Unfolding Participatory Urban Design, Capturing Spatial Feelings and Emotions in Digital Space

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Abstract

This research aims to create a tool that allows participants to engage in citizen controlled urban design in a dynamic 3D environment. The citizens will be guided by a methodology developed in Christopher Alexander's more recent work in the process of unfolding and generative codes (Alexander & CES 2002, 2002, 2004 2005). This will take place within the three-dimensional design software Google Sketchup, supplemented with ruby script applications that utilize the Google Sketchup application programming interface (API). Currently, 3D modeling and design software is ill-suited for facilitating public participation. The software requires high levels of technical training, and is designed only for a single user. Furthermore, Christopher Alexander's methodology for urban design relies heavily on capturing and communicating the personal feelings and emotions that one experiences from a particular place. Current 3D modeling software is also unsuited for capturing and managing data such as this. Starting with Google Sketchup's relatively simple user interface, I will create ruby plugins that walks users through an unfolding process of urban design. This application will show how 3D design software can be the centre of a public design process. This application will also show that by storing, and building off of human feelings and emotions in digital space, these attributes will become inherited naturally into a design project. This is in opposition to the normal procedure where a 3D model attempts to create and convey an emotional reaction from its finished product.

Background and Relevance

This project comes from a noticeable deficit in urban design regarding its use of 3D software to involve the public in the design process. I have found that a part of an urban designer's role is to not only communicate their designs with the public, but to also engage the public in the design process (George 1997, Kosof 1982, Moughtin 2003, Arida 2002). Although urban designers are regularly doing both of these, 3D software and design tools are almost entirely seen as a tool of communication and not as a tool for active public participation in design. I believe all forms of public participation in urban design can benefit from 3D software, however I chose to use Christopher Alexander's recent work on unfolding and generative codes because although it is participatory in nature, it relies heavily on one's willingness to communicate their feelings and emotions that spaces elicit. This type of data provides both unique challenges and opportunities for working with 3D software. Although emotions themselves are not physical objects that can be modeled in space; they are enticed or connected to real geospatial locations that exist in a 3D dimensional world. Using Arnstein's ladder of citizen participation (Arnstein 1967) I am aiming to get closer to the "partnership" rung on the ladder. I believe that including citizens directly in the design process in a 3D environment is closer to this goal then merely communicating urban

design through 3D technology, which is often only the "placation" rung on Arnstein's ladder. Furthermore, 3D technology is traditionally fairly technocratic in use, such that the citizens must rely on the expert. However, my communal approach to 3D technology in design intends to shrink the technological divide in this field. Finally, I believe my research is related to spatial knowledge and information because although 3D models are often made without regard for geographic context, the design tools and methodology I will be building are firmly anchored by their geographic location. Not only does urban design require an adequate spatial context, the methodology of Christopher Alexander's is completely reliant on interpreting and "feeling" real geographical landscapes. With this, I will be attempting to create a way of managing metaphysical data within a 3D geospatial infrastructure.

Methods and Data

This project begins with Google Sketchup and its API. Google Sketchup was chosen for several reasons. To begin with, Google Sketchup offers a free version of their software, which is a huge start in decreasing the technocratic divide. As well, their API is unmatched by other available 3D modeling software. The API plus Google Sketchup's very user friendly interface will be utilized to create plugins in the Ruby programming language that will be loaded into Google Sketchup. The plugins will take the users through a step by step process unfolding their design for a particular area. Some key aspects of this process include the use of a carefully organized method of organizing different layers that the users will contribute. These layers not only represent specific parts of the unfolding process in 3D space, they will also often contain spatial located data related to emotions and feelings. With any participatory process there must a means of handling differing opinions and conflicts. I acknowledge that with any groups, sometimes compromise is not an option, however, attempting diffuse and mitigate as many potential conflicts as possible is an important step in any participatory activity. The Ruby plugin will also utilize layer management to ensure every participant, or group is able to have his specific opinion represented within the 3D landscape if they disagree with the results of the group discussions.

Results

The predicted results of this research are a functioning Ruby plugin for Google Sketchup, as well as an analysis on the systems usability and success at reaching the previously mentioned goals. My results will show that 3D tools can be used in a public participatory context, even if that is not what they were initially designed for. Unfortunately I will not be able to say definitively as whether or not citizens feel more engaged in the design process without a real trial run with citizen participants. Due to time restriction this was not feasible for this project. Live testing will be the next step in this applications implementation process. The finished plugin will however be uploaded to numerous sites that distribute ruby plugins for Google Sketchup, and the code will remain unscrambled, leaving for the possibility for anyone who chooses to change or improve upon the plugin. The results will also demonstrate that feelings and emotion based data when geolocated and stored within a visual layer, are powerful tools that can

shape the entire design process and decide the final design, inverting the current norm of trying to render a model that portrays specific predetermined emotions and feelings.

Conclusions

In conclusion this project, although still in its development stages, will be complete by March 2011 and produce a fully functioning Google Sketchup plugin that will allow for urban designers and citizens to work together in designing a location in a structured 3D environment. They will be guided each step of the way through the process of unfolding as described by Christopher Alexander. People imagine the world in three dimensions and there is a need for these people to be able to express their desires for a geographic setting without strictly relying on design professionals. 3D tools will always be at the forefront for communicating with the public, and designers will always have their place, there is simply a need to open these tools to a broader citizen user group.

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