

To: "Dr. Baruch Fischhoff - Chair, National Academy Committee on Improving Intelligence" <baruch@cmu.edu>, "Dr. Theda Skocpol - National Academy of Sciences" <ts@wjh.harvard.edu>, "Bill Nordhaus - National Academy of Sciences" <william.nordhaus@yale.edu> "Dr. Daniel Goroff - OSTP" <dgoroff@ostp.eop.gov>, "Dr. Richard Cooper - Former Director, National Intelligence Council" <rcooper@harvard.edu>, "Dr. David Shaw - PCAST" <dshaw@blackpointgroup.com>, "Dr. Robert M. Hauser - Exec. Director, DBSSAE" <hauser@ssc.wisc.edu>, "Mr. Jake Sullivan - Director, Policy Planning Staff via Ms. Marisa S. McAuliffe" <mcauliffems@state.gov>, "Dr. Richard Atkinson" <rcatkinson@ucsd.edu>, "Dr. John Mark Hansen - Dean and COSSA Executive Committee" <jhansen@uchicago.edu>, "Dr. Kenneth Prewitt - COSSA President" <kp2058@columbia.edu>, "Dr. Craig Calhoun - Chair-elect AAAS Section K" <calhoun@ssrc.org>, "Dr. William Press, PCAST and AAAS President-elect" <wpress@cs.utexas.edu>
From: Lloyd Etheredge <lloyd.etheredge@policyscience.net>

Subject: 266. Red Team Followup: Detecting Emergent Systems;
Fwd: Brooks on Emergent Systems.
Congratulations!

Dear Dr. Fischhoff, Dr. Hauser, Dr. Skocpol, and Colleagues:

The column by David Brooks in today's New York Times discusses an interesting idea - emergent systems - for a Red Team followup project. If we are dealing with a world of emergent systems - and how can we know? - the standard, fixed coefficient models and unreinvented statistics will make US learning rates slower, and diminish capacities for nimble and effective policy in response to changing circumstances and new political opportunities. We really do need new social science tools to detect such systems, when the conventional intuitions, assumptions, and images of government leaders and agenda-setters also can lag.

Thus, it would be helpful for a Red Team/National Academy project to challenge

conventional beliefs by inventing a system-level strategy to identify and learn quickly about emergent systems. This also would be a useful performance criteria and challenge for the DNI to include in its list of requests to NSF: the right answer is going to include NSF-funded data systems for social science (e.g., content analysis).

[The Kuhnian and other barriers may, however, defeat NSF in such fields as the changes (e.g., new asymmetries of brainpower and money) in the global economic/financial system. so they may not offer a short-term solution to an urgent challenge.]

Congratulations on this morning's Times article by Benedict Carey, based on the project!

David Brooks, as you may know, is a member of the American Academy Commission on the Humanities and Social Sciences (referenced in my earlier message).

LE

March 28, 2011. NYT

Tools for Thinking

by DAVID BROOKS

A few months ago, Steven Pinker of Harvard asked a smart question: What scientific concept would improve everybody's cognitive toolkit?

The good folks at [Edge.org organized a symposium](#), and 164 thinkers contributed suggestions. John McWhorter, a linguist at Columbia University, wrote that people should be more aware of path dependence. This refers to the notion that often "something that seems normal or inevitable today began with a choice that made sense at a particular time in the past, but survived despite the eclipse of the justification for that choice."

For instance, typewriters used to jam if people typed too fast, so the manufacturers designed a keyboard that would slow typists. We no longer have typewriters, but we are stuck with the letter arrangements of the qwerty keyboard.

Path dependence explains many linguistic patterns and mental categories, McWhorter continues. Many people worry about the way e-mail seems to degrade writing skills. But there is nothing about e-mail that forbids people from using the literary style of 19th-century letter writers. In the 1960s, language became less formal, and now anybody who uses the old manner is regarded as an eccentric.

Evgeny Morozov, the author of "The Net Delusion," nominated the Einstellung Effect, the idea that we often try to solve problems by using solutions that worked in the past instead of looking at each situation on its own terms. This effect is especially powerful in foreign affairs, where each new conflict is viewed through the prism of Vietnam or Munich or the cold war or Iraq.

Daniel Kahneman of Princeton University writes about the Focusing Illusion, which holds that "nothing in life is as important as you think it is while you are thinking about it." He continues: "Education is an important determinant of income \cap one of the most important \cap but it is less important than most people think. If everyone had the same education, the inequality of income would be reduced by less than 10 percent. When you focus on education you neglect the myriad of other factors that determine income. The differences of income among people who have the same education are huge."

Joshua Greene, a philosopher and neuroscientist at Harvard University, has a brilliant entry on Supervenience. Imagine a picture on a computer screen of a dog sitting in a rowboat. It can be described as a picture of a dog, but at a different level it can be described as an arrangement of pixels and colors. The relationship between the two levels is asymmetric. The same image can be displayed at different sizes with different pixels. The high-level properties (dogness) supervene the low-level properties (pixels).

Supervenience, Greene continues, helps explain things like the relationship between science and the humanities. Humanists fear that scientists are taking over their territory and trying to explain everything. But new discoveries about the brain don't explain Macbeth. The products of the mind supervene the mechanisms of the brain. The

humanities can be informed by the cognitive sciences even as they supervene them.

If I were presumptuous enough to nominate a few entries, I'd suggest the Fundamental Attribution Error: Don't try to explain by character traits behavior that is better explained by context.

I'd also nominate the distinction between emotion and arousal. There's a general assumption that emotional people are always flying off the handle. That's not true. We would also say that Emily Dickinson was emotionally astute. As far as I know, she did not go around screaming all the time. It would be useful if we could distinguish between the emotionality of Dickinson and the arousal of the talk-show jock.

Public life would be vastly improved if people relied more on the concept of emergence. Many contributors to the Edge symposium hit on this point.

We often try to understand problems by taking apart and studying their constituent parts. But emergent problems can't be understood this way. Emergent systems are ones in which many different elements interact. The pattern of interaction then produces a new element that is greater than the sum of the parts, which then exercises a top-down influence on the constituent elements.

Culture is an emergent system. A group of people establishes a pattern of interaction. And once that culture exists, it influences how the individuals in it behave. An economy is an emergent system. So is political polarization, rising health care costs and a bad marriage.

Emergent systems are bottom-up and top-down simultaneously. They have to be studied differently, as wholes and as nested networks of relationships. We still try to address problems like poverty and Islamic extremism by trying to tease out individual causes. We might make more headway if we thought emergently.

We'd certainly be better off if everyone sampled the fabulous Edge symposium, which, like the best in science, is modest and daring all at once.

Dr. Lloyd S. Etheredge

Policy Sciences Center

URL: www.policyscience.net

301-365-5241 (v); lloyd.etheredge@policyscience.net (email)

[The Policy Sciences Center, Inc. is a public foundation that develops and integrates knowledge and practice to advance human dignity. Its headquarters are 127 Wall St., Room 322 PO Box 208215 in New Haven, CT 06520-8215. It may be contacted at the office of its Chair, Michael Reisman (michael.reisman@yale.edu), 203-432-1993. Further information about the Policy Sciences Center and its projects, Society, and journal is available at www.policysciences.org.]