

Making Sense of Crisis: Cognitive Barriers of Learning in Critical Situations

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Abstract: *This paper explores the role of cognitive issues in learning from crisis situations, in particular the managers' mental representations of crisis and the relationship of these "maps" with the learning process through "sense-making", as well as the possible cognitive barriers that might prevent the process of learning from crisis and thus allow the incubation of crises to develop in the company. Reviewing secondary data from the current literature, the paper focuses on the complexity of human "sense-making" and understanding the phenomena of crisis and the meaning people assign to it. Considerable attention and analysis has been done in order to assess the manner in which organizations can effectively learn to prevent crisis situations, addressing the theoretical frameworks that analyse the barriers that might occur in the learning from crisis process at an individual and group level, pointing out the need of recognition and sense-making that sometimes the current state of knowledge is not well. The paper argues that the effective organizational learning from crises requires changes in the core beliefs, values and assumptions of organizational members, which translate into sustained behavioural changes and that these changes are possible through intense cognitive processes, in particular through the way managers make sense of crisis situations.*

Keywords: *crisis, learning, cognitive barriers, sense-making, managers, literature review*

Introduction

Considerable attention and research has been done in order to assess the manner in which organizations can effectively learn to prevent crisis situations, addressing the theoretical frameworks that analyse the barriers that might occur in the learning from crisis process at an individual and group level, pointing out the need of recognition and sense-making that sometimes the current state of knowledge is not well.

Yet, less consideration has been given to the role of cognitive issues in learning from crisis situations and in particular to the role of the managers' mental representation of crisis and the relationship of these maps with the learning process through sense-making, while considering the individual defence mechanisms and the possible faulty beliefs, assumptions and rationalizations present at the group and organizational level. Moreover, the adoption of the new rules and breaking of the old ones brought uncertainties about the responsibility and accountability of managing problems, which later on led to obstruction of crisis prevention, preparedness and difficulties in response phase. This overall macro-economic and political environment, in connection with the latest development all over EU and worldwide, are influencing the way individual companies are coping with the situation and finally understand to manage crisis.

In this respect, this paper emphasizes the role of cognitive issues in learning from crisis situations. In particular, it focuses on managers' mental representations of crisis and the relationship of these "maps" with the learning process through "sense-making", as well as the possible cognitive barriers that might prevent the process of learning from crisis. In other words, we consider the theoretical concepts that address the organizational learning process, as well as the barriers that might occur in the process of learning and that organizations incubate by themselves the potential for disaster through faulty assumptions, which finally impacts over the control and management systems.

Understanding crisis in a dynamic context

It is important in our analysis to integrate the main theories and theoretical frameworks in relation with crisis and organizational learning process, as well as barriers to learning, in order to understand in more depth the cognitive issues that lie at the level of individual, group and organization.

The phenomenon of crisis has attracted extensive attention from the scholars from all kinds of fields and disciplines in an attempt to define and conceptualize it. Crisis is a much too complex and complicated phenomenon to be easily defined. Yet some of the early definitions given by scholars describe crisis as an event that threatens the most important goals of the companies such as survival and profitability, and is usually triggered by low probability events which cause extensive damage and social disruptions involving a variety of stakeholders (Smith, 1999; Shrivastava & Mitroff, 1987). Modern crises defi-

nitions have addressed the issue of crisis from the perspective of stakeholders' perception of concepts like threat, uncertainty and urgency: a severe threat or an unfavourable, destructive, life-threatening change of victims' environment, with a high degree of uncertainty, very critical and often irreversible (Dubrovski, 2009; Malle, 2009; Kouzmin, 2008); the term crisis is attributable and encompasses all types of negative events and it is applied to situations that are considered to be unexpected, undesirable, unpredictable and unthinkable which most of the time produce uncertainty and disbelief (Milasinovic et al., 2010; Heath et al., 2009).

The definition of crisis, as well as the attributions of its causes is much too diversified, as well as biased by the particular field in which it is studied. A study made by Pauchant and Douville (1993) revealed the different topics and frameworks that were used by different authors in an attempt to define crisis and crisis management. A central problem in trying to define crisis are the ambiguities that surrounds the concept itself. In the present paper when referring to *crisis* we intend to mean *organizational crisis* and the impact that a particular organization can face when hit by crisis situations; and not "societal crisis" (Jaques, 2010, p.10) where the organization is affected only as part of broader context.

The process of defining crisis has not found yet a collective acceptance and a precise meaning of the concept itself. The evolution of defining crisis starts from a traditional approach of seeing crisis as a purely adverse event that triggers the focus of the organization on the incident response (Coombs, 2007; Davies, 2005) and thus positioning the crisis management along-side operational and tactical level, a reactive management, continuing further with a process approach of crisis being considered not only sudden events, but acknowledging the existence of a period of red flags and the need of the managers to proactively identify and implement processes and activities that prevent potential crisis and/or can mitigate the ones that do occur ('t Hart et al., 2001; Pauchant & Mitroff, 1992). The complementary relationship between the two approaches of defining crisis has been further argued and discussed and the need for a new approach emerged, which considers crisis management as a *processum continuum*, a fully integrated model that sees the need for management systems to feed-back learning (Jaques, 2010; Jaques, 2009; Jaques, 2007, Roux-Dufort, 2000).

