Review: Global Catastrophes and Trends: The Next Fifty Years
By Vaclav Smil

Reviewed by Enzo Ferrara
Istituto Nazionale di Ricerca Metrologica, Italy

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Whether they are natural or man-driven, catastrophes challenge humankind's grandeur. Myths address such dreadful discontinuities as the foundation of novel times; literally, in the ancient Greek, *katastrophé* is "the sky falling down", or "a new beginning". Yet, be it Atlantis, the Deluge, locusts, or Armageddon, the only indisputable lesson of history is that sooner or later, suddenly or gradually, civilizations eventually collapse.

If we also are to worry is the question tackled by Vaclav Smil – renowned energy scientist at the University of Manitoba – attempting to identify the major risks of present times and their likely impact to the global future: despite its worldwide high-tech power, a destiny of failure seems inescapable to our culture too.

Smil outlines his skepticism beginning on the first pages. General trends, he observes, follow a pattern of slow gains and gradual diffusion, marked by disperse discontinuities. According to Smil, negative remarks like those given by Jared Diamond (*Collapse*, 2004) or the Ehrlichs (*One with Nineveh*, 2004) rely on projections for population, economy, and environment treated as static. Rather, presenting perspectives over the next 50 years, Smil emphasizes the role played by the complexity of human systems, inherent uncertainties, and our limited understanding. His thesis is that key discontinuities occur generally as low-probability but recurrent phenomena (earthquakes, eruptions, pandemics, wars), or as persistent, gradually unfolding trends (resource depletion, demographic progression, environmental, economic, and political shifts). In both cases, understanding change can help us reverse negative trends and minimize the risks before they bring economic collapse, conflicts, or wide social turmoil.

The list of threats Smil provides for the environment includes catastrophes that never occurred before, such as nuclear war and human-induced climate change. Smil's analysis is thoughtful. He surveys also the assault on the global water cycle, the massive alteration of the nitrogen cycle, and the increasing trend of resistance to antibiotics of common pathogenic bacteria. Our actions have changed natural equilibria well beyond the carbon cycle, with consequences already creating environmental end social problems (droughts, floods, salinisation, deforestation, fishing decline). Furthermore, Smil observes that our technical foundations laid down in the past century require huge supplies of energy whose sources and infrastructures urge change. But this is unachievable without discarding old power hierarchies in the geopolitical scenario and building anew. Any possible revolution in energy will depend on the dynamics of the world order, thoroughly analyzed by Smil in their present state: decline of major economies (Japan, Europe, Russia, U.S.), transformation of the Muslim world, and the rise of China and India.

To quantify the risks, Smil compares the different probabilities. Although catastrophic floods and earthquakes can take place twice per decade, their global effects are limited and the likelihood that world-changing natural disasters occur is vanishing. Rather, as the fight against disease is decelerating, with a growing evidence of contagious diseases, failures in eradication, and antibiotic resistance, we should expect a new pandemic to happen in half a century having the worst impact in the poor world. Those living in the affluent society should be more worried of climate change and environment depletion. But if a sound perspective is sought to lessen the impact of harmful events on a global scale we ought not to ask for whom the bell tolls. Our efforts should converge chiefly on manmade catastrophes that destroy the environment. After 1989, violent conflicts fell in number, the U.S. and Russia reduced nuclear arsenals, and terrorism has rarely been effective beyond symbolism (with the tragic exception of September 11th) – Smil explains – yet the deadly potential accruing to war is orders of magnitude higher than for all natural catastrophes. Mass exodus of populations fleeing conflicts adds to this count, accompanied by famine, which is the most terrible catastrophe of our time. In terms of casualties, modern Armageddon overwhelms any replication of Atlantis or the ten biblical plagues that affected Pharaoh.

The text draws on the author's cultural breadth and gains by his distaste for schematic knowledge. Although he lacks attention to the social and geopolitical ramifications of climate change, Smil provides reliable long-term perspectives along with tables, graphs, and statistics to appraise the dominant trends and potential catastrophes facing humanity for the next generation.

Enzo Ferrara <e.ferrara@inrim.it>, Chemist, Istituto Nazionale di Ricerca Metrologica, Strada delle Cacce, 91 – 10135 Torino, Italy. TEL: + 39 -0-11 3919837.

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