Digital Tectonics

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Since the practice of landscape architecture, designers and practitioners have always struggled acquiring the necessary and valuable height data or any other terrestrial information needed. This precise data set acquisition has evolved from commodity to absolute necessity especially in sites that are prone to flooding, where even centimeters of height difference can have a huge impact.

From the perspective of education, it is also vital that a studio can have any site as fast and as costless as possible in order to have a common base and point of reference for the students to work on. In this experimental study we have developed a digital tool, or instrument if you like, that can provide a point cloud of any site in the world with varying point density and precision. This is a standalone Java program which extracts height information from the Google Earth data base and produces a parametrized list of points.

Another function which is important in this tool that we have developed, is the ability to produce the code for a CNC milling machine, so that one can select a region and instantly mill it, thus avoiding and bypassing the 3D CAD-CAAM programs that are otherwise used to produce the code. This was tested as an individual research project in ETH, ILA with exciting results and it could be a way to have quick draft landscape models instead of first sketches and images. Students can benefit from this as it can be a fast way to preview the site and work on it. What is more, it is currently under further development and more features can be added, such as, a “live-scale” function as well as safety function for the machine. Traditionally, in landscape design people start from plans and sections and may end up in a three dimensional outcome, usually a model. Lately, the 3D software development is reaching towards landscape practices with promising future results. With the Digital Tectonics tool we target towards an opposite workflow, first having the 3D of any site and then working on it with any means, even with an analogue way and then 3D scanned. The change in technique can convey also a difference in meaning as well as intentions as well as capabilities. This is the main contribution that the Digital Tectonics, and its further versions, can make for the practice.

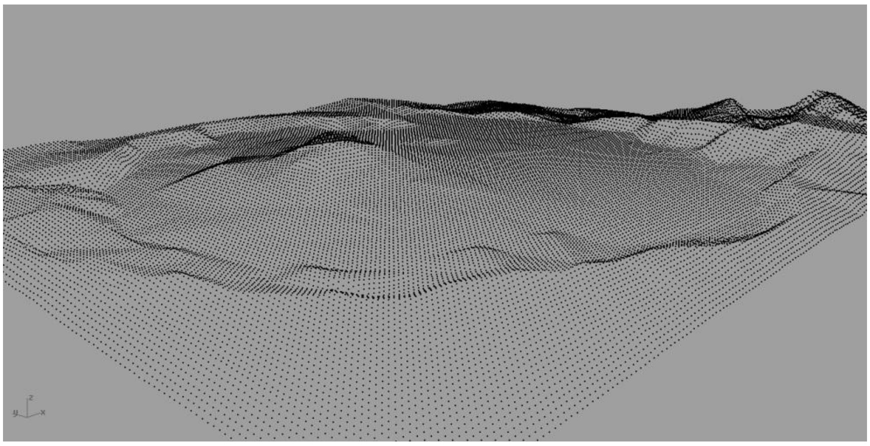

Fig.1 PointCloud created by the Digital Tectonics Tool. Source: Georgios Orfanopoulos

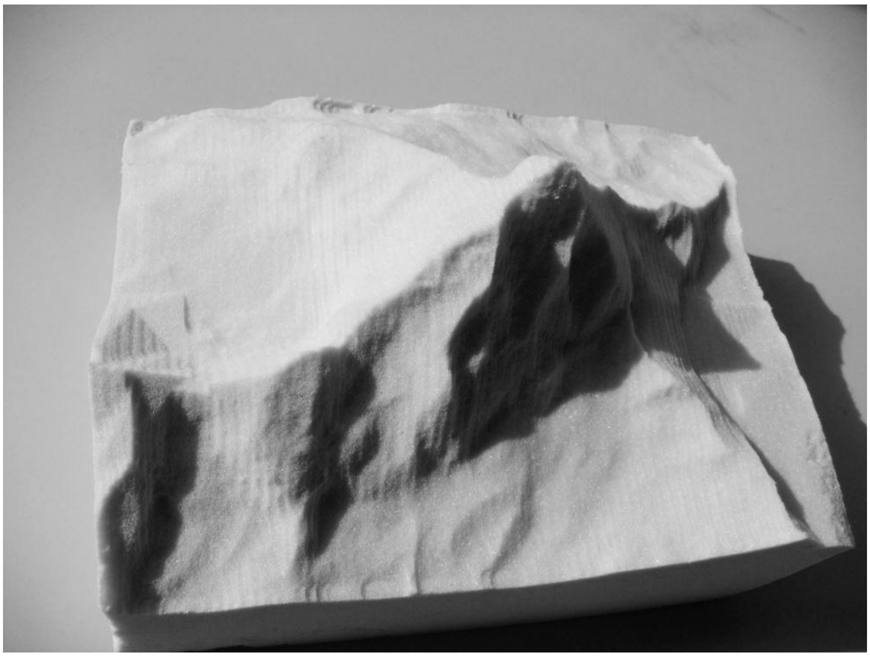

Fig.2 Milled Matterhorn model, with the automated code from Digital Tectonics Tool. Milled in the ETH Raplab, Chair of Prof.Girot. Source: Georgios Orfanopoulos

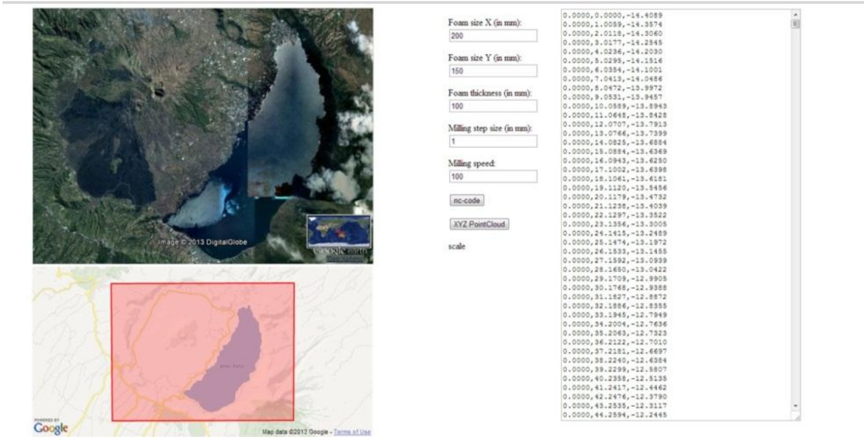

Fig.3 Digital Tectonics Tool interface. Source: Georgios Orfanopoulos