



## **Organizational Strategies for Critical Transportation Infrastructure: Characteristics of Urban Resilience. The Case of Montreal.**

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The Case of Montreal.

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The proposed paper presents preliminary results on the resilience of organizations managing critical infrastructure in the Metropolitan Montreal area (Canada). A resilient city is characterized by a network of infrastructures and individuals capable of maintaining their activities in spite of a disturbance (Godschalk, 2002). Critical infrastructures provide essential services for the functioning of society. In a crisis situation, the interruption or a decrease in performance of critical infrastructures could have important impacts on the population. They are also vulnerable to accidents and cascading effects because of their complexity and tight interdependence (Perrow, 1984). For these reasons, protection and security of the essential assets and networks are one of the objectives of organizations and governments.

But prevention and recovery are two endpoints of a continuum which include also intermediate concerns: ensuring organizational robustness or failing with elegance rather than catastrophically. This continuum also includes organizational resilience (or system), or the ability to recover quickly after an interruption has occurred. Wildavsky (1988) proposes that anticipation strategies work better against known problems while resilience strategies focus on unknown problems. Anticipation policies can unnecessarily immobilize investments against risks, while resilience strategies include the potential for a certain sacrifice in the interests of a more long-term survival and adaptation to changing threats. In addition, a too large confidence in anticipation strategies can bring loss of capacity of an organization to adapt to conditions. Each strategy must adapt to specific conditions. Where uncertainties are important, resilience is probably the most appropriate. Where conditions are stable, and where future projections are generally fair, anticipating works better, although it should be used judiciously (Fiksel, 2003).

Anticipation strategies immobilize specific or tangible resources and, can eventually be costly in the long-term. On the other hand, resilient systems and organizations are those that quickly acquire information about their environments, quickly change their behaviour and their structures, even if the circumstances are chaotic. They communicate easily and openly, and largely mobilize networks of expertise and support (Perrow, 1999).

We conducted qualitative research to assess different variables that positively affect the organizational resilience in the management of critical infrastructure. We preferred a methodology allowing us to retain the complexity of the phenomenon, not affecting the nature of the system studied. Our methodology allows us to create pragmatic theoretical concepts (grounded theory) (Glaser and Strauss, 1967). Our main concern is not to separate the phenomenon studied in its context. This methodology allows us to better understand the coordination between the organizations network infrastructure essential by a process of "sweeping-in" (Dewey, 1938). After conducting a literature review of various concepts of our research (Comfort, L. K., 2002; Lagadec and Michel-Kerjan, 2004; Perrow, 1999; Weick and Sutcliffe, 2001; and more) we have conducted numerous interviews and distributed a questionnaire to highlight significant indicators.

For the first part of this research, we targeted the transportation critical infrastructure of Montreal area because it is crucial and also this infrastructure includes public, parapublic and private organisations. The first results of this research demonstrate the contribution of different structural and functional factors that influence the intraorganizational resilience and interorganizational resilience for the transportation sector of Montreal.