

Project Report

Urban Resilience in Action: the Resilient Melbourne Strategy as Transformative Urban Innovation Policy? †

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Abstract: More and more cities are developing strategies and implementing actions to increase their resilience to a diversity of environmental, social and economic challenges. International networks such as 100 Resilient Cities, established by the Rockefeller Foundation, are supporting cities to find and implement solutions to ‘shocks and stresses.’ This new approach to urban governance, often initiated by philanthropic organizations, is debated. On the one hand, these initiatives are celebrated as catalysts for transformational change through ‘collaboration’ and ‘co-design’ in contexts such as mobility, energy, green space or housing. On the other hand, urban resilience initiatives have been criticized for prioritizing private sector agendas and top-down approaches and hollowing out public sector tasks and democratic participation. However, little is known how urban resilience strategies are actually implemented in practice. Embedded action research on the implementation of the Resilient Melbourne strategy provides the opportunity to have a closer look at this highly contested topic. This paper provides first insights into the research project Urban Resilience in Action, using the Resilient Melbourne strategy to assess the implementation of selected actions. It shows that a reconceptualization and new analytical dimensions are needed to understand urban resilience as an urban innovation strategy.

Keywords: Urban resilience; urban innovation strategy, resilience practice; action research; governance experimentation; city networks; urban sustainability; governance innovation; Melbourne

1. Introduction

Cities are increasingly facing unprecedented challenges linked to multifaceted issues such as rapid population growth, environmental degradation, extreme weather events and growing social inequalities. A key question is, therefore: how can cities cope with these complex issues and build resilience in the face of these wicked problems? Resilience has emerged as a central aspect of UN’s sustainable development goals [1] and became a topic for policy-makers and researchers (e.g., [2–4]). During the last few years, cities worldwide have initiated urban resilience strategies in response to context-specific challenges and identified suitable actions to create innovative solutions. Local governments, public-private partnerships and international city networks have developed resilience strategies and implemented actions designed to increase the resilience of cities in the face of ‘acute shocks’ and ‘chronic stresses.’ The 100 Resilient Cities network (100RC), initiated by the Rockefeller Foundation, is probably the most prominent example.

As part of 100RC, resilience strategies and actions are emerging quickly across cities around the globe and are challenging existing urban planning practice and policy [5], for example, by pursuing

climate and environmental governance in their own right. 100RC provides funding for a Chief Resilience Officer in each of the cities participating in the network to lead resilience efforts, resources for drafting a resilience strategy, access to a network of platform partners across the private sector, public sector, academic and NGO and, finally, membership in a global city network to share best practice and know-how. In its recently launched midterm evaluation, 100RC reports that since its launch in 2013, member cities have hired 83 Chief Resilience Officers and released 49 Resilience Strategies, securing more than US\$ 3.35 billion in external funding for urban planning projects [6]. The title of the midterm evaluation also reveals the more profound ambitions of 100RC, namely ‘Institutionalizing Urban Resilience.’

For 100RC, institutionalizing resilience refers, on the one hand, to the explication and reference of resilience – including the identification of place-specific shocks and stressors – in and across major urban planning documents. On the other hand, 100RC seeks to endeavour urban resilience through institutional transformation that disrupts ‘silo thinking’ in public and private sectors and through greater emphasis on community participation. Here, the midterm evaluation notes that 100RC has been largely successful in integrating resilience in urban planning, less progress has been made in terms of institutional reform [6].

Part of the challenge in assessing and evaluating resilience strategies has to do with the notion of resilience itself. In and by itself it is a classic example of a boundary object [7]. As a concept, it is interpreted and talked about in different ways and meanings within different communities, retaining nevertheless sufficient identical content to allow communication between these communities and translation between the different uses [8]. Unsurprisingly, due to this ambiguity and interpretative flexibility, the term resilience and its translation to urban planning and governance, remains heavily debated across different scientific disciplines.

Various scholars have criticized resilience strategies and actions as predominantly ‘externally’ steered and characterized by ‘top-down’ governance approaches that give little space for identifying local needs, participation and learning processes (e.g., [9–11]). Others have criticized the rather technocratic understanding and tendencies to quantify resilience as a condition rather than as an on-going and dynamic socio-political process [9,12].

