

POLITICAL ECONOMICS

Why People Turn to Bombs

Ethan Bueno de Mesquita

In *What Makes a Terrorist: Economics and the Roots of Terrorism*, Alan Krueger (a professor of economics and public policy at Princeton University and adviser to the U.S. National Counterterrorism Center) addresses a key question in the academic and policy debates sparked by 9/11: What are the individual and societal causes of terrorism? The book's great strength is its focus on new sources of data examined in new ways. Somewhat less satisfying are the conclusions drawn from the evidence. Krueger seems overly confident that correlations in the data have simple causal interpretations. As a result, although the book makes real contributions to our understanding of the empirical landscape of terrorism, I remain skeptical of the author's inferences and policy conclusions.

The most compelling analysis in the book is of biographical information on operatives from Hezbollah and Hamas. This is a substantial contribution, offering insight into who becomes a terrorist and, as important, pushing terrorism studies in a productive new direction, toward microlevel data. Not surprisingly, these data yield Krueger's most provocative results: Terrorist operatives are neither poor nor poorly educated. Rather, their economic and educational statuses tend to lie around, or even slightly exceed, the averages in their societies. Moreover, terrorists are not especially likely to emerge from the world's poorest countries.

Following 9/11, many policy-makers took as self-evident that poverty and ignorance were at the root of terrorism. Krueger quotes President Bush: "We fight against poverty because hope is an answer to terror." The book provides a valuable service in dispelling the stereotype of the poor, ignorant terrorist. And Krueger takes the argument one step further, concluding, "A wealth of evidence now shows that any effect of education and poverty on terrorism is indirect, complicated, and probably quite weak."

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What, then, are the root causes of terror? Krueger suggests two. First, across countries, the absence of political freedom is positively correlated with terror attacks. Thus, Krueger argues, "a lack of civil liberties seems to be a main cause of terrorism around the world." Second, democracies are more often the victims of terrorism than autocracies. The reason, Krueger suggests, is that democratic leaders are more responsive than autocratic leaders to



Terror in the streets. This depiction of a bomb exploding on Paris's Avenue de la Republique appeared in the February 1905 issue of *Le Petit Journal*.

public opinion, making terrorism—a tactic designed to create mass panic—more effective in democracies.

Krueger concludes that alleviating poverty is unlikely to reduce terrorism and that counterterrorism operations that violate civil liberties may be counterproductive. "The importance of guaranteeing civil liberties has been underemphasized as a means of prosecuting the war on terrorism and the war in Iraq," he argues. Krueger also suggests that terrorism "only matters in a big way if we let it matter." If the media and the government minimize the public panic that terrorist attacks engender, the negative consequences of such attacks will be diminished.

There are good reasons to be skeptical of Krueger's interpretations of his findings and, ultimately, of his policy conclusions. Ironically, most of the grounds for skepticism revolve around lessons that many social scientists learned from Krueger himself, in his path-breaking work in labor economics on how to

draw causal inferences from observational data—an approach made famous by another economist in the bestseller *Freakonomics* (1).

In particular, one needs to be cautious in drawing even intuitive conclusions based on simple patterns in the data. Occasionally, Krueger acknowledges such concerns. Often, however, he seems overly confident of his conclusions, given the evidence.

One example relates to Krueger's argument that democracies suffer more terrorist

attacks than autocracies because democratic leaders are more responsive to terrorism, making democracies attractive targets. Other scholars offer a different interpretation: the empirical relationship between regime type and terrorism is spurious and actually reflects systematic underreporting of terrorist incidents in nondemocracies (2). If they are correct, this calls Krueger's theoretical inference into question.

Critiques with more substantial policy implications can be made of other of Krueger's arguments. As I have discussed elsewhere (3), Krueger's important observation that terrorist operatives are neither poor nor poorly educated does not justify his conclusion that socioeconomic factors are irrelevant for terrorist mobilization. As Krueger himself notes, terrorist organizations screen potential recruits, preferring educated candidates

because they are more effective in carrying out difficult assignments (4). To see the problem this creates for Krueger's logic, suppose that terrorist organizations accept recruits only over some competence threshold and that, as suggested by the data, competence is positively correlated with income or education. Suppose, further, that economic downturns increase mobilization (perhaps by decreasing opportunity costs). In such a world, because of screening, the terrorists actually observed will be neither poor nor poorly educated, just as in Krueger's data. Yet, Krueger's conclusion will not be true: the supply of acceptable operatives and, therefore, the expected level of violence will be affected by economic factors. Of course, this theoretical argument does not establish that poverty causes terrorism. But it does suggest that the data Krueger presents on the socioeconomic status of terrorists do not entail his inference that "there is not much question that poverty has little to do with terrorism."

What Makes a Terrorist Economics and the Roots of Terrorism

by Alan B. Krueger

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For similar reasons, I am not as convinced as Krueger that the data show that limited political freedoms are a root cause of terror. The negative correlation between political freedom and terrorism could be due to causal forces that run in either direction—repression could spark violence or violence could lead a government to repress (a point that arises in the question-and-answer section at the end of the book). This causal uncertainty is important. In many conflict situations, counterterrorism operations necessitate an infringement on the rights and interests of civilians. As a result, sometimes civil liberties cannot be increased in the presence of a terrorist threat without a concomitant security trade-off. Before reaching strong conclusions about how to balance such concerns, we should seek more compelling evidence of the causal link between political freedom and political violence.

