ^{6}tʰi^{3}
need	do	NMLZ	all	do-GOOD	CRS	other	thing
ʔɳjə^{3}	so^{5}	**hʊ^{3}**	tso^{5}	go^{8}.			
NEG.have	what	GOOD	do	NMLZ.PRT			

'(I) finish all that should be done, there's nothing else that (I) **can** do.'

At the stage of conventionalization, the modal meaning of *hʊ*^{3} becomes independent of the source meaning 'fit to' which means that its modal meaning does not need to be supported by a specific context. In (47), the 'can' meaning of *hʊ*^{3} is the only interpretation.

Conventionalization

(47) □头卯**好**走另外埭路个□。

ŋa^{4}	də^{4}mɒ^{6}	**hʊ^{3}**	tsə^{3}	liŋ^{6}ŋa^{6}	da^{6}	lu^{6}	gə^{8}	jæ.
1PL	just.now	GOOD	walk	other	CLF	road	AFF	PRT

'We **could** take the other road just now.'

We must admit that, as a modal verb, *hʊ*^{3} has attained a certain degree of conventionalization, as demonstrated in (47). However, there are still constraints and restrictions closely related to the source uses of *hʊ*^{3} which can be explained by the principles of persistence and layering (Hopper 1991). Ambiguity between 'fit to' and 'can' emerges when *hʊ*^{3} denotes circumstantial possibility. In addition to contextual information, the syntactic units and semantic components of a sentence are also important in interpretating the meaning of *hʊ*^{3}. Compare examples (48) and (49) of circumstantial possibility below. Each component of the sentence adds to its interpretation. In (48), the verb *ti*^{3}*tsa*^{5} 'pay a debt in kind' implies that the items used to pay a debt are of a certain value, thereby implying that items of a certain value 'fit to' and 'can' be used to pay a debt. In contrast, (49) is a simple statement that lettuce, a common vegetable, can be served after a simple preparation. The meaning 'fit to' is not compatible with this particular sentence.

(48) 值铜钿个东西**好**抵债个□。

dzə^{8}	doŋ^{2}djɛ̃^{2}	gə^{8}	toŋ^{1}ɕi^{1}	**hʊ^{3}**	ti^{3}tsa^{5}	gə^{8}	jə^{8}.
worth	money	REL	thing	GOOD	repay	AFF	PRT

'Anything of value is **suitable** for repaying the debt.

'Anything of value **can** (be used to) repay my debt.'

(49) 生菜水里汆一记就**好**吃哉。

saŋ^{1}ts^{h}ᴇ^{5}	sɿ^{3}	li^{4}	ts^{h}ə^{1}	ʔjə^{7}	tɕi^{5}	ʑjə^{6}	**hʊ^{3}**	tɕ^{h}jə^{7}	dzᴇ.
lettuce	water	inside	blanch	one	VCLF	then	GOOD	eat	CRS

'Just blanch in boiling water, and the lettuce **can** be eaten then.'

Unlike in cases of circumstantial possibility, when denoting deontic permission, weak obligation, participant-internal possibility, and epistemic possibility, *hʊ*^{3} can hardly be interpreted as 'fit to'. One more example of permission (deontic possibility) is given below. Interpretating *hʊ*^{3} as 'fit to' in (50) is impossible. See (55) and (58) for examples of participant-internal possibility and epistemic possibility, respectively.

(50) 小人□个**好**不懂礼貌□?

ɕjɒ^{3}ɳiŋ^{2}	na^{8}gə^{8}	**hʊ^{3}**	fə^{7}	toŋ^{3}	li^{4}mɒ^{6}	ɳiŋ?
child	how	GOOD	NEG	know	politeness	PRT

'How **could** it be that children do not know about being polite?'

The ambiguity between 'fit to' and circumstantial 'can' is the major reason we have proposed in Figure 1 that, within the participant-external modality expressed by *hʊ*^{3}, it is

from circumstantial possibility that *hɒ*^{3} extends to express deontic modality. Our hypothesis conforms to general principles of grammaticalization. The fact that *hɒ*^{3} exhibits a high frequency of ambiguity when denoting circumstantial possibility suggests the *hɒ*^{3} of circumstantial possibility is less desemanticized and thus less grammaticalized. Cross-linguistically, it is also attested that circumstantial possibility can extend to express deontic possibility, such as 'get to' in English (Kuteva et al. 2019, p. 191) and Chinese *de*^{2}/*dei*^{3} 得 'obtain' (Narrog 2012, pp. 215–20). See also *hao*^{3} 'good' in the history of Chinese, as discussed in Section 6.5.

Like circumstantial possibility, permission is a kind of possibility determined by external conditions. The example below gives a case that can be understood either as circumstantial possibility or as permission. On the one hand, kids are usually thought to have fewer obligations and more leisure time than adults do. Under such circumstances, kids can have fun and hang out as they wish. On the other hand, (51) can also be read as giving permission, in that kids may play at will since they are free from many social obligations.