Based on initial findings from on-going embedded research with Resilient Melbourne, this paper argues that resilience strategies and their implementation require a different framework for analysis than those usually applied, notable those departing from or relating to an urban planning perspective. Even though resilience has been influential in raising greater attention for the ecological dimensions and imperatives of urban planning [5], the way change dynamics are conceptualized in planning remain difficult to align with resilience theory. By assuming change instead of stability, resilience challenges the attempt to defeat disorder inherent in traditional planning approaches. Rather, it prioritizes the contingency and serendipity of novelty and surprise [13]. Based on initial observations of the implementation of the Resilient Melbourne Strategy, this paper develops an analytical framework that is more attuned to the change dynamics and an evolutionary understanding of urban resilience.

So far, Resilient Melbourne has relied largely on indicators and other quantitative tools to assess the implementation of its strategy. We seek to complement this perspective by more in-depth qualitative research to further understand outcomes and impacts of resilience actions, learning processes and structures of power and guidance. Therefore, analytical frameworks are needed to investigate how strategies are translated into actions beyond quantitative analysis of actions’ outcomes.

This paper reports on our initial observations regarding the development and implementation of the Resilient Melbourne strategy. More specifically, it seeks to reconceptualize Resilient Melbourne as an urban innovation strategy. This conceptualization will better align with the intentions of 100RC to drive institutional change in urban governance than traditional planning frameworks. By focusing on the activities (actions) of Resilient Melbourne, we develop a framework to understand the translation from strategy to practice as an expression of transformative innovation policy [14] to better understand the structures, drivers and mechanisms of urban resilience-building.

2. Urban Resilience—from Reactive Disaster Management to Proactive Urban Innovation Strategy

For more than a decade, the concept of resilience was predominately linked to approaches of ‘reactive’ emergency management, ‘bouncing-back,’ ‘absorbing,’ ‘adaptation’ and ‘vulnerability’ to disasters and hazards. Academics and high-level political organizations have explored and conceptualized how to respond after natural- or human-made disasters (e.g., [15,16]). In 2012, the UN-Habitat highlighted the role of resilience in the urban context by launching the City Resilience Profiling Programme (CRPP), which was grounded on the understanding that resilience is the “ability of human settlements to withstand and to recover quickly from any plausible hazards [. . .] and quickly bounce back to a stable state” [16].

Since then, the understandings and definitions of resilience have continually changed and diversified [4]. The idea of self-restoring human-nature systems back to equilibrium dynamics has been questioned [17]. As a result, the ideas of ‘social-ecological resilience’ [17] and ‘evolutionary resilience’ [3] have gained a lot of attention. ‘Socio-ecological resilience’ seeks to deepen our understanding of ecosystem dynamics, human nature and relationships. ‘Evolutionary resilience’ “promotes the understanding of places not as units of analysis or neutral containers but as complex, interconnected socio-spatial systems with extensive and unpredictable feedback processes which operate at multiple scales and timeframes” [3] (p. 304). Bringing this together, scholars increasingly understand resilience as non-static, ongoing, co-evolutionary systemic change in complex socio-ecological-technological systems.

Initiatives such as 100 Resilient Cities interpret resilience as a process of change and adaptation in response to ‘acute shocks’ but, also, ‘chronic stresses.’ Stresses are understood as challenges that occur on a day-to-day or cyclical basis and incrementally disturb urban socio-ecological and socio-technical systems (e.g. energy, food, water, green space, health, housing affordability, consequences of climate change, shortage and accessibility of public transport and social and cultural disadvantages). Therefore, there has been a shift from a ‘looking-back’ to a forward-looking view of resilience. In other words, resilience is understood as a more holistic approach that includes mechanisms of ‘bouncing back’ to a pre-disaster status as well as ‘bouncing forward.’ Bouncing forward is sometimes used to describe anticipatory actions designed to prevent a disaster or more commonly, to convey the notion of not just suffering the impacts of an acute shock but seeking to advance a community or place to a better situation as part of or following, recovery. Assessing the Resilient Melbourne Strategy in practice helps to further explore, understand and reconceptualize these new approaches of urban resilience.

