

Governance Solutions for Wicked Problems: Metropolitan Innovation Ecosystems as Frontrunners to Sustainable Well-Being

Timo J. Hämäläinen

*“Too close a view may interfere with one’s grasp”
of an overall problem or concept.*

Stafford Beer (1926–2002)

Theorist, consultant, and business professor

The growing specialization and interdependence of societies as well as their rapid technological and economic transformation have increased the level of uncertainty and complexity in decision making and the role of wicked problems in policy making. This article analyzes the nature and evolution of wicked problems and argues that they stem from the gap between the complexity of the policy problem and the variety of the corresponding governance arrangements. This complexity gap can be closed with new governance solutions that include participation, interaction, and cooperation among stakeholders; collective learning processes; coordination by mutual adjustment and clear systemic direction, decentralization, diversity, and experimentation; and effective measures to overcome system rigidities and development bottlenecks. For several reasons, cities and metropolitan areas provide ideal ecosystems for addressing wicked problems. They have the requisite variety of resources, capabilities and services, physical proximity that facilitates rich face-to-face communication, learning and cooperation, as well as the right scope for producing and experimenting with the necessary public goods and services. The article concludes by arguing that Finland could become a global frontrunner in solving wicked problems in policy making by adopting a strategy of sustainable well-being. This strategy would build on the world-class well-being knowledge within the Finnish welfare state and the rapidly growing international research on subjective well-being and happiness.

Introduction

The industrialized world is undergoing a historical transformation. The current phase of the economic crisis that started in 2008 is a part of a deeper and longer-term structural crisis of the 20th century societal paradigm (Freeman & Perez, 1988; Hämäläinen, 2003). This structural crisis results from the maturity and negative spillover effects of the energy-intensive and material-intensive model of mass production and mass consumption that spread throughout the industrialized world during the past century. This economic model benefited from the opening of world trade and the development of welfare state institutions, which channelled resources to individuals with higher propensity to consume. These developments created new demand for the growing production capacity of industrialized countries. However, the accumulating problems of this so-

cio-economic model have become increasingly evident since the late 1960s when the baby-boomers first rebelled against the established values of industrialized societies.

The problems of the established socio-economic model stem from various sources, such as the globalization of production systems and accelerated structural change in national and local economies, changing skill requirements of new technologies, unsustainable use of natural resources, aging of populations, decision making and governance problems in the face of increased uncertainty and economic complexity, changing values and demand patterns of citizens, as well as outdated regulatory frameworks. These problems have made the current societal model of industrialized countries unsustainable economically, socially, ecologically, and in terms of individual well-being.

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The accumulating problems of industrialized societies have reinforced the interest in sustainable development. However, the current discourse on sustainable development is still largely based on the work of the Brundtland Commission in the late 1980s. It defined sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). Although the Commission offered no definition of needs, they did refer to basic material necessities, such as food, water, and shelter. In the subsequent sustainable development work, this view has led to an emphasis on economic and equity issues, in addition to environmental concerns. The lack of clear definition of needs has made the concept of sustainable development rather difficult to implement in practice (Rauschmayer et al., 2011).

Today, many people feel that sustainable development policies and the associated drive towards more sustainable lifestyles tend to restrict their freedom of choice and subjective well-being. They feel that they would have to sacrifice their usual lifestyle in order to live in a more sustainable way. However, a more holistic understanding of human needs and well-being opens up new policy and behavioural options that can achieve the same sustainability benefits while maintaining or improving individual well-being. This is possible if the restrictions on individual freedom and resource use are compensated for with improvements in the other determinants of individual well-being. Such improvements can be an effective motivator for sustainable behaviour.

The traditional perspective to sustainable development emphasizes a society's resilience against downside risks. If we expand this perspective towards a more holistic view of well-being, we can adopt a more positive concept of *sustainable well-being*. This new concept suggests that societies should aim to meet *all* well-being needs of the present generation without compromising the ability of future generations to meet their needs. Thus, sustainable development policies should build on a deep understanding of the various determinants of human well-being in the changing natural and socio-economic environment.

As a result, the traditional economic, social, and ecological perspectives on sustainable development need to be supplemented with the *subjective well-being* and *responsibility of individuals*. The more holistic sustainable well-being framework is laid out in Figure 1. It was originally developed as a future vision for Finland and oth-

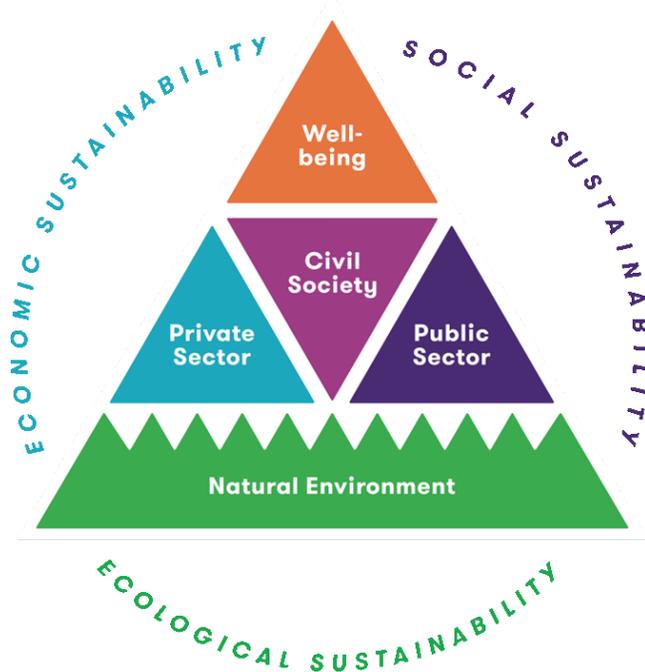


Figure 1. The sustainable well-being framework (Reproduced from Hämäläinen, 2013)

