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Leading Change in a Complex World: Transdisciplinary Perspectives
Organising Complexity: Creating Boundary Objects for Sustainable Urban Development

CHAPTER 3

Organising Complexity: Creating Boundary Objects for Sustainable Urban Development

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Takeaways for Leading Change

This chapter examines the pursuit of smart and sustainable urbanism. Sustainability is understood as integrated policy and planning measures carried out in cities and city regions. The chapter shows that even if the general goal of sustainability promotion can be compressed to generic planning guidelines, localities and city regions resort to situational interpretations and instruments to reach them. The chapter introduces boundary objects and boundary work as a theoretically interesting and empirically tested method for organisations and actors to make sense of changing environments. On this basis, it discusses how new decision-making spaces emerge and are identified as a call for new forms of leadership. The implications of this research for leading change in a complex world are manifold and layered. It shows that transformations such as urbanisation have equally systemic repercussions that national institutions seek to manage and then transfer to local and regional actors, which produce measures and outcomes. These transformations may take the form of ruptures that shake the established roles of local and regional actors and the very foundations of their division of labour. Finally, ruptures, changing roles and confusion should prompt organisations to reconsider the scope of their action and the logic of having and maintaining current organisational boundaries.

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Urbanisation is a planetary process. Homo sapiens are now a predominantly urban species. Cities are thus the key arenas for humankind to keep its planet habitable (see Madanipour, 2006). According to the World Bank estimates, 54 percent of the global population was urban in 2016. For North America this figure was 82 and for the European Union 75 respectively (WB, 2018). The sustainability challenge of avoiding the depletion of natural resources and risking the ecological balance at the expense of future generations is a task faced in a predominantly urban environment (Goodbun, Till & Iossifova, 2012). However, pursuing sustainability in an urban setting is a complex task. It comprises a multi-faceted, multi-sectoral and highly complicated web of choices, with numerous actors operating according to their own, and not infrequently conflicting, visions of promoting sustainability.

To achieve sustainability, decision-makers need devices and artefacts to connect the worlds of dispersed groups of actors and organisations (Kahneman, 2003; Vakkuri, 2010). Boundary objects may constitute one such artefact. Boundary objects, as conceptualised by Star and Griesemer (1989, p. 393), are "both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites". They may either show connections between seemingly detached decision-making processes or play down obstacles that are imaginary or institutionally cooked up rather than real (cf. Quick & Feldman, 2012, pp. 17–18). Such boundary objects, even if weakly structured at the level of their common use, become more structured in local uses where institutions and actors attach meanings to highly complicated phenomena, such as sustainability. However, boundary objects are social constructions. They are devised to serve specific goals, such as acting as intermediaries between groups with different interests

> This chapter examines complexity through an inquiry into how linking organisational or other boundaries occurs in the pursuit of sustainable urban development.

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(Guston, 2001). For this they require actors who connect the detached worlds, a process here referred to as "boundary work".

We approach boundary objects as analytical tools for discussing the means that eventually structure cross-sectoral cooperation for promoting sustainable urban development. Boundary objects and boundary work give organisations and actors an opportunity to make sense of their changing environment and what this change requires from them. We ask 1) what is the role of boundary objects and boundary work in the promotion of sustainable urban development in Finnish city regions, 2) how do different actors promote their interpretations of sustainability, and 3) what is the role of administrative and other systemic reforms to the design of boundary objects?

The purpose of this chapter is to examine complexity through an inquiry into how linking organisational or other boundaries occurs in the pursuit of sustainable urban development. We claim that institutionally weak urban regions are more suitable platforms for boundary work than the siloed administrations of institutionally strong municipalities. The territorial scale for our empirical scrutiny comprises Finnish city regions and the complexities and solutions for promoting sustainability. We give a practical example of how organisations working with different aspects of sustainability can utilise boundary objects in order to reach a common ground.

