

The Urban Mind

Cultural and Environmental Dynamics

Edited by
Paul J.J. Sinclair, Gullög Nordquist,
Frands Herschend and Christian Isendahl



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15. Innovative Memory and Resilient Cities: Echoes from Ancient Constantinople

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ABSTRACT

This chapter uses insights from resilience thinking in analysing a two-thousand-year period of ancient and modern Constantinople, addressing one of the great challenges of the Urban Anthropocene: how to nurture an ecologically sound urbanisation. One of the lessons is that Constantinople maintained a *diversity of insurance strategies* to a greater degree than many historical and contemporary urban centres. It invested heavily not only in military infrastructure but also in systems for supplying, storing, and producing food and water. From major granaries and at least four harbours the citizens could receive seaborne goods, but during sieges the trade networks broke down. At those times, when supplies ran dry, there were possibilities to cultivate food within the defensive walls and to catch fish in the Golden Horn. Repeated sieges, which occurred on average every fifty years, generated a diversity of social-ecological memories – the means by which the knowledge, experience, and practice of how to manage a local ecosystem were stored and transmitted in a community. These memories existed in multiple groups of society, partly as a response to the collapse of long-distance, seaborne, grain transports from Egypt. Food production and transports were decentralized into a plethora of smaller subsistence communities (*oikoi*), which also sold the surplus to the markets of the city. In this way Constantinople became more self-reliant on regional ecosystems. An additional result was that the defensive walls were moved, not in order to construct more buildings but to increase the proportion of gardens and agricultural land. In a comparison with Cairo, it can be seen that these innovations related to enhanced self-reliance in food production made it possible for

Constantinople to bounce back from extreme hardships, such as extended sieges, without collapsing into chaos or moral decay. Transformed urban morphology of the city would simply remind residents, through the visual presence of a living garden culture, of the importance of the latter for food security. Without the gardens the long intervals between sieges would probably have been enough to dissolve living memory. Hence, the urban resilience of Constantinople was enhanced, promoting well-established old regimes and traditions of importance for producing ecosystem services to society while at the same time testing and refining new and successful regimes, or in other words through the interplay of memory and innovation. Currently, and even more so in decades to come, the mindsets of urban people hold power in a global arena. Questions related to how the loss of green space in metropolitan landscapes will affect worldviews are worrisome since it is the desires and demands of urban people that will affect future decisions and essentially determine the fate of the planet. People throughout the world, and not least in Western societies, need to be constantly reminded of our dependence on a living planet and stay motivated to support it. Social-ecological memories related to local food production have to be nurtured in urban landscapes as well, and an urban morphology is needed that strengthens ecological awareness across urban populations rather than the opposite.

Challenges for the urban Anthropocene and sources of resilience

The previous chapter focused on the resilience of Constantinople by analysing metabolic flows of ecosystem services. We have used insights from resilience thinking¹ when searching for sources that enabled the persistence and development of Constantinople despite regularly occurring disturbances such as sieges, loss of territory for agriculture, and collapsed trade networks. Our discussion contributes to the theory development based on institutional theory² and on social-ecological systems thinking with a focus on small-scale, self-sufficient, rural societies.³ However, societies of this type make up only a minor portion of the world population today. What is still largely lacking in social-ecological resilience theory is a treatment of cities in general and large urban agglomerations in particular. This includes the historical lessons that can be drawn from distant urban pasts in regard to sustaining ecosystem services during times of hardship and crisis.

Currently, with increasing urbanisation we are entering what may be termed the Urban Anthropocene, an era in which up to 66% of the human population will live and work within urban landscapes a development which may have increasing, perhaps ominous or disturbing, environmental impacts.⁴ Unless current trends of urban development are transformed, the actions and desires of urban populations will dominate global material flows, leaving large, destructive footprints on a planetary scale. Urban innovations need to interact reciprocally with the biosphere in order for civilization to operate in safe development trajectories.⁵ Two of the grand challenges of the Urban Anthropocene are therefore 1) to increase understanding of how to mitigate the environmental burdens of cities, and 2) at the same time learn how to build local urban resilience to uncertain global

1 Folke *et al.* 2005; Folke 2006; Walker & Salt 2006.

2 Ostrom 1990.

3 Berkes & Folke 1998; Berkes *et al.* 2003.

4 UN 2009.

5 Rockström *et al.* 2009; Ernstson *et al.* 2010.

futures. This chapter aims mainly to contribute to discussions of the second challenge by exploring insights in the previous chapter, and it attempts to convince the reader that such urban resilience and innovation building must interact positively with the mindsets of urban people and the biosphere as a whole.

