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## **HOW TO BUILD GEOMETRIZED ARCHITECTURAL FORMS USING COMPUTER MODELLING AND ROBOTIC FABRICATION?**

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In this paper the process of creation of authors' own spatial installation with the help of a six-axis robotic arm during the 20th National Meeting of Students of Architecture in Zakopane is presented. The motifs of the highlander art gouged out on *sosręb* (kind of joist used in polish highlander cottages) were accounted for an inspiration for the origin of the installation. They were simplified to geometric forms, and applied on the sides of the tetrahedron's frustum.

First of all the issue of the use of robots in the field of architecture, examples of their use in the rapidly developing trend of parametric architecture, and the possibility of a new approach to the creation process were outlined.



Fig. 1 Creation of the installation with the use of a six-axis robot during the "RÓWNO\_REGLE" (Nationwide Meetings of Architecture Students - OSSA, 2017 Zakopane).

In the second part the process of creating the installation, from the idea to its execution, is presented in a thorough way. Special attention to the subsequent phases of the use of widely understood geometry is being paid. The limitations that authors must have taken into account, due to the use of the robotic arm and how it influenced the geometry of the installation forms is discussed. Subsequent stages of the design of installation, computer applications and tools used are outlined. How to create spatial patterns, later used as walls of the frustum, and how to prefabricate them is discussed in details. The stages of work, both automated and manual, are analysed. The possible room for automatisisation is pointed out as well as the time taken to complete the components is compared.

In the summary the final thoughts, based on the experience resulting from the installation made in Zakopane, concerning the new opportunities to create artistic installation with the use of robotic arm are concluded. Last but not least the usefulness of the used technology and its future importance for the trend setting in modern architecture and fine arts are also under consideration.



Fig. 2 The installation which was created during the "RÓWNO\_REGLE" (Nationwide Meetings of Architecture Students - OSSA, 2017 Zakopane).

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