Planning for Resilience

The disruptive and potentially devastating trauma caused by inevitable natural, economic, and political shocks has long plagued cities and regions. The growing global importance of concentrations of people and agglomerations of economic activity in this "century of the city" also means concentrated exposures increasingly severe shocks and stresses posed by a changing climate, technological dependence, and decentralized security threats. Most recently the 2011 Tōhoku earthquake and tsunami and Superstorm Sandy in 2012 brought the vulnerability of major urban centers in advanced nations to the forefront of urban planning and policymaking.

While resilience is a four-decade old concept describing the capacity of socio-ecological systems to retain their original purpose after enduring some catastrophic change, its recent emergence as a planning concept can seem like the latest trend in a slew of buzzwords. At this year's UCLA Lake Arrowhead Symposium, we take a deep dive into the core concept of urban resilience: cities as dynamic systems of systems that are both complex and unpredictable, but also – with the proper mix of robustness, resourcefulness, innovation, and flexibility – unparalleled engines of self-organized response and recovery. Coming back to the surface, we will make strong, relevant connections to current practice with specific examples from U.S. and world cities and actionable approaches to enhance the resilience of cities and regions.

Resilience planning moves away from traditional disaster management, based on planning for specific hazards, toward acknowledging the uncertainty of direct causes and impacts of inevitable future system shocks. Resilience planning acknowledges the growing threat of chronic stresses – caused by climate change or infrastructure

disinvestment – in addition to the sudden shocks that have always impacted cities, such as earthquakes, storms, and fires.

Resilience planning and policymaking acknowledges the interdependencies between diverse regional population groups, economic sectors, and place types in making regions resilient; recognizing that a region's recovery may depend on its most vulnerable populations, sectors, neighborhood, or transportation link. These include short-term actions that enhance the robustness of civic institutions, socio-economic and environmental systems – robustness that enhances the city's response and recovery capacity after inevitable system shocks. For example, a place with robust civic institutions will be better able to withstand the effects of an earthquake. It will have greater government institutional capacity to adopt and enforce building codes, educational systems to train structural engineers, and the foresight and resources to plan for disasters and activate an enhanced response competency after an event.

Theories and decision-making tools that rely on static views of metropolitan residents and systems are inadequate in the face of inevitable change in baseline conditions. A changing climate means the environment in this century will differ substantially from the last one. A changing economy means historic notions of annual growth, full employment, and balance between economic sectors, regions, and nations may be less relevant to predicting the future. Resilience planning requires more agile governance approaches based on adaptive learning in response to fresh information, multidimensional goal-setting, acknowledged changes in baseline conditions, and multiple versions of the future.

Symposium Objectives

- Define what resilience planning means, and its implications for policy and planning in communities and regions,
- Examine case studies of more and less resilient responses to major shocks such as hurricanes and earthquakes in order to draw lessons for future practice,
- Explore a series of specific examples of resiliency planning in order to make the concept clear and meaningful for practitioners and their organizations, and
- Focus on policies and planning for more slow-burning yet increasingly significant resilience issues, such as decaying infrastructure, drought and climate change.

Who should attend?

The UCLA Lake Arrowhead Symposium is a collaborative enterprise that each fall brings together researchers, practitioners, elected officials, and private sector stakeholders to discuss and debate some aspect of the transportation – land use –

environment connection. This symposium is intended for policy-makers and analysts in the public and private sectors whose work concerns long-term planning, management, and finance of transportation and land use systems in cities and regions, and who are concerned with the continuity of those systems amidst environmental, economic, and social change. The program is structured to encourage active participation and dialogue among speakers and audience members, who are purposefully heterogeneous in order to stimulate thoughtful discussion and debate among all participants.

