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Essay

Systems Theory and Intercultural Communication: Methods for Heuristic Model Design

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Abstract: This article focuses on methods for designing heuristic models within the paradigm of systems theory and in the disciplinary context of intercultural communication. The main question arises from the striking observation that common language is insufficient to develop knowledge about human communication, especially when many factors of complexity (such as ambiguity, paradoxes, or uncertainty) are involved in the composition of an abstract research object. This epistemological, theoretical, and methodological problem is one of the main challenges to the scientificity of anthropological theories and concepts on culture. Moreover, these questions lie at the heart of research on intercultural communication. Authors and theorists in the complexity sciences have already stressed the need, in such cases, to think in terms of models or semiotic representations, since these tools of thought can mediate much more effectively than unformalized language between the heterogeneous set of perceptions arising from the field of experience, on the one hand, and the philosophical principles that organize speculative thought, on the other. This sets the scene for a reflection on the need to master the theory of heuristic models when it comes to developing scientific knowledge in the field of intercultural communication. In this essay, my first aim is to make explicit the conditions likely to ensure the heuristic value of a model, while my second aim is to clarify the operational function and required level of abstraction of certain terms, such as heading, concept, category, model, and system that are among the most commonly used by academics in their descriptive accounts or explanatory hypotheses. To achieve this second objective, I propose to create cognitive meta-categories to identify the three (nominal, cardinal, or ordinal) roles of words in the reference grids that we use to classify our ideas and to specify how to use these meta-categories in the construction of our heuristic models. Alongside the theoretical presentation, examples of application are provided, almost all of which are drawn from my own research into the increased cultural vigilance of the majority population in Québec since the reasonable accommodation crisis in this French-speaking province of Canada. The typology I propose will perhaps help to avoid the confusion regularly committed by authors who attribute only cosmetic functions to words that nevertheless have a highly heuristic value and who forget to consider the logical leaps of their theoretical thinking in the construction of heuristic models.

Keywords: heuristic model; system; complexity; method; intercultural communication studies; Gregory Bateson; anthropology; informational realism; Québec

1. Introduction

1.1. The Inadequacy of Language for Understanding Human Communication

One of the main problems of cultural anthropology is to describe cultures *in words*, a difficulty that is almost impossible to avoid due to the unquestionable privilege accorded to linguistic modes of representation in humanities and communication research. I became aware of this problematic aspect of the discipline when I studied ethnomusicology several years ago. I had noted on the first page of my notebook Charles Seeger's recommendation, quoted here by Bruno Nettl, that scholars should be "constantly on guard against unknown and imponderable factors introduced into their works as a result of dealing with one form of communication in the mode of another, that is, talking about music" [1].

Long before Seeger became concerned with this epistemological and methodological difficulty (1970s) and thereby highlighted the problem of "horizontal" transposition or translation in cultural research (from one mode or one code of communication to another), researchers of the previous generation (1950s) were also concerned with the role played by the theoretical language of academics in proceeding to "convert indigenous categories into scientific concepts [i.e.,] into intellectual tools with a heuristic vocation and transcultural scope" [2]. In the course of this "vertical" process (from one level of communication to another), the Māori notion of *tapu*, for example, became a concept referring to moral prohibitions after a conversion requiring its "deculturation" in order to "confer on it descriptive and heuristic faculties that can be transposed to other contexts". According to Obadia, the debate is, in this case, "examining the relationship between the emic (indigenous) and etic (scientific) categories" of culture [2].

By taking an even broader view of this central problem of metacommunication in cultural behavior studies, the anthropologist Gregory Bateson sent out a much more serious and concise warning when he asserted that "words are dangerous things" threatening the scientificity of our theoretical endeavors [3]. His most acerbic comment on this topic was aimed at the "commonly used" behavioral science terminology of his day, such as

> "ego," "anxiety," "instinct," "purpose," "mind," "self," "fixed action pattern," "intelligence," "stupidity," "maturity," and the like. For the sake of politeness, I call these "heuristic" concepts; but, in truth, most of them are so loosely derived and so mutually irrelevant that they mix together to make a sort of conceptual fog which does much to delay the progress of science. [3]

Clearly, Bateson had in mind a much more fundamental aspect of the problem of developing knowledge through language, one whose consequences go far beyond the difficulties of changing the code (*translation*), mode (*transposition*), or perspective (*interpretation*). Although Bateson did not underestimate the importance of the last one—he said, for example, that "to try to construct a machine to translate the art of one culture into the art of another would be [...] silly" [3]—he was nevertheless more concerned with the fundamental cognitive problem of *representation*, in general and specific scientific contexts, as also discussed by Immanuel Kant before him in terms of "understanding", "reason", and "judgments" (both synthetic and analytic) in his *Critique of Pure Reason* [4].

It would take several pages, even several articles, to demonstrate the profound link between Bateson's epistemological and methodological thinking in his domain of "culture contact" studies, on the one hand [3], and Kant's "general method of imagination", on the other [4]. While using a different vocabulary, Bateson nevertheless remained very close to Kant's ideas on "methods of representation", particularly on the "schematism of the pure understanding", the introduction of intuition into the development of knowledge, the intermediate place occupied by the heuristic procedures of research—i.e., between "principles" and "experimentation", in Kant's terms [4], and between the "foundations of science" and the "data of experience", in Bateson's [3]—and above all, architectonics, which, in Kant's philosophical terminology, is none other than "the art of constructing systems" [5]. Kant's and Bateson's respective pleas for what we might ultimately call systems theory are not only eloquent but also logical and convincing. To go straight to their common conclusion, we could say that all knowledge of the phenomenological environment depends on our capacity for designing heuristic models, which are "mediating representations" or, even more simply, a kind of "third thing" that goes between pure concepts of understanding and empirical intuitions.

Insofar as we consider that any model can be this "third thing" capable of playing the role of mediating representation, the notion becomes, therefore, crucial in scientific thinking. For this reason, we should resist the temptation to confuse the abstract idea of a "model" with any other concept that might be easier to grasp but, at the same time, dangerously misleading. If, however, we absolutely had to choose one, we would have to imagine a template rather than a mold, as I underlined in a previous publication [6], drawing on a

reflection by Simone Weil [7]. But it is still best to refer directly to the definitions proposed by Kant and Bateson respectively.

In a chapter on the schematism of "pure conceptions of the understanding", Kant [4] gave his philosophical definition of what a model is, which he called a "transcendental schema" [4]:

> Now it is quite clear that there must be some third thing, which on the one side is homogeneous with the category, and with the phenomenon on the other, and so makes the application of the former to the latter possible. This mediating representation must be pure (without any empirical content), and yet must on the one side be intellectual, on the other sensuous. Such a representation is the transcendental schema. [4]

In *Mind and Nature: A Necessary Unity,* Bateson also gave his definition of what a model is, which he called a "pattern which connects" [8]. The purpose of this metastructure is to preserve the organizational coherence and functional maintenance of the ecological unit involved, which might otherwise be dismembered by analysis processes. This is, in fact, Bateson's central thesis:

> The *pattern which connects is a metapattern*. It is a pattern of patterns. It is that metapattern which defines the vast generalization that, indeed, *it is patterns which connect*. [8]

While the concept of model seems clear to Kant and Bateson (as well as to other systems thinkers such as Norbert Wiener, Simone Weil, Nicolas Luhmann, Jean-Louis Le Moigne, Edgar Morin and Robert Estivals, among them), the often inappropriate use of it in the context of humanities research is nonetheless perplexing, and considerably hampers the integration of heuristic model methods into cultural anthropology. As a contemporary example of the conceptual fog that results from deficient formalism in scientific discourse, I could cite the one that Lionel Obadia helps to thicken in a chapter devoted to "questions of method" raised by anthropology of religions [2]: knowing that his object of research (beliefs) is highly abstract and therefore requires the support of words, Obadia could have done better than to assert that the singular religions studied by anthropologists are classifiable by "major models" forming a list of "headings" or "concepts" to which other "categories" are sometimes added, all of these "models" reflecting different religious "systems" [2]. From a literary point of view, Obadia's text seems enriched by the procession of synonyms he uses. From a methodologic point of view, however, it should be noted that the terms Obadia equates—heading, concept, category, model, and system —are not synonyms, nor substitutable with one another, nor are they at the same level of abstraction, nor should they appear other than in a certain order corresponding to the modalities (inductive or deductive) of the reasoning supported in the thesis being put forward. In confusing these terms—in particular, by making a model the equivalent of a system—Obadia commits a logical error that leads me to believe that his words are formulated with poetic rather than scientific intent.

