Resilient organizations: Offense versus Defense

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ABSTRACT

This paper extends prior research in organisational resilience, differentiating between resilience due to adaptive capacity versus the ability to resist change and persist. A typology of organisational resilience emerges which 1) captures the duality of the construct, 2) recognises that resilience can be an undesirable element in the case of an underperforming system and 3) introduces a network perspective to organisational resilience, going beyond the individual or organisational level of analysis to the larger network of stakeholders in which organisations are embedded. The Resilience Architecture Framework provides a platform for the integration of theoretical aspects from divergent research streams such as organisational rigidity, dynamic capabilities and organisational ambidexterity, into the study of organisational resilience.

Keywords: resilience, organisational adaptation, organizational rigidity, strategic decision-making, strategy and structure, organizational change, transformation

INTRODUCTION

Resilience often appears as a residual to explain unexpected survival rather than as a component of corporate strategy (Sutcliffe and Vogus 2003). Although the concept has been explored within the field of ecological economics (Brand 2009; Derissen et al 2011), it has not been fully examined within the strategic management literature. In this paper we attempt to integrate findings from research in socio-ecological systems and organisations in order to develop an operational conceptualization and typology of organisational resilience, providing a platform for a better understating of the evolution of resilience and its relationship to organisational structure, processes and strategy. Following Gunderson and Holling (2001) we define resilience as the magnitude of disturbance the system can tolerate and still persist. We revisit existing approaches to organisational resilience, which fail to recognise the dual manifestation of persistence as either capacity for adaptive learning or resistance to change (see Table 1 for a list of definitions).

<INSERT TABLE 1 ABOUT HERE>

The major consequence of this conceptualization is that resilience is not always a desirable system characteristic and thus cannot be a target in itself. A typology of organisational resilience, the Resilience Architecture Framework (RAF) is proposed. We suggest that this captures the duality of the construct, and introduces a network perspective to organisational resilience. The Resilience

Architecture Framework goes beyond the individual or organisational level of analysis to the larger network of stakeholders in which organisations are embedded. We propose that the Resilience Architecture Framework provides a platform for the integration of theoretical aspects from divergent research streams such as organisational rigidity, dynamic capabilities and organisational ambidexterity, into the study of organisational resilience.

ORGANISATIONAL RESILIENCE

Overall there is little systematic work on organisational resilience that has received independent attention. Some approaches to organisational resilience are influenced by the engineering definition of resilience, interpreting resilience as the "capacity to be robust under conditions of enormous stress and change" (Coutu 2002, p. 52). The ability to withstand stress is translated into the ability to respond while avoiding engagement in regressive behaviour (Horne 1997). Resilience in core physics and engineering is the ability of the system to absorb disturbances and consecutively return to equilibrium. A perfectly resilient system in that respect is therefore a perfectly elastic mechanical system, where any energy that is absorbed can be emitted without any losses, returning the system to its previous stable state. Some earlier approaches to ecological resilience also focus on resistance to disturbance and return to equilibrium (Pimm 1984). These approaches recognise a single stable state where the system can return after perturbation and are usually applied to improve systems efficiency.

Organisational resilience has also been defined as a set of social skills, adopting an agency rather than structural perspective. According to this school of thought organisational resilience "builds on the foundation of the resilience of members of that organisation" (Riolli and Savicki 2003, p. 228) and it requires "people who can respond quickly and effectively to change while enduring minimal stress" (Mallak 1998, p. 8). Various behavioural characteristics have therefore been proposed as contributors to organisational resilience. Examples include Horne's (1997) seven streams of behaviour; Mallak's (1998) principles and Coutu's (2002) organisational resilience characteristics, being a staunch acceptance of reality, a deep belief that life is meaningful and the uncanny ability to improvise. There is some merit in this research stream, which aims at the development of a social system of collaboration and participation that is able to respond to change (Diamond 1996). However, these interpretations fail to link behavioural responses to complex system dynamics.