(51) □大姑娘**好**随便搞{个□}，□大人随便搞不来个□。

na^{4}	do^{6}ku^{1}ȵjaŋ^{2}	**hɒ^{3}**	dzɛ^{2}bjɛ̃^{6}	kɒ^{3}	gɔ^{8},	ŋa^{4}	do^{6}ȵiŋ^{2}
2PL	girl	GOOD	at.will	play	AFF.PRT	1PL	adult
dzɛ^{2}bjɛ̃^{6}	kɒ^{3}-və^{8}-lɛ^{2}	gə^{8}	jæ.				
at.will	play-NEG-come	AFF	PRT				

'You little girls **can/may** hang out and have fun as you wish, but as adults we can't play at will.' (Elicitation)

The stage of permission is probably an intermediate stage in *hɒ*^{3}'s extension from circumstantial possibility to weak obligation (see van der Auwera and Plungian 1998, p. 99 for English *must* and German *müssen*) since we do not observe any ambiguous contexts of circumstantial possibility and weak obligation. Yet, ambiguity between permission and weak obligation is readily attested. Example (52) can be interpreted in two ways. If doing chores is the agreed daily routine prior to homework, *hɒ*^{3} denotes permission. However, if doing chores is the choice of the participant and there is still homework to do, *hɒ*^{3} is interpretable as weak obligation.

(52) 是介{无有}事体哉，侬好做作业去哉。

zɛ^{4}ka^{5}	ʔȵjə^{3}	zɿ^{6}t^{h}i^{3}	dzɛ,	noŋ^{4}	**hɒ^{3}**	tsɔ^{5}
apart.from.this	NEG.have	thing	CRS	2SG	GOOD	do
tsɔ^{7}ȵjə^{8}	tɕ^{h}i^{5}	dzɛ.				
homework	go	CRS				

'Apart from this, there are no chores. You **may/should** do your homework.' (Elicitation)

In the example below, a father impatiently urges his child to do homework. The permission meaning of the clause *hɒ*^{3} *tsɔ*^{5} *tsɔ*^{7}*ȵjə*^{8} is ruled out by the context and can only be understood as '(you) should do your homework'.

(53) 有有搞撑□□？**好**做作业哉□！

ɦjə^{4}	ɦjə^{4}	kɒ^{3}-ts^{h}aŋ^{5}	lɛ	ɒ?	**hɒ^{3}**	tsɔ^{5}	tsɔ^{7}ȵjə^{8}	dzɛ	jə^{8}!
have	have	play-enough	PRT	PRT	GOOD	do	homework	CRS	PRS

'Are you done with (the games)? (You) should do your homework.'

6.2. Circumstantial Possibility > Participant-Internal Possibility

Under the framework of context-induced grammaticalization, we propose that it is from circumstantial possibility that participant-internal possibility is derived. As claimed by Narrog (2012, p. 10), "circumstantial possibility with animate agents usually presupposes ability". As in (54), the action of crossing the ditch is enabled by two conditions. One is the width of the ditch, and the other is the physical ability of the participant. The former is the enabling circumstantial condition, while the latter is a determining inherent ability.

(54) □道沟{只有}一些末儿劳什，一记过之**好**跨过去个□。

haŋ^{5}	da^{6}	kjə^{1}	tɕjə^{5}	ʔjə^{7}sə^{7}ma^{8}-ŋ	lɒ^{2}zə^{8},	ʔjə^{7}
DIST	CLF	ditch	only.have	a.little-DIM	thing	one
tɕi^{5}-ku^{5}tsɪ^{1}	**hɒ^{3}**	k^{h}o^{1}-ku^{5}tɕ^{h}i^{5}	gə^{8}	la.		
VCLF-DIM	GOOD	stride-pass.over	AFF	PRT		

'That ditch is such a little thing. (I) **can** cross over by taking just one jump.'

Example (55) is a HAVE-construction used to express possibility. The possibility of earning money is enabled by the condition that the participant, *my father*, does woodworking. In fact, the HAVE-construction *tsoŋ^{3} ɦjə^{4} ljaŋ^{4} k^{h}wɛ^{5} hɒ^{3} ts^{h}əŋ^{5}* can denote circumstantial possibility even if the context is not considered. Namely, *there's always some money that one can earn*. Given that it is the same referent who does woodworking and earns money, the meaning of circumstantial possibility can be ruled out. Example (56) offers a case where participant-internal possibility is the only interpretation.

(55) □老爹做做木匠，总有两块钱**好**趁。

ŋa^{4}	lɒ^{4}tja^{1}	tso^{5}tso^{5}	mə^{8}ɦjaŋ^{6},	tsoŋ^{3}	ɦjə^{4}	ljaŋ^{4}
1SG.POSS.KIN	dad	do.DLM	carpenter	somehow	have	several
k^{h}wɛ^{5}	**hɒ^{3}**	ts^{h}əŋ^{5}.				
CLF	GOOD	earn				

'My father does some woodworking on and off and (he) **can** somehow make some money (out of it).'

(56) 我眼睛是不好，介我**好**听个□。

ŋo^{4}	ŋjæ^{4}tɕiŋ^{1}	zɛ^{4}	fə^{7}	hɒ^{3}, ka^{7}	ŋo^{4}	**hɒ^{3}**	t^{h}iŋ^{5}	gə^{8}	ja.
1SG	eye	indeed	NEG	GOOD but	1SG	GOOD	hear	AFF	PRT

'My eyes aren't good, but (even so) I **can** hear.'

When denoting participant-internal possibility, there exist restrictions for *hɒ^{3}* that may be related to both circumstantial possibility and its lexical meaning.

In Jidong Shaoxing, potential constructions are commonly used to express participant-internal possibility (see also Sheng 2021, p. 415). In this domain, the distribution of potential constructions and *hɒ^{3}* partially overlap. *hɒ^{3}* can be replaced by a potential construction in most cases, except for modal HAVE-constructions, which exclusively use *hɒ^{3}*. For example, the second clause of (56), reproduced below, can also be realized by a potential construction.

(57) 介我听得见个□。

ka^{7}	ŋo^{4}	**t^{h}iŋ^{5}-tə^{7}-ȵjɛ̃^{6}**	gə^{8}	ja.
but	1SG	hear-POT-see	AFF	PRT

'but (even so) I can hear.'

