

A Security Community Challenge: System Effects

The security community, especially at the strategic level, has always been concerned with system effects. This includes non-linearities, feedback, indirect effects, contingences, interaction effects, and unintended consequences. The increasingly close coupling of system in complex societies has made system effects an acute concern. A simple example of the kind of phenomena we are referring to is the following:

“The introduction of cell phones in India contributed to the spread of AIDS: They allowed prostitutes to make their own arrangements with clients, thereby enabling them to move out of brothels. Brothels, however, had been good sites for enforcing the use of condoms.” (Jervis, p396)

System effects cross boundaries, activate non-obvious potentials, and produce sharp deviations. Historians recognize system effects, and thus it is no surprise that decision makers, who live with system effects daily, have an affinity for history and find historical analogies to be meaningful and persuasive. But social scientists often bypass system effects in the way they conduct research. Two ways this is done is to focus on short causal chains within limited domains, and to assume that environments are placid and equilibrating. A methodological argument for this approach is that parts of reality must be understood under controlled conditions first. Only then will there be a basis for considering system interactions within realistic environments. Regardless of whether one accepts this reductionist argument, there is limited opportunity or reward for academic researchers to proceed to examine systems phenomena. The costs of this neglect can be huge, and they are borne both by decision makers and the nation as a whole. A prime example is the 2007 economic crash. Fed Chairman Alan Greenspan was shaken by events and was honest enough to admit that his lifelong assumptions concerning a self-correcting economic system were wrong. He recognized that he was not able to conceive of runaway feedback that broke the standard model and led to disaster. Others who study system phenomena were well aware of such possibilities and were able to assess risks that others did not recognize and to propose effective remedies. Recent advances in theory and method suggests that the study of system effects has huge potential over the next decade, especially in security domains.

The state of the art is ably surveyed in the special issue of the journal cited below. Three of the contributors -- Scott Page, Philip Tetlock, and Robert Jervis -- have developed a strong following in the security community. The National Academies itself conducted a symposium on this topic in May at CIA, where Page, Tetlock, Yaneer Bar-Yam, Joshua Epstein, Claudio Cioffi-Revilla, Ian Lustick, and other system effects researchers received a warm reception. (See the link to the May symposium presentations on the Decadal project page.) These are just a sample of the relevant sources, not the only names to consider. New tools are attractive, but there are several related traditions, such as systems thinking and cybernetics, that offer alternative methods and continue to produce insights concerning systems effects and should not be overlooked.

(In response to the second call for white papers, I will follow up with some “solutions”.)

Robert Jervis (2012) SYSTEM EFFECTS REVISITED, *Critical Review: A Journal of Politics and Society*, 24:3, 393-415.

<https://scholarlyresearchandarticles.files.wordpress.com/2015/03/089138112e20122e767048.pdf>

This journal issue is focused on the continuing relevance of Jervis’s book, *System Effects: Complexity in Political and Social Life* (Princeton, 1998). See table of contents:

www.tandfonline.com/toc/rcrj20/24/3. In his article Jervis notes that, while there has been a great deal of progress that will be important for decision makers, the academy continues to shun this type of research.

Quoting from the flyleaf of the original book: “Robert Jervis concludes in this provocative book that the very foundations of many social science theories--especially those in political science--are faulty. Taking insights from complexity theory as his point of departure, the author observes that we live in a world where things are interconnected, where unintended consequences of our actions are unavoidable and unpredictable, and where the total effect of behavior is not equal to the sum of individual actions.”