



## **EMERGENCE AND PUBLIC ADMINISTRATION**

### **A literature review for the project 'A New Synthesis in Public Administration'**

Commissioned by Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, Directie Kennis (The Netherlands)

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## **Abstract**

This literature review explores the concept of emergence in public governance, and the need for building anticipative capacity in public organisations. The purpose of this review is to explore how public organisations can deal with issues that emerge in their environment. Emerging issues are characterised by a great deal of complexity and uncertainty, and therefore create challenges for static public governance arrangements. Dealing with emerging issues requires that organisations and systems build anticipative capacities. The literature review summarises recent but also less recent organisation theory focusing on organisational improvisation and on complex governance arrangements. This literature presents an alternative way of both analysing organisations and of organising beyond static and highly proceduralised or systemised conceptions. New organisational arrangements to cope with emergence sometimes appear counterintuitive, and they sometimes appear to defy the rules of economy, efficiency, democracy and the rule of law. As is evident from Bourgon's 'New Synthesis' framework, an organisation or system that facilitates emergence needs to make a trade-off with other objectives. While such arrangements are good at anticipating change and at detecting trends, they come with challenges to the performance, compliance, and the resilience of the public sector.

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## 1 Introduction

This literature review explores the concept of emergence in public governance, and the need for building anticipative capacity in public organisations. It was commissioned by Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, Directie Kennis (Ministry of the Interior and Kingdom Relations, The Netherlands), as part of the 'New Synthesis Project' ([www.ns6newsynthesis.com](http://www.ns6newsynthesis.com)).

The purpose of this review is to explore how public organisations can deal with issues that emerge in their environment. Emerging issues are characterised by a great deal of complexity and uncertainty, and therefore create challenges for static public governance arrangements. Dealing with emerging issues requires that organisations and systems build anticipative capacities. The project documents of the New Synthesis project define emergence as 'the process by which new patterns arise out of the multiplicity of interactions between different systems.' The literature review summarises recent but also less recent organisation theory focusing on organisational improvisation and on complex governance arrangements. This literature presents an alternative way of both analysing organisations and of organising beyond static and highly proceduralised or systemised conceptions. While the focus will mainly be on (public) organisations, we will also show how more recent public administration literature on network and complexity has focused extensively on the concept of emergence. In this review paper, we do not only describe trends, but we will also analyse new challenges, relying on the framework provided by the New Synthesis project and the concepts of performance, compliance and resilience therein.

This paper has four main parts. In chapter one, we show how traditional organisation studies have largely ignored the concept of emergence. We do highlight, however, that they have dealt with emergence in an indirect way by devoting considerable attention to processes of formalisation in organisations and the related positive and negative effects of such formalisation. After introducing this literature, we in chapter 3 show how traditional organisations are able to deal with emergence through processes of improvisation and bricolage, and through relying on emerging strategies. This shows that emergence is far from absent from mainstream organisation theory.

In chapter 4, we stop focusing on organisations, and introduce readers to newer thinking on emergence within social systems theories. In this chapter, we show how emergence takes a central role in systems theory and complexity theory, and how these theoretical frames are increasingly being used in studying the public sector. To operate within a social system, the public sector needs to develop anticipative capacities and ways for managing system dynamics.

Chapters 2, 3 and 4 exclusively focus on emergence. In chapter 5 we discuss the findings and critically assess how emergence may or may not contribute to other organisational or system objectives as defined within 'New Synthesis' framework. More specifically, we show how emergence interacts with performance, compliance and resilience.

## 2 Emergence in organisations

In this chapter, we explore how issues of emergence and anticipative capacity have featured in organisation theory. This focus in this chapter will be on traditional organisations, with more or less well-defined boundaries. In chapter four, we will extend this review to networks of organisations and systems.

Traditionally, organisation theory has devoted considerable attention to processes of formalisation in organisations, and the effects of such formalisation. Introducing systems of control and standardisation has been central to much of organisational management practice. Procedures, as a result, have become quite important in both theory and practice. Emergence appears to be in direct contradiction to such trends. In the first chapter of this paper, we demonstrate how emergence conflicts with traditional and mechanistic concepts of organisation. Emergence requires a certain degree of rule transgression, and traditional organisation theory has always had problems with giving such transgressions a positive role in explanatory frameworks, where formal organisation dominates. Likewise, public sector reform has paid lip service to emergence as an idea, but often resorted to proceduralist, structured and formal reform recommendations. The organisation literature has however devoted considerable attention to the functions and dysfunctions of formalisation. In this section, we will summarise the literature on virtues and vices of formalism, and will more specifically focus on the effects of overformalisation of organisations (and thus the eradication of emergence) on creative discretion, innovation, and institutional memory.

### *2.1 Restricting emergence: Formalisation and control in organisations*

#### **Curtailling deviance in formal organisations**

Criticism of traditional bureaucratic organisation is not new, and the dangers of attributing too much value to formal organisation have been highlighted before (Thompson 1965; Adler and Borys 1996). Thompson's classic critique of traditional bureaucracy is very relevant for this review: 'the bureaucratic form of organization is characterised by high productive efficiency but low innovative capacity' (Thompson 1965). It demonstrates the tension between the rigid, rule-based logic of bureaucracies, and the more messy reality of innovation (Bowden 1979). Following rules and procedures is a key characteristic of the classic Weberian approach to bureaucracies. Not following the rule is deviant behaviour. Classic organisation theory has likewise treated deviance from organisational rules as exceptional and undesirable. At the same time, however, the literature is full of examples where rule-breaking is associated with problem-solving, innovation, and success. Administrative discretion is exercised out of compassion, to facilitate solutions, or to save resources (Lipsky 1980; Riccucci 2005). Civil servants act as guerrillas and willingly violate norms to further their beliefs (O'Leary 2005). Managers are invited to break the chains of rules and to act as true entrepreneurs (Osborne and Gaebler 1992). Behaviours and actions 'out-of-the-normal' may be more common to organisations – even highly formalised ones – than generally assumed. In addition, such behaviours may fulfil important functions in organisational evolution and survival.

Selznick's classic observation in 1957 that organisation analysis mainly deals with analysis of routine processes (Selznick 1957: 31) may well still hold. In some subdomains of organisation theory, however, non-routine processes have recently started to receive more attention, and concepts such as bricolage, improvisation have slowly become part of the canon (Weick 2001; Kamoche, Pina e Cunha et al. 2002). In public administration theory, complexity is a growing niche (Kickert, Klijn et al. 1997; Koppenjan and Klijn 2004; Klijn 2008). Bureaucracies' ways of coping with firm structures yet fuzzy mandates are well documented (Lerner and Wanat 1983).

Organisation theory combines paradoxical elements: you should have formal organisation, and you should have flexibility (see also Talbot 2005). These are two contradicting administrative doctrines (Hood and Jackson 1991), which makes the effects of formalisation on organisations far from clear. Adler and Borys distinguished between two types of formalisation: enabling and coercive (Adler and Borys 1996). In organisation studies, they argue, two different views on formalisation, or bureaucracy, exist. One posits that bureaucracy stifles creativity, and demotivates workers. Yet, according to the positive view, formalisation is positive because it provides guidance and reduces role stress (Adler and Borys 1996: 61). Having a formal structure at first reduces ambiguity and increases identification with the organisation, but may at the same time strengthen the potential for role conflicts between employees' and organisational values. Most organisations combine a mix of procedures and flexible arrangements (Vieira da Cunha, Pina e Cunha et al. 2007), and different sections or layers of an organisation may display quite different characteristics. Some aspects of organisations are tightly structured, but others are very flexible. Outward appearances of formalisation may hide quite divergent informal structures of an organisation, and formal and informal structure may only be very loosely coupled (March and Olsen 1976).

### **The new proceduralism in public sector reform and implications for emergence**

Despite the observation that public sectors operate in a fast-changing environment, many public sectors have resorted to quite traditional organisational reform recipes. These tend to give considerable attention to streamlining and strengthening organisational procedures, and have relied extensively on processes of standardisation, formalisation, normalisation, and systemisation. While intended to counter dysfunctions of traditional bureaucracies, some reforms have resulted in new types of proceduralism, thereby in effect re-affirming and strengthening the traditional bureaucratic formalism.

In J. Q. Wilson's now classic distinction between different types of government agencies, production-type agencies are just one possible type. Typical for production agencies is that activities, outputs and outcomes are relatively easy to define (Wilson 1989: 158-171). This is only the case for a very limited number of government organisations. Because of their nature, the activities in these production-type agencies can be organised using Fordist principles, based on clear procedures. Because activities



and outcomes, and the relation between both, are more difficult to define or measure, and because these concepts are at the same time unstable and changing, such a Fordist approach may be less appropriate for what Wilson calls procedural, craft or coping organisations. Yet, he sees a tendency in government reforms to treat all agencies as production-type agencies, and to apply reform mechanisms appropriate for these agencies, such as tight procedures, detailed records etc. to all government organisations (Wilson 1989: 170). Similarly, New Public Management reforms have tended to be reduced to a neo-taylorist agenda (Pollitt 1990), and in policy-making Stone observed a growing belief in 'the rationality project', or a move towards making policy using 'rational, analytical, and scientific methods' (Stone 2002). Seddon likens reforms in the UK public sector to the establishment of 'public service factories', which he describes as a 'gloomy vision' (Seddon 2008: 147).

In his books on tides of reform in the US Federal government, Light speaks about a 'new proceduralism' in the 1980s and early 1990s to describe a situation where management has become more procedural, and where procedural fixes are preferred as a method to make government work (Light 1997: 115-123). Despite all the attention for fancy new concepts such as deregulation, decentralisation, internal competition, partnerships etc., traditional bureaucracy has proved to be a very durable and persistent organisational principle (Schofield 2001). Entrepreneurialism in NPM appears to be something that mainly applies to managers, not to front-line workers, who are increasingly locked into a series of systems and procedures.

Despite high-minded rhetoric, there lies a disturbingly strong common element below many managerial innovations and the mainstream management theory. Rational managers, formal strategy, and rational and planned use of resources are all part of management consultant's toolbox (Pina e Cunha 2005). Half a century ago, Philip Selznick already complained about the 'overemphasis on neat organization' in mechanical metaphors of organisations (Selznick 1957: 3). Management models and aids such as Total Quality Management, Business Process Reengineering, lean thinking, strategic management and performance measurement place considerable emphasis on procedures and formalism, and have difficulties dealing with the creative results of divergence from procedures, and accounting for organisational change. As such, they are helpful in stable environments. As will be shown later in this literature review, formalised bureaucratic structures are geared towards productivity and control, not towards creativity and innovation (Thompson 1965). This makes organisations that appear to function very efficiently in their day-to-day operations very vulnerable to changes in their environment.

## *2.2 The virtues of formalisation*

Formalising organisations has tremendous advantages for the performance and predictability of organisations and their outputs. By incorporating organisational activities into procedures, by making all individual acts in the organisation explicit, and by formalising informal activities, instrumental improvement becomes possible. In the mid-19<sup>th</sup> to early 20<sup>th</sup> century, the embracement of the

Weberian bureaucratic ideal type created new efficiencies and more equity, especially when compared to the previously existing systems riddled with waste, inefficiency, favouritism and patronage. The study of public administration has often focused on the dysfunctions of bureaucracy and the bureaucrat personality has been described as dull, grey, rule following and risk avoiding (Merton 1940). Yet formalisation, and thus curtailing emergence, has important virtues, both for operational efficiency, cost, and employee well-being.

Formalisation provides organisations with a certain degree of stability. Even when organisations function in environments with varying degrees of uncertainty, the stability and predictability offered by formalisation aids systems in their survival (Silberman 1993). In high-uncertainty environments organisations need specialised systems to increase their knowledge. Formalised routines then become extremely practical. Furthermore, lower levels of discretion due to extensive rule systems may be a solution to counter common mistakes (Ayres 2007: 85) and may thus increase predictability. Formalism makes an organisation and its environment stable, but institutionalisation also means losing flexibility (Selznick 1957: 7).

A further related advantage of highly formalised and routinised systems is that they have clear and transparent lines of accountability (Kassel 2008). Having strong, visible and stable formal structures gives organisations an appearance of competence. Formal structures provide legitimacy, and signal that an organisation is acting in an appropriate manner (Meyer and Rowan 1991: 50). We come back to these arguments in chapter 5.

Formalisation of organisations also has a number of positive effects on employees. It may protect them against arbitrary decisions, rewards and punishments. Rules and norms act as neutral authority and take randomness and abuse out of the line manager. In this way, formalisation may strengthen employees' feelings of justice, fairness, equity (Aldrich 1999: 137). Formalism and bureaucracy regulate the behaviour of employees 'by a complex and all-encompassing set of rules' (Wilson 1989: 114). This reduces role ambiguity, creates stability, and shows each and every employee what his or her role in and contribution to the organisation is, thereby potentially strengthening organisational identification. Yet, by providing clear guidance, role definitions also show employees what is the bare minimum that needs to be done (Merton 1940). Excessive formalisation has important dysfunctions as we will show in the next section.

### *2.3 The formalistic straightjacket and implications for emergence*

Because the virtues of formalisation are well-known, they do not generally become the topic of research or social commentary. Instead, much research has focused on the dysfunctions of organisational formalisation. Dysfunctions of formalisation include situations where structures and norms become a formalistic straightjacket and thereby hinder the organisation in effectively performing its productive functions. Formalisation also appears to have an effect on the skills and learning behaviours of organisations' employees, and may lead to organisational fragmentation.