When denoting participant-internal possibility, potential constructions are more generalized and neutral, while *hɒ^{3}* is most often observed in one of two specific contexts. The first often involves an enabling condition, external or internal, as in (54). In the second, *hɒ^{3}* expresses a possible option. This is the case in (56), a sentence produced in the context of a concert. Here, the ability to hear provides an option for enjoying a concert, even though one's eyesight is not good. These two types of contexts contain traces of *hɒ^{3}*'s use denoting circumstantial possibility, i.e., possibility enabled by external circumstances. The example below shows a case where *hɒ^{3}* cannot be used to express inherent ability. To answer the question 'Can you hear (me)?', only the potential construction can be used, as in (58A$_{i}$). *hɒ^{3}* can neither be used to form the question 'Can you hear (me)?' nor be used to answer the question, as in (58A$_{ii}$).

(58) Q- 侬耳朵好不好□？听不听得见□？
noŋ⁴ ȵi⁴to hɒ³ və⁸ hɒ³ lɛ? tʰiŋ⁵ və⁸ tʰiŋ⁵-tə⁷-ȵjɛ̃⁶ lɛ?
2SG ear GOOD NEG GOOD PRT hear NEG hear-POT-see PRT
'Did you get your hearing back? Can you hear (me)?'

A_i- 听得见{个□}。
tʰiŋ⁵-tə⁷-ȵjɛ̃⁶ gɔ⁸.
hear-POT-see AFF.PRT
'(Yes, I) can.'

A_{ii}- *好听{个□}。
***hɒ³** tʰiŋ⁵ gɔ⁸.
GOOD hear AFF.PRT
Attempted: 'Yes, I can.' (Elicitation)

In addition, we observe that *hɒ*^{3} is not compatible with the [V-tə^7-COMP] potential construction. A pair of contrastive sentences is given in (59) to better illustrate this restriction on the use of *hɒ*^{3}. The context of (59a) entirely suits *hɒ*^{3} in that the possibility of seeing clearly is allowed or enabled by wearing glasses. However, since the possibility of seeing clearly is expressed by the potential construction *kʰə̃⁵-tə⁷-ȵjɛ̃⁶* 'can see clearly', using *hɒ*^{3} here is ungrammatical. To produce a grammatical sentence with *hɒ*^{3} in such a context, the potential construction cannot be used, as in (59b).

(59) a. 渠近视，要戴眼镜会（***好**）看得见。
ɦi⁴ dʑiŋ⁴zɿ⁶, ʔjɒ⁵ ta⁵ ŋjæ⁴tɕiŋ⁵ ɦwɛ⁶ (***hɒ³**) kʰə̃⁵-tə⁷-ȵjɛ̃⁶.
3SG short-sighted need wear glasses only.then GOOD look-POT-see
'He's short-sighted. (He) must wear glasses and only then he **can** see clearly.'
(Elicitation)

b. 渠近视个□，要戴眼镜□，**好**看个□。
ɦi⁴ dʑiŋ⁴zɿ⁶ gə⁸ jæ, ʔjɒ⁵ ta⁵ ŋjæ⁴tɕiŋ⁵ mə⁸,
3SG short-sighted AFF PRT need wear glasses PRT
hɒ³ kʰə̃⁵ gə⁸ jə⁸.
GOOD look AFF PRT
'He's short-sighted and he **can** see only if he wears glasses.'

This restriction might be related to the source meaning of *hɒ*^{3}, 'fit to'. As the meaning 'fit to' implies possibility, a possible explanation is that *hɒ*^{3} does not co-occur with a potential construction to avoid semantic redundancy. An analogy would be an awkward and redundant English construction, 'fit to be able to'. This trace persists when *hɒ*^{3} is used as a modal auxiliary.[6]

The development of circumstantial possibility into participant-internal possibility was neglected in the early literature on modality, with the reverse pathway, participant-internal possibility > circumstantial possibility, generally being accepted by scholars (Bybee et al. 1994, chp. 6; Traugott and Dasher 2001, chp. 3; van der Auwera and Plungian 1998). With the addition of linguistic evidence from Southeast Asian languages, the proposed diachronic development from participant-internal possibility to circumstantial possibility was then revised (van der Auwera et al. 2009, sct. 5). Narrog (2012, pp. 205–8) further confirms the pathway from circumstantial possibility to participant-internal possibility with the development of the Thai verb *dâay* 'emerge' and the Japanese *idek-* 'appear'. A view of bidirectional development between participant-internal and circumstantial possibility has now become mainstream (Kuteva et al. 2019, p. 344).

6.3. Circumstantial and Participant-Internal Possibility > Epistemic Possibility

We propose that in Jidong Shaoxing, the epistemic use of *hɒ*^{3} is the extension of both circumstantial and participant-internal possibility, contexts for both of which can be observed separately. Example (60) is understood as a case of epistemic possibility when the speaker makes a guess before fetching the clothes laid out in the sun. *hɒ*^{3} in this sentence can be interpreted as circumstantial 'can' if being in the sun long enough is considered as an enabling condition for drying the clothes.

Circumstantial–Epistemic

(60) 晒起□两件衣裳**好**燥□哉。

sa^{5}-tɕ^{h}i^{3}	doŋ	ljaŋ^{4}	dʑjɛ̃^{6}	ʔi^{1}ʑjɒŋ^{2}	**hɒ^{3}**	sɒ^{5}	doŋ	dzᴇ.
dry.in.the.sun-INC	DUR	several	CLF	clothes	GOOD	dry	PRF	CRS

'The clothes in the sun **may** have dried.'