er advanced societies by Sitra, the Finnish Innovation Fund. The subjective well-being has been included in the framework because mental well-being problems have become increasingly prevalent in industrialized countries during the past few decades (Hämäläinen 2014; O'Hara & Lyon, 2014). Individual responsibility must be added, because sustainability cannot be reached in a complex society without responsible individual choices.

Citizens are generally well aware of the most important sustainability problems. However, there is much less consensus about the appropriate solutions to these problems. Sustainability experts are typically specialized in different dimensions of these problems (e.g., economic, social, ecological) and they do not typically attempt to integrate their various specialized solutions into a more holistic and coherent vision. This is unfortunate given that the key sustainability challenges – such as climate change, structural unemployment, persistent fiscal deficits, and lifestyle diseases – are *wicked problems* (Rittel & Webber, 1973) that cannot be solved with traditional compartmentalized policy and governance approaches. New governance solutions are clearly needed. And, such solutions may be built in innovation ecosystems that involve participants from private, public, and third sectors.

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This article analyzes the nature and evolution of wicked policy problems and suggests new governance solutions. It argues that the multi-stakeholder innovation ecosystems of cities and metropolitan areas (metros) have special advantages in developing the solutions that can match the increased complexity and uncertainty of contemporary economies and societies. The final section argues that Finland, and the Helsinki metropolitan area specifically, could become global frontrunners in the move towards a *sustainable well-being society* (see Hämäläinen, 2013).

Wicked Policy Problems

Unlike *tame problems*, which can be solved by established professions and experts in a routine way, the characteristics of wicked problems make their solution very difficult with traditional governance arrangements, such as markets or public-sector hierarchies (Berkes, 2007; Grint, 2005; Ho, 2012; Rittel & Webber, 1973). These characteristics induce the following:

- Wicked problems involve *multiple stakeholders*, each with their own cognitive frames, values, norms, and interests.
- There are *no definitive definitions* for wicked problems; each definition depends on the perspective taken. The preferred solution is linked to the chosen perspective and definition.
- There are *no optimum or correct solutions* for wicked problems, only good, satisfactory, or bad ones.
- Wicked problems have *no stopping rule*. There are no criteria for a sufficient understanding of wicked problems or the length of their causal chains in an open system.
- Wicked problems tend to involve *threshold effects*. Passing the threshold can cause a regime shift.
- Wicked problems *involve fundamental uncertainty and unpredictability*. They cannot be solved without collective learning and reframing processes that reduce this uncertainty to a manageable level.
- Every wicked problem is essentially *unique*. Customized solutions are required. Moreover, there is *no natural level* at which a wicked problem should be analyzed or solved.

- Every attempt to solve a wicked problem has *significant consequences*. In addition, these attempts tend to have *unintended consequences*.
- There are *no immediate or ultimate tests of the solutions* to wicked problems. The full consequences of a solution cannot be appraised until all repercussions have completely run out, and no one knows when they have.

Despite their widely acknowledged importance, the discourse on wicked problems in policy making has so far been more descriptive than analytical. Their nature and evolution have received scant theoretical attention.

Three fundamental reasons account for the increasing prominence of wicked problems in policy making in recent decades (Figure 2). Two of them have increased the *cognitive and relational complexity* of individual, organizational, and policy making environments. Cognitive complexity refers to the density and variability (quality) of interactions that take place among interdependent agents. Relational complexity, in turn, refers to the number (quantity) of parts in the system and the links between them (Boisot & Child, 1999). The third reason has limited decision makers' capacity to adapt to the increased complexity. The wicked problems result from this growing "adaptive tension" or "complexity gap" (Boisot & McKelvey, 2010; Casti, 2012).

First, the improved communication technologies, globalization of markets, and long-term economic growth have facilitated increasing specialization and division of labour in production systems. This trend has led to an increasing geographical and functional interdependence of economic activities (Geyer & Rihani, 2010; Hämäläinen & Schienstock, 2001; Wallis & North, 1986). The more numerous and tightly-interdependent economic activities have created growing relational complexity and coordination problems in industrialized societies. At the same time, these societies have become culturally and cognitively more differentiated, individualistic, and complex. The new information technologies have also made more people active stakeholders in societal problems (Roberts, 2000).

