Computer Application Journal #6

Math Created Objects

Collecting, showcasing, and celebrating the collection of water within the building is a primary objective for the project. The project design utilizes a rectilinear form and organization to encapsulate the nature of the computer science program and looks to more organic forms to represent the natural elements that are composed in the building.

To accomplish this, mathematical formulas were used to create unique and specific forms. While looking to math to find inspiration for a form that could be used as a water storage device, the cushion surface was discovered. This object has a similar shape to a bowl.

THe grasshopper plugin within Rhino was employed to produce the object. Working with Christopher Scwalbe, we were able to create a script that produces the cushion surface. The script uses C# components in order to create the object. The cushion surface is made up of an implicit equation, so the script is a bit more complicated, and requires the script to take a set amount of points, and use the implicit formula to organize the points to create the object. This is a process, as the shape is so complicated, that it needs time to let the points solve themselves and slowly smoothen out to create the shape.

10/12/22

Creating a Parametric Canopy

My studio project design contains a central, vertical element that brings water collection from the roof through the building to the first floor where it can be stored and then used for watering vegetation, cooling the data center, or for gray water in the restrooms. This central element, while essential to the project concept, requires a thoughtful and specific design response. There is a need to explore design options.

To explore options, a grasshopper script was devised to create a parametric, panelized canopy that is able to be manipulated easily to see what size and shape will work for the tube as well as the project as a whole.

The script, created with Christopher Scwalbe, is fairly straightforward and relies on the manipulation of three primary circles or ellipses. The spacing and sizing of these shapes can be changed to create different, and unique forms.
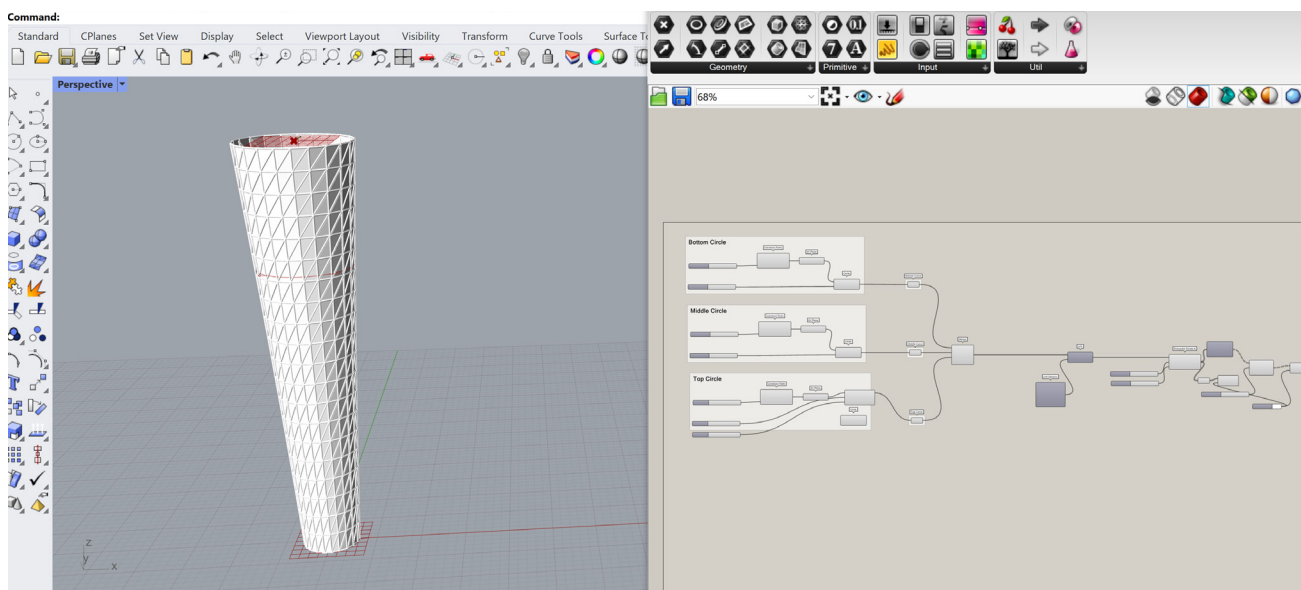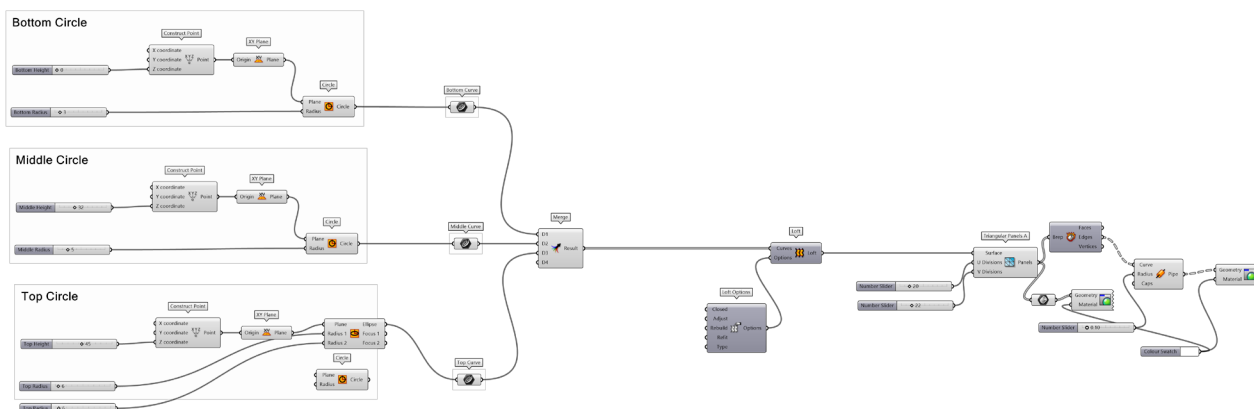
Interdisciplinary Modeling

There is a need for efficiency within modeling in order to best use time and resources in the design process. In order to maximize this, we must find ways to best use every program. Programs such as Rhino are able to produce more complex, unique, and organic shapes and forms much easier than Revit. Revit, however, is able to produce documents and very efficiently.

By installing Rhino Inside Revit, we are able to transfer model elements between programs, and get the best of both worlds. For the studio, I will be able to transfer the cushion surface and parametric canopy from above, into my existing Revit model. This will add another level of richness and information to my design and presentation. As I will be able to see more clearly how modeled elements relate to one another.