Geog 461 Learning Objective Outline

LOO 24 Reflections on GIS Decision Support Situations

24.1 What role does decision situation assessment play in understanding the need for GIS-based decision support capabilities?
Nyerges and Jankowski *GISURE* Chapter 10. Conclusions about GIS-based Decision Support in Urban-Regional Environments Section 10.1 Decision Situation Assessment

As a GIS Analyst – know your motivation for work – it might come from many sources. Mitchell (1990) called this source of motivation – legitimization. Course material has been set in a substantive context of community-regional planning, improvement programming, and project implementation level decision processes to address land use, transportation and water resource concerns.

Consider GIS use for planning, programming, and project implementation-level decision support based on "institutional motivations" for everyday work - laws, policies, regulations, missions, guidelines, and important research questions not yet answered.

The **decision situation assessment framework** called enhanced adaptive structuration theory (EAST2) presented in Chapter 2 encourages us to consider GIS use for planning, programming, and project-level decision support from a broad perspective, as there are many aspects of decision situations in society that should be considered when putting GIS technology to use.

- Consider the institutional influences, (i.e., the laws, policies, regulations, missions, guidelines, and important research questions not yet answered, etc.) that direct industries, governments, organizations, not-for-profits, groups, and individuals to consider geographic information in various ways when addressing planning, programming an project-level issues.

- Understand the influence that various communities and publics bring to situations through their motivation to address certain concerns based on interpretations of institutional influences. Those interpretations in large part motivate certain values, goals, objectives, and criteria measurements to be used, hence databases to be developed and analyses to be performed, when people support planning, programming, and project-level decision tasks with GIS-based information products.

24.2 What are the regional growth management challenges?
Nyerges and Jankowski *GISDS* Chapter 10. Conclusions about GIS-based Decision Support in Urban-Regional Environments Section 10.2 Growth Management Perspectives

Eleven states and many more communities have enacted comprehensive growth management laws/regulations
3 states top-down controls – stronger state level control on planning and programming policies-goals
Florida, New Jersey, Oregon
8 states bottom-up control – stronger local level to set planning and programming policies-goals
Vermont, Maine, Rhode Island, Georgia, Washington, Maryland, Hawaii, Minnesota

Communities function within city, regional, state, national, and even global contexts of economic, social and environmental forces (econ, soc and environ forces are recognized in sustainable development literature).

***Local issues – an American Perspective on Democracy**
American culture tends to reinforce the idea that public decision making should happen at the lowest possible level of government to be most meaningful – impact on community quality of life. Local influences tend to resist regional and state influences. Even if accepted, there is still a tension that exists resulting in an intergovernmental challenge

***Intergovernmental challenge**
Despite resistance by local interests in relation to regional and state interests, extra-local interests tend to demand attention since boundaries are open to people and wildlife behavior.
Consider the following:
- Transportation systems require coordination at regional and state levels
  – in fact by law, in order for a region to receive Federal dollars
- Sewer and water systems cover multiple jurisdictions to make them more efficient
- Watersheds cross jurisdictional boundaries – the fish don't pay attention to city boundaries
  hence, recently formed watershed planning councils
- Social and economic disparities among jurisdictions threaten to disrupt regional economies unless addressed on regional basis

***Regional growth management – organizations and effective management**
Types of regional organizations that participate in growth management
- Regional Planning Councils or Districts (in WA State - Reg Trans Plng Organization; locally PSRC)
- Metropolitan Planning Organizations (locally PSRC)
- Federal/State – Chartered Commissions or authorities charged with protecting sensitive areas
- Regional Public Service Authorities (locally Port of Seattle – harbor and airport; Sound Transit)
- Regional business and civic leadership groups (locally Greater King County Chamber of Commerce)
- Ad hoc groups (Water Forum – a three county water supply group: Snohomish, King, Pierce)
- Consolidated city/county government

Lessons for Effective Regional Growth Management – what's needed to make it work
Effective regional efforts rely on:
- broad constituency of interests e.g., transportation and/or environment across the region
- clear objectives for action, e.g., addressing water pollution to cleanup on Lake Washington in 1970's
- focus on the regional, and ability to guide state/Federal to say "no" to some local proposals
- accountability of local governments to regional interests, e.g., coordination of county plans
- shared regional decision making, but local government retains major responsibility to implement

