

Interaction Between Scientists and Nonscientists in Community-Based Watershed Management

Emergence of the Concept of Stream Naturalization

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About (two of) the Authors



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- Dynamics of Fluvial Systems
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- North American Urban Political Processes
- Housing and Urban Policy
- Social Theory and the Built Environment
- Qualitative Methods
- Social theory and Environmental Change
- Dynamics of Neighborhood Change

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Watershed Management: A Social Process

- Shift away from top-down strategies.
- Bottom-up approach, involves all relevant parties.
- Community participation underpins Integrated Environmental Management (IEM).
 - IEM is essential to USEPA's "Watershed Protection Approach" (WPA).
- Cooperation, collaboration, conflict resolution, social negotiation are central.

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Different Values

- Local people (and knowledge) vs. technical experts.
- Concepts of nature, environmental quality and sustainability are value-laden.
- Participatory approaches must respect knowledge, values, experiences, etc. of all participants.
- Fails if one type of knowledge is "privileged."

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Challenge for Scientists

1. Understand distinction between their knowledge & values.
2. Recognize their knowledge & values not recognized as privileged by community.
3. Understand knowledge & values of nonscientists & how to communicate.
4. Develop place-specific representations of scientific knowledge, sensitive to social & cultural worlds of nonscientists.

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Midwest Watershed Modifications

- Pre-settlement landscape too wet for agriculture.
- Artificial drainage "embedded in the social fabric".
- Local drainage districts have authority to modify streams.
- Channelization of over 23% of Illinois stream length. 100% in headwaters of some basins.
- Adverse impacts on flooding, habitat, channel stability.

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East-Central Illinois Experience

- Strong resistance to using environmental info.
- Embarras R. organization: broad constituency.
- Rural stakeholders disregarded info on geomorphology & ecology.
- Preferred the familiar: channel dredging.
- Technical experts objected & had their views inserted late in the process.
- Drainage district commissioners have authority.

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Changing Ethics

- Prevailing community ethic must change through social process.
- Scientists must genuinely understand perspectives of local stakeholders.
- Build partnerships based on trust.
- To ignore community values, such as field drainage, is to risk dismissal or scorn.
- Habitat component that respected drainage concerns was accepted.

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Scientists in Local Negotiations

- Genuine social interaction cannot be ensured by formal prescriptions.
- Scientist are minority in community decisions.
- They must “situate their knowledge and opinions” in the local cultural context.
- Wielding “knowledge as a source of power” often leads to ineffective top-down intervention.
- Foster relationships based on trust & respect.

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Model of Interaction



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New Watershed Approach

- Gradual shift of community ethic to concern for environmental quality.
- Mutual reconsideration of competing values.
- Tailor scientific prescriptions to local settings.
- Restoration and rehabilitation is unlikely:
 - Pre-disturbance conditions not known.
 - Pristine state likely not sustainable given current water and sediment loads.
 - Private land too valuable to take out of production.

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Stream Naturalization

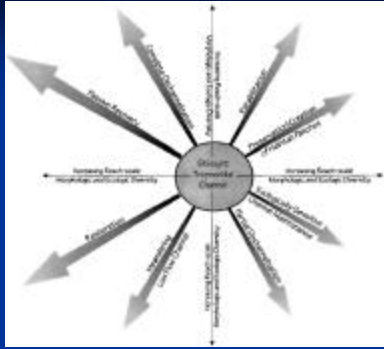
- Goal: establish sustainable, morphologically and hydraulically varied, yet dynamically stable fluvial systems that are capable of supporting healthy, biologically diverse aquatic systems.
- System Insurance Sustainability addresses social & economic concerns but preserves or enhances biophysical diversity.
- Accommodate human intervention, compatible with current rates & magnitudes of fluvial processes.
- Accomplished gradually through a series of reach-scale projects.

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Stream Naturalization Practices



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“Natural”

- Defined by community relative to the modified state of the system.
- Goal of naturalization: drive the system as a whole toward increasing morphological, hydraulic & ecological diversity,
- In a manner that is:
 - Acceptable to the local community,
 - Sustainable by natural processes, including human intervention.

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