3D Modeling as Part of the Design Process

Anaís Plácido | Landscape Architecture
Andrew O. Wilcox
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Project Context

Over the past decade 3D modeling has changed from its intended application. Initially, it was used to create industrial prototypes that were to be mass produced. However, over the past decade this has changed and it is now being used in a variety of disciplines - for different purposes. The environmental design disciplines of architecture and landscape architecture have embraced it as well and it is mainly used to create the final model of a design project. However, this project proposes that 3D modeling can be an integral part of the initial design process, which consists of site analysis and conceptual design.

Process

To showcase the ability of 3D design and modeling to be part of a design process this project explores the relationship between site to structure through the use of 3D software such as Rhino and Grasshopper. Site can be seen as a type of a land form (flat, scope, mound, and depression) condition that exists on a site and structure can bee seen as the architecture that can exist on site- be it a building or a more sculptural feature. The goal is to see how these relationships can be explored and modeled through the use of a new medium. A matrix will be developed that allows for these relationships to be categorized and effectively explore the medium. In addition, the ways by which this medium can be used in the field of landscape architecture will be essential part of the learning process.

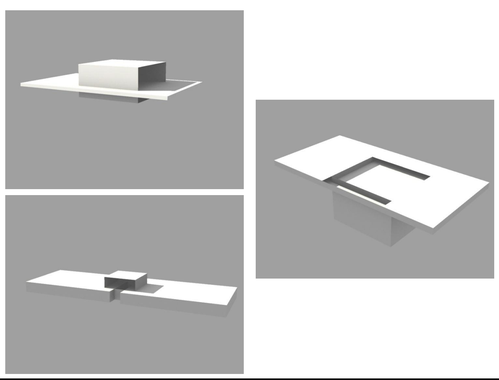
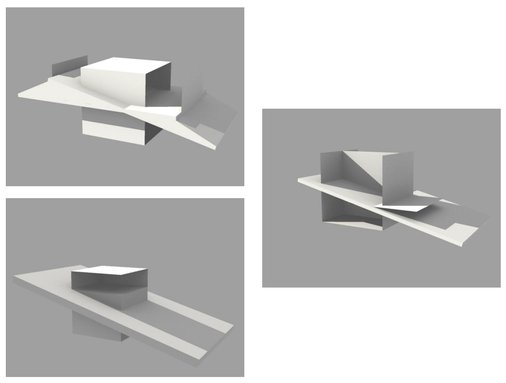
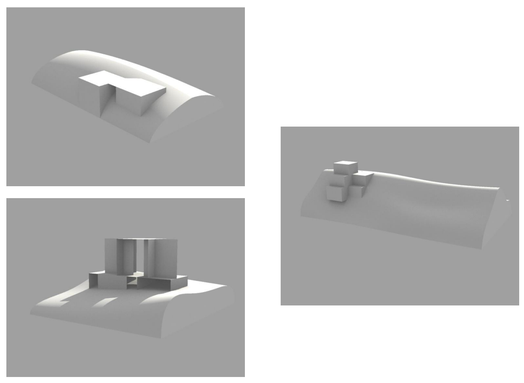
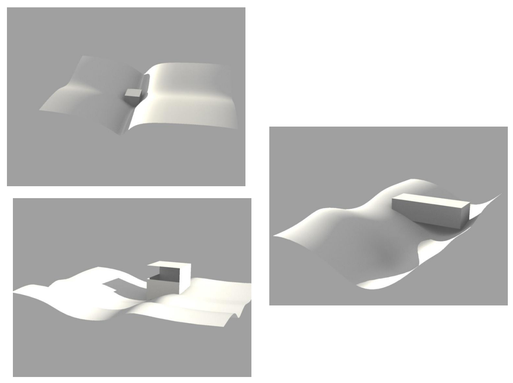
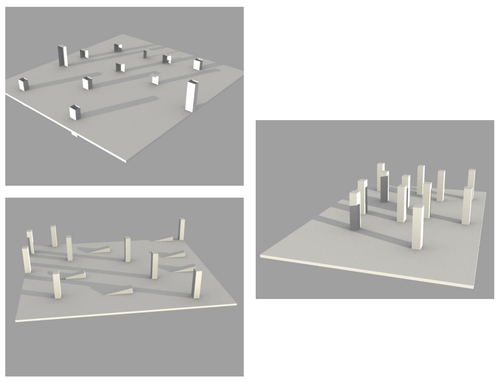
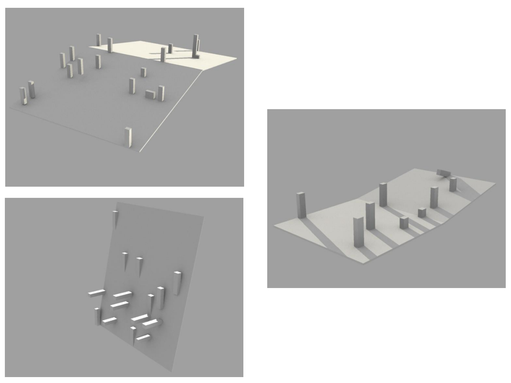
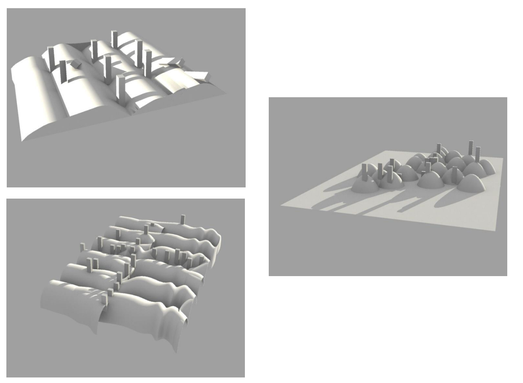
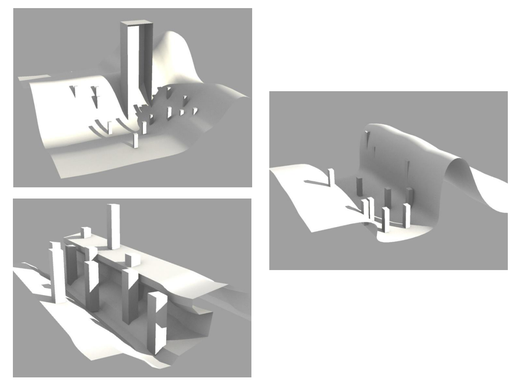
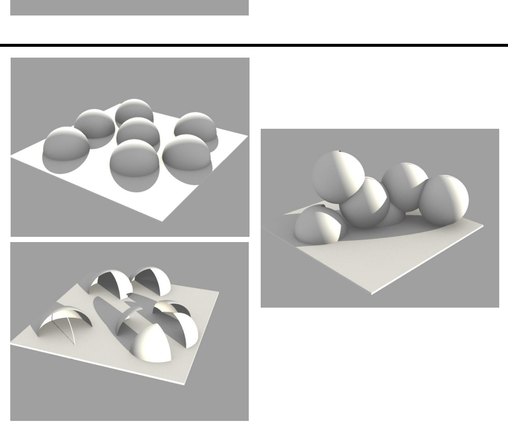
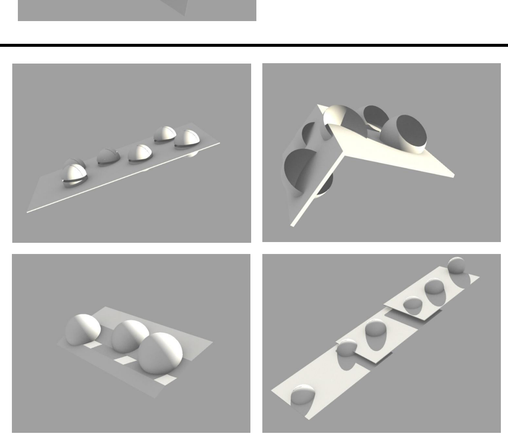
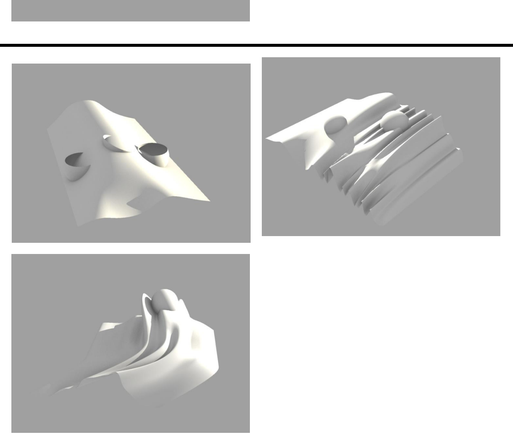
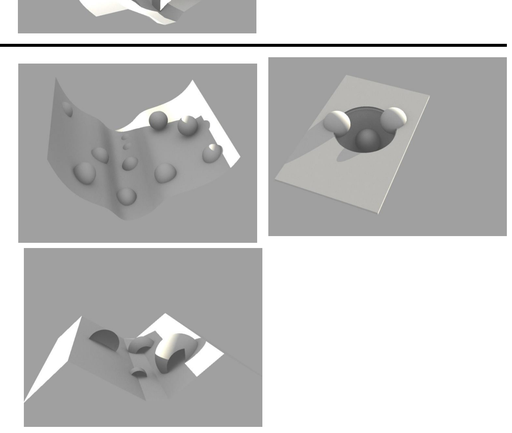
Rhinoceros