More recently, resilience has been examined as an attribute of adaptive systems in at least two independent research streams. Viewing resilience as adaptability in the context of being able to "rebound from adversity strengthened and more resourceful" (Sutcliffe and Vogus 2003, p.97) is observed in the literature of high reliability organisations (HRO's). HRO's are organisational systems in which reliability is a more pressing issue than efficiency, as failures can escalate rapidly causing wide scale damage (Weick 1987). Examples of such systems include nuclear power generators, aircraft operations, air traffic control systems, emergency medical treatment, continuous processing firms and wildland fire fighting crews (Weick and Sutcliffe 2001). The unique characteristic of such organisations is that exploration is not an alternative option for organisational learning due to the prohibitively high cost to failure ratio. This consecutively leads to the development of an array of adaptive strategies such as decentralized decision making dynamics that allow "migration" of decisions in search for the person of higher expertise or tenure on the job (Roberts, Stout and Halpern 1994) and a "reluctance to simplify interpretations" coupled with high "sensitivity to operations", which lead to well-developed situational awareness and the acknowledgement of troublesome situations in their infancy (Weick and Sutcliffe 2001). Failures within HRO's do take place, there are however sophisticated structural and cultural mechanisms in place to reduce the number of such occurrences or manage to contain them in smaller scales, avoiding large scale collapse. It is important to note that HRO's achieve high reliability at a technical level. The challenge lies in transferring learning from the operational to the strategic level.

Efforts are being made to apply organisational resilience as the "primary strategic purpose of complexity logic" (Lengnick-Hall and Wolff 1999, p. 1118), viewing complexity as an independent research stream, where predictability and control over market conditions is limited and where small changes in initial conditions can result in a great variety of outcomes. The objective of survival is differentiated from the improvement of performance, with some researchers advocating the need for a dual management mode, where the linear success criteria are applied in stable conditions (this is where optimization techniques could work), whereas resilience criteria substitute those in conditions of turbulence (Dervitsiotis 2003). Others see resilience-focus management as a continuous

anticipation and adjustment to disturbances that can permanently impair the earning capacity of the corporation (Hamel and Valikangas 2003). In all cases however, management for resilience diverges from optimization and requires the development of the ability to balance efficiency and adaptability, "unity and diversity" (Hamel & Valikangas 2003, p. 63). This research stream is influenced by emerging literature in socio-ecological systems resilience, a school of thought that also originates from the field of ecology (Holling 1973; Holling & Meffe 1996), it accepts however increased fluctuation and transformation between multiple equilibrium states, shifting the focus of enquiry from systems efficiency and return to equilibrium to maintenance of critical system functions and processes (Gunderson & Holling 2001; Holling 2001).

STRATEGIC OFFENCE VERSUS DEFENCE: A DUAL CONCEPUALIZATION

Whether scholars refer to complex systems survival, system adaptation, absorbance of disturbance, or ability to return to a single equilibrium, resilience is always approached as a positive and desirable concept or system characteristic. In that sense all previous approaches of organisational resilience have something in common. Although this is also the case in the vast majority of socio-ecological systems literature, some researchers have highlighted that unlike sustainability, ***resilience can be desirable or undesirable depending on the system state*** (Carpenter, Walker, Anderies and Abel 2001; Mamouni Limnios 2008). For example, system states that decrease social welfare, such as polluted water supplies and dictatorships, can be highly resilient (Carpenter et al, 2001). Similarly, large organisations that fail to satisfy key stakeholders' needs can be very resilient and maintain an underperforming system state for extended periods of time (Mamouni Limnios 2008).

Referring to the work of Gunderson and Holling (2001), we observe that they measure resilience by the ***magnitude of disturbance the system can tolerate and still persist***. High levels of resilience can therefore be due to the system's adaptive capacity, where the system reacts to disturbance by changing its structure, processes and functions in order to increase its ability to persist. Adaptive capacity is often used interchangeably with resilience in the literature of complex socio-ecological systems. However, a system may also be very resilient due to its ability to resist change and maintain its current structure and processes. In this case the system is able to tolerate disturbance and absorb shocks rather than adapt to change. Differentiating between these two opposing

manifestations of resilience as either ***offence (adaptation)*** or ***defense (resistance)*** to internal or external disturbance is critical, especially in organisational systems, where these attributes assume a strategic character and can be influenced and adjusted upon a better understanding of the system state and condition.

