What kind of problem is a megacity?
Planning, rapid urbanization, and self-organization

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In *The Death and Life of Great American Cities*, Jane Jacobs asked the question: «what sort of problem is a city?». Her answer prefigured today's theorizing on complex systems as she argued that cities are characterized by organized complexity. Since the publication of Jacob's classic book, cities have changed profoundly; the world's urban population has quadrupled, the Global North is no longer the focal point of urbanization, and cities' densities have been decreasing rapidly. In addition, new strands of literature have developed insights into how urban complexity, planning, and modernism might be understood and engaged in the Global South. These shifts in urbanization and urban studies raise the question whether ways of seeing and planning cities inspired by Jacobs are helpful and how they might be amended. Perhaps contemporary megacities are a different kind of problem.

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Introduction

In the conclusion to her classic book, *The Death and Life of Great American Cities*, Jane Jacobs (1961) asked the question that inspired this essay's title: «what sort of problem is a city?». Her answer is that cities are systems of organized complexity in which many variables interact over different temporal and spatial scales. In the language of today's complexity theory, the city is a complex adaptive system. Such systems are open and intricate, eluding top-down planning. The best planners can hope to do, is to try and understand the city as best as they can so that they might be able to help it along a little bit – instead of imposing their ideas, they should gently steer urban development with subtle and strategic interventions. Today, Jacobs' ideas have become dominant among planners in the Global North. While top-down or authoritarian planning has not disappeared, the consensus among planners is that their task is to guide urban development along instead of dictating in detail what neighborhoods and cities should look like.

What is the relevance of Jacobs' vision of cities and planning for today's rapidly urbanizing world? How well does her vision travel to the African and Asian con-

texts where cities have been growing most prodigiously? One reason to explore this question is that researchers of cities in the Global South criticize modern urban planning along similar lines as Jacobs. Watson (2009, 2262) argues that in «much of the global South, master planning, zoning and visions of urban modernism are still the norm», while Robinson (2006) suggests that urban thinking on the global South is mired in developmentalism and modernization theory. These modernist planning instruments are often ineffective and potentially harmful. For instance, Monstadt and Schramm argue that the modernist ideal of the «networked city» misrecognizes Dar es Salaam's hybrid, unequal and heterogeneous infrastructural arrangements; Kamate (2011) shows that planners in Zimbabwe call upon zoning regulations to violently suppress informal practices of poor urbanites while bending rules to accommodate the interests of the affluent. More generally, the literature on Southern urbanism points to a disconnect between rigid modernist plans that envision linear urban development and everyday practices of city-making (Roy 2005).

These critiques of modernist planning echo those of Jacobs in that they criticize modernist planning's tendency to suppress hybrid, quotidian, informal, and incremental practices of city-making. Since the target of critique – modernist planning – is the same, this raises the question whether Jacobs' conception of cities as complex systems could suggest an alternative understanding of cities and planning in the Global South. Indeed, some scholars have already explored how a conceptualization of cities as complex adaptive systems would allow for a more flexible approach to planning that seeks to work with self-organization instead of suppressing it. Prosper Korah and colleagues have explicitly called for African planners to embrace a complexity perspective to better incorporate bottom-up initiatives (Korah *et al.* 2017). At the same time, however, it is clear that Jacobs' ideas reflect the specific historical and geographical conditions in which they originated. For instance, there is little in Jacobs' work that would help grasp the legacy of colonialism or the contemporary reality of rapid urbanization. Similarly, whereas the development of urban infrastructures is a major challenge for cities of the Global South (*e.g.* Pieterse 2013), it hardly features in Jacobs' work.

Bringing Jacobs' ideas into dialogue with Southern urbanism – as both reality on the ground and a heterogeneous set of literatures – means we need to reconsider, amend, and revise some of her basic assumptions and categories; notions like «modernism» or «complexity» might have different empirical referents or practical implications depending on the urban contexts involved. If cities in the Global South are indeed a problem of organized complexity, then how they are organized and how are they complex? And what are the implications for planning?

This essay is structured as follows. I first revisit Jane Jacobs' contribution to the understanding of cities. I revisit Jacobs' work for those not be familiar with the

canon of urban studies but also to highlight the specific conditions that shaped her understanding of cities as complex systems. I then describe urbanization trends in general terms, asking what sorts of cities are presently in the making and what sorts of challenges they raise. Finally, I explore the dynamics of planning and self-organization, suggesting how a conception of cities as complex systems might help move beyond modernist urban planning.

