

Resilience: What it is and how to achieve it¹

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May 6th, 2008

The House Committee on Homeland Security
“The Resilient Homeland – Broadening the Homeland Security Strategy”

¹ Much more information, including detailed analyses, case studies, numerous examples and recommendations for action are included in my book “The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage” (MIT Press, 2005).

My research takes a supply chain perspective on corporate preparedness and response to high-impact/low-probability disruptions. The supply chain of an organization includes the enterprise itself as well as the web of companies and entities that support its operations and service delivery.

The focus of my writings is on **resilience — the ability to bounce back from large scale disruptions**. In particular, it demonstrates how investments in resilience can be turned into a competitive advantage.

When thinking about the nature of vulnerability and how to build resilience in organizations, one should consider first a framework for defining vulnerability and prioritizing risks. Vulnerability is defined as the combination of disruption likelihood and the resilience of the company to such disruption—whether it can recover and how quickly. This framework can be used to prioritize all the disruption risks a company faces and thus prioritize the planning for response.

All disruptions can be traced to several generic causes:

- Random events. These are natural occurrences such as floods, earthquakes, droughts, etc. Given their frequency, insurance companies can calculate likelihood and create insurance pools.
- Accidents. Accidents are typically the result of multiple causes. There is, however, a large body of literature on accident avoidance, based on “near miss” analysis and the “safety pyramid.” The experience which this literature is based on includes the aviation, chemical and nuclear industries.
- Negligence. Including non-compliance with regulations or standards as well as not paying attention to shifting public attitudes regarding corporate social responsibility.
- Intentional disruptions. These include terrorist attacks about also industrial actions, industrial espionage and sabotage. Intentional disruptions are different due the “smart adversary” on the other side; they adapt when defensive measures are put in place.

Compounding effects of large scale disruptions include the following:

- In many cases there is significant public fear (think about SARS, 9/11, Chernobyl)
- Government reaction, which has to come quickly in cases involving public fear, may exacerbate the situation (border closer after 9/11; UK response to the foot and mouth disease, Japanese government reaction to the Kobe earthquake, etc.)

- Living in a connected world, large scale disruptions have cascading effects worldwide
- While the likelihood of individual disaster is small, the likelihood of *some* disaster taking place *somewhere sometime* is not insignificant.

The first and most important step in dealing with disruptions is working to avoid them. It is difficult to avoid natural phenomena and there is significant work on avoiding accidents. Avoiding intentional disruptions is the realm of security, however, where one has to focus on the following:

- Layering the defense
- Balancing the defensive measures
- Investing in security in accordance with risk (“profiling”)
- Collaborating across enterprises, agencies and the citizenry
- Creating a security culture
- Practice, practice, practice.

The second step in building resilience is the implementation of a detection system. The most dangerous disruption is the one that is not detected until it is too late. Early detection can trigger early response and, in most cases, a more effective response.

Lastly, the planning and preparation should lay the foundations for a collaborative response. Building joint process, getting to know all organizations involved in a response, assigning specific roles. Of particular importance are public-private partnerships, the utilization of volunteers

There are basically only two ways to prepare for responding after a disruption hits: building in redundancy and building in flexibility. Redundancy is the first line of defense in case of a disruption. Safety stock of parts and finished goods, spare capacity and multiple suppliers, extra trained personnel, all provide a cushion to absorb some impact. Redundancy, however, is expensive even though there are various forms of minimizing the impact of extra resources and under-utilization. A better strategy is to develop flexibility.

Flexibility has many facets. Consider first, there is the paradox of flexibility: the more standardized many operations and procedures are, the more flexibility they afford. Thus, standard parts, processes, products and procedure, create the ability of their users to be flexible since the users can count on the standards and build on them. Such standardization allows for interchangeability and thus moving resources from where they are to where they are needed in case of a disruption. Just as important, however, is the development of a culture of flexibility. This involves the creation of certain human resources expectations and job definitions as well as cross-training.

The most interesting aspect of building flexibility in an organization is that unlike other resilience measures, flexibility helps companies in the competitive positioning. The

reason is that markets around the world are changing at a faster and faster pace. A company that builds in the ability to respond to supply disruption (creating supply/demand imbalance) is automatically building in the ability to respond to demand fluctuations, winning market share.

The important facet of a culture of flexibility and resilience include the following:

- Continuous communications – resilient companies communicate obsessively so when a disruption takes place people know the exact status of the enterprise. Resilient organizations also have redundant communications capacity, knowing that the volume of communications will grow substantially during a disruption. (Examples: Dell; UPS; counter example: Jet Blue during February 2007)
- Distributed power. Resilient organizations allow every employee, regardless of rank to take decisive action in case of a developing disruption. In the vast majority of the cases, the ability of field personnel to take action quickly can limit the scope of a developing disruption and therefore minimize casualties and damage. (Examples: Toyota's *Andon cord*; US Navy carrier operations; World [Japanese retailer], US Coast Guard operations during Katrina)
- Passion for work and the mission. Resilient organizations demonstrate passionate commitment to the success of their organization, causing employees to go "above and beyond the call of duty." (Examples: Schneider Trucking; Southwest Airlines)
- Deference to expertise. When a disruption is eminent or when it takes place, resilient organizations understand that there is a transfer of deference from rank to expertise (Examples: US Marines, FAA controllers, Chemical plants operators)
- Conditioning for disruptions. Resilient organizations are those that are disrupted continuously. They simply develop expertise at continuous re-planning and getting back to normal operations quickly. (Examples: UPS; FedEx; Counter examples of introducing uncertainty: Intel)

Culture is difficult to define and even more difficult to change. However, there have been spectacular examples of deep culture changes in society and in corporations. These include:

- Safety. During the first part of the 20th century executives used to believe that safety is too expensive to install in plant leading to thousands of casualties in plant and railroad yards. Federal regulations and society's attitude have changed this perception dramatically.
- Quality. The quality of US cars used to embarrass US automotive executives who truly believed that quality is too expensive to install in their cars. Toyota proved the fallacy of this argument and changed the industrial landscape forever.

- Social norms such as smoking as well as drinking and driving have changed dramatically in the US over the last 20 years.

Thus, corporate and society's culture can change, and senior managers in industry, as well as the Government can have significant influence.