Symposium Organizers

Todd Gauthier
Communications and Events Manager, UCLA Lewis Center for Regional Policy Studies and UCLA Institute of Transportation Studies

Juan Matute, AICP
Associate Director, UCLA Lewis Center for Regional Policy Studies and UCLA Institute of Transportation Studies
Lecturer, Department of Urban Planning and Institute of Environment and Sustainability, UCLA

Brian D. Taylor, FAICP
Professor of Urban Planning, UCLA Luskin School of Public Affairs
Director, UCLA Lewis Center for Regional and Policy Studies and UCLA Institute of Transportation Studies

Presenting Organizations

Lewis Center
Communities • Transportation • Environment

UCLA ITS
INSTITUTE OF TRANSPORTATION STUDIES

Program

Sunday, October 19, 2014

1:00 PM Registration, check-in, and refreshments

1:30-1:45 **Welcome and Symposium Overview** [Presentation PDF]

Brian Taylor, Todd Gauthier, & Juan Matute

1:45-2:45 **What Are Resilient Cities and Regions, and Why Should We Care?**

We kick-off the symposium by defining the concept of resilience for cities and regions. What are resilient places? Can place-based resilience be measured? Resilience planning for cities and regions necessitates a systems-oriented approach to understanding and managing the complex relationships between people, place, and gradual or sudden catastrophic change.

Moderator: **Juan Matute**

Talk titles:

Resilience for cities and regions: What it means, and why is it important? [Presentation PDF]

Aidan Hughes, Principal, Arup

Resilience lessons from New Orleans [Presentation PDF]

Alexandra Norton, Director of Organizational Effectiveness, City of New Orleans

Discussion

2:45-3:30 **Planning for Resilience** [Presentation PDF]

Bill Fulton, FAICP, Director, Kinder Institute for Urban Research at Rice University

3:30-4:00 Break

4:00-5:30 **Resilient Infrastructure: Buildings, Energy, & Water**

In this session, we take a deep dive into infrastructure, specifically buildings, energy & water. These are essential systems that many take for granted until they fail. Each of these systems are critical to the resilience of places. Buildings shelter not only people but also house the institutions that organize response to calamity. Energy powers information-gathering and decision-making capacity. Because of the reliability of water delivery systems, we are more likely to store food than water. This makes access to potable water a key constraint in meeting basic human needs amidst calamity. How can these systems be made more resilient to both immediate but also long-term threats?

Moderator: **Mike Schneider**, Senior Vice President, HDR, Inc.

Talk titles:

From sustainable water policy to sustainable water systems: 21st Century approaches to resilient infrastructure [Presentation PDF]

Maria Mehranian, Managing Partner & Chief Financial Officer, Cordoba Corporation; Chairperson, Los Angeles Regional Water Quality Control Board

Distributed electricity generation, smart microgrids, and resilience [Presentation PDF]

Byron Washom, Director, Strategic Energy Initiatives, UC San Diego

Resilient water systems for drought-prone regions [Presentation PDF]

Bill Funderburk, Vice President, Los Angeles Department of Water and Power Board of Commissioners

Discussion

5:30-6:30 Check-in and reception

6:30-8:00 Dinner

8:00-9:30 **A Tale of Two Cities: Hurricane Katrina and Superstorm Sandy**

Two hurricanes, two regions. In the case of Hurricane Katrina, the capacity of many systems was overwhelmed prior to, during, and after the event. Severe poverty, infrastructure disinvestment, and other

factors that exacerbate vulnerability came to a head in a catastrophic event that overwhelmed the response capacity of government at all levels.

New York City has been seen as a leader in climate adaptation planning. Even before Sandy, the city sought to understand and mitigate risks posed by its waterfront. In this panel, we will discuss pre- and post-Sandy conceptions of and actions to enhance resiliency in New York City. This panel will include cross-cutting themes of social, economic, and environmental resiliency. One big change before and after Sandy was the perceived need for small business continuity programs to quickly rebuild the economic fabric of neighborhoods.

Moderator: **Cheryl Viegas-Walker**, First Vice President, Southern California Association of Governments

Talk titles:

Lessons from New Orleans' decade-long recovery from Hurricane Katrina [Presentation PDF] [Supplemental Materials PDF]

John Renne, AICP, Associate Provost for Urban Initiatives; Associate Professor, Planning and Urban Studies; Director, Merritt C. Becker, Jr. Transportation Institute, University of New Orleans

Response and recovery from Hurricane Sandy: What's worked, and what hasn't? [Presentation PDF]

Anne Strauss-Wieder, Principal, Anne Strauss-Wieder, Inc.

