

Knowledge management for governance

Public-Private Communities of Practice and the challenge of co-evolution

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1. INTRODUCTION

Governing our society is not easy. The role and potential of government in our society becomes more and more limited (cf. Kickert et.al. 1997; Kooijman, 1993). Emphasis is no longer placed upon government, but more often on the way in which government in interaction with its environment ‘runs society’. Governance refers explicitly to the process through which policy is formulated. It pays attention to the fact that many actors with different interests are involved in policy processes and that a government as a central ruler don’t exist. Policy is the result of the interactions between mutual dependent actors in public-private networks. Governance approaches forms an answer upon the ever increasing complexity of our nowadays society. In line with this governance ‘ideology’ many new methods of policy-making (interactive policy-making, collaborative dialogues, round table conferences etc.) are introduced. The literature about policy-making within these complex policy networks, is enormous and grows steadily (Teisman, 2002, Pierry, 2003).

Managing knowledge within these interactive policy processes is an important aspect of ‘effective governance’. We need insight in the goals and perceptions of the many involved actors (knowledge about the policy process), but it is also necessary to know how to realise our shared ambitions in a complex and highly dynamic society (knowledge about (implementing) the policy) (Koppenjan & Klijn, 2004). Knowledge is a highly localised and distributed asset and public officials have to mobilise this knowledge. Acknowledged is that ‘each person is a special kind of expert, especially with respect to his or her own problems (Mitroff, 1983: 125).

In this paper, a first attempt is made to give more insight into the challenges for knowledge management of governance processes. Therefore a perspective on knowledge management inspired by complexity theory is developed and applied on a specific governance project in the Netherlands. It seems to be that complexity theory can offer interesting insights in order to understand the fundamental changes we can see in the way ‘government governs’ our society. After all, governance approaches are intended to mobilise different actors with different interests and frames of references in an interactive process that is located on the boundaries of traditional organisations and institutions. These processes are in essence self-organising (Pierry en Peters, 2000). In its applied form, complexity theory gives handsome insights to understand ‘governance’ (cf. Kiel, 1994). It gives us also insight in the way knowledge for governance is created and how knowledge management can be filled in, in situations of complexity and chaos.

This perspective upon knowledge management for governance is in this paper confronted with two other perspectives, a rational and an argumentative perspective. An empirical illustration is given by analysing the Dutch Communities of Practice approach in spatial planning. The use of Communities of Practice in spatial planning fits well within a governance ideology. COPs try to combine both knowledge development and policy-making: they are intended to produce useful knowledge and deliver concrete (supported) solutions for policy problems.

It is argued that creating and maintaining ‘bounded instability’ in order to facilitate fruitful patterns of co-evolution is an important knowledge management objective. This notion of ‘bounded instability’ as a precondition for creativity and innovation is used to describe and evaluate a concrete COP, de Overdiepse Polder. It is argued that COP’s can be fruitful ways to produce valuable policy proposals, but that reaching ‘bounded instability’ requires careful dilemma management.

2. STRUCTURE OF THE PAPER

First, I will present three perspectives upon the theme ‘knowledge for policy’ and ‘knowledge management’, based upon the literature about these topics. A complexity or co-evolution perspective is compared with a more classical, rational view on knowledge and policy and a more recent, argumentative or discursive view on it. Second, I shall explore the notion of complexity in more detail. I try to make clear that a complexity perspective has added value for the study of knowledge management for governance processes. Third, I will formulate the challenges complexity theory provokes for public knowledge management. They consist especially in creating a situation of ‘bounded instability’ in order to facilitate co-evolution. Finally, I will describe the Communities of Practice approach in the field of Dutch environmental planning as a way to ‘manage’ bounded instability in order to realise creative proposals.

3. KNOWLEDGE FOR GOVERNANCE

a. Three perspectives upon knowledge for policy

When we explore the literature about the theme ‘knowledge for policy’, we see a clear development in it. Started from a strict rational approach on knowledge (for example Simon (1976) with his concept of bounded rationality), it gradually evolves to a more argumentative, constructivistic interpretation of knowledge. More and more, the traditional positivistic viewpoint is replaced by a post positivistic standpoint (see Hajer, 1995; Fischer, 2003).

Many authors (as Weiss, 1980; Sabatier, 1978; Beyer & Trice, 1982; Huberman, 1994; and many more) have written about the topic of the use of information in policy making. In these studies, knowledge is a visible product, synthesised in reports and notes. The relationship between science and policy is bilateral: there is one actor how gives knowledge and one how receives it. We can describe these studies by using the metaphor of the injection pump: knowledge is injected in the policy, sometimes successful, often with many complications (Van Buuren & Edelenbos, 2003).

More recently, there is more attention for the multilateral relationships that are important when we think about knowledge for policy. The use of knowledge from the experience of citizens and the interests of stakeholders, in combination with the added value of participative policy making became more important (Mayer, 1997). Literature deals with notions of the negotiated character of knowledge

(Van Eeten, 1999), collaborative dialogues (Connick & Innes, 2001), joint fact-finding etc. We can speak of the argumentative turn in policy analysis (Fischer & Forester, 1993).

In fact, in the traditional paradigm, knowledge is a rational, positivistic representation of reality on which policy makers could base their policy decisions. In the more post positivistic paradigm, knowledge is a social construct, made by very different people with their own interpretation of reality. Policy is based upon a shared understanding of the policy problem and the solution of it. Of course, thinking in terms of governance results more or less automatically in a more ‘democratic’ view upon knowledge for policy (Kazancigil, 1998). The changing view on knowledge towards a more social constructivistic perspective can be seen as an effect of the changing way to make public policy (De Bruijn en Ten Heuvelhof, 1999; Hoppe, 1999).

