Bożena KOTARSKA-LEWANDOWSKA
Gdansk University of Technology
Faculty of Civil and Environmental Engineering
Department of Mechanics of Materials and Structures
G. Narutowicza Street No 11/12, 80-233 Gdansk, Poland
phone/fax: +48 58 347 18 91   e-mail: bokot@pg.gda.pl

BETWEEN DESCRIPTIVE GEOMETRY AND CAD 3D

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Descriptive geometry provides methods to analyse three-dimensional space through two-dimensional drawings and prepares to create technical documentation. Geometric form of an engineering project is presented by the means of projection methods based on a 3D model, which is present in designer's imagination. The forthcoming era of BIM (Building Information Modelling) brings changes in the way the engineer works, as the vision is translated directly from the designer's mind into a digital model. The main tasks concern creation of the model and the two-dimensional documentation is obtained automatically.

Currently during the first semester of study, every engineering student participates in a descriptive geometry module, adjusted to the specific requirements of the given course. 3D modelling programs are introduced throughout the course of study. In both cases the academic aim is to develop competency in effective operation is space. Although the aim is to obtain with different means, it refers to the same intellectual operations related to the perception of space. Therefore, it is worth investigating which skills acquired through the descriptive geometry education can be applied in the initial stage of 3D modelling.

The paper attempts to develop an introduction to 3D modelling which takes into consideration skills acquired from the previous experience in descriptive geometry with a reference to the issues of modelling. The aim is not to present topics from descriptive geometry in the digital environment but to apply its knowledge in modelling and creating of 2D documentation in practice. When constructing the content of such an introduction, it is necessary to select previously learned constructions and algorithms, but also do not limit the creative approach. At the same time it is difficult to ignore the fact that many of the key issues for descriptive geometry in a digital environment can be achieved with one click. The formulation of the problem should therefore include options for available solutions in selected software. The paper presents some tasks for building solids, creating tangent surface, setting defined views and many more.