Individual irresponsibility and a reduction of systems to its component factors may then be the result. More importantly, formalisation, and especially excessive formalisation, may affect the organisation's capacity to act in changing environments, and may have negative effects on innovative capacity and organisational memory. When officials or organisations, for instance as part of industrial action, decide to go by the book, they use their knowledge about the dysfunctions of extreme rule-following to grind the organisation to a halt. This illustrates the difficult balance between rules and chaos in organisations. In this paper, we use the concept 'overformalisation' to refer to situations where organisations have formalised extensively, and have limited discretion. The classic organisation literature, but also the literature on classic bureaucracy, has talked extensively about dysfunctions of bureaucratic and mechanistic organisation models. One classic example is Merton's comment on goal displacement where the means (rules) become the end in an organisation (Merton 1964).

The argument in this paper is not that formalisation is bad for organisations. But organisations need to be aware of the dysfunctions of formalisation, especially when embarking on a process of reformalising their activities or strengthening their procedures by using popular managerial aids. There is a fine line between functional and dysfunctional procedures. When public officials start working to the rule, this often results in organisational gridlock (Scott 1998: 310). Research on regulation talks about compliance junkies, who comply with rules for the sake of it. This is for instance evident in Bardach and Kagan's book 'Going by the book' (Bardach and Kagan 2002) in which they discuss the concept of regulatory unreasonableness, whereby strict compliance to rules is the ultimate guide for behaviour and leads to dysfunctional regulation. The growth of the 'new legalism' in (mainly) Anglo-Saxon countries, where legal thinking dominates as expressed in an increased tendency to sue and to seek legal remedies, and in a high number of legal professionals, is a further illustration of a trend towards (over)formalisation. Bureaucracies are motivated by stabilising the organisation's operating system (Mintzberg 1978: 941), and by defining away environmental pressure. This may result in what Holling calls a rigidity trap, in which systems become too tightly aligned and controlled that they cannot adapt to external changes, resulting in a loss of innovative capacity (Holling 2001: 400).

### **Deprofessionalisation, deskilling and job morale**

Formalisation in organisations has been found to lead to alienation and loss of autonomy, especially in organisational contexts with many professionals (e.g. scientists) (Podsakoff, Williams et al. 1986). By formalising and standardising all tasks within an organisation, the level of skill required to perform these tasks decreases and employees performing similar tasks are interchangeable. Some have labelled this phenomenon as dumbing down public services, because it is based on employing cheap people working on scripts (Seddon 2008: 73). This critique is very much in line with old critiques on Taylorism, which focused on the detachment of the worker's skills from the task at hand, the separation of conception and execution, and the close managerial control of the work.

Formalisation, as a result, may lead to workers who are highly skilled in one specific capacity, but with little cross-departmental learning. Learning requires employees who participate, who feel empowered, and who have a certain level of discretion to acquire and use new knowledge (Fiol and Lyles 1985). Holling uses the concept of a 'poverty' trap in systems, where adaptive capacities in systems have been eradicated so that change is no longer possible (Holling 2001: 400). This may indeed be the case, but one has to appreciate that such rigidity and extreme specialisation is exactly why formalised systems have been so successful.

Related recent concerns have focused on the application of models such as lean and mean production and the effect they may have on employee morale and commitment (Knights and McCabe 2003: 121). Likewise, Radnor and Boaden have emphasised lean thinking's effects on workforce stress and a loss of autonomy (Radnor and Boaden 2004). As the management thinker Chris Argyris argued, formal organisation and 'the needs of a mature personality' may be incongruent because of the requirements of formal organisation leading to employees with minimal control over their environment, who are expected to be passive, subordinate, dependent and who are expected to adapt a short time horizon, and only need to use shallow abilities (Argyris 1965: 66). Ayres talks about a status squeeze on professionals as a result of algorithms, models, statistics, standardised and automated decision making and diagnosis systems turning formerly professional jobs into low status jobs (Ayres 2007: 166-7).

A characteristic of public services is that they have ramifications that go well beyond the immediate organisation and its processes (Smith 1995: 285). Formalisation reduces the scope of individual jobs and workers. In the literature on organisational citizenship, we find that a willingness to exceed one's formal job requirements is a key element of such organisational citizenship (Organ and Greene 1981; Organ 1990; Aldrich 1999: 131). When jobs are defined narrowly, employees may be less likely to do things that are not part of the formal requirements and to perform extra-role behaviour (Morrison 1994). The philosopher MacIntyre expands this argument and argues that irresponsibility may be strengthened and that moral agency risks to disappear when someone does not look beyond the own clearly demarcated role (MacIntyre 1999). But again, the evidence is not conclusive. Research on organisational formalisation has also found that it sometimes leads to higher rather than lower organisational commitment (Podsakoff, Williams et al. 1986; Michaels, Cron et al. 1988) .

### **System dependency, supervision and initiative**

Employee skills matter for management and supervision requirements. The observations in the preceding sections are not unlike Veblen's old observation of trained incapacity (Veblen 1914). Very formal and specialised job descriptions and an unwillingness to act beyond one's own clearly demarcated formal role may create irresponsibility for wider organisational processes and outcomes. Highly formalised organisations consist of a series of segregated small units, and the boundaries between units pinpoint responsibility. The same boundaries however also encourage irresponsibility when boundaries are crossed (Thompson 1965: 8-9). 'I'll have to check with my manager' then becomes a common credo.

The result of such changes is that coordination moves up higher into the hierarchy, because lower levels have become too highly specialised. High specialisation of employees increases the need for supervision and coordination. Standardisation appears to coincide with an increased supervision over the frontline (Ackroyd, Kirkpatrick et al. 2007). According to Turok and Edge (1999), there has indeed been an increase in managerial jobs, yet they are not clear about the reasons for this increase. Van der Lans suggested this has also been the case in the Dutch public sector (van der Lans 2005). Mason found that the number of supervisors after the introduction of lean production remained stable and did not decline as lean thinking would have prescribed. But he did not find an increase in the number of supervisors, as some of the arguments discussed in this section would have suggested (Mason 2000).

Research by De Witte and Steijn showed that while many jobs have become more complex jobs, they have not come with more autonomy for employees (De Witte and Steijn 2000). Middle managers are also complaining about the ever smaller amount of discretion they have in decision making, their limited management autonomy, and the fear to do things beyond their remit, resulting in decreasing morale (Thomas and Dunkerley 1999). Kelman used the concept 'fear of discretion' in research on government procurement, to refer to structural impediments that stop public officials from exercising discretion (Kelman 1990).

This limited discretion in an overformalised environment is also evident from research on the impact of IT systems on workers' discretion. Such systems effectively function as a system of control (Knights and McCabe 2003: 70). Adler and Borys talk about a 'deskilling logic' (1996: 74), where machines are designed to minimise reliance on employees' skills and discretion. Only the supervisor can authorise deviation from the procedure (Adler and Borys 1996: 74), thereby effectively limiting learning opportunities for individual workers. Macdonald (2002) talks about technological determinism. In research in Dutch social security offices, Scheepers (1992) found that street level bureaucrats are more inclined to approach the problem from the organisation's viewpoint rather than from the clients': 'Case-workers using a computer during contacts indicate that in case of disagreements with clients they are much less inclined to go into the problem, talk it over and search for a solution. Instead, these case-workers are more inclined to hush the problem, to avoid the problem, or to evade the problem by letting someone else with more authority deal with it.' (Scheepers 1992: 355). Formalism prescribes a best way, where problems only exist when they are recognised by the system. Other problems bring the system in disarray, and the operator is not allowed to solve them because by doing so he disrupts the system or violates lines of authority. The operator may also no longer be able to solve problems because of deskilling and overspecialisation. Despite these studies, there is no scientific agreement on whether technology and formalisation lead to de- or revaluation of skills in the organisation (Adler and Borys 1996: 67). But it is evident that formalised IT systems do not exactly facilitate emergence in organisations (Bovens and Zouridis 2002).

## **Eliminating creative discretion and innovation**

Early organisation theory was based on a 'myth of formal organisation' and disregarded (informal) organisational reality (Meyer and Rowan 1991). In a fully rational organisation there is no place for discretion, because the rule is seen as entirely functional. Administrative discretion has since the 1960s become one of the key concepts in public administration (Blau 1963; Lipsky 1980; Hill and Hupe 2002). Gradually, the idea that a willingness to bend rules, nonconformity and risk taking were essential for organisations to function and survive gained ground (DeHart-Davis 2007). Rule bending can be both beneficial and detrimental to the organisation, but this often is a normative judgment (DeHart-Davis 2007). In the latter case, concepts such as rule breaking, shirking, and sabotage are often used (O'Leary 2005). Traditional responses to observed discretion were to treat it as undesirable, dysfunctional, and even illegal. Tensions between strict rules and discretion are a very old theme in organisation theory and public administration (Bardach and Kagan 2002: 34-5). Discretion can be done within the general rules or outside them. Generally, there is always some discretion built into systems (routine discretion), whereby selection between alternatives has to be made. Creative discretion goes somewhat further (and is often required in customised services), and deviant discretion involves moving beyond the framework (Kelley 1993). Higher formalisation in an organisation reduces deviant discretion (Kelley, Longfellow et al. 1996: 149-150), but it may also reduce other types of discretion.

Innovation often emerges from discretionary practices rather than from planning (see also 3.2), and there generally is a tension between creativity and control (Simons 1995). Discretion is necessary: 'The amount of discretion available to managers is a strong factor in determining whether improvisation will be used. If one assumes that greater freedom invites increased improvisation, those most likely to improvise in the public sector are elected officials and upper-level managers. At a collective level, agencies most likely to improvise are those that exist in a chaotic environment, or in a cultural climate that supports improvisation.' (FitzPatrick 2002: 648). This quote further confirms the trend we discussed earlier to move decisions up into the hierarchy.

In highly formalised organisations, such as the production-type agencies as described by Wilson (1989), innovation is unlikely to emerge from within the production process. Bureaucratic structures are geared towards productivity and control, not towards creativity and innovation (Thompson 1965). Innovation needs 'uncommitted money, time, skills and good will' (Thompson 1965: 10). Innovation and change in organisations can be due to 'mistakes, misunderstandings, surprises, and idle curiosity' (Aldrich 1999: 22). It needs an untidy structure, not the overspecification of formalised organisations (Thompson 1965: 3): 'In the innovative organization, departmentalization must be arranged so as to keep parochialism to a minimum. Some overlapping and duplication, some vagueness about jurisdictions, make a good deal of communication necessary. People have to define and redefine their responsibilities continually, case after case.' (Thompson 1965: 15). Innovation, in other words, requires serendipity and spontaneity (Kamoche, Pina e Cunha et al. 2002: 7). A drive for conformity is therefore bad for innovation in public services (Bowden 1979). Retention of organisation (i.e. keeping

what is) happens through limiting discretion; change through nurturing discretion and thus emergence (Aldrich 1999).

Innovation is often not a discrete decision or event, but it emerges in an organisation, it is an accretion of events. It is not linear, it is complex, it requires modification and reinvention, and knows many setbacks (Van de Ven, Polley et al. 1999). Excessive procedures make emergence no longer possible to achieve, because it is not allowed. Because improvisation and trial and error look unplanned and inefficient, they are often considered as bad (Pina e Cunha, Vieira da Cunha et al. 2002). Hesitant steps towards innovation may well be seen as divergence or inefficiency by those higher up in the organisation. High formalisation in organisations has often been mentioned as a factor negatively related to innovation, yet this finding is complicated by the assertion that bureaucratic organisations are better at *implementing* the innovations (Damanpour 1991).

### **Learning and institutional memory**

Excessive formalisation, we have mentioned earlier, may lead to a shrinking knowledge base in organisations, because little in the organisation exists beyond the procedure book and strategic plan. Employees act as repositories of non-formalised or non-codified knowledge (Aldrich 1999: 144), yet in overformalised organisations non-codified information has no place because employees are not encouraged to think beyond their own particular role and function. This leaves a very fragmented knowledge base. Local knowledge is not taken into account, because it is seen as irrelevant in an organisation that has been entirely planned. Overformalised organisations are particularly bad at dealing with non-codified information, which means there is little space for information and knowledge to emerge. Without such information emergence, it is difficult for organisations to anticipate changes in their environment, as we will demonstrate in section 4.5 of this paper.

There are however also arguments going in the opposite direction. Pollitt talks about organisational forgetting, and explores the argument that post-bureaucratic organisations do not learn, but forget, and that traditional bureaucracies tend to have better organisational memories (Pollitt 2009). Indeed, formalised organisations are more likely to have well-defined storage locations for information (routines, archives, records, long-term employees etc.), this unlike less-permanent and networked organisations. Networks are notoriously bad at storing information (Agranoff 2007). The result of a trend towards post-bureaucratic types of organisation may be a disappearing organisational memory. As a result of organisational restructuring, shifts in the media used to store information, the decline of permanent public service careers, frequent organisational change, etc., modern organisations and systems may suffer from institutional amnesia (Pollitt 2000). Pollitt contrasts the popular concept of organisational learning to organisational forgetting. This phenomenon may also be related to the process of deskilling mentioned earlier, leading to the disappearance of employees with in-depth, broad, specialised and long-term memories, in favour of short-term system operators. We will further explore these assertions in section 4.5 on anticipative capacity, a capacity which requires observation skills and learning.

### 3 Dealing with emergence in organisations

In the previous chapter, we have introduced the topic of this literature review by showing how classic organisation theory (and public sector reforms as well) has tended to focus on processes of curtailing emergence. Emergence, in such approaches, is seen as a transgression of organisational boundaries, organisational routines and organisations rules and formal procedures. We argued that such formalisation in organisations comes with a great number of advantages. At the same time, formalisation, especially when it becomes extreme, creates many dysfunctions for organisations.

In this chapter, we show how organisation theory has already quite early on devoted attention to aspects of emergence. Despite the popularity of the concepts in current literature (see also later in this review, where we discuss social systems and complexity theory), classic organisation theory has indeed also devoted attention to processes of emergence. In this chapter, we discuss two subfields in organisations theory that rely extensively on emergence or related concepts. We first discuss the literature focusing on processes of organisational improvisation and bricolage, and subsequently review the literature on emergent strategy and logical incrementalism.

