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Building Resilience in Public Organizations: The Role of Waste and Bricolage

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ABSTRACT

This paper shows how organizational waste and processes of bricolage have an important role in the functioning of public organizations, and how this is essential to innovation, organisational resilience and survival. This paper largely builds on the work of organisation theorist Karl E. Weick and his work on bricolage and improvisation more specifically. The paper is conceptual in nature, and outlines the characteristics of the concept of bricolage, and the organisational requirements for bricolage to emerge and flourish. It shows how organisations that are over-proceduralised or over-organised leave little space for the emergence of solutions and actions. This has negative consequences for organisational learning and for innovation, and, ultimately, for organizations' capability to deal with crises. Organisational memory, a certain degree of discretion, waste and redundancy are crucial for organisations' long-term survival.

Keywords: Improvisation; resilience; emergence; bricolage; organisational memory; crisis; innovation

Introduction

Public organizations rely to a great extent on standard operating procedures to guide their actions in daily operations and interventions. In this article we use the literature on organisational improvisation and bricolage to show how excess *organisation* in organisations may hinder their capability to cope with emerging trends and sudden unexpected events such as crises. This paper largely builds on the work of organisation theorist Karl E. Weick and his work on bricolage and improvisation more specifically. It is argued that a certain degree of redundancy and waste is required to safeguard organisations' resilience and survival. By allowing employees to become *bricoleurs*, innovative solutions may emerge in situations where standard operating procedures are not available. This requires organisations to allow a certain degree of discretion based on employees' professional skills who can tap into their own experience and a reservoir of organisational memory. The article outlines the characteristics of the concept of bricolage, and the organisational requirements for bricolage to emerge and flourish.

This paper has four main parts. First, we show how traditional organisation studies have largely ignored the concept of improvisation and emergence. We highlight 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 show how improvisation and bricolage may make organisations more resilient. Finally, we discuss how a certain degree of waste in the

organisation of public organisations contributes to their ability to cope with crises and unexpected events.

Restricting Emergence: Curtailing 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 here: '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 the literature is full of examples where rule-breaking is associated with problem-solving, innovation, and success (Lipsky, 1980; Riccucci, 2005; O'Leary, 2005). 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.

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).

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 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 and Vieira da Cunha, 2002). In public administration theory, complexity is a growing niche (Kickert, Klijn and Koppenjan, 1997; Koppenjan and Klijn, 2004; Klijn, 2008). Bureaucracies' ways of coping with firm structures yet fuzzy mandates are well documented (Lerner and Wanat, 1983), and the importance of having routine processes as a way of coping with non-routine events has likewise received considerable attention.

The New Proceduralism in Public Sector Organisations and Implications for Emergence

Despite the observation that public sector organisations 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. 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' (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 the preferred 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 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. Formalised bureaucratic structures are geared towards productivity and control, not towards creativity and innovation, and even less towards resilience (Thompson, 1965). This makes organisations that appear to function very efficiently in their day-to-day operations very vulnerable to changes in their environment.

The Virtues of Standard Operating Procedures

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. 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).

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.

The Formalistic Straightjacket and Implications for Emergence and Resilience

The virtues of formalisation are well-known, and therefore 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 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. In this paper, we use the concept *overformalisation* to refer to situations where organisations have formalised extensively, and where there is only limited discretion.

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 identifies 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. 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 (Podsakoff, Williams and Todor, 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). A characteristic of public organizations 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 and Todor, 1986; Michaels 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 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 and Walker, 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. 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. Such solutions disrupt the system or violate 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).

The Elimination of Creative Discretion

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 a 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. 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 and Malehorn, 1996: 149-150), but it may also reduce other types of discretion.

Innovation often emerges from discretionary practices rather than from planning. 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).

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 and Vieira da Cunha, 2002: 7). A drive for conformity is therefore bad for innovation in public organizations (Bowden, 1979). Retention of organisation (i.e. keeping what is) happens through limiting discretion; change through nurturing discretion and thus emergence (Aldrich, 1999: 21-41). Excessive procedures make emergence no longer possible to achieve, because it is not allowed. Improvisation and trial and error look unplanned and inefficient, and are therefore often considered as bad (Pina e Cunha, Vieira da Cunha and Kamoche, 2002). Hesitant steps towards innovation may well be seen as divergence or inefficiency by those higher up in the organisation.

Implications for Learning and Institutional Memory

Excessive formalisation, we have mentioned earlier, may lead to a shrinking knowledge base in organisations. In the organisation, little 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. 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, putting them at risk.

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. Modern organisations and systems may suffer from institutional amnesia or a disappearing organisational memory. (Pollitt, 2000). 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 longterm memories, in favour of short-term system operators. We will further explore these assertions in a later section. This has an effect on organisations’ anticipative capacity, as we will see later.

The Role of Organisational Improvisation and Bricolage for Resilient Organisations

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 and Kamoche, 1999). Pina e Cunha and others 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 and Kamoche, 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 and Binkhorst, 1977; Bastien and Hostager, 2002). Later scholars attempted to define improvisation and its characteristics, and started to focus on businesses (Pina e Cunha, Vieira da Cunha and Kamoche, 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 and Chia, 2007: 16) - 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).

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 and Kamoche, 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 and Moorman, 2001). Improvisation and bricolage differ from creativity in that improvisation and bricolage are not always novel (Pina e Cunha, Vieira da Cunha and Kamoche, 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 recomposition 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). 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). Organisational memory is also dependent on and embodied in individual memory.

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 10th 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 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.

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 or on-the-spot responses difficult if not impossible. 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. 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).

Bricolage and Improvisation

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, 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.

Resilience and Emergence Require Organisational Redundancy and Waste

Both emergence and resilience require a certain degree of redundancy and slack. Earlier 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 and Roos, 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, 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). Highly formalised systems codify knowledge and trim knowledge down to its bare necessities. To deal with crises, 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).

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