The definition of crisis faces its limitations and there is a considerable debate in the literature over the exact nature of this definition; even though there is

no collective acceptance about what crisis precisely means, there is a general acceptance of the fact that crises are situations that affect organizations as a system whole, challenging its previously held assumptions, offering urgent and novel decisions and actions, leading to potentially restructuring of the organization and affecting the system and basic assumptions of the system's members (Swartz et al., 2003; Smith, 2002; Herbane et al., 1997; Elliott et al., 2000; Turner, 1976). Scholars seem to agree on some key elements identified in relation with crisis and these are: scale and severity of the event (which usually includes loss of reputation, loss of life and property damages); the manner and speed with which an adverse event escalates into the organization as a whole; weak control systems and failure to detect the "near misses"; impaired communication and poor signal detection of adverse events; failure of the organization to detect and recognize the external warnings; the role and contribution of management, both as function and process, to the creation of conditions and climate within which errors might be generated and occur; full cultural readjustment as a direct consequence of the event, in the sense of fundamental changes in the assumptions and beliefs of the senior managers as well as of the organizational members (Milasinovic et al., 2010; Dubrovski, 2009; Heath et al., 2009; Malle, 2009; Wicks, 2001; Smith, 1999; Swartz et al., 1995; Turner, 1994; Smith & Sipika, 1993; Smith, 1990; Mitroff et al., 1989; Shrivastava & Mitroff, 1987). As Mitroff (2004) has mentioned in his works on crisis leadership the purpose of defining crisis is not to predict, but more to guide: "...it is not possible to give a precise definition of a crises because it is not possible to predict with certainty how a crisis will occur, when and why..." and when referring to organizational management he stated clearly that "...one sees the need for the Big Picture [1] thinking" (p.63).

Having in mind the aim of our study and in close connection with our intention of defining crisis, we shall refer in particular to the last of key element identified above, namely the changes in the assumptions and believes of managers in times of crisis. As argued by Pauchant and Mitroff (1992) one of the three existential effects of crisis besides the threat that it can pose to the legitimacy of the entire industry and the reversal of the strategic mission of a company, is the effect that occurs at the individual level. Crises are able to disturb the way people perceive the world, as well as their identity and "their inner sense of self-worth... their inner cohesion" (p.16). Individuals use faulty rationalizations and denials in order to be able to escape terrifying experiences, like the ones that crisis situations can bring. We will discuss in depth on the matters of *faulty rationalization* and *defence mechanisms* in the sections to come.

For the purpose of this paper and its central theme we will consider the definition of Smith (2002) that a crisis is an event in which “a fundamental challenge is made to the core assumptions and beliefs held by management (*s.n.: author’s underlying*) about the nature of risk and the resultant exposure of the limitations of the various control mechanisms in place to deal with those risks” (p.61). Also, it is important to conceptualise crisis that will contribute in its in-depth understanding. For this purpose the next two sections are focused on the systemic and complexity conceptualization of crisis.

The systemic view of crisis

Crises are known to occur in many forms. In order for companies to be able to fully address the matter of crisis and to be able to develop the right strategic approach in dealing with, it is necessary to understand the different types of crises that can occur, as well as the multiple perspectives crises can be looked at. Crises, by their very nature, create for the organizations a series of problems to cope with, especially in terms of their capabilities and abilities to coordinate the activities in times of acute stress. A particular concern of the researchers in crises management has been concentrated on better understanding of the organizational cultural process of crises incubation. In his seminal work Turner (1976) argued that organizations incubate by themselves the potential for disaster through faulty assumptions, man-made disasters, which finally impacts over the control and management systems. Turner’s idea that organizations can incubate themselves the potential for crisis was fundamental in shaping the agenda of crises management researchers. Mitroff et al. (1988a) argued for a model resulted from an organization-environment interaction with socio-technical factors (See Figure 1). The two dimensions were developed based on the Jungian typology which was, originally rooted in individual personality theory and later on were extended to the business area in analysing the organizational and strategic issues. When dealing with corporate crisis and crisis management, the need for considering not only the technical issues but also the human and social dimension is paramount. Organization must consider all dimensions when seeking to examine their basic sense of identity and thus modify their corporate culture (Shrivastava & Mitroff, 1987).

