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Strategic Agility in Public Management
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1. Introduction

Governments in industrialized societies are facing a historical adjustment challenge. The current technological revolution and the transformation of the world economy are fundamentally changing their societies and operating environments. The social and institutional adjustments to the new techno-economic realities are not easy. In the long historical perspective, the recent economic turmoil can be understood as a structural adjustment crisis (Freeman and Perez 1988). The crisis has led to unsustainable levels of public borrowing which will ultimately force governments to rethink their role and tasks in the society. The required budget cuts and structural changes will present unprecedented renewal challenges to the public sector.

The crisis of the old economic paradigm coincides with the crisis of the old energy paradigm based on cheap fossil fuels. Effective responses to climate change require new life styles, technologies, institutions and policies. At the same time, the rapid expansion and increasing specialization of international production networks is reshaping the established location-specific advantages of regions and countries for different types of business activities (Baldwin 2006). Established economic structures are in flux as many traditional economic activities become unviable in their current locations and are relocated to other parts of the world. Governments are struggling to find ways of supporting the development of new business activities that could substitute for the lost ones (Arvidsson and Mannervik 2009; Hämäläinen 2010; Scottish government 2011; Bakhshi, Freeman and Potts 2011).

Modern information technologies are also changing the way civic society operates and citizens live their lives. Societies are becoming more transparent and interactive. Increasingly educated and affluent citizens demand more open and participatory decision making and service development processes. At the same time, corrupted politicians and civil servants become more easily exposed to public criticism.

The globalization of business activities, culture and human interaction has created a growing need for public goods and services at the international level where institutional structures are still insufficient. Financial markets, global pandemics, international drug trafficking, organized crime, terrorism and climate change are the most visible global challenges that currently call for supranational governance solutions. Many more public goods and services need to be produced at the international level in the future.

The decision making processes of governments are being fundamentally challenged by the current transformation. The world of public and private decision makers is characterized by increasing dynamism, information overload, uncertainty, specialization, interdependence, complexity and unintended consequences (IBM 2010). Today's economies and societies can be conceptualized as *multi-level nested systems-of-systems* or *complex adaptive systems* (Gunderson and Holling 2002; Fischer 2006; Beinhocker 2007). Such systems consist of multiple interacting and interdependent sub-systems at different levels of aggregation in which numerous decision makers interact, adapt, learn and innovate. These systems are characterized by emergent phenomena and evolutionary processes.

The rapid technological, economic and environmental changes have challenged the established organizational and institutional arrangements of industrialized societies. Those societies that are first able develop well-functioning organizational and institutional solutions for the new techno-economic environment will most likely perform best in the coming decades. This is due to the "increasing returns" and massive productivity benefits that stem from the positive systemic externalities, complementarities and synergies of a coherent and well-functioning socio-economic system (Arthur 1994; Hämäläinen 2007a). The countries that successfully combined mass production and consumption with large hierarchical organizations and welfare state institutions after the Second World War provide a good historical example of the benefits of these systemic synergies.

On the other hand, societies that adjust their institutions slowly or only in a piecemeal way are likely to get stuck in a "decreasing returns" regime of low productivity growth, poor economic performance and relative social decline. The poor economic performance of the Great Britain after the second industrial revolution is a case in point. It became a "prisoner of its own success" and could not change its economic and social structures quickly enough when the new mass-production paradigm demanded it (Freeman 1995).

2. Need for a new policy approach

Traditional large hierarchical organizations and long-term planning face increasing problems in the new environment that calls for rapid adaptation to environmental changes and unexpected organizational demands (Fischer 2006, Espejo and Gill 1989). Many big corporations have already adopted new organizational arrangements that are better adjusted to the new operating context (see e.g. Heckscher and Adler 2006; Doz and Kosonen 2008). In contrast, the public sector is still largely organized according to the old hierarchical paradigm. Thus, many

governments have been both surprised and overwhelmed by the recent economic, environmental, health and security crises.

The problems of hierarchical planning and rational decision making in dealing with complex social problems are not new to public governance scholars. Charles Lindblom noted long ago that real policy making processes are characterized by incremental analysis and decision making - or "muddling through" - rather than rational, comprehensive analysis and major policy reforms (Lindblom 1959; 1979). However, practical difficulties in implementing the "rational-comprehensive" approach have not prevented policy makers from holding it as an ideal towards which they should steer public policy making.

The growing interest in "evidence-based policy making" (EBP) is a recent example of this conviction. Despite increasing amounts of data and analysis, the EBP has not able to meet the challenge of the new "wicked problems" and the increasing complexity and uncertainty of socio-economic environment. More than new data and analysis, these governance challenges require new interpretative frames and theories from policy makers. The EBP is best when applied to narrow policy questions in relatively stable policy fields (Mulgan 2009; Head 2010).

Although "muddling through" has often been more effective than hierarchical planning in dealing with complex policy problems, it has its own weaknesses in the rapidly changing policy environment. The focus on incremental changes may lead to sub-optimization and path-dependence when major changes in the society or its environment would require more fundamental adjustments in policy directions. "Grand issues" are usually "simply left off the agenda" (Lindblom 1979, 523).

The risks of path-dependency are aggravated by the fact that this approach to policy making relies heavily on competing interests to point out the relevant information for decision making. Since entirely new policy approaches and directions tend to have weak or non-existent interest groups the policy making process is usually dominated by established interests. Moreover, the day-to-day struggle and mutual adjustment of different political interests often excludes long-term issues from the political agenda. The incremental policy approach reinforces this tendency for short-sighted policy making though, in principle, it didn't have to do so (Lindblom 1959).

Finally, a reactionary focus on incremental "ills to be remedied" does not produce a broader positive vision that could coordinate and energize the decentralized change efforts of numerous interdependent actors. As a result, the various change efforts may lack sufficient motivation and drive to succeed and the mutual adjustment of

interdependent actors may not converge into any coherent and synergistic whole (Hämäläinen and Schienstock 2001).[1]

The new public sector governance arrangements should ideally be able to solve many of the problems that hierarchical and incremental policy making approaches have in the new socio-economic environment. This paper will introduce a new governance framework that attempts to do that. It builds on the experience of major corporations that have successfully combined high levels of efficiency and productivity with strategic and organizational flexibility (Doz and Kosonen 2008). There are good reasons to believe that their experience is useful and relevant for the renewal of public sector governance arrangements. We will also incorporate relevant findings from recent research on social innovation processes (Hämäläinen and Heiskala 2007).

This paper is an attempt to open a discussion on new governance principles that could make the public sector more "strategically agile". In practice, strategic agility means the capacity of an organization to proactively identify and respond to emerging policy challenges so as to avoid unnecessary crises and carry out strategic and structural changes in an orderly and timely manner (Doz and Kosonen 2008). We believe that the more rapidly changing, uncertain and complex operating environment will put a premium on such capacity in the public sector. Since many of the organizational principles discussed in this paper have originated from the private sector ascertaining their applicability in the public sector requires further research and discussion.