Example (61) is a case of participant-internal–epistemic polysemy. Example (62) gives an ambiguous case of circumstantial, participant-internal, as well as epistemic interpretations.

Participant-internal–Epistemic

(61) 渠一百斤都挑得来□，八十斤咸般也**好**挑个□。

ɦi^{4}	ʔjə^{7}pa^{7}	tɕiŋ^{1}	tu^{1}	t^{h}jɒ^{1}-tə^{7}-lᴇ^{2}	lᴇ,	pa^{7}zə^{8}	tɕiŋ^{1}
3SG	one.hundred	a.half.kilo	all	carry-POT-come	PRT	eighty	a.half.kilo
ɦæ^{2}pæ^{1}	ɦa^{4}	**hɒ^{3}**	t^{h}jɒ^{1}	gə^{8}	jə^{8}.		
certainly	also	GOOD	carry	AFF	PRT		

'(Since) he can lift 50 kilos, he **can/may** certainly lift 40 kilos.'

Circumstantial–Participant-internal–Epistemic

(62) 毕业哉个说话，渠**好**做个老师{个□}。

pjə^{7}nʚjə^{8}	dzᴇ	gə^{8}ɕjo^{7}ɦwo^{6},	ɦi^{4}	**hɒ^{3}**	tso^{5}	gə^{8}	lɒ^{4}sɿ^{1}	go^{8}.
graduation	CRS	if	3SG	GOOD	do	CLF	teacher	AFF.PRT

'He **can/may** be a teacher after graduation.'

Cross-linguistically, deontic–epistemic polysemy is well attested and studied. English *must* is a well-known example (Traugott and Dasher 2001, pp. 120–21). Even though *hɒ*^{3} can be used to express both deontic and epistemic meanings, we do not posit an evolutional relation between the two meanings in Jidong Shaoxing, as polygrammaticalization (Craig 1991) may also be possible. The main reason for this conclusion is that a bridging context of deontic–epistemic polysemy is rarely observed among conservative speakers. The three conservative speakers in this study considered the sentence in (63) to suggest permission or weak obligation, while only the innovative speaker involved in this study claimed that the sentence can express both deontic and epistemic meanings.

(63) 五点钟哉，渠好去哉。

ŋ^{4}	tjɛ̃^{3}tɕjoŋ^{1}	dzᴇ,	ɦi^{4}	**hɒ^{3}**	tɕ^{h}i^{5}	dzᴇ.
five	o'clock	CRS	3SG	GOOD	go	CRS

'It's five o'clock (and time to get off). He **may/should** leave.'

'It's five o'clock (and time to get off). #**He may probably be gone**.'

For this study, we also tested quite a few deontic expressions formed by *hɒ*^{3} in epistemic contexts. The tests turned out to be failures with the three conservative speakers. One of the examples is given below. The clause *hɒ*^{3} *tɕjə*^{7}*hwɜŋ*^{1} *dzᴇ jə*^{8} '(he) should get married' expressed by *hɒ*^{3} in (64ii) is a speaker's advice. Using it to answer the question 'Is he married?' in (65Q) to express one's presumption was ungrammatical for our conservative speakers but caused no problems for the innovative speaker, as shown in (65A$_{i}$). Instead, the conservative speakers used *ʔiŋ*^{1}*kᴇ*^{1} 'should' to form a presumption as an answer to the question, as in (65A$_{ii}$).

(64) 渠年纪也不小□哉，好结婚哉□。

(i)	ɦi^{4}	ȵjɛ̃^{2}tɕi^{5}	ɦa^{4}	fə^{7}	ɕjɒ^{3}	doŋ	dzɛ.
	3SG	age	also	NEG	small	PRF	CRS
(ii)	hɒ^{3}	tɕjə^{7}hwəŋ^{1}	dzɛ	jə^{8}.			
	GOOD	marry	CRS	PRT			

'He's not young. (He) **should** get married.'

(65) Q- 渠婚有有结□□?

ɦi^{4}	hwəŋ^{1}	ɦjə^{4}	ɦjə^{4}	tɕjə^{7}	lɛ	ɦa?
3SG	marriage	have	have	marry	PRT	PRT

'Is he married?'

A_i- #渠好结婚□哉{个□}。

#ɦi^{4}	hɒ^{3}	tɕjə^{7}hwəŋ^{1}	doŋ	dzɛ	go^{8}.
3SG	GOOD	marry	PRF	CRS	AFF.PRT

'He may probably be married.' (Elicitation)

A_{ii}- 渠应该结婚□哉{个□}。

ɦi^{4}	**ʔiŋ^{1}kɛ^{1}**	tɕjə^{7}hwəŋ^{1}	doŋ	dzɛ	go^{8}.
3SG	should	marry	PRF	CRS	AFF.PRT

'He may probably be married.'

Epistemic possibility is probably the latest layer of the semantic and functional extension of *hɒ*^{3}. There are two main pieces of evidence in support of this hypothesis.

First, when denoting epistemic possibility, the use of *hɒ*^{3} is still dependent not only on its circumstantial possibility use, but in many cases, on the source meaning 'fit to'. This means that there needs to be a certain enabling condition for a grammatical proposition of epistemic possibility realized with *hɒ*^{3}, whose surface meaning corresponds to 'may' but whose underlying meaning is 'it is the right or proper moment for'. Example (66) is one such grammatical example where *hɒ*^{3} is used to express a presumption based on the speaker's judgement and knowledge. Here, the sentence was produced during the airtime of a frequently watched television program. Similarly, example (60) can also be read 'it's the right time for the clothes to have dried'.