Second, the rapid techno-economic change of recent decades and the current socio-institutional transformation of industrialized societies have created fundamental economic uncertainty and cognitive complexity (Hämäläinen, 2003). The established socio-economic

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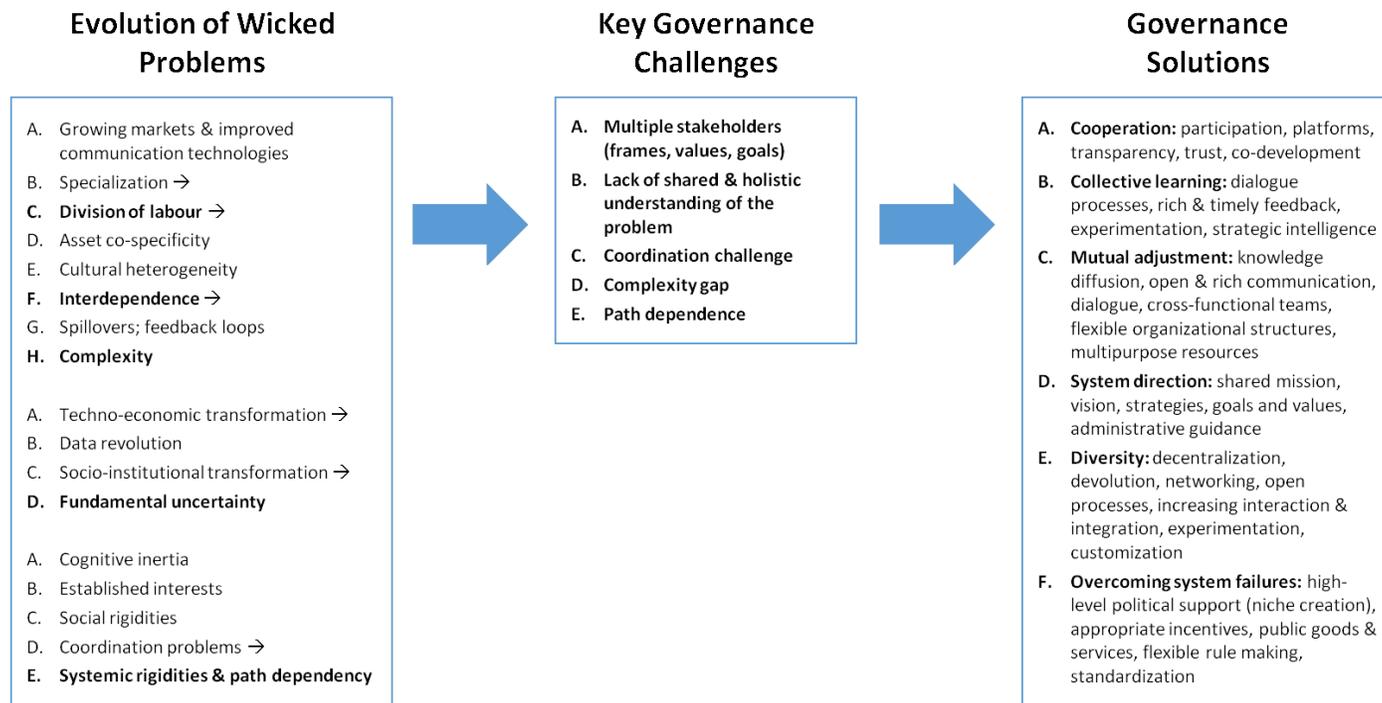


Figure 2. Evolution and governance of wicked problems. (The arrows signify causal relationships.)

arrangements and institutions are changing in unpredictable ways, which makes long-term planning extremely difficult. This uncertainty does not so much stem from the lack of data, the availability of which has exploded in recent decades, but from the insufficiency of the established cognitive frames, theories, and routines with which decision makers try to make sense of all the incoming data (Beer, 1973; Boisot, 1994). The "big data revolution" or narrow evidence-based policy making will not be of much help to decision makers struggling with making sense of wicked problems. Moreover, reactive and unpredictable policy making will only add to the systemic uncertainty.

Third, the long-term evolution and specialization of socio-economic systems tend to create various cognitive, economic, and social rigidities and coordination problems that reduce the behavioural and strategic options available to decision makers (Denning 2007; Fukuyama, 2014; Hämäläinen, 2007a; Olson, 1982; Weber & Rochracher, 2012). These systemic failures and rigidities produce path-dependent behaviour and resource lock-ins, which make structural changes difficult and increase the adaptive tension between the system and its increasingly complex environment.

As a result of these three factors, the established governance arrangements in industrialized societies suffer from a growing complexity gap and adaptive tension – a mismatch between the ever-more-complex environment and the limited capacity of the existing governance arrangements to cope with it (Ashby, 1958; Geyer & Rihani, 2010; Ho, 2012; IBM, 2010). This complexity gap can be found at all levels of the society: individuals suffer from growing life-management problems (Hämäläinen, 2014; Schwartz, 2005), corporations and governments struggle with the rigidities of large bureaucracies (Doz & Kosonen, 2007, 2014; Fukuyama, 2014; Hamel, 2007), and multinational institutions cannot find sustainable solutions to global wicked problems.

How to Build Requisite Variety for Solving Wicked Problems

There are basically two strategies for closing the complexity gap: complexity reduction and complexity absorption (Boisot & McKelvey, 2010). The complexity reduction strategy aims to simplify the incoming data by codification and abstraction (e.g., theories, models, and accounting ratios) or by simplifying the system's environment by reducing the number of interacting ele-

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ments and their interdependencies (e.g., modularization and standardization). This strategy is likely to work best in relatively stable and highly-institutionalized environments (Boisot & Child, 1999). The complexity absorption strategy, in turn, is more appropriate for highly complex and uncertain environments that involve plenty of context-specific and tacit knowledge. This strategy builds requisite variety, adaptability, and new strategic options by diversifying and combining the cognitive frames of key decision makers and increasing the number of system participants and their interdependencies.