Recently, complexity theorists as Stacey (2003), Flood (1999), Oliver & Roos (2000), White (2001) and others deliver a new paradigm upon public management and the role of knowledge in it. Although complexity theory is mostly applied in a business context, there are also attempts to apply it in the policy sciences (Haynes, 2003). It is not difficult to argue that complexity theory offers a hopeful perspective for a dynamic, ever expanding, fragmenting, but also interconnected public sector that has numerous types of multi-actor settings in it, lots of differing actors with their own ideas, goals and roles, many forms of emergent order, spontaneous informal rules within formal structures etc. We can see the shift to a complexity paradigm as a radicalisation of the ‘governance perspective’ (see also paragraph 4).

When we summarise these three perspectives on public policy and on ‘knowledge for policy’, we come to the following characteristics of each.

	Rational perspective	Argumentative perspective	Co-evolution perspective
Label for stream in literature	Knowledge utilisation studies. Policy Analysis	Argumentative turn, participative policy approach.	Complex adaptive systems, complexity management
View upon policy	Central-rule approach	Multi-actor, consensus approach	Process approach, co-evolution emphasised
Characteristics knowledge for policy	Policy-relevant information; policy research, advice, evaluation studies	Interests, interpretations, frames, democratic deliberations	Highly localised personal knowledge, (reflexive) feedback information
Characteristics knowledge diffusion in policy processes	Injection pump metaphor: knowledge is injected in policy-process. They are more or less receptive for this injection.	Dialogue among stakeholders and policymakers.	Continuous knowledge-use and re-interpretation by all participating actors in a policy-field.
Corresponding problems	Technocracy, under-utilization of knowledge <i>Uncertainty</i>	Quality of consensus Openness of process <i>Ambiguity</i>	Balancing between dilemmas <i>Chaos</i>
Authors	Simon, Weiss, Huberman	Fischer, Dunn, Dryzek	White, Teisman, Rotmans

Table 1. Three perspectives upon ‘knowledge for policy’

b. Three perspectives upon knowledge management

The development in the policy studies is also reflected in the development of the literature on knowledge management. There we can also find the three stages: from a rational, positivistic ‘existential’ view on knowledge, to a dialogical, pragmatic ‘consensual’ view (see also Moss, 2001) and recently, we can find a complexity perspective upon knowledge management (Stacey, 1992; Lissack & Roos, 1999). The transition between the first two perspectives is often illustrated by the move in thinking about ‘learning’. In the more traditional view, learning is a cognitive activity, whereby an actor applies information into his existing stock of knowledge. In latter accounts, learning is social, which happens in interaction between actors. Relational factors are crucial for actors to share and develop knowledge.

Recently also a complexity view upon knowledge management is developed in which it has to do with creating the right conditions for knowledge development in situations of non-linearity and self-organisation (Chiva-Gomez, 2001). Core of this body of knowledge is the argument that actors (individuals but also organisations) function within a complex and dynamic environment and have to find a sufficient level of adaptability, in order to manage the continuing flows of positive and negative feedback. Organisations have to handle divers dilemmas between openness and closeness etc. We can summarize these three perspectives upon knowledge management as follows:

	Rational perspective	Argumentative perspective	Co-evolution perspective
Knowledge management	Information and knowledge management. Emphasis upon data and information	Collaborative learning; social learning. Emphasis upon interaction and joint knowledge production	Positive & negative feedback, fitness landscapes. Emphasis upon competence and co-evolution
Methods and instruments	ICT, data mining, information management	Conferencing, action research, dialoguing, participatory analysis	Communities of practice, dilemma-management
Illustrative authors	Davenport & Pruzak	Brown & Duguid	Stacey, Flood, Merry

Table 2. Three perspectives upon knowledge management

c. Three perspectives upon public knowledge management

I will elaborate the three above-mentioned perspectives with inventorying their specific interpretation of some key issues concerning public knowledge management. In the rest of this paper I will focus upon the third perspective, but the first two perspectives are used for making a comparison in the conclusion of this paper.

Relevant aspects of knowledge	Rational perspective	Argumentative perspective	Co-evolution perspective
<i>What is knowledge?</i>	<ul style="list-style-type: none"> • Knowledge consists of facts about reality and their relations. • The stock of knowledge grows through (scientific) research 	<ul style="list-style-type: none"> • Knowledge consists of the combination of many subjective interpretations of 'reality'. • The stock of knowledge grows when other interpretations are included 	<ul style="list-style-type: none"> • Knowledge is the result of the interaction of actors with each other and with their environment. • Knowledge is the emergent result of co-evolving actors in interaction processes
<i>How is knowledge made?</i>	<ul style="list-style-type: none"> • A process of scientific fact finding and theory building (induction and deduction) generates knowledge. • Knowledge is adjusted by falsification and rational argumentation. 	<ul style="list-style-type: none"> • Knowledge is the result of a process of argumentation. All participants bring in their specific insights and interpretations. The result is a shared interpretation. • Knowledge is adjusted by incorporating new arguments and interpretations. 	<ul style="list-style-type: none"> • Knowledge is the result of the continuous reflection of an actor upon his 'adaptive walk': his environment and his co-participants. • Knowledge is adjusted every time, especially when the actor changes his goals or his roles, eventually under changed conditions.
<i>Barriers for knowledge creation</i>	<ul style="list-style-type: none"> • Uncertainty about the facts, insufficient resources for doing research; progress of scientific research 	<ul style="list-style-type: none"> • Neglecting diversity, lacking language bridges; cognitive and social distance 	<ul style="list-style-type: none"> • Denying complexity; solving dilemmas in stead of recognise them; fixated goals and roles
<i>Role of knowledge in policy processes</i>	<ul style="list-style-type: none"> • Research as fact-finding for policy processes. • Realising 'hard' knowledge is crucial for choosing the right policy options. 	<ul style="list-style-type: none"> • Arguments play a role in formulating policy options and choosing policy routes. • A shared interpretation of the policy problem is crucial to choose policy options that have enough support 	<ul style="list-style-type: none"> • Knowledge as competency in search for goal realisation and role fulfilment. • Competency as crucial for realising sustainable policy options.
<i>What can public knowledge management do?</i>	<ul style="list-style-type: none"> • Commission good research • Keep good relations between the policy and the research world to facilitate the diffusion of knowledge. • Maintaining the timing of the research, in order to safeguard the availability of knowledge before decision-making 	<ul style="list-style-type: none"> • Facilitate a fair and open deliberation process and safeguard the quality of the resulting consensus (prevent 'negotiated nonsense') 	<ul style="list-style-type: none"> • Acknowledge complexity and facilitate the development of individual and shared knowledge in a context of complexity • Realising and maintaining a situation of bounded instability as the precondition for creativity and innovation