The chapter proceeds as follows: The next section discusses urbanisation as an agglomerated problem. We then discuss what pursuing sustainability in an urban contexts means. This is followed by the discussion of MAL+PE, a Finnish agreement-based version for promoting sustainable urban development. In the empirical section of the chapter we analyse, by focusing on one aspect of the MAL+PE process, an example of the creation of boundary concepts in the context of urban sustainability. We argue the negotiated MAL+PE arrangement enables the use of sustainable and integrated policy and planning measures. By so doing it can be seen as a means to organise the complexity inherent in sustainable urban development. The chapter draws its inspiration from the Finnish city region with the most promising track record in MAL+PE

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work, the Tampere city region, but will also shed light on city regions as a sustainability policy arena in more general.

Urbanisation as an Agglomerated Problem

Humankind is at a crossroads marked by a dense mixture of agglomerated problems. Agglomerated problems are made of many intertwined challenges met simultaneously. First, *the critical natural resources* that originally allowed the evolution of a modern society are finite. Second, *populations are ageing,* first in industrialised societies and after a while throughout the world. Third, *the entire world grows more urbanised* with new forms of urban communities and new transformational dynamics emerging everywhere (e.g. Saunders, 2011; Ehrenhalt, 2012). Finally, *the changing climate* ensures that nature will not let human communities function unchanged (cf. Pirani & Tolkoff, 2014; Sunstein, 2007). Urbanisation, demographic transformation, resource scarcity and unpredictable weather highlights the necessity to use the building blocks of dignified human life, starting from cultivable land or drinkable water in a responsible manner (Goodbun, Till, & Iossifova, 2012) – and to find new ways and new resources to nurture the resilience of ever wider cities and metropolitan areas.

A worthwhile option in responsible resource-use stems from the modern industrial logic: use them more efficiently. The idea is extremely logical, as sprawling suburban designs produce extensive greenhouse gases in the form of greater per capita infrastructure investments and traffic output compared with greater or traditional urban densities. Urban sprawl as a term refers to inefficient and sparse suburban settlement structures. James H. Kunstler (1993) once dubbed it the greatest resource misallocation in the history of humankind. A more compact and connective urban form with layers of mixed use enhancing its multifunctionality has been a key urban design strategy to resist sprawl (CNU, 2009). New urbanism, an influential planning ideology, has evolved from an urban development resistance movement to a source of planning rules and paradigms particularly cherished by city planners. This reflects the gradual awakening of the planning profession to the

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threat sprawl poses to all aspects of sustainability, from ecological to economic (Chakrabarti, 2013).

New urbanism fights urban sprawl through promoting walkable urban environments, finding ways to develop human-size neighbourhoods in a transit-oriented way without compromising the ecological aspects of sustainable urbanity. These are now widely considered essential elements of responsible or "good" urban planning and design – not only in the American home ground of new urbanists, but worldwide. A major handicap of this planning ideology comes from the restrictions set by geographical scale: it works best at the neighbourhood and city district level. However, the basic units of territorially extensive urban networks are large city regions, the natural venues for suburban sprawl. Many of the tools employed by new urbanist planners tend to be insufficient on larger scales.

One strategy for escaping the scale limits of neighbourhoods or urban districts is *smart growth*. This idea has also emerged from the new urbanist movement but focuses on the dynamics and drivers of growth and change instead of the physical design of a particular city (cf. Vanolo, 2014). Another promising approach to the promotion of more sustainable urban development is *smart urbanism*. It, in the words of Hajer (2014), calls for an entire language that expresses more than efficiency and technology. In many culturally important instances these traditional domains of smart city thinking are infested with unfulfilled expectations for better urbanity or development (Townsend, 2014; Graeber, 2015, p. 109).

