NEW HABILITATION IN THE ENVIRONMENT OF POLISH GEOMETRY AND ENGINEERING GRAPHICS

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On the 27th of January 2010 dr Edwin Koźniewski, an assistant professor at The Faculty of Civil and Environmental Engineering at Bialystok University of Technology (Department of Spatial Information), took his habilitation examination at Silesian University of Technology in Gliwice, before the Scientific Council of the Faculty of Engineering. In the course of the examination dr Koźniewski presented his main scientific achievements contained in his habilitation dissertation, entitled '*Geometry of Roofs. Theory and Applications*' published by Bialystok University of Technology Press in 2007.

The reviewers of the habilitation process were:

Dr hab. Eng. Bogusław JANUSZEWSKI, associate professor at Rzeszów University of Technology,

Prof. dr hab. Eng. Stefan PRZEWŁOCKI from Łódź University of Technology,

Prof. dr hab. Eng. arch. Janusz RĘBIELAK from Cracow University of Technology,

Dr hab. Eng. Jerzy SKRZYPCZYK, associate professor at Silesian University of Technology.

Dr hab. Eng. Jarosław MIRSKI, associate professor at Kielce University of Technology was also present. It should be noted that dr hab. Eng. MIRSKI was elected to join the Scientific Council of Faculty of Engineering by the decision of The Central Commission for Academic Titles and Degrees in order to assist in the proceedings of dr Koźniewski's habilitation process.

In the course of his habilitation examination dr Koźniewski also delivered the lecture entitled '*Hasse Diagrams in Geometry and Discrete Multi-Objective Optimization in Analysis of Variants of Roof Coverings*' By the decision of the Scientific Council of Civil Engineering Faculty Silesian University of Technology dr Edwin KOŹNIEWSKI was awarded habilitation (in Poland the title of dr hab.) in the discipline of Civil Engineering, specialty *Descriptive Geometry and Engineering Graphics.*

Dr Koźniewski's habilitation monograph is a conclusion of his original research into roof theory and its application in civil engineering and architecture (detailed description topological roof shapes along with the following: atrial roofs; applications for computer aided design of car park drainage systems, courtyards, swimming pools; applying geometry of roofs and Voronoi diagrams for polygons in order to solve such optimization tasks as determining the survey route of regions with the minimum distance from the slope of earthwork site (river gravel, minerals); geometry-aided determination of the predicted yield lines of plates under static load).

The monograph was divided into six chapters and the appendix. In chapter 1 the roofs (roof skeletons) as polyhedral surfaces are described in the language of graph theory, Euler theorem and the so called roof equations are formulated and proved. Chapter 2 contains further theorems related to roofs in the language of graph theory and it presents the description

of the so called *elementary roofs*. In chapter 3 the author gives detailed analysis of the topological shapes of roof skeletons. Chapter 4 describes roof skeletons determined by rectangular polygons. Some suggestions of geometric design of roofs with 'neighbours', atrial roofs and their applications for computer-aided design of drainage systems in car parks, courtyards, swimming pools and football pitches are given in chapter 5. The final chapter discusses the application of roof geometry and Voronoi diagrams for solving optimization tasks such as determining the router of survey of regions with minimal distance from the cut slope of earthwork site. The appendix contains the suggestion for utilizing geometry of roofs for geometry-aided determination of the expected yield lines of a plate under static load.

Congratulations for the author on his success. We wish him further successes in his didactic and scientific work.