

# Future Directions of Map Analysis and GIS Modeling

...where we are headed and how we can get there

## 2013 Arkansas GIS Symposium The State of GIS | September 9th - 13th 2013

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Most of GIS's recent growth has been in its capabilities as a "technical tool" for corralling vast amounts of spatial data and providing near instantaneous access to remote sensing images, GPS navigation, interactive maps, asset management records, geo-queries and awesome displays. However, GIS as an "analytical tool" hasn't experienced the same meteoric rise—in fact it might be argued that the analytic side of GIS has somewhat stalled over the last decade. But the future of GIS is moving from a "down the hall and to the right" specialist's role providing mapped data, to a broader and more active role providing spatial information through map analysis and modeling that directly interacts with research, policy formation, planning and management decisions. The shifting emphasis from data-centric tools for mensuration (*Where is What*) to application-specific constructs of prescriptive mapping (*Why, So What and What If*) infuses consideration of geographic patterns and relationships within problem-solving contexts. This presentation describes a comprehensive framework for map analysis and modeling concepts and procedures as direct spatial extensions of traditional mathematics and statistics enabling individuals with minimal or no GIS background to develop spatial reasoning skills—thinking with maps.

**Reference:** (PowerPoint slides and live URL links to references are posted at [www.innovativegis.com/basis/present/Arkansas\\_Sep2013/](http://www.innovativegis.com/basis/present/Arkansas_Sep2013/))

- [Simultaneously Trivializing and Complicating GIS](http://www.innovativegis.com/basis/Papers/Other/SpatialSTEM/TrivializingComplicating_GIS.pdf) — white paper describing a mathematical structure for Spatial Analysis/ Statistics.  
[http://www.innovativegis.com/basis/Papers/Other/SpatialSTEM/TrivializingComplicating\\_GIS.pdf](http://www.innovativegis.com/basis/Papers/Other/SpatialSTEM/TrivializingComplicating_GIS.pdf)
- [SpatialSTEM: a mathematical/statistical framework for understanding and communicating grid-based map analysis](http://www.innovativegis.com/basis/Papers/Other/ASPRS13_sSTEM/), paper presented at ASPRS 2013 Annual Conference, Baltimore, Maryland, March 28, 2013.  
[http://www.innovativegis.com/basis/Papers/Other/ASPRS13\\_sSTEM/](http://www.innovativegis.com/basis/Papers/Other/ASPRS13_sSTEM/)
- [A Math/Stat Framework for Grid-based Map Analysis and Modeling](http://www.innovativegis.com/basis/MapAnalysis/Topic30/Topic30.htm) — Topic 30 in the *Beyond Mapping III* online book in the three-part compilation series of the *Beyond Mapping* columns published in *GeoWorld* since 1989.  
<http://www.innovativegis.com/basis/MapAnalysis/Topic30/Topic30.htm>
- [A Brief History and Probable Future of Geotechnology](http://www.innovativegis.com/basis/Papers/Other/Geotechnology/Geotechnology_history_future.htm) — white paper on the evolution and future directions of GIS technology.  
[http://www.innovativegis.com/basis/Papers/Other/Geotechnology/Geotechnology\\_history\\_future.htm](http://www.innovativegis.com/basis/Papers/Other/Geotechnology/Geotechnology_history_future.htm)
- [GIS Evolution and Future Trends](http://www.innovativegis.com/basis/MapAnalysis/Topic27/Topic27.htm) — Topic 27 in the *Beyond Mapping III* online book in the three-part compilation series of the *Beyond Mapping* columns published in *GeoWorld* since 1989.  
<http://www.innovativegis.com/basis/MapAnalysis/Topic27/Topic27.htm>
- [Beyond Mapping Compilation Series](http://www.innovativegis.com/basis/MapAnalysis/ChronList/ChronologicalListing.htm) — a compilation of nearly two hundred "Beyond Mapping" columns appearing in *GeoWorld* 1989 to 2013 organized into three online books.  
<http://www.innovativegis.com/basis/MapAnalysis/ChronList/ChronologicalListing.htm>



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[http://www.innovativegis.com/basis/basis/cv\\_berry.htm](http://www.innovativegis.com/basis/basis/cv_berry.htm) — Email: [jberry@innovativegis.com](mailto:jberry@innovativegis.com) — Website: [www.innovativegis.com](http://www.innovativegis.com)