Continuous urbanisation and the enlargement of the urban scale follows from global competition. No urban design paradigm or cultural critique can turn that process around. Finland is no exception to this development. In Finland, growing urban entities comprising of entire functional systems made up of central cities and their neighbouring municipalities has emerged as the basic component of societal development, breaking and dissipating the traditional urban form (Karppi, 2017). The merging of municipalities, reforms of public administration systems and support of various forms of intermunicipal cooperation have all contributed to this gradual transformation. But the scale expansion that has followed has come with a price. Rapid demographic growth and dynamic economies in the largest and best-connected city regions, which have superior educational

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institutions and broader service systems, have led to intense land-use pressures as well as challenges in long-term financial sustainability. This puts them at the forefront for mitigating the repercussions of growth, including urban sprawl and due resource inefficiencies.

Pursuing Sustainability and How to Get It "Right"

Pursuing sustainability in an urban context typically requires different actors to reach a common understanding through the "lowest common denominator". This satisfies the minimal requirements of distinct world views by capturing characteristics that fall within the minimum acceptable range of those world views (Star & Griesemer, 1989, p. 404). The method involves the utilisation of "versatile, plastic, reconfigurable (programmable) objects that each world can meld to its purposes locally" (Star & Griesemer, 1989). Boundary objects are created through this process. This requires conceptual clarity, which may, however, become compromised by the approaches of institutionally embedded actors to the basic elements constituting these objects.

The case of pursuing urban sustainability is ultimate particularly for the atmospheric magnitude of climate change and other large-scale *unknown unknowns* involved. Such "things we do not know we do not know" and their multiple origins have been revealed by Keenan (2014) in a study of the ambiguities faced by commercial real estate actors in their attempts to adapt to climate change. Ambiguities abound, and they should make different stakeholders receptive to each others' views and sensitive to their capacities to turn out information from which they all can benefit. By contrast, in more routine governance settings, sectoral boundaries limit the scopes of administrations and cocoon individual actors and administrators. This not only allows them to stick to their siloed routines, it allows them to legitimately ignore information that might compromise them.

Established routines may also involve complicated issues. Pursuit of important but ambiguous goals such as sustainability is a prime example of a complex process. This complexity is not reduced by the fact that the general context of measures for striving towards greater sustainability is rapidly

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changing. Due to the scale of urban expansion, the world is becoming not only more urban but also metropolitan or "city regional". Metropolitan, as a spatial scale, refers to an amalgamation of municipalities that comprise an integrated labour market area and related economic interests joined together by a dense and high-capacity regional traffic system (Ehrenhalt, 2012). Functionally, scale expansion means new actors, with their responsibilities, priorities and interpretations,

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meet and try to find common grounds as they work with complex and moving targets such as promotion of sustainability in urban development.

Moreover, scale expansion has contextual features. In Finland, this entails a peculiar leadership challenge: it evokes, to dramatise a little, institutional zombies. This is due to the fact that the institutional apparatus for urban and regional planning as a domain for pursuing sustainable development, does not acknowledge the metropolitan – or city region – level. One step down, there are municipalities with broad planning, nature protection and service provision responsibilities. One step up, there are the regions (in Finnish *maakunnat*), the nascent units of self-government responsible for the implementation of national policy goals pertaining to local land-use and other planning procedures. City regions, while trying to tackle major sustainability (policy) issues, have to do it through negotiation and by making themselves useful to the municipalities they represent. Their administrative powers to bring forth regional interests that should be apart from those of the municipalities are akin to pushing with a rope. It is no wonder only a few city regions have established formal agencies to work on that scale.

In the following we approach the sustainability measures pursued in the Tampere city region by looking at the siloed routines and practices of different municipal administrations. While doing so we necessarily reveal these routines as agency and administration-labelled proxies (cf. Buckingham-Hatfield & Evans, 1996, pp. 4–5). Proxies like these are the interpretations of different actors as to how the "pursuit of sustainability" is portrayed through their own practices, routines and responsibilities. All actor-based proxies taken together, they may eventually constitute some form of

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sustainability aggregate; a rough, partly overlapping, partly complementary set of activities all seeking to promote sustainability. Proxies, we argue, are virtually inevitable. They stem from a division of labour recognisable in any multifunctional system. The multifunctional nature of a system is a reflection of complexities that are the basic features of governance as well as an outcome of the system's interaction with its environment.