(66) 介光折电视**好**开始□哉。

ka^{5}kwɒŋ^{1}	tsə^{7}	djɛ̃^{6}zɿ^{6}	**hɒ^{3}**	k^{h}ɛ^{1}sɿ^{3}	doŋ	dzɛ.
NOW	CLF	TV	GOOD	begin	PRF	CRS

'The TV show **may** have been on.'

In comparison, although (67) is similarly an expression of probability based on one's judgement, the use of *hɒ*^{3} would be ungrammatical. As mentioned above, *hɒ*^{3}'s epistemic use is still restricted by its source uses. Looking awful is neither an enabling condition for falling ill, nor reflective of the moment for falling ill. Rather, it is a sign of being ill.

(67) 渠人介难看，***好**生毛病□哉□。

ɦi^{4}	ȵiŋ^{2}	ka^{5}	næ^{2}k^{h}ə^{5},	***hɒ^{3}**	saŋ^{1}	mɒ^{2}biŋ^{6}	doŋ	dzɛ	ɒ.
3SG	person	so	out.of.sorts	GOOD	have	sickness	PRF	CRS	PRT

'He looks awful and **may** be sick.' (Elicitation)

Second, different speakers show different degrees of tolerance for using *hɒ*^{3} to express epistemic possibility. The cases of (63) and (65) have already provided a glimpse into this situation. Examples (68) and (69a) were only accepted by our innovative consultant. Sometimes it is difficult to determine whether or not the epistemic meaning of *hɒ*^{3} can be accepted. We reproduce example (42) in (69b) to highlight cases of arbitrariness. The only difference between (69a) and (69b) is the subject. Our conservative consultants could only accept (69b), and when replacing the subject 'car' with the third person pronoun the sentence turns out to be ungrammatical.

(68) #渠今年**好**有五岁□哉。

#ɦi^{4}	tɕi^{4}ȵjɛ̃^{2}	**hɒ^{3}**	ɦjə^{4}	ŋ^{4}	sᴇ^{5}	doŋ	dzᴇ.
3sg	this.year	good	have	five	year	prf	crs

'He **may** have been five years old this year.' (Elicitation)

(69) a. #渠**好**来□哉。

#ɦi^{4}	**hɒ^{3}**	lᴇ^{2}	doŋ		dzᴇ.
3sg	good	come	prf		crs

'He is **probably** coming.' (Elicitation)

b. 车**好**来□哉。

tɕ^{h}jo^{1}	**hɒ^{3}**	lᴇ^{2}	doŋ		dzᴇ.
car	good	come	prf		crs

'The car/bus is **probably** coming.'

Restrictions on using the epistemic *hɒ*^{3} reflect the fact that *hɒ*^{3} is in the process of functional extension or grammaticalization. As can be observed from the examples above, the generalization of the epistemic *hɒ*^{3} varies among different speakers. Still, all of this information suggests that the epistemic use of *hɒ*^{3} is its latest layer of extension.

6.4. Accelerating Factors

We have identified the auxiliary *hɒ*^{3} 'fit to' as the source of its modal meanings including 'can', 'may', and 'should'. Other factors may also accelerate or generalize the extension of *hɒ*^{3}.

First, *hɒ*^{3} itself can be used independently to ask for agreement, which is probably an extension from the meaning 'good', as in (70). Since asking for agreement presupposes permission, this use of *hɒ*^{3} can definitely promote extension to permission.

(70) 介我前拨侬换个，**好**?

ka^{7}	ŋo^{4}	ʑjɛ̃^{2}	pə^{7}	noŋ^{4}	ɦwə̃^{6}	gə^{8},	**hɒ^{3}**?
so	1sg	first	ben	2sg	change	clf	good

'I'll change it for another one for you, **OK**?'

Second, though rare, we do observe some contexts of 'easy'-'can' polysemy, which means that 'be easy to' is also a possible source for 'can'. Example (71) is a case where *hɒ*^{3} can either be interpreted as 'be easy to' or as the 'can' of circumstantial possibility, that is, either the thin and watery texture of corn porridge makes it easy to swallow, or one could drink the porridge (like drinking water). In addition, example (40) showed a case of 'fit'-'easy'-'can' polysemy, which can be interpreted as '(leaves) easily float on the surface of the water'.

(71) □辰光六谷糊煞煞薄{个□}，□□**好**呷个□。

haŋ^{5}	zəŋ^{2}kwɒŋ^{1}	lo^{8}kwo^{7}	ɦu^{2}	sa^{7}sa^{7}bo^{8}	go,	do^{6}do^{6}	**hɒ^{3}**	ha^{7}
dist	moment	corn	porridge	thin	aff.prt	ono	good	drink
gə^{8}	la.							
aff	prt							

'The corn porridge (we used to eat before) was very thin.

a. **[hɒ^{43} haʔ^{5}]**: It was **easy to** drink (like drinking water).' Elicitation

b. **[hɒ^{44} haʔ^{4}]**: (One) **could** drink (instead of chewing it, like drinking water).'

The reason the meaning 'be easy to' is not identified as the source for the modal *hɒ*^{3} is that contexts suggesting 'easy'-'can' polysemy are less frequent than those suggesting 'fit'-'can' polysemy. Moreover, the sandhi patterns of *hɒ*^{3} are different when denoting these two different meanings. As given in the translations of (71), *hɒ*^{43} *haʔ*^{5} denotes 'easy to drink', a sandhi pattern of forming a compound word, while *hɒ*^{44} *haʔ*^{4} signifies 'can drink'.