Resilience was first developed by systems ecologists as the ability of a system to maintain its structure and function after disturbance, or as “the capacity to lead a continued existence by incorporating change”.⁶ The perspective focuses on the short periods of disturbances and crises, and possible bifurcation points (tipping points) where systems evolve into alternative trajectories. This line of research includes thinking about how to remain in desirable trajectories as well as how to evoke transitions from undesirable ones.⁷ It thus requires understanding of historical trajectories of structural change emerging from localized interactions in complex adaptive systems,⁸ and how experiences of such change are stored, interpreted and used. Resilience thinking, including multiple non-linear processes involved in a city’s historical development, hence provides a different basis for theoretical explorations.

Resilience thinking, and indeed historical common sense, teaches us that any system is prone to surprise. Multiple case studies show that the most prominent resilience principle is *diversity*. It is the diversity of complex social-ecological relations and features that underpins the production of ecosystem services, and that bolsters self-organization, recombination and innovative capacity in relation to disturbance.⁹ Since humans form part of social-ecological systems, the diversity of urban minds (or mindscapes) and how they connect is equally important for resilience. All the more since it is the habits of the mind that govern the diversity of social practices, and the methods and places for food production, and that consequently form part of the potential success of any attempt to navigate change of urban metabolism in relation to disturbance.

These reflections can also be brought to bear on the Constantinople story, which is one of diversity and change and of a flexibility of the urban mind. A number of factors helped Constantinople to withstand its challenges, in particular sieges that undermined trade networks of ecosystem services. Constantinople maintained a *diversity of insurance strategies* to a greater degree than many contemporary urban centres or agglomerations. From a military defence perspective it was surrounded by water from all sides but one, and opponents with no major naval power were forced to face the impressive Antonine walls. The Byzantine fleet in itself was for a long time very capable. It both dominated the sea and was able to maintain supplies through some enemy blockades. The rulers of the city invested heavily not only in military infrastructure but also in systems for supplying and storing food and water. Water from the aqueducts was stored in a series of reservoirs that were built reusing components of previous buildings. From major granaries and at least four harbours the citizens could receive seaborne goods. And very important was that when sieges were efficient and supplies ran dry, there were also possibilities to cultivate food within the Antonine walls and catch fish in the Golden Horn. Hence Constantinople had a variety of options to sustain the city with food. These options were maintained institutionally and defended in times of crisis as well as times of prosperity.

6 Holling 1973; 1986.

7 Walker & Salt 2006; Rockström *et al.* 2009.

8 Levin 1998.

9 Berkes *et al.* 2003; Ostrom 2008; Scheffer & Westley 2007.

Knowledge and values concerning resilience building were stored in multiple groups of society, partly as a response to repeated food shortages and disturbed urban metabolism. There was a clear shift in the management of food supply compared to the situation before and after the 7th-century crisis when the empire lost many of its provinces. The huge 6th-century city was heavily dependent on long-distance traffic with large ships, transporting grain from Egypt to the heart of the empire. This complicated industry, in many ways an early mirror of the present-day global transport system, was thoroughly governed by the state. The crisis, related to the loss of productive farmland and trade networks, did not change the dominant modes of government since the economic decisions in the city were mainly made by the state. Decisions related to food production and transports were, however, decentralized. As a self-organized response, *oikoi* (houses/social communities) from this point on owned, rented, and managed farmland in, close and far away from the city.¹⁰ They produced for themselves and sold the surplus to the markets of the city. In this way Constantinople became more self-reliant on regional ecosystems. The society of the city was no longer greatly dependent on large-scale imports from distant landscapes, managed by the state. Urban metabolism thus changed in character, and simultaneously knowledge and practices concerning food production diversified into a plethora of *oikoi* in Constantinople. It was now in the interest of many diverse self-organized communities to steward their land in a way that could give them long-term returns and a surplus that could be sold in the food markets of the city. This innovation increased resilience in the flow of ecosystem services related to agriculture and gardening. The memory of past crises thus led to new and innovative ways of providing food to the inhabitants.