The institutional haziness of city regions can also work for the benefit of thinning out if not entirely dismantling the boundaries of administrative silos – brought to city regions by the customary division of labour in their adjoining municipalities' administrative structures. As we noted, reaching sustainability outcomes necessarily calls for cross-sectoral work that is notoriously hard for formally-empowered administrative bodies and agencies. However, if the city regions and their evolution do not acknowledge sectors in the way that administrations and agencies do, why should they be injured by the lock-ins caused by these institutional features? Instead, working in the context of urban regions makes it possible to design and utilise proxies that transcend the typically results-oriented goals of agencies in order to create new types of boundary objects. The boundary work this redesigning requires, we argue, is necessary in tackling the problems of multi-faceted and still siloed planning practices in city regions.

City regions are administratively crippled even in their institutionally strongest form, represented here by the Tampere city region. Given this, we enquire into the role cross-sectoral cooperation between its member municipalities' could play in coordinating and essentially putting together the proxies for sustainable development. Furthermore, we ask what kinds of arenas exist, or may be needed, for this coordination. As the subject of this coordination is sustainability, we also acknowledge the much-debated question: Can sustainability be planned in the first place (cf. Meadowcroft, 1999)?

MAL+PE as a Sustainability Regime

The empirical section builds on findings and analyses several Finnish city regions, using the Tampere region as the primary case. For policymakers,

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looking at city regions instead of individual municipalities verges on a contradiction in terms: from a global perspective Finnish municipalities have an exceptionally strong constitutional position with self-government that also includes local taxation. Due to this, large-scale public-private partnerships in large infrastructure and other projects have been rare in Finnish municipalities, with Tampere region again an exceptional case (cf. Valkama, Oulasvirta & Karppi, 2016). Land use and much of infrastructure, housing and even biodiversity policies are composed by municipalities; albeit often in co-operation with central government institutions. In comparison, the position of city regions, newcomers on the Finnish administrative map, is based on consent among different actors. This consent constitutes the key artefact to boost integrated urban policymaking and shatter the administrative silos that effectively maintain land use, traffic, housing, business development and service production as separate policy areas in municipalities.

From a global perspective, Finnish municipalities have an exceptionally strong constitutional position with self-government that also includes local taxation.

Due to this feature, the entire MAL+PE framework can be seen as a Finnish boundary object for promoting sustainable urban development. Particularly in the case of Tampere city region it has the form of an entire boundary organisation created by the region's municipalities. The core component of MAL+PE is MAL, a Finnish acronym that comes from the words land-use (in Finnish, *Maankäyttö*), housing (*Asuminen*) and traffic (*Liikenne*). Currently, co-operation among the municipalities of four largest city regions and the national government is based on MAL agreements. The proto idea for MAL was first introduced in 2009 as part of the proposed government reform of municipalities and their service provision (Maankäytön..., 2015). The government's role becomes most visible through its participation in regionally relevant investments, spearheaded in the Tampere city region by the new light rail system.

A MAL prototype action was initiated in the beginning of the year 2010 and evaluated already during the latter part of 2011 as part of broader

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government programs on regional cohesion and competitiveness. Simultaneously, a practice and experience-based volume on contemporary planning of urban areas was published by a newly created actor, MAL Network (Kurunmäki, Uusivuori, & Hanhijärvi, 2011). This network was established in the Tampere city region to build on the experiences of municipalities in the second-largest urban area in Finland. In the closing words of that volume, Dr. Kimmo Kurunmäki, the then leader of the MAL network envisioned its next phase until 2013. This included the provision of public services and business development – or *vitality policies* in the governance newspeak – making one of their first appearances in the future design of the MAL configuration.

