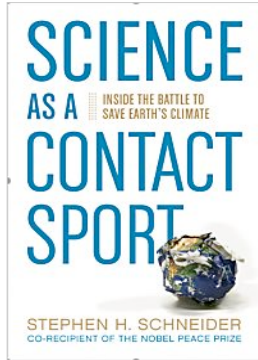


## Book Review



**Science as a Contact Sport: Inside the Battle to Save Earth's Climate**, by Stephen H. Schneider, Washington D.C.: the National Geographic Society, 2009, 288 pages, \$28.00 (hardback)

Reviewed by Todd Doersch

Stephen Schneider was a prolific pioneer of climate science and perhaps the field's most articulate and vocal advocate of the urgent need for mitigation of human-induced climate change. He died suddenly of a heart attack in July 2010 while flying from one climate conference to another. His legacy will be that of a clarion caller. If the world soon manages to come together to establish and enforce performance standards on emissions; to put a market-oriented price on carbon; and to institute strong incentives to innovate in clean-tech, then Schneider's leadership will have been one key catalyst. His enduring influence is evident by the symposium in his name, [the 2011 Stephen H. Schneider Symposium on Climate Change: From Science to Policy](#), held August 24–27 in Boulder, Colorado.

### Purposes of the Book

Schneider states that his book, *Science as a Contact Sport*, recounts “the story of how climate scientists gradually formed a strong consensus that human activity has produced potentially dangerous changes in Earth's climate” (p. 10). His insider's historical overview sets up his call to action: Schneider gives specific advice to scientists on how they can communicate better with politicians, the media, and the general public. He also gives strong advice to policy makers on concrete steps to take. And he tells the rest of us what we can do to make a difference.

In addition to his overt goal for the book, I sensed two additional unstated purposes: Schneider wants to provide a scorecard for us, a cast of characters to help the uninitiated interpret the cacophony we hear regarding climate science. And he wants to set the record straight on a few niggling points. I did appreciate his introduction of the personalities from climatology and his demystifying of the alphabet soup of acronyms routinely used in the

field. He was quite blunt in his criticism of those who pursued “persistent distortion” (p. 204), or perpetrated “scientific dishonesty” (p. 220), as well as in his praise of those he admires.

### **Context of the Book**

Recall that the book was released in October 2009, just two months before the start of the momentous UN Climate Summit in Copenhagen, at which expectations were raised and then dashed for a successor treaty to the Kyoto Protocol. Clearly, Schneider was hoping his book would frame the debate and improve communications. His intentions might have come to pass, were it not for the infamous “Climategate” controversy that erupted just weeks before Copenhagen and usurped all attention away from Schneider’s book. A cynical but plausible interpretation of events is that a party with a vested interest to see the Copenhagen summit fail orchestrated the cybercrime as a PR trap that the media fell for hook, line, and sinker. Whereas Schneider had tried to build trust by advocating a transparent process, the criminals who stole the emails of six academics in England were trying to undermine trust through obfuscation. Although far too late for Copenhagen, the findings of all inquiries into the episode concluded that not one scientific finding was discredited from the entire body of research contained in the Intergovernmental Panel on Climate Change (IPCC) (Schneider, Feb. 4, 2010).

### **Through the Lens of Investment Management**

My background is economics and finance, not biology or climate science. Yet Schneider’s book reveals that I—and many of my investment management colleagues—share considerable common ground with Schneider: We both are Bayesians who update our prior beliefs as the new information comes in. We both are model builders who continually enhance and refine models to predict a noisy future. We both estimate probabilities and designate ranges to our inputs and our outputs. In short, we both are accustomed to making decisions in the face of uncertainty with only partial information.

While we share some of the same toolkit, the challenges investment managers confront with those tools pale to triviality in comparison to the profundity of Schneider’s focus. For example, when Schneider points out an “unfortunate overlap in time scales” (p. 257) (that is, it takes too long to establish statistical significance), he is not referring to a factor used to predict a stock’s return. He means that by the time we ascertain definitively that CO<sup>2</sup> is a real problem, Earth will be far beyond irreversible “tipping points.” Sea levels will rise dramatically, storms will be more extreme and damaging, cultural heritages will be lost, species will go extinct. The real costs of destroyed infrastructure and foregone benefits to society will be immense. Kind of makes tweaking an alpha model seem childish by comparison.

