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A Diagnostic Method for the Study of Disaster Management: A Review of Fundamentals and Practices

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1. Introduction

A diagnostic method for the study of disaster management, based on a synthesis of principles considered fundamental to successful crisis response, will be presented in this chapter. These principles can be grouped into four main categories: planning/preparedness, coordination, leadership and civil society behaviour (Lalonde, 2011). Several studies of disaster management have highlighted these categories separately, but they have seldom been considered together in a comprehensive perspective. This method of classification should allow researchers and managers to have a better overview of recurrent patterns that emerge from real cases and practices and provide avenues for resolving discrepancies with fundamental principles. This approach is based on a cross-sectional analysis of disasters, the method favoured by a number of researchers (Hart et al., 2001; Quarantelli, 2005). Based on reports from national inquiries and expert committees on four major disasters that occurred in Canada, France, the United States and Southeast Asia, this study presents a diagnosis for each of the four disaster management categories. The results show recurrent dysfunctional patterns of disaster management in each category: 1) public authorities have limited capacity and preparedness to cope with disasters; 2) the links between field responders and central administrations are dysfunctional, partly because administrators tend to operate in a vacuum; 3) grassroots leaders tend to demonstrate more key leadership skills than government officials; 4) citizenship behaviours are poorly integrated into formal response, so community inteventions tend to operate independently of official media channels. These results confirm numerous observations in the literature on the importance of several aspects of disaster preparedness and response: integrating disaster planning into the overall organization strategy on an ongoing basis, establishing networking structures, developing adaptive leadership skills at each phase of a disaster, and incorporating helping behaviour from civil society in disaster responses. The chapter conclusion will attempt to highlight the reasons that may explain the recurring deficiencies and problematic patterns in disaster management.

2. A diagnostic method based on major trends in the disaster literature

For many decades, the field of disaster management has been characterized by two main trends (Lalonde, 2007): organizational contingencies and planning/preparedness for a

disaster. On one hand, the literature on organizational contingencies relies mostly on the sociology of disasters (Drabek & McEntire, 2003; Dynes, De Marchi, & Pelanda, 1987; Fischer, 1998). This field of inquiry has provided a wealth of data highlighting the complex and often disorganized dynamic amongst the responders themselves, as well as the roles and behaviours of citizens during crises (Helsloot & Ruitenberg, 2004; Perry & Lindell, 2003b). The research also draws attention to the political geometry of interventions, which varies depending on the missions of the responding organizations (Kreps & Bosworth, 2007), the strategies deployed (e.g., coalitions, alliances and disputes over control of resources; "garbage-can" approach), and the specific structural modalities or archetypes adopted to deal with the crisis (Lalonde, 2004; Macintosh & Maclean, 1999; Quarantelli, 1988). On the other hand, the disaster planning literature emphasizes formal or explicit knowledge and offers a number of normative pronouncements aimed at increasing the efficiency of disaster interventions. This often takes the form of recommendations which are presented as the correct way to cope with crisis situations. Authors in this field emphasize the need for emergency planning (Quarantelli, 1988, 1996); the identification and description of actions pertaining to various phases of a crisis, from detecting early warning signs to post-crisis activities (Mitroff, 1988); the need to promote preventive behaviour and the development of a culture of security, both within organizations and in the population at large (Denis, 2002); and the importance of training (Borodzicz & Van Haperen, 2002), developing communication skills and fostering leaders' awareness of their roles in times of crisis (Heifetz et al., 2009; James & Wooten, 2005; Wooten & James, 2008). In the disaster planning literature, the focus is on formalizing a set of rules, routines, techniques and general guidelines to follow in order to master the risks and dangers.

Together, these two major trends have contributed greatly to research in disaster management and knowledge development in the field. They are highly instructive for managers and policy makers and have contributed important insights to the discipline that can be used in the formulation of a diagnostic method capable of evaluating responses to disasters. The questions facing researchers are the degree to which organizations integrate this research-based knowledge, how it is actually implemented in practice, where the most common pitfalls can be found, and why they remain so commonplace. It is the aim of this chapter to respond to these questions. The next section will present the four frameworks that form the foundation of our diagnostic method for the analysis of disaster management. We will then present findings based on applying this diagnostic method to four major disasters that occurred in Canada, France, the United States and Southeast Asia. These implications of these findings are then discussed, concluding with the main reasons that dysfunctional patterns in disaster management persist.

3. Examination of disaster management based on four integrated frameworks

3.1 Framework for a diagnosis regarding planning and preparedness

Many authors argue that organizations can significantly increase the effectiveness of their crisis response by establishing an integrated and comprehensive risk management process and regularly updating their crisis preparedness (Alexander, 2005; Lagadec, 1996; McEntire & Myers, 2004; Perry & Lindell, 2003a; Quarantelli, 1988). This process should be part of the organization's overall strategy (Pauchant & Mitroff, 1995; Pollard & Hotho, 2006; Sapriel, 2003), should not be dealt with as an exceptional phenomenon (Roux-Dufort, 2007), and

should be led by a senior manager acting as facilitator (Denis, 2002; Pauchant & Mitroff, 1995). Many authors deplore the fact that planning exercises are limited to establishing routines and formal plans that will rarely be put into practice (Comfort, 2005; McEntire & Myers, 2004; Perry & Lindell, 2003a) rather than situating planning within an ongoing process to improve the organization's intrinsic preparedness to cope with crises (Boin & Lagadec, 2000; Robert & Lajtah, 2003; Pearce, 2003). According to Perry and Lindell (2003a), a serious and rigorous approach to crisis planning and preparedness should be based on four major components: 1) evaluating the risks (vulnerability assessment); 2) evaluating the ability of the organization and community to cope with crises (capacity assessment); 3) developing and maintaining the skills of individual responders; and 4) establishing a flexible structure that can be deployed quickly when a crisis arises. In the same vein, Robert and Lajtah (2003) suggest that crisis management should be understood as a process that is continuously enriched by the knowledge, experience and training of managers, staff and other stakeholders who work closely with the organization, as well as by conducting regular simulations.

Because crisis preparation is never definitively completed, such knowledge and experience must be monitored and updated regularly, and should not be limited to drafting plans and designing emergency response protocols. Any number of situations can drive the need for regular updates, such as key people leaving the organization, taking valuable expertise with them; changes in resource availability (financial, material and human) which can impact the emphasis given to planning (Boin & McConnell, 2007; McConnell & Drennan, 2006); and variations in the nature of risks over time. Table 1 summarizes the components of the diagnosis that should be considered at the planning/preparedness level.

Components of the diagnosis	Yes	No
<u>Formal planning</u> 1. Is the plan (or plans) up to date? 2. Does the plan take into account community behaviour? 3. Does the plan include the coordination of the various responders? 4. Does the plan include personnel training?		
<u>Risk assessment</u> 5. Have the risks been evaluated in advance? 6. Does the organization have a multiple-risk plan? 7. Has the population been informed of the potential risks?		
<u>Capacity assessment</u> 8. The organization acts with diligence and purpose: a) Have the crisis managers verified that their interventions will not harm the population? b) Do the crisis managers regularly invest in the development of crisis intervention capabilities? 9. The organization shows flexibility in the application of response routines: a) Have the managers verified that responders act in a concerted manner? b) Have the managers adapted their interventions to the contingencies?		

Table 1. Diagnosis regarding planning/preparedness.

3.2 Framework for a diagnosis regarding coordination

Along with planning, coordination is one of the central themes in the disaster management literature (Drabek, 2007; Morris et al., 2007). Indeed, the lack of integration of activities among the various stakeholders has been identified by many authors as one of the major ongoing problems in crisis response coordination, highlighting as well the fragmented, even conflicting nature of their interventions.