The original MAL is regularly extended to MALPE (or MAL+PE) with P for services (in Finnish *Palvelut*) end E for business development (*Elinkeinot*). Yet, before continuing and particularly before branding MAL/MAL+PE as a ground-breaking institutional innovation, a brief disclaimer is necessary. The integrated approach to the various elements defining the planning of urban or any other geographic areas has an extensive track record. One should keep in mind the original approaches to cities and their environs as promoted by Patrick Geddes's idea of a regional plan or Patrick Abercrombie's Green Belt of London with its present-day offspring, yielding to the much praised Portland growth boundary (e.g. Mace, Blanc, Gordon, & Scanlon, 2016; Batty & Marshall, 2009; Beauregard, 2015). The Tennessee Valley Authority during the Great Depression was yet another of the concept's early roots. Reino Ajo (1944) measured the intensity of the Tampere downtown's regional economic impact as it reached the fringes of a territory known since the 1940s as the Tampere traffic (catchment) area and today as Tampere Region. In the UK, the famous 1960's South-East Study traced the developmental dynamisms around the Greater London Region, and its Finnish cousin, *Uusimaa* (or, in English, Helsinki Region) 2010 from the year 1966 did the same at approximately the same time in what was to become, decades later, the Helsinki Metropolitan area.

Where MAL+PE is genuinely unique is that the traditional unitary state model of spatial planning based on planning legislation and division of labour between strictly defined planning authorities has been complemented by a new kind of trading zone. This consists of agreements among the

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municipalities of those city regions most willing to go beyond the planning mechanisms stipulated in the 1999 Land Use and Building Act (132/1999) on the one hand and the key planning ministries of the national government on the other. The fact that these agreements differ from case to case, reflecting the particular conditions in the first four city regions which have completed them, introduces a certain "quasi-federal" element in the Finnish planning regime. A common denominator to all agreements, however, is the pursuit of sustainability in urban development. The institutional mechanism to set this goal comes from the National Land-use Guidelines. They are based on a government decision in 2000 with a second revision issued by the Ministry of the Environment in December 2017. These guidelines comprise the backbone for the entire system of strategic land-use planning from local to regional, to highway, power grid and other infrastructure and network planning. However, they intervene in the functions of regional administrations whose reform is now also underway. The future role for the guidelines is therefore somewhat contested.

How Can Boundary Work Help in Breeding Smart and Sustainable Urbanism?

Sustainability is a notoriously ambiguous, even treacherous, concept. In an all-Nordic endeavour to chart challenges for the 21st century regional development, Janne Hukkinen (2000, p. 175) encapsulated this disposition to a catchy maxim "my sustainability is not your sustainability". The general concept has remained prone to conflicting and opportunistic interpretations alike. In urban planning – bound to promote sustainable development – it has been eagerly elaborated into what has been discussed here as sustainability proxies. Given the lacking heuristics of what fundamentally is at stake with sustainability and smart urbanism, performance measurement and measurers of performance are necessarily able to produce only approximations of (smart) sustainability (cf. Keenan, 2014).

We have discussed sustainability proxies in the context of decision-making in city regions, but they occur in the construction and selection

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of planning principles and goals such as transit-oriented development, walkable city, carbon footprint reduction, LEED standard, sprawl prevention, inward-bound growth, and finally, in the ubiquitous-sounding sustainable urbanism (e.g. Renne, 2009; Talen, 2011; Wells, Timmer & Carr, 2011; Speck, 2012; Duany, 2013). All of these are, one way or another, within the reach of smart urbanism. However, in its constitutionally strong municipal frame sustainability-promoting urban policy-making is easily confined by strong administrative barriers that open parallel, partly overlapping but not integrated or coordinated interpretations of local sustainable development. In its institutionally weak frame on the level of city regions, promotion of sustainability is necessarily confronted with tensions between legitimate ideals and limited means to turn these ideals into workable policy practices. Institutional weakness invokes thoughts of the loss of power in attempts to promote the desired goals. In some instances it may be an advantage if not an outright strength.

