Heeding Its Lessons – How the New Field of Geodesign Can still Learn from Past Experiences

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Invited Paper

Geodesign is the emerging area of study, research, and practice that combines design from disciplines like landscape architecture with science from fields like geography and environmental science and is facilitated through the newest innovations in geospatial technology (DANGERMOND, 2009; GOODCHILD, 2010; FLAXMAN, 2010). Concomitant with its status as a nascent field, geodesign has been the focus of special issues of journals, discussed in panels at conferences, featured in non-academic magazines and generated an annual standalone conference called the Geodesign Summit. A measure of the field anticipated stamina is that two American universities will begin geodesign degree programs in the Fall of 2013. Despite the energy and promise of the field, there are also a number of potential barriers to its success that will need to be overcome.

This paper presents a summary of two recent papers examining potential lessons for the emerging field of geodesign. One of the papers looks back to a similar time of convergence when many GIS innovations emerged from the landscape architecture program at Harvard in the 1960s and early 1970s. While many of the innovations from that period succeeded with exceptional impact, for years their use and integration was more apparent outside landscape architecture than within. The second paper considers experiences in regional design studios as a parallel to experiences by newly interested parties in geodesign. Both papers leverage their explorations as potential lessons for those contributing to the growth of geodesign today.

1 Learning from History

In, "Geographic information systems and landscape architectural design and scholarship: A source of heritage and tension" (TULLOCH 2012), lessons from the early years of GIS at the Harvard Graduate School of Design (GSD) are gleaned. Based heavily on first-hand eyewitness accounts, the paper describes how challenges faced by the early designer-innovators at GSD may apply to geodesign today.

Central to the experience at that time was the role played by Charles Harris, then the chair of landscape architecture, who hired Symap's creator Howard Fisher to found the Computer Graphics Laboratory. In a very short time, the GSD and the Lab became a hub of intellectual and innovative creativity attracting an impressive bevy of eventual GIS experts including Carl Steinitz, Nick Chrisman, Scott Morehouse, Tim Murray, Bruce Rowland, and Jack Dangermond.

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Also attracted to this hub were the graduate students who went on to co-found the GIS company, Erdas: Lawrie Jordan, Steve Sperry, and Bruce Rado. As detailed by NIEMANN & NIEMANN (1994), these 3 students were part of a class at Harvard that sped the transformation by refusing to use the software (or pay tuition) until Harris found a way to make it more user-friendly. Over many years, the student body tested and improved the different versions of the nascent geospatial technologies through applied studio projects. While quite successful, these projects also provide insights into today's geodesign.

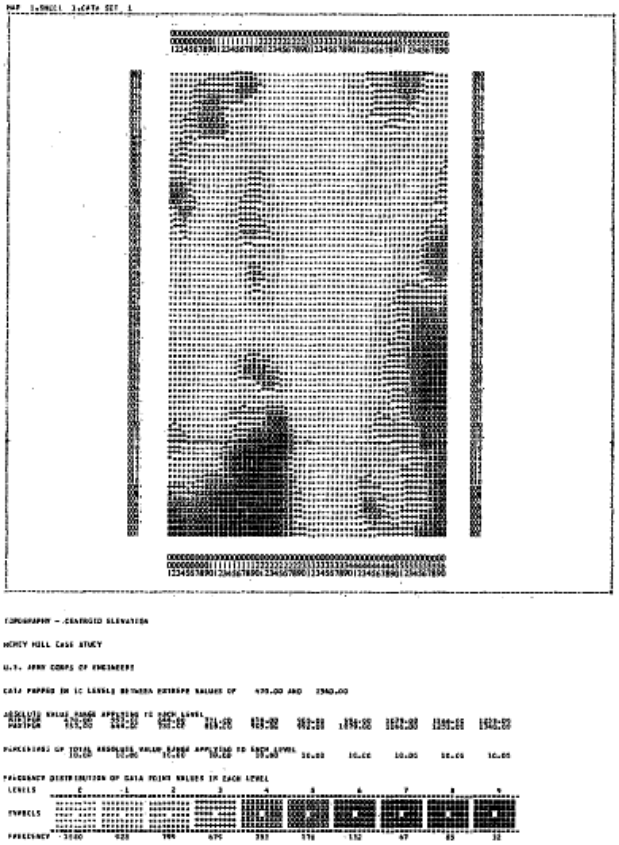

Fig. 1: The Computer Graphics Lab at Harvard used a project working for the US Army Corps of Engineers at Honey Hill (elevation map shown above) as a proof of concept for GIs as a scientific integration tool (MURRAY et al., 1971)

