Framework rules for self-organizing cities: Introduction

Why does self-organization challenge planning?

Self-organization is a key mechanism through which cities spontaneously and dynamically evolve and adjust to changing circumstances (Allen, 1997; Batty, 2005; Portugali, 2000). It entails an emerging process: place-based actions and interactions of an unrestricted number of urban agents produce certain physical, social and economic patterns at a global level that in turn coordinate the expectations and actions of actors at the local level (Moroni and Cozzolino, 2019). While providing cities with the capacity to adapt, the spontaneous nature of urban self-organization also challenges planning aspirations (Rauws et al., 2016).

Urban planning typically aims to coordinate urban development centrally. However, in the case of urban self-organization, a multitude of indirectly interacting actors unintentionally contribute to the emergence and persistence of urban patterns. This does not only imply that the exact course and outcomes of self-organization dynamics are very hard to predict, but it also means that fully planned and coordinated collective action is by definition impossible (Moroni et al., 2020: 220). Orthodox top-down approaches to city development are thus of limited help in dealing with the positive and negative effects of urban self-organization.

Therefore, this special issue explores what kind of formal rules and other instruments enable planning to relate to urban self-organization. While impossible to fully plan and control, urban self-organization is sensitive to institutional and physical conditions. By targeting these conditions, planners can facilitate and guide urban self-organization (Rauws and De Roo, 2016; Zhang et al., 2020: 287). How to do this effectively, while acknowledging that single actors have no direct responsibility for urban outcomes, is considered a real challenge here.

Self-organization overruled by ‘modernist technocratic planning’

The spontaneous nature of self-organizing urban phenomena has not always been problematic to city planning. Before the rise of modern town planning, for example, planning guidelines and investments were actually aimed at enabling spontaneous coordination among urban actors (Hakim, 2014). City administrators governed urban realities by installing general urban codes for the development of private assets, and by providing infrastructure and public spaces necessary for collective life. In many of these cases, self-organized developments were facilitated and guided by rules and principles derived from informal, long-standing traditions (Akbar, 1988; Hakim, 2014; Kostof, 1991).

Things have changed, especially in the Western world, with the rise of modern town planning in the 20th century. Building on scientific surveying as a product of the Enlightenment, and in response to the needs and challenges posed to cities by the industrial revolution, comprehensive planning approaches were developed (Van der Cammen et al., 2012).
Amplified by the more directive role of public authorities, the establishment of the welfare state and a strong belief in society's malleability after the Second World War, these approaches relied mainly on blueprint plans through which the development of neighbourhoods and cities was designed in full detail (Cozzolino, 2020: 203). In this case, a set of planning rules and instruments have been installed to direct and control urban development, such as statutory land-use plans and orthodox zoning (Rantanen and Rajaniemi, 2020: 321). The underlying assumption of these types of rules and instruments is that public planning must be at the forefront when it comes to how societal, economic and ecological dynamics translate into urban change (De Roo et al., 2020).

While in some situations this might be a valuable approach, such rules and instruments have their limitations (Partanen, 2020: 304). Attempts to centrally control what should be built where and when, can often not keep up with the complexity of urban dynamics, especially in the case of large-scale transformations (Alfasi, 2018; Holcombe, 2013; Moroni, 2015), let alone that such top-down approaches would be automatically accepted by today’s society (Alonso et al., 2011). Moreover, in many cases, the instrumental use of planning rules results in the definition of detailed solutions to specific problems. As a consequence, they lose their effectiveness when the problem definition changes or different solutions become more feasible than those envisioned when these rules were implemented (Moroni et al., 2018; Van Rijswick and Salet, 2012). In other words, detailed comprehensive planning approaches may hamper a city’s ability to respond to, and deal with, new societal demands, unexpected innovations, and economic or demographic shifts (Buitelaar and Sorel, 2010; Rauws et al., 2014). As we enter an era of continuous innovation (Batty, 2018) with increasing interdependencies between socio-economic systems (Helbing, 2012), planning approaches that foster the adaptive capacity of cities (Rauws, 2017) and inspire innovative roles that planners should play in complex decision-making arenas are needed increasingly (Rijken et al., 2020: 336; Rosner-Manor et al., 2020: 251).

