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Reducing Catastrophic Risk Through Integrative Assessment

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The stakes couldn't be higher. There are impending catastrophic risks that threaten to end human civilization. We could face not only the deaths of billions worldwide, but also the loss of countless future generations. As any goal we may have depends on our continued existence, our top societal priority must be to reduce catastrophic risk.

Alarmingly, catastrophe may not be far off. British Astronomer Royal Sir Martin Rees, author of Our Final Hour, gives humanity just a 50/50 chance of surviving past 2100. But whether we survive is not like flipping a coin. Through action, we can tip the odds in our favor.

Many successful catastrophic risk reduction projects already exist. NASA's Spaceguard Survey has catalogued many large asteroids that could collide with Earth. The Nuclear Threat Initiative has helped stem nuclear proliferation. And Al Gore and the Intergovernmental Panel on Climate Change (IPCC) won a well-deserved Nobel Peace Prize for raising awareness and understanding of climate change risk.

These efforts share many features. Each is well-funded and has high-level government support. Each blends the physical science of the underlying risk with the policy science of how to address it. And each focuses on one specific risk. This single-risk approach allows in-depth analysis of each risk.

Our greatest hope, however, is in an integrative approach to catastrophic risks. Such efforts highlight which risk reduction efforts are most important. In a world of limited resources, we must prioritize among risk reduction efforts. Super-volcanoes may be able to cause our extinction, but they are very rare and there is little we can do to stop them. Nuclear warfare, on the other hand, is more likely, but can be avoided through measures of non-proliferation and geopolitical stability. Thus, we should invest more in reducing nuclear warfare risk than in reducing super-volcano risk.

An integrative risk approach identifies the many interactions between risks. For example, climate change may worsen geopolitical tensions, feeding large-scale war. Such war could be the largest impact of climate change. It also could be avoided not only by reducing greenhouse gas emissions but also by encouraging geopolitical stability. To be fair, the climate change and warfare communities do have a long history of dialog- indeed, nuclear winter is itself a climatic phenomenon- but even today this dialog is more the exception than the rule.

Finally, an integrative risk approach streamlines the assessment and response process. This is because different risks can often use similar methods for assessment and response. For example, the techniques for assessing the uncertainty surrounding risks are quite similar regardless of the nature of the underlying risk. Also, policies to regulate technologies which could cause catastrophe are similar, regardless of whether the technology is nuclear, biological, computational, or other. Finally, defense mechanisms such as Earth refuges and space colonies would prevent a wide range of catastrophes from causing human extinction.

Under the leadership of the Oxford University-based Future of Humanity Institute, a new initiative has been launched to address catastrophic risk in an integrative fashion. To date, the initiative has published a book and hosted a conference on catastrophic risk (see global-catastrophic-risks.com). As a delegate of the conference, I witnessed firsthand the tremendous synergy that occurs when all risks are considered together.

This integrative project should be expanded. More research is needed to understand what the most important risks are and how we can address them most effectively. However, the project should not be strictly academic. Instead, it should involve the business and policy communities so that research can be

translated into action. And since catastrophic risk is a global phenomenon, the effort should be global in scale. This could resemble the IPCC and its policy counterpart, the United Nations Framework Convention on Climate Change.

We may never be able to completely eliminate catastrophic risk, but through efforts like those described here, we can go a long way toward reducing it. We can prevent some catastrophes entirely, and we can reduce the severity of many others that do occur. Doing so, however, requires dedicated effort. This effort should be society's top priority. Our very survival depends precisely upon it. *Seth Baum is a Ph.D. student in the Geography Department at Pennsylvania State University and a member of the Writers Circle of the American Geographical Society. He can be reached at mailto:sbaum@psu.edu*

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