A *model* and a *system* are two different things. A model "is a theorization of reality or a preparation for action on reality [whereas] the system is a general theory" [9]. In other words, "a model is such because of its direct relation to reality. A system is such because of its general theorization of models" [9]. According to Estivals, whose perspective was that of the information sciences, the construction of a model (modelization) and the construction of a system (systemization) are two distinct and orderly stages in the process of theoretical abstraction, either inductive or deductive. While modelization consists in building "a conceptual whole directly derived from a limited category of phenomena, and linked to them by analogy", systematization "involves comparing models that have already been established and verified, to derive a general explanation valid for a much wider field of study" [9].

In systems thinking, then, the whole explanation process—which originates in lived experience—is "based on two stages, the second of which is the construction of *systems*

through systematization, i.e., the comparison of models" [9]. In terms of organizing ideas, heuristic models are cognitive tools conceived to bridge the intellectual gap between what we perceive as a complex reality to be studied, on the one hand, and the abstract architectonics of general systems theory, on the other. Several authors have made general systems theory explicit [10], notably Jean-Louis Le Moigne [11–13]. For this reason, I will not go into it here. Instead, I will focus on heuristic models, as they make up the first half of the whole explanation process.

1.2. The Need for Model-Based Thinking

Before embarking on the long process of representing reality by building a heuristic model, any researcher may be inclined to ask whether this modeling phase is really necessary. The answer is quite simple: the more abstract and complex the object of research, the more urgent and inevitable the need to build heuristic models to reflect on it. There is no doubt in my mind that the anthropology of intercultural communication has to deal with an object that is both abstract and complex, which justifies a commitment to the construction of models. But it is not enough to say so: it has to be argued.

Firstly, *abstraction*. From a disciplinary point of view, the task of an anthropologist of intercultural communication is to observe the "relation of difference", which is an element of reality that cannot be considered a *fact*, i.e., that it has no "real existence" or "real occurrence". Indeed, the very nature of data in the inquiry of intercultural anthropology is conceived as information about relations and, as such, can never be presented "as having objective reality". Bateson insisted on this point, modifying an idea of Kant and drawing on advances in cybernetics, theories of perception (Gestalt), and other sciences of his time:

> Kant argued long ago that this piece of chalk contains a million potential facts (*Tatsachen*) but that only a very few of these become truly facts by affecting the behavior of entities capable of responding to facts. For Kant's *Tatsachen*, I would substitute *differences* and point out that the number of *potential* differences in this chalk is infinite but that very few of them become *effective* differences (i.e., items of information) in the mental process of any larger entity. [8]

This conception of human communication as a continual tracking of "differences that make a difference" (which means *information*) takes shape in the contemporary hypothesis of reality as a world of informational objects, which includes the mind, ideas, difference, change, information, command, and communication:

> Informational Realism argues that, as far as we can tell, the ultimate nature of reality is informational, that is, it makes sense to adopt a Level of Abstraction at which our mind-independent reality is constituted by relata that are neither substantial nor material (they might well be, but we have no reasons to suppose them to be so) but informational. [14]

Considering what has just been stated, there is no doubt that the object of the anthropology of intercultural communication is highly abstract, essentially informational, and requires the support of a heuristic model in order to develop valid and scientific knowledge.

Then, *complexity*. Uncertainty, like ambiguity, hazard, and other factors of complexity, make the cultural behaviors studied by anthropologists a domain of human experience that "never could become knowledge" if we cannot grasp "the synthetical unity of phenomena", that is, if we cannot synthesize our cultural experiences "according to conceptions of the object of phenomena in general" [4]. Without such a capacity for synthesis, Kant asserted, experience "would be merely a rhapsody of perceptions, never fitting together into any connected text, according to rules of a thoroughly united (possible) consciousness, and therefore never subjected to the transcendental and necessary unity of apperception":

> Experience has therefore for a foundation, a priori principles of its form, that is to say, general rules of unity in the synthesis of phenomena, the objective reality of which rules, as necessary conditions—even of the possibility of experience—can always be shown in experience. But apart from this relation, a priori synthetical

propositions are absolutely impossible, because they have no third term, that is, no pure object, in which the synthetical unity can exhibit the objective reality of its conceptions. [4]

As an abstract object of research, intercultural communication is clearly characterized by a complexity that can take many forms, such as "fuzziness and imprecision, hazard and instability, ambiguity, uncertainty and unpredictability" [15]. Sometimes, complexity means "random incidents, chance, initiative, decision, crisis, the unexpected, the unforeseen, and awareness of deviations and transformations" [16]. Some other times, it means antagonism, emergence, dialogical loops, and multidimensionality [17] or difference, change, paradoxes, entropy, threshold, and probability [8].

Ambiguity is a particularly interesting complexity factor for researchers working on cultural behaviors. Pop-Flanja and Gâz, for example, ask, "to what extent can we regard ambiguity as being constructive or destructive in building inter or cross-cultural interactions and to what extent does communication need to be clear in order to be effective" [18]. Paradox is a second variable of complexity that deserves considerable attention from researchers working on immigration policies that have an impact on the cultural ecology of the host countries. I am thinking in particular of immigration policies that have both legal and economic legitimacy but nevertheless seem cruel from a moral point of view. In Québec's and Canada's immigration policies, the closure of Roxham Road is a case in point. In April 2023, when the Trudeau federal government announced, apparently "without any warning, the closure to asylum seekers of Roxham Road"—a rural road that constituted an "irregular" border crossing between New York State (USA) and the province of Québec (Canada)—many people denounced the law, lamenting that "hundreds or even thousands of migrants [...] will suffer from this decision in the coming months" [19]. This case perfectly illustrates the anthropological complexity of situations where a double bind is difficult to overcome. Uncertainty and unpredictability are also omnipresent factors of complexity in the field of intercultural communication, both from methodological and theoretical points of view and from the point of view of people observed in the research field. For Instance, it is clear that the agreement between Canada and the United States that now applies to illegal migrants venturing onto Roxham Road means that individuals already weakened by difficult living conditions will now have to face the "uncertain ends of harrowing journeys", which is unacceptable, cruel, and inhuman: "They're nervous, they're scared [...] They want a roof over their heads. They want their kids to be educated. They want to be able to put food on their table. They want to work. It's like, why wouldn't we be more open to that?" [20].

And yet, ambiguity, paradoxes, uncertainty, and unpredictability are features of human life that are not just reserved for people exposed to such extreme future conditions [16]. In fact, in terms of human culture, all of these factors of complexity can be observed in all spheres of activity (work, health, family, housing, security, education, culture, spiritual life) and, furthermore, at all scales of observation (individuals, groups, societies, the world). From a methodological point of view, this complexity presents intercultural studies "with the permanent challenge of reasoning in terms of models" [21]. As Floridi puts it,

> Instrumentally and predictively successful models (especially, but not only, those propounded by scientific theories) at a given level of abstraction can be, in the best circumstances, increasingly informative about the relations that obtain between the (possibly unobservable) informational objects that constitute the system under investigation (through the observable phenomena). [14]

As a corollary, I would say that heuristic models in the anthropology of intercultural communication only find their real usefulness when they reach a sufficient level of abstraction to inform us about the links that exist between the unobservable objects of communication. Put another way, the aim of heuristic models in our discipline is not to define essences or states of a cultural matter "at a given time and in a given space", as classical physicists would do in the world of certainty, but rather to capture intersections

of meaning at a given level of abstraction and according to a given protocol, as quantum physicists would do in the world of uncertainty. Within the framework of systems thinking methods, models are "artificial intelligible representations" [11]. Rarely do the models proposed by researchers have predictive, decision-making, or normative functions [5]. Their value is more often descriptive than explanatory [22] and consequently, they are "hypothetical rather than considered a valid expression" [5]. It may be added that the models constructed by systemic theorists result from operations of "schematization of a complex reality, of which they offer an immediately legible image" [5].

For someone willing to acknowledge the striking insufficiency of non-formalized language for developing knowledge about cultural and intercultural communication, the need to think in terms of heuristic models or semiotic representations should now seem fully justified. It is from this premise that I now intend to take charge of the two objectives I have set for this essay. The first objective is to make explicit the conditions likely to ensure the heuristic value of a model built with words (rather than numbers, images, graphs, or diagrams) (Section 2), while the second aim (Section 3) is to clarify the operational function and level of abstraction required for certain terms necessary for the construction of heuristic models such as heading, concept, and category, which are among the words most commonly used by academics in their descriptive or explanatory hypotheses.