Rediscovering urban self-organization

The rise of ‘complexity theories of cities’ (Batty, 2013; Portugali et al., 2012) and the nature-based understanding of urban evolution (Narraway et al., 2020: 268), alongside the increasing critique of modernist technocratic planning, have fuelled renewed attention for mechanisms of self-organization in cities. Several scholars argue for a re-appreciation of the kind of principles that shaped the development of cities before modern town planning (e.g. Cozzolino, 2020: 203; Hakim, 2014). At the same time, today’s planners can develop a more fine-grained understanding of urban self-organization since simulation and modelling techniques continue to advance, and the availability of microdata on human action is expanding considerably (Singleton et al., 2018). These innovations stress the responsibility of planners to secure the vitality of contemporary cities in encountering, for instance global risks (e.g. environmental crises), the yet unknown implications of artificial intelligence and impending automated mobility and logistics systems. In this sense, it is key that planners respond intelligently to how such dynamic changes accelerate, alter or frustrate self-organization in cities, and in turn impact the wellbeing of urban communities.

In addressing this challenging task, this special issue explores possible innovation in rule-making and related instruments. It does so by directly referring to the concept of framework rules, which Moroni (2015) defines as a set of simple, relational and mainly negative formal rules suitable for complex self-organizing systems that are constantly in flux. Instead of defining a desirable configuration in detail, public authorities should provide a general institutional framework that leaves room for unplanned, spontaneous urban developments as the rules are
independent of the outcomes and keep a certain level of abstraction (see also Cozzolino et al., 2017). But how can planning approaches based on such general framework rules be tailored to the different urban challenges that cities face at diverse scales of reference?

This brings us to the question regarding which instruments can be applied in combination with framework rules for self-organizing cities. While the desire to control and prescribe future urban change is still very much present in ordinary planning practices, planning is also becoming more collaborative and sensitive to the need to accommodate citizens, entrepreneurs and collectives who aim for urban and societal change (PBL Netherlands Environmental Assessment Agency and Hajer, 2011). Therefore, crucial issues to tackle include which combination of planning rules and instruments accommodate such practices of shared decision-making, and which roles planners have in aligning these with do-it-yourself practices and experiments that try to incorporate the complexity of social systems (Rosner-Manor et al., 2020: 251). At least as important is to use technological opportunities to advance land-use regulation instruments to better respond to changing urban dynamics (Partanen, 2020: 304; Rantanen and Rajaniemi, 2020: 321). Other less explored questions, such as the issue of taxation (Minola et al., 2020: 235), may also have a great effect on the self-organizing capacity of cities.

With a focus on contemporary systems of rules, instruments and the roles of planners, this special issue explores possible ways through which planners can proactively relate to self-organization while tackling urban challenges. It does so by answering three main questions:

(i) How can the relationship between urban self-organization and city planning be conceptualized?
(ii) Which framework rules and related planning instruments are suitable for dealing with urban self-organization?
(iii) How can framework rules be updated in self-organizing cities?

Overall lessons

For each question, general lessons can be drawn from the collection of papers. Concerning the relation between urban self-organization and city planning, we conclude that this relationship is a co-evolutionary one in which channelling urban self-organization towards desirable directions of development is a delicate process.

The co-evolutionary relationship between self-organization and planning

A unique quality of urban self-organization is that it provides cities with the capacity to renew and innovate from the bottom-up. By generating new urban patterns, i.e. physical configurations, social conventions, flows of goods or people, or clusters of functions or services, it enables cities to adapt to changing circumstances. Obviously, the outcomes of urban self-organization can be valued as positive or as negative by the city community. For instance, the rapid expansion of Airbnb short-term rental flats in various cities is seen by some as a boost for the local tourist sector, while others emphasize that Airbnb practices exacerbate the affordable housing issue. In more general terms, self-organization can bring innovation to the way spaces are used; social, economic and cultural interactions take place; and services are provided, but these innovations sometimes also come with effects that decrease liveability, such as high levels of segregation, pollution or congestion.

Given the positive and negative effects of urban self-organization, planning has the responsibility to relate itself to self-organization, while acknowledging its autonomous and unpredictable nature. Directing urban self-organization, for instance, processes of neighbourhood gentrification, to particular predefined outcomes is impossible (Moroni, 2015). Instead,
interventions can, on the one hand, be oriented at accommodating and stimulating certain self-organizing processes that are seen as desirable. On the other hand, when certain emerging patterns are undesirable, interventions may aim to constrain and, if possible, even prevent them (De Roo, 2016).