Table 3. Three perspectives upon public knowledge management

The available space in this paper leaves no room for a thorough analysis of the three perspectives. They are presented to make a comparison possible between, on the one hand, the two traditional strands of research and, on the other hand, the ‘new’ complexity perspective. In this paper I focus upon the complexity perspective and its value for thinking about knowledge management for governance. The other perspectives are presented here to make clear that a complexity perspective on the one hand is relative ‘new’. On the other hand we can say that it builds further on longer existing perspectives in which dynamics, dilemmas and unpredictability plays an important role (see also White, 2001).

4. COMPLEXITY

What are the reasons that the complexity perspective quickly developed last years? One of the reasons is the ever-expanding complexity of the situations and problems we confront. This is due to a number of reasons, such as the following (Gallopín et.al. 2001: 222/3).

- *“Ontological changes*: human induced changes in the nature of the real world, proceeding at unprecedented rates and scales and also resulting in growing connectedness and interdependence at many levels (...);
- *Epistemological changes*: changes in our understanding of the world related to the modern scientific awareness of the behaviour of complex systems, including the realisation that unpredictability and surprise may be built in the fabric of reality (...);
- *Changes in the nature of decision-making*: in many parts of the world, a more participatory style of decision-making is gaining space, superseding the technocratic and the authoritarian styles. This, together with the widening acceptance of additional criteria, such as the environment, human rights, gender, and others, as well as the emergence of new social actors such as the non-governmental organisations and transnational companies, leads to an increase in the number of dimensions used to define issues, problems, and solutions and hence to higher complexity”.

What is complexity?

‘Complex systems generally exhibit a number of attributes that make them more difficult to understand and manage than simple and complicated systems’ (Gallopín et.al. 2001: 225). We can summarize the most important characteristics of a complex phenomenon as follows:

- *Multiplicity of legitimate perspectives* (reality is ambiguous: there are more, valid interpretations possible. Attention for this diversity in perspectives and interests of different stakeholders is needed);

- *Non-linearity* (relations in a systems are not linear. A given action can lead to several possible outcomes, some of which are disproportionate in size to the action itself. Through multiple interactions, organizations are capable of many responses that are complex and unpredictable, leading to many outcomes);
- *Emergence and self-organisation* (novel patterns of order can spontaneously emerge from the interactions between the elements of the system);
- *Multiplicity of scales and interconnectivity* (many complex systems are hierarchic: systems are both subsystem and supra-system; all parts are connected and influence each other);
- *Co-evolution* (parts of a complex system evolve in interaction with their environment);
- *Irreducible uncertainty* (as a consequence of the complex character of systems) (cf. Gallopin et.al. 2001; White, 2001; Stacey, 1999; Holland, 1995 in White, 2001).

Why should we use a complexity perspective on governance?

It is often said: government is a complex phenomenon. Governance, however, as the process in which government, public agencies, private actors, citizens, stakeholders and others give form on, what we name ‘public policy’, is an even more complex phenomenon, even when we use the concept of complexity in a principal theoretical sense (Smith & Stacey, 1997). White (2001: 248) argues why complexity theory can help us by analysing governance as follows: *“It is assumed that today’s society is characterized by dynamics, complexity and diversity, and it has been shown that the responses to this situation, such as partnerships and multi-agency arrangements, are also complex. These organizational forms are dynamic in that the composition of forces will result in non-linear cause-effect patterns of governing. They are also complex in that they are configured as a network and have multiple and diverse parts and the interaction between the parts is necessary in working on problems as well as solutions. They are diverse, in that there exists variations, and differences in their specification. Finally, in order that the governance system can respond to the dynamics, complexity and diversity of society, it must be capable of producing or reproducing its own organization and reproducing its governance structures. That is, the emergence of organizations for governance can be articulate as self-organizing”*.

