Emergence and Persistence of a Watershed Governance Network

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Levin College Research Conference
August 21, 2014
Research Questions

• What are the unique qualities of the Social-Ecological System of the Chagrin River valley and watershed?
• How did governance of the Chagrin River watershed emerge from this SES?
• How is this governance structured and how does it function?
• What are the qualities of governance in the Chagrin River watershed that has allowed this configuration to persist over time?
Framework

Policies and Outcomes:
- Ecological Resilience
- Ecosystem Emergence of Governance

Network Structure and Function
- Persistence and Adaptive Capacity

Watershed Social-Ecological System (SES)
- Ecological, Economic and Social Disruptions and Opportunities

Org. Roles
- Legal/Institutional Norms
- Knowledge/Social Learning

Policies and Outcomes:
- Ecological Resilience Ecosystem

Maxine Goodman Levin College of Urban Affairs
Social-Ecological System

• Multi-scale pattern of resource use around which humans have organized themselves (Resilience Alliance 2007)

• Humans and nature co-dependent and co-evolving (Ostrom 1990; du Plessis, 2008; Folke 2006)

• Sustainability: maintaining system resilience – (Berkes, Colding and Folke 2000)
Governance Networks

- Governance structure and function:
  - Formal and informal rules and norms (Hufty 2011; Pahl-Wost et al 2007)
  - Stakeholders set norms of interaction and motives (Cooper and Kathi 2005; Ozawa 1991; Wondolleck and Yaffee 2000; Thompson and Perry 2006; Innes and Booher 2010)
  - Shared meanings and knowledge as basis for joint action (Wenger 1998; )
  - Networks of inter-personal and inter-organizational relationships that channel resource flows
Emergence of Governance

• Self organizing
  – SES is a complex system
  – Things get organized in response to SES

• Complex patterns from simple rules
  – Micro-level interactions among people and organizations create structure (institutions, norms of behavior)
  – This structure creates constraints/opportunities for individual/organizational interaction
  – People change the structure over time
Persistence defined

- Emergent macro patterns persist *despite continual turnover in their constituents*
- Drivers?
  - Legal framework/mandates
  - Organizational positioning/influence
    - Success in mobilizing resources
  - Adaptive capacity of network
    - Leadership
    - Learning capacity of network
Data Collection

• Review Historical documents
• 20 stakeholder interviews to date across type of organization, geographic range
  – Semi-structured, recorded, transcribed
  – Reviewed by three researchers for themes and data
• Web pages, linked in, interviews to map network relationships
  – Analyze with UCINET software
Results: SES

• SES: AT THE EDGE!
  – local urbanization and farming landscapes
  – impervious cover threshold
  – still something worth preserving
• Fragmented geography & fragmented cultures tied to landscape and history
• Fragmented government authority
• Strong agreement among stakeholders on conditions and trends
Results: Emergence of Current Governance

- NETWORK FACTORS: convergence of stakeholder interests, trends and disruptions
  - Large land holders
  - Headwater land trusts
  - Downstream flooding communities
- UNIQUE to SES: Chagrin River Watershed Partners
- EXTERNAL FACTORS
  - Phase II regulations and funding opportunities
Chagrin River Watershed Partners

- Member organization of municipalities and townships in watershed; local government dues
- Formed in 1996; all but two local govt. are members
- Sponsoring members: private and nonprofit organizations (engineer, planning, ecological services)
- Membership dues hire small staff to assist local governments in storm water management efforts
  - Project management, grant writing, model regulations, technical assistance, networking, facilitation of processes, land owner outreach, research on stormwater and stream restoration
- [http://www.crwp.org](http://www.crwp.org)
Governance Structure

• What did our interviews tell us?
  – Strong role of CRWP STAFF in leading activities, bridging function, mobilizing resources (money and expertise); watershed perspective
  – Not one watershed network
    • Rather differentiated by geography (e.g., upstream/downstream), by county boundary (county, Metroparks & SWCD)
    • Differentiated by communities of practice
      – Except when these come together for specific projects
Governance Function

• Little mention of federal and state agencies for bridging function, but serve as source of scientific information and $, and therefore have influence

• Network operates informally, through personal connections, with limited formal opportunities for knowledge exchange or sharing

• Various types and levels of interaction: cooperation, coordination and collaboration (how does this shape structure?)
Network Analysis of Five Projects

