

RESILIENCE AND HOMELAND SECURITY PATRIOTISM, ANXIETY, AND COMPLEX SYSTEM DYNAMICS

BY BENJAMIN SIMS

IN THE REALM of U.S. homeland security, the word of the day seems to be “resilience.” As a sociologist working in this area, I encounter the term more and more frequently, in a variety of contexts. More publicly, Secretary of Homeland Security Jeannette Napolitano has frequently spoken about her department’s efforts to “strengthen the resilience of ... infrastructure, computer networks, and of ... communities and citizens” (Napolitano, 2010). Resilience is also prominently mentioned in recent Homeland Security policy documents, including the 2010 Quadrennial Homeland Security Review, which lists “Ensuring Resilience to Disasters” as one of five core “Homeland Security Missions” (Dept. of Homeland Security, 2010), and the 2009 National Infrastructure Protection Plan (NIPP), which now emphasizes the dual goals of “protection and resilience” (Dept. of Homeland Security, 2010). The Department of Homeland Security (DHS) sponsors conferences of its grantees in the academic community under the rubric of “Science and Technology for Intelligent Resilience.” Resilience is a broad concept as it is used in the homeland security realm—it can refer to the technological nuts and bolts of infrastructure, as well as the more general character of a community, region, or nation. Though it is too soon to say for certain, the term may be on its way to encompassing or displacing more established terms like “protection” and “vulnerability.”

The concept of resilience, as it is currently used, has a surprisingly interdisciplinary history. Engineers have long used resilience to refer to the ability of materials to spring back to their original shape, but the modern notion of resilience of systems seems to have emerged in the discipline of ecology in the mid-1970s, with the publication of a now-widely cited paper on the topic by Canadian ecologist C.S. Holling (1973). Holling made a point of distinguishing between two ways of understanding system resilience—an engineering perspective that assumes a system has a single, well-defined equilibrium state that it can return to after a disruption, and an ecological perspective that sees systems as having multiple, dynamic equilibrium states. In engineered systems, Holling and his colleagues have argued, resilience can be defined as the



KATRINA AFTERMATH

A U.S. Army High Mobility Multipurpose Wheeled Vehicle traverses through floodwater surrounding the Superdome in New Orleans, Louisiana, September 2005.

time required to return to normal function after a disruption, while in ecological systems, resilience is the ability of a system to avoid being pushed over the edge into an alternative equilibrium regime (Folke 2006; Gunderson 2000; Holling 1996). In a disciplinary reversal, these definitions are now widely cited in the engineering literature as a way of distinguishing whether a particular resilience project is treating an engineered system in the classical manner or treating it as a complex, quasi-ecological system (e.g. Blackmore and Plant 2008; Madni and Jackson 2009). Within ecology, resilience became a central theme for a great deal of work in the area of social-ecological interactions. From ecology and engineering, the concept

eventually migrated into the field of disaster research, a domain of interdisciplinary research dominated by engineers and social scientists. In this field, it became the basis of a new focus on the resilience of human communities, including the infrastructure systems that enable them to function (Bruneau et al. 2003; Norris et al. 2008; Cutter et al. 2008). Disaster researchers, in turn, seem to have introduced the term into the DHS lexicon, although the exact sequence of events at that point is pretty speculative.

There is little consensus, even within specific research traditions, on what properties of a system make it resilient. Madni and Jackson (2009) list a number of resilience heuristics that have been proposed in the engineering literature, in-



cluding functional redundancy, physical redundancy, ability to reorganize, human-in-the-loop when needed, predictability of system behavior, complexity avoidance, graceful degradation, inspectability, and ability to learn or adapt. As this list indicates, resilience is generally closely linked to ideas about system complexity, self-organization, and adaptability.

So, origins aside, why has resilience become the latest word in homeland security? What is its appeal, and why does it make sense to people at this point in history? I think there are four key reasons for its ascension.