The governance of complex systems and wicked problems has been studied by scholars in cybernetics (Beer, 1973; Espejo, 2003), resilience studies (Berkes, 2007; Ho, 2012) and organizational management (Boisot & McKelvey, 2010; Grint, 2005; Hagel et al., 2013; Heifetz & Laurie, 1997). The policy implications of their research are consistent with the complexity absorption strategy. This research suggests that governments should adopt a new stewardship role towards wicked problems in which they support (see Figure 2):

- participation, interaction, and cooperation of all key stakeholders (requisite variety)
- collective learning processes to create more diverse collective mental frames
- coordination by mutual adjustment and a clear overall direction
- growing diversity and experimentation in governance arrangements
- effective measures to overcome systemic rigidities and bottlenecks

The solutions to wicked problems can be searched for and found in multi-stakeholder ecosystems. These ecosystems demand the participation and contribution of all key stakeholders who, initially, have their own specific worldviews, values, goals, and interests. They need to build trust and a more holistic, shared understanding of the problem before a satisfactory and sustainable solution can emerge. The interaction and cooperation of key stakeholders can be facilitated by creating specific platforms and facilitated processes that bring them together for shared dialogues and co-development activities (Berkes, 2007; Klijn, 2008; Roberts, 2000). For example, customized foresight, strategy, workshop, or training processes as well as regular social events and

gatherings can be used for this purpose. However, Roberts (2000) notes that “getting the whole system in the room” is not easy. It is challenging to figure out what the system is, who the stakeholders are and how to select them, how many can be accommodated under one roof, what the agenda will be, and how to facilitate interactions.

Collective learning processes and the collaboration of multiple stakeholders with different backgrounds and interests are often motivated by a major crisis or failure. Fortunately, there are also proactive ways to motivate such processes. These methods focus on other ways of creating the necessary *cognitive dissonance* in the minds of stakeholders (Festinger, 1957; Hämäläinen, 2007b; Heifetz & Laurie, 1997). Useful tools for this purpose include small-scale experiments, strategic intelligence activities (foresight, benchmarking, evaluations), critical research inputs, as well as measurement and feedback systems that challenge the established truths and mental models (Hagel et al., 2013; Hämäläinen, 2007b; Heifetz & Laurie, 1997).

Collective learning processes require deep dialogue that supports the development of shared understandings, language, and trust (Denning, 2007; Roberts, 2000). Ho (2012) describes the experience of the Singaporean government:

“Developing policies and plans to deal with... wicked problems requires the integration of diverse insights, experience and expertise. People from different organizations, both from within and outside of government, have to come together and pool their knowledge in order to discover potential solutions. Cooperative mechanisms need to be set up to enable the sharing of information and to strengthen collective action.”

Collective learning processes can be facilitated by *adaptive leadership* in which the leader (Denning, 2007; Grint, 2005; Heifetz & Laurie, 1997):

- understands the true wickedness and extent of the problem
- facilitates and participates in the social interaction and collective learning process
- does not provide all the answers but frames the key questions and issues
- makes the participants face the difficult problems and their responsibilities

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- protects dissident voices from lower levels of the organization
- exposes conflicts, viewing them as engines of creativity and learning
- manages the rate of change to protect the participants from excessive (paralyzing) uncertainty
- exerts the *soft power* of persuasion, ideological legitimacy, and attractive values rather than command and control
- challenges unproductive norms and orients people to new behaviour and roles

It is also important that the adaptive leader leaves maximum degrees of freedom for the participants so that they can respond to emerging issues and challenges. Self-organization, mutual adjustment, experimentation, and co-evolution tend to work better with wicked problems than rigid plans and organizational structures (Roberts, 2000).

Friedrich Hayek (1945) argued that the key problem in economic organization is the effective application of the dispersed local knowledge of economic actors while, at the same time, facilitating their efficient coordination. Highly complex and uncertain systems cannot be efficiently governed by either markets or hierarchical organization. It requires mutual adjustment among decentralized but interdependent actors, guided by a shared vision, goals, values and rules (Hämäläinen & Schienstock, 2001; Hayek 1983). The overall direction for the system can be reinforced by key performance indicators, administrative guidance, and multilevel partnerships that link actors at different levels of the system (Berkes, 2007; Espejo, 2003; Klijn, 2008).

Collective learning and mutual adjustment can be facilitated with the same policy tools: open and rich communication, cross-functional teams, and knowledge diffusion. Mutual adjustment can also be supported with multi-purpose resources, decentralized decision making, liberal or flexible regulatory environments, as well by standardization of key interfaces in the value-adding system (Baldwin & Clark, 1997).

As suggested above, the complexity gap can also be reduced by increasing the variety and complexity of the governance arrangements. Practical examples include collaborative networking, partnerships, and other hy-

brid organizations, open innovation, co-design, and co-production with customers, matrix structures, public-private-people partnerships, a whole-of-government approach, decentralization and devolution of decision making, as well as task forces and other contingent organizations that are formed on demand (Berkes, 2007; Espejo, 2003; Hagel et al., 2013; Heifetz & Laurie, 1997; Ho, 2012). Due the growing complexity gap, it is not surprising that most new organizational trends seem to move towards increasing variety and complexity.

