

**Global Catastrophes and Trends: The Next Fifty Years**, by Vaclav Smil. 2008. Cambridge, Massachusetts: MIT Press. 307 + xi. ISBN 978-0-262-19586-7, \$29.95.

*Global Catastrophes and Trends* is a recent book from the prodigious multilingual Canadian researcher, synthesizer, and author, Vaclav Smil. Many readers will be familiar with his previous work on energy, pollution, ecology, and China, much of which informs this volume on issues faced by humankind in the next 50 years. Drawing upon a large and varied literature (36 bibliography pages, perhaps 700 items), Smil divides his book into four components: fatal discontinuities, unfolding trends, environmental change, and dealing with risk and uncertainty. The first section deals with low probability/high impact events such as asteroid collisions and mega volcanoes, as well as pandemics, violence, and, briefly, imaginable surprises including nuclear war. The section on evolving trends documents energy transitions and changes to the global order, where Smil seems to enjoy the gradual decline of the United States and ascendance of China. Evolving environmental trends warrant separate treatment—global warming, sea level rise, biodiversity loss, antibiotic resistance, and ecosystem services among them. Finally, Smil provides an overview of relative, perceived, and absolute risk, prescribing no solutions but urging attention to what may emerge as real threats, observing that “catastrophes and endings are also opportunities and beginnings” (p. 253).

There is some original research in this book, but its considerable value is the synthesis of kinds, magnitudes, and probabilities of different threats into a comparable framework. The scale of analysis is “global civilization” (p. 251), with lesser reference to other personal and family concerns such as children, accidents, safety, health, employment, and poverty, which in cross-cultural studies of popular threat perception have been shown to be more salient than global issues, regardless of awareness. Value added in Smil’s synthesis includes juxtaposition of issues with interesting graphics focusing on OM (order of magnitude) and use of logarithmic scales. Smil brings a careful, analytical, and quantitative perspective in comparing threats, in many cases having to rework data from multiple sources into similar measures. There is also an edge to Smil’s writing: humor, chagrin, opinion, even contempt make this as much a scientific essay as analysis.

Among graphics this reviewer found particularly interesting were those showing volcanic eruptions and deaths (Figure 2.10, p. 28); magnitude of wars (Figure 2.19, p. 51); deaths from terrorism compared to other causes (Figure 2.24, p. 65); and global flows of renewable energy (Figure 3.4, p. 83), although strictly speaking the last shows energy *flow* resources (wind, tides, solar radiation) not *renewable* energy resources (biomass). Figure 5.3 (p. 227) is equally interesting, a log-log graph of “fatalities per person per hour of exposure vs. average annual number of fatalities.” It would not be surprising if many of Smil’s graphics end up in classroom presentations.

As in many books, there are errors reasonably attributed to inadequate copyediting by the publisher and others for which the author must assume responsibility. An example of the former is “and but” (p. 115); throughout the book the text mentions “Figure X” while the item itself is captioned with “Fig. X” for no apparent reason. References Smil 2005a and 2005b (p. xi) should be Smil 2005b and 2005c. In Figure 4.2 (p. 176) graphs of recent and geologic CO<sub>2</sub> concentration have time scales running in opposite directions. Some minor issues of the latter kind include the assertion (p. 41) that there is no treatment for viral pneumonia (agreed, there may be no pharmaceutical cure, but there certainly is palliative treatment) and the outdated pattern of European Union membership in Figure 3.8 (p. 99)—Bulgaria and Romania joined on January 1, 2007. The same Figure 3.8 is entitled “Europe’s Muslim hinterland” (p. 99); why isn’t the title “Islam’s European hinterland” or perhaps “Islam’s Christian heartland”? A dasymetric map of the Muslim world (Figure 3.11, p. 110) has two categories, majority and minority, without qualification that minority must mean some measure of “significant minority”; otherwise most of the world has some degree of Muslim minority. Smil cites Orhan Pamuk’s provocative novel *Snow* as an authority on the complex headscarf issue in Turkey, which Smil calls “a sacred banner of non-negotiable identity” (p. 115). Maybe the Christian sacred banner called a wedding ring isn’t quite so non-negotiable!

There are more significant issues. Regarding Islam, Smil swipes at American understanding of the religion based on the supposed absence of two Arab-language books by Muhammad Shahrur in the Library of Congress (p. 114). In fact, these 1990 and 1994 volumes *are* there, along with two later Shahrur books, from 1996 and 2000. That Americans may well be ignorant of Islam begs the case; absence of two books from the Library of Congress—even if true—would hardly be conclusive. Andreas Christmann’s (2009) English-language Shahrur, published after Smil’s book, will certainly make Shahrur accessible to non-Arabic-language readers and enhance cross-religion understanding.

Figure 3.24 shows a world map of “Failed States” with accompanying text that cites the Republic of South Africa and Djibouti as “the only two stable countries in Africa” (p. 162), whereas many other African countries as well as most of Europe are similarly symbolized on the map (perhaps a confusion of no-data vs. stable?). Here Smil drew upon a map that appeared in an article in *Foreign Policy* that cuts off the list of “borderline states” at the 60th rank whereas the original data from the Fund for Peace Project ([www.fundforpeace.org/web/index.php?option=com\\_content&task=view&id=103&Itemid=325](http://www.fundforpeace.org/web/index.php?option=com_content&task=view&id=103&Itemid=325), accessed May 1, 2009) includes 16 additional countries correctly mapped on the Wikipedia entry for 2005 “failed states” (the additions importantly include China and India). Later years of the index have additional categories, including the previously absent category of insufficient information. Tanzania, Gambia, Senegal, and Botswana should be happy: all are listed more favorably than Djibouti in the 2007 listings, but all join South Africa under the “warning” category by that time.

Smil presents three failed appraisals in his effort to cast doubt on our ability to prognosticate and explain. On climate change, he accepts uncritically the contention that there was a scientific consensus in the 1970s about global cooling (p. 220). Yes, there was media attention to a *supposed*

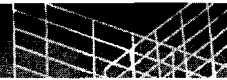
cooling consensus, but review of the scientific literature shows no such consensus. It was debunked by Peterson, Connolley, and Fleck (2008), whose paper was published in September 2008, perhaps too late to come to Smil's attention. Similarly, Smil dismisses fears about possible onset of a global thermohaline ocean circulation collapse, and notes that thermohaline circulation is not responsible for the Gulf Stream anyway, and also that the Gulf Stream does not warm European winters (p. 221, citing Seager et al., 2002). While the dominant atmospheric role in driving the Gulf Stream is correct, the assertion that it does not warm European winters was subsequently challenged as a miscalculation that Smil missed (Rhines and Häkkinen, 2003; see also [www.realclimate.org](http://www.realclimate.org)). Smil also questions the retrospective appraisal of the human role in Easter Island by Jared Diamond in *Collapse* (2005) as a "simplistic explanation" (pp. 223–224). Not getting all the details right in a comprehensive synthesis is certainly a risk.

Issues such as these should not seriously detract from the *Global Catastrophes and Trends* core message: change is inevitable and *sometimes* anticipated. Understanding relative fear, measuring the real odds, thinking and acting rationally, taking opportunities that already exist, and using coping strategies—all suggest that our demise is not inevitable. Nevertheless, do not just sit there, worry!

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