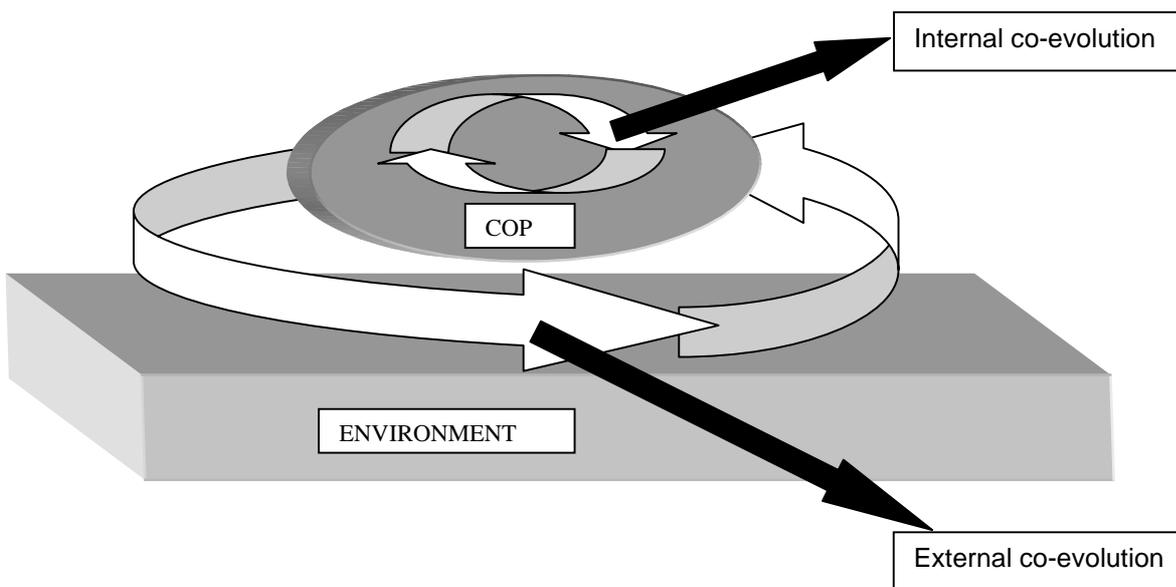
The shortcomings of a rational perspective are emphasised by them who use a more argumentative perspective (Fischer & Forester, 1993). Knowledge is not neutral, objective and value-free. Policy analysis build upon this vision on knowledge can become technocratic and undemocratic. The shortcomings of an argumentative perspective are less emphasised. Some authors speak of the danger of ‘negotiated nonsense’ (actors confirm about the knowledge, but the knowledge itself is useless, see Van de Riet, 2003). Others speak about the never-ending processes of consensus seeking and the weak results of it. Joint fact-finding, collaborative analysis and participatory policy analysis can fulfil good functions in governance processes. However, a major weakness of governance processes is their weak relationship with their wider (public and societal) environment (see Edelenbos

et. al. 2004). Autonomous and inert governance processes replace the classic problem of an autonomous government. In a complex world, co-evolution between processes and organisations is crucial to derive sustainable policy solutions. Our complexity perspective sheds light upon the challenges of co-evolution, governance processes confront with. On this aspect this paper concentrates.

Governance and co-evolution

The notion of complexity is frequently linked on the notion of co-evolution (Oliver & Roos, 1999; Merry, 1999). When our environment is continuously changing, as a consequence of others and ours acts, we can only survive in such an environment by seeking a sufficient level of fitness. We have to adapt ourselves to the conditions of our environment, but we also need to keep a sufficient level of uniqueness in order to deliver added value to this environment (Oliver and Roos, 1999). There is a process of co-evolution between actors or systems and their environment: other related actors and systems. 'Co-evolution is a process of coupled, deforming landscapes where the adaptive moves of each entity alter the landscapes of its neighbours' (Mitleton-Kelly, 1998: 10). The central dilemma here is between identity (standing alone) and participation (going with the stream). The identity forms the added value of an actor for his environment. In participation capabilities lie the conditions for successful communication and co-operation, necessary to reach common (public) goals. When actors succeed in handling this dilemma, fruitful co-evolution can arise.

In the classic view, government develops almost autonomously. They steer the society, unilaterally. Experts delivered knowledge and speak truth to power. In recent governance approaches, government is one of the players, and policy is made in interaction with stakeholders, de-central governmental actors and other actors. Policy is the process in which co-evolving actors come to agreement about policy solutions. In governance approaches, the diversity of the environment is recognised in the mobilisation of the participating actors on interactive policy processes. Governance processes facilitate co-evolution. Highly diverse actors and organisations (reflecting the diversity of the environment of the policy problem) become interconnected in such a arena. This arena functions as a platform for reaching consensus and forms a linking-pin between highly different ambitions and goals. But because the fact that such an arena is located outside the existing organisations (sponsors, clients), there has to be also an external process of co-evolution: between arena and home organisations. Schematised:



5. PUBLIC KNOWLEDGE MANAGEMENT: STRIVING FOR DELIBERATE CO-EVOLUTION

A central challenge for governance processes is to reach a deliberate way of co-evolution between on the one hand highly diverse actors, participating in a policy process, and on the other hand between this process and the public, private and societal environment. I will argue that these processes of co-evolution can be facilitated by encouraging situations of ‘bounded instability’ on ‘the edge of chaos’ (Merry, 1999; Griffin et. al. 1999; Stacey, 2003; McElroy, 2003). In these ‘far-from-equilibrium’ situations, the ideal conditions for creativity, spontaneous emergence and self-organization are all present. In situations of equilibrium, organizations are normally too static to be really adaptive to new, unanticipated situations. Such a system will become irrelevant for its environment. That environment changes rapidly and subsystems react upon each other. A subsystem that doesn’t communicate with other systems will become useless for his environment. Only negative feedback is taken into account: all the signals that attack the own world are translated in actions to defend that worldview.

When totally unstable, systems drift away, not capable to respond in a coherent way to new challenges and an easy prey for disintegrating forces. Such a system will become rudderless. Without an own vision, and always trying to adapt, such a system thrives upon the waves of the dynamics of the environment. Here, only positive feedback is considered relevant: each change in the environment generates a subsequent action from an unstable system. We can make a link with the law of requisite variety: systems have to show at least as much variety as the variety of the environment in which they operate is (see Moss, 2001).

