

Risk Management – Is Back to History also Back to the Future?

by Walter R. Stahel

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Maybe historians should play a bigger role in reminding us that many of today's disaster and risk problems have periodically occurred in earlier times, and have been written about? But which risk manager reads historic books in the era of the Internet? Your humble servant has stumbled over a collection of articles by historians¹ on natural disaster. Flabbergasted by the wealth of literature written by our forefathers on this subject, I have decided to share it with you. Notwithstanding the fact that some of the events and their analysis go back a few hundred years, they still contain useful lessons for today's risk managers.

Have you ever heard the name of John Tyndall? He is the discoverer of the Greenhouse effect and was the successor of Michael Faraday as Director of the Royal Institution of Great Britain, which enables you to place him in history. The Tyndall Centre for Climate Change, a novel organisation founded in September 2000 by the UK Research Councils, was named after him. The Tyndall Centre integrates the UK's expertise from traditionally separate disciplines into a single unified body that represents the UK's mass of academic expertise in climate change research.

Disasters have always played a role in great literature, and natural disasters especially so, as witnessed in the following quotation:

*'Vous avez vu des tremblements de terre; mais, mademoiselle, avez-vous jamais eu la peste?
– Jamais, répondit la baronne.*

Si vous l'aviez eue, reprit la vieille, vous avoueriez qu'elle est bien au dessus d'un tremblement de terre.'
(Voltaire, *Candide, ou l'Optimisme*, 1759)

'You have seen earthquakes; but, young lady, have you ever had the pestilence? – Never, replied the Baroness.

If you had, answered the old lady, you would agree that it is well beyond any earthquake.'

Would Voltaire's comparison of the two events under the common heading of 'natural disasters' be politically incorrect today? I doubt it, which means that our reference grids also change over time.

Historians have only recently re-discovered natural disasters as a continuous experience of their turf, i.e. the interplay of society and history. Among these historians were Arno Borst² and Manfred Jakobowski-Jiessen³ - many more are listed in the very detailed sources of the papers in the publication quoted as *footnote 1*.

¹ 'Naturkatastrophen' – 'Catastrophes naturelles'. Traverse, *Zeitschrift für Geschichte – Revue d'histoire*, 2003/3. Chronos Verlag Zürich. ISBN 3-905315-28-9. ISSN 1420-4355.

² Borst, Arno, Das Erdbeben von 1348. Ein historischer Beitrag zur Katastrophenforschung; in *Historische Zeitschrift* 233 (1981), 529-569.

³ Jakobowski-Tiessen, Manfred, Sturmflut 1717. *Die Bewältigung einer Naturkatastrophe in der Frühen Neuzeit*; München 1992,.

According to a recent article in The Sunday Telegraph, this new research also forces a rethink by scientists on modern climate changes and its causes. The science journalist Robert Matthews depicts that grape picking was common in England during the 12th century. And Dr Stott, professor emeritus of bio-geography at the University of London, points out that *'what has been forgotten in all the discussion about global warming is a proper sense of history. During the Medieval Warm Period at the beginning of the second Millennium, the world was warmer even than today, and history shows that it was a wonderful period of plenty for everyone'*.

In contrast, severe famines and economic collapse followed the onset of the Little Ice Age around 1300, according to Prof. Stott. *'When the temperature started to drop, harvests failed and England's vine industry died. It makes one wonder why there is so much fear of warmth today.'*

These are some of the conclusions of the most comprehensive study yet of global temperature over the past 1'000 years. A review of more than 240 scientific studies has shown that today's temperatures are neither the warmest period over the past millennium nor are they producing the most extreme weather – in stark contrast to the claims of the environmentalists.

History – and nature – seem to be set to prove their point. According to a recent article in the weekly ,New Europe'⁴, based on a report by the EU's Joint Research Centre in Brussels that analyses the agricultural production in Europe in 2003, maize and sugar beet production has been cut by a quarter in Italy, while wheat yields have fallen by a third in Portugal.