Organisations exhibit a combination of both adaptive capacity and resistance to change. It is obvious that an organisation cannot change its tactics as a reaction to each slight change of the environment it operates in, and it is also not able to remain static, as it will necessarily evolve through time, even if it has a tendency to adapt towards momentum (Miller and Friesen 1980) by re-enforcing its strategies rather than adapting them to its environment. The interchange between adaptability and pervasive momentum has been widely studied in the literatures of organisational adaptation and learning and it relates to the adoption of exploitation (i.e., improving efficiency of existing skills) or exploration (i.e., looking for new possibilities) processes of organisational learning (March 1991; March and Weil 2005).

Organisations that balance exploration and exploitation are able to continuously scan their environment and identify the need and opportunity to change when it presents itself, while maintaining and evolving the key organisational capabilities (O'Reilly and Tushman 2004). Such organisations are resilient through a balanced combination of strategic offense and defense, operating in a highly desirable system state. However, incremental successes achieved through exploitation tend to discourage exploration, and have thus been proven to result in cycles of exploitation reinforcement (March 1991). This can take place both at the organisational and the individual employee level, leading to the formation of rigid monocultures. Such systems maintain a narrow strategic focus and employ minimal adaptation which is incremental in nature. The benefits of this tactic decrease with time, and have been advocated to ultimately trigger corporate failure (March 1991; Miller 1990; 1993). In such cases resilience is exhibited due to the system's ability to resist change and persist and becomes an undesirable system characteristic, as it prevents the system from entering a phase of change, and retains its current, suboptimal state.

It is worth noting that in complex socio-ecological systems literature, the manifestation of resilience as resistance to change is treated as an exception to the norm and is not therefore integrated

in the generic approach, which views a resilient system as creative and adaptive. Such systems are termed maladaptive and are considered to display "a kind of perverse resilience" (Holling 2001). Their state is termed a "rigidity trap", which is contrasted to a "poverty trap", the latter being the case of a system with low potential (system wealth) and low connectivity (connectedness between internal controlling variables and processes), still exhibiting high resilience and thus maintaining its maladaptive state. Polluted ecosystems, natural systems that have lost their diversity, and social systems traumatized by social disruption or conflict and have lost their cultural cohesion and adaptive abilities are examples of systems operating in the poverty trap. This condition is less applicable to organisational systems, which being man-made systems will not be highly resilient in such circumstances of low connectivity and internal capital. They are more likely to enter a reorganisation phase or fail to survive.

THE RESILIENCE ARCHITECTURE FRAMEWORK

Embracing this duality of the nature of resilience, both in terms of manifestation as adaptation or resistance, as well as being either a desirable or undesirable system characteristic will impact on the strategic use of the concept. It becomes evident that resilience cannot be a target in itself, which is how the concept has been primarily approached in organisational research. Furthermore, the focus on system desirability introduces the perspective of system actors, which can be either endogenous or exogenous to the organisation. Applying a strategic network approach therefore seems as the most appropriate way to examine organisational resilience, approaching it as an emergent, dynamic property that results from the interactions of the organisation within a complex network of actors.

The organisational system becomes the primary unit of analysis, defined as a ***network of interrelated actors who are systematically arranged and managed to pursue a set of activities under the collective goal of delivering a product or service***. By this definition, the boundaries of organisational systems will not always coincide with their legal boundaries. Some large corporations for example may have subdivisions that pursue diverse strategic goals, thus encompassing a number of organisations by our definition. On the other hand, franchise, co-operative, and horizontally or vertically integrated business structures (such as the Japanese keiretsu), can be classified as single organisational systems.

The organisation is an open system that interacts with its socio-ecological environment. It is therefore a nested system within a wider network of organisational stakeholders, which can include individuals, institutions, social networks and natural systems (the latter also referred to as silent stakeholders). System desirability is therefore dependent upon the perspectives of internal actors (such as employees, management and shareholders), as well as external actors that operate in the market, the technical-economic and the scientific sub-environments (Lawrence and Lorsch 1967). The network of external organisational stakeholders could therefore include customers, suppliers, competitors, financiers, government and community agents, all of which directly or indirectly influence the organisation.