Fruitful co-evolution only can occur when there is co-evolution between a dynamic system and a dynamic environment. When one of both remains static, this process is distorted (Boisot & Child, 1999). When situations of ‘absolute’ instability and stability don’t have the potential for innovations, that situations of bounded instability have, knowledge management has to strive to create ‘bounded instability’. Characteristic for that state of a system is the fact that it continuously has to balance between the extremes of a couple of dilemmas. It has to do with (see Stacey, 2003; Lissack & Roos, 1999):

- Leaving room for novel (emergent) communication patterns and spontaneous order;
- Combining both goal seeking and goal realisation;
- Combining both openness and closeness;
- Combining a strong, own identity with maintaining close ties with the environment (thus developing an identity in which the environment sees added value).

Chiva-Gómez (2003: 105) states that the facilitating factors for organisational learning in complex adaptive systems are, among others:

- a. Cultural diversity achieved through the existence of shared and heterogeneous individual schemas (discerning ideas);
- b. The juxtaposition of order and disorder in the equilibrium of forces between a formal structure and an informal one.

In such a system, positive and negative feedback holds each other in balance. Such a system has to try to prevent itself to become stable or unstable. On the edge of chaos, creativity and innovations can be reached.

Bounded instability, governance and knowledge management

But what means the challenge of bounded instability for the task of public knowledge management? Knowledge management has, inevitably, limited ambitions. It has to do with equipping governance processes with enough possibilities for creativity. When creativity normally arises in situations of ‘bounded instability’, then knowledge management has to encourage the genesis and sustainability of that sort of situations. In these settings, on the one hand systems adapt to a fast-changing environment, and on the other hand, systems develop new, unique features that give them a new position and added value in this environment. The outcome of these systems cannot be known in advance, but it is likely that they will generate some novel form of order, out of chaos (Stacey, 1992; 1995; Flood, 1999; Merry, 1999). In continuous co-evolution with its environment, a bounded instable system has its own unique characteristics as well as meaningful functions in its larger ecosystem.

There is, in essence, no principal distinction between knowledge management and the management of policy processes. When actors discuss about policy proposals, they develop knowledge about policy processes and about technical aspects of policy solutions. In many governance processes, technical experts participate on equal feet with interest parties and public agencies. We will

see that COPs can at the same time be characterised as knowledge processes and as policy processes. They are inclined to ‘learn by doing’.

I will illustrate the point of knowledge management as creating and maintaining ‘bounded instability’ with experiences from the recently started Communities of Practices by Habiforum, a Dutch knowledge network, financed by public and private partners. First, I want to describe this new form of governance, combined with knowledge management. Then, I will analyse them from a ‘bounded instability’ perspective. I illustrate this with a concrete case: the COP Overdiepse Polderⁱ.

6. COMMUNITIES OF PRACTICE, COMPLEX EVOLVING SYSTEMS?

Recently, a rather new phenomenon has entered the Dutch policy arena around issues as multiple land use and sustainable spatial planning. Habiforum, a public-private of knowledge network has proposed to start so-named Communities of Practiceⁱⁱ, inter-organisational groups of people with diverse backgrounds that have to deliver innovative solutions for complicated problems concerning the scarce space in the Netherlands. In COPs, knowledge creation (thinking) and problem solving (doing) goes together. It is a working and learning environment (Van Luin & Hillebrand, 2003).

COPs have a twofold ambition. On the one hand, they are specific forms of governance: innovative policymaking takes place in public-private constellations composed of actors from public, private and societal partners, citizens included. COPs form new ways of making policy, more goal seeking than goal-realising, more open, interdisciplinary, and tolerant for creative ideas than traditional policy processes. On the other hand, they are specific places in which knowledge products or innovations are generated. These innovations are on the hand technical, focusing upon the content of the policy (finding new combinations of spatial functions, for example), but on the other hand also procedural: new ways of finding solutions for enduring policy problems.

The participants in such a COP have different backgrounds: public agencies participate (local, regional authorities, policy agencies), but also private partners (as property developers, engineering consultants et cetera) and public or private advisers (from universities, public or private advice centres, consultants), which participate on equal terms. The COP will be a safe spot for them to develop creative ideas. The process of developing ideas is as open as possible. The objectives of a COP are defined broadly and can change during the process. Reification of solutions is deferred to the end of the process.

We have stated that a COP is most effective in terms of knowledge production when it operates at the ‘edge of chaos’, in a situation of bounded instability. Which characteristics of a COP point to possibilities of staying in such a specific situation?

a. Bounded instability in starting a COP

The starting point of a COP can be characterised as bounded instability. Very different actors from different backgrounds meet each other for the first time and have to develop a shared context, rules of the game, a shared ambition, mutual understanding etc. (see Bood & Coenders, 2003). The only things there are are the set of actors who are selected to participate and a vague idea of the goal of the COP (for example: 'finding novel ways to combine housing with water storing') In this situation, almost everything can occur (Stacey, 2003: 129). When actors are sufficiently open, willing to share information and try to understand each other, the conditions for creative knowledge creation are present.

b. Bounded instability in the functioning of a COP

COPs can be seen as systems, composed of actors from other systems. But a COP also function as a supplier for a policy system. The participants bring their own specific knowledge from their home base. Through a COP many diverse systems (and their own environments!) get interconnected and the dynamics of these systems have more or less impact upon the functioning of the COP. On the other side, a policy system has some expectations from the COP. Logically that creates a situation of instability. When a COP continually seeks to find a balance between the wishes of the policy system and the ideas of the different participants, we can say that it operates on 'the edge of chaos'. A COP takes an external position from the public sector. They try to be an autonomous entity that is independent of formal structures, public authority and hierarchy. In this freedom lies the potency to realise novel solutions for old problems, which cannot be solved by the traditional system and the old way of doing thingsⁱⁱⁱ. But, to keep relevance for the public sector, COPs has to answer the questions, public actors have.