The sheer number of stakeholders[1] involved adds to the complexity of coordination and can contribute to a lack of integration. The ability to create collaborative networks in times of crisis has been identified as an important factor in effective response (Wise, 2006). Many authors stress the importance of incorporating stakeholders, organizations, governments and local communities into a network of responders (Oloruntoba, 2005; Pearce, 2003; Waugh & Streib, 2006). In fact, in times of crisis, organizations and their stakeholders become more interdependent (Alvarado & Mendis, 2010; Kruchten et al., 2008) for a variety of reasons including the urgency to act in the absence of information normally considered essential for decision-making (Quarantelli, 1988), the increased uncertainty concerning what should be done, the possible negative effects on the reputations of those involved in the crisis, and the long-term impacts on the future of the organizations or their official representatives. Thus, during crises, organizations typically put diverse strategies into practice, most of which are based on forming alliances, alliances made on the basis of the personal contacts of the strategists and senior leaders involved. Unfortunately, these strategies are often imbued with political gamesmanship (Rosenthal, Charles & Hart, 1989). In most instances, however, they are not implemented blindly, as organizations tend to form alliances with others that are comparable in terms of status or legitimacy (Drabek & Hoetmer, 1991; Dynes, 1978; Wolensky, 1983), becoming similar to the "coalitions" described by Cyert and March (1963). According to several authors (Dynes, 1994; Morris et al., 2007; Quarantelli, 1997), there are two main models for defining coordination. The first is based on a traditional hierarchy in which relationships between the components of a system are clearly defined, including the distribution of authority. As these and other authors point out, while this model is very effective for routine and repetitive activities, it can result in inflexible structures that discourage adaptation and change (Takeda & Helms, 2006a, 2006b). The second model is based on networks of interdependent stakeholders that go beyond simple hierarchy and function through cooperation. This model assumes that relationships among organizations or individuals cannot be defined through formal ties alone, and that networks are formed among stakeholders who share values or beliefs. Yet, although the network model is based on greater structural flexibility and agility, it can prove difficult to implement, especially when the actors involved are not accustomed to working together or, worse, when they see each other as competitors. Morris and colleagues (2007) suggest that "contingent coordination", understood as a mix of traditional hierarchy (or the "command and control" model) and network-based coordination is a far better approach to solving the multifaceted problems usually associated with coordination. This approach combines the advantages of accountability and role definition associated with the classical

[1] Tierney (2003), for example, noted that the Disaster Research Center counted at least 500 organizations involved in the first ten days after the attack on the World Trade Center on September 11, 2001.

top-down approach adopted by most public bureaucracies with the advantages of a flexible, negotiated and adaptable structure in order to deal with problems as they arise in the course of a disaster.

Insofar as one of the best predictors of effective coordination during crises is prior knowledge of potential collaborators (Dynes, 1994), a socio-ecological view of networks (Trist, 1983; Kapucu et al., 2010) may address the difficulties individual organizations face in dealing with complex or chaotic environments when attempting to operate in isolation. In the crisis management literature, the "crisis room" is often identified as the place for interaction among stakeholders from various organizations who are striving to act in concert in the heat of a crisis. In essence, the crisis room transcends the limiting particularities of each organization because, taken separately, each one is incapable or unable to solve the meta-problems generated by a crisis "because they lack the requisite variety" (Trist, 1983: 272). Beyond their inherent lack of flexibility, bureaucratic structures pose other intra-organizational issues that impact coordination during crises (Quarantelli, 1988). These issues concern: the modes of delegation and communication among units; the organization of work, such as the allocation and assignment of tasks; the ability of responders to demonstrate self-management, resourcefulness, imagination or improvisation (Lalonde, 2010); and the ways in which information is transmitted and communicated to maintain overall cohesion. Quarantelli (1988) provided an excellent summary of the principal challenges in coordination that he sees as revolving around three main elements: 1) communication, both internal and external, as well as with the public; 2) the exercise of authority; and 3) the development of cooperative structures. For each of these three aspects, the author defines the principal coordination issues to be considered in the context of crisis response. The main principles put forward by Quarantelli are summarized in Table 2.

Components of the diagnosis	Yes	No
Communication 1. Able to create new mechanisms to facilitate internal and external information flow? 2. Provides appropriate information to the population? 3. Integrates information from outside the formal decision-making mechanisms?		
Exercising authority 4. Authorizes the delegation and decentralization of certain decisions? 5. Demonstrates collegiality in the distribution of tasks? 6. Able to resolve conflicts between organizations? 7. Able to mobilize and motivate personnel and avoid burnouts?		
Developing cooperative structures 8. Works in collaboration with other leaders? 9. Integrates emerging local groups in the crisis response? 10. Maintains and strengthens harmonious relations with other leaders during normal (non-crisis) periods?		

Table 2. Diagnosis regarding coordination.

3.3 Framework for a diagnosis regarding leadership

When a crisis occurs, in addition to expecting their leaders to make critical decisions, citizens will turn to them for support, comfort and reassurance. As crises may take many forms and develop in very unexpected directions, crisis leadership must be highly adaptive (Heifetz et al., 2009; Ivanescu, 2011; Snowden & Boone, 2007). It not only requires rapid reactions, but also appropriate responses (Garcia, 2006; Lagadec, 1996), from implementing plans and creating tools to fostering a capacity for judgment and directing operations. Crisis leadership should not be strictly based on hierarchy and a centralized, command-and-control approach, but rather on collective sense making (Boin et al., 2005; Wooten & James, 2008), the construction of a shared legitimacy and the principles of continuity and cooperation (Dynes, 1983, 1994; Ivanescu, 2011; Lagadec, 1996; Quarantelli, 1988).

While effective crisis leadership entails the ability to mobilize and communicate adequately with people, it also requires a keen sensitivity to the external environment, such as the capacity to pick up on indications of an impending crisis, the ability to anticipate, the ability to view events in a systematic way, and the capacity to work in a network and with emerging actors (Boin et al., 2005; James, Wooten & Dushek, 2011; Watkins & Bazerman, 2003; Wooten & James, 2008). Of course, the skills required in times of crisis do not develop in a vacuum; they must be painstakingly cultivated beforehand through appropriate training, coaching and mentoring. According to many authors (Boin et al., 2005; Lagadec,1996; Smits & Ally, 2003; Wooten & James, 2008)[2], managers must develop certain specific abilities required in the various phases of a crisis. Boin et al. (2005) put forward five core tasks related to crisis leadership: sense making, decision making, meaning making, terminating and learning. These tasks punctuate the general process of crisis management — from the onset (in planning/preparedness, including detection of early warning signs) through the post-crisis period (when learning takes place). For their part, Wooten and James (2008) differentiate key skills for each phase. Thus, the capacities to give meaning to crisis warning signs and anticipate their potential impact on others are two key skills during the detection phase. In the prevention/preparation phase, the authors suggest that the capacity to convince organizational members of the importance of investing in crisis management planning is key. They argue that an agent of change who is skilled in issue selling is essential to bringing organizational leaders to pay attention to crisis preparation. Wooten and James (2008) also suggest that two additional skills are essential during the preparation phase: organizational agility (i.e., having detailed knowledge of the organization and a systemic view of the interaction dynamics likely to be deployed to face the crisis) and creativity (i.e., the capacity to imagine novel scenarios to deal with the contingencies of the crisis situation). At the height of the crisis, in the context of direct and active interventions, the capacity to make decisions under pressure, to ability to communicate effectively, and the courage to take needed risks is critical success factors. During the phase of reconstruction and returning to normal activities, promoting organizational resilience and adopting

[2] Some of these authors, such as Boin et al. (2005), have focused on public leadership during crises, whereas others, such as James, Wooten & Dushek (2011), have focused primarily on business leadership. Despite this distinction, the results are largely in agreement.

ethical and responsible behaviour are two additional skills. On this point, the authors mention that organizations never completely return to how they were before the crisis. It is important that lessons be learned based on the strengths and weaknesses revealed during the crisis, with a concomitant review of any errors that can be avoided in the future. Even more importantly, the acknowledgement of these shortcomings will undoubtedly foster the support and confidence of stakeholders. Finally, adopting a learning approach encourages further reflection on improving crisis management practices outside the phases related to the crisis itself.