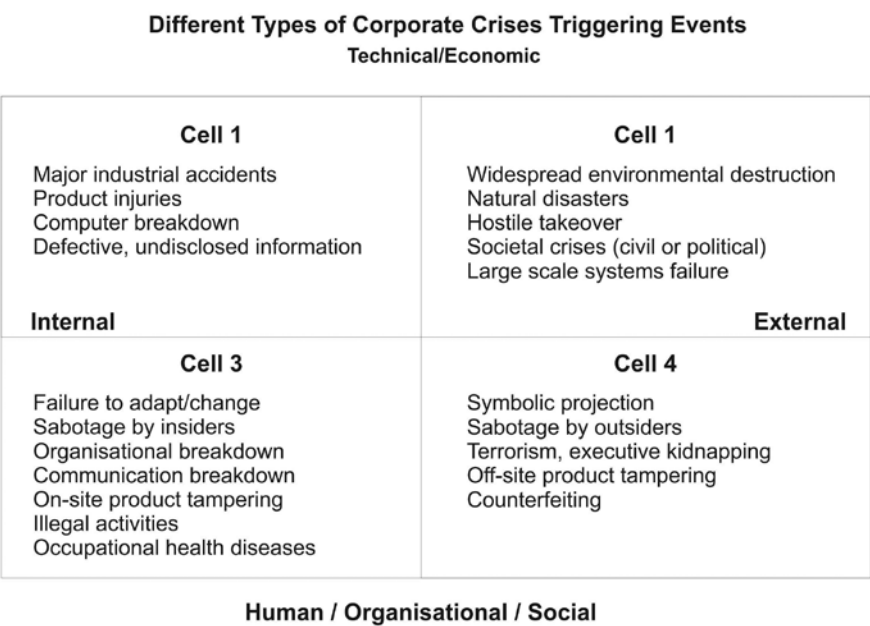


Figure 1 – Types of Corporate Crises Triggering Events
Source: Mitroff, Pauchant and Schrivastava (1988a)

Mitroff (2004) has further developed the crises typology and named it “Crises Portfolio” (p.60), clustering each type of crisis into different families: economic, informational, physical, human resources, reputational, psychopathic acts and natural disasters. We are in line with his arguments that organizations have to: be prepared for at least one crises from each family type, as every type of crises can happen to every organization; “think about the unthinkable” prior to its occurrence; be prepare for simultaneous occurrence of multiple crises; be aware that every crises is in itself capable of being both the cause and the effect of another type of crises; look to the crises portfolio as a whole and with systemic view; spread the risk across all the families of crises and thus correct the limited oversight of only considering those that the organization has already experienced; see the interconnection between all types of crises.

Having the overall picture of the crises portfolio, thinking and considering each type in itself and interconnected with all the others constitutes the bases for what it has been argued to be the *systemic view* of crisis as well as an *integrated crisis management* approach (Jaques, 2009; Gundel 2005; Brown, 2002; ‘t Hart & Boin, 2001; Penrose, 2000; Pauchant & Mitroff, 1992; Phelps, 1986).

Major Crisis Types/Risks

Economic	Informational	Physical (Loss of key plants and facilities)	Human Resource
Labor strikes	Loss of proprietary and confidential information	Loss of key equipment, plants, and material supplies	Loss of key executives
Labor unrest	False information	Breakdowns of key equipment, plants, etc.	Loss of key personnel
Labor shortage	Tampering with computer records	Loss of key facilities	Rise in absenteeism
Major decline in stock price and fluctuations	Loss of key computer information with regard to costumers, suppliers, etc. Y2K	Major plant disruptions	Rise in vandalism and accidents
Market crash			Workplace violence
Decline in major earnings			
Reputational	Psychopathic Acts	Natural Disasters	
Slander	Product tampering	Earthquake	
Gossip	Kidnapping	Fire	
Sick jokes	Hostage taking	Floods	
Rumors	Terrorism	Explosions	
Damage to corporate reputation	Workplace violence	Typhoons	
Tampering with corporate logos		Hurricanes	

Figure 2 – Crises Portfolio
Source: Mitroff (2004)

It has been empirically tested that any crisis member of the clusters can be in the same time the cause or even the effect of any other crisis and that technical and social factors are so interconnected and linked that it is almost impossible to say that a trigger of a major crisis was technical or social in its nature (Pauchant & Mitroff, 1992). Moreover management scholars have argued that crises can be considered as normal events that are triggered by both the *complexity of the system* and the *faulty rationalizations*, as well as by the interconnected and interlinked relationship of technological systems and the humans who manage them (Pauchant & Mitroff, 1990; Mitroff et al., 1988a; Mitroff et al., 1988b).

The circular, cyclical and amplifying way in which the phenomenon of crisis usually acts has been argued and empirically tested (Jaques, 2009; Hale et al., 2005; Penrose, 2000; Darling, 1994). As Pauchant and Mitroff (1992) describe “a crisis is ill structured, systemic, and messy” (p.29). The tendency of managers to look at the crisis in a very narrow way and to focus only on some aspects

of the outcome crisis could induce, such as engineering or finance, is one of the drivers that creates the effect of their vulnerability to crisis. Managers' failure to look at the crisis in a systemic view creates the crisis-proneness of the organizations (Jaques, 2008; Brown, 2002).

Last but not least, the systemic view argues that small changes in some variables of the system can amplify their effect if influenced by other variables. It is what in the theory of chaos is called the butterfly effect [2], described for the first time by Lorenz (1963). In a similar approach, the authors of management science (Obolenski, 2010; Smith & Sipika, 2003; Weick, 1988) have drawn the attention of danger that occurs in tight coupling large systems that are particularly prone to disasters due to their complex interactions, where as a change in one variable can trigger changes in other variables which finally can lead to the breakdown of the entire system, in the absence of regulation.

The complexity view

As argued in the previous subsection, unfortunately managers tend to omit the multifaceted view of the crisis and see only the restricted number of its effects, attempting though to implement additional control mechanisms. One of the most erroneous misconceptions when referring to crisis is that management refuses to see it as a positive force, "as a factor in itself contributing to the existence of the enterprise" (Pauchant & Mitroff, 1992, p.20). We are of the opinion of the authors that stated that crises have to be seen both as a positive as well as negative force acting towards the organization, both danger but also opportunity, where as the successful development of the organization can be conditioned by the destructive side of the crisis in itself (Pauchant & Mitroff, 1992; Pauchant & Mitroff, 1990).