grasshopper
GENERATIVE MODELING FOR RHINO

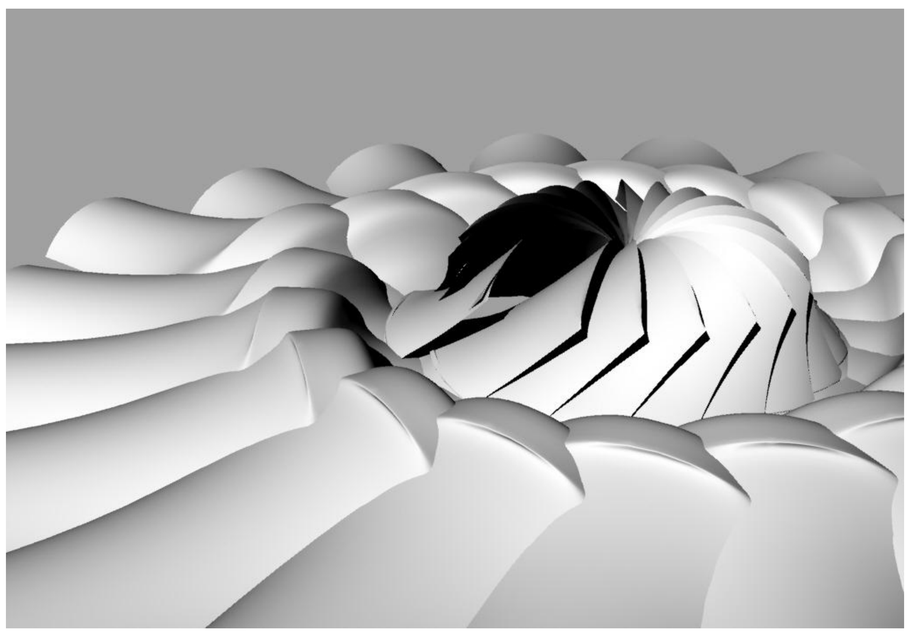
The Matrix: Exploring Site to Structure Relationships

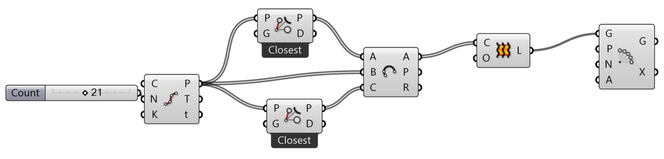
SITE

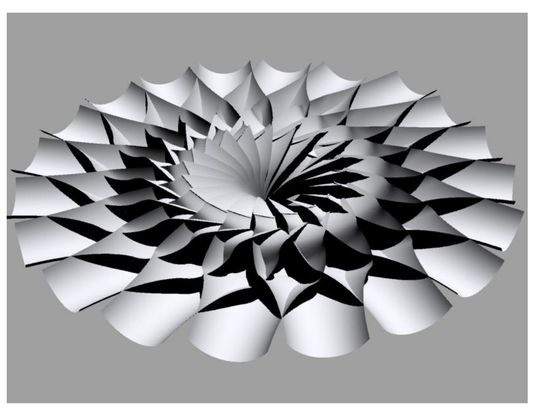
Structure Types

	Flat	Slope	Mounding	Depression
Box				
Vertical				
Sphere				

Grasshopper Scripting Exploration







Findings and Resolution

Going through the several model iterations was a beneficial creative exercise. The benefits of creating 3D models was that they were quick and an efficient way of exploring different possibilities. This can help when working at the conceptual phase of a design project and different ideas need to be explored and run through. It becomes more efficient that creating models by hand which at time can take hours. On average these models took 5-10 minutes depending on the desired result.

Something that became apparent was that the result of modeling was the surprising result. While the term “happy accident” in art and design is often look positively there is a lack of control than comes with it. Admittingly, the results were sometimes positive but it would difficult to replicate it again.

To deal with this, I found that Grasshopper provides greater control through scripting and programming. Lines and shapes are created purposefully and based on a logic that must work. Otherwise, the model will not be able to be created. Overall, 3D modeling can be a great part of going through the design process and provides several opportunities to quickly intervene and test different ideas out.