

## Warnings: Finding Cassandras to Stop Catastrophes

By Richard Clarke and R.P. Eddy

Ecco, 2017

416 pp., \$17.95

ISBN-13: 978-0-06248-802-2

Reviewed By Larry Garber

Every day we hear warnings—from parents concerned about the personal safety and good health of their children, to government officials worried about protecting the citizenry from external adversaries and the forces of nature. Distinguishing serious warnings of impending catastrophe from those that are frivolous may mean the difference between life and death, success and failure, freedom and oppression.

In *Warnings: Finding Cassandras To Stop Catastrophes*, Richard Clarke and R.P. Eddy focus on contemporary prophets—respected experts who issue warnings of dire consequences that will likely ensue if specific actions are not taken—and then evaluate the reasons their warnings are ignored or not acted upon with the requisite seriousness. The authors argue that we must pay particular heed to prospective Cassandras who have identified several non-strictly military threats and articulated the grave consequences that may result if their warnings are left untended.

The historic examples are of recent vintage—Iraq’s invasion of Kuwait, Hurricane Katrina, Fukushima, rise of Islamic State of Iraq and the Levant—and will be familiar to most readers, even if the individuals who proved prescient in predicting these events are not. In general terms, the authors argue that government policymakers fail

to heed the Cassandras’ warnings because of their personal characteristics, the biases of those hearing their warnings, bureaucratic sclerosis, and prevailing political winds.

Based on the case studies presented, the authors devise a “Cassandra coefficient” as a guide to identify future disasters. Among the 24 factors that form the guide:

- initial occurrence syndrome—predicted event has never before happened;
- diffusion of responsibility among prospective decisionmakers;
- agenda inertia—too many items competing for attention;
- complexity mismatch—decisionmakers do not have the expertise to understand underlying data forming basis of threat;
- off-putting personality of predictor; and
- scientific reticence associated with predictor who, in rush to issue the warning, does not rely on complete data sets or followed precise protocols.

The authors emphasize that they are not proposing an algorithmic formula or trusting the wonders of big data for determining which threats to take seriously, but instead advocate relying on an analyst’s subjective judgment of the factors comprising the Cassandra coefficient. The faith they place in the human Cassandra in this era of artificial intelligence and deep learning, at times, seems quaint.

The second half of *Warnings* examines seven prospective catastrophes—out-of-control pandemics; rising sea levels; nuclear winter; asteroid impacts; and technological advances associated with artificial intelligence; the Internet of Things; and genetic modification. The focus is directed toward scientists generally associated with prestigious academic institutions who issue the warnings. In some cases,

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the authors acknowledge that government bodies are debating appropriate responses. However, the authors warn against satisficing solutions, where the threat is the subject of further study or to responsive action not commensurate with the potential catastrophe.

*Warnings* can be read as an introduction to the implications of social psychology on policymaking when faced with uncertainty or as an overview of several specific challenges that contemporary policymakers must confront. However, the authors' evident intent—as evidenced by the bright yellow book cover and the *Warnings* title in large bold letters—is to dramatize the issues raised and to provoke debate among senior policymakers. Their broad goal is to influence those involved in national security matters.

In the final chapter, the authors call for the establishment of a new National Warning Office in the White House that would serve as the interagency focal point for identifying disasters on the horizon. They also advocate a series of responses under the general headings of surveillance, hedging, mitigating, and preventing. Finally, they emphasize the importance of applying a communications strategy to persuade reticent decisionmakers, cost conscious budget appropriators, an innocent public, and other nations of the need to act promptly and responsibly to counter the threats.