Components of the diagnosis	Yes	No
Before the crisis 1. Able to pick up on and make sense of early warning signals and the potential impacts they presage? 2. Uses persuasion and is skilled in communicating ideas? 3. Adopts a systemic view of the situation? 4. Demonstrates imaginative thinking?		
During the crisis 5. Maintains composure, enabling good decision-making under pressure? 6. Communicates effectively with entourage? 7. Takes "calculated" risks?		
After the crisis 8. Consolidates future interventions with a view toward resilience? 9. Regains the trust and confidence of other responders and employees? 10. Adopts a learning attitude?		

Table 3. Diagnosis regarding leadership.

3.4 Framework for a diagnosis regarding the behaviour of civil society

Civil society's behaviour in the face of crises is the subject of popular perceptions and myths, which a number of researchers have attempted to deconstruct (Drabek & McEntire, 2003; Dynes, 1983, 1994; Helsloot & Ruitenberg, 2004; Perry & Lindell, 2003b; Quarantelli, 1988; Tierney, 2003). As early as the 1960s, the sociologist Allen Barton (1969) was one of the first to introduce the notion of an "emergency social system" to convey the adaptive response of communities towards disasters likely to affect them. Far from giving rise to anti-social behaviour, disasters may bring about an "esprit de corps" or what Barton calls a "therapeutic community" composed of all the civic behaviours aimed at providing emergency assistance in the first moments following the destructive impact of a disaster (Drabek, 2007). Far from being a group of panicked and irrational actors, civil society can bring together citizens who are generally in control of themselves, make logical decisions, and provide initial help to their fellow victims. Dynes (1983), for example, uses the term "situational altruism" to characterize the expansion of civic roles in the form of mutual aid and expressions of solidarity towards victims.

The expansion of new roles and responsibilities among citizens can be a considerable challenge for organizations with more established and formal missions. In fact, the

convergence of a large number of volunteers who lack training and knowledge of emergency procedures can impede proper coordination of response activities and block access routes to the disaster site (Drabek & McEntire, 2003). This observation, made notably by Helsloot and Ruitenberg (2004), is nonetheless counterbalanced by the advantages provided by help from citizens. In the opinion of many authors, it is in the best interests of governments to understand these advantages and integrate these civic behaviours into their coordination mechanisms. For example, in certain American cities, authorities have understood these advantages and have established civilian training programs (Tierney, 2003). The role of civil society may vary depending on the particular phase of the disaster, the type of disaster, and the characteristics of the affected communities.

Quarantelli (1993) thus argues that natural disasters usually bring about more consensual behaviour and empathetic gestures, whereas riots, environmental disasters or those resulting from manufacturing activities are more controversial. Regarding citizen involvement in different crisis phases, Helsloot and Ruitenberg (2004) point to the regrettable fact that the average citizen is little inclined to and not very interested in investing in preparing for a crisis. Citizens can, however, form organized groups after a crisis or disaster to make their voices heard. It is thus important to take into consideration the amount of information to which citizens have access before, during and after a disaster. The period leading-up to a crisis appears crucial, since the lack of time during the crisis will quickly prevent authorities from communicating relevant information to actors in civil society. Overcoming this obstacle is, furthermore, a real test of strength for those responsible for crisis management. In order to ensure that there is a clear understanding of what is happening, managers need to have strong communication skills and learn how to deal with the public nature and media coverage of most crises (Pollard & Hotho, 2006).

The role of civil society can also be examined from on the standpoint of citizens' views of their leaders and, more generally, of the reputation of response organizations during crises, particularly as represented in the media (Taylor, 2000; Alsop, Littlefield & Quenette, 2007). This can result in the search for guilty parties and the loss of confidence in leaders and institutions. In this regard, the role of the media during crises is also critical; they are viewed variously as probing, irritating and provoking or, conversely, as partners in communicating information to the public. According to several authors (Coppola, 2005; Littlefield & Quenette, 2007; Oloruntoba, 2005), the media can play a positive and constructive role, provided they act and behave like partners and allies in times of crisis. One critical role for the media would then be relaying information to the public. Coppola (2005) further asserts that journalists are not necessarily trained and prepared to fulfill this role, which is why the media must become aware of their impact on crisis management and especially in the management of perceptions. In summary, the need for a better understanding of community characteristics and civic behaviour in times of crisis is one of the guiding principles identified in the planning and coordination literature (Drabek & McEntire, 2003; Pearce, 2003). Altruistic acts give rise to activities that can be organized to a greater or lesser degree, an aspect that should be considered when coordinating crisis responses (Coate et al., 2006).

Components of the diagnosis	Yes	No
Civic behaviours 1. The population engages in: a) Altruistic acts? b) "Normal" panic behaviour? c) Delinquent acts such as looting or interference with public safety? d) Non-compliance with evacuation orders? e) Abdication of civic roles or lack of assistance to persons in danger?		
Emergence of grassroots leadership 2. Local and national actors — previously lesser known and/or less central to formal authority — act as consciousness-raisers?		
Role played by the media 3. Emphasize mostly what is dysfunctional? 4. Tend to focus on identifying the guilty parties? 5. Communicate useful information to the population?		

Table 4. Diagnosis regarding the behaviour of civil society.

4. A meta-analysis of four cases based on the diagnostic method

4.1 Choice of cases

In the last decade, many countries have experienced major disasters that have captured our collective imagination due to their very serious consequences in terms of death and material damage. These events involved mobilization of public services and the highest governmental authorities. They became the subject of a number of investigative reports by experts in the field and national commissions, and these reports now constitute invaluable sources of information for researchers (Quarantelli, 2005). This study thus employs a qualitative approach consisting of the content analysis of reports on four national disasters: Hurricane Katrina in the United States (2005), the tsunami in Southeast Asia (2004), the heat wave in France (2003) and the SARS outbreak in Canada (2003). Each of these disasters is treated as a case (Yin, 2009) and analyzed at a macro level. To properly describe each case, an exhaustive study of the national disaster inquiries was conducted to reconstruct a narrative of the events (Boje, 2008) that provides a thorough understanding of the context and the behaviour of the main actors. These four cases were chosen based on their high visibility, the fact that they were studied in depth by committees of experts or commissions of inquiry, their extensive coverage in the media, and the considerable upheaval they caused for the populations of these countries as a whole.

4.2 Review of two main sources of information

A meta-analysis of disaster management in the field for each case was conducted based on two complementary sources of information: the scientific community, in the form of research results (reliable data), and expert committees, in the form of recommendations[3].

[3] After an initial classification of materials, "information holes" occurred mostly in the categories of leadership and the behaviour of civil society. Additional information to complete the analysis was therefore obtained from other sources, mainly newspapers, doctoral dissertations, and previously published articles focusing on the four disasters included in this study.

The study was conducted in two stages. First, a review of the academic research[4] on each of the four disasters studied in this paper was undertaken to identify recurring themes relating to disaster management practices. The results of this exercise, presented in the first part of the chapter, led to the identification of four major themes -- planning/preparedness, coordination, leadership and behaviour of civil society, as well as some guiding principles considered by researchers as the standard needed for effective disaster management[5]. The research design also enabled the classification of recommendations and lessons drawn from the four disasters, derived from the content analysis of the following expert committee reports (listed in references): for the SARS outbreak in Toronto, the report of the National Advisory Committee on SARS; for the public health impacts of Hurricane Katrina in New Orleans, the reports from the US House of Representatives (2006) and from the White House (2006); for the tsunami in Southeast Asia, the reports from International Federation of the Red Cross (2005) and United Nations (2005); and for the heat wave in France, the report from the National Assembly (2003, 2004). Classification of the main recommendations in these reports led to a diagnosis in each of the four areas of crisis management based on the precepts put forth in the academic literature.