This critical paradox have been addressed by few authors (Schwartz, 1987; Sievers, 1986) arguing that construction and destruction, life and death, order and chaos, business as usual and crisis have to be seen as a whole and not as opposites. Life and death in this complementary view is an old philosophical concept. We are strongly on the opinion that it is this paradox, this misconception of crisis and order that is the single most important reason why today's organizations are not crisis-prepared. As described by Pauchant and Mitroff (1992) there are three different crisis management approaches that, even though do not completely embrace the Heraclitus view of crises, are trying to point more or less in the same direction: (i) the management group that

see crises as normal accidents resulting only from complexity of technology, (ii) the second group that embrace a more political and socio-psychological view that considers crisis as an outcome of faulty decisions placing though the responsibility on individuals and (iii) the last group which is attempting to integrate both of the previous perspectives and thus considering crises as normal events but triggered by both system complexity and faulty decisions, technological as well as human interrelationships. We are on the side of the last management approach that looks to crisis in a more integrated perspective and sees both the “element of determinism” and “free will” (Pauchant & Mitroff, 1992, p.22) in the sense that the organizational system is very much influenced by its own complexity where order and chaos influence each variable within it and where human decisions can be in the same time potential for disasters and also potential for resolutions.

The Heraclitus view of complexity is nothing else but another way of arguing on the necessity to see the crisis in a *systemic view*, as we have argued in the previous subchapter. The complexity view sees the interrelationship between numerous variables that constitutes the whole system, but also sees the paradoxical nature of each variable comprising both the source of chaos and order (Stacey, 2003). We thus argue that it is absolutely necessary that a systemic view is followed in order to look at the phenomena of crisis urging us to understand how a change in one variable can affect the entire system, having in mind that a change in one variable is influenced and amplified by other variables. In other words, the systemic view looks on how one or more events can trigger certain patterns of interactions in the system. The complexity of the systems and their complicated, dynamic and interconnected nature make human interaction extremely difficult and attempts to correct them fail most of the times. It is this vicious circle that originates in the systems self-feeding the crisis phenomena.

Organizations are living organisms that, in order to stay alive and properly function, need both integrative as well as destructive forces. The latter are obviously more present and visible in the times of crises, yet their presence has to be seen as both a prerequisite for the life of the system itself, as well as its doom. The intellectual, emotional and existential recognition of the fragility of life and its paradoxical nature represent the psychological keystone of crisis management. Managers play a very important role in accepting this paradoxical interplay between chaos and order, life and death, creation and destruction. We argue that managers in crisis-prepared organizations do their best to reduce the likelihood of crises to occur and if so, to cope with their effects,

whereas managers in crisis-prone organizations completely deny the possibility that crises can occur and if so, they are able to manage them through increased control mechanism or, even more, invoking fate as the perfect excuse for not being able to do anything about it.

We argue that managers follow this paradoxical Heraclitian view of crisis. And this is mostly because the fundamental of this view sees crises not only as being normal events in the life of the organizations, but being life-enhancing and that individuals have to do their best to reduce the effects of crisis, even though past available knowledge may be incomplete or not suited for the particular situation. Therefore, there is a need of a more integrated conceptualization of crisis and its management.

Conceptualizing crisis: the Onion Model

Pauchant and Mitroff (1988, 1992) provided one of the most in-depth examinations of the crises phenomenon and developed a diagnosis model of crises management, meant to help managers determining their crises prone or preparedness of their organizations: the so-called *Onion Model of Crises Management*. They argued that in order for managers to conduct such a diagnosis it is necessary to examine the organization at four different levels: strategies, structures, culture and individuals' subjective beliefs and assumptions (see Figure 3). Moreover they have empirically proved that change in an organization that is crisis-prone occurs only at the superficial level of the structures and plans, rather than in the very heart of the onion where collective and individual beliefs and assumptions lies: "crises prone organizations have institutionalized 'sickness' in their culture, thus making it acceptable; furthermore they have put tremendous pressure on 'normal' individuals to become 'sick' in order to fit in...it is not what members of the family *do* that leads to disaster: it is how they *are*" (Pauchant and Mitroff, 1992, pp.172-173).

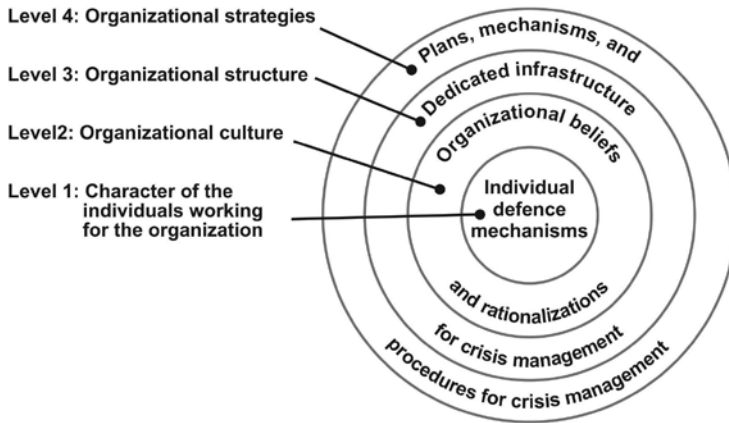


Figure 3 – Onion Model of Crisis Management
Source: Pauchant and Mitroff (1988)