#### *3.1 Organisational improvisation and bricolage*

##### **Defining bricolage**

Bricolage, a concept borrowed from the anthropologist Claude Levi Strauss, became familiar to organisation scholars through the work of Karl Weick (see e.g. Weick 1993). Bricolage refers to a nonlinear, nonplanned, nondirect way of thinking. Bricolage 'can be defined as the invention of resources from the available materials to solve unanticipated problems' (Pina e Cunha 2005: 6). The bricoleur, or he who bricolates, 'in contrast to the scientist or engineer, acquires and assembles tools and materials as he or she goes, keeping them until they might be used. Each is shaped in part by its previous application but remains inevitably underdetermined, imperfectly understood, open to manipulation for whatever purpose is at hand' (Freeman 2007: 486). Bricolage can thus not be captured in rules or procedures. Bricolage and improvisation are often used interchangeably in organisation theory (Pina e Cunha, Vieira da Cunha et al. 1999). Pina e Cunha et al. define organisational improvisation as 'the conception of action as it unfolds, by an organization and/or its members, drawing on available material, cognitive, affective and social resources.' (Pina e Cunha, Vieira da Cunha et al. 1999: 302). Organisational improvisation diverges from more traditional models of organisation because it is based on a convergence of conception and execution (Moorman and Miner 1998). Unlike a rational planner, bricoleurs go ahead using available material, rather than waiting for optimal conditions.

Early researchers on organisational improvisation and bricolage often relied on metaphors, such as the improvisation of a jazz musician, to describe organisational realities (Bougon, Weick et al. 1977; Bastien, Hostager et al. 2002). Later scholars attempted to define improvisation and its



characteristics, and started to focus on businesses (Pina e Cunha, Vieira da Cunha et al. 1999). Bricolage is also used in studies on product design, and especially in the literature on innovations (Andersen 2008), where the focus is on the bottom-up dynamics rather than on the planned nature of innovations. Coercive approaches to procedure design tended to see 'any deviation from standard procedure' as suspect (Adler and Borys 1996: 71). Improvisation, therefore, is in this logic seen as undesirable. Organisation theory has in fact long recognised improvisation, but it 'was seen as an organisation dysfunction' (Leybourne 2007: 231). Adler and Borys give the example of companies where employees are prevented from repairing something themselves, because access to the inner core or control panel of the machine would also allow them to tamper with other settings. Avoiding this tampering is seen as more necessary than 'bricolated' repairs. 'Improvisations to support repetitive work need to be hidden' (Vieira da Cunha, Pina e Cunha et al. 2007: 16), because they challenge managerial control. Bricolage, on the contrary, allows for a bottom-up employment of skills in the organisation (Andersen 2008). As such, 'bricolage is not a deviation from "proper" management but a necessary practice for our organizations' (Pina e Cunha 2005: 6). Recent literature increasingly describes improvisation as an essential skills for managers rather than treating it as something in contradiction with managerial control (Leybourne 2007). This trend is also visible in the literature on complexity and the role of (public) managers in organisational networks, as described in chapter 4. The concept of bricolage helps us to understand why and how new organisational structures and actions emerge, or to understand the evolution of systems (Campbell 1997).

### **Bricolage and improvisation as situated action – the role of organisational memory**

Bricoleurs do not just do something. Organisational improvisation is not totally random behaviour. Bricoleurs have a great deal of practical experience, and fall back on a series of learned routines. Improvisation does not come out of the blue but requires informal knowledge networks (Augier and Vendelo 1999) and tacit knowledge is essential. Bricoleurs use their memory, and have considerable local knowledge, much of which is not recognised in the organisation's formal knowledge repositories. There are certain general rules, and much rehearsal is necessary to enable rapid cognition and complex decision-making (Gladwell 2005: 114). This makes bricolage situated action.

Yet, the literature is divided on whether organisational memory hinders improvisation because one returns to known patterns and structures, or stimulates it because one has more learned elements that can be recombined (Pina e Cunha, Vieira da Cunha et al. 2002: 117-8). Returning to the jazz metaphor used in the preceding section, the question thus is whether the jazz player who has more tunes to choose from will revert to an old tune, or recombine tunes to a new one? Historical information may thus aid innovation through bricolage (Andersen 2008), yet memory may also hinder innovation, because it tends to rely on things that have been. Experience thus plays a role in both successful *and unsuccessful* improvisation (Miner, Bassoff et al. 2001). Improvisation and bricolage differ from creativity in that improvisation and bricolage are not always novel (Pina e Cunha, Vieira da Cunha et al. 1999). It may just be recombination of old acts, or traditional behaviour that is not normally displayed in a certain context. At the core of the concept of bricolage is a recombination of

older elements. Entirely new things, 'fancy' things as Weick calls them, are based on a recombination of existing elements and thus require memory (Weick 2005: 426). Bricoleurs may use and unearth techniques that seemed obsolete or even unorthodox, and so become innovative.

Organisational and individual memory and experience come under pressure in highly formalised environments, as already mentioned. Bricolage requires lots of practice and prior experience (Weick 2001: 286-9). Therefore, 'Bricolage is more likely to be practiced by experienced rather than by inexperienced people' (Pina e Cunha 2005: 16). Weick suggested that a too extensive formal training may have a negative effect on problem-solving capacity (Weick 2001: 295), because this training only prepares one to function in a heavily standardised, proceduralised and predetermined environment and not in a new and chaotic ones (Weick 2001: 111). Such 'overlearned behaviours' may then impede successful action in changing, unpredictable situations (Weick 1985). At the same time, however, standard operating procedures serve as a memory, and reduce uncertainty (Moynihan 2008). Especially in times of crisis, organisational memory becomes important. Organisational memory is partly embodied in standard operating procedures, systems and artefacts (Walsh and Rivera Ungson 1991).

But organisational memory is also dependent on and embodied in individual memory. This becomes visible in the practice of bringing back in people who have had previous experience with a specific crisis (Moynihan 2008: 360). Trends as described in earlier sections leading to a disconnection between the individual and the organisation, e.g. through short term flexible employment, may threaten the development of such organisational memory. Bricoleurs and discretionary managers are professionals and needs certain skills and experience to function. A short-term reliance on e.g. narrow performance indicators and targets may be detrimental to the development of such skills (Radin 2006)

### **Encouraging and controlling bricolage**

Enabling bricolage and improvisation to stimulate innovation and problem-solving, while at the same time limiting it to safeguard routine performance and compliance is a key challenge. Just as absence of routines may lead to inefficient organisation, routine itself may become stifling, and even dangerous. Weick gives the example of fire-fighters who are most likely to get killed or injured in their 10<sup>th</sup> year on the job, because they then become less open to new information. Bricolage is based on experience rather than on the organisation's organising theory or theoretical purism (Bardach and Kagan 2002: 84-5). This may at times become problematic in a public organisation, which is generally based on such relatively purist organising principles, such as the rule of law, equity, and clear definitions of boundaries. Bricoleurs however typically think and act beyond their function and work across existing boundaries. They span boundaries and take initiative. For bricolage to work, some degree of social capital and trust is required (Campbell 1997), something which does not always flourish in a control- and compliance-driven environment.

Bricolage and improvisation are fully situated in a local context, and can be encouraged through designing tinkering, experimenting and serendipity into the organisation (Ciborra 2002: 50). Weick encourages organisational complication rather than simplification, and a kind of purposeful playfulness in organisations (Weick 1979). Simplification, routines, and operating manuals can be harmful to organisations because they make the emergence of new ideas difficult if not impossible. Inserting a certain random element into organisations 'much like spontaneous action informed by intuition, hunches, and experience, complicates situations in the sense of generating new information on the basis of which previously unimagined courses of action become apparent.' (Harmon 2006: 105). Bricolage needs local learning, and emerges not from plans but from local needs. It requires tolerance and encouraging of local tinkering at the operational level, rather than planned change. The literature on ICT development even goes as far as highlighting the virtues of hacking and hackers for innovation (Ciborra 2002). Whereas Weberian approaches to organisation regard deviation from rules as a mistake, systems approaches view deviations as 'part of the social order of an organization'. They 'contribute to the maintenance and preservation of the system.' (Brans and Rossbach 1997: 420).

### *3.2 Emerging strategy and logical incrementalism*

A second area in classical organisation studies where emergence has received considerable attention is the literature on emerging strategy. In this section, we introduce readers to Emerging strategy and logical incrementalism.

#### **Emerging strategy**

In management literature, strategy is often described as: (a) explicit, (b) developed consciously and purposefully, and (c) made in advance of the specific decisions to which it applies. In common terminology, a strategy is a 'plan' (Mintzberg 1978: 935). In Mintzberg's definition 'Strategy can be viewed as the set of consistent behaviours by which the organization establishes for a time its place in its environment, and strategic change can be viewed as the organization's response to environmental change, constrained by the momentum of the bureaucracy and accelerated or dampened by leadership' (Mintzberg 1978: 941). Hereby, he distinguishes between the strategy as a plan approach, which he calls the intended strategy and the realised strategy. The former is described above, the latter is defined as a 'pattern in a stream of decisions: (...) when a sequence of decisions in some area exhibits a consistency over time, a strategy will be considered to have formed' (Mintzberg 1978: 935). A realised strategy can be an intended one, but can also come about unintended and gradually. When an intended strategy is realised it is a deliberate strategy (Mintzberg 1978: 945). Unintended but nevertheless realised strategies are emergent strategies.

This latter view on strategy can be problematic when applied to standardised and formalised organisations. They operate with fixed strategies, excluding the formulation of new strategies. Mintzberg also talks about the risks of overrealisation of intended strategies: 'bureaucratic momentum

takes over, happy to have a clear strategy, never stopping to question it' (Mintzberg 1978: 947). While making strategy explicit might be popular consultant terminology, this can also lead to counterproductive effects (Mintzberg 1978: 947). Emergent strategy suits adhocracies very well. These are configurations in which professionals are involved in the establishment of organisational patterns (Mintzberg 1983). In the public sector strategy generally consists of 'often emergent, evolutionary goals' (Christensen, Laegreid et al. 2008: 85).

### **Strategic and management impact**

Strategic impact happens because managers may prefer to start changing structures by means of bricolage rather than by paying high sunk costs and committing themselves too early to radically new structures (Lanzara 1998; Pina e Cunha 2005: 7). The emerging strategy literature also posits the inseparability of conception and execution, thus opposing the traditional view where 'design-precedes-execution' (Pina e Cunha 2005: 8). In a rational planning and resource allocation process, there is no place for bricolage. Strategic alignment means that strategy formulation is approached as a purely cognitive process, where planning and implementation of strategy are seen as separate (Ciborra 2002). This is further strengthened by managers' desire to present themselves as rational planners (Pina e Cunha 2005: 14). In emerging strategy approaches the focus lies on available resources rather than optimal resources (Pina e Cunha, Vieira da Cunha et al. 1999). In practice managers act both as rational resource planners and as bricoleurs. Fitzpatrick confirms this view that both planning and improvisation in an organisation are necessities: 'just as an organization unable to improvise is ill equipped to respond to change and sudden chaos, an organization unable to plan is incapable of managing growth' (FitzPatrick 2002: 647). Moreover, in the public sector norms such as transparency and accountability limit the scope within which improvisation can take place. Risk avoiding behaviour of managers may furthermore reduce the extent in which improvisation occurs in public sector organisations (FitzPatrick 2002: 647-8).

Klijn et al. (2009: 35) elaborate on management ideas from a complexity theory perspective, in which they distinguish three perspectives. The first views management as 'going with the flow', and emphasises dynamics, self-organisation and emergence. In this perspective, the manager's role is to adapt to these developments. In the second perspective, smart interventions are at the core. The manager should have a good understanding of his environment to be able to make such interventions. This also holds for the view of management as 'riding the fitness landscape'. In this third perspective, the manager has to grasp opportunities and use them to realise or alternate strategies. Still other literature posits an absence of strategy. Denhardt (1993: 18) speaks of pragmatic incrementalism 'where change occurs in a free-flowing process in which the manager pursues a wide variety of often unexpected opportunities to move the organization in the desired direction'. In this approach a public manager does formulate objectives, but does not exactly know how to realise them. Thus, the main task of the manager is to improvise and be a role model indicating the direction of change.

Rycroft & Cash (1999) contribute to the literature on emergence by identifying and characterizing three different technological innovation patterns emerging in organisations: the normal pattern, transition and transformation. The first is a continuous incremental pattern in which an established network and technology moves along an established trajectory. The second is a new path followed by the established network and technology. The third is a new trajectory by a new network and technology. The notion of co-evolution helps to explain emerging innovation. Indicators for patterns of change are community disintegration; external invaders; new technology waves; and changes in the environment. Recognizing these events by scanning and intelligence gathering improves strategic decision making and enhances learning within the organisation. However, complexity inherently equals incomplete learning, making it a trial-and-error process.

### **Logical incrementalism**

The idea of incrementalism dates back to 1959 when Charles Lindblom introduced this term in his well-known article *The Science of Muddling Through*. Lindblom (1959) herein described how policymaking is a process of successive limited comparison, resulting in incremental changes in policy. Notwithstanding the small scope of the adjustments, ex post evaluation is often able to identify significant development in policies (Lindblom 1959). It was on this notion combined with the ideal type strategy of rational planning that Quinn (1978) built his theory of logical incrementalism. This type of incrementalism is defined as 'internal decisions and external events that flow together to create a new, widely shared consensus for action amongst key members of the top management team' (Quinn 1978: 7). It differs from the "muddling" of Lindblom (1959) in the sense that it is 'a purposeful, effective proactive management technique' (Quinn 1978: 8). 'Logical incrementalism assumes a tension between identified environmental stimuli and "the way we do things around here" [...] and this approach explicitly recognizes the need for managing such ambiguity' (Johnson 1988: 78). Cognitive and process limits restrain the managers in implementing rational strategies, making the constant coupling of analytical and political developments to be the most important challenge in managing the aforementioned ambiguity (Quinn 1978). It is from this logical incrementalist perspective that ambiguity is viewed as an undesired feature because it can imply a deviation from the formal organisational procedures (the way we do it) and therefore must be managed. The role of the manager then is to couple developments and procedures. Eventually, logical incrementalism results in a learning process in which the organisation constantly aligns itself with changes in the environment (Johnson 1988: 88). It is for this reason that Huber (1991: 91) defines logical incrementalism as experiential learning.