4.3 Creation of a meta-matrix

The most pertinent data from research papers and from expert and/or public reports were collected, classified and recorded in a meta-matrix as described by Miles and Huberman (1994). The meta-matrix was organized into sub-themes, which were developed based on quotations drawn from the various reports[6]. For each case, both the head researcher and a research assistant read and classified relevant data, in accordance with the principle of double coding, thus increasing the consistency and internal validity (Yin, 2009). A preliminary document was prepared identifying the main information points and the sub-themes. A second document was then prepared in which the most relevant quotes were grouped into the four major themes identified from the literature review (planning/preparedness, coordination, leadership and behaviour of civil society). Some quotes were removed to avoid redundancy[7]. The quotes and sub-themes were added, modified or removed using an inductive approach and were contingent.

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[4] Articles published between 2000 and 2008 in specialized journals such as *Disasters,* the *Journal of Disaster Policy*, *Research and Management*, the *Journal of Contingencies and Crisis Management*, *Disaster Prevention and Management* and the *International Journal of Emergency Management* provided the basis for this review.

[5] The work of Perry and Lindell (2003a), Alexander (2005) and McEntire and Myers (2004) has been key in the development of guiding principles in planning and preparedness. The work of Dynes (1983, 1994) and Quarantelli (1988) has provided the basis for statements about coordination. For leadership, the recent work of Wooten and James (2008) as well as the work of Boin and colleagues (2005) have identified the key skills required in times of crisis. Finally, considerable research from the Disaster Research Center as well as that of Helsloot and Ruitenberg, 2004 and Perry and Lindell, 2003b were used to identify the main principles concerning the behaviour of civil society.

[6] Each quote or excerpt specified the source (page and report name).

[7] There was considerable redundancy in the diagnosis provided in the various reports selected for analysis. The method of classification used was in accordance with the saturation principle for qualitative methods (Corbin & Strauss, 2008). In addition, other authors have reached the same conclusion with regard to a strong convergence in the diagnosis of the management of these crises (Boudes & Laroche, 2009).

5. Overview of the main results

Table 5 summarizes the principal results of the application of the diagnostic method to each case. The next section presents the details of the diagnosis for each category (planning/preparedness, coordination, leadership and the behaviour of civil society).

5.1 Diagnosis regarding planning and preparedness

Public authorities in three of the four regions studied had crisis management plans. Prior to the SARS outbreak, the government of Ontario did not have a plan in effect to fight a pandemic. This situation significantly impeded the effectiveness of preventive interventions and the coordination of various actors in the health system, not least because they had to actually create a plan from the ground up in the midst of the ongoing crisis. The need for such planning, however, was well-known and had been brought to their attention on a number of prior occasions, including the report of the Krever Commission's inquiry into the contaminated blood scandal. As early as 1997, six years before the SARS outbreak, Justice Krever had stipulated that chronic under-financing of public health services was harmful to the population. In Ontario, Justice O'Connor, who also delved into questions concerning the financing of the provincial public health system, noted that the Health Minister had broadened the responsibilities of public health agencies without providing the necessary additional funding. In short, well before the arrival of SARS, it was clear that the public health system did not have sufficient capacity to cope with emergencies or crises:

It is troubling that Ontario ignored so many public health wake-up calls from Mr. Justice Krever in the blood inquiry, Mr. Justice O'Connor in the Walkerton inquiry, from the Provincial Auditor, from the West Nile experience, from pandemic flu planners and others. Despite many alarm calls about the urgent need to improve public health capacity, despite all the reports emphasizing the problem, the decline of Ontario's public health capacity received little attention until SARS. SARS was the final, tragic wake-up call. To ignore it is to endanger the lives and the health of everyone in Ontario. *(SARS Report, 2006, 4:40)*

Similarly, in the Indian Ocean region, a number of experts (Kelman, 2006; Oloruntoba, 2005; Schaar, 2005) had pointed out serious deficiencies in national planning, basic support infrastructure and risk evaluation. Indeed, studies conducted since the 1980s had demonstrated the importance of being better prepared to deal with a tsunami, but the Indian government in particular considered that this threat was not the most dangerous or significant one for the country:

In 1967, the issue of a tsunami warning system for India was raised at the Indian Institute of Science in Bangalore. The idea was supported in principle, but with frequent and severe droughts, river floods, and cyclones causing known levels of destruction, tsunamis were considered to have a lower priority. (*Kelman, 2006: 183*)

In Indonesia, the government had started to develop a national tsunami detection system to warn the population of danger, but this system was far from ready at the time the quake struck in December 2004. Thus, in contrast to countries in the Pacific Ocean, several Southeast Asian countries did not have any modern technology at their disposal to protect the population, such as sensors capable of precisely detecting earthquakes or tsunami waves and transmitting vital information to governments. It appears that prior to the 2004 tsunami:

[…] some agencies were actively trying to develop tsunami warning systems in some sectors of the Indian Ocean. For example, the Intergovernmental Oceanographic Commission (IOC), the Indian government, and the Indonesian government were pursuing an Indian Ocean tsunami warning system, but were unable to obtain adequate resources. *(Kelman, 2006: 182)*

It goes without saying that the regions that were devastated by the tsunami less than 15 minutes after the earthquake, such as the province of Aceh in Indonesia, would not have been able to benefit efficiently from a warning system. But those that were hit later, such as Sri Lanka, India, the Maldives and Thailand, would have had time to respond and should have received a warning:

A tsunami bulletin was transmitted within 15 minutes of the earthquake from the Pacific Tsunami Warning Center (PTWS), but no Asian country directly received that warning. What was missing was an organized emergency communication plan beyond the Pacific region. (*Annunziato & Best, 2005: 7*)

Indeed, even though a warning would not have prevented the physical and material devastation in Southeast Asia, "[…] the information may have allowed people to escape to higher ground or take other emergency actions" (Martin, 2007: 191). On December 26 2004, "[t]here was no Tsunami early warning system which would have saved many lives" (Munasinghe, 2007: 10). Munasinghe (2007) and Rodriguez (2006) add that for the moment, there is simply no detection system able to warn the population of an impending threat. The communities hit by the tsunami did not possess any warning system whatsoever of the sort necessary and essential to saving the lives of their inhabitants.

Finally, while France and the United States had crisis management plans in place at the time of the heat wave of 2003 and Hurricane Katrina in 2005, respectively, their limitations were quickly revealed.

In the case of France, the danger associated with a heat wave was not among the concerns of society at large and public health organizations in particular, nor was it a priority for surveillance or crisis management organizations such as the *Institut national de veille sanitaire (InVS*; institute for public health surveillance*)* or the *Centre Opérationnel de Gestion Interministériel des Crises* (COGIC; interministerial crisis management operations centre). This omission indicates that the risk analysis and vulnerability assessment were not conducted thoroughly:

[…] what emerges clearly from the hearings of the commission of inquiry is that the consequences of intense heat on the population had not been fully analyzed or anticipated by the public health and safety services prior to last summer's tragic episode. Several ministers agreed on this point. *(*translation; *Assemblée nationale, 2004a: 51)*

Thus, during his hearing, Gilles Brücker, the director of the *InVS*, indicated that climate risks had not been included in the aims and means contract in effect; consequently, the organization was not concerned about them (Jacquat 2003; 14). Moreover, the report produced by the commission headed by Claude Evin mentions that in 1993 the health and biometeorology commission had initiated a discussion of the impacts of climate events on certain categories of the population judged most vulnerable, such as the elderly, but that "the INVS representative had not attended the meetings for years even though the INVS was a member" (Létard, 2004: 57). This was corroborated by the Health Minister Jean-François Mattei's additional comments, who explained to the Inquiry members:

[…] in 2003, while preparing the public health bill [...], the directorate-general for health called upon 140 French, European and international experts with the goal of developing a list of 100 priority public health objectives. Not one of them mentioned problems related to climate." *(Létard et al., 2004)*

It seems possible to say that the risks related to the dangers were not well known and not integrated into a global vision of risk. As a result, the system erred by not anticipating or picking up the warning signs. This led to a plethora of cascading problems, including the death of 15,000 people, most of whom were elderly, due to the delay in interventions.