1. Jane Jacobs

Jane Jacobs rose to fame as the nemesis of Robert Moses, the modernist master planner of New York. When Moses looked at the city of New York from above (and that was his preferred vantage point), he saw inefficiency, even chaos. It was his task as a planner to bring order to the city, to get it moving. He believed wide roads were like arteries, seeing cars as the city's lifeblood. To make way for those roads, he had to cut through or even raze neighborhoods. In one of those neighborhoods lived Jane Jacobs, a journalist. She looked at the city not from above but from below. And what she saw was quite different from what Moses saw. She did not see chaos but an intricate web of social relations. Whereas modernist planners like Moses wanted to improve efficiency by creating separate spaces for different functions, Jacobs suggested that mixture and diversity – of people, buildings, and functions – nourished the vitality of urban life.

Jacobs' discussion of «slums» is particularly relevant since many of the world's new urban inhabitants, and the majority of new urbanites in Africa, will live in areas designated as slums (Pieterse 2013, 23). While modernist planners abhor slums, for Jacobs they are, like cities, exemplars of organized complexity. She argues that the brilliance Boston's North End slum lies in its capacity to nourish private initiative. Slums' dense and intricate lay-out allows for a wide range of formal and informal entrepreneurship for which there is no place in the modernist schemes with their strict separation of living and working. Slums develop incrementally as residents invest in their dwellings, upgrading them when they have the opportunity and according to their specific needs.

Jacobs thus elevated slums from a planning disaster into a template for progress. She was part of a broader movement that also included John Turner, the anarchist architect who, like Jacobs, celebrated the ingenuity of urban dwellers. Instead of developing plans of his own, he supported the efforts of communities of Latin-American urban residents to construct their own housing and neighborhoods. Although Jacobs and Turner took on different roles, they both viewed cities not as artefacts construed through expert design but as collective creations assembled through asynchronous, uncoordinated, iterative, and distributed efforts by everyday city builders.

2. Richard Sennett

As we explore the relevance of Jacobs' vision of cities, we must acknowledge that her particular understanding of urban complexity was much shaped by the context in which she lived and worked. Greenwich Village, the area she sought to protect against Robert Moses, is very central, dense, and vibrant – it's the sort of place that conforms to conventional understandings of what an urban neighborhood looks like. Much the same is true of the other areas she describes in her book, including the Boston slum.

Central areas in cities of the Global North are obviously still important but much has changed since she wrote *Death and Life of Great American Cities*. The world's urban population has *quadrupled* – a dazzling statistic. Just as important, the Global North is no longer the focal point of urbanization. The number and proportion of urban residents have been growing rapidly and will continue to grow in the coming years, especially in Africa and Asia. These geographical shifts in urbanization raise the question whether ways of seeing and planning cities inspired by Jacobs should be abandoned or amended.

One response to these questions comes from Richard Sennett (2019) whose work can be read as an extended dialogue with Jane Jacobs. Like Jacobs, New York defines Sennett's urbanism, but in recent years he has sought to extend his practice and thinking to cities of the Global South. In *Building and Dwelling*, he recounts his conversations with Madame Q, a Chinese planner. She contributed to the planning of China's sprawling suburbs of high-rise residential towers but, late in life, felt that the transition to this new urban modernity had been too sudden and comprehensive; too much of the old city had been torn down too quickly. A Jacobsian at heart, Sennett sees the high-rise towers as a nightmarish urban landscape with festering crime and endemic depression but, to his surprise, Madame Q disagreed. She felt that Jane Jacobs, as a champion of slow growth and bottom-up politics, was «too American». Slow growth, she felt, is only for rich countries. The idea of spontaneous order might have worked for Greenwich Village but it does not work for the sprawling cities of China.

Madame Q's remarks suggest that we might need a different window into dynamics of urbanization. Looking at the intricate web of relations in a centuries' old neighborhood is intriguing but does not quite capture the grandiose and occasionally brutal coming of new urban worlds that is presently unfolding. Let us, therefore, look at urbanization and cities at the largest of scales before returning to the question of planning megacities.

3. A view from the sky

As has been repeated ad infinitum, the world's urban population has been growing rapidly and will continue to do so in the coming decades. This growth extends to all places in the urban hierarchy, from small towns to megacities. If we define megacities as cities with a population of more than 10 million inhabitants, then their number has increased from 8 in 1970 to 27 in 2010. Between 2010 and 2020, the number of megacities is estimated at 37. While very large cities pose problems of their own, in my view the main issue here is not the mere size but growth.