3. The Resilient Melbourne Strategy

The City of Melbourne became part of 100RC in 2013. It joined on the understanding that it would attempt to work at a metropolitan scale, working with all of Melbourne’s over 30 metropolitan councils. Melbourne was thus selected among the first group of 32 cities to join the 100RC network. As part of the city’s successful bid, the Rockefeller Foundation funded for two years a full-time operating Chief Resilience Officer who coordinates and leads the Resilient Melbourne initiative. As part of releasing the Resilient Melbourne Strategy (RMS) and moving to implementation, the Resilient Melbourne Delivery Office (RMDO) was created to oversee the delivery of actions in the strategy, to monitor and report on progress, with a view to embedding the practice of urban resilience across state and local government, as well as many private and not-for-profit actors. In its current incarnation, the RMDO has a five year sunset clause, with its small project team paid for in a three way split between the Victorian State Government, the City of Melbourne and the other 31 metropolitan councils. The team has to attract additional funding and resources to pay for the actions in the strategy.

In developing the RMS, from late 2014 through 2015, fields of action were identified through consultation processes and the cooperation of more than 1000 individuals and organizations from public, private and academic sectors [18] across Melbourne. The results of these debates were brought together and synthesized in the RMS, which was released in May 2016. The key goals of the strategy are described as follows: “[. . .] address the chronic stresses and acute shocks we are likely to experience

and to achieve our vision of a city that is viable, sustainable, liveable and prosperous, today and long into the future" [18].

As Figure 1 shows, the identified challenges for metropolitan Melbourne are diverse. The city faces a number of 'acute shocks' and 'chronic stresses' that are linked to natural and anthropogenic related hazards as well as socio-economic and socio-technical challenges that continually pressure the city's infrastructure and population. A major stressor is the rapid population growth the city has been facing for more than ten years. Melbourne is currently growing faster than metropolitan areas such as Paris, London or New York. In just ten years, the population increased by nearly 1 million, from 3.7 million (2006) to 4.7 million (2017) [19]. In other words, Melbourne must accommodate around 100,000 new inhabitants every year. Similar growth rates are expected for the following decades, with the population expected to grow to 8 million by 2050. This has implications for the population but, also, for authorities that provide infrastructure and other public services and facilities (e.g. energy, transport, water, sewage, schools, health services, etc.).

Acute Shocks	Chronic Stresses
<p>Sudden events that threaten a city. Examples of Melbourne's acute shocks include:</p> <ul style="list-style-type: none"> ▪ Bushfires ▪ Floods ▪ Heatwaves ▪ Disease epidemics ▪ Infrastructure-related emergencies ▪ Extremist acts, including cyber crime 	<p>Challenges that weaken the fabric of a city on a day-to-day or cyclical basis. Examples of Melbourne's chronic stresses include:</p> <ul style="list-style-type: none"> ▪ Rapid population growth ▪ Increasing social inequality ▪ Increasing pressures on our natural assets ▪ Unemployment, particularly among young people ▪ Climate change ▪ Increasing rates of alcoholism and family violence

Figure 1. Shocks and Stresses acknowledged in the Resilient Melbourne Strategy.

Apart from the diverse challenges linked to population growth, the city also faces socio-environmental challenges. Droughts, heat waves and other extreme weather events have demonstrated the vulnerability of parts of the population and infrastructure. Furthermore, the strategy also identified socio-cultural and socio-economic problems such as increasing social inequality, unemployment, alcoholism and family violence. Based on the assessments of these context-specific challenges, 18 core actions were conceptualized and described in the strategy. Since 2016, most of the actions have been implemented. Many of these actions can be understood as pilot projects—not only technology- or infrastructure-related but, also, as new approaches to improve social relations, policy and planning.

4. Urban Resilience Action Research—an Embedded, Interactive and Collaborative Research Approach

The research project Urban Resilience in Action is conducted under the lead of the professorial City of Melbourne Chair in Resilient Cities, whose role was initiated as part of the Resilient Melbourne Strategy (RMS). Jointly funded by the City of Melbourne and the University of Melbourne, the chair is considered a connector between Resilient Melbourne, academia and other stakeholders in Metropolitan Melbourne. Apart from leading and coordinating academic work, the chair's role is to actively be participating in resilience-building actions and co-shaping related processes. The close interactions with the RMDO are sought to be stimulating for new ways of urban resilience thinking and implementation in Melbourne and internationally [18].