The institutional ambiguities of city regions do not necessitate the creation of the kind of watertight sectoral administrations whose existence in both national government bodies and municipalities is an empirical fact. This ambiguity should enable municipal actors involved in regional co-operation to unlearn if not entirely overcome the restricting boundaries and actively search for something Quick and Feldman (2011, p. 7) call *issue boundaries*. Central to this process is to identify issues, not silo-defined – let alone silo *defining* – as scope for the joint activities of actors. Boundary objects constructed this way may enable purposeful cooperation for promoting sustainability in land use planning. Moreover, promotion of sustainability may even benefit from a problem that traditionally has been conceived of stemming from planning as a peculiar but not entirely exceptional social practice.

Attributes that "should" make planning distinct (but fail to do so) are generic dispositions and central tendencies, not historically and culturally fixed qualities (Beauregard, 2015, p. 23; cf. Buckingham-Hatfield & Evans, 1996, pp. 7–8). These attributes are rightfully claimed by several professional groups including social workers, financial managers, and urban designers to be the uppermost topping to the urban pie. If planning smart, sustainable and at any rate advancing urbanity is indeed a generic joint venture rather than any professional group's natural monopoly, the institutional ambiguity

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of city regions only makes this trait stronger. Yet, this feature needs not to be an encumbrance. Going back to the ideas originally introduced by Warren Weaver (1948, p. 539), if this kind of setting calls for the use of mixed teams combining expertise from different fields, it makes an excellent case for organised, or even *organising*, complexity. In our example of planned sustainability, agglomerated problems are faced through a system of an organic whole – such as the metropolitan components of the global economy – with its concurrent parts in close and meaningful cooperation.

An example of the deliberate attempts to reconstruct existing administrative boundaries, using city regions as arenas to do so is the process of redefining the roles and responsibilities of municipalities in the face of government-led large-scale social and health reform now underway in Finland. Attached to a more generic process of creating regional self-government as a third tier of democratic governance, it would take one of the largest sectors from the municipalities, relocate it to the new regional administrations, and finance it solely from the state budget instead of part-financing it through municipal taxes. However, despite this restructuring, municipalities remain responsible for policies that promote their residents' well-being and health. With a removal of administrative sectors explicitly charged with these tasks, many of the remaining sectors need to redefine their roles in the new situation: finding out what other municipalities, linked together with several physical, social and economic structures do is of particular value. Boundaries of action need to be redefined.

The agility of municipal actors to manage this transposition was tested in the Tampere city region in 2017. The region's agency, operating in all MAL+PE "sectors", organised a joint planning meeting for its eight member municipalities' executive and senior civil servants in infrastructure and welfare services with the aim of carrying out this redefining process. The session started with an invited kick-off introduction to the day's theme, built environment as a resource in promoting health and well-being after the social and health reform, given by a member of our research team. The agency's officials in charge of land-use, infrastructure services and welfare served as secretaries of rotating working groups that began after the introduction.

The task for participants was an act of boundary work par excellence. The social and health reform, the key strategic target of the national

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government, has been a great source of systemic ambiguity constituting a shared veil of ignorance between the present and the future. It allowed every participating expert to admit they were unaware of how the future would unfold without risking their legitimacy as otherwise well-informed specialists. Subsequent workshops and expert meetings organised by our research team as part of a broader entity analysing the future of MAL+PE integration has produced an identical result. In the face of major systemic ambiguity, experts seem to tune themselves to a learner's mode. Together with other experts they keenly gather and share information in order to collectively map an unknown terrain, instead of pressing an agenda trusted in their hands by their respective agencies to be pressed. This obviously is a productive mindset for boundary work.

Shared experiences and a need to produce them for collective problem-solving can also be seen as drivers for boundary work – even if it should be hard to objectify them in a more traditional setting of an object as an artefact (cf. Quick & Feldman, 2011, p. 18). In the working groups the land-use, infrastructure and welfare service executives started to connect the issues central to their respective sectors with each other and to the future linkage between health-promotion, the use of urban space, service networks, and their public finance implications. All are aspects of sustainability and all called for newly thought out cooperation at the city-regional level. Experiences from this exercise were used as catalyst for a subsequent series of workshops to identify common boundary spaces and objects among land use planners and business developers (or the M and E sectors) of the Tampere city region.