What form does rapid city growth take? Here I want to draw on research conducted by professor Solly Angel and his group at New York University (Angel 2018). Angel's perspective is very different from Jacob's. He looks at cities from above, even from out of space. His raw data consist of satellite imageries that he uses to chart the growth and shape of cities. Rather than grounding his understanding in any one place, he looks at what he calls the «universe of cities». Such a view of cities – from afar and in search of universals – has often been criticized but it can help to grasp some general patterns. As we will see, while his perspective and method are very different from Jacobs', he too considers cities as complex systems. What we ultimately need to do is to connect this very general level of analysis to more local and situated understandings (*e.g.* Lawhon *et al.* 2014).

Angel (2018) relies primarily on satellite images. His database comprises 200 cities that are representative of a total of about 4,231 cities with a population of more than 100,000 inhabitants. Using this sample of 200 cities, we can understand general trends in terms of population dynamics, city growth, and densities between 1990 and 2014. He selected 10 cities for more detailed analysis, allowing us, for instance, to see differences in growth between in the old core (the areas built before 1990) and the new urban periphery (the areas built after 1990). One finding from Angel's research is that the city areas he identified in 1990 have seen population increases; on average their populations have grown by 50 percent. Since this growth occurred within the city limits of 1990, it means that densities increased. So just looking at these core areas, the areas that were already part of the city in 1990, we see more populated, denser cities. This conjures up the image of a *Planet of Slums*, the title of Mike Davis' 2006 book. It is a pessimistic, dark account of the new urban world. Neighborhoods like Old Fadama in Accra, Dharavi in Mumbai, Makoko in Lagos, Kibera in Nairobi, Rocinha in Rio de Janeiro have gained global infamy and are sometimes held up, by Mike Davis and others, as harbingers of the new urban future.

But at least two important qualifications are in order. First, impoverishment is not the only or even the dominant trend. There are certainly tendencies towards

dispossession and marginalization. Often people have been pushed off their land or forced to escaped from conflict only to find themselves barely able to survive in cities. But informal neighborhoods, even the most impoverished, often offer to their residents prospects for a better life (Perlman 2010). And if we take a much broader look at aggregate statistics, such as those reported by World in Data, then we see remarkably clear trends towards improvement. For instance, the number and share of people with access to improved water has increased substantially. The same is true for the number and share of people with access to electricity. These statistics are not only about cities or slums but the move to cities is certainly correlated with improvements. It is important to note that there is intense debate on these statistics; how the indicators are defined and operationalized matters for the patterns we find. Moreover, it is clear that as some kinds of inequalities or forms of impoverishment decline, others become more pronounced and important. Still, the statistics do help to see that Davis' dystopian diagnosis, itself largely based on cross-sectional data, does not comprehensively capture urban trends. They further suggest that infrastructures for water and electricity are developing in spite of the widely reported failures of modern planning. As I argue below, this is, at least in part, due to self-organization, with residents taking on the planning and development of infrastructure.

4. Planning challenges

A second qualification to the idea that we are entering a world of slums is that the predominant trend is not one of concentration but of diffusion. While it is true the urban areas of 1990 saw an increase in population, an even more pronounced trend in Angel's research is that cities are expanding rapidly and that population densities are decreasing (Angel 2018). This trend is evident throughout the world but it is especially pronounced in developing countries; the emerging urban world is not one where people are packed together in inner cities but one where people spread out. The areas that were added to cities – the new urban peripheries – absorbed 61 percent of total urban population growth. In developing countries, the spatial extent of cities grew by 6.7% per year compared to 4.7% population growth. Cities' spatial extent – that is: their total area – expanded with 176% between 1990 and 2014. As a result, average densities declined from 111 to 66 residents per hectare.

These numbers suggest profound transformations that escape from view when we focus on the central areas of cities, as Jacobs and many urbanists after her did. Angel's approach, his view from the sky, directs our attention to new urban areas that are as vast as they are unremarkable. The new urban peripheries lack the

impressive skyscrapers of central business districts and they do not capture the imagination in the way bustling inner-city slums do, which is why they do not attract the attention of tourists, academics, or journalists. But the peripheries define cities – they are in important part the present and future of human societies and we must understand and come to terms with them (Keil 2017).