Finally, wicked problems can rarely be solved without strong support from public authorities in overcoming systemic rigidities and bottlenecks. Their tailored interventions are needed for encouraging the reallocation of productive resources towards new solutions through the provision of appropriate incentives, necessary public goods and services, and appropriate institutional rules (Weber & Rochracher, 2012). The new governance solutions may need a safe niche to develop and show their potential without the interference of established interests or market pressures (Geels & Raven, 2006).

Governance Advantages of Metropolitan Innovation Ecosystems

The economic advantages of cities and metropolitan areas are well known. The agglomeration of people and resources facilitates high levels of specialization, interaction, and complexity, which leads to higher productivity, income, and growth (Bettencourt et al., 2007; Glaeser & Joshi-Ghani, 2013). These multi-stakeholder ecosystems offer the best possible environment for solving wicked problems in policy making. As Glaeser and Joshi-Ghani (2013) argue, cities and metros can also become “the engines of transformative change toward inclusive, people-centered, and sustainable development”. There are seven reasons to believe that cities and metropolitan areas are ideally placed to develop sustainable solutions to wicked policy problems.

First, as dense agglomerations of people and organizations, cities and metros produce many negative externalities and wicked problems that demand innovative new solutions. But, they also have a specific *variety advantage*, meaning the requisite variety of different resources, capabilities, specialized services, and overlapping networks to develop innovative solutions to these complex problems. In addition, cities and metros have a wide variety of job, partnering, and leisure time opportunities, which attract more people with all kinds of skills to move to them, further increasing their diversity. The interaction of the various actors and resources is intensi-

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fied by low transportation and communication costs (Bettencourt, 2013). As Katz and Bradley (2013) emphasize: “[m]etros have emerged as the uber-network: inter-linked firms, institutions, and individuals working together across sectors, disciplines, jurisdictions, artificial political borders, and... even political parties”. And, the bigger the city, the more variety and complexity it has (Bettencourt et al., 2007).

Second, metros and cities can provide the close physical proximity for collective learning, sense-making, and innovation processes that require face-to-face interaction and dialogue as well as plenty of tacit, context-specific information and knowledge (Boisot & Cox, 1999). In addition, the innovativeness of cities grows more rapidly than their population as they become larger (Bettencourt et al., 2007). The physical proximity is also important for the mutual adjustment and coordination of complex networks of interdependent actors. “Metros are integrated rather than compartmentalized. Multiple public, private, and civic actors are empowered to look across challenges, naturally connecting the dots between related issues” (Katz & Bradley, 2013).

Third, metros and cities also have advantages in mobilizing the necessary cooperation. The established local relationships and personal networks provide a good basis for trust-building and cooperation. The similarities in context and daily experiences provide cognitive overlap that facilitates interaction. Key stakeholders are also easier to convene together locally than on a national or international scale. As Glaeser and Joshi-Ghani (2013) conclude, “proximity is valuable precisely because it makes connections easier”.

Bettencourt (2014) underlines the efficient information processing that underlies the above governance advantages:

“Developed cities today are social and technical complex systems characterized by historically unprecedented levels of diversity and temporal and functional integration. This growing individual specialization and interdependence makes large cities extremely diverse and culturally relies on fine temporal and spatial integration and on faster and more information flows. The informational processes lie at the core of what makes cities the economic and cultural engines of all human societies.”

Fourth, because metros and cities are concentrated action networks or *natural economic areas*, the governance solutions for wicked problems are often best aligned with their boundaries. The nature of these prob-

lems and citizen preferences for their solutions are likely to be more homogenous within particular metros and cities than among them. This is also consistent with the principle of *fiscal federalism*, which recommends that the boundaries of jurisdictions should match the benefiting areas of the public good and services that they provide (Oates, 1999). The local efforts to solve wicked problems are also likely to produce more committed and responsible behaviour among citizens when they can participate and see the results of their own contributions. These are their “own challenges” (Katz & Bradley, 2013).

Fifth, the smaller organizations of local governments can also make them more agile than large national ministries and bureaucracies in responding to local development and cooperation needs. Moreover, the local officials and politicians have better contextual knowledge and information, they are directly responsible to their local constituencies, and they do not have to commit themselves to rigid equality and universalism principles of national governments (Oates, 1999).

Sixth, the geographical concentration of people provides ecological sustainability benefits to cities and metros. The same physical infrastructure can serve more people (Bettencourt et al., 2007), commuting and transportation distances are shorter, and housing arrangements are less energy-intensive per capita than in less densely-populated regions.

Finally, the local experimentation of metros and cities is also welcome from the national policy perspective because parallel local experimentation increases the pace of collective learning and innovation while, at the same time, reducing the risks of systemic change compared to full-blown national reforms. However, this requires an appropriate systemic governance arrangement that collects, combines, and shares the lessons learned from successful local governance solutions (Heilmann, 2008; Sabel & Zeitlin, 2012).

Finland as a Frontrunner in Sustainable Well-Being

The transition towards a society of sustainable well-being needs frontrunners. Finland and the Helsinki metropolitan area are well placed to become a global frontrunner in sustainable development and well-being. Finland and the Helsinki metropolitan area could adopt a strategy that builds on a state-of-the-art understanding of well-being. This would yield several benefits (Hämäläinen, 2013):

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- It would help individuals, organizations, and policy makers to make better-informed decisions about how to improve the well-being of citizens and their living environments. This includes targeting the scarce public resources in a way that most effectively promotes the well-being of citizens.
- It would support and motivate the sustainable lifestyle changes of individuals.
- It would help firms to develop more competitive products and services with higher value-added and large international markets (because value ultimately stems from contributions to well-being).
- It would attract international investors and experts looking for world-class well-being knowledge, innovation networks, and living environments.