So, the products of a COP results on the one hand from the free process of thinking and debating about the most relevant question the COP has to answer. On the other hand, a COP has to answer (more or less) the questions, public sector agents have. Creativity and relevance are the two criteria that a COP has to fulfil.

COPs form safe places for people to work on innovative solutions for enduring problems. Participating in a COP means people are free to say 'everything'. People are stimulated to be as open as possible and to abolish old worldviews and interpretations. By realising mutual trust, co-operation and a shared sense of belonging, a COP becomes a cosy place to be (see also Bood & Coenders, 2003). However, sometimes there has to be a strong competition between ideas, insights and interests. The relative cosiness has to be disrupted by more or less fierce quarrels about the value of ideas. So, bounded instability is stimulated.

In most Habiforum COPs, 'pressure cooker' meetings are held to reach breakthroughs in order to make sufficient progress in delivering concrete results. There is a danger for COPs that they come in a situation of stability: people know each other, develop shared rules of the game, develop a shared

vision and strong group culture, so that fruitful disagreements no longer occur (Moss, 2001). It is also difficult for a COP to remain critical upon their own results. When feelings of 'being ready' rise too early, the process is too early flattened.

c. Creating and maintaining bounded instability in COPs

We summarise the conditions under which a COP functions on 'the edge of chaos'. Creating bounded instability consists of:

- Selecting highly different partners from all relevant stakeholders and knowledge owners;
- Formulate a concrete goal without slamming the further process of generating innovative policy proposals;
- Positioning the COP outside the hierarchy and procedures of the public sector, while striving for a fruitful relation with the relevant public actors in order to secure the relevance and of the COP and the utilisation of its products.

Maintaining bounded instability in COPs implies:

- Keeping the process as long as possible open, but also striving for regular points of freezing concrete results and conclusions;
- Keeping the COP as independent as possible, but also maintaining fruitful relations with the public sector in order to keep relevant;
- Prevent feelings of 'being arrived': the diversity, dynamics, and fruitful tensions have to be safeguarded when a COP functions well. After a very dynamic start, a COP comes in tranquil waters. That is good, but too much 'peace and love' distorts the quality of the results.

The main difficulties for COPs in realising and maintaining an 'edge of chaos' situation, can be summarised in two core dilemma's (see also Van Buuren & Edelenbos, 2004):

- The dilemma between maintaining a good relation with the public sector and guaranteeing enough freedom to formulate unconventional proposals;
- The dilemma between keeping the process open as long as possible while freezing the process when concrete results can be gained.

Box. 1 A success story: the Overdiepse polder

When COPs succeed in balancing between the two opposites of these dilemmas, they can generate innovative solutions for persistent policy problems. An example of such a COP is the COP 'Overdiepse Polder'. In this specific Dutch polder, a persistent problem was the water retention capacity of the Bergse Meuse. In times of high water, the river cannot store all the water. So, more space for the river is needed. In the polder, nineteen families (most of them are farmers) have united themselves and have tried to anticipate the official plans for calamity polders.

In cooperation with public officials, Habiforum and a project bureau 'Space for the River', the farmers have proposed to build the houses and farms upon artificial hills and to make the polder available for water retention in times of high water. They started from a general point: how to realize more 'space for the river'? In the process, three alternatives were proposed: higher dikes, all buildings upon artificial hills, and a middle variant. The second variant was considered to be most helpful, so it was in further detail worked out.

The project director stated that the process was directed towards developing concrete proposals to make water storing in the polder possible. In this COP, fixations came quickly in the process. The problem was concrete and the range of possible solutions limited. The sense of urgency by the occupants of the polder did them strive for quick results.

The project leader has alternate a strategy of accepting and highlighting differences and tensions between actors with a strategy of emphasising mutual interdependence and a sense of community. By doing this, a robust result was generated which all involved actors support.

Establishing fruitful relations with public officials was done in different ways. In the starting phase of the COP, the problem definition was communicated with the relevant administrators. They agreed on the realisation of a COP and give the COP its 'license to operate'. During the process, formal and informal contacts were maintained with politicians and civil servants of the municipality, the province and the department of Transport, Public Works and Water Management. In the COP participates a civil servant of the province. He maintains the regular contacts with the deputy (responsible official) of the province.

Very recently, the necessary finances are obtained. The central government has chosen this project as an exemplar project in the program 'Space for the river'. This means that the project has been perceived as valuable and attractive. The necessary formal procedures to realise this project will start in the near future.

7. CONCLUSION

In this paper we have tried to analyse a recent phenomenon in Dutch spatial policy, Communities of Practice, as functioning on the edge of chaos. We can conclude that, in potency, a COP has enough possibilities to remain on this fruitful edge. But, there are also dangers for a COP to become too stable or to become totally instable.

The danger of stability lies in the strong group culture a COP develops. Stability can also arise from a totally independent or dependent position a COP takes in relation to public actors (their sponsor or customer). Too much stability can also result from defining the goal of the COP in a too early stage. In such a situation, creativity is driven out. The danger of instability lies in a process that remains open and uncoordinated, an overload of personal opinions, the absence of a shared goal etc.