## Confronting Critical Challenges

Schneider advises that we “protect the planetary commons” (p. 257), an allusion to Garrett Hardin’s famous 1968 paper, “Tragedy of the Commons,” in which Hardin formalizes a conundrum recognized by the classic Greeks as well (Hardin, 1968). Schneider states the conundrum thus: “I was sometimes disgusted how national interests trump planetary interests, and the here-and-now overshadows long-term sustainability” (p. 193). Since before Aristotle, people have recognized the individual incentive to exploit a free externality, even though by doing so, the value of that externality erodes toward zero for the entire community. Schneider proposes a conventional solution for the tragedy of the commons: “The price of energy should reflect all the costs, including damages to nature and society from unpriced emissions” (p. 265). That is, put a price on carbon, so that the cost of carbon emissions can be taken into account in any manufacturing process.

Battling “bipolar framing” by the media is another challenge Schneider confronts (p. 259). He explains that well-intentioned journalists who seek two-sided “balance” in their coverage of science issues are actually committing a disservice to their readers by leaving the mistaken impression that both sides are equally credible. In science, unlike politics, there is a preponderance of evidence that has been tightly scrutinized by many well-qualified experts. Often there are other distinct, nuanced views—not just one diametrically opposing view—that have likewise earned their own respective levels of credibility through rigorous and, in fact, skeptical peer review. “Science is not about equality. Quality trumps equality,” Schneider asserts (Schneider, Feb. 4, 2010). He offers guidelines for how scientists can communicate better to journalists: (1) Scientists must drop any superiority judgments; (2) Scientists must thoroughly explain how they arrive at their conclusions; and (3) Scientists must go into explicit detail on their websites (where depth is possible), in contrast to the highly abbreviated sound bites of an interview session (p. 229).

If neither the media nor governments are very good at sorting out relative credibility, then scientists must do it in structured organizations such as the Intergovernmental Panel on Climate Change (IPCC), in which Schneider was active since it began in 1988. He helped the IPCC crystallize and codify the distinction between evidence-based assessments of experts and values-based judgments of citizens. Judgments are the legitimate domain of public policy debate, in which issues and costs are weighed and in which every opinion is equal. Schneider defines this process as “risk management.” But he draws a sharp distinction between risk management and risk assessment. Risk assessment requires extensive scrutiny and confirmation of scientific findings in a forum of experts. The IPCC provides just such a rigorous forum in which over 180 climate scientists from around the world review and interpret existing scientific literature. The goal of the IPCC is to provide

evidence-based analysis to the policymakers, whose debates will thereby be better informed. The IPCC should not be viewed as a biased advocacy group, according to Schneider (p. 142). Fellow founder of the IPCC, Bert Bolin, said “To gain international credibility, the process must involve witnesses that many nations and groups can trust. The combination of expertise and witnessing the legitimacy of the process is what has made IPCC so effective.” (p. 142)

### **Communicating Probabilities**

Schneider insists that his academic colleagues apply consistent terminology when describing ranges of probabilities. He and others in the IPCC drafted a formal treatment of uncertainties in 1998 that applied a quantitative scale to phrases like “very low confidence” versus “low confidence”, for example. Assigning subjective ranges to such phrases required much negotiation, but brought hundreds of occurrences of such phrases into consistency throughout the growing body of climate research. This initiative became particularly important as the numerous strands of independent, specialty research evolved into closer interdisciplinary collaboration (p. 151).