The economic benefits of sustainable well-being would be particularly attractive. With high costs and living standards, Finnish firms can only succeed with a high value-added strategy in international competition. Given that all value ultimately stems from contributions to individual well-being, a sophisticated understanding of well-being is crucial for the development of economic strategies in high-cost countries. Instead of trying to export the existing welfare services, a sustainable well-being strategy would focus on understanding and serving the changing well-being needs of individuals and communities. World-class well-being knowledge could be applied to create better and more sustainable products, services, policies, institutions, and living environments. This human-centric approach would create a new high-value-added advantage for Finland in the rapidly changing international division of labour.

The transition to sustainable well-being requires fundamental changes in lifestyles, public policies, and institutional structures. Such changes must be supported by cultural beliefs, values, and norms in order to be sustainable. Finland has cultural value orientation that supports a shift towards sustainable well-being. First of all, Finnish values emphasize intellectual autonomy, equality, and harmony. Intellectual autonomy includes independent reflective capacity, holistic worldview, curiosity, and creativity. Equality refers to the concern for the natural environment and the well-being of others. It also emphasizes social justice, responsibility, helpfulness, and honesty. Harmony, in turn, underlines the importance of adapting oneself to the social and natural worlds. It puts a high

value on world peace, conservation, and unity with nature, and the acceptance of one's part in the world (Schwartz, 2011).

Secondly, the Finnish culture also emphasizes secular-rational and self-expression values (WVS, 2015). The secular-rational value orientation rejects religious, authoritarian, absolutist, and traditional family values, while accepting, for example, divorce, abortion, euthanasia, and suicide. The self-expression values, in turn, underline subjective well-being, self-actualization, and quality of life. This value orientation is typical in affluent societies that have already satisfied their economic and physical security needs. Such societies tend to move from materialistic to post-materialistic values, which give high priority to environmental protection, tolerance of diversity, interpersonal trust, and rising demands for participation in decision making in economic and political lives.

The actual quality of life and well-being are also high in Finland. In the 2012 European Quality of Life Survey, Finland ranked second after Denmark both in happiness and the perceived quality of life. The same survey revealed that the citizens of these two countries were also the most successful in balancing work and family lives. The trust in public institutions and among Finnish citizens is high. The Finnish welfare state provides equal educational and healthcare opportunities for all. The high quality of Finnish education and healthcare systems is known worldwide. The well-educated and reliable public authorities maintain well-functioning institutions and safe infrastructures. There is also plenty of space and nature for everyone to enjoy. Finns have a close relationship with nature, which is an important determinant of personal well-being (Basu et al., 2014). It is a great opportunity for Finland and the Helsinki metropolitan area to leverage these advantages to boost their transition to sustainable well-being and to build their attractiveness as a business location and living environment.

Conclusions

The growing specialization and interdependence of societies as well as their rapid technological and economic transformation have increased the level of uncertainty and complexity in decision making and the role of wicked problems in policy making. This article analyzed the nature and evolution of wicked problems and argued that they stem from the growing gap between the complexity of policy problems and the variety of the corresponding governance arrangements.

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This complexity gap can be closed with new governance solutions that include participation, interaction, and cooperation among stakeholders, collective learning processes, coordination by mutual adjustment, and clear systemic direction, decentralization, diversity and experimentation, and effective measures to overcome system rigidities and development bottlenecks.

For several reasons, cities and metropolitan areas are ideal environments for addressing wicked problems. They have special innovation ecosystems that have the requisite variety of resources, capabilities, and services; physical proximity that facilitates rich face-to-face communication, learning and cooperation; as well as the right scope for producing and experimenting with the necessary public goods and services. The article concludes by arguing that Finland and the Helsinki metropolitan area could become a global frontrunner in solving wicked problems in policy making by adopting a strategy of sustainable well-being. This goal could be achieved by building on the world-class knowledge of the Finnish welfare state and the rapidly growing international research on subjective well-being.