The Onion Model of Crisis Management sits in the core of our case study analysis being the basis for the research methodology. It is considered and we strongly agree with this argument that there are four key factors that can determine an organization to be either crisis-prone or crisis-prepared. As these factors are uncovered one after the other in a sequential way the resemblance with the layers of the onion has been done, therefore we will also address them as *layers*: (i) layer 1: the individuals beliefs and defence mechanisms; (ii) layer 2: organizational beliefs and rationalization; (iii) layer 3: organizational infrastructure dedicated for crisis management; (iv) layer 4: plans, mechanisms and procedures for crisis management.

All the four layers are very important and need separate attention, yet, for the purpose of our analysis we will address in more depth layer 2 and, especially layer 1, as we strongly believe that an organization, per se, cannot be crisis-prepared or crisis prone, only the individuals in it can finally influence the crisis perspective of an organization, as well as be able to either foster or resist crisis management efforts. These two layers represent the unconscious and invisible aspects of the organization, being without any doubt the hardest to be seen and to be tackled.

Layer 3 and 4 are the most visible part of the Onion Model, even for an outsider of the organization. Layer's 4 plans, mechanisms and procedures are actually the crisis management *strategy* of the organization and this is really the

outmost layer and the most easily one to be seen. Layer 3 represents in fact the *structure* of the organization, both in the sense of its tangible elements such as rules of authority and power (the formal hierarchy), as well as internal norms and regulations, but also more symbolic functions such as degree of formalization and the control mechanisms that can indicate the level of trust that exists in the organization. What it needs to be said about layer 3 is that while it is very easy from an outsider to see the structure of the organization it is, ironically, sometimes more difficult for the individuals to understand how structure affects their way of working. Both layers (strategy and structure) are strongly related and can influence each other in an interactive manner.

All the four layers are interconnected with each other and are influencing each other implying a mixture of individual, organizational, structural and technological factors. Yet it has been argued that companies with a high degree of technical orientation (like the one that our Company entails – gas distribution network operator) face greater difficulties in crisis management, and this is mostly due to the fact that usually they are very well doing on the technical factors (layer 3 and 4) but they definitively tend to act poor on the human factors (layer 1 and 2) (Desai, 2010). Above all, this model links crisis with a continuous learning process clearly.

Crisis and learning

Although the relationship between crisis and learning remains still unclear in literature, there are scholars that highlight the effects that crisis situation have on learning and change (Veil, 2011; Deverell, 2009; Dillon & Tinsley, 2008; Lalonde, 2007; Smith & Elliott, 2007; Popper & Lipshitz, 2000; Crossan et al., 1999; Fiol & Lyles, 1985; March & Olsen, 1975). Schwab (2007) stated that organizational learning occurs “when experience systematically alters behaviours” (p.233) which indicates that the process of organizational learning is clearly distinguished between the cognition and behaviour, as well as between lessons *observed* (that do not change the actual behaviour) and lessons *implemented* (that actually change the individual and the organizations).

The most important factors that drive and influence the organizational behaviour is represented by the less observable, much unconscious ones referred to as “culture of the organization” (Mitroff et al., 1989, p.271), individuals, as human factors and organizations combined. Culture can thus be defined as a set of hardly articulated and largely unconscious beliefs, norms, values

and assumptions that the organization held about it, its environment and the nature of people in general. As Pauchant and Mitroff (1988) said: “culture is to an organization what personality is to an individual” (p.54). So as most of the individual personality aspects are unconscious, much of the organizations are not aware of the most important forces that influence their actions, operating in a more basic *take-it-for-granted* manner.

A theoretical model that raised extreme interest for the purposes of the present case study analyses is the one developed by Crossan et al. (1999) named “*the 4Is framework of organizational learning*”. The model consists in presenting the organizational learning as four processes – Intuiting, Interpreting, Integrating, and Institutionalizing – linking the Individual, Group and Organizational levels. The model argues for a continued and dynamic learning process and that learning do not occur only over time and across the three levels but creates “a tension between assimilating new learning (feed forward) and exploiting or using what has already been learned (feedback)” (p.532).

It has been argued that the model (Table 1) is able to identify the flow of learning in the sense that ideas occur to individuals and that individuals share these ideas among them through the process of integrating; the social dynamic process through which individuals and groups interact, may facilitate or inhibit the learning process; when ultimately learning become institutionalized at the organizational level is very often difficult to change. How managers can influence the learning mechanism along all four processes and throughout all three levels is a matter that has not been empirically tested. While using the four processes of intuiting, interpreting, integrating and institutionalizing throughout all the three dimensions of individual, groups and organizational level, we consider that the model offers good analysis grounds for possible cognitive barriers that might occur in the process of learning from crisis situation, considering the Pauchant and Mitroff (1992) Onion Model of Crises Management layers (individual defence mechanisms and groups/organizational beliefs and assumptions) while looking to the learning from crisis process involving the reflection on “sense-making”.