24.3 What are the implications for the future of GIS applications in communities around the world when considering urban-regional sustainability management in terms of the 1st tier and 2nd tier principles? Nyerges and Jankowski *GISDS* Chapter 10. Conclusions about GIS-based Decision Support in Urban-Regional Environments Section 10.3 Perspectives on Urban-Regional Sustainability

We can use guiding principles for sustainable urban development as a framework and motivation for GIS work in an urban-regional setting - an enhancement to growth management perspective. Material comes from "guiding principles in Chapter 6 of Haughton and Hunter's *Sustainable Cities"*. It is a synthesis based on several authors' work

Haughton and Hunter develop a three-tier framework of "guidance" for urban sustainable development. The first two tiers apply globally. The third tier applies to the local scene, i.e., how the local (region) community wishes to put the first two tiers to action.

1st tier Fundamental principles

Inter-generational equity – same stock of resources for future
Social justice – intra-generational equity, satisfy all basic needs of everyone
Transfrontier justice – cross-boundary exportation of environmental problems to be eliminated

2nd tier Guiding principles

ecological, socio-economic, management issues need be addressed

3rd tier Desirable policy directions – a comprehensive plan, many programs, many projects

left up to the local community to put the first two tiers to action
In many respects, this course ies/was about the second and third tiers, so let us reflect…

What are the implications of selected 2nd tier principles in relation to GIS work activity?

In regards to the **2nd tier of principles in the "ecological" category**, for example**:**
- *Eco Principle 1. Prevention is better than cure.* Use environmental impact assessment to know what impacts are occurring for each of ecological, social, and economic concerns

- *Eco Principle 2. Nothing Stands Alone.* Account for the local, regional, and global implications of urban activities, externalities occur everywhere.

What are implications for GIS activity?
Both of the above principles beg the use of GIS to address sustainability assessment as a combination of environmental, social, and economic assessment, while at the same time account for the implications of activities in those assessments – that is the influences of development activities in multiple domains.

The book "How Green is the City?" addresses "sustainability assessment" as an extension to environmental assessment. That entire book is about the importance of Haughton and Hunter's first ecological guiding principle. GIS is a major information technology being put to use for environmental assessment – and next it will be sustainability assessment.

In regards to the **2nd tier of principles in the "social and economic" category**, for example:
- *Socio-Econ Principle 2. Create new indicators for economic and environmental wealth.* Indicators need be developed at relevant spatial and temporal scales to show distributions of economic and environmental wealth, e.g., the genuine progress indicator - see http://www.rprogress.org/projects/gpi/

- *Socio-Econ Principle 6. Ensure social acceptability of environmental policies.* Policies designed to improve the urban environment should not result in a net decline in the quality of life of disadvantage groups, both in cities and globally.

- *Socio-Econ Principles 7. Widespread Public Participation.* Encouraged in strategy formulation (plan making), policy implementation (capital improvement program), and project implementation (monitoring of what has been done).

What are implications for GIS activity?
GIS can be used to manage data for indicator and index development, not just at national level but local level as well, a focus on operational (everyday use) GIS. Indicators can be used to "ground information" in both plan making and in impact assessment. Impact assessments are needed for better policy development to make plans, hence improve decision processes. Public participation supposedly adds to breadth and depth of decision processes. The process might take slightly longer, but fewer court challenges, because more people were included.

In regards to the **2nd tier of principles in the "management" category,** for example**:**
- *Mgmt Principle 1. Subsidiarity*. Responsibility for implementation and management of urban programs at the lowest feasible and appropriate level – the local level – of government.

- *Mgmt Principle 6. Need for better availability and understanding of environmental information.* Communities and business should be informed of environmental consequences of development proposals, including cross-boundary concerns.

What are implications for GIS activity?
Both Mgmt Principles 1 and 6 encourage the use of GIS at the most disaggregate level of decision making possible. That encouragement parallels values underlying democratic process and economic effectiveness (but not necessarily efficiency in short run). Such motivation is one of the major reasons why the U.S. is the largest user and producer of GIS information technology – a fine grain, disaggregate perspective on the world.

When looking at these sustainability principles, we can identify connections to growth management. The challenge is simply to take a slightly broader, but more fundamental perspective.

People will likely do what comes easy. Unpacking complex situations is crucial to making them easier to understand. Making sustainability management easy through use of GIS is a major thrust in this course. Next session we will consider the GIS technology developments.