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References

- Asby, W. R. 1958. Requisite Variety and Its Implications for the Control of Complex Systems. *Cybernetica*, 1(2): 83–99.
- Balwin, C., & Clark, K. 1997. Managing in an Age of Modularity. *Harvard Business Review*, 75(5): 84–93.
- Basu, A., Kaplan, R., & Kaplan, S. 2014. Creating Supportive Environments to Foster Reasonableness and Achieve Sustainable Well-Being. In T. Hämäläinen & J. Michaelson, J. (Eds.), *Well-Being and Beyond: Broadening the Public and Policy Discourse*. Cheltenham, UK: Edward Elgar.
- Beer, S. 1973. *Designing Freedom*. Massey Lecture. Toronto: Canadian Broadcasting Corporation.
- Berkes, F. 2007. Understanding Uncertainty and Reducing Vulnerability: Lessons from Resilience Thinking. *National Hazards*, 41(2): 283–295.
<http://dx.doi.org/10.1007/s11069-006-9036-7>
- Bettencourt, L. M. A. 2013. *The Kind of Problem a City Is*. SFI Working Paper 2013-03-008. Santa Fe, CA: Santa Fe Institute.
- Bettencourt, L. M. A. 2014. The Uses of Big Data in Cities. *Big Data*, 2(1): 12–22.
- Bettencourt, L. M. A., Lobo, J., Helbing, D., Kühnert, C., & West, G. B. 2007. Growth, Innovation, Scaling, and the pace of Life in Cities. *Proceedings of the National Academy of Sciences*, 104(No): 7301–7306.
<http://dx.doi.org/10.1073/pnas.0610172104>
- Boisot, M. 1994. Information, Economics, and Evolution: What Scope for a Menage a Trois? *World Futures: The Journal of New Paradigm Research*, 41(4): 227–256.
<http://dx.doi.org/10.1080/02604027.1994.9972490>
- Boisot, M., & Child, J. 1999. Organizations as Adaptive Systems in Complex Environments: The Case of China. *Organization Science*, 10(3): 237–252.
<http://dx.doi.org/10.1287/orsc.10.3.237>
- Boisot, M., & Cox, B. 1999. The I-Space: A Framework for Analyzing the Evolution of Social Computing. *Technovation*, 19(9): 525–536.
[http://dx.doi.org/10.1016/S0166-4972\(99\)00049-8](http://dx.doi.org/10.1016/S0166-4972(99)00049-8)
- Boisot, M., & McKelvey, B. 2010. Integrating Modernist and Postmodernist Perspectives on Organizations: A Complexity Science Bridge. *Academy of Management Review*, 35(3): 415–433.
- Casti, J. 2012. *X-Events: The Collapse of Everything*. New York: Harper Collins/Morrow.
- Denning, P. J. 2007. Mastering the Mess. *Communications of the ACM*, 50(4): 21–25.
<http://dx.doi.org/10.1145/1232743.1232763>
- Doz, Y., & Kosonen, M. 2007. *Fast Strategy: How Strategic Agility Will Help You Stay Ahead of the Game*. Philadelphia, PA: Wharton School Publishing.
- Doz, Y., & Kosonen, M. 2014. *Governments for the Future: Building the Strategic and Agile State*. Sitra Studies 80. Helsinki: Sitra.