Boundary Work as a Leadership Artefact

Pursuit and planning greater sustainability in the context of future Finnish city regions has multiple implications for leadership. The issue originates from the ongoing reform of regional administration and a mounting cognitive pressure caused by the increasingly complex character of sustainability, both against a backdrop of the planetary urbanisation. The broader administrative reform can be understood as an attempt to

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alleviate imminent financial imbalances and social and health service delivery failures caused by the concentration of population to a handful of key urban areas. The direct result of this is the complexification of sustainability planning.

Large-scale systemic transformations may be traumatic to established organisations and those in charge of them. But they may also open major arenas for redefining and reconsidering positions, boundaries and division of labour. A great deal of the eventual success in this redefining depends on the readiness of the various actors, both public and private, to acknowledge the scales and scopes of change and to venture out in this exercise. Leadership can be shown through promoting the exchange of different views, opening arenas for the collective sensemaking of experts without the confines of their established institutional roles. Unfortunately, another way to show leadership is equally possible. Also denying the need for arenas for collective sensemaking and replacing them with pressing opinions that provide simple (and simplistic) solutions to the complex world can be understood as leadership of sorts. Both these ways can be seen as artefacts for bringing one or another kind of order to complexity, but only one of them is sustainable in the face of finding a form for unknown unknowns, or the ultimate uncertainties.

What we saw in the MAL+PE boundary work example was a crucial chain of events:

1. a significant rescaling reform of the national social and health care system was acknowledged as of having a transformative impact on the established MAL+PE boundaries of action;

2. boundaries that structure MAL+PE problem were redefined through emergent issues, and the planning problems were revisited and re-interpreted;

3. shared "unknown unknowns" were explored through a collaborative process, which reframed a fundamental systemic ambiguity as a window of opportunity to explore smart and sustainable future urban designs.

For this redefining process to be successful it is obvious that an open rather that constrained exchange of ideas is needed. Complexity should be organised rather than disorganised. Constructive and mutually productive use rather than purposeful misuse of concepts is needed. However, it is far from self-evident that administrations react that way to the complexities

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they encounter. The decision of whether to resort to boundary work, to use it as an instrument for redefining and reorienting the basis of collective reasoning, is an issue of leadership – as is deliberate risk-taking, if the system does little to recognise where the changing world is taking it.

Discussion

This article was inspired by the pursuit of sustainability in different urban settings and ideas of smart and sustainable urbanism. Sustainability was portrayed here as integrated policy and planning measures carried out in cities and city regions particularly with the help of the negotiated MAL+PE arrangement. We saw that even if the general goal of promoting sustainability can be compressed to generic planning guidelines, what the localities and city regions *de facto* demonstrate are various situational interpretations of the most locally relevant aspects of sustainability, promoted with the instruments (and locally devised instructions) available to urban planners (Karppi, Vakkuri & Immonen, 2017).

We have identified several implications relevant to the issues raised in this book. *First*, large-scale changes and transformations such as global warming, urbanisation or ageing have systemic repercussions that national institutions seek to confront and then transfer to local and regional actors, who turn policies into measures and outcomes. *Second*, these transformations may manifest themselves as ruptures that displace the established roles of local and regional actors and the very foundations of their division of labour. *Third*, the ruptures, changing roles and confusion in the face of complexities that transformation imposes on them should prompt organisations to reconsider the scope of their action and the rationality of having and maintaining current organisational boundaries.

Global systemic changes are forces which make transformations of a more limited scope necessary. This chapter has introduced boundary objects and boundary work as a theoretically interesting and empirically tested method for organisations and actors to make sense of their changing environment and what this change requires from them. It has discussed

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how new decision-making spaces emerge and are identified as something calling for equally new forms of leadership.

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