Discussion

9:30-11:00 Informal reception

Monday, October 20, 2014

7:45-8:30 Breakfast

8:30-10:00 **Soft Infrastructure and the Vulnerability and Adaptive Capacity of Cities and Regions**

A focus on hard infrastructure, such as bridges, microgrids, and earthquake-safe buildings can overlook the multiple, overlapping systems that make places more or less resilient. In this panel, we explore the role of economic, civil, social, and communications networks in place-based resilience.

A robust regional economy with high employment is generally seen to reduce vulnerability, but what role do sectoral diversification and the sharing economy play in resilience? Top-down emergency management efforts may overlook the role of non-governmental organizations, which can play a role in preparedness and emergency response, but also whose continuity can be essential as places adapt and recover. The adaptability of the communications network - both the physical and institutional paths of information flows during and after a catastrophic event highlights the role of self-organization and a hierarchical system structure in a resilient response.

Moderator: **Nurit Katz**, Chief Sustainability Officer, UCLA

Talk titles:

Beyond sectoral diversification: Improving the adaptive capacity of household, neighborhood, and regional economies [Presentation PDF]

Sunaree Marshall, Resilience and Environmental Justice Program Analyst, Office of Economic Resilience, U.S. Department of Housing and Urban Development

The often overlooked role of non-governmental organizations in making places more resilient [Presentation PDF]

Brent Woodworth, Executive Director, Los Angeles Emergency Preparedness Foundation

Small businesses and resilience: A case study from Christchurch, New Zealand [Presentation PDF] [Supplemental Materials PDF]

Joanne Stevenson, Research Associate, Resilient Organizations, Christchurch, New Zealand

Discussion

10:00-10:30 Break

10:30-12:00 **Resilient Transportation**

How can communities prepare to maintain the continuity of people and goods movement amidst service disruptions? How have storms, terrorism, and other disasters affected daily mobility and our regional economies? How do sudden incidents affect our daily commutes?

Gradual change threatens the transportation system. Global petroleum demand increasing faster than known reserves suggests rising prices,

perhaps dramatically, in the years ahead. Underinvestment in transportation systems means they grow more vulnerable every day, and the long established system of user finance of transportation systems has grown increasingly unstable.

These gradual changes make the transportation system more vulnerable to sudden events. The terrorist attacks of 9/11 destroyed a major transportation hub under the World Trade Center. Hurricane Sandy inundated the PATH system, causing a month-long outage and hundreds of millions of dollars in repair costs. What can California learn from New York and New Jersey's experience?

Moderator: **Laurie Berman**, District Director, California Department of Transportation

Talk titles:

New York commuter rail after 9/11 and Sandy: Lessons for Southern California [Presentation PDF]

Michael DePallo, Chief Executive Officer, Metrolink

Why it wasn't Carmageddon: The behavioral side of adaptive capacity in transportation networks [Presentation PDF] [Supplemental Materials PDF]

Martin Wachs, Distinguished Professor Emeritus, Urban Planning, UCLA

$5 (or $6 or $7) a gallon: Making transportation systems more resilient in the face of increasing oil demand [Presentation PDF]

Paul Sorensen, Senior Software Manager, Cambridge Systematics, Inc.

Discussion

12:00-1:25 Lunch

1:25-2:55 **Managing, Financing, & Planning for Resilience**

Resilience as a concept applied to cities and regions is overarching and can seem non-specific. How can a planning or policy manager organize teams in projects in support of resilient outcomes for places? Investments that enhance a community's adaptive capacity may be seen as wasteful, redundant, or excessive. What financing strategy is needed to enhance the resiliency of cities and regions? How do system

preservation, state of good repair, and changing funding formulas fit into this new paradigm?

Planning for resilience begins before decisions are made. A wider array of information is needed for decision-making processes that seek to enhance a system's resilience. The amount of information needed to plan and build resilient cities can be too much to analyze via traditional planning methods. New decision-support tools can help planners envision and plan for multiple future eventualities in advance rather than a single point forecast of the future.