This shows that another key (complementing diversity) to sustained resilience in social-ecological systems is the ability to store, and possibly transform, insights over time and use them under new circumstances. This relates to the mindscapes of people, and we refer to it as the memory-innovation dialectic. We do not know exactly how and when knowledge of past metabolic regimes and adaptive strategies in cities survives and is passed on to later generations. However, historical and sociological research has demonstrated that social memory is maintained in communities, in particular in nations but also in cities, professional groups and religions.¹¹ Halbwachs' work shows how experiences are kept alive through transmission between innovative periods.¹² He argues that even though it is only individuals that remember *sensu stricto*, individual memory processes derive from social interaction and are facilitated by supra individual means shared with others including language, symbols, rituals, monuments and landscapes.¹³ Accordingly, social groups construct their own images of the world through agreed upon versions of the past – versions constructed through negotiation, not private remembrance.

10 Magdalino 1995.

11 Halbwachs 1950 [1926]; Connerton 1989; Miształ 2003.

12 Coser 1992.

13 Miształ 2003.

Urban gardens as pockets for social-ecological memory

Research suggests that urban cultivation and other nature-related practices affect urban dwellers' mindsets, particularly those related to values, practical knowledge and stored experiences.¹⁴ We focus here explicitly on social-ecological memory to capture the resilience dimension. Social-ecological memory is a special subcategory of social memory, here used as the means by which knowledge, experience and practice of how to manage a local ecosystem and its services is retained in a community, and revived and transmitted over time.¹⁵ It is, of course, dependent on circumstance and context, and it may be perfectly maladaptive to the environment, contain all sorts of ills for society, and may also block transformation by causing inertia. However, social-ecological memory captures vital relations between social groups and living ecosystems that affect the ability of people to respond to disturbance in the urban metabolism of ecosystem services. Social-ecological memory that carries knowledge and ecological practices is a reflection of the interactions of the communities of practice¹⁶ in a dialectical relationship with the physical places in which the practices are performed.¹⁷ For instance, successful responses to crises have been argued to be retained in particular collectives of urban gardeners.

Modern urban history teaches us that urban gardens have been sources of local resilience during periods of crisis. For example, during the First World War allotment gardens played a crucial part in supplying city dwellers in Britain with vegetables; the number of allotment gardens surged from 600000 to 1500000. By 1918 allotment gardens had provided 2000000 tons of vegetables.¹⁸ Allotment gardens were planted in parks and sports fields, and even at Buckingham Palace the earth was tilled to grow vegetables as part of the *Every Man a Gardener Campaign*.¹⁹ After the war the number of allotments declined abruptly. The Second World War sparked a new explosion in the number of allotment gardens, very similar to the campaign of the previous war. Such boom and bust cycles of urban allotment gardening in relation to the world wars provided relief to people in urban areas all over the Western world.²⁰ A recent example of urban gardens as sources of resilience is found on Cuba. The US blockade in combination with the later collapse of the Soviet Union caused a catastrophic shortfall in food availability, especially among urban populations. Ten years after the collapse of the Soviet Union, 400 horticulture collectives were found in Havana alone, annually producing 8500 tons of vegetables, 7.5 million eggs and 3650 tons using fossil-fuel-independent organic farming practices.²¹ These practices have not turned Havana into a rich city, but simply helped it to respond to blockades and collapsed trade networks.²²

Social-ecological memories that carry experiences such as those stored from

14 Miller 2005; McDaniel & Alley 2005; Andersson *et al.* 2007; Barthel *et al.* 2010.

15 Barthel *et al.* 2010.

16 Wenger 1998.

17 Barthel *et al.* 2010.

18 House of Commons 1998.

19 Crouch & Ward 1988; House of Commons 1998.

20 Basset 1979; Gröning 1996; <http://www.koloni.org/pdf/01.pdf>.

21 Altieri *et al.* 1999.

22 Barthel *et al.* 2011.

the world wars are critical subsets of any social-ecological system, providing sources of resilience to deal with ecological disturbances to metropolitan landscapes. Metaphorically, social-ecological memory is akin to a library, with a building, staff, lenders and organization, in which ecological knowledge and practical advice for management are reflected in how it is built, structured and organized by the people engaged in the library and in the contents of the books, with new books continuously added.