Surprisingly, given Clarke's and Eddy's respective experiences on the National Security Council, *Warnings* does not provide a guide for how to prioritize among the threats posed by adversary states—China, Iran, North Korea, and Russia—and the threats articulated by the new Cassandras. Currently, the traditional hierarchy of national security concerns preoccupies senior government officials in the executive branch. Their temporal bandwidths do not leave much room to prepare for the inevitable pandemics and sea level increases, much less the threats posed by asteroids or advances in technology that pose new dangers for

humankind. These are perennial back-burner issues, which does not mean that no one in government is responsible for tracking them. Federal agencies, such as National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, Center for Disease Control and Prevention, and U.S. Agency for International Development, have experts who understand the serious threats described in the book, and they are feverishly seeking to devise appropriate responses even as they are starved for resources and their scientific knowledge belittled.

The policy question is how we determine, in our fast-changing and limited discretionary budget world, what is the appropriate amount of resources to invest in threat identification in general and as responses to particular threats once identified. In practice, such decisions are based on traditional political-economic considerations: who has the power, what incentives do they have to act, and are there countervailing factors that can impact their decision? For example, we are inclined to prioritize the eradication of extreme poverty or education for all, over preparing for an asteroid strike, even as research continues regarding remote, over-the-horizon threats.

Beyond the call for a new White House unit, *Warnings* does not consider whether the current architecture of the national security enterprise requires restructuring in view of the new threats. Many of the new threats reflect both stand-alone concerns for the United States and the potential for operational use by our adversaries. Hence, combating these threats requires a 21<sup>st</sup> century national security enterprise that consciously integrates the mission critical teams responsible for governance and resource allocations, operations and execution of programs, and the development and appropriate utilization of technological advances. These teams must provide the needed flexibility, particularly with respect to procurement and personnel, to ensure effective responses to existing and emerging threats.

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All the prospective threats identified in *Warnings* represent challenges not just for the United States, but for the entire international community. Yet, the book gives short shrift to the role of global governance and the potential need for the development of new norms to cover such matters as the use of artificial intelligence, the internet, and gene editing in warfare, peacetime, and the gray periods in-between. The present era requires more inclusive processes, not just among nation states but including representatives of the private sector and civil society, and enhanced cooperation.

The authors do not consider whether their emphasis on the sentinel role of human Cassandras will remain practicable. Technological advances

are increasing our reliance on machines to assess impending catastrophes and to develop appropriate responses. Indeed, it is not science fiction to anticipate increased reliance on Cassandra machines, which issue credible and timely warnings regarding the location of failing infrastructure, the occurrence of natural disasters, and imminence of health emergencies, and that contribute to saving millions of lives. And yet, while we expect technological advances, including super-intelligent machines, to improve personal well-being, human dignity, and freedom, humans must continue to play a leading role in ensuring that values remain an essential part of the equation. **PRISM**

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## International Conflict and Cyberspace Superiority: Theory and Practice

By William D. Bryant.

Routledge, 2016

239 pp., \$54.95

ISBN-13: 978-1-13889-319-1

Reviewed By: Diana Gill

*Cyberspace Superiority* is a compelling mix of advanced technological know-how and easy-to-understand writing. Bryant, a Lieutenant Colonel who is a career fighter pilot and earned his Ph.D. in military strategy, first examines whether cyberspace is a “global common”—i.e. a shared resource like the oceans, atmosphere, space, and Antarctica.

The answer may well determine the future nature of cyber hostilities but, with the issue as yet unsettled, Bryant posits a far more pressing question—is superiority in cyberspace “a useful construct for thinking about and planning for nation-state conflict in cyberspace?”

Loosely defined, superiority in cyberspace is a combatant’s freedom to achieve “friendly objectives, while preventing the enemy from achieving his objectives.” For the United States, this means our ability to operate freely in that environment without significant interference from enemy combatants during a time of war. Bryant likens it to superiority inherent to other domains of warfare—land, air, sea, and space—such as efforts by the U.S. Air Force to control air space, or the U.S. Navy to control the sea. He distinguishes cyberspace from the other domains by its extremely plastic nature. “Every computer, router, or device attached, or removed,

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Dr. Diana C. Gill is an independent scholar and author of *How We are Changed by War: A Study of Letters and Diaries from Colonial Conflicts to Operation Iraqi Freedom*.