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- Espejo, R. 2003. Social Systems and the Embodiment of Organizational Learning. In E. Mitleton-Kelly (Ed.), *Complex Systems and Evolutionary Perspectives on Organizations: The Application of Complexity Theory to Organizations*. Amsterdam: Elsevier Science.
- Festinger, L. 1957. *A Theory of Cognitive Dissonance*. Evanston, IL: Row, Peterson and Company.
- Freeman, C., & Louca, F. 2002. *As Times Go By: From the Industrial Revolutions to the Information Revolution*. Oxford, UK: Oxford University Press.
- Freeman, C., & Perez, C. 1988. Structural Crises and Adjustment, Business Cycles and Investment Behavior. In G. Dosi, F. Christopher, N. Richard, G. Silverberg, & L. Soete (Eds.), *Technical Change and Economic Theory*. London: Pinter Publishers.
- Fukuyama, F. 2014. America in Decay. *Foreign Affairs*, 93(5): 3–26.
- Geels, F., & Raven, R. 2006. Non-Linearity and Expectations in Niche-Development Trajectories: Ups and Downs in Dutch Biogas Development (1973-2003). *Technology Analysis & Strategic Management*, 18(3-4): 375–392. <http://dx.doi.org/10.1080/09537320600777143>
- Geyer, R., & Rihani, S. 2010. *Complexity and Public Policy: A New Approach to 21st Century Politics, Policy & Society*. London: Routledge.
- Grint, K. 2005. Problems, Problems, Problems: The Social Constructions of Leadership. *Human Relations*, 58(11): 1467–1494. <http://dx.doi.org/10.1177/0018726705061314>
- Hagel, J., Brown, J. S., Samoylova, T., & Arkenberg, C. 2013. *Coherency in Contradiction*. Report 5 of the 2013 Shift Index Series. Westlake, TX: Deloitte University Press.
- Hamel, G. 2007. *The Future of Management*. Cambridge, MA: Harvard Business School Press.
- Hayek, F. A. 1945. The Use of Knowledge in Society. *The American Economic Review*, 35(4): 519–530.
- Hayek, F. 1983. *Law, Legislation and Liberty: Volume I, Rules and Order*. Chicago, IL: The University of Chicago Press.
- Heifetz, R., & Laurie, D. 1997. The Work of Leadership. *Harvard Business Review*, 75(1): 124–134.
- Heilmann, S. 2008. From Local Experiments to National Policy: The Origins of China's Distinctive Policy Process. *The China Journal*, 59(Jan): 1–30. <http://dx.doi.org/10.2307/20066378>
- Ho, P. 2012. *Governing for the Future: What Governments Can Do*. RSIS Working Paper No. 248. Singapore: S. Rajaratnam School of International Studies.
- Hämäläinen, T. 2003. *National Competitiveness and Economic Growth: The Changing Determinants of Economic Performance in the World Economy*. Cheltenham, UK: Edward Elgar.
- Hämäläinen, T. 2007a. Social Innovation, Structural Adjustment and Economic Performance. In T. Hämmäläinen & R. Heiskala (Eds.), *Social Innovations, Institutional Change and Economic Performance: Making Sense of Structural Adjustment Processes in Industrial Sectors, Regions and Societies*: 11–51. Cheltenham, UK: Edward Elgar. <http://dx.doi.org/10.4337/9781847206992.00008>
- Hämäläinen, T. 2007b. Policy Implications: How to Facilitate the Structural Adjustment and Renewal of Advanced Societies? In T. Hämmäläinen & R. Heiskala (Eds.), *Social Innovations, Institutional Change and Economic Performance: Making Sense of Structural Adjustment Processes in Industrial Sectors, Regions and Societies*: 95–119. Cheltenham, UK: Edward Elgar. <http://dx.doi.org/10.4337/9781847206992.00011>
- Hämäläinen, T. 2013. *Towards a Sustainable Well-Being Society: Building Blocks for a New Socioeconomic Model*. Helsinki: Sitra.
- Hämäläinen, T. 2014. In Search of Coherence: Sketching a Theory of Sustainable Well-Being. In T. Hämmäläinen & J. Michaelson (Eds.), *Well-Being and Beyond: Broadening the Public and Policy Discourse*: 17–67. Cheltenham, UK: Edward Elgar.
- Hämäläinen, T., & Michaelson, J. (Eds.) 2014. *Well-Being and Beyond: Broadening the Public and Policy Discourse*. Cheltenham, UK: Edward Elgar.
- Hämäläinen, T., & Schienstock, G. 2001. The Comparative Advantage of Networks in Economic Organisation: Efficiency and Innovation in Highly Specialized and Uncertain Environments. In *Innovative Networks: Co-Operation in National Innovation Systems*: 17–45. Paris: Organisation for Economic Co-operation and Development (OECD).
- IBM. 2010. Capitalizing on Complexity: Insights from the Global Chief Executive Officer Survey. *IBM.com*. Accessed October 1, 2015: <http://www-935.ibm.com/services/us/ceo/ceostudy2010/index.html>
- Katz, B., & Bradley, J. 2013. *The Metropolitan Revolution: How Cities and Metros Are Fixing Our Broken Politics and Fragile Economy*. Washington, DC: Brookings Institution Press.
- Klijin, E-H. 2008. Complexity Theory and Public Administration: What's New? *Public Management Review*, 10(3): 299–317. <http://dx.doi.org/10.1080/14719030802002675>
- Oates, W. 1999. An Essay on Fiscal Federalism. *Journal of Economic Literature*, 37(3): 1120–1149. <http://dx.doi.org/10.1257/jel.37.3.1120>
- O'Hara, M., & Lyon, A. 2014. Well-Being and Well-Becoming: Reauthorizing the Subject in Incoherent Times. In T. Hämmäläinen & J. Michaelson (Eds.), *Well-Being and Beyond: Broadening the Public and Policy Discourse*: 98–122. Cheltenham, UK: Edward Elgar.
- Olson, M. 1982. *The Rise and Decline of Nations*. New Haven, CT: Yale University Press.
- Rauschmayer, F., Omann, I., & Fruhmman, J. 2011. Needs, Capabilities, and Quality of Life: Re-Focusing Sustainable Development. In F. Rauschmayer, I. Omann, & J. Fruhmman (Eds.), *Sustainable Development: Capabilities, Needs, and Well-Being*: 1–24. London: Routledge.
- Rittel, H., & Webber, M. 1973. Dilemmas in a General Theory of Planning. *Policy Sciences*, 4(2): 155–169. <http://dx.doi.org/10.1007/BF01405730>
- Roberts, N. 2000. Wicked Problems and Network Approaches to Resolution. *International Public Management Review*, 1(1): 1–19.
- Sabel, C., & Zeitlin, J. 2012. Experimentalist Governance. In D. Levi-Faur (Ed.), *The Oxford Handbook of Governance*: 169–183. Oxford, UK: Oxford University Press. <http://dx.doi.org/10.1093/oxfordhb/9780199560530.013.0012>

Metropolitan Innovation Ecosystems as Frontrunners to Sustainable Well-Being

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- Schwartz, B. 2005. *The Paradox of Choice: Why More is Less*. New York: Harper Perennial.
- Schwartz, S. H. 2011. *Kulttuuriset arvo-orientaatiot: kansallisten erojen luonne ja seuraukset*. Helsinki: Limor Kustannus.
- Wallis, J., & North, D. 1986. Measuring the Transaction Sector in the American Economy, 1870–1970. In S. Engerman & R. Galman (Eds.), *Long-term Factors in American Economic Growth*: 95–162. Chicago, IL: University of Chicago Press
- Weber, K. W., & Rochracher, H. 2012. Legitimizing Research, Technology and Innovation Policies for Transformative Change: Combining Insights from Innovation Systems and Multi-Level Perspective in a Comprehensive ‘Failures’ Framework. *Research Policy*, 46(6): 1037–1047.
<http://dx.doi.org/10.1016/j.respol.2011.10.015>
- WCED. 1987. *Our Common Future: Report of the World Commission on Environment and Development*. New York: United Nations.
- WVS. 2015. Findings and Insights: Cultural Map – WVS Wave 6 (2010–2014). World Values Survey (WVS). Accessed October 1, 2015:
<http://www.worldvaluessurvey.org/wvs.jsp>

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