Discussing the role of interventions, the contributors to this special issue stress the co-evolutionary nature between self-organization and planning. This is to say that the outcomes of self-organization can trigger planning responses, while these responses may in turn influence the direction, speed and/or scope of spontaneous pattern formation (for instance, by creating opportunities for and constraints on individual actions). In this process of mutual feedback, some urban development pathways become amplified while others peter out, and thus selection takes place (Gerrits, 2008). Contributors to this special issue show that, on an operational level, such feedback loops include, for instance, mutual adaptation between area guidelines and local plans for urban (re)development sites, on the one hand, and emerging new urban patterns at these sites on the other (Rantanen and Rajaniemi, 2020: 321). The paper by Zhang et al. (2020: 287) indicates that co-evolution may also take place at the level of urban governance arrangements as a whole, in which emergent patterns trigger demands for coordinated action, in turn giving rise to forms of shared governance. The result is a multi-layered governance landscape that affects the possibility spaces of self-organized urban dynamics by generating pockets of autonomous change while closing others.

Channelling urban self-organization via planning interventions is a difficult and delicate process. It is difficult since it is hard to detect emerging patterns at an early stage, let alone to predict their eventual influence on the city and how it will be perceived. Also, the fact that the plurality of actors contributing to such emerging patterns does not have direct responsibility for the outcomes limits the range of possible interventions (Rauws, 2016). Channelling self-organization is a delicate matter as attempts to stimulate or regulate specific individual actions may also hamper more desired forms of urban self-organization, thus reducing the adaptive capacity of the city. Therefore, planners need a repertoire of planning interventions that allows them to truly work with urban self-organization instead of against it. Establishing such a workable mix of rules and instruments offers planners a way to differentiate their interventions to a variety of urban challenges and in accordance with the available means and political mandate.

Framework rules and complementing instruments

Collectively, the papers of this special issue contribute to a differentiated toolbox for planners. With regard to the main focus of the special issue, i.e. framework rules, the authors agree that to make better use of local knowledge, a legal framework should leave the development of specific solutions closer to urban agents and their territorial contexts. This means moving from a prescriptive approach in rule-making to one that is more proscriptive in nature. While the former implies that planning rules are used to reach specific social-spatial outcomes, the latter recognizes the complexity of urban actions and interactions and therefore uses planning rules mainly to avoid the emergence of undesirable outcomes and to (softly) channel self-organization towards a preferable range of emergent configurations (Moroni et al., 2020: 220). In this regard, various terms are introduced by the contributors akin to the concept of framework rules, such as rule-based planning, urban codes and area guidelines (Partanen, 2020: 304; Rosnar-Manor et al., 2020: 251; Rantanen and Rajaniemi, 2020: 321). They all stress, in their own way and at different scales, legally binding frameworks that leave room for a diversity of actions and urban configurations.

As importantly, the contributions indicate that certain framework rules need to be complemented with other instruments to successfully enable as well as guide urban self-organization towards preferred outcomes. In his plea for adaptive neighbourhoods, Cozzolino (2020: 203)
highlights the need for ownership systems in which the overall distribution of design responsibility is shared among many independent urban agents. Minola et al. (2020: 235) argue for a radical revision of tax systems to provide financial conditions that support decentralized value creation. Moroni et al. (2020: 220) stress the importance of carrying structures, referring to vital infrastructures and services that foster action and interaction, which is a quality that might indeed be better understood by learning from nature (Narraway et al., 2020: 268).

As regards possible innovative roles for planners, Rosner-Manor et al. (2020: 251) suggest planners should engage in local placemaking activities if they want to link formal urban codes to the informal place-based community codes, while Rijken et al. (2020: 336) envision the role planners as ‘brokers’ in making explicit the potential impact of new developments in correspondence to hardly controllable demographic trends.

In providing possibilities to enable and constrain urban self-organization, the suggested instruments differ in time spans and scales. This differentiation is important as the ongoing self-organized urban dynamics and the adaptation of planning interventions cannot and should not necessarily evolve at similar speeds. Vital infrastructures that serve as carrying infrastructures typically serve long time periods. The same applies to framework rules; as per definition, an unstable rule is not a rule (Brennan and Buchanan, 2000). Meanwhile, experiments, and to some degree community initiatives, are often more transient in nature. In a similar vein, some instruments are suitable for guiding higher level dynamics (e.g.
at the city level), while others serve best for dynamics at lower scales (e.g. the neighbourhood level). The former includes, for instance, taxation instruments (Minola et al., 2020: 235), and the latter, the design of public spaces (Cozzolino, 2020: 203). Using the different degrees to which rules and instruments are suitable for tailoring interventions to the time and place specifics of urban issues enables planning to be sensitive to rapid changes and to phases of relative stability in self-organized dynamics.