Undoubtedly, these factors illustrated above contribute to the generalization of the modal uses of *hɒ*^{3}. It is true that grammaticalization is unpredictable to a certain degree, but frequency of use still plays a role in expanding the possibilities a given form has for grammaticalization (Hopper and Traugott 2003, pp. 106, 126–30).

6.5. Hao^3 好 *'Good' in the History of Chinese*

We have reconstructed the functional extension of *hɒ*^{3} in Jidong Shaoxing in Sections 6.1–6.3 by adopting the model of context-induced grammaticalization proposed by Heine (2002). Although our reconstruction of *hɒ*^{3} cannot be directly supported due to a lack of diachronic records of Jidong Shaoxing,[7] it conforms to the evolution of *hao*^{3} 好 'good' (the etymon of *hɒ*^{3}) in the history of Chinese in the history of Chinese. Based on Li's work (2017), and diachronic analyses proposed by J. Li (2005) and Jiang and Cui (2017), the evolution of *hao*^{3} in the history of Chinese is reorganized and adapted in Table 2.

Table 2. Evolution of *hao* in the history of Chinese.

Periodization *	C-POSS/'Fit to'	D-NEC	PI-POSS	'Easy to'
Early Medieval (3rd–6th century)				
Late Medieval (6th century-1250)				
Pre-Modern (1250–1400)				
Modern (15th–18th century)				
Contemporary (19th cent.-present)	*zhi*^{3}*hao*^{3} 'can only'			

* The periodization of Chinese we follow in this paper is that proposed by Peyraube (1988).

According to J. Li (2005), M. Li (2017, p. 69), and Jiang and Cui (2017), modal uses of *hao*^{3} can be first observed in Early Medieval Chinese (3rd century–6th century).[8] During this time, it was used to express circumstantial possibility and could be interpreted as 'fit to' or 'can', as shown in (72). Compare this example with the Jidong Shaoxing example (26), reproduced here in (73).

(72) 羔有死者，皮**好**作裘褥，肉**好**做干腊，及作肉酱，味又甚美。
gao^1 you^3 si^3 zhe^3, pi^2 **hao^3** zuo^4 qiu^{2}ru^4 rou^4 **hao^3**
lamb have die NMLZ skin GOOD do fur.mattress meat GOOD
zuo^4 gan^{1}la^4, ji^2 zuo^4 rou^{4}jiang^4, wei^4 you^4 shen^4 mei^3.
do cured.meat and do meat.sauce flavor also very pretty
'(If) there's a dead lamb, the fur **[can be]/[fits to be]** made into a mattress and the meat **[can be]/[fits to be]** made into cured meat and meat sauce which is extremely delicious.'
Qi Min Yao Shu · Yang Yang 齐民要术·养羊 (544AD) [Essential techniques for the welfare of the people · Raising sheep]
(Cited from M. Li (2017, p. 69) and glossed and translated by S. Lü)

(73) Jidong Shaoxing
甲鱼背**好**做药个□。
ka^{7}ŋ^2 pɛ^5 **hɒ^3** tso^5 ɦja^8 gə^8 jæ.
soft.shell.turtle back GOOD do medicine AFF PRT
'Turtle shells **can** be made into (Chinese traditional) medicine.'

The 'fit'-'can' polysemy of *hao*^{3} persisted until its circumstantial possibility use began to decline in Modern Chinese, specifically during the Qing Dynasty. In contemporary Standard Mandarin, only the fossilized *zhi*^{3}*hao*^{3} 只好 'can only' is used to denote circumstantial possibility. As shown in (74), the deletion of the adverb *zhi*^{3} 'only' is ungrammatical in Standard Mandarin.

(74) Standard Mandarin
他腿断了，*（只）**好**在家休息。
ta^1 tui^3 duan^4 le, ***(zhi^3)** **hao^3** zai^4 jia^1 xiu^{1}xi^4.
3SG leg break CRS only GOOD at home rest
'His leg is broken and he **can only** take a rest at home.'

As indicated in Table 2, towards the end period of Late Medieval Chinese, which corresponds to the Song Dynasty (960AD–1279), a significant new meaning of *hao*^{3} emerged—the deontic meaning 'should'. However, this use only lasted to Pre-Modern Chinese. See (75).

(75) 似这般汉，正**好**蓦头蓦面唾。

si^{4}	zhe^{4}ban^{1}	han^{4},	zheng^{4}	**hao^{3}**	mo^{4}tou^{2}mo^{4}mian^{4}	tuo^{4}.
resemble	so	man	just	GOOD	in.the.face	spit

'A person like this, (one) **should** spit on him in the face.'

Bi Yan Lu · 78 Ze 碧岩录·78则 (1125) [Blue Cliff Record · Verse 78]

(Cited from M. Li (2017, p. 132) and glossed and translated by S. Lü)

A bit later than the deontic use of *hao*^{3}, the interpretation of participant-internal possibility appeared in Pre-Modern Chinese during the Yuan and Ming Dynasties (1271–1644), as shown below. Note that M. Li (2017, p. 153) does not single out the meaning of participant-internal possibility for *hao*^{3}.

(76) 您兄弟量窄，只**好**陪哥哥一小钟。

nin^{2}	xiong^{1}di^{4}	liang^{4}	zhai^{3},			
2SG.HON	sibling	capacity	narrow			
zhi^{3}	**hao^{3}**	pei^{2}	ge^{1}ge^{1}	yi^{4}	xiao^{3}	zhong^{4}.
only	GOOD	accompany	brother	one	small	cup

'I'm not good at drinking (alcohol) and I **can** only drink a small cup to accompany you.'