Analysing selected 'actions' of the RMS by following an embedded research approach provides the opportunity to gain in-depth insights on urban resilience in practice. Drawing on four selected

RMS actions as case studies in different fields (urban greening, mobility, housing and energy), the research project critically interrogates urban resilience actions to gain knowledge on this new forms of urban policy. By following a qualitative case study-based research design, the project complements quantitative-oriented assessments of outputs conducted by Resilient Melbourne through indicators developed by 100RC and its platform partners. This approach allows an in-depth examination of the structures and processes of the actions. To provide insights into how the actions were initiated and progress over time, the research project aims to unpack the heterogeneity of private, public and civic actor interests, capabilities and relations that configure these urban resilience actions. The goal is to identify and understand the driving and hindering forces, actor constellations and learning processes.

The following four RMS Actions were selected for analysis: Metropolitan Urban Forest Strategy (Urban Greening), Metropolitan Cycling Network (Mobility), Resilient Communities in Residential and Mixed-use Developments (Housing), Local Government Renewables Group Purchasing (Energy). For each of these case studies, data is or will be collected through semi-structured interviews, case study-related documents (e.g. RMS document, workshop reports) and participation in meetings and workshops. Interview participants are selected through advice by the RMDO and via snowball sampling to capture a variety of stakeholder perspectives involved in the actions. As Figure 2 shows, the project is now at a critical stage in which first insights could be made through data collection and first analytical exercises in the context of two of the four actions. These insights helped us to reconceptualize and unpack Resilient Melbourne as an urban innovation strategy.

Jan-Jul 2018.	Aug-Dec 2018	Jan-Apr 2019	May-Jun 2019	Jul-Sep 2019
STEP 1 ✓ Conceptual phase	STEP 2 ✓ Data collection I	STEP 3 (✓) Analysis I Data collection II	STEP 4 Analysis II	STEP 5 Results
<ul style="list-style-type: none"> ▪ Research questions ▪ Theoretical foundations ▪ Selection of case studies <p>Step 1 was conceptualized in cooperation with the Resilient Melbourne Delivery Office.</p>	<ul style="list-style-type: none"> ▪ Collection of documents ▪ Participation in workshops and events ▪ Stakeholder interviews (representatives of local government NGO, academia) <p>A1: Metropolitan Urban Forest Strategy A2: Metropolitan Cycling Network</p>	<ul style="list-style-type: none"> ▪ Analysis of documents and interviews A1, A2 ▪ Collection of documents ▪ Participation in workshops and events ▪ Stakeholder interviews (representatives of local government NGO, academia) <p>A3: Resilient Communities A4: Local Government Renewables Group Purchasing</p>	<ul style="list-style-type: none"> ▪ Analysis of documents and interviews A3, A4 ▪ Comparing data of all Actions (A1-A4) 	<ul style="list-style-type: none"> ▪ Presentation of results

Figure 2. Stages of the research project Urban Resilience in Action.

The four selected case study actions are at different stages of the implementation process and follow different organizational structures and logics. As described in the RMS, many actions are sought to develop new approaches in coping with increasing complexity and uncertainty [18]. Apart from a stronger engagement with the private sector and communities, the strategy explicitly highlights the importance of a multi-level governance approach that brings together all three levels of government—local, state and Commonwealth. The strategy states “we must innovate, be adaptable and flexible, collaborate across traditional boundaries and sectors and act now, for the long term” [18]. Therefore, the actions can be seen as pilot projects - not only new technology- or infrastructure-related but, also as new approaches to improve social relations, policy making and planning. The following short introductions of the selected case studies provide an overview of the goals, structures and key actors.

4.1. Metropolitan Urban Forest Strategy

Indicated in the RMS as a priority ‘flagship action,’ this action seeks to develop a metropolitan-wide approach to increase the city’s tree canopy cover and overall vegetation by linking existing urban green infrastructure initiatives, reforestation and other environmental initiatives. The goal is to develop metropolitan-wide thinking to tackle a range of challenges: loss of biodiversity; hazards such as heatwaves and flooding; and physical and mental health issues. While the topic has been on the agenda of a number of municipalities in Melbourne for some time, a metropolitan-wide urban greening strategy had not been pursued. This gap was identified through the RMS and framed in the action, ‘Metropolitan Urban Forest Strategy.’ Implemented and coordinated in a public–private partnership, this action provides an opportunity for an in-depth analysis of urban resilience as an ‘experimental’ urban governance approach. In partnership with the RMDO, the coordination of this action is driven by The Nature Conservancy (TNC), a non-governmental organization and ‘platform partner’ of the 100RC network. With support from the private sector, a mapping of Melbourne’s green space has been conducted. DigitalGlobe and Trimble, also 100RC platform partners, supported this first step by providing satellite images, software and analysis. Concurrently, a series of workshops have captured input from representatives of more than 60 stakeholder organisations (public and private sector, NGO and academia) to understand the critical aspects and challenges to developing a metropolitan strategy.