Table 1 – The 4Is Framework of Organizational Learning

Level	Process	Inputs/Outcomes
Individual	Intuiting (the preconscious recognition of the pattern and/or possibilities inherent in a personal stream of experience)	Experiences Images Metaphors
	Interpreting (the explaining through words and/or actions of an insight or idea to one's self and to others)	Language Cognitive map Conversation/Dialog
Group	Integrating (the process of developing shared understanding among individuals and of taking coordinated action through mutual adjustment)	Shared understanding Mutual adjustment Interactive Systems
Organization	Institutionalizing (the process of ensuring that routinized actions occur; tasks are defined, actions specified, and organizational mechanisms are put in place to ensure that certain actions take place; the process of embedded learning that has occurred by individuals and groups into the organization and includes systems, structures, procedures and strategy)	Routines Diagnostic systems Rules and procedures

Source: Crossan et al. (1999)

Based on the previously mentioned Onion Model of Crisis Management and considering Turner's (1976) seminal work regarding full cultural readjustment, we are fully in line with the scholars that sustained the idea that the effective organizational learning from crises requires changes in the core beliefs, values and assumptions of organizational members which translates into sustained behavioural changes (Aspaslan, 2009; Aspaslan et al., 2009; Smith & Elliot, 2007; Elliot & Smith, 2006; Elliott et al., 2000; Turner, 1994; Turner, 1976). Yet, as it is an ideal to believe in Turner's (1976) full cultural adjustment capability of the organizations, it is the author's opinion that this is being rarely achieved. When analysing the learning from crisis phenomena there is a clear need to address questions like *what is learned out of the crisis situations* (single-loop leaning when individuals detect and correct the flaws in the organization but do not question the basic norms or double-loop learning is achieved when inquiries made by individuals within the organization take form of restructuring its prevailing norms and assumption), *what is the focus of learning* (is it prevention in the sense of finding the cause and making sure that it will not occur again or is it reaction and response when the actions of

the individuals are aimed to just minimize the consequences) and *is learning implemented* (both cognition – changes in the state of knowledge - and behaviour – changes in the organizational overall outcome). Concerns have been raised in terms of both cognition and behaviour level when real crisis events happen (Bartunek & Moch, 1987; Staw et al., 1981), namely the fact that even though learning from crisis occurs it does not necessarily mean that it leads to improved performance, moreover the changed behaviour does not necessarily reflects the reflection of cognition and vice-versa. The same authors concluded that, in response to external threats and failures, it is very often that managers tend to response as a reflex reaction in a mechanic adaptation, rather than engaging in analytical analyses and reflective cognition.

We agree with the part of the literature pertaining opportunities for learning from crisis situations that may arise in all the three stages of crisis, but it is the post-crisis moment (crisis of legitimation) that represents the most common moment when learning is expected to occur; concerns are to be considered to the possible series of cognitive processes that may contribute to the prevention of organizational learning and so the existence of barriers to learning from crisis situations (Elliott, 2009; Smith & Elliott, 2007; Wicks, 2001), as well as the danger that such barriers act like real inhibitors to an enhancing resilience organizational capacities (Stein, 2008; Boin & McConnell, 2007). Within a crisis-prone organization, the resistance to change is more visible at the structures and plans, organizational practices and behaviours, whereas all these are ultimately determined by the individual and collective beliefs. Only learning that challenge the core organizational paradigm provide the basis of a full cultural readjustment (Smith, 2002).

Barriers to learning

The emphasis of cognitive elements of organizations and institutions is becoming increasingly relevant from the perspective that sees and recognizes the individuals' role in "understanding and prescribing meanings to the social context" (Wicks, 2001, p.22). Thus it has been agreed that individuals, either managers or lower level organizational members, construction of reality might be distorted "through frames or schema that are used to organize and interpret knowledge" (Elliott et al, 2000, p. 21).

There are several cognitive and cultural barriers generally presented in the crises management literature as blocking the learning process and creating

the danger for a crises prone organization (Fischbacher-Smith & Fischbacher-Smith, 2009; Goyal & Kulkarni, 2009; Reason, 1995; Tombs & Smith, 1995; Pauchant & Douville, 1993, Turner, 1976). Although it is very difficult to draw a clear line between which of the barriers are developed strictly at the cognitive individual level and which are embedded in the organizational culture, defence routines and schemata, as well as it is pretty much argued that most of them can be group around or associated with the rigid core beliefs and assumptions of the individuals, for the sake of clarity we shall try to group them in separate clusters.

Thus a first set of barriers are related to the *rigidity of core beliefs, values and assumptions/ lack of social corporate responsibility*, namely the issue of denial that create problems of sense making of the situations that are not as they usual are and the creation of deeply held values and assumptions. Social responsibility argument is used to surface the constraints around the rigid core beliefs, values and assumptions.

The second category is referring to *ineffective communication and information difficulties*, in very close connection with a third category of *denial, centrality of expertise and disregard of outsiders*, whereas either the information made available will hinder the identification of vulnerabilities (through making issues “un-discussable”) or the language of the discourse is very technical for the non-experts and the use of scientific evidences is considered as needed to support the core paradigm (which mainly affects and will lead to the exclusion of the outside stakeholders).