The Resilience Architecture Framework provides a novel typology of organisational resilience, introducing a classification based on both the level of system resilience and the desirability of system state (Figure 1). RAF applications would allow for snapshot, but also historical assessments of organizational resilience, improving our understanding of factors that can increase or decrease organizational resilience. This is not a discrete category diagram, as the organisational system fluctuates continuously within the four quadrants. In the following sections we summarize the characteristics of four organisational archetypes as they relate to the framework's quadrants.

<INSERT FIGURE 1 ABOUT HERE>

The Adaptability Quadrant

Systems in the adaptability quadrant enjoy prosperity and exhibit high levels of resilience in the form of adaptive capacity. They have developed a set of dynamic capabilities that result in a strategic ability to adapt, integrate, and reconfigure internal and external organisational skills, resources, and functional competences to match the requirements of a changing environment (Teece, Pisano and Shuen 2007). Their business model satisfies the majority of stakeholder needs, through the establishment of win-win relationships and successful negotiations that generate a high level of stakeholder consent over corporate activities. These companies have developed appropriate structures and processes that enable them to assess their internal and external environment and successfully innovate and adapt through a balance of exploitation of existing competencies and exploration of new capabilities, achieving what Miller and Friesen (1980) describe as "*functional momentum*".

A closely related concept in organisation theory is the notion of the ambidextrous organisation, which suggests that superior performance is expected by organisations that are capable of simultaneously applying exploration and exploitation (Tushman and O'Reilly 1996). Raisch, Birkinshaw, Probst and Tushman (2009) in their introduction to a special issue on organisational ambidexterity highlight that research in organisational ambidexterity has thus far adopted a static perspective to organisational behaviour, examining static configurations associated with this ideal system state. The need to examine the dynamic processes underlying the emergence of ambidexterity was stressed, as well as the significance of complex social networks that determine a firm's ability to integrate internal and external knowledge in this process.

The Vulnerability Quadrant

Systems in the vulnerability quadrant achieve stakeholder satisfaction, but only under specific conditions, which make them vulnerable to change. These conditions may be external, internal, or a combination of both. While their situational dependence is concealed, such systems can temporarily disguise their vulnerability. Situational dependence can be caused by underinvestment in exploration. A related concept in organisational theory is that of resource rigidity (Gilbert 2005), which materializes due to resource dependency and incumbent reinvestment incentives. In such cases, external resource providers and market forces shape and constrain the system's strategic choices, resulting in the observed unwillingness to invest. According to Gilbert (2005), in the face of threats to the existing business model, organisations experiencing resource rigidity tend to exit inertia and unlock resources.

Systems operating in the vulnerability quadrant are therefore susceptible to external disturbance such as: government actions, shifts in demographics, sociocultural perception, technology development, changes in the natural environment, capital market shifts, labour market shifts and regulatory changes (Johnson, Scholes and Whittington 2005). Examples here include technological and socio-cultural changes that have historically been detrimental to entire industries, such as the invention of the cassette that drove the vinyl industry obsolete (Manuel 1991), and the socio-cultural and legal changes in the western world that greatly impacted the international tobacco industry (Feldman 2006). Current examples include the impact of climate change on agricultural businesses

operating in marginal climatic environments, as well as carbon intensive industries that are being adversely affected by economic regulation and public pressure. Another recent example is the effect of the 2008 Global Financial Crisis on the automotive industry, making evident that a number of key players were functioning in the vulnerability quadrant, as entire production and supply chains were highly dependent on the availability of credit.

The Rigidity Quadrant

Systems in the rigidity quadrant are not satisfying the needs of a significant portion of their stakeholders. There are obvious signs of decline in the systems performance, which can take many forms such as sales, profitability or productivity decline, increased employee turnover, customer dissatisfaction, public perception decline, etc. However, despite these signs, the system remains in denial, unable to enter a phase of change and reorganisation. This is either because it has managed to develop defensive mechanisms (processes that maintain current structure and functions), or because it does not have the sufficient capital to instigate and support the restructure. Such systems may manage to survive in these conditions for long periods of time, although they are commonly "accident[s] waiting to happen" (Holling 2001, p. 396). They are caught in a rigidity or poverty trap and can suddenly collapse upon a disturbance. Resilience in these cases is an undesirable system characteristic; systems exhibit a "dysfunctional momentum" (Miller and Friesen 1980), prolonging adaptation and survival in a rigid state, commonly decreasing the chances of successful transformation upon unexpected disturbance.