Yuan Qu Xuan · Zhusha Dan 元曲选·朱砂担 (1616) [Selected Yuan Theatre Plays · A Picul of Cinnabar]

(Cited from M. Li (2017, p. 153) and glossed and translated by S. Lü)

Like the deontic use, the participant-internal possibility use of *hao*^{3} did not last long and was not further generalized.

As for the meaning 'be easy to', the 'easy'-'can' polysemy can also be observed for *hao*^{3}, as in (77).

(77) 嫂嫂，你如今真个不**好**过日子，不如跟着我一同回去住罢。

sao^{3}sao	ni^{3}	ru^{2}jin^{1}	zhen^{1}ge^{4}	bu^{4}	**hao^{3}**	guo^{4}	ri^{4}zi
sister-in-law	2SG	now	indeed	NEG	GOOD	live	life
bu^{4}ru^{2}	gen^{1}-zhe	wo^{3}	yi^{4}tong^{2}	hui^{2}-qu^{4}	zhu^{4}	ba.	
inferior	follow-DUR	1SG	together	return-go	live	PRT	

'Sister, you **[aren't easy to]/[can't]** make a living now. It would be better to come to live with me.'

Yuan Qu Xuan · Ren Fengzi 元曲选·任风子 (1616) [Selected Yuan Theatre Plays · Ren Fengzi]

(Cited from M. Li (2017, p. 153) and glossed and translated by S. Lü)

Nevertheless, as can be seen in Table 2, *hao*^{3}'s meaning 'be easy to', considered as an evaluative meaning by M. Li (2017, p. 104), emerged later than the meaning 'fit to/can', sometime between the Tang and the Five Dynasties (618–960AD) (see also J. Li 2005; Jiang and Cui 2017). This suggests that 'be easy to' is not the direct source for the modal uses of *hao*^{3}. The meaning 'be easy to' for *hao*^{3} maintains an active status in Standard Mandarin.

The evolution of *hao*^{3} in the history of Chinese parallels the extension of *hɒ*^{3} in Jidong Shaoxing and supports our reconstruction of *hɒ*^{3}. The fact that *hao*^{3} 'good' is used to denote weak obligation and participant-internal possibility in the history of Chinese sheds some light on the evolution of *hɒ*^{3} 'good' in Jidong Shaoxing. Both of these uses appeared much later than the circumstantial possibility use, suggesting that the chain 'circumstantial possibility > participant-internal possibility' for *hɒ*^{3} in Jidong Shaoxing is plausible. Furthermore, the emergence and generalization of *hao*^{3}'s meaning 'be easy to' can also be mapped onto Jidong Shaoxing *hɒ*^{3}. That 'be easy to' emerged later than the meaning of circumstantial possibility suggests the implausibility of identifying 'be easy to' as the source meaning for circumstantial 'can'.

7. Conclusions

This paper has provided a case study on the modal uses of the lexeme *hɒ*^{3} 'good' in Jidong Shaoxing. The lexeme *hɒ*^{3} is a polysemous and multi-functional word. *hɒ*^{3} can serve as an adjective/adjectival verb 'good, fitting, ready, done, ok'. Its modal uses include circumstantial 'can', participant-internal 'can', permission 'may', weak obligation 'should', and epistemic 'can'. *hɒ*^{3} shows asymmetrical semantic extension in Jidong Shaoxing. While the positive form of *hɒ*^{3} possesses modal functions, the negated form *fə*^{7} *hɒ*^{3} only denotes 'not good' or 'not suitable'.

We have proposed that it is from the meaning 'fit to' but not directly from the lexical meaning 'good' that the modal meanings of *hɒ*^{3} are derived. This pathway is different from the 'good' > deontic permission route found in some other languages (Kuteva et al. 2019, pp. 219–20). Adopting the context-induced grammaticalization model, we have reconstructed the process of extension of *hɒ*^{3} in Jidong Shaoxing, proposing that the *hɒ*^{3} of 'fit to' has followed a multidirectional or polygrammaticalization pattern. This pattern contains an intermediate stage of circumstantial possibility in the development of both its deontic and participant-internal uses:

Chain 1: 'fit to' > circumstantial 'can' > deontic 'may, should'.

Chain 2: 'fit to' > circumstantial 'can' > participant-internal 'can'.

Within deontic modality, the *hɒ*^{3} of permission is reconstructed as the source for the *hɒ*^{3} of weak obligation, i.e., circumstantial 'can' > permission 'may' > weak obligation 'should'.

Although the chain of circumstantial possibility > participant-internal possibility is cross-linguistically less common than the reverse, our proposition is based on linguistic facts in Jidong Shaoxing and conforms to the evolution of the etymon *hao*^{3} 'good' of *hɒ*^{3} in the history of Chinese. A similar pathway can be found in Chinese: *ke*^{3} 可 'suitable' > root possibility > ability (Meisterernst 2008a, 2008b; see also Kuteva et al. 2019, p. 415). Our findings contribute some new evidence for two proposed bidirectional developments in the modal domain: circumstantial ↔ participant-internal and deontic permission ↔ deontic necessity (Narrog 2012, pp. 185–221).

The epistemic use of *hɒ*^{3} is proposed as the latest stage of extension in the current Jidong Shaoxing. It is from both circumstantial and participant-internal 'can' that the epistemic 'can' is developed:

Chain 3: circumstantial-participant-internal 'can' > epistemic 'can, may'.

The epistemic use of *hɒ*^{3} is often restricted by the source meaning of circumstantial 'can' or 'fit to'. Additionally, the degree of generalization of epistemic *hɒ*^{3} varies between different speakers.

