

rates second in Japan and Germany after viewers have watched the film, it performed poorly in the United States and—even stranger from a non-U.S. view—is not affected by the film: About 7 percent of watchers and nonwatchers chose it.

There is much more to comment and compare about the studies mentioned, and the participants of the Potsdam workshop agreed to unite forces to create such a comparison. For now it is worth noting that the impact studies of *The Day After Tomorrow* have entered a new, reflexive area of climate change research: the area of the impacts of impacts. Twentieth Century Fox Germany has established an initiative to facilitate emissions trading rights and reducing CO₂ emissions of services, events, and traffic (see <http://www.climatepartner.de>). One might take it as image work, but it is also an indication that *The Day After Tomorrow* might not be the last of the global warming movies. Thus, it will be helpful for climate scientists to continue researching media and film representations of climate change and the public's response to them. It is doubtful that the creators of the United Nations Framework Convention on Climate Change had Hollywood on their minds when they drafted Article 6, which asks for improved communication and education on the issue of climate change. But the entertainment industry seems to have done quite a lot for the public awareness of climate change, and Anthony Leiserowitz gave us a very useful look at this new domain of climate impact research.

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1. See <http://www.boxofficemojo.com/movies/?page=main&id=dayaftertomorrow.htm>.

2. A. Leiserowitz, "Before and After *The Day After Tomorrow*: A U.S. Study of Climate Risk Perception," *Environment*, November 2004, 22–37.

3. F. Reusswig, J. Schwarzkopf, and P. Pohlentz, *Double Impact. The Climate Blockbuster The Day After Tomorrow and its Impact on the German Cinema Public*, Potsdam Institute for Climate Impact Research (PIK) Report No. 93 (Potsdam, Germany: PIK, 2004), http://www.pik-potsdam.de/publications/pik_reports.

4. M. Aoyagi-Utsui, "The Day After Tomorrow: A Study on the Impact of A Global Warming Movie on the Japanese Public," National Institute for Environmental Studies (NIES) Working Paper (unpublished), October 2004; T. Lowe et al., "Does Tomorrow Ever Come? Disaster Narrative and Public Perceptions of Climate Change," Draft Tyndall Working Paper (unpublished), October 2004; and A. Balmford et al., "Hollywood, Climate Change, and the Public," *Science*, 17 September 2004, 1713.

As the article "Before and After *The Day After Tomorrow*" was going to press, I was very pleased to learn that somewhat similar studies had been conducted in the United Kingdom, Germany, and Japan. Thanks to the generous hospitality of Fritz Reusswig and the Potsdam Institute for Climate Impact Research, the primary investigators of all these studies gathered for a workshop in October 2004 to share our respective findings. This meeting was quite stimulating and led to the formation of an international research team to conduct cross-cultural experimental research.

I thank Reusswig for his comments on the paper and would like to take this opportunity to address his primary concern. We conducted three national surveys of the American public—before, during, and several months after the movie played in theaters. The article reported results from the first two waves, in particular the second, which compared a randomly selected group of movie watchers and nonwatchers from a national sample in June 2004—several weeks after the movie debuted. The first two surveys were not based on a within-subject (panel) design, so this study was unable to directly measure whether watching the film changed an individual's attitudes toward climate change. Thus Reusswig raises a legitimate question: Are the significant differences observed in the U.S. study between movie watchers and nonwatchers really due to the impact of the film, or did movie watchers already have "more pro-climate or pro-environment attitudes before entering the cinema"? In other words, perhaps moviegoers went to the film because they were already more concerned about global warming.

Three streams of convergent evidence suggest this hypothesis is incorrect. First, our own and other previous national surveys have found that climate change is not a highly salient concern of the American public, yet by the time of our second survey, 21 million American adults had seen the movie in the theater. Our respondents were randomly selected to represent this group. On its face it seems unlikely that 21 million Americans went to the film because they were already highly concerned about global warming. It is more likely that most people went to see the film because it was a summertime, blockbuster disaster movie.

Nonetheless, we explicitly tested this hypothesis in our third and final survey, completed in

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November 2004. In this survey (not reported in our article because it had not been conducted yet) we re-interviewed the same respondents as in wave two, including movie watchers. We asked them, "Why did you watch this movie?" Of all movie watchers, only 17 percent said they went because they were "interested in global warming." By contrast, 83 percent of moviegoers went because they "liked the trailer" (29 percent), "like disaster movies" (21 percent), "like to see all big films" (21 percent), or "another reason" (12 percent). In contrast, Reusswig's team found that among German moviegoers, 36 percent said a prior interest in climate change led them to watch the film. As he writes, "The German panel study demonstrates a rather strong self-recruitment of . . . more engaged visitors of the film." Again, by contrast, only 17 percent of American moviegoers said they went because of a prior interest in global warming. Thus, the results on which he bases his conclusion that "there is a significant self-selection effect" are probably more indicative of very interesting cross-cultural differences between German and American climate change risk perceptions.

Second, as reported in the article, we determined that movie watchers were demographically different from the general public—they tended to be slightly younger, male, Hispanic, and politically liberal. We therefore used multiple regression to control for sociodemographic and political variables, including sex, age, education, income, race, political party, and political liberalism. In almost all cases and as

reported in the article, we found that even after controlling for these variables, there remained significant differences between the attitudes of watchers and nonwatchers.

Third, as reported in the *Environment* article, we directly asked movie watchers whether the movie made them more worried about global warming. Forty-nine percent of moviegoers said the film made them somewhat (36 percent) or much more worried (13 percent), 42 percent said it did not change their level of worry, and finally, only 1 percent said it made them less worried. These three streams of convergent evidence all suggest that indeed, the reported differences in perceived risk between watchers and nonwatchers were due to the impact of the film.

During the meeting in Potsdam, the principle investigators of all five studies identified a number of other intriguing cross-cultural differences in American, British, German, and Japanese responses to the movie, which we intend to investigate further with a multinational experimental study, using exactly the same research design and instruments in these and other cultural contexts. We have only scratched the surface, however, in the effort to understand the role of popular representations of risk (such as movies, books, television, fiction, and nonfiction) or of cross-national differences in public risk perception and behavior.

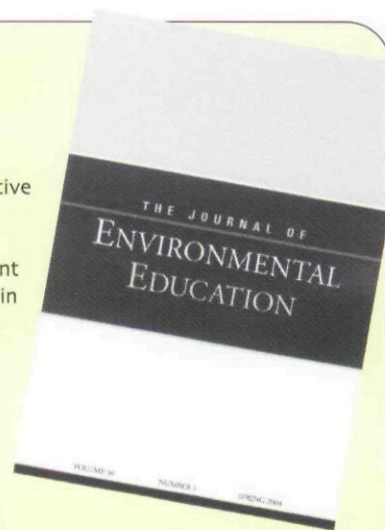
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