GEOMETRY – AN IMPORTANT MEANS OF EDUCATION IN THE CIVILISATION SCOPE

Geometry (from the Greek: γεωμετρία; *geo* = earth, *metria* = measure) is a genuine science, rooted in mathematics, which studies the plane and spatial forms of bodies from the objective or conceptual reality and the nature of the relationship that exists between them. Due to its complexity, geometry is divided into: Euclidian geometry, analytical geometry, descriptive geometry, projective geometry, kinematic geometry, surface and curve differential geometry, axiomatic geometry, non-Euclidian geometry, generalized spatial geometry, global geometry, combinatorial topology.

There are some ancient, Egyptian, Chaldean documents, dating from around the years 3000 – 2000 BC, which contain the first theories and practical rules for determining the areas of certain surfaces identified as triangles, parallelograms, and trapezes, for calculating the volumes of certain solids named parallelepipeds, pyramids, and truncated pyramids. In ancient Greece, geometry was called the "queen" of sciences and was considered a real paradigm for approaching the reasoning specific to most theoretical sciences. In ancient China, there seemed to have been some similar mathematical studies, which haven't been preserved until nowadays, because they were stored on degradable paper support.

For the culture of the contemporary generation of engineers, architects and designers it is necessary to mention a few famous names in the domain of geometry from the history of civilisation, together with their accomplishments:
- In Antiquity: Tales' theory of like figures of (6th century BC), the Pythagorean theorem (580-500 BC), the invention of the regular polyhedral, the building of the regular pentagon in the Pythagoras school, the method of the deductive reasoning, the calculus of the area of some figures delimited by some circle arcs, devised by Hippocrates (5th century BC), the method of the known geometrical places in Plato's school (429 – 348 BC), the systematic, concise, axiomatic geometry of Euclid (3th century BC) etc.;
- In the 3rd century AC, Pappus formulated early projective geometry theories;
- During the Renaissance period, Gerard Desargues (1593-1662) devised a series of rules regarding the plane representation of spatial figures;
- In 1789, Gaspard Monge (1746-1816) created descriptive geometry and contributed, together with L. Euler and Joseph Lagrange to the completion of spatial analytic geometry etc.

It is important to underline the *dynamic character of geometry*, the existence of concerted research within all its branches along the historical development of humankind. During each century, from the relatively new history, there are many examples that can be given regarding famous people and the contribution they brought to this science.

Plane and spatial geometry and descriptive geometry have the role of forming the spatial view, of ordering reasoning by obeying a rigorous, spontaneous, clear logic.

Technical higher education includes descriptive and analytic geometry as fundamental disciplines in the curriculum in order to develop the creativity and ingenuity of future designers.

It is regrettable that primary schools and high schools minimised the study of geometry. This matter should be urgently looked into by the representatives from the Ministry of National Education.

Descriptive geometry, as a modern science, has the role of regulating the representation of plane and spatial geometrical elements in the double and triple Monge projection, in axonometric projection, in the geometrical perspective that uses the conic projection. It represents the theoretical foundation of technical drawing, with various applications technics, industry, architecture, building, the theory of shadows, topography. The need for designers and for materialising technical ideas, along the evolution of civilisation, led to the development of descriptive geometry, technical drawing being the discipline that establishes the connection between the project, the concept and the execution.

The new design and 2D and 3D modelling software represent the modern component in the creation activity, which represent a natural evolution in the present social and historical framework. The spectacular dynamics of software's continuous improvement depends on the evolution of civilisation by constantly altering people's spiritual and material needs.

At present, technical creation is the superior means of manifestation of the human creation due to a series of ample and rigorous interdisciplinary approaches. The design activities are identified with a complex means that polishes the spirit and the mind in the creation process.

The modern man permanently tends to acquire different skills so that communication and teamwork could lead to the best technical solutions.

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