At the time Hurricane Katrina hit the Gulf of Mexico in the United States, the American administration was in the midst of revising its crisis planning, so the lessons drawn from simulation exercises were not yet fully integrated into the plan.[8] Following the September 2001 attacks, the crisis planning was oriented towards strengthening a military command and control system, a direction a number of observers considered ill-suited to natural catastrophes. The constitutional foundations of the Stafford Act, according to which the Federal Government intervenes only at the request of the states, are also poorly adapted to incidents on a national scale.

Furthermore, the meteorological forecast had given a general forewarning. The director of National Oceanic and Atmospheric Administration, David L. Johnson, as well as director of the National Hurricane Center (NHC), Max Mayfield, both declared in May of 2005 that the Atlantic hurricane season was going to have above normal activity and that planning and preparation were going to make a difference in responding to any related emergency situations. In view of this alarming forecast, the two directors urged residents and government agencies in at-risk areas to prepare themselves and make planning efforts well before the hurricanes would hit (Bipartisan Committee, 2006: 21). Thus, Hurricane Katrina was not in itself a surprise. The probable force of the hurricane season had been predicted. Moreover, the importance of preparing efficiently had been emphasized by several experts. "Federal, State, and local plans were inadequate for a catastrophe that had been anticipated for years" (Bipartisan Committee, 2006: 60). Consequently, the deficiencies in preparation could have been avoided or at the very least attenuated.

Similarly, it is unfortunate that in spite of all the warnings, the Gulf states were not better prepared, the result of an unfortunate gap between government policy and actual practices (Comfort, 2005). In fact, these states initiated emergency action by activating parts of their emergency response plans only a few days before Katrina hit the coast. Neither government nor private sector organizations seemed adequately prepared to face a disaster on the scale of Katrina. In addition, emergency alert systems were not used in any of the three states at risk. The outcome of this ambivalent planning was that "[s]till, tens of thousands, many of them the region's most vulnerable, remained in areas most threatened by the approaching hurricane" (Bipartisan Committee, 2006: 29).

[8] The Hurricane Pam Exercise was a simulation created following reports from all levels of government regarding the potential danger of a level four or five hurricane in New Orleans. Leading officials from approximately 50 organizations participated in the exercise in July 2004. Even though the simulation was assessed to plan for disasters like Hurricane Katrina, "[…] the exercise also highlighted lessons learned that were not implemented and did not anticipate certain weaknesses that Katrina exposed" (White House Committee, 2006: 81).

Overall, the initial findings on the planning/preparedness dimension corroborate previous research to the effect that having a plan is a necessary but insufficient condition to dealing with a crisis. Crisis planning is a process that must be based on a multi-risk approach in order to improve preparation, an aspect which was absent in all four of the crisis cases we examined.

5.2 Diagnosis regarding coordination

Coordination problems were also prevalent in all four disasters. The issues identified and mentioned in the post-crisis reports included: the cumbersome, halting nature of bureaucracy; the tendency to isolate the different actors; the gap between actors on the ground (or those intervening directly with the population) and administrators; the tendency towards organizational hierarchy and centralized decision-making; the multiplicity of actors generating confusion and sometimes duplication of efforts; and the inefficiency in managing donations and international aid.

The fight against SARS was hindered by problems associated with the collection of funds and the analysis and sharing of information. In addition, tense relations among various levels of government and between the provincial public health authorities and local offices did not help to resolve the crisis efficiently. Justice Campbell, who presided over the SARS Commission in Ontario, reported that numerous local offices thought management had high expectations but provided neither support nor timely and accurate information to doctors and public health officers in the field. The lack of planning for information systems and data collection likewise had harmful repercussions on interventions. The inadequate systems, combined with a crushing number of disorganized requests, made it impossible for public health and hospital staff to efficiently coordinate their efforts. “Confusion, duplication and an apparent competition prevailed in the work of those in the central apparatus who sought information from local public health units and hospitals" (SARS Commission, 2006, 4: 132). However, no system had been implemented to respond to the discrepant needs of the various responders. In fact, requests were coming in from everywhere and in large numbers. ”There was no order or logic in the frenzied, disorganized, overlapping, repetitious, multiple demands for information from hospitals and local public health units” (SARS Commission, 2006, 4: 135). This duplication of efforts was caused by poor coordination and by the fact that, due to the absence of a pre-established plan and structure, each office created their own data collection system during the SARS outbreak. Considerable time and effort was needed to verify the discrepancies, inquire about the condition of patients and determine which of several reports was indeed correct. This lack of coordination increased the stress felt by both responders and victims.

In France during the heat wave, the *Institut de veille sanitaire* (public health surveillance institute) and the *Direction générale de la santé* (DGS; public health division of the health ministry) operated in seclusion from the situation on the ground. No representative of these institutions visited hospitals to take stock of the situation, and it was only very late in the crisis that they discussed possible measures for curbing the crisis with responders from the hospital sector. In terms of coordination, there was an evident gap between the upper and lower echelons. This lack of integration was responsible for the discrepancy between the mobilization of hospitals and the central administration. On the whole, mobilization was rather efficient at the local level (health services, hospitals, retirement homes, emergency

medical services and fire departments), in spite of some degree of physical and psychological exhaustion on the part of the personnel. But that the response of the central administration was rather laborious and late. Thus the DGS and INVS in particular worked in an information vacuum. Interactions between the two institutions and the other actors were infrequent and very formal. No representative of these institutions went to hospitals to observe the extent of the situation and it was late in the crisis before members of local hospital administrations were included in consultations with the central institutions. In fact, no one seemed to know who was really in charge of managing this crisis. Consequently, it is difficult to speak of formal structures in charge of crisis management because all the actors seem to have taken part in it, without any actual structure being in place. Similarly, it is difficult to assess whether the principle of decentralization and delegation in decision-making was respected, because the first emergency actions were organized and carried out in the field and only gradually came under centralized coordination.

