Final Progress Report
Sustainability Science Program
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Fields: Public administration, political science, transportation policy, social network analysis.

Degree program, institution, and graduation date:
      Ph.D., Transportation Technology and Policy
      University of California, Davis
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Faculty hosts at Harvard: David Lazer and Bill Clark, Harvard Kennedy School

SSP research project: I employ social network analysis to better understand how and why policy actors organize their collaborative relationships, and to better understand the implications of this networking behavior for sustainability. The applied context of my research is regional land use and transportation planning in California. The aim of my project is to better understand how institutions may be designed to promote sustainable outcomes by promoting networks that encourage social learning and innovation. Title: "Tying it All Together: Networks and Policy-Oriented Learning in Regional Planning Processes."

SSP research project, abstract:

This project investigates the determinants of policy network structure, and the role of belief systems and biased learning in shaping networks. Understanding the interplay between beliefs and networks is important in order to move towards a theory of institutional design to support policy and social learning in the face of complex problems of sustainability. Three theoretical frameworks are adopted to explain network structure. The Advocacy Coalition Framework (ACF) asserts that actors are subject to systematic cognitive biases that polarize networks along ideological lines. This causes entrenched political conflict and tends to inhibit successful learning. The Institutional Analysis and Development framework asserts beliefs and values do not drive network structure, and that actors seek to position themselves close to political resources. Social Capital Theory asserts that policy brokers are able to span divides within networks by making investments in collaborative ties.

Hypotheses are tested using survey data on the beliefs and networking behavior of policy elites involved in transportation and land use planning in five regions of California (N = 752). Results lend support for the ACF view that networks are polarized through cognitive biases, but also demonstrate that shared

beliefs are not a sufficient explanation for network cohesion. Power-seeking may be a strong driver of networking within ideologically-similar groups (as predicted by Institutional Analysis and Development), and policy brokers can help to create social capital both within and across groups through transitivity effects. Finally, this project underscores the need to develop better methods of survey-based network measurement to support future research on policy networks.

The problem I address: Successful policy learning is vital to sustainability, but is very difficult to achieve. I hypothesize that this is due in large part to cognitive biases that cause stakeholders in policy processes to filter out information that contradicts their prior beliefs and values. It is also due to institutional constraints that do inhibit the formation of social networks across certain critical boundaries.

Key question asked about the problem: Do collaborative policy-making institutions promote networks that facilitate learning and collective action, despite these cognitive biases? Are some types of social networks "optimal" for promoting successful learning and innovation?

Methods used to answer this question: Survey data on beliefs and network relationships are collected from policy elites involved in regional planning processes in California. Social network analysis is then used to uncover the structural features of decision-making processes that have been more successful in promoting learning within the policy domain. My project makes use of exponential random graph models (ERGM) and an adaptation of quadratic assignment procedure (QAP) to test hypotheses of learning and social network structure. I also use agent-based computer simulations to test the dynamic consequences of different learning models.

Principle literature upon which my research draws: Political science, public administration, policy studies, sociology, and management.

Empirical data acquisition: Survey data was collected from 752 policy elites involved in regional land-use and transportation efforts in five regions of California. Surveys measured belief systems and various types of policy-relevant network relationships. A portion of my work also employs agent-based computer simulation.

Geographical region studied: Planning regions within California: Merced, Tri-County, Riverside, San Diego, and Sacramento.

Recommendations that might be relevant to problem: The potential for successful learning increases when networks are dense and span structural holes (e.g., no groups are left out of the process). Thus, collaborative processes should seek to close gaps in networks by ensuring that diverse interests, localities, and levels of government have many forums for information exchange and collaboration. Policy brokers can help to realize this goal by making investments in collaborative ties that create indirect "paths" between conflicting parties. Policy brokers are more likely to be successful when they have moderate belief systems and are perceived to be influential in the policy system.

Description of final product I am aiming to achieve: I aim to have my dissertation, which overlaps with my SSP project, published as three separate papers in the peer-reviewed literature.

Major other intellectual or professional advancement activities over the past academic year: I have finished my dissertation and graduated from U.C. Davis. I have also worked to produce a working paper on the Ruffolo Curriculum on Sustainability Science with the 2007-2008 group of fellows. I have presented papers at the 2009 AAAS meetings (on using the Web as a tool for social science research), and at the 2009 Midwest Political Science meetings. I have also been offered and accepted a faculty position in Public Administration at West Virginia University.

Publications and reports related to my fellowship research:

Adam Douglas Henry (2009). "The Challenge of Learning for Sustainability: A Prolegomenon to Theory." *Human Ecology Review*, 16(2): 131–140.

Thomas Dietz and Adam Douglas Henry (2008). "Context and the commons." *Proceedings of the National Academy of Sciences*, 105(36): 13189 – 13190.

Adam Douglas Henry (2009). "Tying it All Together: Networks and Policy-Oriented Learning in Regional Planning Processes." Ph.D. dissertation, University of California, Davis, United States -- California. Dissertations & Theses: Full Text database. In press.

Adam Douglas Henry (2008). "Social network analysis: An emergent method." Pages 138-140, <u>In</u> Linda Kalof, Amy Dan and Thomas Dietz. *Essentials of Social Research*. Berkshire, UK: Open University Press/McGraw Hill Publishers.

Mark Lubell, Adam Douglas Henry, and Mike McCoy (2008). "Institutional Collective-Action in an Ecology of Games?" <u>In</u> Richard C. Feiock and John T. Scholz (Eds.). *Self-Organizing Federalism: Collaborative Mechanisms to Mitigate Institutional Collective Action*. Cambridge, UK: Cambridge University Press.

Adam Douglas Henry (2007). "Simulating the Evolution of Policy-Relevant Beliefs: Can Rational Learning Lead to Advocacy Coalitions?" Pages 135–160, <u>In</u> Elinor Ostrom and Achim Schlüter (Eds.). *The Challenge of Self-Governance in Complex, Globalizing Economies*. University of Freiburg Institute of Forestry Economics Working Paper Series.

Adam Douglas Henry, Mark Lubell, and Mike McCoy. "Ideology and Social Capital as Drivers of Policy Network Structure." Paper in **revise and resubmit** status in the *Journal of Public Administration Research and Theory*.

Mark Lubell, Adam Douglas Henry, and Mike McCoy. "Collaborative Policy in an Ecology of Games." Paper in **revise and resubmit** status in the *American Journal of Political Science*.

Adam Douglas Henry. "Ideology versus Power as Drivers of Network Structure." Paper **under review** at MIT Press as chapter in *Networking Nature: From the State to Civil Society*.

Adam Douglas Henry. "Ideology, Power, and Network Cohesion in Regional Planning." Paper **under review** in the *Journal of Policy Analysis and Management*.

Adam Douglas Henry and Thomas Dietz. "Environmental Policy and the Cognitive Black Box: Reconciling the Political Science and Social Psychological Traditions." Paper **under review** in *Organization and Environment*.

Principal collaborators outside of Harvard:
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Mike McCoy, University of California, Davis
Thomas Dietz, Michigan State University
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