2. Heuristic Model Validation Requirements

2.1. Two Principles to Be Observed

In anthropology, a theoretical model acquires heuristic value when it makes it possible to describe, explain, and sometimes even anticipate relational behaviors that escape human perception in the field of experience by detecting informational redundancies, extrapolating relational trends from observable processes or behaviors, and postulating possible changes in a niche of ideas. Bateson identified two conditions likely to ensure the heuristic value of such a model: compliance with the principle of triadic comparability, on the one hand, and compliance with the principle of domain compatibility, on the other.

The first principle, triadic comparability, is satisfied when a theory is developed thoroughly and consistently at each of the three levels of artificial systems: the formal level, functional level, and processual level. Systemic theorists should always consider these three "sorts of comparability" to establish links between experiential reality as perceived and the models under construction [3]. In this respect, Bateson's method of triadic comparison seems to be inspired by psychologist Kenneth Craik's hypothesis on *The Nature of Explanation* [23], according to which the human mind elaborates mental representations in order to understand the structure or anticipate the functioning and processes that take place in the reality of the world. Bateson's triadic method of reasoning is even more closely aligned with the "trialectic of Being, Doing and Becoming" referred to by Le Moigne in his compendium of systems thinking [13]. The triadic mode of comparison and reasoning is based on the principle that any definition elaborated within the systems paradigm must include "a functional definition (what the object does) [definition by its function], an ontological definition (what the object is) [definition by its form and structure] and a genetic definition (what the object becomes) [definition by its processes]" [13]. Correlation is therefore the result of a triple (not a simple) comparison. In line with a sound constructivist epistemology, this is what we might call perspective triangulation modeling [24].

The second condition to ensure the heuristic value of scientific theories and concepts is compliance with the principle of domain compatibility. This principle has something to do with the prior distinction of three major phenomenological domains that science set itself the task of elucidating: (1) the domain of inanimate matter; (2) the domain of the animate or "adaptive" world of organic or biological life; and (3) the domain of information, ideas, differences, and communication, which is dependent on the structure, functioning, and processes of human cognition. We could perhaps use the terminology of the three spheres (geo, bio, noo) coined by Vladimir Vernadsky [25] to refer to these three domains, but this would entail a lengthy discussion that is beyond my scope here. Instead, I suggest we

speak of these three spheres as being at distinct and increasingly higher levels of abstraction (levels 1, 2, and 3) while focusing on another aspect of their distinction that has major epistemological and methodological implications. Indeed, what is most important to recognize about these three domains of human experience is the fundamental differences in the laws that govern their organization, cohesion, functioning, and processes. The laws governing their evolution, first and foremost, could not be more radical: whereas the transformation of matter in the "geosphere" (domain 1) can be explained by a certain set of physical and chemical laws, it is a completely different set of laws that must be mobilized to explain the evolution of the adaptive and sensitive entities that animate the "biosphere" (domain 2), not to mention the fact that, since the advent of cybernetics and its major discoveries in the 1940s and 1950s, scientists have demonstrated that it is yet another set of laws—such as those of "order, negative entropy, and information" [3]—that are needed to explain processes in the sphere of human communication (domain 3). (Note, however, that my critique of analogies and metaphors built on the example of the physical sciences (domain 1) is limited to those inspired by the laws of classical mechanics, as developed by Newton, and not to those inspired by the laws of quantum physics, which provides theoretical models of uncertainty and chaos that are fully compatible with those of human communication).

The principle of domain compatibility is therefore the one that must guide our work when we develop a theory by abduction, i.e., when we structure our understanding of a phenomenon by borrowing a theory rooted in another domain of human experience. For example, to pose a problem of intercultural communication (domain 3) in terms of collision mechanics (domain 1) is to transgress the principle of domain compatibility, which necessarily leads to "pathologies of epistemology" and to the emergence of paradoxes from which it is not easy to escape later on [3]. Bateson forcefully and persistently defended the original intellectual conviction of his own, now shared by many academics in the humanities and social sciences, that neither the foundations of Newtonian physics nor those of chemistry could be used to describe human behavior or the human mind, or to test heuristic hypotheses about it, or to confront, in all their breadth and complexity, the cultural problems debated by anthropologists [3].

The two principles of heuristic model theory that have just been outlined should not only be respected by anthropologists in the construction phase of their models but also be used to assess the heuristic value or potential of existing models. The following section presents an example of this application of the heuristic model validation requirements for evaluation purposes.

2.2. Assessing the Heuristic Value of Culture Shock Theory

In the field of intercultural communication studies, one of the predominant theories is that of culture shock, which I will use as an example in the methodological discussion that follows. My aim here is to see how we can methodologically argue that it is a misleading theory that has undermined anthropological research on intercultural communication [26]. My opinion here is not based on the fact that it is "old-fashioned and therefore wrong", as Dutton bitterly reproaches all those who disavow this theory [27], but rather because it escapes the domain compatibility criteria of scientificity identified above.

Culture shock theories are based on one or other of the following three metaphorical constructions—physical (used by Choueiri [28]), medical (developed by Oberg [29]), and moral (denounced by Dutton [27])—none of which is consistent with the informational and cultural nature of the phenomenon. For instance, the physical science metaphor (domain 1) evokes the physical impact of a collision between two concrete entities. This formal level of comparison gives force to the false impression that cultures are concrete objects. This may well have very little impact on the advancement of knowledge in the field, were it not for the propensity of each and every thinker—from academics to politicians, to citizens, and so on—to spin this kind of expressive metaphor beyond its first expression. By shifting from a formal to a functional level of comparison, the physical metaphor was able to instill the

idea that head-on intercultural encounters could cause psychic wounds, and that it was smart to guard against them. Obviously, this type of reasoning based on an inadequate metaphor cannot be qualified as scientifically admissible, even if it can be appreciated for its expressive potential in a literary context.

We could also look at the procedural level of comparison between the idea of shock and that of an intercultural encounter by quoting Choueiri, who wrote in an almost poetic construction (originally in French) that "cultures polish each other like pebbles on the shore and this operation is called culture shock" («*Les cultures se polissent les unes les autres comme les galets sur la grève et cette opération porte le nom de choc culturel*») [28]. In this case, interpreting the metaphor gives a representation of cultural groups and people as a kind of "shore pebbles" tossed about by the movement of the waves and experiencing the constraint of their mixing in a giant "melting pot"—an expression that has long described the politics of cultural integration in the United States—while showing little resistance to the polishing of their behaviors and the process of eroding their differences. Despite its genuine literary interest, this homonomy based on incongruous metaphor does not provide any honest explanation of how people react, interact, or simply relate in a context of superdiversity. We could repeat the same exercise by examining the heuristic value of this concept seen under the angle of the medical metaphor or the moral metaphor to illustrate the type of epistemological errors of which Bateson spoke in connection with the ill-formulated concepts. A corrective would be to reconstruct our representation of the difficult experience of sudden cultural uncertainty (hitherto referred to as culture shock) by seeking a new analogy rising to an "equally abstract level" [3], i.e., using, for this specific purpose, a metaphor drawn from the field of communication and information (domain 3).

2.3. Relying on Our Experience of the Information World

Among the various possibilities open to the intercultural communication researcher looking for an inspiring and heuristic metaphor drawn from the field of information (domain 3), that of the computer analogy often comes first. Geert Hofstede is one of the renowned scientists who envisioned culture through this perspective: "with a computer metaphor [he said], culture is the software of our minds. We need shared software in order to communicate. So, culture is about what we share with those around us" [30]. Although this computational metaphor is at the same level of abstraction as the intercultural experience that we are trying to theorize as anthropologists (domain 3), it would be problematic to see it as a solid foundation for a theory of intercultural experience since it eliminates from the equation some data of human behavior and psychology, in particular, those that are of an emotional nature. The task of replacing the metaphor of "shock" with one drawn from the "world of sense, organization, and communication" [8], to return to our example, does not mean ignoring the emotional intensity of the experience of cultural disorientation, insecurity, or uncertainty that it sought to express. Nor is this to deny the quality of the empirical work carried out to date on this phenomenon, nor to cast doubt on the complexity of the adaptation process that this research has observed [31,32].