Social-ecological memory is also related to 'ecological memory', which is a concept developed in systems ecology with links to resilience thinking²³ but which has repercussions in broader traditions of research on memory within psychology and other disciplines.²⁴ It has also been broadened in discussions of environmental history and ecocritical literature.²⁵ In a city there are numerous and varied communities, and associated social memories, on different levels of society.²⁶ Specialized communities and organizations that carry knowledge and practices are developed, for instance, among urban farmers working closely in a community, among monks in the monasteries, among bureaucrats, architects and others.

Currently in metropolitan landscapes, social-ecological memory is fragile and vague compared to the powerful forces of daily demands, desires, and impressions. In that sense the urban mind is a constantly changing mix of the long waves of influence through social-ecological memory and the higher frequencies on which other values rest, for example those connected with industry, marketing and mass consumption, and thereby the contemporary urban metabolism. In this context, eroded diversity of urban minds has direct bearing on resilience, since mindsets may also be maladaptive if they are totally decoupled from local and regional environmental dynamics.²⁷ Maladaptive social memories may lead to jeopardy, since individuals have a tendency to lock into one of several interpretations of reality, and to the same behaviour as peers in communities. Historically this has led to increased rigidity and to clinging to maladaptive habits of mind as a response to crises, reducing chances for innovative change and survival.²⁸

Social-ecological memory in this respect should not be confused with individual or collective memory. It should rather be understood as relations – among individuals, their communities and physical objects – that carry place-specific experiences and knowledge. The carriers are physical features of the urban environment that perform resilient memory work and the communities of people that manage those features, including their interaction in urban-nature practices, institutions, rituals and narratives. Together the urban physical environment and the diversity of social memories and narratives shape the urban mind. As indicated above, modern examples of such physical 'memory workers' include small-scale urban gardens, which tend to serve as living libraries for the transmission of information about local climate, soils, and moisture regimes as well as about changing populations of pollinators and pest-regulating birds.²⁹ It seems that living ecosystems support social-ecological memory, and that such memories could

23 Bengtsson *et al.* 2003.

24 Neisser & Winograd 1988.

25 Buell 2009.

26 Wenger 1998.

27 McGovern 1994; Holling & Meffe 1996.

28 Scheffer & Westley 2007.

29 Crumley 2002; Barthel 2008.

easily dissolve from the urban mind if urban ecosystems are removed from metropolitan landscapes. Without these structures and processes social memory has nothing to work on, except through media like art and literature. Carriers of practical knowledge and place-specific experiences dissolve.

The question arises as to whether oral tradition in isolated farming communities can continue to exist over very long periods in urban contexts. The sad truth is probably that it can not, which is why the physical green areas, the external literature and the citywide institutions were so important in Constantinople. For instance, landscape features, institutions and organizations store practices and knowledge much better than individuals do, partly via negotiations about rules, what has been called institutional memory.³⁰ It has been argued³¹ that Aldo Leopold's classic *A Sand County Almanac* (1949) has served to remind the American mind about the collective relationship of humans with the land, and that this helps explain its enormous success over more than half a century. Related interdisciplinary research shows that documented narratives, or 'protective stories' articulated by grassroots civic ecology movements, determine success or failure when influencing the broader urban mind in matters of ecosystem conservation.³²

Research shows that landscape features, monuments and urban morphology are important mnemonic devices for people and organizations.³³ Monasteries, urban gardens, parks, and other physical structures serve as reminders of alternative uses of urban space and as opportunities to protect and foster ecosystems and public health services. If urban green spaces are transformed into brown or grey spaces such social-ecological memories may dissolve from the urban mind. The mind itself may not be enough, but the mind can more readily sustain resilient ideas if the urban fabric favours mnemonic devices that help urban people remember their dependence on living ecosystems. Institutions, narratives and gardens also need nurturing and management but they can outlive individuals many times over.

