



SESSION 1 - RESEARCH AND GEOMETRY
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DRAWING MATHEMATICS – A TRIBUTE TO GEOMETRY
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ABSTRACT

Geometry has been used since the immemorial times of ancient Egypt but was the Romans who used it in a constructive point of view. The limitation of scientific knowledge was then supported by geometric design, because numbers¹ did not accomplish this evolution. What led Vitruvius to assert (with all the constraints related to the certainty of his writings) that certain problems can only be solved through drawing [1, p.271]. The gradually expansion of the numerical universe, allowed to obtain results by the use of mathematic calculation instead of the descriptive geometry; so that it now has a different designation in mathematics. But whatever the used process – descriptive or analytic – the result is unique.

Thus, based in the principle (which seems to have been lost in time) that Geometry is Mathematics, it becomes necessary to consider the convergence of differences in Descriptive and Analytic Geometry curricula, to solve problems of architectural design. The future necessary involves Computer Graphics (CG) field to describe Geometry; an area where the use is separated from programming, but where, again, the knowledge of the philosophy of the digital design tools allows exploring and getting results that goes beyond the imagination of the architect.

This paper purposes a new approach to the Geometry teaching, which integrates the recourse to digital drawing tools, computation tools and digital fabrication tools, to support the understanding of the precise space representation and the exploration of new conceptual universes concerning the geometrical space. This approach is based on the experiences that have been developed in the scope of the Architecture course curricula at Instituto Superior Técnico (Lisbon).

¹Although the set of numbers not yet be established at that time, only the natural numbers (other then zero) were then used.