Moderator: **Donald Shoup**, Distinguished Professor of Urban Planning, UCLA

Talk titles:

Asset management approach to managing and financing infrastructure [Presentation PDF]

Josh Deflorio, Senior Associate, Cambridge Systematics

Robust decision-making under uncertainty as a planning tool for resilient cities & regions [Presentation PDF]

Robert Lempert, Director, Frederick S. Pardee Center for Longer Range Global Policy, RAND Pardee School

Household finance and economic vulnerability [Presentation PDF]

Jane Pollard, Professor, Economic Geography, Newcastle University (UK)

Discussion

2:55-3:10 **Breakout Activity**

Breakout discussion groups are an optional activity for participants to engage in focused discussions on specific topics. Breakout groups are self-organized: a few topics have been proposed, but you may propose a new topic you're interested in discussing so that others can join. Propose new topics or sign up for groups on the message board outside of the meeting hall.

Groups can meet formally or informally during the free time the reception, dinner, the informal reception, or breakfast on Tuesday morning. Groups will share their highlights on Tuesday at 9:30 AM

3:10-6:00 Free time

5:30-6:30 Reception

6:30-8:00 Dinner

8:00-9:30 **Shaken, but Not Stirred (to Action)? Twenty and 25 Years After the Northridge and Loma Prieta Earthquakes: What Will (and Won't) Be Different When the Next One Hits?**

In this panel we focus on lessons learned from these events. Many in the audience will remember these incidents. We focus on what has changed, what pre-existing vulnerabilities remain, and what new vulnerabilities have emerged since. We'll also discuss how achieved or needed changes that make California's major regions more resilient to earthquakes will reduce vulnerability or enhance adaptive capacity to withstand other threats.

Northridge and Sylmar were both overnight quakes that occurred at a time with minimal loading on the transportation system. What might a major daytime earthquake be like today?

Moderator: **Andre Boutros**, Executive Director, California Transportation Commission

Talk titles:

San Francisco 25 years after Loma Prieta: Water under the bridge? [Presentation PDF]

Janiele Maffei, Chief Mitigation Officer, California Earthquake Authority

Los Angeles 20 years after Northridge: What's the (soft) story? [Presentation PDF] [Supplemental Materials PDF]

Jonathan P. Stewart, Professor and Chair, Department of Civil Engineering, UCLA

Learning and adapting in pursuit of resilience: What would be different today? [Presentation PDF] [Supplemental Materials PDF]

Mary Comerio, Professor, College of Environmental Design, UC Berkeley

9:30-11:00 Informal reception

Tuesday, October 21, 2014

7:45-9:00 Breakfast & Breakout Group Meetings

9:00-9:30 **Setting the Stage: Planning to Make Places More Resilient**

Can a place be resilient to earthquakes, but not to floods or civil unrest? In this penultimate session, we will examine the importance of planning for multiple futures in making places more resilient.

In this talk, Ray Quay presents examples of adaptive governance for planning and policy.

Decision-making processes that incorporate resilience planning methods may lead to adoption of counterintuitive policies and measures. For example, adding development and activity at already congested transit nodes may worsen congestion, but diversify the transportation system by increasing use of non-auto modes. While such diversity may enhance resilience, not all may see or value this benefit. Thus, securing popular and political support for implementation of resilience measures may prove challenging.

Moderator: **Richard Willson,** Professor and Chair, Department of Urban and Regional Planning, California State Polytechnic University

Talk title:

Anticipatory governance approach to resilience planning
[Presentation PDF]

Ray Quay, Research Professional, Decision Center for a Desert City, Julie Ann Wrigley Global Institute of Sustainability

9:30-10:30 **Breakout Groups Report Back; Facilitated Discussion**

Facilitator: **Richard Willson**

Discussion

10:30-11:00 Break

11:00-12:00 **Resilience: From Concept to Practice**

Speakers will reflect on the 2.5-day program, sharing insights on what resilience planning means for their organizations.

Moderator: **Brian Taylor**

Mike McCoy, Executive Director, California Strategic Growth Council

Victoria Salinas, Chief Resilience Officer, City of Oakland

Discussion

12:00-1:30 Concluding lunch