The central dilemma of complex adaptive systems is, as earlier stated, the tension between identity and participation (Merry, 1999). Managing complex adaptive systems is the same as balancing between the opposite sites of some horrible dilemmas. In our analysis, the COP approach can be seen as a hopeful attempt to organise 'bounded instability'. However, there are no clear-cut prescriptions

possible to sustain on the edge of chaos. The job of the project leader, but also of all participants, can be characterised as ‘boundary work’ on three levels:

1. In the relation between the COP and its environment (sponsor): to safeguard autonomy and relevance;
2. In delivering concrete results: to create openings and establish curtailments;
3. In generating rich results: to stimulate diversity and strive for cohesiveness.

8. DISCUSSION

Finally, I want to give some considerations about the COP approach when we confront it with the three perspectives which we started this paper. From a rational perspective, a COP is a relative strange method. When you detect a problem, you have to formulate an adequate question to a good expert and he will tell you the solution. The only thing you have to do is to implement this solution. Maybe, a COP can help you to collect more expertise, but normally the COP approach doesn’t fit with a technocratic intention, presupposed in the rational perspective. From an argumentative perspective, a COP can help you to mobilise support for a policy decision and to generate relevant insights. The architecture of the governance process is important for reaching a valuable and sustainable consensus. A co-evolution perspective adds to these insights the recognition of complexity and the value of managing ‘bounded instability’. In addition, a co-evolution perspective deals with the ambivalent position of many interactive policy processes: they are as independent as possible in order to generate novel and fresh solutions, but they have to maintain relations with their sponsor organisation in order to ‘sell’ their products.

In essence, a rational and an argumentative perspective are focused upon goal realisation and neglect complexity, while an adaptive (co-evolution) perspective invites for a more goal searching approach and for recognising complexity and its challenges. Knowledge is the result of the self-organising processes in complex adaptive systems. Knowledge management focus upon creating the right conditions for these processes.

COPs have the ambition to stay on the edge of chaos. In that sense, they fulfil the requirements complexity theory put on knowledge management. The dilemmatic character of this approach escapes the simplifications of a rational and an argumentative perspective.

All interactive policy processes have to deal with the two-sided ambition of co-evolution and bounded instability. They have to try to integrate the societal diversity of interests and frames. But they also have to fit their solution within the requirements of the public and private clients. They have to balance between independence and triviality, between unfruitful diversity and colourlessness. The task of public managers in managing these dilemmas is difficult. In further clarifying the concepts of bounded instability and co-evolution and their interrelation, science can enhance the action capabilities of these managers.

Literature

- Beyer, J.M. & H.M. Trice (1982) "The utilization process: a conceptual framework and synthesis of empirical findings" in: *Administrative Science Quarterly*, Vol. 27, Issue 4, pp 591-622.
- Boisot, M. & Child, J. (1999) Organizations as adaptive systems in complex environments: the case of China. In: *Organization Science*, vol. 10, no. 3, May-June, p. 237-252.
- Bood, R. & M. Coenders (2003) *Communities of Practice. Bronnen van inspiratie*. Lemma, Utrecht.
- Bruijn, H. de & E. Ten Heuvelhof (1999) Scientific expertise in complex decision-making processes. In: *Science and Public Policy*, vol. 16, no. 3, p. 179-184.
- Buuren, M.W. van & Edelenbos, J. (2004) Conflicting knowledge. Why is joint knowledge production such a problem? *Science and Public Policy*, vol. XX, no. 4.
- Buuren, M.W. van & Edelenbos, J. (2004) *Communities of Practice as dilemma-sensitive arrangements for knowledge creation?* Unpublished paper.
- Chiva-Gómez, Ricardo (2003) The facilitating factors for organizational learning: bringing ideas from complex adaptive systems. In: *Knowledge and Process Management*, vol. 10, no. 2, pp. 99-114.
- Connick, S. & Innes, J. (2001) *Outcomes of collaborative water policy-making: applying complexity thinking to evaluation*. University of California at Berkeley, Institute of Urban and Regional Development. Working paper 2001-08.
- Eeten, M.J.G. van (1999) 'Dialogues of the deaf' on science in policy controversies. In: *Science and public policy*. 26 (3), June 1999, pages 185-192.
- Fischer, F. (2003) *Reframing public policy : discursive politics and deliberative practices*. Oxford University Press, Oxford.
- Fischer, F. & J. Forester (1993) *The argumentative turn in policy analysis and planning*. UCL Press, London.
- Flood, R.L. (1999) Knowing of the Unknowable. In: *Systemic Practice and Action Research*, vol. 12 no. 3, p. 247-256.
- Gallopín, G.C.; Funtowicz, S.; O'Connor, M.; Ravetz, J. (2001) Science for the twenty-first century: from social contract to the scientific core. In: *International Social Science Journal*, vol. 53, no. 2, p. 219-229.
- Griffin, D.; Shaw, P.; Stacey, R.D. (1999) Knowing and acting in conditions of uncertainty: a complexity perspective. In: *Systemic Practice and Action Research*, vol. 12 no. 3, p. 295-309.
- Habiforum, Diverse publications about the COP 'Overdiepse Polder', Gouda. See also: www.habiforum.nl (in Dutch).
- Hajer, M. (1995) *The politics of environmental discourse. Ecological modernization and the policy process*. Clarendon press, Oxford.
- Haynes, Ph. (2003) *Managing complexity in the public services*. Open University Press, Maidenhead.
- Hoppe, R. (1999) Policy analysis, science and politics: from 'speaking truth to power' to 'making sense together'. In: *Science and public policy*. 26 (3), June 1999, pages 201-210.
- Huberman, M. (1994) Research Utilization: The State of the Art. In: *Knowledge and Policy: the international journal of knowledge transfer and Utilization*, 7 (4), winter 1994, pages 13-33.
- Kazancigil, A. (1998) Governance and science: market-like modes of managing science and producing knowledge. In: *Unesco*, 50, p. 69-79.
- Kickert, W.J.M.; Klijn, E-H.; Koppenjan, J. eds. (1997) *Managing complex networks. Strategies for the public sector*. Sage Publications, London.
- Kiel, L.D. (1994) *Managing Chaos and Complexity in Government. A new paradigm for managing change, innovation, and organizational renewal*. Jossey-Bass Publishers, San Francisco.
- Kooiman, J. ed. (1993) *Modern governance: new government – society interactions*. Sage, London.
- Koppenjan, J.F.M. & Klijn, E-H. (2004) *Managing uncertainties in networks*. Routledge, London.
- Lissack, M. & J. Roos (1999) *The next common sense. Mastering corporate complexity through coherence*. Nicholas Brealey Publishing, London.