Adaptive organisations can fall into the rigidity trap by continuously reinforcing successful strategies of the past, failing to identify changing market conditions. This condition has been termed routine rigidity (Gilbert, 2005), as it stems from an inability to change the patterns and logic that underlie organisational investments. It also reflects the process of path dependency in which firms lock-into inferior products or processes, remaining inflexible in the face of new market entrants and competitor innovations (Teece et al 1997). The past success of these companies becomes their own downfall, a phenomenon known as the Icarus paradox (Miller 1990). The development of rigid monocultures and narrow strategic focus is in such cases commonly supported by overreliance on exploitation for organisational learning.

The Transience Quadrant

Systems in the transience quadrant experience a highly uncertain future. They commonly undergo structural or procedural changes in an effort to adapt to external disturbances. There is a distinction here between systems that are flexible and adaptable to external disturbances and therefore have high levels of resilience, and systems in this quadrant. Although very flexible, transient systems are highly unstable and may either achieve adaptation or may fail to adapt. In the case of failure the system may reach complete destruction or may transform to a system of lesser productivity. Companies in their early life-cycle commonly pass through this quadrant, as they have not yet achieved high levels of stakeholder satisfaction, nor resilience. Also companies that go through substantial reorganisation and restructuring may pass through this stage for longer or shorter periods of time, depending on the ability of the change process to minimize risk of failure and maintain a level of resilience.

FUTURE DIRECTIONS

Strategic management theory has a distinguished history which has evolved strongly since the early work of Selznick (1948; 1957) and Penrose (1959). As noted by Hoskisson et al (1999), the field of strategy has swung like a pendulum from an "inside" perspective focusing on leadership and decision making, to an "outside" perspective led by the industrial economics paradigms of Porter (1981), and back to an "inside" one with the resource based view (Rumelt 1974; 1984; Barney 1986a/b; 1991). Research has focused on the firm's evolutionary cycle and how resources and dynamic capabilities are dealt with via path dependencies as a means of coping with complex contingencies over time (Eriksson, Majkgard and Sharma 2000). The strategic behaviour of the firm has been viewed as river flowing through a series of pathways as the organisation seeks to adapt to the complexity, change and uncertainty that confront its leadership within competitive market environments (Lamberg and Parvinen 2003). These analogies have emerged as a means of helping to explain why some firms succeed while others fail, and why seemingly successful firms during one period decline in following years. Some attention has been given to the application of organisational resilience theory to strategic human resources management (Lengnick-Hall, Beck and Lengnick-Hall 2011). However, there has

been little attention given to the lessons that can be obtained from ecological economics and the concepts of organisational resilience within the wider strategic management theory.

Further research is needed to develop and test resilience determinants that would guide the classification of organisational systems in the framework. Case study analysis at corporate and industry levels can provide useful insights and understanding of system dynamics, enabling managers to identify early signs of rigidity or vulnerability and instigate timely transformations at smaller scales to achieve learning and adaptation at larger system scales. The analysis can take place at various temporal and spatial scales, embedding the organisational network into the larger socio-economic and ecological networks, in order to study cascading effects of resilience between various system types. An understanding of likely system trajectories would transform RAF from a diagnostic to a decision making tool, directing strategic focus based on system classification.

Despite the difficulties of "living forward", confronting system complexities and dealing with emergent system properties, we need to address those issues in our theoretical models and their applications. To achieve that we should incorporate non-linear concepts in our theorizing, address multiple system scales and conduct longitudinal analysis, situating phenomena in their historical contexts (Meyer, Gaba and Colwell 2005). The Resilience Architecture Framework provides a basis for further theory development and applications in this direction.

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Table 1: Definitions

Organisational Resilience:	The magnitude of disturbance an organisation can tolerate and still persist.
Organisational System:	The network of interrelated actors who are systematically arranged and managed to pursue a set of activities under the collective goal of delivering a product or service.
Internal Connectedness:	The level of connections and interdependencies between internal system variables and processes.
External Connectedness:	The level of connections and interdependencies between system variables and processes and the external environment.
Self-organisation ability:	The ability of the system to re-organize its processes without external support

Figure 1: The Resilience Architecture Framework