Mind-resilience dialectic

The gardening culture of Constantinople was part of a continuum of social memory going back to its foundation.³⁴ Analysing the resilience of Constantinople clearly shows that its garden infrastructure in the urban landscape played a vital role for its persistence, which is in line with research on ecological memory that revolves around dialectical relationships between physical landscape features and renewal of ecosystem processes.³⁵ As part of the complex urban fabric of Constantinople, the green infrastructure served the city well for a long time precisely because it functioned as a vehicle for a social-ecological memory that retained certain subsistence competencies, thus lowering vulnerability, but at the same time allowed for diversity in problem-solving mechanisms in the plethora of *oikoi* that would support such memory. Drawing on the notion that acquisition of so-

30 Walsh 1991.

31 E.g. Crumley 2007.

32 Ernstson & Sörlin 2009.

33 Miztal 2003; Schama 1995.

34 Cf. Crumley 1994; Bellwood 2005.

35 E.g. Bengtsson *et al.* 2003.

cial memory typically follows crises,³⁶ and that the average time between sieges was about 50 years, it is reasonable to assume that between the periods of siege the practice, knowledge and experience related to local crop production were retained in the urban mind of the city, carried on in its gardens and *oikoi*.

In order to preserve the social-ecological memory related to urban food production in the dominant mode of the urban mind of Constantinople, there may have been times when there was a need to actively transform the mindsets among its bureaucrats. Decentralizing agriculture into *oikoi* in tandem with constructing a 'green infrastructure' by moving the city wall can be interpreted as urban innovations that enabled garden- and food-production memories to expand in the overall urban mind. Such changes in the morphology of the city would simply remind residents, by visual presence and by garden culture, of their importance for food security during sieges. Without those physical gardens and communities the 50-year intervals between sieges would probably have been enough to dissolve living memory. Hence, resilience might be enhanced by the interplay of relevant memory and innovation, or in other words by promoting well-established old regimes and traditions of importance for producing goods to society while at the same time testing and refining new and successful regimes.

Hence, this chapter implicitly argues that the human mind and memory do not evolve in isolation, *sensu Descartes*, but co-evolve via our senses, with changes in the physical Earth. Transformation of the physical landscape of Constantinople possibly enabled one sort of social-ecological memory to expand in the dominant mode of the urban mind. We find it highly probable that awareness of the importance of locally produced crops, as well as agricultural skills, enabled the city to preserve a green infrastructure within the city walls, which was important for adapting to external stressors. This was a more important contribution to the urban mind than the beautiful buildings, monuments and artefacts of Constantinople. Owing to the presence of gardens and urban farms and the people that were engaged in them, city inhabitants were simply better prepared mentally to respond to sudden drops in food imports. Hence, large-scale innovations of the system (decentralization into *oikoi* and changing the urban morphology of Constantinople) were necessary to conserve social-ecological memories of food production at a diversity of local scales of the urban landscape, a dynamic that corresponds to the notion of panarchy of nested scales in complex adaptive systems.³⁷

All lines of business, organizations and families develop their own social practices and shared histories, and hence social memories.³⁸ In order for the city to develop into trajectories of local resilience, social-ecological memories had to be nurtured, and other social memories transformed into directed innovative lines of thought that strengthened ecological processes across urban space rather than undermined them. The carriers of knowledge and practices of Constantinople's garden communities were probably, like in garden communities today, strongly influenced by the physical properties of their city, but people were of course also constrained and informed by literature and laws in combination with oral traditions, community rituals and mimicking of behaviour of peers.³⁹

Important to illuminate is the fact that Constantinople had a literate society that inherited written experiences of agriculture and gardening dating back to

36 Folke *et al.* 2003; Berkes & Turner 2006; cf. Schwartz & Nichols 2006.

37 Gunderson & Holling 2002.

38 Misztal 2003.

39 Nazarea 2006; Barthel *et al.* 2010.

antiquity. Monasteries and to some degree the state apparatus were organizations that legitimized themselves by using old traditions and knowledge. The agricultural compilation *Geoponika* was assembled in the 9th century, but was based on previous works dating all the way back to the Hellenistic period.⁴⁰ It functioned as a memory-carrier of agricultural practices and knowledge of subjects as diverse as celestial and terrestrial *omina*, viticulture, oleoculture, apiculture, veterinary medicine, the construction of fishponds, the use of donkeys and monkeys, and much more. A diversity of such memories could then be used in debates on how to prepare for potentially uncertain futures. Hence such social-ecological memories of how to grow food in Constantinople were always in place and could 'kick in' when needed.

