Linking Space and Place: A Methodology for Geospatial Design

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In this paper, I consider the practical applications of linking the design of the human realm (built environment) with geospatial technology. This includes the development of tools for spatial decision support, tools that integrate design with scientific knowledge and evidence, and tools that allow users to examine the outcomes of decisions in a spatiotemporal context.

Design in the human and urban realms is intrinsically spatial. Integration with geospatial research involves structuring the analysis and presentation in terms of spatial layers, where design interventions are generated through an exploratory, interactive process, turning layers on and off and varying spatiotemporal scale to generate design alternatives. This increases the ability to make design options—their consequences and tradeoffs—explicit and meaningful.

In its current mode, design in a spatial context is hampered by the following:

- Non-spatial information applied to resolving design issues that are inherently spatial
- Failure to capitalize on local knowledge and deep understanding of spatial environments
- Failure to adequately resolve design trade-offs, especially trade-offs concerning spatial knowledge (example: introduction of increased density, which can vary by spatial context and spatially-derived capacities)
- Focus on green building technologies that are often aspatial and don't adequately consider spatial context and other locational information (e.g., "green" Walmarts analyzed apart from implications of their spatial context)
- Models and methods are for flat and static maps

Geo-spatial design could help resolve:

- How to combine objective data with contributed information (local, vernacular knowledge); how to capitalize on user-generated knowledge
- How to integrate 2-dimensional and 3-dimensional data more seamlessly and in a way that responds quickly (on-the-fly) to proposed design interventions

- How to use geospatial research/technology to stimulate better-informed public debate that incorporates design trade-offs and integrates spatial knowledge
- How to improve dynamic support tools that incorporate visualization in spatial contexts and in the public decision-making arena
- How to better integrate design interventions proposed at different spatial and temporal scales. A geospatial approach facilitates design at a range of telescoping scales. For example, there are large scale design issues involving entire regions, and small scale design issues involving single urban spaces. Urban design issues range from the more general to the more specific, and the range of applicable design elements and strategies vary by spatial and temporal scale. These variations need to be treated in a more integrated way.

The following areas illustrate the kinds of geospatial design topics that need to be pursued:

- Delineation of the spatial boundaries of neighborhoods with social, cultural, and economic meaning. Neighborhoods within a regional framework may have or require spatial delineation (size, shape, centrality).
- Refine spatial strategies for promotion of local means of production (of food, for example)—the application of which varies considerably by spatial scale.
- Refine analytical methods that organize and preserve the integrity of different types of urban and rural environments, varying along a continuum that ranges from less intensity – rural – to high intensity – urban.
- Analyze strategies for increasing connectivity, such as those that constrain or promote passive social and economic contact. Incorporate variation by scale, type of route, and destination.
- Analyze the geographic centrality, extent, and boundedness of urban population sub-groups and the relationship to design concepts and strategies with social, cultural and economic meaning.
- Identify the spatial extent of urban edges, their positive role as spatial delineators, and the interventions that could mitigate their harmful effects.
- Evaluate spatial proximities as a means of social justice; investigate spatial accessibility as a method for improved jobs/housing balance.
- Evaluate land use diversity and associated design interventions that support and enhance sustainable social and economic mix at different spatial scales.
- Evaluate spatial proximities and propose design interventions that increase desirable proximities and decrease negative ones.
- Analyze the spatial context of density and how it varies in intensity, opportunity, and effect depending on a range of two and three dimensional variables.