The next two sections of the paper will analyze the various types of rigidities that may prevent proactive systemic and organizational changes. The following section will discuss the similarities and differences between private and public sectors which influence the transferability of private sector organizational solutions to the public sector. In this section, we will also introduce the idea that governments could adopt a broader "macro-organizational" role in which they would closely cooperate with the private and third sectors in order to foster broader systemic changes. In the last three sections of the paper, we will use the strategic agility framework of to discuss the ways in which "strategic sensitivity", "collective commitment" and "resource fluidity" could be improved in public sector organizations and in the wider society.

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[1] Lindblom himself noted the need for a "broader" or "higher" set of lasting "ambitions", "ideals" or "directions". He argued that such higher ambitions are often fuzzy: "At best they can only be incompletely analyzed – held in the mind loosely where they are beset by internal contradictions… Perhaps they enter into our thinking most significantly through posing trade-off problems, in which incremental gains on one front are traded against decrements on others." According to Lindblom, visionary thinking can provide a shared frame and understanding of complex policy issues. Thus it complements the more practical problem solving efforts at the grassroots level (Lindblom 1979, 519, 522).

3. Accumulation of systemic rigidities in stable conditions

The strong economic growth and relatively stable environment of the postwar decades provided a fruitful ground for the accumulation of various types of organizational and institutional rigidities in industrialized societies. These rigidities can be analyzed at different systemic levels. We will first discuss them at the societal level where structural adjustment processes involve many interdependent agents in different sectors. Then we will focus on the organizational rigidities of the public sector.

The governments of industrialized societies adopted the hierarchical and divisionally-structured governance model of large business conglomerates after the Second World War (Mintzberg 1996). This governance model emphasized top-down planning and performance measurement in addition to the more traditional rules and regulations. It performed well with the relatively simple public bureaucracies and stable socio-economic environment of the postwar decades.

Over time, however, the growth of welfare state functions led to increasing organizational specialization, interdependence and complexity (Hämäläinen and Schienstock 2001). Hierarchical coordination of such highly-specialized and complex activities became problematic once the pace of socio-economic change grew in the 1970s. Since the early 1990s, public sector governance problems were further aggravated by new horizontal policy challenges related to the current socio-economic transformation. Coordination failures among separate government "silos" became increasingly evident. Today, public hierarchies seem too *rigid* and *path-dependent* to meet the new systemic adjustment challenges of industrialized societies (OECD 2005). Where did all this rigidity come from?

Human beings, organizations and other social collectivities tend to create *mental inertia* in stable conditions where continuous positive feedback from regular activities reinforces established cognitive frames and behavioral models (Huff and Huff 2000). Collective mental rigidities shape and filter the issues that can enter into public discussion as well as to collective learning and policy making processes. Human communities do not usually recognize their shared basic assumptions though these may spark emotional responses if challenged (Bohm 2004; Hämäläinen 2007a). Governments tend to look for evidence that confirms their established beliefs and ignore information that challenges them (Mulgan 2009).

Stable environments also strengthen *established interests* (Olson 1982). Strong interest groups usually have the most to lose economically and politically if the pace of structural change accelerates. These groups tend to have specialized skills and assets which lose value in major systemic changes. In addition, long-term success and environmental stability also deepen *social bonds and networks* which can become constraining once more radical changes are needed (Seo and Greed 2002).

The fear of becoming socially excluded may prevent people from "rocking the boat" with radical ideas or initiatives (Bohm 2004). Finally, many socio-economic systems are so complex and interdependent that carrying out coherent systemic changes is very *difficult in practice* (Hämäläinen 2007a). This is especially true if there is no "orchestrating" agent with system-wide interests and coordination capabilities. Since orchestration is a *public good* for the whole actor-network individual private agents often lack the incentives for undertaking that role (Schienstock and Hämäläinen 2001).

4. Sources of organizational inertia

Doz and Kosonen (2008) have studied the organizational sources of strategic agility and rigidity in private corporations. Many sources of strategic rigidity that they identified in the corporate world also cause organizational inertia in public sector organizations. We will now analyze these factors along the three dimensions of their framework: *strategic sensitivity*, *collective commitment* and *resource fluidity*.

Strategic sensitivity. The strategic sensitivity and mental flexibility of public sector managers can be blurred, inter alia, by *tunnel vision, strategic myopia* and *external praise*. Tunnel vision refers to the gradual narrowing of management's mental frames when they focus tightly on the organization's core activities. Since these mental frames determine what information will receive attention, tunnel vision tends to limit the range of alternative solutions considered to the ones already known and familiar. Clear division of labor and lack of horizontal cooperation among public sector organizations can lead to tunnel vision in stable conditions where external circumstances or resource scarcities do not challenge the established cognitive frames.

Both individuals and organizations suffer from short-sightedness. Public sector organizations do not have the competitive and financial market pressures of major corporations but they must accommodate the rapidly evolving interests of their politically elected leaders. These interests rarely extend beyond next elections. Moreover, annual budgeting processes make major long-term commitments and investments difficult for policy makers (OECD 2005).

Successful corporations sometimes fall victims of a "dominant mindset" (Doz and Kosonen 2008). They learn to take their dominant position for granted in all their business relationships. This becomes a problem in a networked economy where balanced cooperative relationships are the key to long term success. The politicians and policy makers of successful nations face a similar risk. International praise for success in competitiveness and well-being rankings may breed complacency and a dominant mindset if decision makers start to think that "we have it here", "our

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model is the best!" The risk increases if international delegations flock in the country to study its "Miracle".

Collective commitment. Carrying out systemic changes requires collective commitment from all the key stakeholders. Such commitment is difficult to achieve if the management groups of relevant public sector organizations are too divergent, charmed by their political power, reliant on their own expertise or lack the emotional drive to implement changes (Doz and Kosonen 2008).

The growing size and specialization of public sector organizations tends to separate their managers from each other as their own organizational units demand more attention and personal incentives and ambitions focus their attention to subunit goals. Over time, individual policy domains develop their own communities with *specific belief systems, ideologies, preferences* and *educational backgrounds*. There are also practical differences among policy domains which make policy integration more difficult. Different policy domains have *different stakeholders* with various preferences and needs (e.g. firms vs. individual citizens). *Policy drivers* may also differ. For example, environmental and sustainable development policies are usually driven by international agreements and global problems; whereas innovation policy has traditionally focused on national issues. *Policy measures* also tend to vary among policy domains. Financial subsidies are commonly used in innovation and industry policy; whereas environmental policies often use fiscal incentives and regulation. Finally, the resources available to different public sector organizations (and other stakeholders) differ which may hamper joint-actions (OECD 2005)

The top leaders of public sector organizations have a lot of power. Sometimes they can become intoxicated by their own power and fame in a way that affects their risk taking and creates harmful organizational turf battles. The probability of such power games is further increased by an overall scarcity of resources which turns resource allocation processes into a zero-sum-game where one manager's gain is another's loss (OECD 2005). Inflated egos may also surround themselves with people who have similar values and backgrounds which decreases the quality of dialogue among managers (Doz and Kosonen 2008).