In this context, Angel highlights a fundamental attribute of the emerging urban world, namely that it is not easily contained (Angel 2018). Planners have attempted to increase density and prevent urban sprawl but on the whole they have, to put it mildly, not been successful. The sprawling urban fabric eludes the control of planners (Owusu 2013). The new neighborhoods are generally constructed without much regulation or government intervention. With Jane Jacobs in mind, we might think that this would create the space for the self-organized, incremental development of vibrant neighborhoods. But this is not what Angel's research finds (Angel 2018). Instead of spontaneous efficiency, he finds a dysfunctional urban fabric. The low densities of the new urban peripheries create major issues in terms of environmental damage and energy inefficiency. Moreover, compared to core areas, the new urban peripheries have larger building blocks, narrower streets, and fewer four-way intersections. Jacobs herself identified large building blocks as an obstacle to vibrant neighborhood life and the other factors, too, limit opportunities for social interaction and are indicative of transport inefficiencies.

5. Infrastructural challenges

Another major challenge of the new urban peripheries is that it is costly and difficult to build public infrastructures and provide collective services. Urban expansion is often unplanned and erratic, making it difficult to anticipate where state services where will be needed (Owusu 2013). Moreover, low densities increase the costs of infrastructure, creating a further burden on governments that strapped for funds (Pieterse 2013). We can therefore expect that the provision of amenities and services in the new urban peripheries is very uneven (Bartels *et al.* 2018, 2020). While we have a number of studies that suggest this is indeed the case, it is challenging to examine access to infrastructures and services at scale since there is a dearth of data and virtually no comparative data on access to basic services (Pieterse and Parnell 2014, cited in Ammann and Forster 2018, 5).

Although data scarcity remains an issue, we can for some cities compare the old core with the new urban periphery (Ramos and Uitermark 2021). When we look at electricity, we find that coverage is generally high (Table 1). Although the differences are small, we do find that the periphery is less connected than the core. Accra is the only exception among the cities for which we have data: there the

Table 1 **Access to electricity around the year 2010 in cities for which data is available in the Database on Urban Inequality and Amenities (Ramos and Uitermark 2021). Years may differ based on the timing of the census**

	No electricity %	
	Core	Periphery
Accra	5.0	19.4
Addis Ababa	0.3	2.9
Alexandria	0.3	0.7
Cairo	0.7	0.7
Cebu	5.9	7.9
Manilla	2.5	4.1
Santiago	0.5	0.4

Table 2 **Access to piped water around the year 2010 in cities for which data is available in the Database on Urban Inequality and Amenities (Ramos and Uitermark 2021). Years may differ based on the timing of the census**

	No piped water %	
	Core	Periphery
Accra	28.9	41.4
Addis Ababa	0.1	4.4
Alexandria	2.9	2.4
Bangkok	2.5	31.7
Buenos Aires	0.6	2.4
Cairo	3.0	4.6
Manilla	40.7	49.3

difference is 14 percentage points. Differences in access to piped water are more pronounced (Table 2). Accra again shows a large difference and so do Bangkok ad Manilla. Where coverage is not comprehensive, there are stark differences between the core and the periphery.

These patterns suggest that access to utilities is generally uneven, with the periphery being underserved compared to the core. An optimistic reading is that peripheral areas will eventually catch up, that they might lag behind but they are moving in the same direction. But there is also something else going on: especially on the urban periphery, the fragmentation and privatization of infrastructures reflect and reinforce segregation (Graham and Marvin 2001). We see hints of this when we look at sewerage for which we have data on four cities (Table 3).

Table 3 **Access to sewerage around the year 2010 in cities for which data is available in the Database on Urban Inequality and Amenities (Ramos and Uitermark 2021). Years may differ based on the timing of the census**

		Sewage system (public)	Septic tank (private)	Not connected
Alexandria	Core	84	3	13
	Periphery	69	11	21
Buenos Aires	Core	66	19	15
	Periphery	28	40	32
Cairo	Core	81	3	16
	Periphery	64	6	30
Mexico	Core	98	1	0
	Periphery	87	10	2

In all four cities, the public infrastructure is most developed in the core areas. In three out of four cities, a clear majority of residents are connected to the public sewerage. The pattern is different for the new urban periphery. A sizeable group is not connected to the public system but has found a private solution: they dispose their waste in a septic tank. Another sizeable group does not have any connection to sewerage. Infrastructural fragmentation here equals infrastructural inequality: poorer residents who cannot afford a private solution, in this case a septic tank, suffer the underdevelopment of public infrastructure in the peripheries (Uitermark and Tieleman 2020). This not only means that there is stark inequality in water provision between the rich and the poor but also that the rich lose interest in maintaining the quality of the public pipe network. Seen in this light of these findings, the discrepancies between cores and peripheries we find in a number of cities might not be transitory. What we see instead is that the type of public infrastructure that has connected cities and fostered equality in terms of services fails to get off the ground on the urban periphery.