### **Logical incrementalism as a strategy**

Quinn (1978: 17-18) calls logical incrementalism a strategy that emerges. Successful managers couple and order the different strategic processes within an organisation in such a way that it survives. This involves a substantial amount of risk taking, for outcomes cannot be calculated or predicted. Then managers incrementally take on urgent matters and respond to urgent events. These

may in turn affect the existing strategies, making a continuous reassessment of the organisation and its future. Thus, logical incrementalism is a dynamic process without a clear beginning or end. This notion has also been explored by other scholars (Pascale 1985; Peters 1987; Weick 1987; Conger and Kanungo 1988; Kotter 1988). The basic premise of this literature is that top management has a vision that facilitates the rooting of strong organisational values within the strategy process (Hart 1992: 329). 'The vision serves to create both chaos and order: It creates chaos by continually challenging organisational members to go beyond the status quo yet provides order by offering a long-term direction as a beacon that will guide individual, short-term action' (Nonaka 1988 in Hart 1992).

In a case study, Johnson (1988) came across several elements of logical incrementalism. It became apparent that managers thought of strategy as a rational, but incremental process, which is closely related to the work of Quinn (1978; 1980). Johnson shows that managers believe that 'small movements in strategy allow deliberate experimentation and sensing of the environment through action' (1988: 79). It has as an advantage that when small steps are perceived successful, strategy can be further developed on the underlying assumptions. Besides, small steps allow for short-term returns for the shareholders; they keep the organisation sensitive and adjustable to changes in the environment; and employees will go along with the change more readily. Quinn (1978) defines logical incrementalism an emergent strategy. The strategy process starts in decentral units of the organisation and find its way to the top, where it is being managed and becomes incorporated in the organisation its procedures. And it are exactly these procedures that Mintzberg views as the threshold for the realisation of emergent strategies.

## 4 Emergence in social systems

The previous chapters of this review dealt with emergence in relation to traditional formalised organisations. This chapter will deal with emergence and the anticipative capacity of systems. Systems and complexity theory provide meaningful insights into how organisations and systems, intended or unintended, anticipate to emergent phenomena. Interaction of the system or organisation with sub elements within and the environment outside is a central theme in the literature on systems and can also be related to anticipative capacity. In this chapter, we first introduce systems and complexity theory, and show they have been introduced to Public Administration. Subsequently, we show how emergence takes in a central position in these theories. We end the chapter by focusing on anticipative capacities, and on the management of system dynamics.

### 4.1 Systems theory

We first provide a short introduction of systems theory and the role of anticipative capacity within systems theory. Researching systems has a long history, dating back to the 17<sup>th</sup> century (cf. François 1999). Although rooted in natural sciences, it has been applied and adapted to many different fields, including Public Administration and organisation theories. Reed (in Porter 2006) distinguishes three periods to show a gradual move of system theories to the forefront of organisation theory. In the first period, organisations were considered to be autonomous and rational systems. Probably the most influential scholar of this first period was Taylor, with his Scientific Management. The second period can be described as one in which holistic approaches to social systems with interdependent relationships and interactions were the focus of research. An important theoretical notion stemming from this period is contingency theory. This theory elaborates on the importance of the environmental fit of an organisation in order to achieve success, and has been applied to a variety of Public Administration topics ranging from HRM issues (Steijn and Groeneveld 2009) to public policy (Bovens, 't Hart et al. 2001). In the third and current period a system is viewed as organic, responsive and ambiguous in its workings and system boundaries. Its ambiguous boundaries mean that the environment has substantial influence on the system itself (Porter 2006).

According to this approach, a system is defined by the members of a system but since those members make subjective decisions about who is included and who is not, such boundaries are not given a priori. In other words: a system cannot easily be distinguished from its environment as it depends upon the boundary judgement of the observer. Cilliers explains how 'we frame the system by describing it in a certain way (for a certain reason) but we are constrained in where the frame can be drawn. The boundary of the system is therefore neither purely a fiction of our description, nor is it a purely natural thing' (2001: 141).

Nevertheless, all systems have in common that they display the following characteristics: 1) one can distinguish multiple different elements; 2) these elements are related and influence one another; 3)

the whole is more than the sum of parts; and 4) the whole is to a certain extent persistent and goal-oriented (Meadows 2008).

Developing this further, three dimensions are distinguished which make up a system: elements, relationships and goals. The elements are the units within a system and can take many forms and shapes, from people to bureaucracy to culture. Hence, an element can be physical or non-physical and it can be decomposed in sub-elements, sub-sub elements etc. The relations between the elements mostly consist of information exchange, communication and dependency. The goals of a system are difficult to establish, and mostly only become visible once action has occurred (Meadows 2008). Teisman, Gerrits and Van Buuren (2009) define these relationships as mutual, emergent and dynamic. For elements in the system, the consequence is that they have to adjust to changing relationships. But while the elements and relationships are changing, the system as a whole also changes and influences the development of the system. In social systems, the crucial point is that the elements (also referred to as agents in the jargon of systems theory) possess the cognitive ability to actively change, as opposed the passiveness of non-human elements. (Peterson 2000; Teisman, Gerrits et al. 2009). Accordingly, what systems theory ultimately is about, is 'the interdisciplinary understanding of reality as composed of complex open systems with emergent properties and transformational potential' (Byrne 2005: 97).

#### *4.2 Complexity theory*

Complexity theory provides us with plenty of insights regarding emergence and anticipative capacity. The roots of complexity theory are diverse. It stems from developments such as chaos theory, computational theory and evolutionary biology. Such approaches are all rooted in general systems theory as outlined in the previous section. Goldstein (1999: 56-7) talks about four central interrelated schools in complexity theory: Complex Adaptive Systems theory, non linear dynamic systems theory, the synergetics school and far-from-equilibrium thermodynamics. There are considerable cross-references between the different schools of thought. The common point of departure is the complex adaptive system. Holland offers a common definition of a complex adaptive systems (in Waldrop 1994):

'a Complex Adaptive System (CAS) is a dynamic network of many agents (which may represent cells, species, individuals, firms, nations) acting in parallel, constantly acting and reacting to what the other agents are doing. The control of a CAS tends to be highly dispersed and decentralized. If there is to be any coherent behavior in the system, it has to arise from competition and cooperation among the agents themselves. The overall behavior of the system is the result of a huge number of decisions made every moment by many individual agents'.

This definition already sheds some light on the non-linear dynamics taking place within a system. These dynamics can be a result of either intended or unintended action, and from events outside the scope of the system. Thus, 'processes are guided by actors in charge, aiming to achieve their goals



and intentionally induced as well as emerging forces' (Teisman, Westerveld et al. 2009: 57).. The synergetics school deals with self-organisation in physical systems, which was later applied to social systems (see also next section). Far-from-equilibrium dynamics refers to 'a kind of self-organizing dynamic order that maintains itself through continuous exchange of energy with the environment' (Jantsch 1980: 66). This short description of schools indicates the relatedness between systems theory and complexity theory. The latter is built on several building blocks of the former.

#### *4.3 Complex systems theory in Public Administration*

Applications of complex systems theory in Public Administration are a relatively new phenomenon. Despite the seemingly good fit of complexity theory concepts with the realities of public administration, they are not often used in Public Administration research. 'The ideas and concepts from complexity theory have been shown to be more in line with the development of public administration theories than the scarce use of ideas, based in complexity theories, in public administration would have led us to believe. Many of the ideas and concepts of complexity theory fit rather well into contemporary ideas about complex decision-making, complexity in strategies and processes and emergent characteristics of processes and institutions in public administration theory' (Klijn and Snellen 2009: 35-6). Sementelli also points at the development of Public Administration to a more complexity oriented field of research: 'Over the past 25 years or so, many have moved away from simplistic, linear, cause-and-effect approaches to dealing with administrative problems, realizing that their intricacy, particularly in public administration, rarely lead us to a single best solution. Consequently, notions of subjective imagery and complexity, both mathematical and conceptual, have become popular tools to understand wicked problems, language games, and the practical symbolism of everyday life' (2007: 757).

Morçöl (2003) elaborates on the importance of understanding complexity to improve policy processes. Following Sharkansky (2002) that policymaking can be compared to a search for simplicity, he presents several arguments why policy processes are complex, and how complexity concepts can be applied in public administration. Morçöl distinguishes between several forms of complexity in public administration: number of actors, elements and interactions; nonlinear relations; emergence; and coevolution.

Boundary judgments also play a central role as complexity is partly in the eye of the beholder. Perrow (1986) stresses that dimensions of the system create complexity, but that is also the judgment made by the viewer which establishes complexity. Morçöl provides an example in which the latter is shown: 'participants of bureaucratic organizations ("observing systems") interpret rules based on their cultural and group affiliations and personal psychologies. Thus they construct the knowledge of an organization in different ways. [...] Furthermore, as they interpret and enact on their interpretations, they reconstitute the organization, which contributes to the complexity of the organization' (2003: 11).

Explicit attempts to apply complexity theory to Public Administration in order to understand the (seemingly confusing) dynamics of public decision making processes and bureaucracies can be

attributed to (among others), Haynes (2003), Middleton-Kelly (2003), Gerrits (2008), Morçöl (2009), and Teisman, Gerrits and Van Buuren (2009). The latter apply complexity theory to governance processes. They distinguish between non-linear dynamics, self-organisation, and co-evolution amongst the most influential dimensions in complexity theory applied to governance structures. Koehler (2003) is another of the few scholars who introduced a new Public Administration theory that draws upon complexity concepts. He explores public policy timing problems with the use of new theoretical constructs which he calls 'time-ecology', 'heterochrony' and 'temporal signature'. These concepts focus on mutual interdependencies, system logic, and nonlinear dynamics. Still, because of the rather limited induction of complexity theory in Public Administration, 'much work remains to be done to empirically operationalize the concepts and their applications to empirical phenomena' (Klijn and Snellen 2009: 36). Pollitt (2009) proves to be rather critical of the added value of complex systems theory for the study of Public Administration. He does not see much explanatory power in complexity theory in comparison with other theories and misses the identification of causal processes or mechanisms. Nevertheless, he agrees with the importance of identifying patterns that emerge out of different sources and acknowledges that complexity theory has so far advanced more in this respect than other theories.

#### *4.4 The concept and role of emergence in complexity theory*

Emergence is one of the central elements within complex systems theory. According to Byrne (2005) emergent properties are by definition an element of complex systems theory. In search of a conceptualisation of these emergent properties in complexity theory, De Wolf & Holvoet (2004) note that in most literature, emergence is only described in vague terms. Goldstein's definition proves useful. He defines emergence as 'the arising of novel and coherent structures, patterns, and properties during the process of self-organization in complex systems' (1999: 49). According to Goldstein, emergence requires a system with at least four characteristics: nonlinearity, self-organisation, being beyond equilibrium and attractors. These characteristics have been derived from the major schools in complexity theory (see previous section).

#### **Characteristics of emergence**

##### *Non-linearity*

Non-linearity is essentially the driver behind emergence and is caused by positive feedback loops (Goldstein 1999). Positive feedback loops are disproportional returns to certain (steering) incentives. 'Feedback in systems is the return of a portion of the output of a process or system to a certain input' (Gerrits and Marks 2009: 138). Complexity theory distinguishes between positive and negative feedback. Positive feedback has an amplifying effect on the initial input. Negative feedback occurs when the output has a stabilizing effect on the input. Especially positive feedback loops can cause significant dynamics which actors within a system need to react upon. It needs to be mentioned that the terms 'positive' and 'negative' do not indicate the quality of the outcome. For example, positive

feedback may not need to bring about positive results. It just indicates that the outcomes are disproportional to the original incentive.

Because the relation between incentive and outcome can be disproportional, the processes are deemed non-linear. A well-known example to illustrate non-linearity is the butterfly-effect. A butterfly in the Amazon-forest flaps its wings, hereby creating air movement. This emerging local movement of air then interacts with other air movements in its surrounding environment, causing a new, emerging, local weather pattern. A few days later, a hurricane in South-East Asia has developed through subsequent emerging patterns (Flood 1999). Thus, a small local movement can have deep, unexpected, results elsewhere. The Red Queen metaphor (from Lewis Carroll's *Through the Looking-glass*) is another good example in the context of organisations. (Sementelli 2007). In Carroll's story the queen mentioned that one has to keep on running to stay in the same place. Applied in an organisational context, this 'offers a way of understanding how programs and strategies may be understood as successful if they just avoid losing ground, without being tied to the notion of linear progress' (Sementelli 2007: 741).

### *Self-organisation*

'Complexity theory argues that in essence, all structures in complex systems are self-organizing' (Teisman, Gerrits et al. 2009, after Jantsch 1980). Self-organisation can be described as local interaction between elements emerging into a new structure, without any form of external control or coordination (Jantsch 1980; Cilliers 1998; Heylighen 2002; Stacey 2003; De Wolf and Holvoet 2004). Following De Wolf & Holvoet (2004: 9), 'the essence of self-organisation is an adaptable behaviour that autonomously acquires and maintains an increased order'. At first glance, the notions of emergence and self-organisation are much alike, but they both point at different characteristics of the system. Whereas emergence emphasises the presence of a macro-level established by local interaction but which can be very diverse in nature, self-organisation focuses on the development of order or structure without external control (2004). That does not mean that self-organizing systems are isolated from their environment. On the contrary, self-organisation is a response to the environment but still without having the environment determining the organisation of the system. In other words: self-organisation can not be created or enforced. Systems can basically respond to their environment in two ways: through conservative and dissipative self-organisation. Conservative self-organisation indicates a system which responds to outside pressure by closing itself off. It is highly self-referential, and creates stability through the implementation of control mechanisms such as structures and norms. Conservative self-organisations are the foundations for stability and order but run the risk of getting out of touch with what happens in the outside world. Dissipative self-organisation is defined by Jantsch (1980: 66) as 'a kind of self-organizing dynamic order that maintains itself through continuous exchange of energy with the environment'. Synergy, innovation and creativity are favourable mechanisms that suit this type of self-organisation (Buijs, Van der Bol et al. 2009). The downside of dissipative self-organisations is the risk of continuous dissipation and therefore lack of stability and concrete action.