4.2. The Metropolitan Cycling Network (MCN)

As many other cities around the world, Melbourne has started to support cycling to solve several challenges such as congestion, pollution and health issues and reduce pressure on traditional infrastructure. The MCN, another ‘flagship action’ which seeks to establish concepts for a bicycle path network designed to increase safety and practicality of cycling in metropolitan Melbourne. The coordination is undertaken by the RMDO; however, the wider governance structure is based on a partnership in collaboration with Melbourne’s metropolitan municipalities, NGOs, state government transport bodies and 100RC platform partners from the private sector. A special role was played by the consultancy company Jacobs, which facilitated kick-off workshops in 2017, under their role as platform partners. The workshops were an important first step in bringing together key stakeholders in Melbourne’s cycling ‘eco-system.’ Local government representatives from each of Melbourne’s six urban ‘sub-regions,’ 13 state government agencies and a number of advocacy groups attended the second workshop. Similar to the Metropolitan Forest Strategy, this action provides an opportunity to learn more about the structure and the processes of implementing urban resilience.

4.3. Resilient Communities in Residential and Mixed-Use Developments

Socio-spatial polarization, inequalities and the lack of social cohesion are increasing phenomenon in city contexts. The goal of this action is to trial new modes of property development that consider the needs and ideas of residents in the development process to build social capital and increase resilience

to socio-economic challenges. In 2017, Resilient Melbourne invited stakeholders to submit expressions of interest to link their development projects to the Resilient Melbourne Action. Five projects with different approaches and contexts (brownfield and greenfield developments) were selected. A key goal is to learn from these projects and identify approaches that could be scaled up and repeated in Melbourne - and beyond. This action brings together property developers, municipalities, researchers and community groups to trial new ways of shaping neighbourhoods through integrating social aspects in planning and implementation. The governance approaches and decision-making processes for each of the selected development projects will be analysed in the research project. The research outcomes are crucial to give policy advice in supporting similar projects in the future.

4.4. Local Government Renewables Group Purchasing

There is a pressing need to drive low-carbon energy transitions at the city scale. This action seeks to develop strategies and opportunities for local councils to increase their usage of cleaner energy sources. More specifically, by organizing workshops, Resilient Melbourne helps to identify new ways of procurement of renewable energy direct from new renewable energy projects. The Melbourne Renewable Energy Project (MREP)—driven by four municipalities in cooperation with private and public partners—demonstrates the potential for large energy consumers to collaboratively procure renewable electricity directly from the generator. This collaborative approach aims to: facilitate capacity building; minimize complexity; and scale up outcomes through repetition of the model within the local government sector. Since the development of MREP, corporate power purchase agreements (PPAs) for renewable electricity supply have gained interest from diverse stakeholders in Melbourne and beyond. Therefore, this action provides the opportunity to assess how local governments can learn from these initiatives in driving decarbonization of council operations.

5. Discussion and Conclusions

The initial observations of our ongoing research project with Resilient Melbourne illustrate that urban resilience research needs new conceptual and analytical lenses. Required are approaches which look closer at the translation from strategy to implementation and ongoing dynamics. Understandings of continual change and open-ended innovation are required to complement the often rather static and technical frameworks and methods of measuring resilience. We argue that there is a strong need to understand the governance and (collaborative) decision-making processes, power relations, learning processes and the political context, to avoid a turn towards technocratic 'solutionism,' delivering quick fixes to intractable challenges. This aligns with the goal of 100RC of driving institutional changes in urban governance through their support in delivering actions in various city context around the world.