Because these software packages and geospatial practices were developed in a design school setting, it created opportunities to witness potential conflicts between design and science. The prominence of the program facilitated the rapid and widespread dissemination of the software to other programs; an undergraduate landscape architecture studio at Wisconsin (DANE ENVIRONMENTAL SYSTEMS EVALUATION, 1969) was already using Harvard's software in 1969 (Fig. 2). While GIS, then, and geodesign, now, hold promise in integrating these two perspectives, the struggles at Harvard's GSD also highlight areas where the two

could create friction. Rather than seeing the science as a rigid barrier to creative design explorations, Harvard's early efforts show today's geodesign proponents ways that exciting solutions emerge when the two intersect.

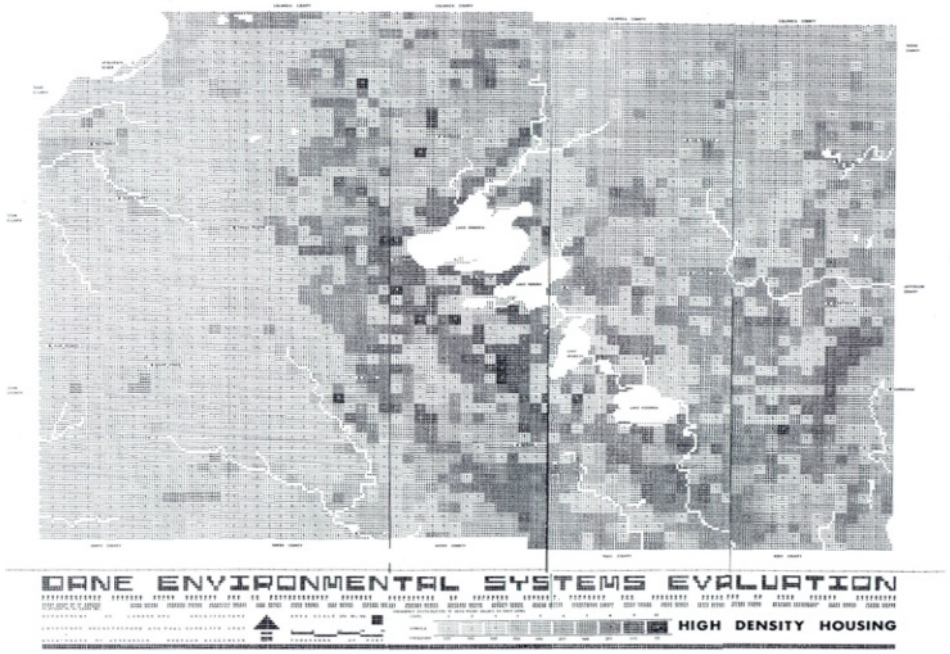

Fig. 2: One example of the rapid impact of Harvard's was the 1969 undergraduate landscape architecture studio taught at Wisconsin (DANE ENVIRONMENTAL SYSTEMS EVALUATION, 1969)

2 Learning from Students

The second paper, "Learning from Students: Geodesign lessons from the Regional Design Studio" (TULLOCH, 2013), turns to more recent work as a source of lessons. Pioneered by earlier landscape architecture professors like Phil Lewis at the University of Wisconsin and Ian McHarg at the University of Pennsylvania, regional design studios have long sought to create sweeping and creative visions for larger landscapes that are informed by information and science. In recent studios at Rutgers University, we can look students' collected experiences as a potential parallel to the experiences that new geodesigners may experience.