Organisations as social systems have a tendency to distinguish themselves from the environment through simplification and the development of internal, self-referential mechanisms. Luhmann has called this type of internal dynamics autopoiesis. 'Autopoietic systems are systems which produce and reproduce the elements they consist of with the help of the elements they consist of. And everything these systems use as a unity – their elements, processes, structures, the systems themselves – is produced precisely by all those unities within the system. There is, then, no input of unity into the system and no output of unity out of the system' (Brans and Rossbach 1997: 425). Social systems use binary codes to decide about the information coming to them. According to Luhmann, the political system operates with binary codes such as government/opposition and conservative/progressive. When viewing an organisation as a social system, boundaries between the organisation and its environment are constituted through binary codes, of which membership is a fundamental one. For governments members are commonly referred to as civil servants or office holders. Complexity is reduced by answering the question: member, yes or no? (Brans and Rossbach 1997).

### *Beyond equilibrium*

As already stated in the previous section, beyond equilibrium, also known as multi-, non- or far-from-equilibrium, emphasises the dynamics within a system. Whereas earlier scholars of systems theory were convinced that a system would eventually convert to a final stable state, an ideal type, beyond equilibrium focuses on the constant adaptive behaviour in social systems. Nicolis and Prigogine (1989) state that the behaviour of human societies to adapt and to act flexible, are striking features of beyond-equilibrium and of an utmost importance in order to perform transitions. Indeed, the ability to grow, change, evolve and innovate confirm the assumption that society is in a state far from equilibrium (Kwintar and Davidson 2008). This far from equilibrium state society is in explains the unpredictable characteristics of emergence. Due to the flexible and dynamic environment in situations of beyond equilibrium, it allows for unexpected consequences of random events. These events can in turn facilitate emergence in a way which cannot be foreseen. It requires acceptance that there is no 'final destination' in terms of development. This is especially important to bureaucracies with their tendency to try fixing things for good.

### *Attractors*

Social systems are unlikely to arrive at a final state, as previous characteristics of emergence have already shown. Theorists in complexity theory use the notion of attractors and the attractor basin to visualise the changes from one temporarily stable state to the other. When the stable state of a system can be depicted as a point, a cloud of points represents the number of possible future stable states of that particular system. Since it is not possible to predict the exact next stable state of a system, there are multiple possible futures from a certain point in time. Some of these futures are more likely than others. The number of possible future states make up the attractor basin, with each

dot in the cloud representing one particular attractor to which the system may move (due to the mechanisms described before).

Originally, systems were thought to have a single best equilibrium to which they would always return after disturbances (at least in the long term). However, social sciences have added that social systems can never return to the same stable state anymore. Rather than having one final state (fixed-point attractor) or moving between a limited number of states (torus attractor), social systems move between incrementally new stable states (strange attractors). (Goldstein 1999; Teisman, Westerveld et al. 2009). Within social systems, different opinions are held in relation to the preferred system state, the preferred attractor. However, it proves to be difficult to achieve the preferred state due to emergent phenomena that occur when moving from one attractor to another (Goldstein 1999; Teisman, Westerveld et al. 2009). Thinking in terms of attractors and attractor basins can help organisations to understand why their organisations may feel inert (too many feedback loops reinforcing the current stable state) or too chaotic (too many feedback loops destabilizing the current stable state).

### **Scientific position**

Emergence as a theoretical notion draws heavily upon systems and complexity theory. Goldstein (1999: 54) says that 'contemporary complexity theory is proving capable of prying open the black box of emergence' [due to the advent of high-speed computers, the discovery of pertinent mathematical constructs and new research methods]. Such a reliance on technology is less feasible in social sciences but there are advanced methods for understanding complexity in social organisation through e.g. qualitative case analysis and contingent qualitative analysis (see e.g., Byrne 2002; Byrne 2005; Gerrits 2008; Ragin and Byrne 2009 for the methodological discussion and for an application to Public Administration). Thus, emergence can be examined and traced back thanks to the development of new methods in complexity theory. The value of emergence as theoretical approach becomes visible when looking at the whole of a system. 'Emergence is appealed to when the configuration of the components of a complex system offers more explanatory insight into the dynamics of the system than do explanations based on the parts alone. Therefore, explanations that include the construct of emergence contain the claim that emergent phenomena are neither predictable from, deducible from, nor reducible to the parts alone' (Goldstein 1999: 57). This signifies that emergence cannot be studied on a micro level exclusively; for high level patterns representing correlations within the system do not manifest themselves solely on a lower scale. 'In fact emergence functions not so much as an explanation but rather as a descriptive term pointing to the patterns, structures, or properties that are exhibited on the macro-level' (Goldstein 1999: 58). This makes the construct of emergence a useful basis on which explanations can be constructed. Therefore, it has little explanatory power in a science that assumes causality between a limited number of variables, but it serves as a foundation to explain dynamics taking place on a macro level following events on a micro level.

Furthermore, Goldstein (1999) wonders whether emergence is merely a provisional theoretical construct that will disappear once a better explanation is available. However, due to the built-in

limitations of predictability in complexity theory, theoretically speaking there will always be space for emergence. 'In effect, there seems to be no end to the emergence of emergents. Therefore, the unpredictability of emergents will always stay one step ahead of the ground won by prediction and, accordingly, emergence will always stay one step ahead of the provisionality argument (Goldstein 1999: 60). Connected to this provisionality debate, is the question whether emergent phenomena are ontological, or whether they are an epistemological instrument. Goldstein does not provide a definite answer, but does warn to be cautious when pointing out an empirical observation as emergent.

### **Emergence in the context of governance and public administration**

Complexity theory is still not used very often in Public Administration, yet there are attempts to address emergence in context of governance and public administration. Teisman, Gerrits and Van Buuren (2009) explore the notion of complexity in relation to governance systems. They assume the latter to be complex by definition due to the interrelatedness of its parts and a whole that is different from the sum of its parts. Thus 'emergence is a way to describe the need to go to the meta level and its unique dynamics' (Goldstein 1999: 58) to be able to gain insight into the dynamics taking place within the system. Teisman, Westerveld & Hertogh (2009) for example, use attractors to describe how policy processes often end up differently than intended by policymakers. Thus, when a certain attractor was preferred, the system ends up at another strange attractor present in the attractor basin because there are multiple feedback loops that determine the current and future stable states, it is not only the initiators that yield the power to 'push systems'. In relation to policy implementation, the authors conceptualise this as 'a battle between "actors in charge" aiming to reach a desired attractor and opponents and proponents creating process dynamics and a high probability of changes in course and outcome' (Teisman, Westerveld et al. 2009: 59). Morçöl (2003) shows that emergence can also be identified in public organisations and policy. In addition to this, Dunn (1994) states that public policies are socially constructed and therefore cannot be deconstructed as independent realities. Morçöl (2003: 8) provides a good example of how public policy can be considered emergent:

'they [public policies, authors] are holistic and thus irreducible to their components. Consider how public policies are made in a democratic society. Groups or individuals initiate a legislative process. The text of a bill is negotiated in the legislature. Finally a text (law) emerges. During its implementation, the text is interpreted and enacted based on the interpretations. What actually happens, what we call a public policy, is not reducible to (or, exactly the same as) the original intents of its initiators, or even the text of the law. Once emerged, the public policy does not stay the same; it evolves'.

#### *4.5 Anticipative capacity*

Emergence is a phenomenon that becomes apparent at the macro-level, but develops itself through micro-level dynamics. The emergents at the micro-level in turn affect the micro-level elements,

causing new dynamics. When viewing organisations as elements on micro-level, interaction between organisation and environment is important as organisations take up information from the environment through interaction (Goldstein 1999). This section will focus on these interactions and the ability of an organisation to anticipate changes in the environment.

Gerrits (2008) draws attention to the ability of human systems to forecast, anticipate, respond deliberately and plan, all based upon their own reference point and judgment of the environment. In the case of an organisation, strategic decisions on how to anticipate a changing environment are based on internal models of the world, schemata (Waldrop 1994).. Because of human cognitive capacities, human systems are able to anticipate future events, both at an individual and at a group level. Their cognitive capabilities allow human systems to make mental maps of the future and to adjust these as soon as signals from the environment start to ring some bells. 'Adaptive responses to environmental problems include counter-moves, altered or new strategies, learning and new knowledge, work-around changes, new allies, and new technologies' (Uhl-Bien, Marion et al. 2007: 103). The chances of survival of such complex adaptive systems depend on their fitness with the environment. Since the environment continuous to evolve, it is necessary for the organisation to evolve along in order to maintain the fit. The process of anticipation is one of trial-and-error to be able to discover the adjustment which proves most successful. However, the possibilities to anticipate by trial-and-error processes are rather limited. Due to time and budget constraints, risk aversive behaviour, pressure from the outside to perform straight of the box, and uncertainty about the trail-and-error method, it is not often practiced. In fact, these processes and the accompanying uncertainty can have a paralyzing effect on the organisation, preventing anticipation.

Leydesdorff (2006) emphasises the meaning of the interaction taking place. Information flows are in real time and to understand them and to give meaning to them takes some time for processing. Thus, allocating meaning is an activity deployed from the perspective of hindsight: First the information flows, then meaning is given to it. This is inevitable given that time is irreversible. While providing meaning to the information, selections are made whether the information is useful, and whether organisational changes may be needed on basis of the incoming information. In this sense, anticipative capacity can be seen as a meaningful retrospective selection process. This paradox can be explained when looking at the definition of anticipative capacity Leydesdorff (2006) borrows from Rosen 'systems which entertain models of their future states in the present can be considered as anticipative systems' (Rosen 1985 in Leydesdorff 2006: 81). By providing meaning to past interactions and the subsequent selection process, an actor chooses a direction leading toward the preferred system state. Still, actors have to understand that there is fundamental uncertainty about the future of a system. It is therefore essential to develop a strong anticipatory system. A strong anticipatory capacity focuses on the future rather than on past events and accepts that the past holds limited value for predicting the future.

#### 4.6 Managing system dynamics

System and complexity theories are rather abstract, which makes it difficult to apply them in empirical research and to derive meaningful directions for management. However, there is literature available that elaborates on management and leadership within complex systems. To gain insight into the context within which managers act, Edelenbos et al. (2009: 175) differentiate between four different ideal type system states.

1. **Stability:** processes of interaction between actors run smoothly, and no disruptions can be identified so that intended strategies can be realised;
2. **Inertia:** interactions become dead-locked, or result in conflict. No progress is made and results are not accomplished;
3. **Dynamic:** many processes of interaction take place. These are intensive and proceed harmoniously both within and outside the system. This results in unexpected, surprising and innovative outcomes;
4. **Chaos:** there is a lot of interaction going on, but it leads nowhere because interaction processes are uncoordinated and disconnected. Because of this, results evaporate.

Because of positive and negative feedback mechanisms the system being steered is only temporarily in one of the above mentioned system states. The table summarises these system states.

**System states** (Teisman, Gerrits et al. 2009: 16)

	<i>Stable</i>	<i>Dynamic</i>
Productively	Stable processes that develop according to expectations due to an absence of 'disturbance' or due to a management ability to control the process	Dynamic processes that develop in a non-linear manner in deviation from initial expectations due to unexpected events, but that still manage to generate satisfactory results
Unproductively	Processes that are controlled well, with clear guidance and goals, but still unable to generate progress (inertia)	Processes that develop in an erratic pattern, challenging existing stable progress, but that are unable to generate a 'new order out of chaos' (evaporation)

In an effort to help managers to deal with the complexity of shifting system states, Teisman (2005) identifies two leadership approaches to deal with complexity. The first approach focuses on order and stability by setting boundaries, creating rules and allocating responsibility in order to achieve the intended societal outcomes. Control is the key to handling complex situations. Line managers and project management fit this picture of order-seeking management. The other leadership type is one of



complexity acceptance. Combining organisational or personal goals with those of other actors in a structure of coordination is an important aspect. This can be done by collective sense-making, and the coupling of ambitions and goals. Network management is the most obvious illustration of this second type of leadership. Both leadership styles hold some truth, and that is why Teisman suggests combining the best of both worlds to realise optimal results. In fact managers often find themselves in between chaos and order. He calls this way “thinking double and acting double”. In relation to the aforementioned system states, a balance between a stable system and a dynamic system should be pursued. Williams (2002) also elaborates on the position of management in between all sorts of actors with different goals and perceptions. A boundary spanner is a person who contributes to effective cooperation. Building sustainable relationships, managing through influencing and negotiation, managing complexity and interdependencies, and the management of roles, responsibilities and motivation are the core competencies of the boundary spanner. These competencies focus on both order and chaos, and therefore provide a good example of double thinking and double acting.

Uhl Bien et al. (2007: 299) make a useful distinction to understand and analyze the activities of managers in complex processes: ‘we propose that leadership should be seen not only as position and authority but also as an emergent, interactive dynamic - a complex interplay from which a collective impetus for action and change emerges when heterogeneous agents interact in networks in ways that produce new patterns of behavior or new modes of operating’. They propose three styles of leadership within their Complexity Leadership Framework.

