PEER

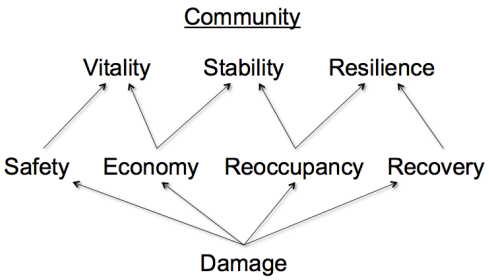
PACIFIC EARTHQUAKE ENGINEERING RESEARCH CENTER

in conjunction with ***SEMM*** *- Structural Engineering, Mechanics and Materials*
Department of Civil and Environmental Engineering, University of California, Berkeley

SEMINAR - Monday, March 14, 2016, 12:10 - 1 pm
502 Davis Hall

Earthquake Resilience:
A New Context for Engineering Research

Once the Resilience movement gets past its buzzword phase, what will it mean to our work as structural engineers?



Earthquake resilience, however you define it, is as much about re-occupancy and recovery as it is about safety. So a shift to resilience-based design will involve new performance objectives, new design criteria, and even new structural systems for limiting downtime. But as resilience emerges as the new basis for seismic mitigation policy, it will also bring more fundamental changes to the way we think about building codes, to the way we measure building performance throughout a jurisdiction, and to the roles we play as engineers.

Our current practices might be inadequate, even counterproductive, in terms of community resilience. Resilience, much more than safety, requires communal action; you can make your building *safe* for yourself, but you can't make your business *resilient* without the rest of the block, neighborhood, city, or region also contributing. The resilience challenge is what economists call a tragedy of the commons, and it cannot be solved by relying on rational self-interest alone. In other words, if we just copy the policies and programs we used for safety hazards, swapping in the word "resilience" for "safety," we will likely fail.

This recognition should affect the advice we give to clients and the input we give to policy-makers. Structural engineers have helped lead past efforts to reduce earthquake risk. If we intend to continue that leadership, we will need to be more careful in lending our support to efforts that mean well but will have unintended, if predictable, consequences. The complexity of the resilience challenge means it is no longer enough for engineers simply to endorse every proposal with the words "earthquake" or "retrofit" in it; we might actually have to smartly oppose some ideas in order to make progress. Using case studies from current projects and recent policy initiatives, Bonowitz will suggest how engineers can maintain their influence, with new confidence and expertise, in the coming era of resilience-based design.

David Bonowitz, SE is a past chair of SEAONC's Seismology and Existing Buildings committees, and he currently chairs the NCSEA Existing Buildings committee. He represents SEAONC on SEAOC's Legislative Committee, is a member of EERI's Advocacy and Public Policy Committee, and is active in the SPUR Resilient City initiative and in the NIST Community Resilience Program. He is a Fellow Member of both SEAONC and SEAOC. Bonowitz is a graduate of Princeton University and holds a Master of Engineering in Structural Engineering from UC Berkeley.