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Off the Shelf

Disaster Has Struck. It's Too Late to Start Planning.

By ROGER LOWENSTEIN

HAD Hurricane Katrina not happened, or had the response to it not been so botched, it is likely that the world would have little interest in Yossi Sheffi, a professor of engineering systems at the Massachusetts Institute of Technology, or in his obscure specialty. The latter is known as "supply chain management." It is the discipline of how companies get the materials and parts they need. Until the day when something goes wrong, it seems most uninteresting. But suppose - just suppose - a levee breaks. Or a fire destroys a factory.

The list is almost endless. I do not mean a hypothetical list. In his new book, "The Resilient Enterprise" (MIT Press, \$29.95), Professor Sheffi seems to have unearthed every disaster to befall a modern corporation. There was the thunderstorm in Albuquerque, the port strike on the West Coast, the quake in Kobe, Japan. There was bankruptcy, terrorism and theft. There was foot-and-mouth disease, toxic chemical reaction, product tampering (Tylenol) and product failure (Firestone/Ford Explorer, and the flawed [Pentium](#) chip).

Engineer that he is, Professor Sheffi calls them "high-impact/low-probability disruptions." That means they happen infrequently but are a real pain when they do. None is likely to befall any one company in any given year. But something from his "Catalog of Catastrophes" will surely happen to somebody. Over the years, [General Motors](#) has suffered virtually every type of disaster - even a tornado. (At least nature does not play favorites: [Toyota](#) has also had its share.)

Professor Sheffi's focus is on what companies can do to avoid disaster, and to minimize the effect and quickly return to business as usual when one occurs. Government, he observes in an aside, is focused only on the first priority - preventing disaster. In a passage that after New Orleans seems spookily prophetic, he quotes Stephen E. Flynn, a senior fellow at the Council on Foreign Relations, saying, "The U.S. government has not worked out protocols for how to restart the trade and transportation system after an event."

As the companies in Professor Sheffi's examples have learned, the damage done by "events" has been magnified by the complexity of the modern world. In 1929, [Ford Motor](#) did everything itself at one mammoth factory. It made its own engine parts, its own rubber, its own glass; it even generated its own power. Today, Ford depends on a supply chain that stretches around the world.

That surely has its advantages, but it makes for a more interdependent and fragile world. Your supplier's problem is your problem. Many of the author's prescriptions add up to tutorials on what companies can do (or have done) to become more resilient in the face of supply-chain breakdowns.

In 2000, a Philips factory in New Mexico was struck by lightning, sparking a small fire. Though it was quickly extinguished, the author recounts, "the real drama was yet to begin; few would have imagined that it would affect the future of two Scandinavian companies." The Philips plant, which made semiconductors, required an absolutely sanitized environment, and the fire had contaminated it. Nearly half of the plant's wafers were made for two cellphone manufacturers, and these companies were suddenly out a critical part.

Purchasing agents for one of them, [Nokia](#) of Finland, immediately alerted Nokia's headquarters, which mounted an all-out hunt for another supplier. When that effort failed, Nokia demanded that Philips redirect capacity from its other facilities to Nokia. In effect, during the interval that the New Mexico plant was down, the two companies operated as one.

The response of Nokia's Swedish rival, LM [Ericsson](#), was more laid back. The author quotes the head of the consumer electronics division saying he did not learn of the problem for several weeks. By then, it was too late. ("One of the most important requirements after a disruption," Professor Sheffi observes, "is to communicate.") While Nokia's share of the cellphone market expanded, Ericsson's business suffered. The damage to Philips, where the fire occurred, was trivial.

Professor Sheffi has dozens of such examples. Many involve taking steps before disaster strikes to contain any damage.

Arranging for backup supplies is an obvious solution. A more subtle step is to standardize parts; then if one factory goes down, another can easily take its place.

The author recognizes that resilience is sometimes at odds with the modern fashion for cost-cutting. The last two decades have seen a relentless effort by firms to reduce their inventories, and thus free up capital. [Steven P. Jobs](#), delivering the keynote speech at a conference in 1999, boasted that [Apple Computer](#) had reduced its inventory to a mere 15 hours' worth of supplies. Three weeks later, an earthquake in Taiwan halted production of essential parts, and Apple was up a creek.

Professor Sheffi does not urge a wholesale return to the era of fully stocked warehouses. He advises companies to be aware that operating with lower inventories means they will not have a cushion when something goes wrong. Resilience connotes flexibility. Some achieve it by diversifying their supplier base, others by forging deep relationships with a few chosen suppliers.

"One of the most important lessons," according to the author, "is that by reducing vulnerability to high-impact/low-probability disruptions, a company will reduce its vulnerability to day-to-day market fluctuations as well, and therefore improve its general performance."

AN example is [Hewlett-Packard's](#) printer operations; Hewlett now waits until the last moment to configure its machines for a particular market. In this way, it can respond more nimbly to a disruption in any single country. The added flexibility helps Hewlett deal with more routine shifts in demand, as well.

Professor Sheffi's none-too-supple prose could benefit from an injection of the flexibility he prizes. However, for managers - and mayors - who hope not to be caught flat-footed after the next Katrina, this book has much to offer. When the author writes that a resilient culture "may be the real secret" to preparedness, the weary residents of New Orleans will surely relate.