"Expert management" is a characteristic of strong leaders with a proven track record. When such leaders get together there may be too little dialogue and critical thinking if they respect each others' expertise and organizational turf too much. On the other hand, expert managers may also end up in excessive debate and no consensus if there is an acute need to find a shared agenda or coordinate interdependencies.

Public sector leaders do not get similar rapid feedback from their decisions as their counterparts in the private sector. The results of public policy making are often rather difficult to assess (Wolf 1988). Achieving collective commitment would require

continuous policy analysis, evaluation and learning as well as a strong shared knowledge base (OECD 2005). Hardly any government has such a capacity at the strategic policy making level, yet.

Finally, emotional apathy may become a source of organizational rigidity if public sector managers and leaders lose interest in what they are doing and get tired. The risk of emotional apathy grows when future opportunities look less thrilling than past experiences. This is a real threat in the public sector where large numbers managers and leaders approach their retirement age in a situation where major cuts in public spending need to be made in the coming years.

Resource fluidity. The last group of factors causing organizational rigidity affects the mobility of resources among alternative uses. Governments may lose their ability to move money and human resources across the public sector in a flexible manner if the various ministries and agencies hold tightly on to their "established" resources in the budgeting process. Conventional planning and budgeting systems may aggravate this problem if they leave little flexibility for reallocation of resources among different policy priorities between parliamentary elections or consecutive budgeting periods.

Highly specialized and tightly integrated activity systems may also become a constraint to resource fluidity. Highly efficient and tailored operating systems may not support new types of activities or the sharing of expertise and resources among different organizational units.

Long-lasting relationships with customers and external partners may further reduce the flexibility of resource allocation processes. As we noted above, social ties tend to bind decision makers in path-dependent behavior. Emerging new areas tend to receive much less attention and resources than the established areas of activity. Often such long-lasting social relationships are further strengthened by technological, organizational, institutional and other ties.

Finally, resource transfers may be inhibited by competence gaps if there is not sufficient human capital to support the new activities. New strategies tend to require new types of competences which may not be available for the organization and which may take a long time to develop. Sometimes such competence gaps lead to a mismatch between the strategic goals of the organization and their implementation plan. The strategy may reflect the organization's changed environment; while the implementation plan is built on the organization's existing competences.

5. Do private sector solutions work in the public sector?

There are good reasons to believe that many of the organizational solutions that firms have developed in response to the growing complexity and uncertainty of

socio-economic environment could equally well work in the public sector. First of all, the environmental and societal driving forces are, to a large extent, the same in these two sectors: new technologies, globalization, growing interdependencies, increased uncertainty, changing preferences of people, etc.

Second, all social systems - corporations and nation states included - share some common features regardless of their systemic level or scope. They all involve a community of people with some shared interests, goals, resources, policies and institutional rules. Not surprisingly, there have been a few attempts to develop "general theories" of social systems and their change processes (see e.g. Parsons 1971; Hämäläinen 2007a). It would be surprising if similar organizational solutions and principles would not work in both sectors.

Third, the history of organizational innovations reveals that they have often spread from the private to the public sector. For example, the mass production system was first developed and adopted by large corporations in the late 19th century (Chandler 1962) but, after the Second World War, it also became a standard organizational arrangement in the production of public welfare services. More recently, private sector organizational innovations such as "management by objectives" and "outsourcing" were also adopted in the public sector.

However, there are also some important differences between the public and private sectors which are likely to constrain the transferability of private sector organizational solutions to the public sector. The *democratic decision making* process is quite different from that of major corporations. Unlike politicians and public policy makers, corporate leaders do not need the support of the wider public when they decide on major strategic changes. Public policy makers often have to facilitate collective learning (and unlearning) processes before major policy reforms become possible (Hämäläinen 2007a). Democratic decision processes are also characterized by *active lobbying* of special interest groups. These groups often have considerable influence in public policy making (Olson 1982). Although major corporations must also sometimes face active special interest groups, the use of political power and public funds attract them even more to public policy making.

Public policy makers also have to take into account multiple and often *contradictory goals* instead of the unitary profit goal of corporations. The *heterogeneity of public sector stakeholders* often necessitates a more general and standardized approach. Public sector solutions need to serve different types of individuals and organizations. Private corporations can usually choose a preferred subgroup as a target for their activities (Mulgan 2009).

The tradeoffs among various organizational goals create difficult optimization problems for public policy makers. For example, the economic efficiency and social equity goals may be difficult to achieve simultaneously (Okun 1975). The results of

public policy making are also more difficult to measure. There are usually multiple interacting causes and effects in public policy making (Mulgan 2009). What is, for example, the value-added of annual defense budgets? Or, how much well-being would various social policy alternatives produce? Hence, input and process criteria are often substituted for output criteria in the evaluation of public sector performance (Hämäläinen 2003).

Finally, the public sector has quite specific *employment constraints*. The fact that the public sector operates on tax revenues puts a lid on public sector salaries which has a negative effect on its attractiveness in the eyes of talented employees. In addition, the lack of market pressure and competition makes public sector jobs more secure and personnel change less frequent (Wolf 1988). Both of these factors may constrain the capacity of public sector management to undertake major reforms that would require new human capital (Stiglitz 1989).

The differences between private and public sectors underline the fact that government policies and activities not only affect public sector organizations but also actors in the private and third sectors, and *vice versa*. Not unlike their networked counterparts in the private sector, governments operate in a broader web of interdependencies which extends far beyond public sector organizations. Hence, governments *can* potentially influence the strategic agility of the private and third sector actors – and thus the whole society. Indeed, we would argue that they *should* do so because the government is the only agent in the society with a society-wide interest and responsibility (Dunning 1992).