In the case of Hurricane Katrina, the "pull system" maintained an extremely hierarchical and vertical relationship between levels of government and inevitably led to delays in responding to the crisis. Certain responders attempted to by-pass problems in applying the National Response Plan by taking initiative on their own while simultaneously handling the tasks assigned by the Federal Emergency Management Agency (FEMA). Search and rescue activities were among those most severely compromised by this situation as, all too often, a number of rescue teams were deployed to the same place, leaving many other victims stranded. Hence, the Federal administration had to face several major challenges. In fact, the Secretary of the Department of Homeland Security, Michael Chertoff, seems to have had great difficulty coordinating the disparate activities of the various Federal agencies and departments. This lack of coordination at the Federal headquarter-level reflected confusing organizational structures in the field. *(Bipartisan Committee, 2006: 53).*

Moreover, the confusing and ambiguous demands resulting from poor coordination in managing requests exceeded the capacities and procedures of the Federal Emergency Management Agency (FEMA).In addition:

Due to the communications problems, officials from national leaders to emergency responders on the ground lacked the level of situational awareness necessary for a prompt and effective response to the catastrophe. *(Bipartisan Committee, 2006: 41).*

These difficulties and others resulted in an ineffective and inefficient response from the Federal authorities. In addition, there seem to have been a too varied and too numerous contingent of Federal coordinators involved, frustrating local and state officials. More specifically, the Federal command, control and authority structure was complex and difficult to understand. Communication and coordination was also lacking at the Federal level and led to incorrect information on available resources. There was an enormous gap between what was necessary in the field and what was sent. According to the expert assessment, considerable amounts of aid and assistance were not used due to a lack of coordination and the excessively complicated procedures from the National Response Plan (NRP). Among other issues, the NRP procedures are too bureaucratic and time-consuming to respond effectively to a catastrophe. Many agencies took action under their own independent authorities while also responding to mission assignments from the FEMA, creating further process confusion and potential duplication of efforts. *(Bipartisan Committee, 2006: 52).* The private sector did make a concerted effort to coordinate its assistance with the Federal government and did so in spite of a plethora of constraints and difficulties.

In the case of the tsunami, despite more than six billion dollars in international assistance, donations were not managed efficiently and only a portion was used to assist communities in need. The absence of functioning cooperative structures thus diminished the efficacy and consistency of the response (Rodriguez, 2006), as each organization had a tendency to operate independently of the others.

In the U.N. Economic and Social Council report, the experts declared that during the crisis, the available resources sometimes exceeded the capacity to administer them efficiently. *(Clinton, 2005 in Trigueros, 2006 : 40)*

Rodriguez (2006) demonstrated how local groups had made a major difference in the response to the tsunami. According to the author, local NGOs helped meet most primary community needs. In both India and Sri Lanka, these organizations were involved at various levels in reconstruction projects, including the development of public-private partnerships to better assist the crisis victims. By involving local community leaders with local and international NGOs to coordinate the distribution of aid and assistance efforts, the reconstruction was facilitated while demonstrating the great resilience of the affected population. Although efforts were made to involve local groups, it appears that the various communities were not fully and sufficiently integrated in the response process (Houghton, 2005). According to Oloruntoba (2005), in managing this crisis, the responders did not sufficiently understand the roles of each:

[…] longer term coordination and partnership with the victims themselves and the local authorities and actors would be required for a successful relief and reconstruction effort […] Intra- and inter-organisational coordination is crucial at all stages of this response; in functions such as asset usage, incident management, search and rescue, division of labour, public information management amongst others. There must be clarification of organisational roles in disaster management. *(Oloruntoba, 2005: 512).*

With regard to the tsunami, the lack of flexibility of the response structures in place — whether international, federal or municipal — had a negative impact on the efficiency of the supply chain and support mechanisms in response to the crisis.

5.3 Diagnosis regarding leadership

The main criticisms of national leaders in the crises we examined concerned the delay in taking action following warning signs of an impending crisis, as well as their lack of visibility during the crisis itself. For example, *The Globe and Mail*, Toronto's daily, reported the absence of then-Prime Minister, Jean Chrétien, and the low profile maintained by the Canadian Minister of Health, Anne McLellan, leaving the public to believe that the SARS crisis was not a federal government priority. Under the headlines "Where are the Leaders When They're Needed?" and "Chrétien Criticized for Lack of Involvement in Crisis," the journalist Bruce Cheadle (2003) wrote "a political leadership vacuum has made a bad situation much worse and helped fan domestic and international perceptions that containing SARS is not a high priority." The same issue was raised by the press with respect to the Premier of Ontario, Ernie Eves, who, after having declared a state of emergency, remained on the sidelines throughout the crisis. Under the headline "Premier Offers Too Little, Too Late in SARS Crisis," columnist Murray Campbell (2003) of *The Globe and Mail* wrote:

[…] from the early days of the SARS outbreak four weeks ago, the Premier said he wanted to keep a low profile on the issue. He certainly has succeeded […] It's one thing to let the professionals handle the SARS outbreak. But the Toronto area desperately needs a politician who understands the symbolism of such a crisis. Mr. Eves has shown he's no Rudy Giuliani.

The same criticism — slowness to act and a failure to be proactive — was directed at then-Prime Minister of France, Jean-Pierre Raffarin, as well as the Minister of Health, Jean-François Mattéi, during the heat wave of the summer of 2003. In an article in *l'Express*, Jean-Marc Biais (2003) reported:

[…] at a minimum we could blame the Prime Minister and his Minister of Health for having led a poorly timed public relations campaign from the top. In the course of this, Jean-François Mattei had the bitter experience of visiting the Pitié-Salpêtrière hospital services (Paris). A nurse did not want to shake his hand. 'It is shameful,' she told him. 'We needed much faster action.'

As the journalist continued:

Jean-François Mattei was, before being named to government, head of the Timone hospital services in Marseille, one of the largest French hospital establishments. As such, he was familiar with the heat wave that struck the Phocaean city in 1983. Also, he would have to have been more sensitive to alarming information.

In the case of the heat wave, it appears that the individuals who had developed the traits considered most important for effective leadership were not the ones heading the administrations, but rather those heading organizations in the field. The public judged the ministers directly concerned with the crisis very harshly for waiting until late in the crisis to interrupt their holidays and return to work, displaying a lack of proactivity in appropriating the crisis and in decision-making. The acting national health director at the time, Dr. Yves Coquin, did not demonstrate any ability to exert influence or persuasion. In fact, messages he addressed to the health minister's office indicating that the situation was under control prevented the heat wave from becoming a priority for the ministry. It thus appears that government leaders remained largely passive and did not at any time seek to go beyond their defined duties in order to understand and interpret the signals coming from the field. As for then-Prime Minister Jean-Pierre Raffarin, he clearly did not make the crisis a priority before August 14, at which time he interrupted his vacation. According to expert opinion from several commissions, the main deficiencies in crisis leadership were the long delays before intervention from the leaders which were related an inability to give meaning to the early warning signs.

The lack of preparedness was also stressed by the four main leaders involved in crisis management after Hurricane Katrina: Secretary of Homeland Security Michael Chertoff, FEMA director Michael Brown, Louisiana governor Kathleen Blanco and New Orleans mayor Ray Nagin (Olejarski & Garnett, 2010). First, Secretary Chertoff undermined public confidence in his abilities by making questionable decisions, such as naming Brown to the post of Principal Federal Officer. Establishing confidence in a leader is an crisis-management asset that Chertoff appears to have been unable to garner, largely because he did not carry out the responsibilities incumbent upon his status:

[…] critical response decision points were assigned to the Secretary of Homeland Security. Secretary Chertoff executed these responsibilities late, ineffectively, or not at all. *(US House, Bipartisan Committee, 2006: 131)*

In addition, the four leaders should have tried to identify potential vulnerabilities and risk. It would have been necessary for the leaders to plan and anticipate potential threats while anticipating certain crisis scenarios. On the one hand, the four leaders, Chertoff, Brown, Blanco and Nagin, all had knowledge of the situation and its probable dangers, but their ability to anticipate future developments was terribly lacking. Furthermore, these supposed leaders did not act proactively. They did not adapt their leadership to the particular circumstances of the crisis and did not act with sufficient diligence considering the context. For example, Blanco and Nagin only ordered a mandatory evacuation very belatedly (US House, Bipartisan Committee, 2006).