Our insights into the Resilient Melbourne strategy actions indicate that urban resilience actions can be interpreted as a place-based urban innovation strategy. Several interviewed stakeholders involved in Resilient Melbourne actions, highlight the novelty of the way of urban governance, as it brings continually together a wide range of stakeholders and follows consultation processes that integrates ideas and critique into the ongoing implementation. Resilient Melbourne is described as a facilitator, moderator and platform for knowledge exchange between local and state government authorities, private sector, NGO and academia. The open and self-reflective nature of actions is helpful to "break down silos and leads to intersectoral thinking," as a representative of a local government authority explained. Another representative described the novel processes of learning between geographical distanced local councils which usually do not cooperate through projects.

These initial findings resonate with contributions which suggest that resilience actions could be useful tests for new ways of governance, particularly in areas where traditional urban planning policy, practice and service delivery are characterized by silo-thinking, path dependencies and a lack of innovative approaches [5]. Based on our insights, we argue that resilience actions can be conceptualized as 'governance experiments' that aim to re-construct established urban governance

structures by disrupting institutional path dependencies through collective innovation, cooperation and coordination.

This resonates with the call for collaborative urban experimentation to govern transition pathways towards more resilient and sustainable cities [20–24]. Academics and city practitioners generally agree that ‘learning by doing’ in so-called living labs, urban transition labs or real-world experiments have the potential to catalyse innovative socio-technical outcomes (e.g., [25–29]). Interactions between grassroots-driven (‘bottom-up’) and policy-driven (‘top-down’) can provide spaces for transformational change apart from established urban policy making [22,23,27]. Fuenfschilling et al. describe urban experimentation as “a way to seed change that over time may lead to a fundamental transformation of a system” [20] (p. 2).

An increasing number of contributors highlight the importance of co-creating knowledge and cooperation between actors from public and private sectors, community and academia to initiate transformative change in urban contexts [21,30,31]. However, we agree with Smeds and Acuto [32], who point out that cities cannot ‘save the planet’ alone. Our work with Resilient Melbourne shows how important multi-level governance is, as the state government level is often mentioned as a critical actor in supporting actions and driving change in urban planning. Therefore, new research lenses are needed to better understand how governance- and socio-technical experiments are interconnected between local and higher policy levels, thus how the ‘vertical scaling up’ of urban governance experiments work [32].

Considering the increasingly contrary perspectives on urban resilience, there are, inevitably, critical and positive potentials for strategies and actions. However, the fluidity and self-reflexive character [33] of contemporary urban resilience invite for innovation processes that acknowledge the contestations, conflicts but equally complementarities and collaborations between different actors. New conceptual approaches and comparative in-depth empirical research are important to provide meaningful advice for policy-makers and city practitioners. To further conceptualize and understand urban resilience as transformational innovation policy, a number of critical aspects need to be explored. This includes the involved driving and resisting stakeholders (incorporating their roles and motives), forms of coordination and structure, learning and knowledge creation and transfer, barrier and challenges in implementing resilience actions.

To understand how urban resilience activities are steered and directed, we need to analyse who is involved and why. As Grillitsch et al. argue, to understand shifts in socio-technical regimes, we need to understand the actors who initiate and engage in change processes [34]. We argue, that a special focus is needed on private sector stakeholders and philanthropy as change agents, as they play an increasingly important role in driving urban resilience. Understanding their interests and motivations helps to explore the ‘new rationales to legitimize policies for transformative change’ [35] and thus to deal with the question who actually benefits from urban resilience building. Furthermore, scrutinizing the new connections and learning processes between a variety of stakeholders in these governance experiments is needed. Little is known about evolutionary aspects in urban resilience-building and related to this, the question of how knowledge is created and transferred within resilience strategies and actions. Shedding light on these dynamics of change also includes the barriers and challenges in implementing urban resilience as governance experiments. We argue that it is also crucial to learn from failures and challenges within these experiments to better understand the processes of implementation but also to give meaningful recommendations to policy makers for further activities.

At this critical stage of our project, these aspects and questions help us to unpack and reconceptualize Resilient Melbourne as an urban transformational innovation strategy and the implementation of actions as governance experiments. Our first insights indicate the potential of embedding urban resilience in established socio-technical and socio-ecological systems. However, in-depth comparative empirical research is needed to explore and analyse to what extent these urban resilience actions can actually play in transforming urban planning and policy making toward more openness, flexibility and inclusiveness.

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