It is for these reasons that, in my own work, I have turned to another informational metaphor, also drawn from the sphere of communication (domain 3), but considering the effects of uncertainty, anxiety, or insecurity that any new encounter can induce in the human experience: that of the emergency alert system. It has great heuristic potential, as it provides a comprehensive source domain for the construction of formal, functional, and process comparisons, as well as models relating to the sources, conditions, degrees, functioning, movements or evolution, management, causes, and effects of uncertainty in information circuits, without forgetting to examine the methods for estimating the risks and the intervention protocols. Interestingly, this metaphor was partially used by Mr. Frederico Mayor, Director-General of the *United Nations Educational, Scientific and Cultural Organization* (UNESCO), at the opening of the Eighteenth Congress of the *International Federation for Parent Education* (IFPE) in Paris on 25 May 1994. The specific theme of the congress was "the family amid current upheaval". In a context of uncertainty, Mayor said

that "to remain true to its mission, [UNESCO] must, above all, be on the watch, sound the alarm and help people to make a diagnosis and prescribe treatment in good time" [33].

As part of my own research into the cultural vigilance behavior adopted by a majority of long-established French-speaking Quebecers (for historical reasons, among others), I modified all of my wording to adapt it to this new metaphor of the emergency alert system. Rather than talking about xenophobic behavior or ideas, for example, I prefer to talk about a psychological and emotional alarm that is triggered in the "mind" of a subsystem (an individual, a group, an organization) when factors of complexity (such as ambiguity, paradoxes, and uncertainty) influence the ecology of its environment without it being possible to estimate the consequences in the short, medium and long term. This led me to draw the following conclusion:

> Situating the concept of "culture shock" within the broader context of theories of change [...] seems to offer [a new formulation of its theory]. This formulation is part of a theory of logic-type changes that occur in human cognition when a paradoxical communication situation disrupts its adaptive functions [...] This path of theoretical development, based on systems thinking, makes it possible to elaborate an explanation that does not presume the positive or negative outcome of the "shock" experience, that can be used at different scales of analysis (individual, group, human), that transcends the specialized vocabulary of psychology and remains close to the concerns of anthropology. [26]

Having achieved my first objective, which was to make explicit the conditions likely to ensure the heuristic value of a model built with words, I now propose to take on the second, which consists in clarifying the operational function and the level of abstraction required for certain terms necessary for the construction of heuristic models.

3. Systemic Formalization Method for Heuristic Model Design

The second aim of this essay is to clarify the operational functions and required levels of abstraction of certain terms, such as heading, concept, category, model, and system, (and even theory), that are among the most commonly used by academics in their descriptive or explanatory hypotheses. To achieve this second objective, I propose to create cognitive meta-categories to identify their roles in the reference grid that we use to classify our ideas while designing our representations of the world and to specify the place we give them in the construction of our heuristic models. To illustrate my point, I will use a mathematical metaphor, which is at the same level of abstraction as the intellectual phenomenon I want to represent so as to respect the principle of domain compatibility, on the one hand, and which I intend to develop in terms of form, function, and process to respect the principle of triadic comparability, on the other.

3.1. Three Functions of Abstractions in Heuristic Model Design

Just as mathematics is made up of numbers, the anthropology of intercultural communication is mainly made up of words, which makes language, labeling, and wording essential elements and procedures in the progression of knowledge in the human and social sciences, despite the difficulties that this can represent. To help, the following terminology is based on the congruence I propose to build between numbers and words or, more precisely, between numbers and scientific wording. According to its lexicographic definition, the idea of a number is the "basic concept of mathematics, one of the fundamental notions of understanding that can be related to other ideas (plurality, set, correspondences) but cannot be defined" [34]. I suggest considering the concept of wording to be a conceptual equivalence that would be specific to the field of the human sciences, that is, as a fundamental notion of understanding that is necessary for the engendering of several disciplines, including philosophy, languages, literature, history, the arts, psychology, geography, political and legal sciences, communication, management, and no doubt, anthropology. This intuition that the concept of wording can congruently echo the mathematical concept of number must be reinforced by the establishment of a contiguity of functions, which implies

the possibility that each of them can be used in three different ways: the nominal way, the cardinal way, and the ordinal way. In mathematics, these three qualifiers are defined as follows:

> Nominal numbers name or identify something (e.g., a zip code or a player on a team.) They do not show quantity or rank. Cardinal numbers, known as the "counting numbers," indicate quantity. Ordinal numbers indicate the order or rank of things in a set (e.g., sixth in line; fourth place). [35]

My proposal is to enrich the terminology of the heuristic model method with these three qualifiers and to consider the possibility that theoretical words in anthropology may also be of a nominal, cardinal, or ordinal type, depending on the function attributed to them by a researcher in the process of constructing a heuristic model. I suggest reserving the use of the nominal meta-category for the classification of words used to relay information, reserving the cardinal meta-category for the classification of words used to grid the territory of ideas under study, and reserving the ordinal meta-category for the classification of words used *to* map thresholds of systemic change. In what follows, each of these three meta-categories of words is examined and illustrated by examples of their application in the field of intercultural communication research.

3.2. Relaying Information with Nominal Wording

In the context of my proposal, nominal words are comparable to nominal numbers: they are labels used to identify objects in a more or less arbitrary way for the convenience of exchange between those who use them. From this perspective, we could compare nominal words to the digits of a telephone number: their actual numerical values are irrelevant, as they do not indicate a quantity, a rank, or any other measure. Similarly, the actual meanings of nominal words are irrelevant to the scientific study of informational reality within a niche of ideas since their role within communication is the same as that of a stick in a relay race: each participant can develop a personal running style and take part in the tournament as long as he or she is in possession of the stick.

When we begin to study a certain niche of intercultural communication, collecting the main nominal words consists in noting the recurrences that characterize the communication process. The verb "to collect" is to be understood here both in the anthropological sense of collecting ethnographic data and in the more trivial sense in which a collector of foreign currency might understand it, that is, as the act of bringing together objects that are more or less disparate in terms of spatial or historical affiliation, form, or value but that play the same role as a means of exchange in the course of human activity. In such a collection, objects are assembled but not necessarily classified in any other way than by the collector's motivation. In my study of cultural vigilance behaviors in Québec, the disordered collection of nominal words includes the following expressions: "conspicuous religious symbols", "reasonable accommodation", "charter of values", "ban on religious symbols", "discrimination based on religion", and "equality of women and men".

It is tempting to think of these words with nominal functions as keywords of the kind we use in research. However, this is not the case. While keywords have a functional value insofar as their meaning is restricted and indisputable (which makes the word "relation" an unusable keyword in the context of academic research), words with a nominal function should be considered more like hashtags on today's social media: they are useful for relaying information on similar subjects. In this frame of reference, "culture shock" is an example of an expression with no other function than nominal, which has not prevented it from being incorporated into numerous scientific theories.

3.3. Squaring the Territory of Ideas with Cardinal Wording

Understood in the philosophical sense of the term, the adjective "cardinal" attributes to a concept the "role of hinge, which serves as a pivot, thus forming, figuratively speaking, the essential part around which everything revolves" [5]. Plato, for example, identified "justice, wisdom, temperance and courage" as the four cardinal virtues of his time (428–347 BC).

Pascal spoke instead of "three orders of things: the flesh, the spirit, the will" [36]. As for the French existentialist philosopher Jean-Paul Sartre, he asserted, in his most important work, *Being and Nothingness*, that "having, doing, and being are the cardinal categories of human reality. Under them are subsumed all types of human conduct" («*Avoir, faire et être sont les catégories cardinales de la réalité humaine. Elles subsument sous elles toutes les conduites de l'homme*») [37]). Apart from a slight displacement effect, Sartre's categories are echoed in Jean-Louis Le Moigne's compendium of systemic thought, in which he claimed that the "trialectic of being, doing and becoming [...] is undoubtedly the key to the representation, if not to the very knowledge of the object" [13]. Finally, in his book *God and Golem, Inc* [38], the well-known father of Cybernetics [39] Norbert Wiener structured his thoughts on the "theme of creative activity [...] under a single set of concepts" that retain the properties of cardinal categories: knowledge, power, and worship [38]. This set of cardinal categories enabled him to create a term-by-term equivalence between what he identified as the three pillars of human thought, on the one hand, and the three pillars of cybernetics, on the other: "knowledge is inextricably linked to communication, power to control, and the evaluation of human objectives to ethics and to the whole normative aspect of religion" [38]. Considering the usefulness of having a stabilized and concordant list of cardinal categories in mind to grid the territory of informational objects when studying a complex and abstract niche of ideas, I will propose four in the next section, specifically chosen for the construction of a heuristic model for research in the anthropology of intercultural communication.

