1. Introduction

In digital design, there is various ways to produce the data for digital fabrication. In a software application tool a whole kind of control is proposed. The mode of use depend of the intention of software architect and sometimes, key features drive all the software philosophy. For instance, in some software you have tool to manipulate mesh in many ways and in other you mainly manipulate shape through Boolean operation of volume. With interoperability of software, each software offers a way of controlling that can fit on the designer approach. In a design process that involved interconnected software, a new level of control exists. The export in a file format itself is a way to drive production process by interconnecting software with different philosophy.

If we zoom deeper in the software, the use of script enables more intricate control of function. Depending on API accessibility or scripting language type, a full range of control is possible. For instance, with simple loop an operation can be spread to all elements of a 3D scene or to all vertices of a mesh.

Through these different examples, we understand that depending the input, the scale of control doesn't apply on the same level. To make grasp these notions to student, a workshop has been designed. In this poster we will present the tools and process used in the workshop then we will explain the result of our observation.
2. Description of the Workshop

Three tools have been taught during this workshop:

- **Processing.** Open source IDE. Language close to Java. Very precise control on operation. The basic library is not suitable to 3D design. We added IGeo library to manage complex geometry through BRep. The students where invited to manipulate 3D coordinates of curve anchor that define surface.

- **Blender.** Open source modelling software. Originally designed to animation movie production. Tools in this software are mainly to manage mesh manipulation. The students were introduced to use modifier that apply a function on all the vertices of a mesh.

- **123DMake.** Simple and mono-functional software, transform a shape in a series pieces ready to be cut with a laser and assemble by hand. There are several modes of assemblies and user can define some parameters like the number of slices and their orientation.

3. Result and observation

As you can see in the survey answers given by the student, even if they get trouble to control their project with the given tool (especially processing), they are mainly satisfied by the result. So in some way, beside the difficulties they succeed to find a way for their designing process. Obviously, will be probably different if they had a full knowledge of the tool. But in the other hand, during the workshop introduction, we promote that digital design is about control and discover. After the workshop we can see that the majority of them agree with this point of view.

In the comment, processing has been perceived as the most complicated part to manage. The students mainly concentrate their work on the other software. But they desire know more about Processing, they feel the potential of such control even if they prefer interact with a GUI rather than a textual form of control. Another workshop can emphasis on the script based control to make them see what are the opportunities specific to this mode of control.

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