The first is that resilience is a good fit with prevailing assumptions about the nature of infrastructure and its sensitivity to harm. In the

20th century, the term infrastructure emerged as a military concept, and was first problematized in terms of protecting distinct infrastructure assets from harm. During the Cold War, a systems view of infrastructure emerged, with a focus on civil defense and ensuring that infrastructure systems, as whole entities, could survive an attack. This view became the basis of the all-hazards “critical infrastructure protection” paradigm that emerged in the 1990s and remains the basis of much homeland security activity (Collier and Lakoff 2008). More recently, however, there has been a movement toward conceptualizing infrastructure systems not just as systems, but as complex networks with dynamic behavior and many interdependencies that could be

exploited by adversaries. For example, DHS’s National Infrastructure Simulation and Analysis Center (NISAC), at Los Alamos and Sandia National Laboratories, is largely dedicated to simulating the dynamics of infrastructure network disruption, including the impact of interdependencies between systems. Resilience, with its connotation of adaptation and bouncing back in the face of disruption, captures this sense of the dynamics of a complex network.

A recent example of how resilience has become associated with this network perspective is a DHS call for proposals to enhance community resilience, which focuses on social network analysis as the main tool for predicting community response to disasters (Department of Homeland

Security 2010). This suggests the possibility that both social and technological elements of resilience may eventually be encompassed within the network metaphor of complex system behavior.

The second reason resilience works so well for the homeland security community is that it appears more “pro-active”—to use contemporary management-speak—than the alternatives, vulnerability and protection (Wilbanks 2010). Vulnerability might be seen as implying weakness, while protection implies a purely defensive stance. Resilience, on the other hand, enables patriotic appeals to American values. To quote Jeanette Napolitano again,

America is a strong nation. And we are a resilient nation. But ... we can't guarantee there won't be another successful terrorist attack ... if that attack comes, our enemies will still not have succeeded, because our nation is too strong, and too resilient, to ever cower before a small group of violent extremists. We have always rebounded from hardships and challenges, and come together as a people to overcome disasters, attacks, and war. And we will do so again (Napolitano, 2010).

So, while the concept of resilience may have originally come out of a very academic context, it is apparent here that part of its success as a term lies in its ability to be mobilized in an explicitly political rhetoric of national identity.

Third, I wonder if the term resilience is becoming popular not just because of its optimistic, can-do connotations, but also because it taps into a darker vein of contemporary anxiety in wealthy Western countries like the United States. By most indicators, the U.S. is not a particularly vulnerable country (though of course vulnerability is not evenly distributed within the population). While it is subject to hurricanes, earthquakes, and other natural hazards, and is now understood to be at some risk from terrorist attacks, the U.S. generally has the infrastructure and resources in place to prevent large numbers of casualties and mitigate the social and economic impacts of most foreseeable natural disasters or hostile acts. Our large, technologically advanced military also ensures that we have the defensive resources to counter all but the most determined adversaries.

But first the 9/11 attacks, and then Hurricane Katrina, have raised questions about the stability of these systems. Could it be (we may fear) that even with the vast resources at our disposal, and with the best of intentions, there is still some

crucial piece missing, some aspect of our way of life that puts us at greater risk than we should be? Perhaps a brittleness, a disconnectedness, a lack of cohesiveness as a society that creates weak points that could bring the whole system down? If I'm not mistaken, these kind of doubts hover on the periphery of much of our national

Vulnerability might be seen as implying weakness. Protection implies a purely defensive stance. Resilience, on the other hand, enables patriotic appeals to American values.

discourse on homeland security. Resilience—particularly the concept of community resilience—is all about developing the means to knit communities more tightly together, strengthening both material and social ties and creating a stronger sense of solidarity. Resilience, in this sense, represents the inverse, the negation, of some of the most characteristic fears of modern Western societies, giving it additional rhetorical power.

Finally, related concepts, like vulnerability, have a tendency to bring up social inequalities. Studies of vulnerability show that it is minorities, the poor, the elderly and the disabled who are at greatest risk of harm from disasters. This often is taken to imply redistributive solutions, which in the United States makes it unlikely to form the basis of a political consensus. Resilience, on the other hand, implies a system where community members come together as equals to solve important problems and resolve deep anxieties in a cooperative, “pro-active” spirit, which is much more likely to be perceived as politically neutral.

In summary, resilience has become popular because it works as a “boundary object” (Star and Griesemer 1989): that is, an entity that has meaning and rhetorical utility for a wide range of communities, including academic ecology, engineering, and social sciences; the developers of infrastructure and social network simulations for homeland security applications; and DHS administrators and politicians promoting national security agendas. It provides a common rubric under which these communities can talk to each other and the public, avoiding potential controversies while responding to the characteristic anxieties of our time. □

BENJAMIN SIMS is technical staff member at the Los Alamos National Laboratory.