Concluding discussion

Are there lessons for research and practice to be harnessed from a study of this kind? The Urban Anthropocene affects ecosystems both in and around cities. Urbanisation is strong and homogenous on a global scale and causes rapid and persistent landscape transformations,⁴¹ and it pushes food production further away from urban food consumption.⁴² Hence, *urban people* globally increasingly rely on long-distance trade networks of food, affecting all ecosystems of the biosphere.⁴³ Especially challenging is the erosion of biodiversity related to industrialized agriculture.⁴⁴ Aggressive agri-business and food chains based on highly prescriptive sets of relations supply cities with food,⁴⁵ resulting in standardization, simplified ecosystems, and eroded soils in those support systems.⁴⁶ The radical industrialization of food production, which has a rich social and cultural history of its own,⁴⁷ accelerated after the Second World War and has been the dominant mode of food production the last 60 years, a brief period indeed when compared to the history of Constantinople.

Urban mindscapes hold power in the global market arena. Loss of green space in metropolitan landscapes and hence erosion of experiences of the ecological foundation of food production, currently witnessed in cities, is worrisome in this context since the desires and demands of urban people affect the food industry.⁴⁸ Urban development thus has responsibility for directed innovations that enable lived experiences of ecosystems close to where people reside, so that people constantly will be reminded of our dependence on a living planet and stay motivated to support it.

Concerns are being raised as to how cities today would respond to shocks to metabolic flows, disturbances in long-distance trade, as well as shocks related to loss of biodiversity, climate change, and peak oil scenarios.⁴⁹ This is a major

40 *Geoponika*.

41 Cox 2005; Lee & Webster 2006.

42 Steel 2010; Berg 2009.

43 Deutsch 2005; Engström *et al.* 2007; Barthel 2008; Ernstson *et al.* 2010.

44 Maffi & Woodley 2010.

45 Deutsch 2005; Murdoch 2006; Steel 2010.

46 Benton *et al.* 2003; Antrop 2005; Negri 2005; Maffi & Woodley 2010.

47 Belasco & Horowitz 2009.

48 Miller 2005; Steel 2010.

49 E.g. Steel 2010.

critique of the version of modernization that has prevailed during the Anthropocene, not just as fact but also as ideal. Only about half a century ago urbanisation in its traditional form – with cars, high-rise buildings, asphalt, and without agriculture, animals, and food production – was regarded as an integrated, if not inevitable, part of modernization⁵⁰ and as the epitome of human achievement, humanity's take-off into an urbanised 'mass consumption society'.⁵¹

As we enter the Urban Anthropocene it seems obvious that new versions of modernization are emerging where the impact of urban growth will be addressed and mitigated. During the Anthropocene there have clearly been elements of urban thought that will contribute to this turnaround of the urban mind in years and decades to come. We have mentioned, as examples, urban designs and theory by Patrick Geddes and his American disciple Lewis Mumford.⁵² But there are of course many others, and there is a host of new literature emerging on precisely these issues, ranging from the level of the individual building⁵³ to the level of the entire city or city region.⁵⁴

This study suggests that the simplistic ideals of modernization may be maladaptive in the long run, and that we should progressively discuss the 'ecologizing' of society⁵⁵ and integrate diversity, insurance capacity, and social-ecological memory in the urban fabric, just as ancient Constantinople did. The old tiresome discussion about progressive or conservative ideologies must cease. Simplified solutions based on ideologies about *only* development or *only* conservation should be scrutinized with regard to each particular case, issue and cultural-ecological context. In Constantinople it was the interplay between social memories and innovation that made resilience building possible. Innovations grew out of experiences related to problem solving of water and food issues. One successful innovation in this regard was the redesigning of the urban morphology for enabling urban agriculture inside the city walls. That increased the amount of productive green space within the city borders. Interestingly, this finding directly communicates with trends in urban planning such as 'smart growth or compact cities'. However, research on how such trends affect local resilience, biodiversity, and the biosphere is unfortunately lacking.