In the future, the government role cannot be limited only to the public sector, or just one level of governance. Modern societies are dynamic, multi-level systems-of-systems which involve *differentiated public goods and institutions* at all systemic levels (Pelikan, 1987; Gunderson and Holling 2002).[2] Public sector organizations are often best positioned to *develop, produce, arrange* and/or *coordinate* the production such public goods and institutions, especially at higher systemic levels. This broader "macro-organizational" or "orchestrating" government role requires close cooperation and coordination with private and third sector actors (Dunning 1992; Metcalfe 1993; Wallin and Su 2010). The macro-organizational role introduces a new dimension to the strategic agility framework that was originally developed for large corporations. The following figure describes the *extended strategic agility framework* within which public sector strategists must operate. We will next turn to analyze the

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[2] For example, organizational sub-units, organizations, industrial sectors, regions and nations all have their own cultural and behavioral norms and institutional rules. They also tend to utilize some shared resources and require coordination of interdependent activities.

ways in which public policy makers can improve the strategic agility of public sector organizations and, more broadly, their societies.
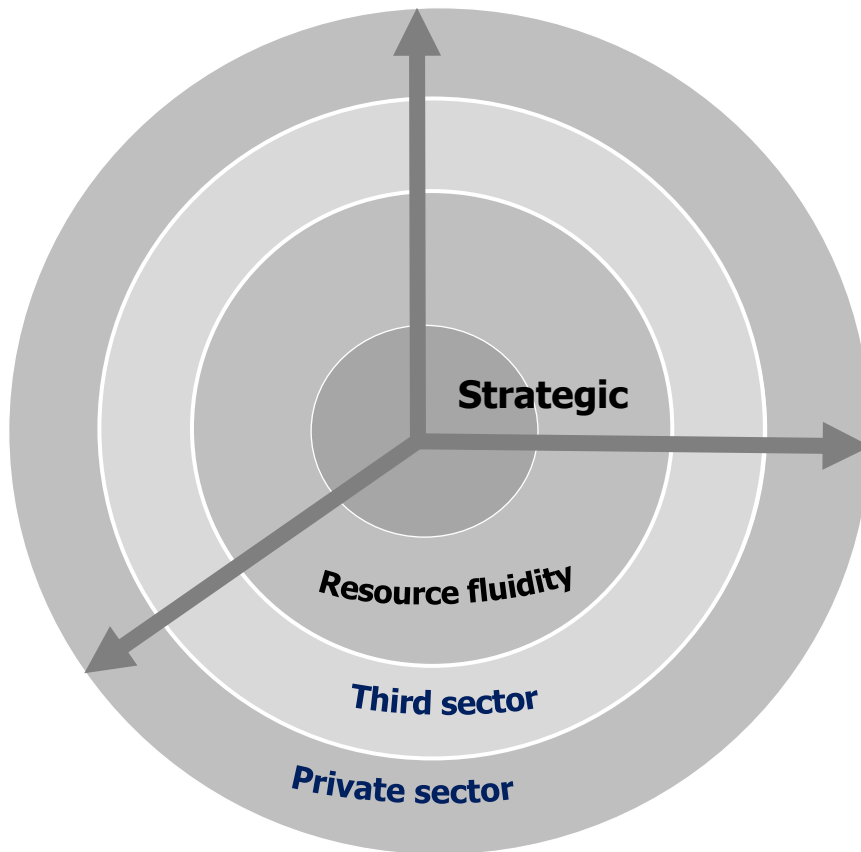

Figure 1. Extended strategic agility framework

6. Improving strategic sensitivity

Most private sector organizational innovations that have spread to the public sector in recent years have been *efficiency-oriented* – for example outsourcing, competitive procurement, shared IT policies and service centers. They have not been aimed at improving the strategic agility (effectiveness and flexibility) of public sector organizations or the wider society.[3] We will now use the strategic agility framework to find out how the strategic sensitivity, collective commitment and resource fluidity of public sector organizations, and societies more generally, can be improved.

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[3] The OECD summarizes the governments' lack of interest in strategic governance issues: "when priority is accorded to efficiency, strategic needs are typically neglected" (OECD 2005).

Sensitivity to emerging environmental and societal changes is a crucial precondition of strategic agility for public sector organizations in the increasingly volatile and complex environment. According to an experienced government strategist: "Most of the day to day errors in government start off as errors of observation – failing to see important realities, screening out uncomfortable facts, or simply misreading the world" (Mulgan 2009, 41). Strategic sensitivity requires early recognition of emerging environmental and social trends, high quality dialogue with internal and external key stakeholders, and an ability to frame strategic issues in a fresh and insightful way. Organizational factors that support high strategic sensitivity are very similar to those that promote radical innovations (Hollingsworth 2009): (a) increased cognitive contradictions, (b) sufficient cognitive diversity and (c) intensive communications.

Cognitive contradictions. Strategic sensitivity requires an ability to overcome the complacency and routinized ways of thinking, which are natural tendencies for human beings who prefer a "stable state" psychologically (Schön 1973). Personal or organizational crises often manage to break the established cognitive and behavioral routines by introducing cognitive contradictions which create an intolerable *cognitive dissonance* in the minds of decision makers (Festinger 1957). The unpleasant dissonance encourages individuals and organizations to reflect their current cognitive and behavioral patterns and reframe their current situation and operating environment. This opens a window for new strategic insights (Hämäläinen 2007a).

Crises are not the only sources of cognitive contradictions that prepare minds for new insights. There are organizational tools that can be used purposefully to create cognitive tensions that motivate reframing (Doz and Kosonen 2008). First, organizations can use *stretched goals*, such as ambitious vision statements, to challenge the prevailing organizational practices and services. Such visions can be reinforced by "burning-the-bridges" type of public announcements where the leaders commit themselves and their organizations to major changes. For example, the Kennedy administration's goal of "landing a man on the moon" by the end of the decade provided the NASA a strong leadership commitment and a mind-stretching challenge in 1961.

Cognitive tensions can also be heightened by the introduction of *contradictory goals* and *multidimensional organizational structures*. They force employees to search for new solutions that go beyond the conventional wisdom and take into account multiple perspectives. Since the 1960s, many large corporations have adopted matrix structures that incorporate these two organizational characteristics.

Matrix structures have many benefits in the current fast-changing and complex organizational environment. According to Ashby's (1958) *Law of requisite variety*, the increasing complexity of operating environment requires corresponding increases in the complexity of governance arrangements. The multidimensionality of matrix

structures can match the complexity of modern value-adding processes and operating environments. They facilitate rich information flows, innovative solutions and allow for quick resource transfers. However, matrix structures also involve many management challenges. These include: the difficulty of aligning multiple goals, unclear roles and responsibilities, ambiguous authority relationships, silo-focused employees and the need for a "matrix guardian" who would guarantee the smooth functioning of the matrix (Sy and D'Annunzio 2005).

Public sector organizations must face these challenges if they adopt the matrix structure. In established public hierarchies, functional goals, occupational roles, personal responsibilities and authority relationships tend to be fairly clear. There is limited cross-functional or cross-sector interaction. Long careers in the same function, agency or ministry build strong commitment and identification with a particular cognitive frame and organizational culture. These organizational characteristics do not prepare civil servants well for a transition to a matrix structure.

The problems with the transition to a matrix structure are reduced if employees have previous cross-functional work experience. Such experience can be developed by institutionalizing job rotation among the different functions and units of the organization. Employees can also be trained in the skills needed with the new organizational form. In addition, training can reinforce the organization's shared vision, values and goals. Informal social events can also build new relationships and social capital across the organization (Doz and Kosonen 2008; Sy and D'Annunzio 2005).