The primary examples used in the paper were studios investing design alternatives for: the Appalachian Trail at Bear Mountain in New York (Fig. 3); landscapes impacted by sea-level rise in Cape May County, New Jersey (Fig. 4); and the Stony Brook-Millstone Watershed in Central New Jersey. While each explored very different forces and uses, they all relied on the integration of GIS and various landscape sciences as important elements of their design process.

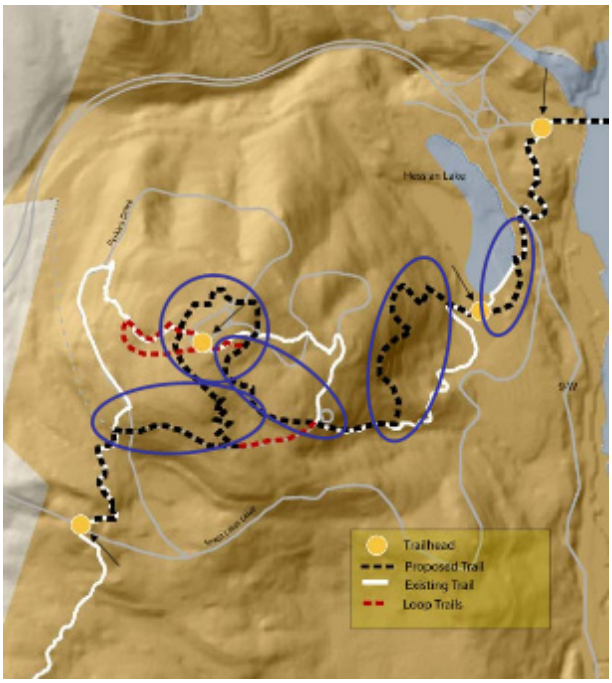

Fig. 3: Students redesigning a segment of the Appalachian Trail at Bear Mountain State Park in Harriman, New York were able to use GIS to guide potential designs and then analyze outcomes

Fig. 4: Students exploring design approaches for sea level rise impacted landscapes in Cape May County explored design solutions about education (above) as well as ecologically sensitive designs

Significant challenges come when, empowered by new technologies, the students encounter rather dramatic issues related to scale. Thinking large and small simultaneously is quite challenging, but recognizing failures in that seems even harder for many. With the larger scale and technology also comes vast quantities of information (and data) resulting in a form of information overload that often stops the student projects rather abruptly. Add to the quantity of information a frequently large quantity of stakeholders and participants, and it becomes clear that geodesign may require new tools and techniques for addressing these concerns (beyond the traditional use of multicriteria decision models).

For students in these studios, still learning design as a foundational skill, there often is a struggle that emerges between what they see as logic and design. STEINITZ (1979) characterized the importance of logic as part of "defensible design processes", but for new designers and geodesigners this can still be a challenge. Similarly, choices between creative or artistic expression and decisions grounded in science and information can be seen as a false choice, but one that geodesigners should anticipate.

3 Final Thoughts

These papers represent only a tiny part of a rapidly growing literature (see the geodesign bibliography at http://gisandscience.com/2009/08/13/geodesign-a-bibliography/). But they are meant to show that while geodesign is a new field built on new technologies, much about it is not. As a multidisciplinary field it will have difficult conflicts, maybe between scientists and designers, that add to the richness of the field but could also derail projects and conversations if we are not careful.

The paper focusing on students' lessons ends with a challenge for geodesign and landscape architecture writ large:

> For geodesign to grow and live up to its fullest potential, we need to be instilling a grand vision of geodesign in professionals and students as an expansive approach to serving society and improving the environment while empowering them to fulfill that vision. This is particularly true in urban planning and design, where these technologies bring with them the potential of new tools for shaping both old and new cities (TULLOCH, 2013).

Indeed, geodesign and digital landscape architecture require an educational response that reaches beyond today's students and out to practitioners and future designers of all stripes. But the challenge of making that happen will require overcoming the barriers we have learned of in history and studio.

4 References

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