1. Administrative Leadership: individual activities based on a formal management position involving planning, structuring and coordinating activities. Notwithstanding the formal character of this type of leadership, it takes complexity and dynamics into account, creating room for adaptive leadership;
2. Adaptive Leadership: ‘emergent change behaviors under conditions of interaction, interdependence, asymmetrical information, complex network dynamics, and tension’ (Uhl-Bien, Marion et al. 2007: 309).
3. Enabling Leadership: the linking pin between administrative and adaptive leadership. On the one hand it pays attention to embedding processes in formal structures, on the other it stimulates interaction, stresses interdependencies and creates tension to stimulate interaction.

Again a combination of order seeking and complexity accepting elements is manifested. This shows that dealing with complex systems containing emergent characteristics needs to combine the leadership approaches to produce acceptable progress and results. This is not unlike the observations emerging from the chapters 2 and 3 in this literature review on formal and informal structures.

## 5 Locating emergence in the New Synthesis Framework

The purpose of this review was to explore how public organisations can deal with issues that emerge in their environment. Emerging issues are characterised by a great deal of complexity and uncertainty, and therefore create challenges for static public governance arrangements. Dealing with emerging issues requires that organisations and systems build anticipative capacities. Such new organisational arrangements to cope with emergence sometimes appear counterintuitive, and they sometimes appear to defy the rules of economy, efficiency, democracy and the rule of law. As is evident from Bourgon's 'New Synthesis' framework, an organisation or system that facilitates emergence needs to make a trade-off with other objectives. While such arrangements are good at anticipating change and at detecting trends, they come with challenges to the performance, compliance, and the resilience of the public sector.

In this chapter, we discuss how emergence contributes to the performance, compliance or resilience of the public sector, or, alternatively, how it undermines these values. This discussion will be based on the literature and evidence presented in the previous chapters.

### *5.1 Emergence vs. performance*

In this first section we explore contributions of emergence to performance and tensions between performance and emergence. We distinguish between three dimensions of performance: performance as achieving outcomes, performance as internal efficiency, and performance as adhering to performance standards and criteria.

#### **When does an anticipatory system perform? When is an outcome good and desirable?**

Systems facilitating emergence and anticipating change may be good at dealing with new, unpredictable and thus emergent problems. Solutions provided through such arrangements may be welcomed by a variety of actors. Behaviours such as bricolage, improvisation, incremental strategising, adaptive and enabling leadership may all lead to desirable outcomes, yet come with a disadvantage that such outcomes are not always predictable. This means there is no prior agreement on what is considered good performance, and this may lead to ex-post conflicts about the followed path. PA scholars using complex systems theories have observed that preferred outcomes are often not realised, and that systems end up in an unexpected system state. When such developments occur in a situation where traditional performance measurement exists as well, performance evaluations can only be negative.

The dysfunctions of overemphasising performance and especially forcing organisations into a performance measurement system mould are well documented. A returning critique of performance measurement is that it applies a straightjacket to organisations (Noordegraaf and Abma 2003). It privileges certain easy-to-define and easy-to-measure procedures, activities and outputs of the

organisation to the detriment of the immeasurable ones (Radin 2006). Within the performance paradigm, government agencies are 'assessed exclusively on the basis of whether and to what extent they meet specified performance objectives' (Thompson 2006: 497). That what cannot be specified does and should not exist. Behn and Kant (1999: 474) listed inhibiting experimentation, risk avoidance, and lack of innovation as potential pitfalls of performance contracting in government procurement, because not experimenting is the safe strategy. These contracts may also stifle overachievement, and may only stimulate innovation in cost cutting, not in service delivery (Behn and Kant 1999: 474-5)

### **Tensions between internal efficiency, emergence, and achieving outcomes**

Organisations with a high anticipative capacity and where emergence is facilitated change frequently and are thus instable, which may have negative effects on organisational efficiency and performance. Highly formalised and stable systems are able to save costs by developing standardised routines, and formal roles. Complex systems on the other hand often rely on constantly reinventing, abolishing and reintroducing old routines. In other words, they may be good at achieving desirable outcomes at a very high cost. In other words, the capacity to adjust to change and crisis may come at a cost of lacking a systematic approach to things (Quinn 1988: 52-3). Bricolage, innovation, and improvisation imply there is substantial trial and error and failure. A public organisation that wants to foster emergence will therefore have to have a great tolerance for waste (see also the discussion on redundancy in the section on resilience). For a policy maker, this may be hard to defend:

'While bricolage is generally seen as a positive skill, it is not the only skill an organization should possess. Most organizations both plan and improvise. Just as an organization unable to improvise is ill equipped to respond to change and sudden chaos, an organization unable to plan is incapable of managing growth. Inefficiencies are likely to result.' (FitzPatrick 2002: 647)

### **Measuring performance in anticipatory systems**

A related issue, also related to the next section on compliance, is that measuring the performance of networks, complex systems, and emerging collaboration is difficult, if not impossible, which makes it difficult to hold them accountable and to assess their value for money.. Measuring performance is easiest in highly formalised environments, and in situations with clear objectives and no unexpected changes. Where such a situation does not exist, a different type of performance control system is needed, probably one based on more 'messy' or political evaluations of performance (Smith 1995: 300). Thus, while anticipative systems may be quite capable at achieving favourable outcomes, they are vulnerable in ex-post discussions about whether the system has actually performed. In an anticipative system, there is no ex-ante agreement on what needs to be achieved, opening up the ex-post evaluation to political games, or inward looking self congratulation by the actors involved in the network. This makes the status of a bricoleur very uncertain, 'at the boundary between highly

competent behaviour and incompetence' (Ciborra 2002: 48), making bricolage a high-risk behaviour in environments with strict formal performance regimes.

However, even in current performance indicators regimes, developed for highly formalised organisations, we de facto see a very rapid turnover in performance indicators and definitions anyway (Pollitt 2009), which indicates that current ways of working contain more emergent features than generally acknowledged.

## *5.2 Emergence vs. compliance*

In this section, we discuss tensions between emergence and compliance. There appear to exist important contradictions between the characteristics of a compliance-based public sector and one that facilitates and nurtures emergence. We first discuss the place of emergence in a public environment. We subsequently show how emergence challenges the traditional role of public officials. We end by distinguishing between process-based approaches to public governance, and outcome-based approaches, and illustrate how compliance and emergence represent two entirely different viewpoints.

### **Emergence in a public context**

Unlike private organisations, public organisations can generally only act when there is a legal basis. As has become apparent in this review, especially in chapter 2, compliance and emergence appear to be in direct contradiction. Emergence implies transgressing rules, or taking action before it is approved. In a traditional rule-of-law setting, norms such as transparency, due process and accountability limit the scope within which improvisation can take place. Such rule-of-law requirements may stimulate managers and civil servants not to adopt risk avoiding behaviour, reducing the extent to which improvisation occurs in public sector organisations (Fitzpatrick, 2002:647-648).

Anticipating change by trial-and-error is highly unpopular in the public sector, because of the risk of failure attached to it, and the uncertainty about outcomes. Failure and non-compliance makes public organisations extremely vulnerable to legal action or popular disapproval. Public actors may for the same reason be very reluctant to engage in network-type collaborative arrangements, because it is not clear within those arrangements where the accountabilities lie (Huxham and Vangen 2000: 800). Research on regulation and performance measurement suggests that compliance is often considered to be more important than performance or achieving outcomes (Behn 2001).

Yet, at the same time, we know from behavioural research in Public Administration that administrative discretion and incrementalism are facts of bureaucratic life. Such behaviours have always existed alongside an outside appearance of strict compliance. This suggests that even traditional compliance-based bureaucracies have always been able to cope with some degree of emergence.

### **Dedicated public officials or renegade bricoleurs and managers?**

Theories on bricolage, improvisation, network management, entrepreneurialism etc. all emphasise the role of the individual public official. This individual has substantial scope for discretionary behaviour. Emergence locates moral agency with the individual public official: the public official or top managers decides what is appropriate behaviour in a certain context.

Improvisation thus comes with a number of risks and dangers (Miner, Bassoff et al. 2001). Bricoleurs or network managers constantly operate at the edge of legality, and the line between legality and illegality is a very thin one (Cunha and Cabral-Cardoso 2006). While emergence may help public officials in achieving favourable outcomes, they also make themselves extremely vulnerable in a compliance-driven public sector. They get the credit when things go well, even when not obeying rules, but they are blamed when things go wrong.

Research on managerialism in the public sector and new roles for top officials has repeatedly warned against renegade entrepreneurs in government, or top officials who take decisions without reference to legal frameworks or political consensus. The high importance attached to individual entrepreneurs may have an impact on organisational cohesion and on the predictability of decisions, and thus on legality and compliance. Because of a strong focus on flexible organisation and fast decisions, the rule of law may be at risk. Enterprising leaders may thus become loose cannons and rule breakers (Borins 2000). Indeed, having public officials with a strong sense of personal mission goes against everything the Weberian bureaucratic model stands for (Newman 2005).

### **The role of due process**

Public organisations are responsible for producing outcomes, but are required to adhere to a number of procedural rules such as accountability, transparency, due process, fairness and equity etc. Research on social justice has shown that citizens not only care about outcomes (Tyler 1990). Process is equally important in justice judgements. There is a thin line between what we consider useful procedures and useless red tape (Kaufman 1977; Bozeman 1993), but theories on emergence give us little tangible evidence to distinguish between them. Emergence and related strategies such as network management or bricolage are very results-oriented, and give little attention to process. This is a risk.

Emergence therefore comes with serious challenges to equal treatment, and opens up opportunities for policy entrepreneurs with both good and bad intentions. New ways of working in the public sector lead to power shifts between actors involved in policies. Because of the focus on results rather than due process, anything goes, and emergence-based public governance makes it very difficult for citizens to sue government when things go wrong. It will therefore be important to monitor how these new ways of working will impact on equal treatment.

In recent complexity theory and network management literature, however (see also chapter 4), we do see that public officials and boundary spanners are looking for strategies to reduce complexity,

though introducing process. Order seeking approaches to managing complex systems contribute to subjecting governance processes to compliance requirements.

### *5.3 Emergence vs. resilience*

While there appear to be many conflicts between emergence-related principles and performance and compliance, emergence and resilience appear to be to some extent complementary. In this section we show how emergence may make a system both more and less resilient. We also argue that creating redundancies in organisations is essential to facilitate both emergence and resilience.

#### **Standard operating procedures and coping with external shocks**

One view on how emergence and resilience go together is that emergence makes systems vulnerable, because of an absence of formalisation. The argument goes that routines, formalisation and standards help an organisation to react to shocks. They thus help stabilising an organisation by reducing environmental uncertainties. Standard operating procedures allow the organisation to react fast and to survive external shocks. Improvising organisations or networks on the other hand may be quite vulnerable, because of a lack of standard operating procedures to fall back on. They need to find ways to formalise ad-hoc collaborations and to adapt to new environmental demands.

At the same time, however, following standard operating procedures during unprecedented events or crises may also turn out to be disastrous (Aldrich 1999: 334; Hood 2000; Gormley and Balla 2004: 26-7). Overorganised systems are quite vulnerable to collapse. C. Northcote Parkinson, best known for his book 'Parkinson's law' observed that 'a perfection of planned layout is achieved only by institutions on the point of collapse' (Parkinson 1957: 60). In other words, resilient systems need to have a certain degree of messiness.

#### **The role of emergence in strong and resilient organisations**

Weick and Sutcliffe, when writing about high-reliability organisations (HROs), such as air traffic control, observed that these organisations tended to avoid simplification. One of the reasons why HROs can cope with the unexpected, is that they are 'reluctant to accept simplifications' (Weick and Sutcliffe 2001: 11). As a result, they remain aware of context. Their main concern is not to celebrate success, but to learn from failure. As a result, they are mainly concerned with the unexpected, not with the already known (Weick 2005: 435). This stands in sharp contrast with highly formalised production-type organisations which tend to value success over the absence of failure, and therefore rely on a high degree of simplification. Systems open to emergence on the other hand are generally relative complicated. In a risky environment, where change is hard to anticipate, it makes sense to build a resilient organisation.

## **Emergence and resilience both require organisational redundancy**

Both emergence and resilience require a certain degree of redundancy and slack. Earlier (chapter 2) we used Cyert and March's concept 'organisational slack' (1963: 36-8), which functions as a buffer to absorb external shocks. In classic economic thinking, such slack is seen as a redundancy that can be eliminated. A common recipe in organisational reform is to reduce waste (Womack, Jones et al. 1990: 103). There often is talk about zero-redundancy, and non-fragmentation of public services as the way forward, and the lean and mean approach is at the basis of many reforms (Miranda and Lerner 1995). Waste and redundancies are generally seen as things the organisation can do without. There are however situations where organisations become too lean, or anorexic (Radnor and Boaden 2004), or where organisations have gotten rid of elements that may prove to be very useful when circumstances change.

Grinding an organisation down to subsistence levels restricts its repertoire of responses to crises and may make it incapable of performing (Landau 1991: 12; Bozeman 1993: 276). According to Landau (1969: 349), redundancies have a latent function in organisations. In engineering, overengineering has long been a common practice, with many redundant structures to protect a system, building or machine against failure and collapse. A certain degree of overengineering reduces the risk of failure (Landau 1969: 349). In public organisations, creating redundancy is often used to reduce political uncertainty, and to safeguard policy implementation (Ting 2003).

Redundancy generally has a negative connotation: something that is not needed, superfluous, useless (Landau 1969: 346). Resilient organisations contain many redundant structures. As we have argued in chapter 3, organisations facilitating emergence also require redundancy. Bricolage only occurs when the organisation or system contains sufficient volumes of organisational memory and when a great deal of cross-organisational linkages exist. Bricolage means recombining tools and action repertoires, including some that had hitherto been seen as outdated and superfluous. It also means that excessive planning in organisations may make organisations more vulnerable, because planning often results in slimming down organisations to those elements that appear to have direct relevance (Weick and Sutcliffe 2001: 51). Seemingly irrelevant organisational units and knowledge may become highly relevant when the context changes, or when an organisation is faced with new challenges or external threats. To be able to survive crises, systems and organisations require redundancy, or the maintenance of back-up systems, and a greater use of materials than would normally be necessary (Hood 1991: 14).