Useful insights can also be catalyzed by *defining the core activities of the organization more broadly and openly* than just describing what it does today. For example, the broader macro-organizational frame may reveal new opportunities for beneficial systemic interventions and private-public partnerships. The broader perspective opens up a whole new opportunity space in which policy makers can influence actors in other sectors and systemic levels.

One example of the more broadly applicable policy measures are *experimental activities* (Hämäläinen 2007b; Mulgan 2009). Small scale pilot projects or simulations are low risk mechanisms for testing alternatives to the established operating models and mechanisms. If an experiment or simulation works better than the established system, the resulting contradiction can spark a critical re-evaluation of current practices and prepare ground for further discussion and development of alternatives. Such experiments can be done in the public, private and third sectors, or in cooperation among them.

A successful experimentation policy requires sound evaluation practices and the capability to scale up successful experiments (Mulgan 2009). Since policy experiments are rarely done in laboratory settings they tend to be sensitive to their

particular real life contexts. This requires high levels of expertise from their evaluators. A peer-review system is often needed. The full societal benefits from experimentation will only materialize if successful innovations can replace the old ways of doing things and become mainstreamed. This calls for higher-level coordination, selection and development of experimental activities. The policy makers should be able to choose, develop and spread the best social innovations developed in experiments.

Unfortunately, the prevailing culture and incentives of public sector organizations rarely support experimental activities. On the contrary, the best way to advance public sector career is often to avoid unnecessary risk taking. The development of a more experimental public sector will require new incentives and strong leadership support.

Cognitive tensions and strategic sensitivity can also be supported by *strategic policy intelligence activities* - such as foresight, evaluation and benchmarking - which highlight emerging problems and opportunities in the society and its environment. These activities are also important for developing a realistic and deep understanding of the effectiveness and efficiency of public policies and organizations and the state of their policy domains (Hämäläinen 2007a; Doz and Kosonen 2008; Mulgan 2009). The discrepancy between the current and the ideal or expected future state creates a cognitive contradiction that fosters strategic insights. The strategic policy intelligence activities can be organized with various constellations of public, private and third sector organizations, research institutions and civil society stakeholders.

There are three specific policy areas in which governments can influence other actors whose activities may then contribute to decision makers' strategic sensitivity. These are the *research, media and communication,* and *culture policies*. In each of these areas, policy makers can support either *progressive activities*, which raise new social issues to public agenda or take new perspectives to old issues, or *conservative activities*, which focus on old issues from traditional perspectives. Progressive research, media and arts can raise the society's awareness of emerging problems and opportunities. On the other hand, conservative research, media and arts tend to reinforce the established worldviews and discourses. Unfortunately, the incentive structures of these institutional fields are often geared against progressive activities and they tend to foster the *status quo* (Hämäläinen 2007b). In order to improve their societies' strategic agility, policy makers can provide support for more radical long-term research projects that challenge the established scientific and cultural paradigms. They can also foster diversity and competition in local media as well as art forms that highlight and reflect new contradictions in the society.

Cognitive diversity. Radical innovations and major strategic insights tend to originate from combinations of different types of knowledge (Arthur 2009; Hollinsworth 2009).

They require cognitive diversity, i.e. the cooperation of experts with various backgrounds and diverse expertise. Knowledge diversity can be fostered by increasing the interactions among experts from different fields, disciplines and organizations.

Shared cross-functional and inter-organizational *visioning, strategy and foresight processes* provide good platforms for such interactions. These processes should not only involve the top management and strategy specialists. They should be open to wider participation from different levels and parts of the organizations (Doz and Kosonen 2008). Furthermore, modern communications technologies and social media allow the opening of the strategy process to the general public, which widens the government knowledge base to the "wisdom of crowds" and improves the public commitment to new strategies (Mulgan 2009). Such open and cooperative processes increase the diversity of available knowledge and expose the participating organizations' cognitive frames, assumptions and policy perspectives to external comment and evaluation. The open strategy process of TEKES, the Finnish Funding Agency for Technology and Innovation, is a good example. It involves policy makers, business people, researchers and civic sector actors from several hundred different of organizations.

The diversity enhancing activities with external stakeholders can also be *institutionalized* in the organization's regular practices. One private sector example can elaborate this. Cisco has established specialized organizational units to drive the cooperation with external partners. It also encourages all of its personnel to associate closely with external stakeholders, particularly with customers and key partners, to understand their needs and concerns better. Cisco expects all senior executives to have regular meetings with their counterparts in customer, potential customer, and partner organizations. In addition, it has developed an open web-based tool to establish new contacts and maintain dialogue with the outside world in its product development (Doz and Kosonen 2008). Although Cisco is probably a forerunner even in the corporate world, it shows the way for public sector organizations that attempt to increase their strategic sensitivity.

Intensive communications. Combining diverse knowledge sets in an insightful way requires rich and sustained communication among the right experts (Hollingsworth 2009). However, developing and maintaining a high quality dialogue among the right people faces many challenges. First, organizational boundaries and practices may separate the experts with potentially synergistic knowledge from each other. Functional or hierarchical divisions may be too broad for fruitful interaction. Second, separate physical locations or premises may also prevent creative exchanges, particularly serendipitous meetings and conversations. On the other hand, shared physical premises facilitate effective face-to-face communication which helps to meld together diverse knowledge sets (Daft and Lengel 1986).

Third, the language of experts can become an obstacle to high quality dialogue in two different ways. If they all use the same jargon, which is often the case if their backgrounds and knowledge are very similar, phenomena not associated with the usual discourse, perspectives and concepts can easily fall out of the radar. On the other hand, experts with very different languages tend to have difficulties in understanding each other. These problems can be alleviated by using a more universal, abstract and concept-rich language that allows for abstraction and analysis. However, this should be done without sacrificing the contextual detail and meaning. Defining the core activities and goals of the organization more broadly may also facilitate a more open and insightful dialogue (Doz and Kosonen 2008). For example, the broadening of industrial policy goals from the reduction "market failures" to reducing "systemic failures" opens a whole new systemic perspective to policy making (Smits and Kuhlmann 2004).

Finally, most decision makers are tied up with daily operational tasks and have very little time to analyze complex strategic issues. Hence, successful governments have created spaces for thought, learning and reflection to focus on the longer-term issues (Mulgan 2009). The integration of new knowledge into decision making processes can also be supported by the use of internal analysts, consultants or facilitators. They provide the necessary analyses of relevant systems and their causal interdependencies as well as shared concepts and new frameworks that support rich interpretations of strategic questions (Doz and Kosonen 2008; Mulgan 2009). Some governments have set up specific strategy teams and units for this purpose.