References

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MICROBIOLOGY

Life in the Really Hard Places

Tom Schmidt

In the classic *Microbe Hunters* (1), microbiologist Paul de Kruif provided an enthralling account of scientists who had devoted their careers to pursuing the unseen world of microbes. His tales of their difficult but rewarding work that identified bacteria and viruses as the causative agents of many of the medical scourges plaguing humanity inspired many current researchers in the field. *The Third Domain* has the potential to similarly enthrall readers and inspire future generations of microbiologists. Rather than recounting discoveries about the relatively few microbes that cause disease, Tim Friend takes readers on a journey that begins

The Third Domain
The Untold Story of
Archaea and the Future
of Biotechnology

by **Tim Friend**

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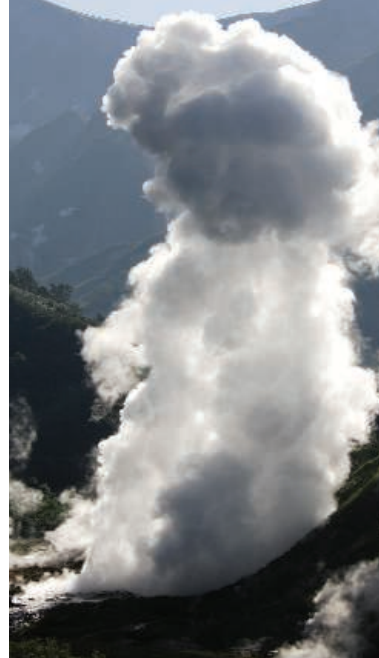
with the discovery of the Archaea—a fundamental discovery that challenged the paradigm that life splits neatly into two distinct groups, one prokaryotic and the other eukaryotic. As Friend so deftly explains, instead there are three primary lineages (or domains) of evolutionary descent: Bacteria, Eukarya, and Archaea.

The journey begins in the 1960s at the University of Illinois, where Carl Woese, driven by a vision of the tremendous value that would be derived from a phylogenetic tree encompassing all forms of life, developed the means to assess the evolutionary relatedness of microbes. (Friend gained an insider's historical perspective through conversations with many of the scientists featured in the book, including Woese.) We learn of the combination of insight and persistence that led to Woese's discovery of the Archaea. Perhaps not surprisingly, serendipity played a part as well: Ralph Wolfe—the world expert on methane-producing “bacteria”—

occupied a lab just down the hall from Woese and suggested that he take a look at these unusual microbes. Those methanogens offered the first evidence that there was more to life than bacteria and eukaryotes. As in any engaging history of science, it is not just the discovery that is recounted; in addition, readers are offered a view into the politics of science. We find that

Woese's discovery of the Archaea was greeted with skepticism by many and ridicule by others, including some very influential scientists.

Along the way, readers meet some of the researchers who recognized early on the dramatic consequences of Woese's discovery. These include the swashbuckling Karl Stetter, hunter extraordinaire of microbes that prefer life in boiling, sulfide-rich waters, and Norman Pace, who combined molecular phylogenetics with strategies to cull DNA sequences directly from natural communities of microbes. Pace's approach to exploring the microbial world without requiring that the organisms of interest be maintained in cultures unleashed a revolu-



Hot home for extremophiles. Velikan (“Giant”) geyser survived the 3 June 2007 landslide that seriously damaged Kamchatka's Valley of the Geysers.

tion in microbial ecology that continues to reverberate.

Friend himself apparently developed a taste for exploring the world of microbes and quit his job as a science journalist for *USA Today* in order to devote his full attention to the Archaea. The book offers readers excursions through Yellowstone National Park to scuba dive for hyperthermophilic microbes, into Costa Rican rainforests to collect termites that house a microbial community in their gut that may be the world's best bioreactor for degrading cellulose, and on a helicopter-assisted foray into Russia's Valley of the Geysers.

Along the way, we learn of biotechnological applications that stem from these exotic microbes, including the potentials to minimize our reliance on fossil fuels and to remediate some rather nasty chemical dumps.

These travelogues are sprinkled with primers in microbiology and chemistry that are needed to fully appreciate life's third domain. For example, while riding a submersible to view the microbial assault under way on the *Titanic*'s hull, Friend takes the opportunity to explain how the vast diversity of microbes in the world's ocean is being cataloged and how genomic methods revealed a previously unrecognized type of photosynthesis in the seas. He also weaves into the adventure stories relevant vignettes from the history of microbiology that set the stage for the archaeal revolution.

It is easy to be swept along with Friend's wild ride through the world of microbes. In his exuberance for explaining the pivotal roles of microbes on Earth, there are some minor errors in details (as there would be in the first edition of any textbook that tackles complex topics), but these are easy to overlook and do not interrupt the excitement of the hunt for new forms of life.

The Third Domain brings deserved acclaim to the discovery of the Archaea as one of the 20th century's most dramatic developments in biology. I suspect many readers will be persuaded to join Friend in his recently acquired fondness for these spectacular microbes.

Reference

1. P. de Kruif, *Microbe Hunters* (Harcourt, Brace, New York, 1926).

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