The ability to deal with crises requires deep knowledge: 'deep knowledge of the technology, the system, one's co-workers, one's self, and the raw materials' (Weick and Sutcliffe 2001: 15). As we have illustrated in chapter 2, highly formalised systems codify knowledge and trim knowledge down to its bare necessities. To deal with crises, however, a system needs people in the organisation to be mindful to halt or contain the development of unexpected events (Weick and Sutcliffe 2001: 3). To do so, people need to know the context and see the signals. This requires that the organisation facilitates imagination. Highly formalised organisations tend to put things into categories to make their world

stable and certain, and thereby overlook 'unnamed experience'. i.e. things that do not (yet) fit any category, that are unnamed, and thus not known (Weick 2005).

## **6 Some conclusions – Emergence in governance arrangements**

Drawing firm conclusions from a very large body of knowledge is far from straightforward. In this brief conclusion, we repeat some of the main arguments made in the previous chapters, and reflect on the usefulness of emergence for the public sector.

A first observation is that public sector reforms focusing on formalisation and proceduralisation may have direct positive effects on short-term efficiency and effectiveness, yet the long term impacts are far from clear. Overorganisation hinders public organisations to react effectively to environmental changes. Public sector reform concepts need to create room for bricolage and foster organisational memory through keeping some organisational redundancies intact.

Emergence is an attractive concept, because it so well seems to respond to public sectors' needs to operate in a fast-changing and complex world. Yet, it comes with major challenges to other public values. Emergence and resilience are largely complementary, but there is an important tension between emergence and performance or compliance. Predictability, both in terms of performance and of compliance remains a key feature in public governance, and is indeed one of the cornerstones of public administration. Emergence-facilitating governance arrangements are attractive in unpredictable and fast-changing environments, but do not offer much predictability. They may therefore not be desirable for all public services (despite the hype currently surrounding the concept). Emergence, furthermore, leaves considerable discretion for managers and individual public officials. While this may in many cases lead to superior performance and problem-solving abilities, it may also open opportunities for opportunism and abuse of power against which citizens have little recourse.

Overall, emergence-related concepts are characterised by a strong emphasis on problem-solving, but they appear to be relatively blind for elements of power and abuse. In a society, unlike physical systems, emerging realities are related to individuals, groups and ideas, and are thus not power free. This lack of a normative dimension makes emergence practical for analytic purposes, yet it provides little guidance for the organisation of the public sector. Emerging realities come in many forms and shapes, and are analytically all equal. Normatively, it largely operates as a negative concept, emphasising the dysfunctions of not allowing a certain degree of emergence for the performance and survival of organisations and systems.



## 7 Reference List

- Ackroyd, S., I. Kirkpatrick, et al. (2007). "Public management reform in the UK and its consequences for professional organization: A comparative analysis." *Public administration* **85**(1): 9-26.
- Adler, P. S. and B. Borys (1996). "Two types of bureaucracy: Enabling and coercive." *Administrative Science Quarterly* **41**(1): 61-89.
- Agranoff, R. (2007). *Managing within networks: Adding value to public organizations*, Georgetown Univ Pr.
- Aldrich, H. (1999). *Organizations evolving*. London, Sage.
- Andersen, O. J. (2008). "A bottom-up perspective on innovations: Mobilizing knowledge and social capital through innovative processes of bricolage." *Administration and Society* **40**(1): 54-78.
- Argyris, C. (1965). *Personality and organization: The conflict between system and the individual*. New York & Tokyo, Harper and Row & John Weatherhill, Inc.
- Augier, M. and M. T. Vendelo (1999). "Networks, cognition and management of tacit knowledge." *Journal of Knowledge Management* **3**(4): 252-261.
- Ayres, I. (2007). *Super crunchers: How anything can be predicted*. London, John Murray.
- Bardach, E. and R. A. Kagan (2002). *Going by the book: The problem of regulatory unreasonableness*. New Brunswick, Transaction Publishers.
- Bastien, D. T., T. J. Hostager, et al. (2002). *Jazz as a process of organizational improvisation*. London and New York, Routledge: 1-13.
- Behn, R. D. (2001). *Rethinking democratic accountability*. Washington, D.C., Brookings University Press.
- Behn, R. D. and P. A. Kant (1999). "Strategies for avoiding the pitfalls of performance contracting." *Public productivity and management review* **22**(4): 470-489.
- Blau, P. (1963). *The dynamics of bureaucracy: a study of interpersonal relationships in two government agencies*. Chicago, University of Chicago Press.
- Borins, S. (2000). "Loose cannons and rule breakers, or enterprising leaders? Some evidence about innovative public managers." *Public Administration Review* **60**(6): 498-507.
- Bougon, M., K. Weick, et al. (1977). "Cognition in organizations: An analysis of the Utrecht Jazz Orchestra." *Administrative Science Quarterly* **22**(4): 606-639.
- Bovens, M., P. 't Hart, et al. (2001). The state of governance in six European states. *Success and Failure in Public Governance*. M. Bovens, P. 't Hart and B. G. Peters. Cheltenham, Edward Elgar: 641-661.
- Bovens, M. and S. Zouridis (2002). "From street-level to system-level bureaucracies: How information and communication technology is transforming administrative discretion and constitutional control." *Public administration review* **62**(2): 174-184.
- Bowden, P. (1979). "Structure and creativity: A civil service hypothesis." *Public Administration*: 287-308.
- Bozeman, B. (1993). "A theory of government 'red tape'." *Journal of public administration research and theory* **3**(3): 273-303.
- Brans, M. and S. Roszbach (1997). "The autopoiesis of administrative systems: Niklas Luhmann on public administration and public policy." *Public administration* **75**: 417-439.
- Buijs, J. M., N. Van der Bol, et al. (2009). *Metropolitan Regions as Self-Organizing Systems. Managing Complex Governance Systems. Dynamics, Self-Organization and Coevolution in Public Investments*. G. R. Teisman, L. Gerrits and A. Van Buuren. New York, Routledge: 97-115.
- Byrne, D. (2002). *Interpreting quantitative data*. London, Sage Publications Ltd.
- Byrne, D. (2005). "Complexity, Configurations and Cases." *Theory, culture & society* **22**(5): 95-111.
- Campbell, J. L. (1997). Mechanisms of evolutionary change in economic governance: Interaction, interpretation and bricolage. *Evolutionary economics and path dependence*. L. Magnusson and J. Ottosson. Cheltenham, Edward Elgar: 10-32.
- Christensen, T., P. Laegreid, et al. (2008). *Organization theory and the public sector: Instrument, culture and myth*. London, Routledge.
- Ciborra, C. (2002). *The labyrinths of information: Challenging the wisdom of systems*. Oxford, Oxford University Press.
- Cilliers, P. (1998). *Complexity and postmodernism: Understanding complex systems*. London, Routledge.

- Cilliers, P. (2001). "Boundaries, Hierarchies and Networks in Complex Systems." International Journal of Innovation Management 5(2): 135-147.
- Conger, J. and N. Kanungo (1988). Charismatic Leadership. San Francisco, Jossey-Bass.
- Cunha, M. P. E. and C. Cabral-Cardoso (2006). "Shades of gray: A liminal interpretation of organizational legality-illegality." International Public Management Journal 9(3): 209.
- Cyert, R. M. and J. G. March (1963). A behavioral theory of the firm. Englewood Cliffs, NJ, Prentice-Hall, Inc.
- Damanpour, F. (1991). "Organizational innovation: A meta-analysis of effects of determinants and moderators." The Academy of Management Journal 34(3): 555-590.
- De Witte, M. and B. Steijn (2000). "Automation, job content, and underemployment." Work, employment and society 14(2): 245-264.
- De Wolf, T. and T. Holvoet (2004). "Emergence and self-organization: A statement of similarities and differences." Proceedings of the 2nd International Workshop on Engineering Self-Organizing Applications.
- DeHart-Davis, L. (2007). "The unbureaucratic personality." Public Administration Review(September/October): 892-903.
- Denhardt, R. B. (1993). The pursuit of significance: Strategies for managerial success in public organizations. Belmont, Wadsworth Publishing Company.
- Dunn, W. N. (1994). Public policy analysis: An introduction. New York, Prentice Hall.
- Edelenbos, J., E. H. Klijn, et al. (2009). Managing Complex Process Systems: Surviving at the Edge of Chaos. Managing Complex Governance Systems. Dynamics, Self-Organization and Coevolution in Public Investments. G. R. Teisman, L. Gerrits and A. Van Buuren. New York, Routledge: 172-192.
- Fiol, C. M. and M. A. Lyles (1985). "Organizational learning." The Academy of Management Review 10(4): 803-813.
- FitzPatrick, S. (2002). "The imaginary and improvisation in public administration." Administrative Theory and Praxis 24(4): 635-654.
- Flood, R. L. (1999). Rethinking the fifth discipline: Learning with the unknowable. New York, Routledge.
- François, C. (1999). "Systemics and cybernetics in a historical perspective." Systems research and behavioral science 16(3): 203-219.
- Freeman, R. (2007). "Epistemological bricolage: How practitioners make sense of learning." Administration and Society 39(4): 476-496.
- Gerrits, L. and P. Marks (2009). Coevolution: A Constant in Non-Linearity. Managing Complex Governance Systems. Dynamics, Self-Organization and Coevolution in Public Investments. A. Van Buuren, G. R. Teisman, L. Gerrits and A. Van Buuren: 134-153.
- Gerrits, L. M. (2008). The gentle art of coevolution: a complexity theory perspective on decision making over estuaries in Germany, Belgium and the Netherlands. Rotterdam, Erasmus Universiteit Rotterdam.
- Gladwell, M. (2005). Blink: The power of thinking without thinking. New York, Back Bay Books.
- Goldstein, J. (1999). "Emergence as a Construct: History and Issues." Emergence 1(1): 49-72.
- Gormley, W. T. and S. J. Balla (2004). Bureaucracy and democracy: Accountability and performance. Washington D.C., CQ Press.
- Harmon, M. M. (2006). Public administration's final exam: A pragmatist restructuring of the profession and the discipline. Tuscaloosa, The University of Alabama Press.
- Hart, S. L. (1992). "An Integrative Framework for Strategy-Making Processes." The Academy of Management Review 17(2): 327-351.
- Haynes, P. (2003). Managing complexity in the public services. Open University Press.
- Heylighen, F. (2002). The science of self-organization and adaptivity. Knowledge Management, Organizational Intelligence and Learning, and Complexity. L. D. Kiel, <http://www.eolss.net/E1-29-toc.aspx>.
- Hill, M. J. and P. L. Hupe (2002). Implementing public policy. London, Sage.
- Holling, C. S. (2001). "Understanding the complexity of economic, ecological, and social systems." Ecosystems 4(5): 390-405.
- Hood, C. (1991). "A public management for all seasons?" Public administration 69(1): 3-19.
- Hood, C. (2000). The art of the state. Oxford, Oxford University Press.
- Hood, C. and M. Jackson (1991). Administrative argument. Aldershot, Dartmouth.
- Huber, G. P. (1991). "Organizational Learning: The Contributing Processes and the Literatures." Organization Science 2(1): 88-115.

- Huxham, C. and S. Vangen (2000). "Ambiguity, Complexity and Dynamics in the Membership of Collaboration." Human Relations **53**(6): 771-806.
- Jantsch, A. (1980). Autopoiesis: A central aspect of dissipative self-organization. Autopoiesis: A theory of living organization. M. Zeleny. New York, North Holland Publishers: 65-88.
- Jantsch, E. (1980). The self-organizing universe: Scientific and human implications of the emerging paradigm of evolution. Oxford, Pergamon Press.
- Johnson, G. (1988). "Rethinking incrementalism." Strategic Management Journal **9**(1): 75-91.
- Kamoche, K. N., M. Pina e Cunha, et al. (2002). Organizational improvisation. London and New York, Routledge.
- Kamoche, K. N., M. Pina e Cunha, et al. (2002). Introduction and overview. London and New York, Routledge: 1-13.
- Kassel, D. S. (2008). "Performance, accountability and the debate over rules." Public Administration Review (March/April): 241-252.
- Kaufman, H. (1977). Red tape: its origins, uses and abuses. Washington D.C., The Brookings Institution.
- Kelley, S. W. (1993). "Discretion and the service employee." Journal of retailing **69**(104-126).
- Kelley, S. W., T. Longfellow, et al. (1996). "Organizational determinants of service employees' exercise of routine, creative, and deviant discretion." Journal of retailing **72**(2): 135-157.
- Kelman, S. (1990). Procurement and public management: The fear of discretion and the quality of government. Washington, DC, AEI Press.
- Kickert, W. J. M., E. H. Klijn, et al. (1997). Managing complex networks: strategies for the public sector, SAGE Publications Ltd.
- Klijn, E. H. (2008). "Complexity theory and public administration: What's new?" Public Management Review **10**(3): 299-317.
- Klijn, E. H. and I. Snellen (2009). Complexity Theory and Public Administration: A Critical Appraisal. Managing Complex Governance Systems. Dynamics, Self-Organization and Coevolution in Public Investments. G. R. Teisman, L. Gerrits and A. Van Buuren. New York, Routledge: 17-36.
- Knights, D. and D. McCabe (2003). Organisation and innovation: Guru schemes and American dreams. Maidenhead, Open University Press.
- Koehler, G. (2003). "Time, complex systems, and public policy: A theoretical foundation for adaptive policy making." Nonlinear Dynamics, Psychology, and Life Sciences **7**(1): 99-114.
- Koppenjan, J. F. M. and E. H. Klijn (2004). Managing uncertainties in networks: A network approach to problem solving and decision making, Routledge.
- Kotter, J. (1988). The leadership factor. New York, The Free Press.
- Kwinter, S. and C. Davidson (2008). Far from Equilibrium: Essays on Technology and Design Culture. New York, Actar.
- Landau, M. (1969). "Redundancy, rationality, and the problem of duplication and overlap." Public Administration Review **29**(4): 346-358.
- Landau, M. (1991). "On multiorganizational systems in public administration." Journal of Public Administration Research and Theory **1**(1): 5-18.
- Lanzara, G. F. (1998). "Self-destructive processes in institution building and some modest countervailing mechanisms." European Journal of Political Research **33**: 1-39.
- Lerner, A. W. and J. Wanat (1983). "Fuzziness and bureaucracy." Public Administration Review **43**(6): 500-509.
- Leybourne, S. A. (2007). "Improvisation within management: oxymoron, paradox, or legitimate way of achieving?" International Journal of Management Concepts and Philosophy **2**(3): 224-239.
- Leydesdorff, L. (2006). The Knowledge-Based Economy: Modeled, Measured, Simulated. Boca Raton, Florida, Universal Publishers.
- Light, P. C. (1997). The tides of reform: Making government work 1945-1995. New Haven, Yale University Press.
- Lindblom, C. E. (1959). "The Science of 'Muddling Through'." Public Administration Review **19**(2): 79-88.
- Lipsky, M. (1980). Street-level bureaucracy: Dilemmas of the individual in public services. New York, Russell Sage Foundation.
- Macdonald, S. (2002). "The IT productivity paradox revisited: technological determinism masked by management method?" International Journal of Information Technology and Management **1**(1): 1-29.
- MacIntyre, A. (1999). "Social structures and their threat to moral agency." Philosophy **74**(289): 311-329.