3.3.1. A List of Four General Headings to Start With

Among the pertinent suggestions made by anthropologists and philosophers, the list of principal headings that seems to me to be the most comprehensive, explicit, and best suited to the human behavior sciences is set out by André Comte-Sponville in a publication in which he attempts to answer the question *Is capitalism moral*? [40]. What Comte-Sponville calls orders—in the philosophical sense in which Blaise Pascal [41] defined them in his theory of orders—are presented in the table of contents of his book in the form of the following numbered headings:

(1)   The economic, techno-scientific order;
(2)   The legal–political order;
(3)   The moral order;
(4)   The ethical order.

Comte-Sponville's four orders can easily be likened to four of the headings used by cultural anthropologists to subdivide their fields of expertise, as shown in Table 1. However, at this early stage in the construction of a heuristic model, it is important to remember that the headings we have chosen as a point of departure are not yet cardinal categories, since, to become so, they will eventually have to be integrated into a complete system of representation and put to the test of informational reality. For the time being, this is still just a vague guideline useful for grasping the complexity of cultural experiences. As Bateson reminds us,

Table 1. A first list of headings to describe culture in words.

Four Orders of Human Existence	Corresponding Disciplinary Specialties
Econo-techno-scientific Order	Anthropology of Technology and Science
Legal-political Order	Anthropology of Laws, Politics, and Governance
Moral-ethical Order (merged)	Anthropology of Moralities, Religions, and Ethics
Epistemological Order (added)	Anthropology of Arts, Magic, and Love

Our categories 'religious,' 'economic,' etc., are not *real* subdivisions which are present in the cultures which we study, but are merely *abstractions* which we make for our own convenience when we set out to describe cultures in words. They are not phenomena present in culture, but are labels for various points of view

which we adopt in our studies. In handling such abstractions we must be careful to avoid Whitehead's "fallacy of misplaced concreteness". [3]

Now, if we consider the list from the point of view of informational realism, it is clear to me that it lacks something that could correspond to a whole area of anthropology classified under the heading of communications. This includes the study of the experience of art, symbols, information, magic, drugs, dreams, lies, and, why not, schizophrenia, difference, and change. It is true, however, that Comte-Sponville remains dubious about his fourth heading, not least because there is an ambiguity between the moral order and the ethical order that he needs to clear up (which he does briefly by proposing that "moral" means everything we do out of duty, and "ethical" is everything we do out of love). His reflections on this problem ultimately led him to "envisage a fifth order" under the heading of the divine or supernatural [40].

For my part, I have decided to combine the moral and ethical orders into a single heading and to complete the list with a new heading revolving around epistemological questions, which seems to me sufficiently broad and abstract "to oversee the whole and ensure its cohesion" [40].

3.3.2. From a List of Headings to a Grid Reference System

If the list presented above is interesting for its capacity to consolidate the links between our chosen headings (in the left-hand column) and the specialties of cultural anthropology (in the right-hand column), it seems unlikely to be useful for the study of intercultural communication. Not to mention that such a formulation—in the form of institutional structures, more precisely—runs the risk of confusing the names of things with the things themselves. This is problematic when you consider that the model under construction is intended to support research in a field where complexity factors are numerous, and objects are unobservable.

To avoid this pitfall and to underline my choice as a systemic theorist to study the complexity of informational and unobservable objects, I propose to apply, here again, the principle of the triadic definition of artificial systems. This involves redistributing each of the four initial headings into three cardinal categories (form, function, process), thus guaranteeing the user of the grid reference system greater conceptual agility.

In Table 2, I present my own triadic formulation of headings adapted to the study of informational objects, for illustrative purposes only, followed by a few additional remarks. At this stage in the construction process, the reader must note that the headings become a list of *orders* (rather than a list of institutions) as a result of my effort to organize and grid my thinking through these "stable or recurring structures, and therefore recognizable and identifiable as a constant and necessary disposition" for the exercise of my thinking [42]. It should also be pointed out that I work with a 12-square grid, whereas Bateson worked with "a lattice of nine squares [i.e.,] three rows of squares with three squares in each row" [3]. Apart from this difference in the number of squares, which suits the nomenclature of this grid of categories whose function is "cardinal", my reference grid is comparable to Bateson's in that, just like him:

Table 2. Triadic wording of the four orders of human existence.

	FORM	FUNCTION	PROCESS
1	Econo-techno-scientific Order	Shaping the world	Instrumental rationality
2	Legal-political Order	Ruling the world	Normative legitimacy
3	Moral-ethical Order	Sharing the world	Moral acceptability
4	Epistemological Order	Sublimating the world	Epistemic credibility

I labeled the horizontal rows with my bits of culture and the vertical columns with my categories. Then I forced myself to see each bit as conceivably belonging to each category. I found that it could be done. [3]

Once again, it is important to stress that these are not natural but artificial divisions of the "world of ideas and communication", since any cultural behavior can belong simultaneously to either of these categories, depending on the point of view of the person interpreting its meaning. Wearing a burka in a Québec amusement park, for example, can at once be seen as a way of shaping, ruling, sharing, and sublimating the world, depending on who will interpret the meaning of this behavior, and it is precisely the possible ambiguity of interpretation that makes the situation so complex. Consequently, this set of cardinal categories should not be considered as a carbon copy of reality but as "labels for points of view voluntarily adopted by the investigator" [3], as a grid reference system for systemic theorists, similar to those used in topography or geodesy, i.e., as a mental and artificial division whose points of intersection alone are useful for composing the overall image of an information niche and for locating ideas in a mental territory. Indeed, it should be conceived as one of the tools that guide the researcher's gaze and "'give [him] to see' without destroying the complexity or ambiguity of the [observed] phenomenon" [12]. From a methodological point of view, this type of theoretical construction makes it possible to process the enormous volume of information on intercultural behavior while repressing the disorder of our perceptions [4]. From a scientific point of view, the heuristic value of this grid pattern can only be appreciated when it is used in the spirit of a systemic or ecological vision of culture, that is, when it helps to understand how pieces of information relating to cultural behavior are distributed in a particular niche, and how cultural ideas hybridize, merge, and compete in people's cultural or intercultural discourse.

Further remarks should be added. When Malinowski and other anthropologists after him (including Bateson) denounced "the weakness of this method of subdividing a culture" into major or categorical functions [3], they were highlighting the danger of purely inductive models (from perceptions to categorization), which tend to reduce the complexity of phenomena and to precipitate the "multiplication of dormitive hypotheses" [3]. This suggests that the usefulness of functional categories lies not in their heuristic potential but rather in the service they provide in terms of data organization. It also invites anthropologists to engage in deductive reasoning.

By contrast, the processual formulation seems to pave the way for increasing complexity, insofar as each "square" of this *category of categories* grid is intended to classify not differences but *differences of differences*, a famous expression coined by Bateson, referring to the cognitive transformation of a perception into an idea. This could have major implications for intercultural communication studies. This means that, if process-based categories have any heuristic value, they could provide us with a description of how a perception of an observable cultural difference (the wearing of the Islamic veil, for instance) is ultimately transformed into a xenophobic or even racist idea. From a methodological point of view, this means implementing in research a range of reasoning modalities, including induction, deduction, abduction, and transduction. To make this aspect more tangible for the reader, examples are provided in the following section.

3.3.3. Using the Grid to Classify Ideas on Religious Neutrality in Québec

In what follows, I give four examples of how I used, both inductively and deductively in circular reasoning, the model I call my Anthropological Grid Reference System to classify ideas reflecting Quebecers' cultural vigilance toward the growing religious diversity in their environment since the 1980s. Quotes are excerpts from the public hearing of citizens heard in the winter of 2014 as part of the public consultation held by the National Assembly's Committee on Institutions on Bill 60, *Charter affirming the values of State secularism and religious neutrality and of equality between women and men, and providing a framework for accommodation requests* [43]. In the context of these public hearings, citizens had the opportunity to state their reasons for supporting or opposing Bill 60, which was intended to prohibit "easily visible" religious symbols [44]. As the aim of my study was to highlight the testimonies of citizens from the majority group—who were mostly in favor of the bill—all of the quotes embedded in the following section are from Caucasian adults (men and

women), Catholics and Francophones, historically rooted in French European culture. Note that Bill 60 served as a basis for *Law 21: Act Respecting the Laicity of the State*, passed by the Québec National Assembly on 16 June 2019. The purpose of this legislation is "to confirm the province's secular status, as well as to prohibit the wearing of religious symbols by civil service employees in positions of authority and by teachers in the public sector" [43].