The next cluster of barriers consists in *maladaptation, threat minimization and environmental shifts* which represents an emergent property of the first two categories of barriers, namely the rigid core values and beliefs and ineffective communication. This set of barriers mainly reflects the use of both temporal and special factors to deny the possibility and existence of the worse-case scenario or the tendency to give very limited attention to the lessons learned to previous events or near misses.

Event fixation and cognitive narrowing relates to the faulty assumption that crisis are unique events thus hindering the learning process. The “it couldn’t happen here” syndrome prevents managers from analysing cues from events that happened elsewhere.

Peripheral inquiry and the decoy phenomena lead to failures of organizations to identity the real threats, allowing the blame culture and “scapegoating”

phenomena to develop and thus inhibiting the search for effective root causes of the events.

Last but not least the tendency to *focus of single loop learning and not on double-loop learning*. This barrier mitigates for the inability of the organizations to challenge the dominant paradigm that may very well be the one that caused the failure in the first place.

Alongside the above-mentioned barriers, managers are thought to play an important role in the learning process and the creation of the organization pathways of vulnerabilities (Smith and Elliott, 2007; Smith, 2005; Elliott et al., 2000; Hynes & Prasad, 1997; Turner, 1994; Mitroff et al., 1989; Starbuck et al., 1978). Much too often in the crisis legitimation phase the reality is constructed through the lens of the powerful as those in these positions of power and authority often re-write the history so as to serve their interest. Managers are believed to have a high influence over the judgment taken around the so-called “acceptable” levels of risks. Their deep core beliefs, values and assumptions are long considered as important in incubating the potential for crisis situations, as well as their ability to shape the defences that are put in place. In other words, they need to make sense of crisis in order to deal with it.

Sense-making and the process of learning

The issue of managers’ sense-making in crisis situation is argued to be a very critical and important element in the learning process (Weick, 1993; Weick, 1988). It is generally accepted that crises, most of the times, engage human actions and these can be easily amplified from a simple deviation to a major crisis situation. It is this “crisis in motion” situation that creates the need for “sense-making” that play an important role in both genesis of crisis and management and prevention of it, if understood (Veil, 2011; Deverell, 2009; Spitzbeck, 2009; Muhren et al., 2008; Weick et al., 2005; Nathan, 2004; Crossan et al., 1999; Savolainen, 1993; Thomas et al., 1993; Weick, 1988). As Weick (1988) sustained, and we agree with it, “if we can understand the process of sense-making during a crisis, then we can develop people to prevent larger crises by smarter management of small crises” (p.308).

Organizational members and, particularly, managers need to continuously *make sense* of their own conduct in order to coordinate and organize tasks. The basic principle of the organizing process is the on-going reproduction of

commonly held and shared reality through routines and standards. The only possibility an organization changes is when routines are challenged or new standards and procedure are introduced (Holmqvist, 2004; Argyris, 1977). Alongside the learning process to adapt to changing conditions, it needs reflection on *sense-making* (in the sense of questioning whether driving to the chosen direction makes sense) and only then the organization is challenging to change the core beliefs and assumptions, as well as its specific view over the outside world.

Sense-making represents the ability of an individual to make sense of circumstances based on personal interpretation and past experience (Weick et al., 2005; Weick, 1988). It is a continuum and interplay between interpretation and action. Yet it has been argued that action determines the situation, whereas preconceptions determine the appropriate action (Staw et al., 1981). The process of understanding (making sense) is facilitated by action, whereas action can affect events and make things even worse. Cognition lies in the path of action, but it is well argued that action precedes and focuses cognition (Weick, 1988).

Weick (1995) has distinguished seven different properties of sense-making: *identity constructing, enactment, social context, on-going understanding, cue extraction, plausibility*. All these properties taken together are suggesting that sense-making should only occur when individuals are socializing in order to make things done, be resilient, keep showing up, treat constraints as being self-imposed and use retrospective to get the sense of the direction. As Weick et al (2005) stated “these are micro-level actions. They are small actions. But they are small actions with large consequences” (p.419). We have tried in Table 2 below to summarize all seven properties of sense-making.

Table 2 – Sense-making Properties

1. identity constructing	<ul style="list-style-type: none"> - individuals and organizations seek to discover what it “knows” and “thinks” about itself and the environment, whereas this construction about the identity will shape the meaning of the information and determine what problems must be solved; - depending who’s the “sense maker” the definition of the problem might change
2. retrospection	<ul style="list-style-type: none"> - the examination of the past practices so as to learn or unlearn things about the actual context;
3. enactment	<ul style="list-style-type: none"> - organizations enact part of the environment they live in though selective attention and interpretations; - individuals very often do not know what is the appropriate action to be taken until they really take action, guided by preconceptions, and see what’s happening; - action determines situations and are subject to multiple interpretations;
4. social context	<ul style="list-style-type: none"> - individual learn about events while comparing what they see with what others see and eventually “negotiating” an acceptable version of what happened; - it is the process of talking, interacting and dialogue with others;
5. ongoing understanding	<ul style="list-style-type: none"> - sense making is about seeking to understand what events mean in close relationship with your organization; - it is moving from one situation to another, making and revising our beliefs and assumptions;
6. cue extraction	<ul style="list-style-type: none"> - individuals decide what to pay attention to and what not; - the extracted cues out of a situation enable people to act and increases the confidence in earlier cues;
7. plausibility	<ul style="list-style-type: none"> - it is often more practical that individuals look to what is more plausible rather than finding accuracy; - plausibility helps people to explore what they see and energize them to act, while the search for accuracy can de-energize as the search drags on and on