- Luin, A. van & H. Hillebrand (2003) Vernieuwend ruimtegebruik: laat kennis stromen. *ROM Special*.
- Mayer, I. S. (1997) *Debating technologies. A methodological contribution to the design and evaluation of participatory policy analysis*. Tilburg University Press, Tilburg.
- McElroy, M.W. (1999) Complexity, IT, and the interprise. In: Lissack, M.R. & Gunz, H.P. (ed.) *Managing Complexity in Organizations. A view in many directions*. Quorum Books, Westport, Connecticut.
- McElroy, M.W. (2003) *The New Knowledge Management. Complexity, learning, and sustainable innovation*. Knowledge Management Consortium International Press, London.
- Merry, U. (1999) Organizational strategy on different landscapes: a new science approach. In: *Systemic Practice and Action Research*, vol. 12, no. 3, p. 257-278.
- Mitleton-Kelly, E. (2003) Ten principles of complexity and enabling structures. In: Mitleton-Kelly, E. (ed.) *Complex systems and evolutionary perspectives of organisations: the application of complexity theory to organisations*. Elsevier.
- Mitroff, I.I. (1983) *Stakeholders of the organizational mind. Towards a new view of organizational policy making*. Jossey-Bass Publishers, London.
- Moss, M. (2001) Sensemaking, complexity and organizational knowledge. In: *Knowledge and Process Management*, vol. 8, no. 4, pp. 217-232.
- Oliver, D. & J. Roos (2000) *Striking a balance: complexity and knowledge landscapes*. McGraw-Hill Publishing Company, London.
- Pierre, J. ed. (2000) *Debating Governance. Authority, Steering, and Democracy*. Oxford University Press, Oxford.
- Pierre, J. & Peters, B.G. (2000) *Governance, Politics and the State*. Macmillan Press Ltd, London.
- Rhodes, R.A.W. (1990) Policy networks: a British perspective. In: *Journal of Theoretical Politics*, Vol. 2. No. 3, p. 293-317.
- Riet, O. van der (2003) *Policy Analysis in multi-actor policy settings. Navigating between negotiated nonsense and superfluous knowledge*. Eburon, Delft.
- Roos, J. & Oliver, D. (1999) From fitness landscapes to knowledge landscapes. In: *Systemic Practice and Action Research*, vol. 12 no. 3, p. 279-293.
- Rotmans, J. (2003) *Transitiemanagement. Sleutel voor een duurzame samenleving*. Koninklijke van Gorcum, Assen.
- Sabatier, P. (1978) The acquisition and utilization of technical information by administrative agencies. In: *Administrative Science Quarterly*, vol. 23, no. 2, p. 396-417.
- Simon, H. (1976) *Administrative Behavior: a study of decision-making processes in administrative organization*. The Free Press, New York, third edition.
- Smith, M.Y. & Stacey, R.D. (1997) Governance and cooperative networks: an adaptive systems perspective. In: *Technological Forecasting and Social Change*, vol. 54, p. 79-94.
- Stacey, R.D. (1992) *Managing the unknowable. Strategic boundaries between order and chaos in organizations*. Jossey-Bass Publishers, San Francisco.
- Stacey, R.D. (1995) The science of complexity: an alternative perspective for strategic change processes. In: *Strategic Management Journal*, vol. 16, p. 477-495.
- Stacey (2003) *Strategic Management en Organizational Dynamics. The challenge of complexity*. Prentice Hall.
- Teisman, G.R. (2004) *Complexity Management*. To appear.
- Weiss, C.H. & M.J. Bucuvalas (1980) *Social science research and decision-making*, New York: Columbia University Press.
- White, L. (2001) 'Effective Governance' through complexity thinking and management science. In: *Systems Research and Behavioral Science*, vol. 18, p. 241-257.

Notes

ⁱ The empirical material is derived from a expert meeting with COP – projectleaders and from an analysis of documents about the COPs in general and, more specific, about the COP Overdiepse Polder. The project leader of the Overdiepse polder has answered some specific questions.

ⁱⁱ Wenger (1998) introduces the term COP, using it for spontaneous networks of (for example) co-workers in a company. He categorizes the COP under the broader term of ‘social learning’. In our case, COPs are interorganizational and not spontaneous. I think, there are good reasons to take the concept of COP broader, whereby it fits well in a complexity perspective. Internal, a COP is focused upon learning and knowledge sharing. But is also intended to take profit of mechanisms as self-organisation and emergence (for example in realising a shared ambition for the COP). External, a COP is focused upon co-evolution with its wider (public) environment. In general, a COP is (in theory) capable of dealing with things like non-linearity and uncertainty, because of the fact that its goal is not defined in advance and also because the process is open as long as possible.

ⁱⁱⁱ As Einstein said: a system cannot solve a problem, that was generated by that system.