

The Essence of Geodesign

for American Planning Association
Technology Division Newsletter

by Bill Miller, Architect and Engineer
Former Direct of Geodesign Services, Esri
Retired (sort-of)

Geodesign, loosely defined as design in geographic space, is the art and science of designing something (e.g. a land use plan, an urban center, or a building) within the context of (that is, by giving consideration to) relevant geographic information.

The essential aspect of geodesign is the idea that design, that is the process of designing (creating or modifying) some portion or aspect of the environment, be it natural or man-made, occurs within the context of geographic space (where the location of the entity being created is referenced to a geographic coordinate system).

At first glance, this seems to be a trivial point. However, the fact that the entity being created or modified is referenced to the geographic space in which it resides means that it is also, either directly or indirectly, referenced to all other information referenced to that space. This means that the designer can take advantage of, or be informed by, that information and how it relates to or conditions the quality or efficiency of the entity being designed, either as it is being designed or after the design has matured to some point where the designer wishes to perform a more comprehensive assessment.

This referential link between the entity being designed and its geographic context provides the tangible basis for doing both science-based and value-based design. Additionally, it has the ability to provide operational linkages to a wide variety of domain-specific information and, in so doing, provides the multidisciplinary platform for doing integral design (holistic design).

Ian McHarg, an early advocate of the use of geographic information, understood this by promoting the use of thematic map layers (e.g. slope, soils, vegetation, etc.) and overlying those layers on a light table to determine areas that were geographically suitable, or unsuitable, for a particular land use. The method was popularized in his book *Design with Nature*.

The problem with this approach, which McHarg advocated prior to the development of GIS, was that it was difficult to manually determine which areas were actually good as opposed to those that were bad. As the number of map layers went up the clarity of the presumed results went down.

GIS changed all this by giving planners the ability to represent, store, manipulate, and overlay the various thematic layers using digital technology. GIS is currently used by most planners to both manage and utilize geographic information pertinent to the needs of their projects. One might even say that most land use planning projects could not be done without the use of GIS.

The problem with GIS is that it was first developed to represent and store geographic information. The analytical capabilities we now commonly associate with GIS came much later. In fact, much of the work since its initial development during the late 60s and until now, has been designed to extend its capabilities with respect to the storage and analysis of geographic information with little attention given to how it might be used as a design tool.

In other words, GIS was designed to do *geo-representation* and *geo-analysis*, but not *geo-design*. This is now beginning to change.

Esri's GeoPlanner for ArcGIS Online now supports the entire geodesign workflow, from project initiation, to data management, to condition assessment, to the creation of alternative designs, to their evaluation, and to the creation of final reports. GeoPlanner's most valued feature, however, is that it supports collaboration and is easy to use.

Planners interested in learning more about GeoPlanner can visit Esri's website or plan to attend the GeoPlanner Workshop offered this coming January as part of Esri's Geodesign Summit in Redlands (January 23-25).

References:

Design with Nature, Ian McHarg, Doubleday & Co., 1969
Document available at [Amazon](#)

Introducing Geodesign: The Concept, Bill Miller, Esri, 2012.
Document available at [Esri](#)

A Framework for Geodesign: Changing Geography by Design, Carl Steinitz, Esri Press, 2012.
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Geodesign: Project Workflow, Bill Miller, Personal Papers, 2015.
Document available at [Author's Website](#)

GeoPlanner, Software, Esri.
Information available at [Esri](#)

Geodesign Summit, Redlands, Esri, January 23-25, 2018.
Information available at [Esri](#)