6. Harnessing or facilitating self-organization

Let me now turn to the question of how to respond to the type of problem that the megacity poses. Today's new urban peripheries, like Jane Jacobs' urban neighborhoods, are examples of organized complexity in the sense that they elude planning and develop through self-organization. But while they are the same *kind* of problem, they are not the same problem. Instead of the dense and intricate structures and networks that Jacobs observes, we find the that the dominant theme

of urbanization is spatial expansion; cities are not becoming denser but sparser. And instead of urban infrastructures knitting different neighborhoods and groups together, we find fragmentation.

This raises practical and political questions. For Jacobs, self-organization and emergence are to be valued and protected – the collective intelligence of urbanites is infinitely greater than the professional intelligence of planners. But looking at the new urban peripheries, we find that they are at risk of self-organizing into inequality and inefficiency. The rise of the periphery raises serious environmental, planning, and infrastructural challenges, which means that merely relying on the harnessing of self-organization runs the risk of amplifying emergent imbalances and inequalities (Uitermark 2015) – in this sense, Jacobs does not travel well. But in a different sense, the challenge of how to plan 'rogue urbanism' and 'emergent cities' (Pieterse and Simone 2013) is similar to the task Jacobs took on: to understand how self-organization works so that it can be harnessed and steered rather than negated.

How would this look? On the one hand, research finds that infrastructural development can and does take place through distributed and incremental extensions and modifications (*e.g.* Silver 2014, Anand 2017) – no master plan or concerted state action is required for the development of fine-grained and comprehensive distribution networks and home connections. In this sense, infrastructural development can occur through self-organization. But, on the other hand, such fine-grained infrastructural development generally relies on large-scale investments of the state in what we may refer to as the backbone of infrastructural networks, such as treatment plants and main lines in the case of water or generators in the case of electricity. This would then suggest that self-organization can be successful to the extent that the state provides an institutional and infrastructural framework. Let me illustrate this general principle through two cases.

The first case is in Tanzania. The economists Michaels (Michaels *et al.* 2021) studied a policy program, called Sites and Services, that was implemented in the 1970s and the 1980s. Its basic philosophy was to create a framework for self-organization to take place. Government officials provided some very basic infrastructure in the form of unpaved roads, water mains, and formal plots. A couple of decades later, the researchers conclude, the designated neighborhoods were thriving. Since they are economists, they measure the neighborhood's vitality in monetary terms, concluding that a modest investment of 3 to 8 dollar per square meter generated value of more than a 100 dollars. But regardless of the exact monetary value, what is interesting for me is the underlying philosophy, which is that the government provided a framework for self-organization to play out: the government *facilitated* self-organization. Another interesting finding from this study is that investing in basic infrastructure worked better than a policy upgrading slum areas that received roughly

the same amount of financial support. Although people in slums improved their private dwellings, the neighborhood quality lagged behind. In particular, the investments in public infrastructure, like roads and water mains, were not so effective. *Harnessing* self-organization, Jacobs' preferred strategy, only worked partially and did not resolve problems of inequality and infrastructural fragmentation. While residents had benefitted privately, they did not benefit collectively.

What this suggests to me is that even modest investments in basic infrastructure generate high yields, both for private households and the neighborhood at large. Rather than harnessing self-organization, the Sites and Services program *facilitated* self-organization, with impressive results. If the state provides a framework that facilitates self-organization, it puts residents in the position to create the sorts of intricate networks that require small investments but detailed terrain knowledge.

A second case comes from the new urban peripheries of Ghana. Land use planning and infrastructural developments are notoriously difficult in Ghana, resulting in cities that grow haphazardly and inequitably. A relic of British colonization, urban planning is centered on rigid plans and focused on correcting transgressions instead of maximizing democratic participation (Korah *et al.* 2017). While urban plans are comprehensive, they are rarely effective. As Korah *et al.* (2017, 362) wryly remark, «the availability of a formal plan does not guarantee certainty about future urban development». This raises the question whether there are more productive ways of conceiving the relationship between planning and self-organization.