However, agricultural output has risen in northern Europe. Warmer weather has boosted sugar beet yields by a quarter in Ireland and by up to 5 percent in Denmark and Sweden, while oilseed rape output in Finland has risen by 12 percent.

Surprised? A EU study last year had forecast just such a shift in productivity. In the USA, scientists at the Joint Global Change Research Institute are prediction that rainfall will increase across much of the country, especially towards the end of the century. Overall, the team expects global warming to deliver better yields to US farmers, but with a chance that the central states could suffer crippling droughts.

Both the EU and US experts warn that the recent heat wave was a foretaste of changes to come. *'it is dangerous to push these things under the carpet because we need to start planning now for the impacts of climate change. I is not too soon to begin building a more resilient agricultural system.'*

Does this mean that resilience will be accepted as an integral part of a productive and efficient economy? And that the ideas of risk management might thus be accepted as of relevance and even of central importance to public policy makers?

A butterfly in the Amazons flapping its wings can cause a storm in Europe!

This first popular explanation of the catastrophe theory comes to mind when reading the stories about the series of blackouts – power cuts is probably the wrong word – lasting for several hours or even days, which have occurred within a few weeks in the Autumn 2003. First was the U.S. East Coast, then the United Kingdom, followed by parts of Sweden and Denmark, to be topped by the ultimate spectacle of a total and lasting blackout of Italy, with the exception of Sardinia.

In the case of the Italian blackout, it seems that the fault was not the proverbial butterfly but a Swiss tree, which caused a flashover on a main power line to Italy. The flashover led to the shut-down of the power line, a fact that was communicated by fax to the Italian utility. But who reads an incoming fax at three in the morning? And according to the latest reports, the same cause may be at the origin of North American black-out of August 14: insufficient vegetation control, insufficient computer maintenance, insufficient training of staff in operation rooms, insufficient communication – is this not simply short for insufficient management?

Politicians find it difficult to accept the gist of the catastrophe theory: that events are not the fault of a sudden and unforeseeable event but the result of overlooked changes over time, for instance in structures with insufficient redundancy and fault tolerance.

The modern term of 'systemic risks' is thus probably a layman's definition of the mathematician's concept of the catastrophe theory, developed in the 1970s. It can be described as a mountain with two

⁴ New Europe of November 9-15, 2003, The Union, p. 7: predictions of global warming effects on crops 'coming true'.

stable situations on either side, and as the way of moving from one side of the mountain to the other. When a given problem shifts from one side to the other, it goes up one side and far beyond the watershed down the other side without anything happening, thus conveying a wrong sense of security – until the situation changes suddenly and radically for no obvious reason at all, causing seemingly a catastrophic event out of the blue.

Another important message from the catastrophe theory is that the same scenario is true for reverting back to the first situation – the problem will not be corrected after reaching the watershed, but only after it has started a long way down the other side of the mountain – and when change happens it will be abrupt, a free fall down to the bottom rather than a controlled slide.

Does this remind you of Murphy's law?

So the real issue of the blackouts for risk managers is a different one, and an issue well known to each of us: how can decision makers be convinced to consider building resilience, redundancy and loss prevention measures into technology, and to apply preventive maintenance where appropriate – issues which are still considered substantial (and unnecessary) cost items, as long as nothing happened. The blackout in Italy has shown the importance of parallel and truly independent energy systems. Automobiles could partly fulfil this role, but only if gasoline stations are equipped with their own generators to power the pumps! The same is true for major buildings and computers of course. To run the electricity grid one needs computers; and to run computers one needs electricity – a classic 'catch 22' situation!

Two research associates of the Geneva Association, as part of their MoT degree (Management of Technology) at the Swiss Federal Institute of Technology in Lausanne, have been studying the problem of power outages in order to understand the underlying principles and to come forward with novel approaches to solutions. a summary of their report is included as a Guest Editorial on the following pages. The full report will be published in the Etude & Dossier series in Spring 2004.

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