In the econo-techno-scientific order, the category of instrumental rationality is intended to describe the cognitive process of matching objectives and resources as closely as possible to obtain the best results. When working with this cardinal category, my task was to classify all citizen comments aimed at denouncing the instrumental irrationality of the behavior displayed by people from other cultures. Once completed, this classification highlighted the fact that members of the cultural majority in Québec generally worry about the presence of Others when a lack of congruence is found between their (extrapolated) instrumental goals and the (observable) means that they use to achieve them. The first extract provides an example of this:

> We visited a mosque. First thing, they ask us to take off your shoes. What do you mean, take off our shoes? [This has no logical connection with the current activity]. But, before we got there, we had men, women with a little carpet rolled up under their arms and then [. . .] going in the mosque. At one point, I said: What's going on? There were men on all fours on the ground. There I looked, but there they were just men. Behind the curtain, there were only women. I could not believe it. I got back on the bus, then I said: Can you go and pray, on all fours, on a carpet? . . . !!! [It is a very irrational thing to do] (Mr. Pineault's wife, 16 January 2014, 17h00). [44]

In the legal-political order, the process of normative legitimacy involves creating links between rights and obligations at the political or legal level of life in society. When working with this second cardinal category, my task was to classify all comments that aimed at denouncing the illegitimacy of the behavior displayed by people from other cultures. Once completed, this classification highlighted the fact that members of the cultural majority in Québec generally worry about the presence of Others when they notice in their behavior a lack of congruence between "our" (legitime) rules, laws, principles, policies, or long-standing practices and "their" (deviant) behavior. The second extract provides an example of this situation:

> What I think about Muslims is that they refuse to respect our rules. They ask to have their schools, their churches, and well: we have no problem with that. But they want us to be forced to respect the rules of their country. No one can decide overnight to change anything for their own good. Here, in Québec, we refuse that our children walk around with a knife, we refuse women be beaten, we refuse slavery. We refuse to allow our children and even adults to wear a wool tuque, a hat, or a baseball cap in church. Everyone must respect these rules. (Mr. Pineault's daughter, 16 January 2014, 17h00). [44]

In the moral-ethnical order, the process of moral acceptability is more concerned with the links between behaviors and the contexts in which they are interpreted or justified (for example, we could accept that it is morally acceptable to kill someone in self-defense but unacceptable in any other context). When working with this other cardinal category, my task was to classify all comments aimed at denouncing the unacceptability of the behavior displayed by people from other cultures. Once completed, this classification highlights the fact that members of the cultural majority in Québec generally worry about the presence of Others when they notice a lack of congruence between a general (overt) behavior adopted by "them" and the context that our presence provides for interpreting it (from a personal point of view). The following extract illustrates this situation:

> The Hasidic Jews in my neighborhood, when I'd say hello to them, they'd look me in the face, then turn their heads, and never answer [...] Very often, when we met them on the street, they'd change the sidewalk. So, I don't mind being open

and trying to be nice to these people, but, at some point, you know, you say hello to them, and then they pretend you don't exist, it's rough. (Ms. Blanc, 15 January 2014, 11h30). [44]

Finally, in relation to the fourth order, the central epistemological problem of art, symbols, information, magic, psychedelic drugs, dreams, lies, schizophrenia, difference, and change is certainly one of epistemic credibility, whose processes require respect for sacred thresholds that must not be profaned if the expected sublimating effects are to occur. When working with this last cardinal category, my task was to classify all of the comments aimed at denouncing the unreliability of the behavior displayed by people from other cultures. Once completed, this classification highlighted the fact that members of the cultural majority in Québec generally worry about the presence of Others when a lack of congruence is detected between the sublimated meaning of a behavior (provided to us by the other) and its profane meaning (suddenly discovered by us). The fourth extract provides an example of this situation:

> The veil is a religious symbol that sends a message of inequality between men and women in a society that advocates equality between men and women. To accept it is to support a double discourse, to support double, troubled, ambivalent, and anxiety-provoking messages. (Ms. Robert, 2 January 2014, 16h00). [44]

As a methodological precept, a set of cardinal categories presupposes an equal probability that each will manifest itself in perceptions during field research. (Note that this was not the case for nominal concepts, which only become informative when they are recurrent.) At this stage of the modeling exercise, the principle of equal probability is an important methodological postulate: it is what constitutes the heuristic tool provided by the model on the state of the vitality of ideas in the ecological or cultural niche observed. However, in order to develop our model into an explanatory rather than a merely descriptive system, it becomes necessary to talk about the limits of each cardinal category, since in systemic or "cybernetic language, the course of events is said to be subject to *restraints*, and it is assumed that, apart from such restraints, the pathways of change would be governed only by equality of probabilities". In fact, adds Bateson, "the 'restraints' upon which cybernetic explanation depends can in all cases be regarded as factors which determine inequality of probability" [3].

3.4. Mapping the Thresholds of Change with Ordinal Wording

So far, I have identified some key elements of a methodology for building systemic models in anthropological studies of intercultural communication by giving examples of possible applications drawn from my own research work on the cultural vigilance behaviors of the majority population in Québec. After having presented the elements that seemed important to me with regard to nominal and cardinal formulations, I will now present in what follows some remarks on *ordinal wording*. This section will be shorter than the previous two, because most of what needs to be said about the "ordering" of cardinal categories—i.e., their hierarchical organization (ascending or descending, or both)—when designing a heuristic model has been set out in Comte-Sponville's book in the form of the problem of the limits of orders in philosophy, by cybernetic authors in the form of the problem of constraints in information theory, and in Bateson's intellectual work in the form of the problem of the *subjugation of the mind* by paradoxical communication (double-bind theory). Nevertheless, I can summarize the main principles underlying this new phase of heuristic systems modeling, which should lead to the development of a model that is no longer merely descriptive but also heuristic, explanatory, and systemic.

3.4.1. The Question of Limits

Each of the four general categories identified by Comte-Sponville is linked by a predicate that limits its conceptual boundaries. These four predicates are presented in the form of dialectical structures that define the limits of each cardinal category: the first

category is structured by the possible-impossible opposition, the second by the legal-illegal opposition, the third by the good-evil opposition and Comte-Sponville's fourth category (but not mine) is structured by the joy-sadness opposition. Despite the nuances expressed by their respective models, Bateson, Comte-Sponville, and others like Basarab Nicolescu nevertheless agree that two cardinal categories or orders "are different if, in passing from one to the other, there is a rupture of laws and a rupture of fundamental concepts", i.e., as soon as the threshold of the relevance of a first predicate is reached in favor of a second [45].

With these predicates in mind, the problem of limits is posed more or less in the following terms, which I take from Comte-Sponville [6,40]. To preserve the equilibrium of human organization, each order of thought has the role of limiting the authority of its (considered) lower order by imposing a new logic. Thus, the logic of "possible or impossible" is limited by the logic of "legal or illegal", which, in turn, is limited by the logic of "right and wrong", and so on. For example, we know that immigration to Canada is not limited by a logic of "possible or impossible" but by a logic of legal or illegal, while the moral logic of good and evil remains a tool of discourse aimed at limiting political powers, as we have already presented in the example of the closure of Roxham Road at the beginning of this essay.

3.4.2. The Question of Restraints

In systemic or "cybernetic" language, Bateson wrote, "the course of events is subject to restraints, and we must assume that, outside these restraints, the paths of change would be governed only by the equality of probabilities". In fact, added Bateson, "the 'restraints' on which the cybernetic explanation depends can in all cases be regarded as factors which determine the inequality of probabilities" [3]. In the context of my research, for example, this means that some restraints could prevent one of the model's orders of ideas from appearing in an environment made up of all intercultural ideas. This has to do with "the negative character of cybernetic explanation [where] 'information' is quantified in negative terms" [3]. To put it in a few words, the more information is excluded from a communication act, the more informative it becomes. However, this is only observable if we have access to the context of the communication, since "without context, there is no communication" [3]. Is another excerpt from the public hearing that will provide an example of this in the context of intercultural communication. The following is a quote from Ms. Céline Duval, provincial president of AFEAS, a women's association for education and social action in Québec. The situation described by Ms. Duval highlights the challenge that growing religious and cultural diversity poses to Québec society for this grandmother and her granddaughter. In this excerpt, Ms. Duval expresses her concern as an educator about the presence of veiled women in her four-and-a-half-year-old granddaughter's environment.