While such a situational understanding can help in advancing the toolkit for planners in dealing with self-organization, it remains crucial to acknowledge, in the first place, that capacity to guide self-organization in cities is limited. This is not only because of the spontaneous nature of urban self-organization itself, but especially because attempts to influence self-organizing dynamics in one urban system may have (non-linear) cascading effects in other related urban systems. In short, any planning intervention in cities must deal with the fact that cities are an interconnected whole, implying that every intentionally driven change may also potentially generate (undesirable) unintentional effects. Thus, a repertoire of interventions only remains productive over time with the help of systematic evaluation and updating of the alignment between planning and urban dynamics. This brings us to the final question on rule revision.

Looking for workable approaches in organizing rule revision

Framework rules, as envisioned in this special issue, provide a general framework for guiding urban development. They are not meant to control urban self-organization, but to condition these processes to some degree. Despite the need to have stable and simple framework rules, contributors show that rules might need to be revised once in a while (Partanen, 2020: 304; Rosner-Manor et al., 2020: 251; Rantanen and Rajaniemi, 2020: 321). The challenge is to find a balance between securing a reliable and stable framework for a plurality of actors having different needs, values and plans, and at the same time, ensuring that rules remain effective in preventing undesirable self-organization outcomes.

The starting point here is that undesirable effects should only in exceptional cases lead to rule revision. One reason is that these effects can be temporal while the revision of rules is a more complicated and costly operation, especially when taking into account that all actors need to become familiar with the rule revision in order for it to be effective. Another reason is
that when rules are frequently revised, they no longer serve as a reliable framework of actions and interactions. This is why complementing stable rules with some of the more short-term based instruments discussed above might be more productive.

While taking these constraints into account, changes in rules can be desirable at some point. For instance, one could think of a situation in which the effects derived from the development of new technologies may generate structurally disruptive challenges as regards the quality of life in urban areas. Take note of the word ‘structurally’, as this indicates that the rules are no longer effective in limiting or preventing undesirable effects of spontaneous pattern formations.

As the debate on rule revision has not convincingly entered complexity theories of cities yet,¹ we argue that two aspects need attention in furthering this topic. First, planning procedures and administrative systems are needed that support processes of rule revision in which stability and flexibility are effectively balanced. Computational techniques, GIS data and 3D model technology offer promising possibilities in developing such procedures and systems, but they also raise questions about transparency, participation and digital dependency (Partanen, 2020: 304; Rantanen and Rajaniemi, 2020: 321).

Second, studies on rule revision for self-organization should define the role of the government. For instance, from a classical liberal perspective, the government should be very wary in using rules beyond protecting an open society, property rights and individual freedom, while from a social democratic perspective, rules are also considered indispensable in reducing inequalities in the provision of welfare services and in the correction of market processes to meet collective interests. In the latter perspective, shorter cycles of rule revision may still not be considered desirable from a technical point of view, but somehow necessary in order to influence the outcomes of self-organization proactively. In short, different ethical/political understanding of society directly affects the coupling between framework rules and societal dynamics. This is why it is important to make different normative perspectives explicit when proposing or evaluating approaches for rule revision.

Concluding remarks

The adaptive capacity of cities becomes of increasing importance due to the central position of cities in today’s highly interconnected world. One way in which planning can strengthen this capacity is by facilitating and channelling urban self-organization, accepting that it is an intrinsic mechanism through which cities spontaneously and dynamically adapt to changing circumstances. This special issue shows that dealing with urban self-organization intelligently requires planners to rethink their role, as well as current systems of rules and other related planning instruments. It also provides evidence for the need for innovation in rule revision in planning procedures and administrative systems. We invite other planning scholars to join these avenues of future research.

Ward Rauws
University of Groningen, the Netherlands

Stefano Cozzolino
ILS–Research Institute for Regional and Urban Development, Germany

Stefano Moroni
Polytechnic University of Milan, Italy
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Note

1. See Alfasi and Portugali (2007) for an initial proposal and Savini (2016) for some of the potential challenges in practice.

References


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