The use of the lexeme HAO 'good' as a modal verb can be considered a regional phenomenon. According to a preliminary cross-linguistic survey, this phenomenon is found across Shanghai, Jiangsu, and Zhejiang Provinces, an area usually known as the Yangtze River Delta, which covers the entire Wu speaking area and some Jianghuai Mandarin 江淮官话 speaking areas. For Wu dialects, HAO 'good' as a modal verb is reported in Chongming 崇明 (Zhang 1993, p. 103), Shanghainese (B. Huang 1996, p. 295), Suzhou 苏州 (Ye 1993, p. 60), Hangzhou 杭州 (Bao 1998, p. 110), Shaoxing, Yuyao 余姚 (Zhou 2019, pp. 23–46), Ningbo (Tang et al. 1997, p. 92), Xianju, Wenzhou 温州 (You and Yang 1998, p. 179), and Jinhua 金华 (Cao 1996, p. 141). For Jianghuai Mandarin, the phenomenon is attested in Nantong 南通 (Tao 2007, p. 154), Yangzhou 扬州 (J. Huang 1996, p. 165), and Nanjing 南京 (Liu 1995, p. 150). In addition, HAO as a modal auxiliary is also attested in some discontinuous areas in Guangdong and Taiwan, that is, in Jieyang Southern Min and Hakka, as mentioned at the beginning of the paper. Certainly, the modal uses of HAO vary in different languages and dialects. More work needs to be carried out to figure out how the modal functions of HAO extend and to what extent its modal uses can be generalized in individual languages.

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Abbreviations

* ungrammatical, # accepted only by innovative speakers, ( ) omissible, { } erosion, □ unknown etymon, 1 first person, 2 second person, 3 third person, ADV adverbializer, AFF affirmative, ALL allative, BEN benefactive, C-POSS circumstantial possibility, CLF classifier, COP copula, COMP complement, CRS currently relevant state, D-NEC deontic necessity, DIM diminutive, DIST distal demonstrative, DLM delimitative, DUR durative, HON honorific, IMP imperative, INC inchoative, KIN kinship, LIT literal meaning, MOD modifier marker, NEG negator, ONO onomatopoeia, PASS passive agent marker, PI-POSS participant-internal possibility, PL plural, POT potential marker, PRF perfect, PROSP prospective, PRT particle, Q question, REL relativizer, S_PROX speaker-based proximal demonstrative, SG singular, TOP topic marker, VCLF verbal classifier, VCOMP verb complementizer, VIV vivid form of adjective.

Notes

1 A rare source for *can* modals observed in Jidong Shaoxing is the potential construction *tɕʰjə⁷-tə⁷-lə⁸* 吃得落 'can < eat-POT-fall'. This construction can function like an auxiliary denoting possibility in the form of [tɕʰjə⁷-tə⁷-lə⁸ VP]. We do not identify *tɕʰjə⁷-tə⁷-lə⁸* as an auxiliary verb because it is subject to a different negation strategy from that of negating an auxiliary. Instead of negating the whole potential construction in the form of [NEG tɕʰjə⁷-tə⁷-lə⁸ VP], it is the complement *lə⁸* that is negated, i.e., [tɕʰjə⁷-və⁸-lə⁸ VP] 吃不落 VP 'eat-NEG-fall' to signify 'cannot VP'. See also Sheng (2021, pp. 415–16).

2 The HAVE-construction might be considered to be a type of "modal possessive construction" (Narrog 2012, p. 269) derived from a possessive-existential construction. However, unlike the constructions which are claimed to contain no overt modal elements by Narrog (2012, p. 269), the overt modal verb *hʊ³* must be used in the modal HAVE-construction in Jidong Shaoxing. Such a modal HAVE-construction is absent in Narrog's findings. See also Note 3.

3 The construction with *ɦjə⁴* 'have' in (30A-ii) is probably a bridging context (or an ambiguous context) between the possessive construction and the modal construction with *ɦjə⁴* 'have'. If the context of (30) is not taken into consideration, (30A-ii) can be interpreted either as 'you have only one (candy) that you can eat' or as 'you can only eat one candy'. The covert subject 'you' of (30A-ii) can still be treated as the possessor of the candy, which is quite different from the case of (27). In (27), 'three cups of rice' is neither the possessor of 'five bowls of (rice)' nor the real subject of the sentence, but a topic whose semantic role is the material for 'five bowls of (rice)'. From the perspective of semantic bleaching, example (27) is more generalized than (30A-ii). Since the development of possessive construction into a modal construction is not a focus of this paper, its grammaticalization pathway is not addressed.

4 Shanghainese belongs to the Shanghai subdivision 上海小片 of the Taihu division, while Xianju Wu belongs to the Taizhou division 台州片 (Wang and Cao 2012, p. 104).

5 This term can be traced back to Evans and Wilkins (2000).

6 One should note that this is not a general restriction of the lexeme 'good' in all the Wu dialects. For example, according to our analysis of one hour of video material, the modal use of *hɔ³* 'good' in Shanghainese is more generalized and can co-occur with a potential construction in a sentence.

7 Historical documents compiled by missionaries concerning early Wu languages can be dated back to the mid-19th century, including Shanghainese, Ningbo, Wenzhou, Taizhou, Suzhou, and Jinhua (You 2021).

[8] Jiang and Cui (2017) propose that the meaning 'fit to, easy to' is derived from the meaning 'love, like' of *hao*^{4} rather than the meaning 'good'. We do not address this proposition here because *hɒ*^{3} in Jidong Shaoxing does not possess the meaning 'love'.

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