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PARAMETRIC DESCRIPTION OF GEOMETRY -NEW DESIGN SKILLS

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Study concerns with computational, parametrical methods to define the geometry and their role in the contemporary architectural design and engineering education.

Graphic record of the geometry is the primary medium to create and communicate design ideas. Traditional methods of representation, derived from the descriptive geometry methods, favor formal repertoire based on the "flat parts",w which is prone to the mapping in the rectangular coordinate system. CAAD/CAM newest technology generation based on computational procedures, that enable the creation and fabrication (CNC) of curvilinear geometry, initiated a revival of interest in organic forms and geometric exploration of topological spaces. According to Philip Jodidio, computer technologies are: "the door to new worlds in which non-Euclidean forms are as natural as cubes and spheres for the previous generation. "(Philip Jodidio, 2003).

In resent years in vanguard architectural offices intensively explored are advanced parametric techniques. They mean for the designer moving away from thinking in terms of a rigid, clearly defined forms in favor of defining the geometrical relationship between the elements that create the geometry and the rules of their mutual interaction. Define a hierarchical relationship is graphically via special applications such as Generative Components Grasshopper either algorithmically or by using scripting languages such as Visual Basic Script. (Fig. 1)

Because this type of modeling geometry is based on parametric equations, and mathematical values, pre-generated structure (form) can be modified by changing the value of certain parameters, until it meets certain criteria such as aesthetic, structural.

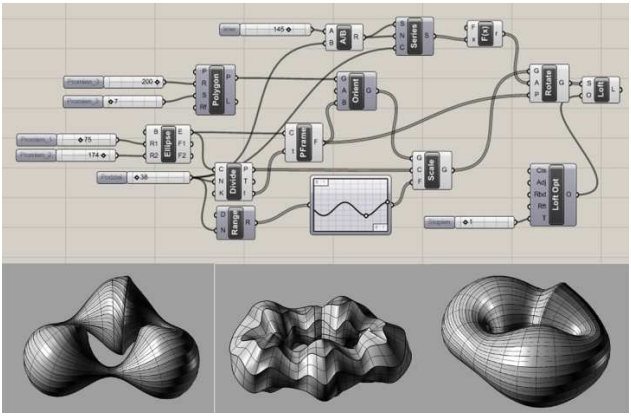

Fig. 1 Parametric description of geometry in the Grasshopper

Already for the youngest generation of architects the knowledge of topological geometry, mathematical description of surfaces and curves (eg.Nurbs) and an ability to interpret and define geometric relationships and to use description methods understood by the computer interface, prerequisite for competitiveness in the global market. So far, this fact is not reflected in the content of education programs in the field of geometry on the majority of Polish technical universities.

Literature:

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