> I'll give you an example I saw this summer with my granddaughter. We were at the zoo [in the city of Granby, Québec] when, by the pool, she saw a lady who wasn't going to bathe because, in addition to the veil, she was wearing the whole big garment on [abaya]. So, my granddaughter told me: *Grandma, why isn't this lady bathing?* I gave a logical answer: *She doesn't have a bathing suit.* That was fine, until she said: *But is a bathing suit expensive, Grandma?* [As I understand it], her question was, if the lady doesn't have a bathing suit, maybe it's because she can't afford to buy one... At four and a half, she doesn't see the nuance, or the prohibition, or other aspects of the situation [...] Then the woman's children got into the water, and the lady had to go in too to get them out of the pool. [This raised another question in my granddaughter's mind]: *Grandma, did the lady remember to bring a change of clothes? She's going to get the car all wet when she boards* [...] My point is that what a child sees are not what we see [as adults]. It's certainly not what I saw. Rather, I saw something unfair. The husband and his children could go swimming, but the mother had to stay out of the pool (Duval, 16 January 2014, 16:00). [44]

This extract shows how the adult has excluded moral information in formulating her answers to the child. This suggests that a restriction of this order was imposed on information delivery by the communication context, which seems quite clear from the educational perspective announced by AFEAS. There are three more reasons why this extract is an exceptional example for my purposes. The first is that the four-and-a-half-year-old, through her questions, has set up instrumental and normative considerations in an ascending order in relation to our heuristic model. The second is that the grandmother tells us what she did not tell the granddaughter about the moral order, giving us clues about the restraints imposed by different contexts. The third is the absence of any information relating to the last order of reality (related to epistemological processes), which highlights a restriction imposed by both the context of a private conversation and that of public hearings. The interesting question that must follow is *why*?

3.4.3. The Question of Subjugation

Besides the questions of limits and restraints, there is a question of subjugation, which is called the tyranny of orders over each other [40,41]. Starting from the observation that there are different orders of reality—each having its own domain, logic, and specific mode of action—the philosopher Blaise Pascal [41] explained that human incomprehension is essentially the result of confusion and power relations between these different orders of human experience. Comte-Sponville [40] sets out Pascal's theory of tyranny, ridicule, barbarism, and angelism clearly and concisely, providing several contemporary examples of its consequences in society, so there is no need for me to return to it. There is, however, something important to highlight in the context of my remarks: despite the somewhat strange nomenclature used by Pascal and despite the fact that he was concerned with a different object of study (which is philosophy motivated by the question, *What can we know?*), his matrix of ideas on the confusion of orders of thought and their mutual subjugation is a key principle in general systems theory. For example, we can correlate this with Bertrand Russel's theory of logical types (mathematics), Gregory Bateson's double-bind theory (psychology), and Basarab Nicolescu's axiom of levels of reality (which forms the basis of his theory of transdisciplinarity). All of these theories are related, not only by their fundamental premise (the interweaving, through thought, of a priori incommensurable worlds) but also by a common objective to solve the problems of the paradoxes encountered in the all-encompassing sphere of information.

I suspect that the same principle could be used to shed light on the paradoxes of cultural appropriation in art, which consists in thinking that certain artists who choose to decolonize their imagination by introducing idioms from different cultural groups into their works are instead, and paradoxically, perpetuating forms of domination against them. I could perhaps give the example, even closer to my work on cultural vigilance in Québec, of the struggles raging in the Canadian arena of the debate between art (order 4) and public morality (order 3), which were raised by two controversial works by the internationally renowned Québec playwright Robert Lepage in 2018: *SLĀV* (in connection with slavery in the United States) and *Kanata* (in connection with the aboriginal question in Canada) [46–48]. In particular, it would be interesting to examine the Canada Council's policy statements (order 2) that identify artistic works as a potentially amplifying modality of "historical inequalities, stereotypes and exploitative relationships that have direct negative consequences on equity-seeking communities in Canada" [49]. For the time being, however, this is only one of my future directions for research.

4. Conclusions

The complete heuristic model, composed of nominal concepts, cardinal categories, and ordinal predicates, is a cognitive tool that I use as a systemic theorist to facilitate and support the denotation, description, or explanation of complex phenomena such as intercultural communication. From my point of view, these three objectives are more than sufficient, and their assignment must be understood in relation to the research questions

formulated in ecological or systemic terms by the researcher. As Bateson pointed out, it is not for academics to provide answers to "the sort of questions which administrators ask of anthropologists—'Is it a good thing to use force in culture contacts?' 'How can we make a given people accept a certain sort of trait?' and so on" [3]. In keeping with an ecological vision of culture systems inspired by Bateson's work, it is necessary to highlight that the primary aim of the heuristic model design is the schematization of complex situations in order to be able to locate the thresholds or "bifurcation points (that is, each moment of the present where the future appears unknown and many scenarios are equally probable)" where it will be necessary for these administrators to make decisions [16].

Although a systemic model can be used as an information base for crisis prevention, risk assessment, or decision making, heuristic models have none of these claims. As conceptual abstractions built from perceptions of informational reality, heuristic models do not claim to have the performative powers of other types of models, such as those used by economists, for example. The purpose of the heuristic kind of model for intercultural anthropologists is ecological because, rather than focusing on the behaviors, words, debates, opinions, arguments, or rhetoric that characterize ideas, especially xenophobic ideas, it focuses instead on relations between systems of thought and their environment. Indeed, in speaking of the ecology of mind, Bateson was referring to the "survival" of ideas:

> The questions which [my] book raises are ecological: How do ideas interact? Is there some sort of natural selection which determines the survival of some ideas and the extinction or death of others? What sort of economics limits the multiplicity of ideas in a given region of mind? What are the necessary conditions for stability (or survival) of such a system or subsystem? [3]

With these questions in mind, I have sought to demonstrate the advantages of integrating systems theory into the examination of intercultural behavior and ideas, as well as to highlight some of the elements of the methods for heuristic model design. In keeping with the theme of this issue, I have also endeavored to provide examples of the model's application to the cultural superdiversity generated by increased migration to Québec. However, the level of abstraction at which I wanted to situate the model allows it to be used for descriptive or explanatory purposes in other registers of cultural interest, thus broadening "the scope of the inquiry". I therefore endorse Bateson's following suggestion:

> We should consider under the head of "culture contact" not only those cases in which the contact occurs between two communities with different cultures and results in profound disturbance of the culture of one or both groups; but also cases of contact within a single community. In these cases the contact is between differentiated groups of individuals, e.g., between the sexes, between old and young, between aristocracy and plebs, between clans, etc., groups which live together in approximate equilibrium. I would even extend the idea of "contact" so widely as to include those processes whereby a child is molded and trained to fit the culture into which he was born. [3]

Examples of the model's application outside of contacts between groups of different nationalities include contacts between different academic cultures within an interdisciplinary research team [50] or contacts between different cultures of professional behavior within the same discipline, such as music [51].

At the end of this article and in the absolute, I agree that the heuristic value of a model is never demonstrable, and that it is up to each researcher to assume responsibility for his or her methods. As Bateson beautifully summed it up, "the point of the probe is always in the heart of the explorer" [8].