7. Building collective commitment

Public sector organizations can use various organizational mechanisms to improve system-wide coordination and commitment. One of them is to adopt a matrix model of organization which we discussed above. It forces the management to take into account organizational interdependencies and adopt a broader organizational mindset. A broader organizational frame can also be supported by assigning two different roles for key executives: one as a functional unit leader, the other with a wider cross-organizational responsibility (Doz and Kosonen 2008). For instance, a new proposal to improve the governance capability of the Finnish government recommends the establishment of a new cross-ministerial council in which different ministers lead teams of 3-4 ministers who share the responsibility and goals for particular horizontal policy area (Määttä 2010).

Besides new organizational structures and responsibilities, achieving collective commitment and system-wide coordination requires shared incentives and agenda (see Doz and Kosonen 2008). Top-level meetings within the Cabinet or across ministries (e.g. among permanent secretaries) should focus on common horizontal

themes that cut across multiple activities or policy making levels. A cross-functional, multi-level agenda focuses the leadership attention to common challenges instead of subunit agendas. The goals and targets of various government subunits should also be transparent and fair. One way of achieving this is to have open discussions about each member's targets in the top management team.

Efficient cooperation and coordination requires that key decision makers understand each others' points of view. High quality dialogue plays an important role in building shared understandings and commitment. Such a dialogue is informal, continuous and it does not try to avoid conflicts which can reveal differences in underlying assumptions and cognitive frames. High quality dialogue cannot develop without sufficiently overlapping areas of expertise, which can be created, *inter alia*, through institutionalized job rotation. Public sector leaders should also have sufficient time and opportunities outside of meetings to get to know each others' personal motives, values and drivers in life. This builds the necessary mutual understanding and trust for close cooperation and coordination.

Doing the same job for too long often leads to declining dialogue and personal motivation. Hence, collective commitment and coordination can also be supported by changes in the leadership team. This can be done by rotating leadership responsibilities in the team or moving management personnel between partner organizations. New responsibilities give experienced leaders new challenges and force them to learn new skills and perspectives. This type of rotation occurs naturally at the political level of government as a result of the democratic process but seldom among senior civil servants in countries with multi-party coalition governments. The bi-partisan political systems have more mobility at the higher levels of civil service due to electoral changes.

Top team dynamics can also be renewed by bringing in new people with fresh ideas. At the same time, it is important to let the "old heroes" to move on gracefully if they have outgrown the new organization or strategy. Their continued presence in the top management can often undermine the new leader's position and constrain fruitful new interactions.

Building collective commitment is a team effort. The top leader of the organization has a central role in building a well functioning team. Large power differences between him or her and the rest of the management team, or among the different members of the management team, are not conducive to critical inquiry and good dialogue. A team of equals can draw on the full capacity of the diverse group instead of being subordinated to a single leader's point of view.

The challenge of achieving collective commitment and cooperation is not limited to public sector organizations. The increasingly complex and uncertain governance environment requires new coordination mechanisms that can support the co-

evolution of multiple, mutually reinforcing activities in public, private and third sector organizations.

Besides improving strategic sensitivity, shared visioning, strategy and foresight processes can support collective commitment and coordination of interdependent organizations (Hämäläinen 2007b). Such processes provide the social conditioning and motivation for individuals to strive for coherent changes in interdependent activities and organizations. Social conditioning is particularly important in situations in which other positive incentives are hard to find (for example, due to tight budgets) or when negative incentives are not effective (such as the risks of status quo during economic booms). Second, widely shared visions and strategies provide effective coordination mechanisms for change processes in highly dynamic and complex systems where both hierarchical top-down arrangements and decentralized *laissez faire* approaches fail (Chang and Rowthorn 1995; Stiglitz 1998). As Stiglitz argues, economic restructuring efforts will not yield the expected positive results without effective coordination:

> "Having a sense of where the economy is going is essential: if, for instance, an economy is to move to the 'next' stage of development, the appropriate infrastructure, human capital and institutions all have to be in place. If any of these essential ingredients is missing, the chances of success will be greatly reduced. Not only must there be coordination of the different agencies within and among levels of government, there must b coordination between the private sector and the public, and between the various parts of the private sector (Stiglitz 1998).

Shared visions and strategies allow the various decision makers and organizations of the system to make decentralized decisions with their best knowledge about local circumstances while, at the same time, knowing where the rest of the system is heading. Hence, shared visions and strategies combine the best features of the decentralized market mechanism - i.e. local knowledge and incentives - with the traditional strengths of hierarchies - i.e. their coordination capacities.

The development of a widely shared vision and strategy must be an open process which involves participants from all groups affected by the expected changes. The active participation and contribution of all interested parties creates the necessary acceptance and commitment to the shared vision and strategy, as well as the behavioral, organizational and institutional changes required by them (Schön 1973; Stiglitz 1998). Many reforms have been poorly implemented, or even failed, because they did not involve some important stakeholders in their development. The lack of participatory processes and social conditioning is still common in the public sector which has a long tradition of 'top down' hierarchical governance (Hämäläinen 2007b).

8. Enabling resource fluidity

High levels of strategic sensitivity and collective commitment do not mean much if key resources, such as capital and people, cannot be effectively reallocated to new opportunities and challenges. Public sector organizations tend to have difficulties in calculating comparable rates of (social) return for alternative activities or investments. Their performance measurement methods and indicators, such as the *social rate of investment* (SROI), are still underdeveloped in comparison to the private sector. As a result, opportunities for beneficial resource reallocation are more difficult to identify and argue for. The lack of clear numerical comparisons of the expected net benefits of alternative policy interventions emphasizes the role of a shared vision and clear strategic goals in public sector resource allocation processes.

Even if strategic reallocation opportunities with better public value can be identified, freeing public sector resources to new uses is not easy.[4] Public sector hierarchies tend to jealously guard their "established" budget appropriations against alternative uses. Their management systems are usually designed for functional optimization of resource use, not for dynamic reallocation of resources among different functions or policy areas. The incentive systems of public organizations are often linked to performing specific activities and processes rather than achieving sustainable results. For example, a surgical hospital may get rewarded for the number of operations performed, not the improvement in their patients' health or well-being. Governments may also have to face a strong reaction from special interest groups if they attempt to make strategic changes that have major distributional effects (Mulgan 2009).

The key principle for flexible resource allocation is to dissociate the performance of the organization's activities from resource ownership (Doz and Kosonen 2008). Budgetary allocations should be closely tied to the government's strategic objectives. As an experienced policy maker put it: "When stated priorities are not reflected in the allocation of new money, and the reallocation of old money, this is generally a sign that political leaders don't have an adequate grip" (Mulgan 2009, 104).

Some activities, such as human resource -, financial- and IT-management, are generic by nature and can be shared among across multiple ministries and organizations. The same principle can be applied to the strategic horizontal policy areas discussed earlier. Public sector organizations can also be made partly dependent on external resources which they have to negotiate from other public or private sector organizations. This makes them more accountable for results than for

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[4] Mulgan notes that few governments can free up more than or two percent of spending within a year (Mulgan 2009).

resource ownership and expenditure. The government may also keep a part of the public sector resources in a common pool which is used when new needs arise in different policy areas (Doz and Kosonen 2008; Mulgan 2009). This would reduce the common path-dependence in public sector budgeting by breaking the link between past activities and the allocation of new resources. This type of "flexible" or zero-based" budgetingå must be supported by a continuous planning process with appropriate strategic intelligence capabilities. A separate unit at the cabinet level, such as the PM's office, can manage a whole portfolio of such initiatives.

