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Theory as Product

The Landscape and Culture
Data as mediator, modes of engagement

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The very first question that C5 raised internally about working with landscape data as a participant in an expanded landscape practice was how we could overcome the obvious applications of landscape data and work toward the development of a practice that is exploratory and not merely explanatory. Let's take two examples. Elevation grid data available from the United States Geological Survey is voluminous and interesting, but to a large degree the applications of such data are what we would expect them to be. Essentially, this data set is a three dimensional terrain description that can be used to render models of the landscape, such as 3D mapping, and that can also be used to perform a variety of predictive functions such as watershed analysis, natural disaster predictions such as flooding and landslide risk analysis, and a wide variety of other environmental, scientific and engineering analysis such as required in forestry, geology, and road construction. The example of the Global Positioning system is also conceptually straight forward in most of its applications. GPS can tell you where you are, and through extrapolation, your direction and velocity. Most applications of GPS technology, such as in agriculture, construction, forestry, military, maritime, public safety, surveying, and surveillance derive value from these positional capabilities in pretty obvious ways. Much the same holds true for consumer applications. GPS is popular with hikers, hunters, boaters, bikers, fishing enthusiasts and even outdoor gamers participating in geo-caching activities. Both GIS data and GPS technology explain a condition relative to place. How can we get outside of these explanatory modes of application for geographic information systems?

The application of such technologies in cultural enterprises such as in the arts, introduces the possibility of other domains of practice for geographic information system technologies. One of the keys to catching an alternative glimpse of the possibilities for global data and GIS technology is to recognize that data is the *actual* expression of our ability to model the planet as a system. The models and data that let us know where we are or what is there are not mimetic, or fake. Because it is actual, data plays an intermediary and "actualizing" role in the human relationship to the landscape. This is not surprising: consider for example the role of cartography in the history of discovery that led to the very understanding that we stand on a globe. What is new however, and that which contemporary artists are beginning to take interest in, is how the ability to computationally explore space through model based processing is opening possibilities for global explorative practices that extend beyond the superficial limits that may seem to be implied in the contemporary applications of GIS systems. In a sense, the intermediary role of data is vastly enhanced through the contemporary informatization of cartography. The role of the virtual in the unfolding of the actual is quickened, more dynamic, more widespread, and more embedded in our culture at this moment in time than at any other. So the question becomes, how can we position the role of geo data in high-tech cultural practices so as to escape assumptions regarding the

applications of geo data?

I propose that we place the mediating function of data against three modes of engagement or practice with data. 1) the participatory 2) the predictive, and 3) the exploratory. These levels of engagement with (or practice of data as landscape art), of course overlap. They are not exclusive categories, but rather occupy a continuum. But the role that data plays in each represents a progression in the cultural role of data from relatively static descriptor, through that of active semiotic agent, and onto data itself being a type of unexplored and uncertain context in which developing well formed questions is the primary, and very interesting, problem.

I have already discussed the role of data in participatory practice. This mode encompasses the types of activities that such data is employed for in consumer and many industrial applications. This mode emphasizes the original design intentions and semantic function of landscape data in a relatively simple manner. In this case, data is being used in exactly the manner in which it was intended to be used - for example - creating 3D models from terrain data, or the common memes of using GPS data to place ones personal position under surveillance, or to draw pictures from track logs. These are all fairly obvious applications of the data and associated technologies in which the mediating role of data in the process is fairly transparent. Participatory GIS artworks may certainly be interesting, and there is certainly aesthetic and experiential ground to cover in this mode of practice. But conceptually, work that maintains at face value the semantic and design intentions of the technology is already somewhat played out at this time.

Predictive practice moves along the continuum. Instead of using GIS technology only as descriptive tool, data is processed (mined) to reveal new knowledge. This approach generally prehends many important aspects of the results even before processing, through the semantic attributes of the data to be processed. A ridiculously simple example illustrates this point: we could say that the area of a rectangle is produced by 'mining' the two lengths of the rectangle algorithmically. Without discussing specific numeric input or output, we nevertheless expect the result to be the area in the same units as the given lengths. This example is of course excessively simple because it does not take into account the issues of non-linearity and bifurcation in complex systems, where changes in internal organization can alter the system so greatly, that all semantic bets are off. But the example does serve the purpose of expressing that the semantics of input data are commonly expressed in the semantics of the output. In predictive analysis, we expect our data to behave predictably well as it undergoes processing. Thus the mediating role of data under these circumstances is that of a *raw material*. For example geologists and civil engineers enlist geo-data to help physically reorganize the landscape; construction, mining, oil drilling, landfill, agriculture, railroads, urban planning, waterworks, dams and transportation are all activities that prehend the landscape through the use of geo-data. Processing yields information that allows the revelation of knowledge about the landscape that predicts our relationship with the landscape. Related to this point is the observation that landscape data is a semiotic agency in this relationship, injecting an influence not only from culture to landscape, but in reverse: from landscape to culture. Data plays an active semiotic role as a mediator between landscape and culture through its expression of the landscape's ontology. Indeed, there are good reasons why many decisions are made that are a direct result of

information systems and data analysis flowing into cultural systems of political decision making. The most common example is the implementation of environmental impact studies in planning decisions.

This line of thinking carries us toward more speculative but potentially much more interesting territory where data is a context for exploration. By exploration, we mean specifically the search for meaning in data that lies beyond the predictive resources available through the intentionally modeled semantic attributes of data. Landscape data is an actual; or we could say, expressed in it are pointers to the virtual ontology of landscape through which the physical landscape itself is distilled. Because landscape data can be placed in motion experimentally through the addition of other dynamic vectors, it can be treated as a dynamic virtual space that contains more reality than what we can predict using our intentionally modeled semantic descriptions of it. Large data may contain subject-less relations of data. Thus, data may become a kind of virtual context whose resources exceed our expectations of it, or exceed the purposes for which it was collected. We can speculate an exploratory mode of practice in which the virtual ontology of landscape, or formative processes behind the physical manifestation of the real, may be explored as an uncertain space or unknown country.

We do not yet have well formed questions about this type of space, but as it turns out, the problem of not having well formed questions about vast data sets is in fact one of the most provocative and unexplored problems facing humanity as our ability to collect data outpaces our ability to process it and derive new knowledge from it. The problem of big data is a metaphorically similar situation to that faced by the early explorers of the North American Continent (who began to arrive as early as 20,000 years ago), in the sense that the vastness and uncertainty surrounding the space to be inhabited exceeds the capability to predicatively map or understand many aspects of (or opportunities within), the space to be explored. We don't know where to start, are not always at leisure to choose our resources, and are not always sure where we stand relative to certain huge data sets. Related issues to this problem include questions of artificial intelligence, particularly the vexing issue of modeling inductive reasoning when faced with quantities of information that exceed machinic abilities to deduce, our understanding of the sublime and the unique ability of humans to inference successfully in situations where most of the parameters are not transparent, the possibility of identifying semiotic-like behaviors in systems in non-semiotic or pre-semiotic contexts, the resourceful human ability to attach meaningful descriptive semantics to systems we don't yet have a model for, and autopoietic systems as conceptual models of living or life-like systems. Non-model based analysis and the study of 'subject-less' relations of data are metaphorically like exploring an unknown territory by doing your best to traverse and map it, even if you don't know where you are going or have a clear concept of what you will find. Suddenly, in the 21st century, such romantic explorations are becoming relevant once again as we collect more data than we can algorithmically digest.

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