References

1. Nettl, B. *The Study of Ethnomusicology: Twenty-Nine Issues and Concepts*; University of Illinois Press: Urbana, IL, USA, 1983.
2. Obadia, L. *L'anthropologie des Religions*; New Edition; ÉditionsFrancecouverte: Paris, France, 2012.
3. Bateson, G. *Steps to an Ecology of Mind*; Ballantine Books: New York, NY, USA, 1972.
4. Kant, I. *The Critique of Pure Reason*; Meiklejohn, J.D.M., Translator; Dover Publications, Inc.: Mineola, NY, USA, 2003.
5. Godin, C. *Dictionnaire de la Philosophie*; Fayard, éditions du Temps: Paris, France, 2004.
6. Genest, S. Le «changement d'état d'esprit»: Une étude à partir de la Pensée Systémique de Gregory Bateson. Ph.D. Thesis, Université de Montréal, Montréal, QC, Canada, 2022.
7. Weil, S. *La Pesanteur et la Grâce*; Librairie Plon: Paris, France, 1988; [1947].
8. Bateson, G. *Mind and Nature—A Necessary Unity*; E.P. Dutton: New York, NY, USA, 1979.
9. Estivals, R. *Théorie Générale de la Schématisation, Tome 3, Théorie de la Communication*; L'Harmattan: Paris, France, 2002.
10. White, B.W.; Genest, S. *Système*; Anthropen: Québec, QC, Canada, 2020. [CrossRef]
11. Le Moigne, J.-L. *La modélisation des Systèmes Complexes*; Dunod: Peers, Belgium, 1995.
12. Le Moigne, J.-L. Vers une épistémologie de la modélisation. In *Expériences de la Modélisation, Modélisation de L'expérience*; Lerbet-Sereni, F., Ed.; L'Harmattan: Paris, France, 2004; pp. 129–149.
13. Le Moigne, J.-L. *La Théorie du Système Général: Théorie de la Modélisation*; Presses universitaires de France: Paris, France, 2006; [1977].
14. Floridi, L. Informational Realism. In *Selected Papers from Conference on Computers and Philosophy (CAP2003), Canberra, Australia*; CRPIT, 37, Weckert, J., Al-Saggaf, Y., Eds.; ACS: Singapore, 2004; pp. 7–12.
15. Donnadieu, G.; Karsky, M. *La systémique. Penser et agir dans la complexité*; Éditions Liaisons: Rueil-Malmaison, France, 2002.
16. De Luca Picione, R.; Lozzi, U. Uncertainty as a constitutive condition of human experience. Paradoxes and complexity of sensemaking in the face of the crisis and uncertainty. *Int. J. Psychoanal. Educ. Subj. Action Soc.* **2021**, *I*, 14–53. [CrossRef]
17. Morin, E. *La méthode*; Éditions du Seuil: Paris, France, 1977–2006; Volume I–II.
18. Pop-Flanja, D.; Gâz, R.-M. Ambiguity in Intercultural Communication. In Proceedings of the International Conference, Regulated Canadian Immigration Consultant (RCIC), Brașov, Romania, 21–23 May 2015.
19. Dorvil, M. «Fermeture du Chemin Roxham: Un Vrai Drame Pour Nous, les Migrants». Le Devoir (28 mars). 2023. Available online: https://www.ledevoir.com/opinion/libre-opinion/786973/libre-opinion-la-fermeture-du-chemin-roxham-est-un-vrai-drame-pour-nous-les-migrants (accessed on 4 September 2023).
20. Nasser, F.; Boynton, S. At Roxham Road, Migrants Reach Uncertain Ends to Harrowing Journeys: 'They're Scared'. Global News Journal, Posted 23 March 2023, 8:18 pm, Updated 7 July 2023, 12:53 a.m. 2023. Available online: https://globalnews.ca/news/9574455/roxham-road-migrants-asylum-journey/ (accessed on 3 September 2023).
21. Walliser, B. *Comment Raisonnent les Économistes: Les Fonctions des Modèles*; Odile Jacob: Paris, France, 2011.
22. Finke, P.; Bolig, M. Explanatory Models in Anthropology: Methodological Refinements, Cross-Cultural Comparison and Theoretical Developments. *Z. Für Ethnol.* **2014**, 39–54.
23. Craik, K. *The Nature of Explanation*; Cambridge University Press: London, UK, 1967.
24. Genest, S. Le constructivisme en études ethniques au Québec: Retour à la notion de frontières de Barth. *Anthropol. Soc.* **2017**, *41*, 59–85. [CrossRef]
25. Vernadsky, V.I. *The Biosphere*; Scientific Chemico-Technical Publishing: Leningrad, Russia, 1926.
26. Genest, S.; Gouin-Bonenfant, M.; White, B. *Choc Culturel*; Anthropen: Québec, QC, Canada, 2021. [CrossRef]
27. Dutton, E. *Culture Shock and Multiculturalism. Reclaiming a Useful Model from the Religious Realm*; Cambridge Scholars Publishing: Newcastle Upon Tyne, UK, 2012.
28. Choueiri, R. Le «choc culturel» et le "choc des cultures". *Géographie et Cultures* **2008**, *68*, 5–20. [CrossRef]
29. Oberg, K. Culture Shock: Adjustment to New Cultural Environments. *Pract. Anthropol.* **1966**, *7*, 177–182. [CrossRef]
30. Hofstede, G. What is Culture? Available online: https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/definition-culture/ (accessed on 4 September 2023).
31. Gouin-Bonenfant, M. Du choc à la confusion: La rencontre interculturelle dans les stages Québec Sans Frontières au Sénégal. In *Mémoire de Maîtrise*; Université de Montréal: Montréal, QC, Canada, 2018.
32. Ward, C.; Bochner, S.; Furnham, A. *The Psychology of Culture Shock*; Routledge: London, UK, 2001.
33. Mayor, F. *Address By Mr. Frederico Mayor, Director-General of UNESCO, at the Opening of the Eighteenth Congress of the International Federation for Parent Education*; IFPE: Paris, France, 1994. Available online: https://unesdoc.unesco.org/ark:/48223/pf0000097386 (accessed on 18 August 2023).

34. CNRTL, Centre National de Ressources Textuelles et Lexicales, Online French Dictionary. Available online: https://www.cnrtl.fr/ (accessed on 22 July 2023).

35. Cardinal, Ordinal, and Nominal Numbers. Available online: https://www.infoplease.com/math-science/mathematics/numbers-formulas/cardinal-ordinal-and-nominal-numbers (accessed on 24 August 2023).

36. Bouchilloux, H. La théorie pascalienne des ordres et le problème des trois ordres. In *L'enseignement Philosophique*; Association Des Professeurs de Philosophie de L'enseignement Public: Paris, France, 2015; Volume 1, pp. 7–19, ISSN 0986-1653. [CrossRef]

37. Sartre, J.-P. *L'être et le Néant: Essai D'ontologie Phénoménologique*; Gallimard: Paris, France, 1943.

38. Wiener, N. *God and Golem, Inc.: A Comment on Certain Points Where Cybernetics Impinges on Religion*; The M.I.T. Press: Cambridge, MA, USA, 1963; ISBN 9780262730112.

39. Wiener, N. *Cybernetics, or Control and Communication in the Animal and the Machine*; The M.I.T. Press: Cambridge, MA, USA, 1948; ISBN 9780262730099.

40. Comte-Sponville, A. *Le Capitalisme est-il Moral? Sur Quelques Ridicules et Tyrannies de Notre Temps*; Éditions Albin Michel: Paris, France, 2004; ISBN 9782226192912.

41. Pascal, B. *Pensées, Opuscules et Lettres*; Éditions de Philippe Sellier, Classiques Garnier, coll. "Bibliothèque du XVIIe siècle": Paris, France, 2011; EAN 9782812401176.

42. Piettre, B. Ordre et désordre: Le point de vue philosophique. In *Désordre(s)*; Centre universitaire de recherches administratives et politiques de Picardie (CURAPP); Chevalier, J., Alaux, J., Piettre, B., Baslé, L., Lafargue, J., Leschi, D., Wahnich, S., Rangeon, F., Sommier, I., Vasseur, J.-F., et al., Eds.; Presses universitaires de France: Paris, France, 1997; pp. 29–45, ISBN 9782130490050.

43. The Canadian Encyclopedia: Bill 21. Available online: https://www.thecanadianencyclopedia.ca/en/article/bill-21 (accessed on 16 August 2023).

44. Assemblée Nationale du Québec: Consultation Générale et Auditions Publiques sur le Projet de loi no. 60. Available online: https://www.assnat.qc.ca/fr/travaux-parlementaires/commissions/ci/mandats/Mandat-24537/index.html (accessed on 16 August 2023).

45. Nicolescu, B. De l'interdisciplinarité à la transdisciplinarité: Fondation méthodologique du dialogue entre les sciences humaines et les sciences exactes. *Nouv. Perspect. En Sci. Soc.* **2011**, *7*, 89–103. [CrossRef]

46. Dundjerović, A.S. *Robert Lepage*; Routledge: London, UK, 2019.

47. Lefrançois, D.; Éthier, M.-A. SLĀV: Une analyse de contenu médiatique centrée sur le concept d'appropriation culturelle. *Rev. De Rech. En Littératie Médiatique Multimodale* **2019**, *9*. [CrossRef]

48. Uzel, J.-P. Un dramaturge et un Iroquois à Paris. L'affaire Kanata. *Esprit* **2020**, *1*, 61–69. [CrossRef]

49. Canada Council of Arts. Cultural Appropriation and the Canada Council's Approach. Available online: https://canadacouncil.ca/funding/funding-decisions/decision-making-process/application-assessment/context-briefs/cultural-appropriation (accessed on 4 September 2023).

50. Genest, S. Dialogo, ingenio, disegno: Trois impératifs de la recherche interdisciplinaire. *Chantiers De L'intervention En Sci. Hum. Interdiscip. Prat. Et Action Prof.* **2020**, *5*, 14–28.

51. Genest, S.; et Vanasse, G. L'intégration des musiques traditionnelles et commerciales aux études universitaires: L'expérience uqamienne (1969–2020). *MUSICultures* **2022**, *48*, 292–322.