Source: Weick (1995)

Sense-making represents a meta-cognitive framework used to “get a grip on the equivocal external environment and its proneness to multiple interpretations” (Muhren et al., 2008, p.200). Questions like “what is happening out there?”, “why it is happening?” or “what does it mean?” are frequently addressed through a sense-making process (Weick et al., 2005). The basic components of sense-making are information seeking, creating, processing and using (Thomas et al., 1993) as well as comprising intuitions, opinions, effective responses, evaluations and questions (Crossan et al., 1999; Savolainen, 1993). As Weick (2005) has stated in its ground-breaking work, “sense-making is

also to understand how people cope with interruptions” (p.5). These interruptions, situations when individuals are confronted with ill-structured problems and ambiguity, are most evident in crisis situations in which continuity is an exception while discontinuity becomes the rule, and this is the reason why sense-making is of particularly relevance.

It is argued that *meaning* to a given situation (e.g. crisis situation) is guided by organizing frameworks or schemata (Bartunek & Moch, 1987): “Schemata therefore guide people as they attend to some aspects of their experiences and, by implication, ignore others” (p.485). Individuals in the organization often continue to use out-dated schemata and no longer will reach to constructive solutions (Nystrom & Starbuck, 1984), as well as they engage in the same behaviours that led to the negative consequences rather than challenging their core beliefs that actually drove the unproductive behaviours. To synthesize:

1. people see the world through their own motives and based on *patterns of old experience* that will influence how they will view future experiences (and this is mostly revealed in crisis situation which are newsworthy events);
2. “we experience the world by creating categories and making distinctions among them” (Langer, 1989 cited in Veil, 2011, p.124), as we recognize only what we are expecting to see and act in a routine fashion;
3. people tend to see only what they expect to see within their “box” and are blind to conditions that do not fit inside this box; they construct an expected world as the present one is too complex to handle and thus process only the information that fits to the expected world, finding reasons to exclude information that might contradict it;

Cognitive barriers that have been revealed in the crisis management literature as being the most powerful barriers to learning from past crisis experience situations can only be addressed and understood through the concept of sense-making. “Actions devoted to sense-making play a central role in the genesis of crisis and therefore need to be understood if we are to manage and prevent crisis” (Weick, 1988, p.308). By not making sense of complex events like crisis situations, failure to remember these events or labelling them as “black swans” (events that are viewed as outliers in not plausible) (Taleb, 2010) managers run into risks of failing to effectively learn lessons about the underlining processes that created these adverse events in the first place.

Conclusions

Crisis is definitively capable to provide stimulus that generates shifts within organizations. The way it does this is especially by revealing and highlighting the limitations of existing and prevailing norms, beliefs and practices of the organizations and its members (Huberman, 2001; Levitt & March, 1988). Understanding this and acknowledging the need for change stays in the ability of managers to filter, interpret and make-sense of the crisis situation. Fail to do this effectively will lead to failure to learn from crisis and so create the crisis proneness and vulnerability of the organization itself.

As revealed in the present paper it is clear that considerable attention and research needs to be done in order to assess the manner in which organizations can effectively learn to prevent crisis situations, addressing the theoretical frameworks that analyse the barriers that might occur in the learning from crisis process at an individual and group level, pointing out the need of recognition and sense-making that sometimes the current state of knowledge is not well.

Yet, less consideration has been given to the role of cognitive issues in learning from crisis situations and in particular to the role of managers mental representation of crisis and the relationship of these maps with the learning process through sense-making, while considering the individual defence mechanisms and the possible faulty beliefs, assumptions and rationalizations present at the group and organizational level. Moreover, there is less evidence on the existing knowledge on crisis and crisis management, as well as on organizational learning from crisis in companies acting in the Southern Eastern European environment.

Last but not least, the study argues that the effective organizational learning from crises requires intense cognitive processes of the managers “making-sense” of crises situations thus enabling changes in the core beliefs, values and assumptions of organizational members finally translated into sustained behavioural changes. Managers’ mental representation of crisis through “sense-making” is able to both facilitate the process of organizational learning from crisis situations and also to reveal the existence of possible cognitive barriers to learning from crises situations. The study argues that failing in addressing these barriers may contribute to the prevention of organizational learning.

In sum, this paper tries to bridge these gaps by providing the basis of a future

research since there is a pressing need to ensure greater empirical testing and validation of the main learning from crisis concepts.

Endnotes

[1] When referring to “Big Picture” Mitroff has envisaged the systemic approach on having the overview of the organization; the “Big Picture” is a concept which is represented by two of the Jung/Myers Briggs systems/dimensions of psychological language: Big Picture – Thing (Intuitive Thinking) and Big-Picture People (Intuitive Feeling).

[2] The theory suggests that the flap of a butterfly wing in one part of the world can trigger a large atmospheric change like a cyclone in another part.

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