Besides resources, organizational responsibilities can also be reallocated to improve resource utilization. The responsibilities of specific units can be broadened or narrowed by reallocating tasks among different units. The role of the more capable or productive organizations and units can grow over time relative to the poorly performing ones. In principle, such reallocation should not be very difficult in public services which typically involve low fixed assets.

Fostering the mobility of people is equally important as that of reallocating financial resources. We have already discussed the importance of personnel rotation for building collective commitment. Job rotation also allows the organization to match the best people to the emerging challenges. This requires a good knowledge base about the individual employees' capabilities and achievements. Thus many large corporations conduct regular "leadership reviews" to have up-to-date information about their managerial pool.

The allocation of human capital can also be improved by open job markets. All new job openings can be openly posted on the intranet and/or internet pages of the organization or the government. Individual career counseling, honest performance feedback and long-term training opportunities can also improve the dynamic reallocation of human capital.

Sometimes it is better to move a whole team to a new task than just individual workers. Well-performing teams may have collective capabilities, internal dynamics and social relationships which can produce good results with many different tasks. Breaking up such teams does not make sense. The flexibility of human capital allocation processes can also be improved by creating a pool of senior managers directly under the leadership team. For instance in Finland, the top 200 civil servants have been identified as a "common resource pool". Developing such a pool not only provides a flexible source of managerial talent for new organizational needs but also supports shared understanding and collaboration among senior managers.

Rapid changes in organizational structures are difficult for traditional public hierarchies. Highly specialized, interdependent and idiosyncratic management systems make organizational reconfigurations difficult and the development of new activities slow. In the private sector, many successful corporations have adopted

modular structures where shared operating processes and interchangeable subunit models and IT-systems contribute to resource fluidity. Modular organizational solutions can also be easily replicated if needed. Sitra, the Finnish Innovation Fund, has applied these organizational principles in the development of two new service companies for the Finnish municipalities. They offer state-of-the-art IT, personnel and financial management services from a shared but geographically decentralized platform that can be easily expanded as the number of subscribing municipalities grows.

The necessary resources for addressing new challenges may not always reside within the public sector. They may have to be developed or acquired from external sources, sometimes even from abroad. Governments who pursue an "open industrial policy" to create new export-oriented business activities actively search, acquire and spread foreign technologies and capabilities in order to complement their domestic strengths in promising business areas.

Finally, structural change always involves "creative destruction" which produces both winners and losers. The losers of change can sometimes be powerful enough to block the whole change process if their losses are not somehow compensated from the gains of structural change (Chang and Rowthorn 1995). The changes will also be more acceptable if the losers are allowed to participate in the related policy making process (Stiglitz 1998; Hämäläinen 2007b).

9. Conclusions

The governments of industrialized societies are facing a historical paradigm shift and unprecedented adjustment challenges. These challenges demand major structural changes in national economies, public services and institutional rules. Similar to previous industrial revolutions, the role of government is likely to be fundamentally changed. Systemic interdependencies and complementarities will favor societies that are able to adapt in a quick and comprehensive way. The new public governance solutions must effectively deal with the increased complexity and uncertainty of the decision making environment. It demands strategic agility in public management: the ability to combine long-term direction with short term flexibility.

There are many road blocks in the way to strategic agility, however. We analyzed the various societal and organizational sources of rigidity and path-dependence. Many of these rigidities are similar in private and public sectors, but there are also some differences. For example, the rent-seeking of special interest groups and coordination failures in systemic change processes are more pronounced in public policy making.

We also examined the possibility of transferring private sector solutions to improve public sector strategic agility. Despite some clear differences between the two sectors, there are also many similarities that make such transfers possible. Thus, we analyzed the role of cognitive contradictions, knowledge diversity and intensive communications in improving the strategic sensitivity in public sector decision making. We also discussed how public sector managers can improve the collective commitment, coordination and resource fluidity in their organizations. There is a clear opportunity for improving public sector strategic agility with new organizational solutions.

The possibilities for positive government intervention do not end at public sector boundaries. The government is the only institution with society-wide responsibilities. It can and it should take a proactive role in the development of private and third sector strategic agility – and hence that of the whole society. This "macro-organizational" role may include progressive research, media and culture policies, increased support for experimental activities, multi-stakeholder foresight, visioning and strategy processes, arranging various platforms and networks for inter-personal or inter-organizational cooperation (e.g. private-public-partnerships), and the compensation for those who lose in structural change. If the hierarchical welfare state model with arms-length macroeconomic relations to markets dominated the postwar decades in industrialized societies; the more open, experimental, cooperative and strategically agile macro-organizational government is likely prevail in the future.

Bibliography

Arthur, W. Brian (1994), *Increasing Returns and Path Dependence in the Economy*, University of Michigan Press, Ann Arbor.

Arthur, Brian (2009), *The nature of Technology: What it is and how it evolves,* Free Press, New York.

Arvidsson, Niklas ja Ulf Mannervik (2009), *The Innovation Platform: Enabling Balance Between Growth and Renewal*, Vinnova Report, 25, Stockholm.

Ashby, W. Ross (1958), "Requisite variety and its implications for the control of complex systems", *Cybernetica* 1:2, p. 83-99.

Baldwin, Richard (2006), "Globalization: The Great Unbundling(s)", Valtioneuvoston kanslia,http://www.vnk.fi/hankkeet/talousneuvosto/tyokokoukset/globalisaatioselvitys-9-2006/artikkelit/Baldwin_06-09-20.pdf

Bakshi, Hasan, Alan Freeman and Jason Potts (2011), *State of Uncertainty: Innovation Policy Through Experimentation*, Provocation 14, April, NESTA, London.

Beinhocker, Eric (2007), *The Origin of Wealth: Evolution, Complexity, and the Radical Remaking of Economics*, Random House Business Books, London.

Bohm, David (2004), *On Dialogue*, Routledge, London.

Chandler, Alfred (1962), *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*, MIT Press, Cambridge.

Chang, H.-J. and Bob Rowthorn (1995), "Role of state in economic change entrepreneurship and conflict management", in H.-J. Chang and Bob Rowthorn (eds), *Role of State in Economic Change*, Oxford: Oxford University Press.

Daft, Richard L. and Robert H. Lengel (1986), "Organizational Information Requirements, Media Richness, and Structural Design", *Management Science*, 32, p. 554-571.

Doz, Yvez and Mikko Kosonen (2008), *Fast Strategy: How Strategic Agility Will Help You to Stay Ahead of the Game*, Wharton School Publishing, Harlow.

