Jonas ZEMKAUSKAS, Lionginas ČIUPAILA, Valentina ZEMKAUSKIENĖ
Vilnius Gediminas Technical University
Fundamental Sciences Faculty, Department of Engineering Graphics
11 Saulėtekio Street LT-10223 Vilnius - LITHUANIA
e-mail: Jonas.Zemkauskas@fm.vgtu.lt

INFLUENCE OF INFORMATION TECHNOLOGY ON ENGINEERING GRAPHICS CONTENTS

Information technology influences engineering graphics content due to its physical structure because of a great number of commands. So "Engineering Graphics AutoCAD-NNN" have spread in the world. It seems that not engineering practice tasks but programmers' designs began to determine graphics content. It is paradoxical that in spite of constant change of "NNN", graphics content was just getting poor. This can be illustrated by disappearance of such important themes as intersection of surfaces and development from graphics syllabi at a number of higher educational institutions. In VGTU a special committee was formed to determine the influence of computer science on graphics and to provide for a reasonable course. It was done and summarized in scientific issues [1, 2]. It's a pity but despite the permanently issued literature [3, 4 and others], we can refer to own experience based on researches of many years and pedagogical experience [5].

We will divide graphics into two parts (Fig.1):

- a general one which include drawing and space modeling and
- an applied part which considers the subjects related to a specific line.

A new component such as provision appears which with the help of computer technology becomes dynamic.

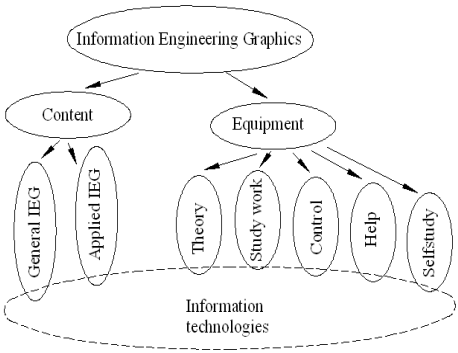

Figure 1. Engineering Graphics Content

The peculiarity of the scheme is that in spite of information technology influence, its content depends only on engineering needs and not on commercial programme potentialities. The other specific feature lies in course computer provision opportunity which enables to automate a part of processes, in this way making material mastering and control much easier.

Let us discuss the peculiarities of general graphics (Fig.2) in more details. General graphics is a fundamental part of engineering graphics considering 2D-drawing, surface and solid modeling and tasks of automated views receiving and development forming. General engineering graphics (GEG) is closely connected with computer work methodology which must at most evaluate computing achievements, take advantage of automation potentialities and 3D geometric modeling.

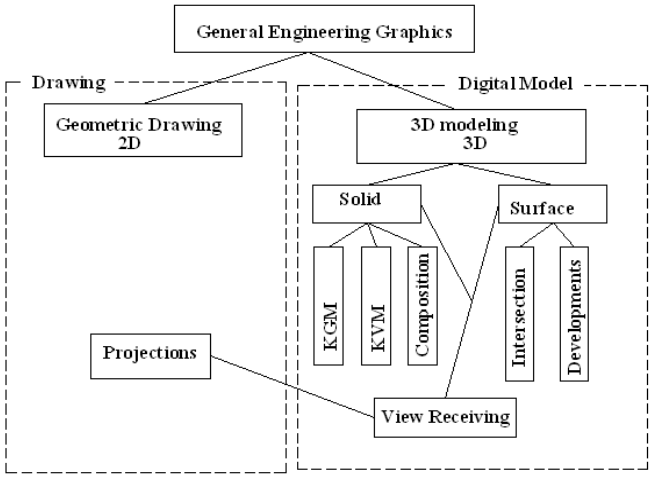

Figure 2. General Graphics Model

There is an evident difference in the scheme comparing with traditional graphics which shows that GIG can be not only a drawing but also a digital model of a space object from which or according to which a drawing can be made automatically. There was only a drawing in traditional graphics which now forms only a part of modern graphics. The digital model is presented on a computer screen in a graphic way, but this makes a precondition for false understanding of visibility, because a computer view coincides with the drawing only in certain conditions**.** The other peculiarity is that the work information became considerably larger, as solid modeling in classical graphics was not at the whole possible. Suppose the formula of solid modeling is the following:

A detail = $\Sigma^{n}_{i=1}E$, where E – a detail elements.

It is obvious that it does not resemble graphics, though there is its essence in computer science. Thus, GIG objects can be drawings, solid objects and space objects views, surface objects, surface developments which visually have a graphical representation and are controlled by digital methods. The consideration of the duality makes the contents of the article.

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