In the case of the tsunami, leadership shown by Indonesian Prime Minister, Susilo Bambang Yudhoyono, and that of Thai Prime Minister, Thaksin Shinawatra, were very different. Whereas the Indonesian Prime Minister failed miserably, the Thai Prime Minister emerged from the crisis fairly honourably. According to the media, Prime Minister Thaksin Shinawatra was able to benefit from the crisis. His repeated appearances at the disaster site transformed him into a hero for the affected population and for the various responders at the site. According to Parry (2005) in *The Times*, "most Thais revere him as a man of practicality and action, a welcome change after 72 years of weak civilian governments punctuated by military coups." Some criticism was nevertheless directed towards Shinawatra's leadership saying that he was putting on a role for the occasion. "Thaksin has managed to reinvent himself as a leader of compassion… Will he stay the same or become a democratic leader or a dictator intolerant of dissent?" (Parry, *The Times*, 2005). In addition, it is important to note that as Prime Minister he failed somewhat in his duties by neglecting to emphasize the need for tsunami detection and warning systems. In this regard, he was more reactive than proactive. As for Prime Minister of Indonesia, Susilo Bambang Yudhoyono, he did not meet the public's expectations. In fact, some critics compared him to President Bush at the time of the 9/11 attacks. "Like Mr. Bush, the newly installed Mr. Yudhoyono will be judged in large measure on his response to a momentous national crisis that found him woefully unprepared" (*Financial Times*, 2005). For that matter, the Indonesian leader had a reputation for being very indecisive. He did not react rapidly to a disaster which had enormous repercussions for his country. By being neither proactive nor actively involved, he developed an image as an incompetent man whose lack of leadership led to a loss of life that could have been avoided.

After-crisis leadership is most often relegated to experts who are given responsibility for leading national commissions of inquiry. Aside from the impressive number of recommendations issued by these commissions — recommendations that are usually based on strengthening and increasing formal crisis procedures — it is practically impossible to determine the degree to which public authorities will follow through on them. Crisis management that has been judged inadequate by the public and the media also results in a search for those responsible or scapegoats, such as Michael Brown (Director of FEMA) for Katrina, Dr. Lucien Abenheïm (Director of Health) during the heat wave, and Dr. Collin Cunha (Director of Public Health in Ontario) during the SARS outbreak.

5.4 Diagnosis regarding the behaviour of civil society

The participation of civil society, through expressions of support and solidarity, was carefully described in the crisis reports we examined. The role of religious and charitable organizations during the Katrina disaster was underscored in the report from the committee established by the American House of Representatives:

[…] countless numbers of charities provided billions of dollars in relief to those in need […] The efforts of charitable organizations in the Gulf Coast represent the largest disaster response effort in U.S. history. *(U.S. House, Bipartisan Committee, 2006: 343)*

In the response to Hurricane Katrina, the presence of organizations outside the government was a significant element. Among others, non-governmental organizations (NGOs), religious organizations and private-sector companies contributed substantially to the response and brought a more human and compassionate aspect to the crisis interventions. However, government agencies did not efficiently coordinate operations with these diverse organizations, the private sector and other volunteers. Among other groups, the American Red Cross played a major role in managing the Katrina response, with 45,000 active volunteers at the height of the crisis. Like other organizations, the Red Cross had to deal with many challenges due to the extent of the crisis, inadequate logistical capacities, and a disorganized procedure for providing emergency shelter. In addition, certain charity officials, like those of the Red Cross, were refused access to certain locations. In spite of these difficulties, experts believe that the Red Cross and a plethora of other charitable organizations played an essential role in the response to Hurricane Katrina. Their actions during the crisis thus had a direct impact on its management. Indeed, these organizations helped the government by creating, among others structures, centres to help volunteer groups manage their resources and to connect them with needs in the field. Nevertheless, there was room for improvement regarding integration of their intervention capacity into the disaster response.

We must recognize that NGOs play a fundamental role in response and recovery efforts and will contribute in ways that are, in many cases, more efficient and effective than the Federal government's response. *(Bipartisan Committee, 2006: 63).*

The commission experts also thought it important to mention that there were stories of courage, determination and compassion that made a difference in the response to Hurricane Katrina. More specifically, some citizens spontaneously provided assistance after the storm. Certain doctors acted independently by providing assistance and medical supplies. Dr. Carrie Oliver, from Texas, is one of these doctors; she opened a temporary clinic and paid for all the medical supplies herself. Importantly, she consistently communicated and cooperated with local officials to rapidly and appropriately serve the affected population. Many other examples of citizen interventions that had a definite impact on crisis management were pointed out. Contrary to popular belief, a majority of the threatened population acted responsibly by evacuating in time and without excessive panic. As for those who became disaster victims, some acted proactively by creating mutual aid networks. Moreover, there was very little looting. The stories of courage, determination and compassion were thus far more numerous than crimes.

The rigid governmental response model was unable to respond and adapt to these spontaneous citizen intervention strategies. For instance, in their efforts to survive, many

disaster victims sought refuge in places that had not previously been considered emergency shelters. Consequently, despite the fact that civil society had acted relatively rationally and responsibly, certain behaviours were not sufficiently taken into account while managing the crisis. For example, some people did not possess the physical or financial means to evacuate. Others, having already lived through other hurricanes, decided not to evacuate, thinking they would be spared. The likelihood of these types of behaviours should be taken into consideration during disaster planning.

In France, expert reports on the heat wave, while revealing the isolation of senior citizens, particularly those living in institutions[9], also showed that victims' families mobilized to come to their aid. The press, having reported the cases of isolated victims or abandoned elderly, let the idea take hold that these cases represented the general rule, whereas the fact-finding missions and inquiries demonstrated that they were isolated occurrences. The intense media attention on these instances played on the emotions, distorting reality, placing blame on governments, and make the society as a whole feel guilt-ridden. The report also identified two individuals who played major roles in communications and decision-making during the heat wave crisis, namely Patrick Pelloux and Pierre Carli. Although they were not part of the central administration or official authorities, these two men demonstrated emerging leadership and contributed to managing the crisis. Each demonstrated an ability to detect crisis signals, by conducting research on the effects of the heat wave, in the case of Pierre Carli, and by communicating with colleagues to verify the status of the situation, in the case of Patrick Pelloux. The two men went above and beyond their duties as emergency physician and doctor in order to understand what was happening and to warn and mobilize people to respond to the crisis. Creativity was also central to the actions of these two emergent leaders, both in defining the appropriate methods of patient management and in their drive to understand the events and warnings.

Rodriguez (2006) reports that, in a number of communities in India and Sri Lanka, citizens actively engaged in activities to comfort the victims and began to rebuild. Tight-knit fishing communities demonstrated remarkable altruism. Munasinghe (2007) highlighted the initiatives undertaken by a group of some one hundred leaders from diverse backgrounds. More specifically, a People's Consultative Meeting was organized only ten days following the disaster with the goal of sharing and encouraging development of a network to address all aspects of managing the crisis. Through this meeting, these leaders paved the way to better coordination of the various interventions carried out by many organizations in the field. Munasinghe (2007:10) concludes:

In summary, civil society in Sri Lanka proved remarkably resilient and helped to hold the country together especially during the first few weeks — apparently, the social capital embedded within traditional communities in affected areas and throughout the nation played a crucial role.

Similarly, the SARS Commission report places great emphasis on the courage, exceptional dedication and heroism of frontline healthcare workers who did everything possible to counter the risks of a SARS pandemic. At the same time, most experts deplore the fact that the official assistance systems did not effectively coordinate these unseen efforts on the part

[9] The mission established by the National Assembly (Jacquat Mission) noted a number of bodies that were never claimed.

of civil society. Furthermore, the Campbell Commission and the Health Canada Report both praised the efforts of numerous local medical officers who assumed substantial roles in managing the SARS outbreak. In the absence of provincial leadership, many established their own networks in order to plan and organize interventions, and they were essentially left on their own without any guidelines or support.

Dr. Sheela Basrur is one of the people who devoted themselves fully to managing the SARS outbreak.