- March, J. G. and J. P. Olsen (1976). Ambiguity and choice in organizations. Bergen, Universitetsforlaget.
- Mason, G. (2000). "Production supervisors in Britain, Germany and the United States: Back from the dead again?" Work, employment and society **14**(4): 625-645.
- Meadows, D. H. (2008). Thinking in systems. Vermont, Chelsea Green Publishing.
- Merton, R. K. (1940). "Bureaucratic structure and personality." Social forces(17): 560-568.
- Merton, R. K. (1964). Social theory and social structure. London, The Free Press of Glencoe.
- Meyer, J. W. and B. Rowan (1991). Institutionalized organizations: Formal structure as myth and ceremony. The new institutionalism in organizational analysis. W. W. Powell and P. J. DiMaggio. Chicago, The University of Chicago Press: 41-62.
- Michaels, R. E., W. L. Cron, et al. (1988). "Influences of formalization on the organizational commitment and work alienation of salespeople and industrial buyers." Journal of Marketing Research **25**(4): 376-383.
- Miner, A. S., P. Bassoff, et al. (2001). "Organizational Improvisation and Learning: A Field Study." Administrative Science Quarterly **46**(2): 304-337.
- Mintzberg, H. (1978). "Patterns in strategy formulation." Management Science **24**(3): 934-948.
- Mintzberg, H. (1983). Structure in fives: designing effective organizations. Englewood Cliffs, Prentice/Hall International, Inc.
- Miranda, R. and A. Lerner (1995). "Bureaucracy, organizational redundancy, and the privatization of public services." Public Administration Review **55**(2): 193-200.
- Mittleton-Kelly, E. (2003). Ten principles of complexity & enabling infrastructures. Complex systems and evolutionary perspectives on organisations: The application of complexity theory to organisations. Amsterdam, Elsevier: 23-50.
- Moorman, C. and A. S. Miner (1998). "Organizational improvisation and organizational memory." The Academy of Management Review **23**(4): 698-723.
- Morçöl, G. (2003). "Complexity and public administration." Paper presented at the Public Administration Theory Network Annual Conference, Anchorage, Alaska: 1-17.
- Morçöl, G. and A. Wachhaus (2009). "Network and Complexity Theories: A Comparison and Prospects for a Synthesis." Administrative Theory & Praxis **31**(1): 44-58.
- Morrison, E. W. (1994). "Role definitions and organizational citizenship behavior: The importance of the employee's perspective." The Academy of Management Journal **37**(6): 1543-1567.
- Moynihan, D. P. (2008). "Learning under uncertainty: Networks in crisis management." Public Administration Review(March/April): 350-365.
- Newman, J. (2005). Bending bureaucracy: Leadership and multi-level governance. The Values of Bureacracy. P. du Gay. Oxford, Oxford University Press: 191-209.
- Nicolis, G. and I. Prigogine (1989). Exploring Complexity - An Introduction, W.H. Freeman & Company.
- Noordegraaf, M. and T. Abma (2003). "Management by measurement? Public management practices amidst ambiguity." Public Administration **81**(4): 853-871.
- O'Leary, R. (2005). The ethics of dissent: Managing guerrilla government. Washington D.C., CQ Press.
- Organ, D. W. (1990). The motivational basis of organizational citizenship behavior. Research in Organizational Behavior. B. M. Staw and L. L. Cumming. Greenwich, CT, JAI Press. **12**: 43-72.
- Organ, D. W. and C. N. Greene (1981). "The effects of formalization on professional involvement: A compensatory process approach." Administrative Science Quarterly **26**(2): 237-252.
- Osborne, D. and T. Gaebler (1992). Reinventing government: how the entrepreneurial spirit is transforming the public sector. Reading, Mass., Addison-Wesley Pub. Co.
- Parkinson, C. N. (1957). Parkinson's law: The pursuit of progress. London, Houghton Mifflin Company.
- Pascale, R. (1985). "The paradox of 'corporate culture': Reconciling ourselves to socialization." California Management Review **27**(2): 26-41.
- Perrow, C. (1986). Complex organizations: A critical essay. New York, Random House.
- Peters, T. (1987). Thriving on chaos. New York, Knopf.
- Peterson, G. (2000). "Political ecology and ecological resilience: an integration of human and ecological dynamics." Ecological Economics **35**(3): 323-336.
- Pina e Cunha, M. (2005). Bricolage in organizations. Lisbon, mimeo.
- Pina e Cunha, M., J. Vieira da Cunha, et al. (1999). "Organizational improvisation: What, when, how and why?" International Journal of Management Reviews **1**(3): 299-341.

- Pina e Cunha, M., J. Vieira da Cunha, et al. (2002). *Organizational improvisation: What, when, how and why*. Organizational improvisation. K. N. Kamoche, M. Pina e Cunha and J. Vieira da Cunha. London and New York, Routledge: 96-137.
- Podsakoff, P. M., L. J. Williams, et al. (1986). "Effects of organizational formalization on alienation among professionals and nonprofessionals." The Academy of Management Journal **29**(4): 820-831.
- Pollitt, C. (1990). Managerialism and the public services: the Anglo-American experience. Oxford, Basil Blackwell.
- Pollitt, C. (2000). "Institutional amnesia: A paradox of the information age'?" Prometheus **18**(1): 5-16.
- Pollitt, C. (2009). "Bureaucracies Remember, Post-bureaucratic Organizations Forget?" Public Administration **87**(2): 198-218.
- Pollitt, C. (2009). Complexity Theory and Evolutionary Public Administration: A Sceptical Afterword. Managing Complex Governance Systems. Dynamics, Self-Organization and Coevolution in Public Investments. G. R. Teisman, L. Gerrits and A. Van Buuren. New York, Routledge: 213-230.
- Porter, T. B. (2006). "Coevolution as a Research Framework for Organizations and the Natural Environment." Organization & Environment **19**(4): 479-504.
- Quinn, J. B. (1978). "Strategic Change: "Logical Incrementalism"." Sloan Management Review **20**(1): 7-21.
- Quinn, J. B. (1980). Strategies for change: Logical incrementalism. Homewood, Irwin.
- Quinn, R. E. (1988). Beyond rational management: Mastering the paradoxes and competing demands of high performance. San Francisco, Jossey-Bass Publishers.
- Radin, B. A. (2006). Challenging the performance movement: Accountability, complexity, and democratic values. Washington, D.C., Georgetown University Press.
- Radnor, Z. J. and J. Boaden (2004). "Developing an understanding of corporate anorexia." International Journal of Operations and Production Management **24**(4): 424-440.
- Ragin, C. C. and D. Byrne (2009). The SAGE Handbook of Case-Based Methods. London, Sage Publication.
- Riccucci, N. M. (2005). How management matters: Street-level bureaucrats and welfare reform. Washington, DC, Georgetown University Press.
- Rosen, R. (1985). Anticipatory systems, Pergamon Press New York.
- Rycroft, R. W. and D. E. Kash (1999). The complexity challenge: Technological innovation for the 21st century. London, Pinter.
- Scheepers, W. A. (1992). "Informatization and changing perceptions in street-level contacts." International Review of Administrative Sciences **58**(3): 349-361.
- Schofield, J. (2001). "The old ways are the best? The durability and usefulness of bureaucracy in public sector management." Organization **8**(1): 77-96.
- Scott, J. C. (1998). Seeing like a state: How certain schemes to improve the human condition have failed. New Haven, Yale University Press.
- Seddon, J. (2008). Systems thinking in the public sector: The failure of the reform regime... and a manifesto for a better way. Axminster, Triarchy Press.
- Selznick, P. (1957). Leadership in administration: A sociological interpretation. Evanston, Illinois, Row, Peterson and Company.
- Sementelli, A. (2007). "Distortions of Progress." Administration & Society **39**(6): 740-760.
- Sharkansky, I. (2002). Politics and policymaking: In search of simplicity. London, Lynne Rienner Publishers.
- Silberman, B. S. (1993). Cages of reason: The rise of the rational state in France, Japan, the United States, and Great Britain. Chicago, The University of Chicago Press.
- Simons, R. (1995). "Control in an age of empowerment." Harvard Business Review(March-April): 80-88.
- Smith, P. (1995). "On the unintended consequences of publishing performance data in the public sector." International Journal of Public Administration **18**(2-3): 277-310.
- Stacey, R. D. (2003). Strategic management and organisational dynamics: The challenge of complexity. London, Prentice-Hall.
- Steijn, B. and S. Groeneveld, Eds. (2009). Strategisch HRM in de publieke sector. Assen, Van Gorcum.
- Stone, D. (2002). Policy paradox: The art of political decision making. New York, W. W. Norton & Company.
- Talbot, C. (2005). The paradoxical primate. Exeter, Imprint Academic.

- Teisman, G. R. (2005). Publiek management op de grens van chaos en orde. Den Haag, Sdu Uitgevers.
- Teisman, G. R., L. Gerrits, et al. (2009). Managing Complex Governance Systems. Dynamics, Self-organization and Coevolution in Public Investments. New York, Routledge.
- Teisman, G. R., E. Westerveld, et al. (2009). The Case of Infrastructure Development in the UK and the Netherlands. Managing Complex Governance Systems. Dynamics, Self-Organization and Coevolution in Public Investments. G. R. Teisman, L. Gerrits and A. Van Buuren: 56-75.
- Thomas, R. and D. Dunkerley (1999). "Janus and the bureaucrats: Middle management in the public sector." Public Policy and Administration **14**(1): 28-41.
- Thompson, J. R. (2006). "The Federal Civil Service: The demise of an institution." Public Administration Review **66**(July/August): 496-503.
- Thompson, V. A. (1965). "Bureaucracy and innovation." Administrative Science Quarterly **10**(1): 1-20.
- Ting, M. M. (2003). "A strategic theory of bureaucratic redundancy." American Journal of Political Science **47**(2): 274-292.
- Turok, I. and N. Edge (1999). The jobs gap in Britain's cities: Employment loss and labour market consequences. Bristol, Policy Press.
- Tyler, T. R. (1990). Why people obey the law. New Haven, Yale University Press.
- Uhl-Bien, M., R. Marion, et al. (2007). "Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era." The Leadership Quarterly **18**(4): 298-318.
- Van de Ven, A. H., D. E. Polley, et al. (1999). The innovation journey. New York, Oxford University Press.
- van der Lans, J. (2005). Koning burger: Nederland als zelfbedieningszaak. Amsterdam, Augustus.
- Veblen, T. (1914). The Instinct of Workmanship and the State of the Industrial Arts. New York, Macmillan.
- Vieira da Cunha, J., M. Pina e Cunha, et al. (2007). Routine as deviation, mimeo.
- Waldrop, M. M. (1994). Complexity: the emerging science at the edge of order and chaos. Harmondsworth, Penguin.
- Walsh, J. P. and G. Rivera Ungson (1991). "Organizational memory." The Academy of Management Review **16**(1): 57-91.
- Weick, K. (1987). "Organizational culture as a source of high reliability." California Management Review **29**(2): 112-127.
- Weick, K. E. (1979). The social psychology of organizing, McGraw Hill.
- Weick, K. E. (1985). A stress analysis of future battlefields. Leadership on the future battlefield. J. G. Hunt and J. D. Blair. McLean, VA, Pergamon Press: 32-46.
- Weick, K. E. (1993). "The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster." Administrative Science Quarterly **38**(4): 628-652.
- Weick, K. E. (2001). Making sense of organizations. Malden, MA, Blackwell.
- Weick, K. E. (2005). "Organizing and failures of imagination." International public management journal **8**(3): 425-438.
- Weick, K. E. and K. M. Sutcliffe (2001). Managing the unexpected: Assuring high performance in an age of complexity. San Francisco, Jossey-Bass.
- Williams, P. (2002). "The competent boundary spanner." Public Administration **80**(1): 103-124.
- Wilson, J. Q. (1989). Bureaucracy: what government agencies do and why they do it. New York, Basic Books.
- Womack, J. P., D. T. Jones, et al. (1990). The machine that changed the world. New York, Macmillan.