Aurora Branch Restoration

Great Lakes Mall

Kenston Lake

Save Sunny Lake

IVEX Dam Removal
Persistence

• Legal mandates
  – Continuing influence of CWA Phase II

• Mobilizing resources
  – $20M over 15 years into CRV
    • CRWP responsible for most of this
  – Highly-connected network of scientific and technical expertise
Persistence: Adaptive Capacity

- Adaptive Capacity
  - of *people* and *institutions* to manage human actions so to enhance ecological system sustainability and resilience
  - *Network of organizations* capable of accumulating the experiences and collective memory needed to cope with surprise and turbulence (Pahl-Wostl et al 2007) through *distributed cognition* (Agyris and Schon 1996)
Adaptive Capacity: Leadership

• CRWP: four executive directors over 15 years
  – New director hired this summer; first one who wasn’t involved at the beginning or didn’t serve as a staff or assistant director at CRWP
  – In each case prior, the leader was just what they organization needed to adapt to trends

• How? Strong and continued presence of board members who began the organization has provided continuity, avoided mission drift
Adaptive Capacity: Diversity

• *Engagement* of a diversity of stakeholders, geographies, interests (*significant evidence*)

• Diversity of expertise of staff at CRWP and in network
  – Multiple communities of practice
Adaptive Capacity: Norms and Rules

• Norms of behavior
  – *Shared* rules and norms for interaction among diverse organizations that *flex to address changing conditions and opportunities* (significant evidence)

• Local government relationships changed through creation of CRWP
  • Beginning to see interaction among local governments on other types of shared projects, based on interaction on storm water management projects
  • All local government members adopted riparian setback ordinances to protect Chagrin from land development negatives

• Trust (interpersonal) for instrumental knowledge and shared interests is very high
Adaptive Capacity: Networked Learning

• Based on social learning
  – Building and sharing instrumental (scientific and technical) and relational (management and personal interactions) (Pahl-Wostl et al 2007)

• Key knowledge (as perceived by participants)
  – Scientific and technical information from park districts, state agencies and county engineers
  – Social learning: shared knowledge base, joint generation of new knowledge, innovation, cross-disciplinary (some evidence in projects)
  – Appreciation of local culture when working in different parts of the watershed (key)
  – Tacit, experiential knowledge to organize and fund large restoration/stormwater projects (CRWP)
Challenges to Adaptive Capacity

• **No clear vision** of how to incorporate **uncertainty** into shared planning and decision making
  – But all respondents expected they could adapt to changing conditions based on their **trust of expertise** and good **working relationships**

• **Still no overall shared** understanding of ecological risks or watershed-level perspective among local governments or citizens according to respondents
Challenges to Adaptive Capacity

• Knowledge “situated” geographically and in sub-networks
  – New knowledge gains not broadly shared across the entire watershed
  – Formal knowledge-sharing uncommon
  – Retirement of agency professionals

• Over-reliance on a few key organizations or key people can reduce flexibility of governance structure and function
  – Network position of CRWP and flexibility?
Three Types of Networks and Resilience?
Conclusions: Enhanced Governance

• Unique role of CWRP as membership organization of local governments places land use authority at core of collaboration and coordination in watershed; this is GOOD!

• Strengthen sharing of instrumental and tacit relational knowledge over a wider geography and into organizations
  – Continue to foster watershed perspective among local governments and other stakeholders; Chagrin Summit?
  – Debrief project successes and failures to professionals and local decision makers (CRWP): what can be learned?
  – State agencies: work with CRWP to ensure transfer of social knowledge about working in the Chagrin River to new state agency personnel; locally-generated projects are key to success
Publications/Future Research

• Publications:
  – Book chapter
  – Journal article: Emergence and Persistence
  – Journal article: Structure theory (bridge literatures)
  – Journal article: Structure application
  – Journal article: Social learning through projects

• Continued Research
  – Environmental history of the Chagrin River
  – Compare governance in Chagrin with other watersheds in Ohio
Thank You!

• Amy Brennan, Ex. Director, Chagrin River Watershed Partners
• Our interview respondents
• Cleveland State University Research Office
  • CSU Faculty Scholarship Initiative Grant provided summer funding for masters student Kristel Smith and doctoral student Aritree Samantha
• Dept. of Urban Studies
  – GA positions for these two students