[…] the real leader of the city's increasingly confident struggle with the disease was even more obvious to all. It was Dr. Sheela Basrur. She has become a household name not just in Toronto and in Ontario but really across Canada. […] They appreciate the clarity, the integrity and the straightforwardness of her presentation of the disease. […] Toronto medical officer of health Sheela Basrur and her colleagues have worked diligently on the main task of containing it and calming irrational fears. *(Barber,2003).*

Civil society as a whole reacted well. However, the lack of information about the spread of the epidemic gave rise to regrettable behaviours which could have been avoided.

SARS has highlighted how communicable diseases, particular those caused by hitherto unknown agents, can tap primal anxieties, prompt enormous interest on the part of the media, and provoke some unsavoury public responses (e.g., incidents of harassment and scapegoating of the Asian community in Toronto). (*Health Canada*, 2003 : 64).

Among other acts committed in the absence of definitive guidance, some citizens harassed others and sought out scapegoats within the Asian community of Toronto. Access to accurate and reliable information as well as confidence in credible leadership would certainly have increased public trust and calmed the fears of Toronto residents.

Cases of looting are mentioned in most reports, notably those on Katrina and the tsunami[10], although it is it difficult to assess the extent of these occurrences. In fact, the regrettable lack of information and late or inaccurate communication of information have been pointed out by experts in all the crises studied. Rodriguez (2006) mentions that a month after the disaster, a number of members of local fishing communities remained in a state of uncertainty about their families, their savings, and where they would live. Plans for relocation proposed by the state suffered from a lack of participation by the affected communities. These groups had the impression that their needs, cultures and interests, which would allow them to return to a normal life, were being neglected.

6. Discussion and conclusion

In light of the results discussed above, it appears that the guiding principles put forward in the literature to orient and inspire effective crisis management were neither followed nor respected in these four disasters. Shortcomings appeared at all levels — in terms of planning and capacity for preparation, in coordination, and at the level of leadership, as well as in understanding the behaviour of civil society. The next section explores some possible reasons for the common pitfalls and recurrent patterns observed during disasters.

[10]The question of looting was not germane to the heat wave or SARS case.

Guiding principle	Katrina (USA)	Heat wave (France)	Tsunami (Southeast Asia)	SARS (Canada)
Planning/Preparedness				
Formal Planning[11]	Yes[12]	Yes[13]	No	No
Capacity Assessment	Weak	Weak	Weak	Weak
Risk Assessment	No	No	No	No
Coordination				
Exercise of Authority	Conflicting	Centralized	Confusing	Centralized
Communication	Difficult	Difficult	Difficult	Difficult
Cooperative Structures	Ineffective	Ineffective	Variable	None
Leadership				
Before the crisis	Weak	Weak	Weak	Weak
During the crisis	Problematic	Problematic	Problematic	Problematic
After the crisis	Unknown[14]	Unknown	Unknown	Unknown
Civil Society				
Civic Behaviours	Mixed assessment[15]	Mixed assessment[16]	Mainly positive[17]	Fear, stigma, Misunderstanding
Emergence of spontaneous leaders	Yes	Yes	Yes	Yes

Table 5. Diagnosis regarding disaster management practices concerned with planning/preparedness, coordination, leadership and civic behaviour.

The analytical framework presented in this chapter has two principal objectives. The first is to propose a method for preparing a diagnosis regarding the principal areas of crisis management which brings to light elements that should be consolidated or reviewed. The second is to indicate more promising avenues for crisis managers to pursue in order to improve the management of future crises, based on research in this field. It is therefore hoped that the diagnostic methods explored here will allow stakeholders to refocus on the fundamental principles of effective disaster management.

Furthermore, considering the state of knowledge in the field, we must question why the same deficiencies in crisis management tend to recur. In this regard, two main types of explanations drawn from the literature — which may serve as warnings for stakeholders — can be put forward: (1) the inadequacy of a strict and unnuanced application of the classic crisis management model based on a "command and control" structure and (2) the difficulties related to real organizational learning.

[11] Written plans, procedures, emergency routines, jurisdictional specifications.
[12] Stratford Act (generic).
[13] "Plan Blanc" which is generic and not specifically for a heat wave crisis.
[14] Leadership undertaken mainly by experts.
[15] Evacuation was a major problem.
[16] The indifference of families has been noted.
[17] Positive due to help from NGOs and humanitarian groups. See Munasinghe (2007)

With regard to coordination, it appears that the classic model inherited from Fayol, which is still quite dominant in management circles (Carroll & Gillen, 1987), tends to be transposed more or less intact into crisis management in the form of the "command and control" model. This is the model most commonly known to administrators and it provides the illusion of being in control of events. However, research has shown that this model proves to be too rigid and centralizing, leaving little room to integrate spontaneous responders who emerge within communities affected by disaster. This tends to create discord and, in the end, to be detrimental to crisis mitigation efforts.

In terms of learning, several factors that seem to impede real integration of knowledge within organizations have been identified. First, the time constraints or temporal framework for learning is too limited (Bourrier, 2002); the issue does not remain a priority once the immediate crisis has passed (Petak, 1985; Lagadec, 1996; Rosenthal and Kouzmin, 1996; Nathan, 2000); or alternatively, the issue is too sensitive for discussion after the organization has gone through a crisis (Lagadec, 1996; Bourrier, 2002).

Moreover, the pressure of managing day-to-day affairs resurfaces and tends to eclipse the period which could be devoted to post-crisis reflection (Rosenthal et al., 1989; Rosenthal and Kouzmin,1996). Second, the manager responsible for integrating learning may be shirking these responsibilities (Lagadec, 1991, 1996), may tend to pass the responsibility off to the experts (Rosenthal and Kouzmin, 1996; Bourrier, 2002), or may use them for political ends (Hart et al., 2001). Third, managers and responders do not view crisis experiences as transferable to routine practice (Roux-Dufort, 2000; Bourrier, 2002). Such experiences are seen as eminently contingent on the idiosyncrasies of the crisis itself (March et al., 1991). Thus, very little sharing of crisis management experience occurs across organizations (Bourrier, 2002), between sectors of activities, or amongst countries (Hart et al., 2001). The classical response to these shortcomings is to add new procedures to the old ones, in the expectation that this will help manage the next crisis. However, empirical research suggests that organizations may not use all of their planned procedures during a crisis and may prefer to adapt their response to the contingencies of the situation (Espedal, 2006; Lalonde, 2004, 2010; Quarantelli, 1998; Schneider, 1992). We believe that in order to avoid the recurrence of dysfunctional patterns in crisis management, it behoves managers and responders to take these warnings into account.

7. Ackowledgments

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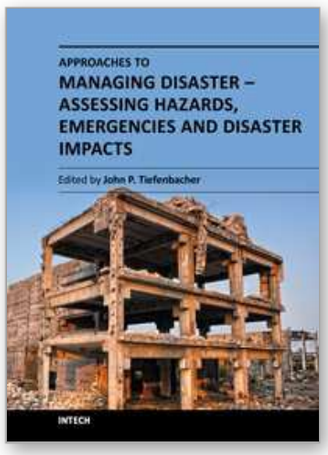

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Approaches to Managing Disaster - Assessing Hazards, Emergencies and Disaster Impacts demonstrates the array of information that is critical for improving disaster management. The book reflects major management components of the disaster continuum (the nature of risk, hazard, vulnerability, planning, response and adaptation) in the context of threats that derive from both nature and technology. The chapters include a selection of original research reports by an array of international scholars focused either on specific locations or on specific events. The chapters are ordered according to the phases of emergencies and disasters. The text reflects the disciplinary diversity found within disaster management and the challenges presented by the co-mingling of science and social science in their collective efforts to promote improvements in the techniques, approaches, and decision-making by emergency-response practitioners and the public. This text demonstrates the growing complexity of disasters and their management, as well as the tests societies face every day.

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