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***Visual Thinking in the 3D World – Three-dimensional Applications
in Teaching and Learning***

In the world of today's information society the torrent of information we are daily faced with has to be appropriately transformed and translated in order to yield representations we are somehow capable of understanding. Such transformations should very much exploit our ability to visualize. By extending 2D representations to three-dimensional ones, pictorial contents become more lifelike, getting closer to practice, creating the basis for a new view of pictorial thinking, giving rise to the emergence to a very effective method of dealing with information overload, of articulating and grasping information. To depict three-dimensional reality onto a two-dimensional plane of course constitutes an age-old scientific problem, the principal aim of the technique sought after being the exact representation, the geometrical analysis and interpretation, of spatial forms. The two main phases of visual communication are the creation of figures on the one hand, and the reading and interpretation of figures on the other. Both these visual communicational phases are characterized by an organic unity of knowledge acquisition, thinking, and creation. Visual thinking here means: operating on pictures and mental images. That is, I wish to approach the capacity for visual thinking from the perspective of the ability to perform unified elementary operations. I have in mind operations such as analysis, synthesis, or abstraction. A typical dynamic visual operation is, for instance, the mental rotation, transformation and representation of some spatial object. Operations performed on mental images we might interpret as analogical processes of thinking, as contrasted with the logical processes of conceptual thinking. Transposing such operations into real physical environments, and thereby creating new kinds of vivid visual experiences, will further enhance the capacity for visual thinking. Such an experience is provided by the new ICT system "Leonar3Do", developed in Hungary. In the domain of teaching and learning, the new visuality is also strengthened by a range of various programs enabling three-dimensional modelling (such as, e.g., Archicad, Artlantis, 3D studio max, Solid works). With their help, we can more easily and effectively process, store, and recall the deluge of information we are today increasingly exposed to. These are changes and achievements that can be subjected, in an appropriate environment, to precise measurements.



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