Dunning, John (1992), "The Global Economy, Domestic Governance, Strategies and Transnational Corporations: Interactions and Policy Implications", *Transnational Corporations*, 1, s. 7-45.

Espejo, Raul and Antonia Gill (1989), *The Viable System Model as a Framework for Understanding Organizations*, Wiley, Chichester.

Festinger, Leon (1957), *A Theory of Cognitive Dissonance*, Evanston, IL: Row, Peterson and Company.

Fischer, David A. (2006), *An Emergent Perspective on Interoperation in Systems of Systems*, March, Carnegie Mellon Software Engineering institute, Pittsburg.

Freeman, Christopher (1995), "History, co-evolution and economic growth", IIASA WP-95-76, September.

Freeman, Christopher and Carlota Perez (1988), "Structural Crises and Adjustment, Business Cycles and Investment Behaviour", in Dosi, Giovanni, Christopher Freeman, Richard Nelson, Gerald Silverberg and Luc Soete (eds.), *Technical Change and Economic Theory*, Pinter Publishers, London.

Gunderson, Lance H. and C.S. Holling (2002), *Panarchy: Understanding Transformations in Human and Natural Systems*, Island Press, Washington.

Head, Brian W. (2010), "Evidence-Based Policy: Principles and Requirements", in *Strengthening Evidence-based Policy in the Australian Federation*, Roundtable Proceedings, Canberra: Productivity Commission, p. 13-26.

Heckscher, Charles and Paul Adler (2006), *Firm as a Collaborative Community*, Oxford University Press, Oxford.

Hollingsworth, Rogers (2009), "A Path-Dependent Perspective on Instutional and Organizational Factors Shaping Major Scientific Discoveries", in Hage, Jerald and Marius Meeus (Eds.), *Innovation, Science and Institutional Change: A Research Handbook*, Oxford University Press, Oxford.

Huff, Anne S. and James O. Huff (2000), *When Firms Change Direction*, Oxford: Oxford University Press.

Hämäläinen, Timo (2007a), "Social innovation, structural adjustment and economic performance", Ch. 2 in Hämäläinen, Timo and Risto Heiskala (Eds.), *Social Innovations, Institutional Change and Economic Performance: Making Sense of Structural Adjustment Processes in Industrial Sectors, Regions and Societies*, Edward Elgar, Cheltenham.

Hämäläinen (2007b), "Policy Implications: How to Facilitate the Structural Adjustment and renewal of Advanced Societies?", Ch. 5 in Hämäläinen, Timo and Risto Heiskala (Eds.), *Social Innovations, Institutional Change and Economic Performance: Making Sense of Structural Adjustment Processes in Industrial Sectors, Regions and Societies*, Edward Elgar, Cheltenham.

Hämäläinen, Timo and Risto Heiskala (2007) (Eds.), *Social Innovations, Institutional Change and Economic Performance: Making Sense of Structural Adjustment Processes in Industrial Sectors, Regions and Societies*, Edward Elgar, Cheltenham.

Hämäläinen and Schienstock (2001), "The comparative advantage of networks in economic organization: Efficiency and innovation in highly specialized and uncertain environments", Ch. 2 in *Innovative Networks: Co-Operation in National Innovation Systems,* OECD, Paris.

Hämäläinen 2010; "Elinkeino- ja innovaatiopolitiikan uudistamistarpeet", in Rouvinen, Petri and Pekka Ylä-Anttila (Eds.), *Kriisin jälkeen*, Taloustieto, Helsinki.

IBM (2010), *capitalizing on Complexity: Insights From the Global Chief Executive Officer Study,* IBM Institute for Business value, Somers, New York.

Lindblom, Charles E. (1959), "The Science of "Muddling Through", *Public Administration Review*, Vol. 19, No. 2, Spring, p. 79-88.

Lindblom, Charles E. (1979), "Still Muddling, Not Yet Through", *Public Administration Review, Vol. 39, No.6, Nov.-Dec., p. 517-526.*

Metcalfe, Les (1993), "Public Management: From Imitation to Innovation", *Australian Journal of Public Administration,* Vol. 52, No. 3, September, p. 292-304.

Mintzberg, Henry (1996), "Managing Government, Governing Management", *Harvard Business Review,* May-June.

Mulgan, Geoff (2009), *The Art of Public Strategy: Mobilizing Power and Knowledge For the Common Good,* Oxford University Press, Oxford.

Määttä, Seppo (2010), *Kaikki yhden ja yksi kaikkien puolesta: valtion konsernijohdon vaativa mutta mahdollinen tehtävä*, Sitran selvityksiä 21, Helsinki.

OECD (2005), *Governance of Innovation Systems: Volume 1, Synthesis Report,* OECD Publishing, Paris.

Okun, Arthur (1975), *Equality and Efficiency: The Big Tradeoff*, The Brookings Institution, Washington, D.C.

Olson, Mancur (1982), *The Rise and Decline of Nations*, Yale University Press, New Haven.

Parsons, Talcott (1971), *The System of Modern Societies,* Prentice-Hall, Englewood Cliffs.

Pelikan, 1987, "The Formation of Incentive Mechanisms in Different Economic Systems", in Hedlund, S. (ed.), *Incentives and Economic System,* Croom Helm, London.

Schienstock, Gerd and Timo Hämäläinen (2001), *Transformation of the Finnish Innovation System: A Network Approach*, Sitra Reports series 7, Helsinki.

Schön, Donald A. (1973), *Beyond the Stable State*, W.W. Norton & Company, New York.

Scottish government (2011), *The Scottish Economic Recovery Plan: update February 2011*, Edinburgh,

Seo, Myeong-Gu and W.E. Douglas Creed (2002), "Institutional contradictions, praxis, and institutional change: A dialectical perspective", *Academy of Management Review*, 27 (2), p. 222–47.

Smits, Ruud and Stefan Kuhlmann (2004), "The Rise of Systemic Instruments in Innovation Policy", *International Journal of Foresight and Innovation Policy*, Vol. 1, Nos. ½.

Stiglitz, Joseph, E. (1989), "On the Economic Role of State", in Joseph E. Stiglitz (ed.),*The Economic Role of State*, Oxford: Basil Blackwell.

Stiglitz, Joseph (1998), "Towards a New Paradigm for Development: Strategies, Policies, and Processes", Prebish Lecture at UNCTAD, October 19, Geneva.

Sy and D'Annunzio 2005, "Challenges and Strategies of Matrix Organizations: Top-Level and Mid-Level Managers' Perspectives", *Humand Resource Planning, 28.1, p. 39-48*

Wallin, Johan and Sun Su (2010), *Innovation and collaboration for a harmonious world*, WSOYpro, Helsinki.

Wolf, Charles Jr. (1988), *Markets or Governments: Choosing Between Imperfect Alternatives*, The MIT Press, Cambridge.

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