Dramatic drops in prosperity and population were witnessed in Constantinople when long-distance trade broke down. But Constantinople was able to bounce back thanks to decentralization into local and regional food production by farming communities (*oikoi*) within and around the city and by the incorporation of more green space within the Antonine walls. Stored in a diversity of community skills was the knowledge of how to steward local agriculture and gardens in relation to place-specific ecosystem dynamics. Echoes from ancient Constantinople serve as critique of current piecemeal solutions for urban sustainability that aim to mitigate carbon emissions by trends such as 'smart growth', whilst tacitly dissolving ideas about liveability, ecosystem services and capacity for local food production. Even if it is crucial to come to grips with the run-away climate change, this study shows that such urban development will decrease the possibilities for self-sustenance and cause future landscapes of vulnerability. More

50 Eisenstadt 1966.

51 Rostow 1960.

52 Luccarelli 1995.

53 E.g. Anker 2010.

54 E.g. Davis 1998; Newman, Beatley & Boyer 2009.

55 Murdoch 2006.

holistic approaches are needed. There is too little discussion of how metropolitan landscapes can build insurance capacity in relation to breakdowns in the long-distance trade of food. Lessons from this study therefore encourage development of post-modern thinking about metropolitan landscapes, and integrate resilience thinking when creating utopias for the Urban Anthropocene.

A self-reflexive insight for science related to our approach of using the deep past as a laboratory for future ideas is that reflexion on central concepts will arise. This is assumed to be a good thing. Constantinople may be considered a resilient city despite its cycles of boom and bust in populations, since it maintained its identity as a central node and powerhouse in the Eastern Mediterranean and the Black Sea region. But what is urban resilience really? Is it meaningful to discuss urban resilience and leave out issues related to ethics and morality? For instance, can it be said that Stalingrad was a resilient city, despite the horrors that went on during the battle in the Second World War? A contrasting contemporary example to Constantinople is the history of Cairo. Hassan⁵⁶ correlates climatic fluctuations, the flooding of the Nile, and the written records of Cairo. While the city persisted, it went through deep crises of starvation and sharp drops in the urban population when the Nile did not fertilize its shores or when the climate was erratic. Even if the city of Cairo, the name and the physical place, persisted through those periods of horror it is repugnant to call it a resilient city because human values that we cherish were sometimes betrayed. During the worst periods of starvation 'urban innovations' saved the day as human corpses were sold in the market places of Cairo.⁵⁷ Thus cannibalism was institutionalized and all barriers for, from our cultural point of view, acceptable human behaviour were overshot. Should we cite this as an example of successful adaptation and use Cairo as an example of urban resilience? The question raises the wider issue of whether resilience is a value-free concept, just as 'fitness' is in evolutionary theory.

When we translate concepts such as resilience and adaptation from the natural to the social world, for example as we look for better solutions for contemporary societies, it seems inevitable that we must subordinate them to some concept concerning the fundamental values of humanity. There is no doubt that violence and killing were also present in Constantinople during times of starvation or when there were disturbances in the flow of ecosystem services like drinking water. For instance, there are records of people getting killed in fights over diminishing supplies of drinking water.⁵⁸ However, those acts were against the law and described as something out of the ordinary. Nonetheless, there is nothing that guarantees the existence of decency and human values under conditions here described as resilient. On the other hand, there is no guarantee of decency and human values under non-resilient conditions either. If anything, we would assume the risks of betrayal of human values to be at greater peril if urban life is riddled by weak resilience and high levels of vulnerability. We would welcome more empirical research on urban history from this perspective. Meanwhile, we would propose as a matter of principle that urban resilience should be more than for the city (name, place and physical space) to simply persist. If social-ecological resilience is to be defensible as a societal goal, human values and ethics must be included. Moreover, arguing for urban resilience in isolation, or for the resilience of networks of cities, without taking into account the environmental burdens of

56 Hassan 1994.

57 Hassan 1994.

58 Croke 2005, 68.

cities on the biosphere will be a repetition of the ills produced by the ideology of modernization.

This interest in urban resilience and innovation reflects a necessary change in direction. It is in this exciting and necessary intellectual design and political endeavour that we are putting forth the urban environmental histories of cities like Constantinople, not as templates, because history never repeats itself except as tragedy or farce, but as resources of ideas, wisdom, and indeed also grave mistakes. Our core message from having revisited the resilience history of Constantinople during more than two millennia is that the keeping of green space for tacit co-production of ecosystem services and the maintenance of civic capacities for food production and community-based relationships to land and water have been essential properties for long-term survival and success. These lessons echo through the present, into the future, since two thirds of the population is projected to live in cities. Schools of innovation, architecture, construction and urban planning, and other mindscapes that will dominate urban development must be 'ecologized' if sustainable development is to have any iota of meaning.

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Abbreviations of classical sources

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