Let us look in some detail at one example from Sebrepor, a neighborhood on the edge of Accra (Uitermark and Tieleman 2020). There, my collaborator Joris Tieleman and I met Mr Jacob. No person has played a bigger role in connecting Sebrepor to the water supply network than Mr Jacob. Mr Jacob is a retired army plumber and he was among the first to settle in what is now Sebrepor. Using his connections in the military and the Ghana Water Company, he first got permission to put up a standpipe that got its water from the nearby army base. For Mr Jacob, however, the standpipe was only the beginning. He and other neighborhood residents established the Water Committee with the goal to connect the entire neighborhood to the standpipe. Wealthier households were the first to connect to the network. They had to pay for the costs of their home connection, the labor of Mr Jacob and other workers, *and* additional pipes to expand the distribution network. After the initial investments, the costs of connections dropped, and progressively more people and places were added to the network. Today Mr Jacob's network covers Sebrepor as well as several adjacent neighborhoods.

What does this example show? It shows that self-organization is indeed a formidable force in the new urban peripheries (Nunbogu *et al.* 2018). Whereas in cities in the Global North infrastructures are typically planned and built centrally, in the

case of Sebrepor, as in many other examples in the global South (*e.g.* Monstadt and Schramm 2017), the water infrastructure developed incrementally and iteratively. The distribution network expanded far and wide without much involvement or direction from the government. But I think it also shows that this self-organization is only possible when the state provides a framework for self-organization to occur. Mr Jacob and his collaborators can lay the distribution network but they are only able to do so because there is a water main. And for the water to actually flow out from the tap, they depend on Ghana Water Company's water treatment plants, mainline infrastructure, and booster stations. I think the lesson here again is that self-organization is efficient and effective to the extent that it supported by a material and institutional framework.

7. Conclusion

Jacobs' landmark contribution, *Death and Life of Great American Cities*, provided a vigorous critique of modernist planning rationalities and marked a shift towards more collaborative forms of city-making. While Jacobs has for good reasons become an icon of the planning profession, her critique of modernism might easily be instrumentalized to argue against any intervention against inequality. Moreover, Jacobs' ideas were very much shaped by the conditions in which they were conceived – central New York in the 1960s – which should caution against any simple transposition to different contexts. When exploring the relevance and resonance of Jacobs' ideas, we should expect no more than affinities and points of orientation. Nevertheless, there are sufficient parallels between Jacobs' critiques of modernist planning in the United States and contemporary critiques of modernist planning in countries of the Global South to warrant a dialogue. As part of a broader effort to consider planning and urban development from a complexity perspective (Korah *et al.* 2017), I revisited Jacobs' critique of modernist planning in light of contemporary dynamics of urbanization. While there are important differences, the similarities suggest that one of Jacobs' ideas – to view cities as systems of organized complexity – is worth considering for epistemological and practical reasons.

Epistemologically, conceiving of cities as complex adaptive systems means considering micro-dynamics and macro-patterns in conjunction. In practice, there has been sharp divide between literatures focusing on different levels. Much of the academic literature on Southern urbanism, and African urbanism in particular, has focused on the micro-dynamics of urban development, emphasizing «nuance, texture, variability, diversity and of course, contingency» (Pieterse 2011, 6). The investigation and explanation of broad trends across countries has received less

attention from academics (*ibidem*) and largely remained the provenance of governmental and non-governmental organizations. This division of labor is unfortunate; much more research is needed to bring out how broad patterns emerge from the micro-dynamics of urban development and, conversely, how inherited and contemporary structures of inequality shape the minutiae of everyday urban life. While complexity approaches offer ways of addressing the linkages between different levels, they also suffer from blind spots. Complexity approaches have historically emphasized bottom-up approaches, with the effect that larger structures and processes – involving the state, colonialism, or capitalism – often escape from view (Uitermark 2015). The challenge, in other words, is not only to see connections across levels but to take into account different kinds of structures and processes.
If we consider cities in the Global South as systems of organized complexity, what sorts of general patterns do we see? We do not find that they are degenerating into a «planet of slums» – not only are there improvements in a number of key domains, we also find that cities' population densities are dropping precipitously. While planners often try to contain urban sprawl, this tendency towards spatial diffusion is a constant across different contexts (Angel 2018). This raises specific challenges. I here mainly focused on the challenge of infrastructure development and argued – in line both with Jacobs' stress on self-organization and with the literature on Southern urbanism's emphasis on the incremental and iterative development of infrastructure – that the growth of intricate water and electricity networks does not require master planning. But this is not to say that there is no role for the state. Self-organization relies on state investments and takes place within conditions set by the government: fine-grained networks of complex systems only emerge within favorable frameworks. The challenge, then, is to boost the role of the state to increase and equalize access to infrastructure without relapsing into the myopia of modernist planning.

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