### **Prescription for the Future**

After clearly delineating the distinction between the agnostic, fact-based scientific method, versus the judgment-laden policy debates of “risk management”, Schneider jumps explicitly over to the risk management side of the line, and shares with us his personal judgments on what we should be doing. Regarding the dilemma mentioned previously that it takes too long to gather definitive statistical proof, Schneider asks: “Why take major risks with the planetary life-support system when mitigating the risks can be done for a small fraction of the growth rate of GDP?” (p. 274) He advocates pursuing three mutually-reinforcing climate policy initiatives: establishing regulatory performance standards that require reductions in carbon emissions; putting a price on carbon (either with a direct tax on carbon emissions, or indirectly via a cap and trade system); and providing incentives to innovate in the realm of clean tech (p. 263). All three initiatives will require Herculean diplomacy skills to coordinate on international levels, a stage on which our planet has not yet exhibited much success. Still, Schneider is optimistic that we can come together, if only scientists and policy makers improve their communications. Schneider hopes that with attractive incentives in place, venture capitalists will encourage inventive entrepreneurs to develop clever carbon capture and sequestration. As a very last resort, only if the three initiatives have failed and Earth is clearly speeding past numerous disastrous tipping points, would Schneider countenance forms of “geoengineering” that attempt to cool the planet to counteract the warming effect of high CO<sup>2</sup> (p. 272).

Perhaps his most ambitious and idealistic suggestion is that the developed world should “help developing countries onto a clean and green pathway by literally leapfrogging over the industrial revolution to high tech, as has already happened with communications” (p. 266). Schneider’s noble goal is to preempt the pollution that otherwise would be generated if 2.6 billion Chinese and Indians adopt the same carbon-intensive pathway followed by 1.1 billion Americans and Europeans. The math indicates that in order to reduce global CO<sup>2</sup>, we need China, India, and the rest of the developing world *not* to follow our bad example.

### **Ethics, not Economics**

Schneider acknowledges that the policy debates will be difficult largely because there will be both losers and winners with *any* scenario, including the “do nothing” scenario. He believes we must “fashion solutions to deal fairly with those particularly hard hit by impacts of climate change and climate policies” (p. 257). While everyone should like the sound of “fairness,” game theory tells us there are numerous reasonable but conflicting ways to define fairness. I am less optimistic than Schneider that the planet will be able to reach consensus in the realm of ethics, given our poor track record thus far and our very disparate belief systems.

### **Setting the Record Straight**

Schneider feels he must set the record straight regarding four unflattering episodes in his career; whereas I do not think he needs to be so defensive. He goes to some length explaining why and how he changed his stance early in his career from forecasting global cooling to warming based on refinements in his modeling. In another chapter, Schneider bends over backwards to articulate a posthumous rapprochement with Carl Sagan, with whom he had a public feud in the early eighties regarding the climate implications of nuclear war. In a third example, Schneider clearly is still chaffing from being misquoted in an interview in *Discover* magazine in 1988. Journalists and bloggers continue to malign Schneider by resurrecting the “double ethical bind” misquote. The fourth case is an apology for being a very frequent flier and thus having a much larger carbon footprint than most other people. His students remind him that his positive influence over many people justifies his high personal carbon emissions. I think the book would be stronger if all four episodes were edited out.

### **Summary**

*Science as a Contact Sport* by Stephen Schneider serves its intended purpose well as an historical review of how the relatively young field of climate science has evolved. The book puts to rest any lingering doubts regarding whether or not the earth is warming (it is),

and whether or not the change is human-induced (it largely is). The book also provides an impassioned and compelling call to action to reduce our carbon emissions before our planet reaches irreversible “tipping points.” I picked up the book as an uninformed skeptic. The book induced me to inquire more deeply into the topics raised. I have gained a fuller appreciation for the complexities involved in climate research and policy negotiations, and I thank Steve Schneider for broadening my horizons and conveying a vocabulary that will allow me to be a more discerning consumer of news from the field of climate science in the future. For example, I look forward to tracking the activities of the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Framework Convention on Climate Change (UNFCCC) as we approach the expiration of the Kyoto Protocol at the end of 2012. I heartily recommend the book to other investment management professionals.

## References

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The 2011 Stephen H. Schneider Symposium on Climate Change: From Science to Policy, to be held August 24-27 in Boulder, Colorado. Link to [http://woods.stanford.edu/cgi-bin/wp/?page\\_id=53](http://woods.stanford.edu/cgi-bin/wp/?page_id=53)

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