POLYTECHNIC OF TORINO
FACULTY OF ARCHITECTURE 1
Degree in Architecture
Honors theses

Shape and Geometry. Genesis of the shape and the use of the geometry till the a.d.
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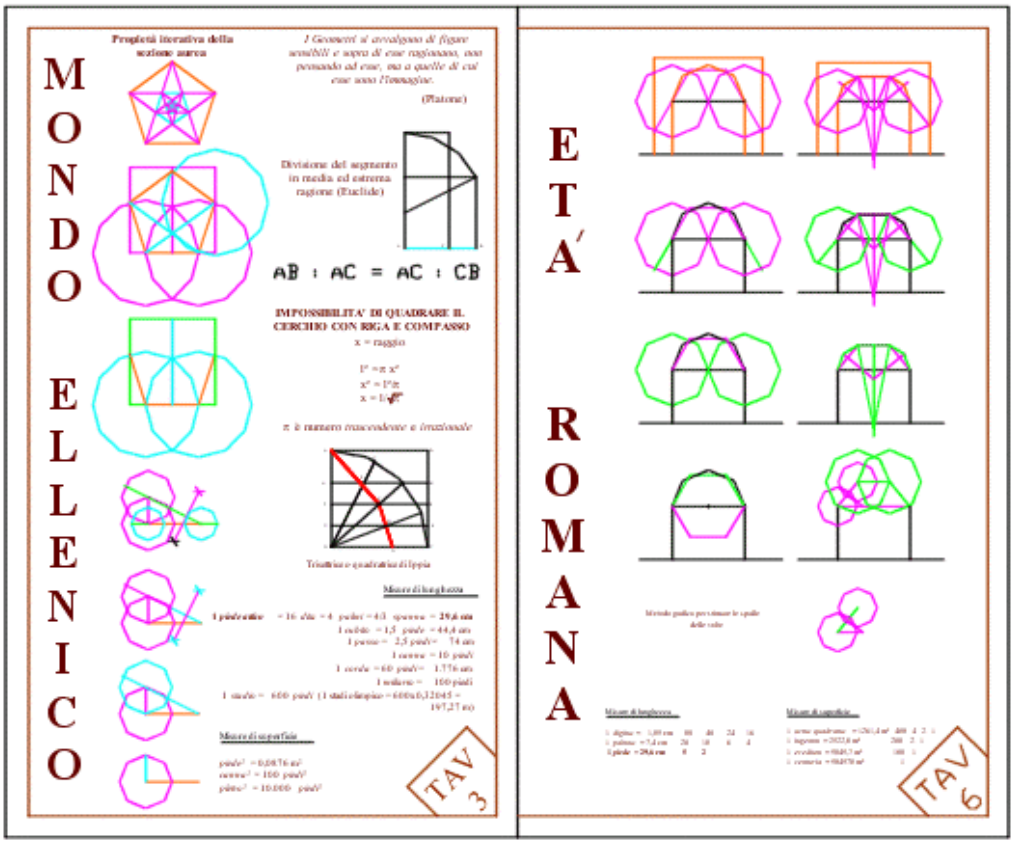
In the geometric-architectonic review of the history of the mathematics from the archaic civilisation to the II century b.C. and by the practical application in the roman world, it is proposed a further widening of the cognitive route in the research field of “orderer criteria of the formal invention that – by the already well-established Theory of the Formal Geometry – is inborn in the geometry”.

To understand the process of the formal invention expressive modality it needs to put aside the modern culture that makes use of the descriptive and projective geometry: everything transmitted took a graphic form by the ruler and compasses use. Understanding the geometric link to the form draw and to the space control means to understand the “fourth dimension” (the evolution of the shape in the time and space), to verify the unitariness and consequentially to understand the meaning of every single being constitute the whole. It can not be possible to have a strong and deep idea of the greek mathematics without, in some way, have a knowledge of the greek philosophy, indeed one of the objective of this study was to research the reasons because a certain discovery occurs in a specific age, place and by that specific people who realise that knowledge progress.



It can be true that the geometry in the archaic age was not release from the rough matrix of a spatial experience that comprehend every measurable element (the geometry was geography, sometime surveying, its figures have nothing mysterious, secured to the reality without needs of abstraction). It must wait till the Greek of the IV century b.C. (after the problems raised by the discovery of the irrational numbers) to find a God surveyor: the ellenic world set the first step on the way of “scientific spirit”, that goes on the “way of the object” opened and travelled from Mesopotamia to Egypt.

The Ellen built up an abstract science of the geometry based on a strictly logic-rational criteria and world wide valid. They made, for the first time, a simulation of a physic phenomena, they developed the calculus as a one-discipline, they set theoretical problems up to the infinitesimal calculus, up to the trigonometry, up to the explanation of the sky mechanic (Eudosso, beginning of the IV century). This attitude itself allow “to use the so called Euclid’s geometry as a methodological path even for the control of the architectonics space”.

The objects of the physical world have, more than the specific properties of the formed matter, two common properties: the Shape and the Extension (as the capacity to occupy the space). If for every body it is neglected the strictly material property, it remains only the “idea”.

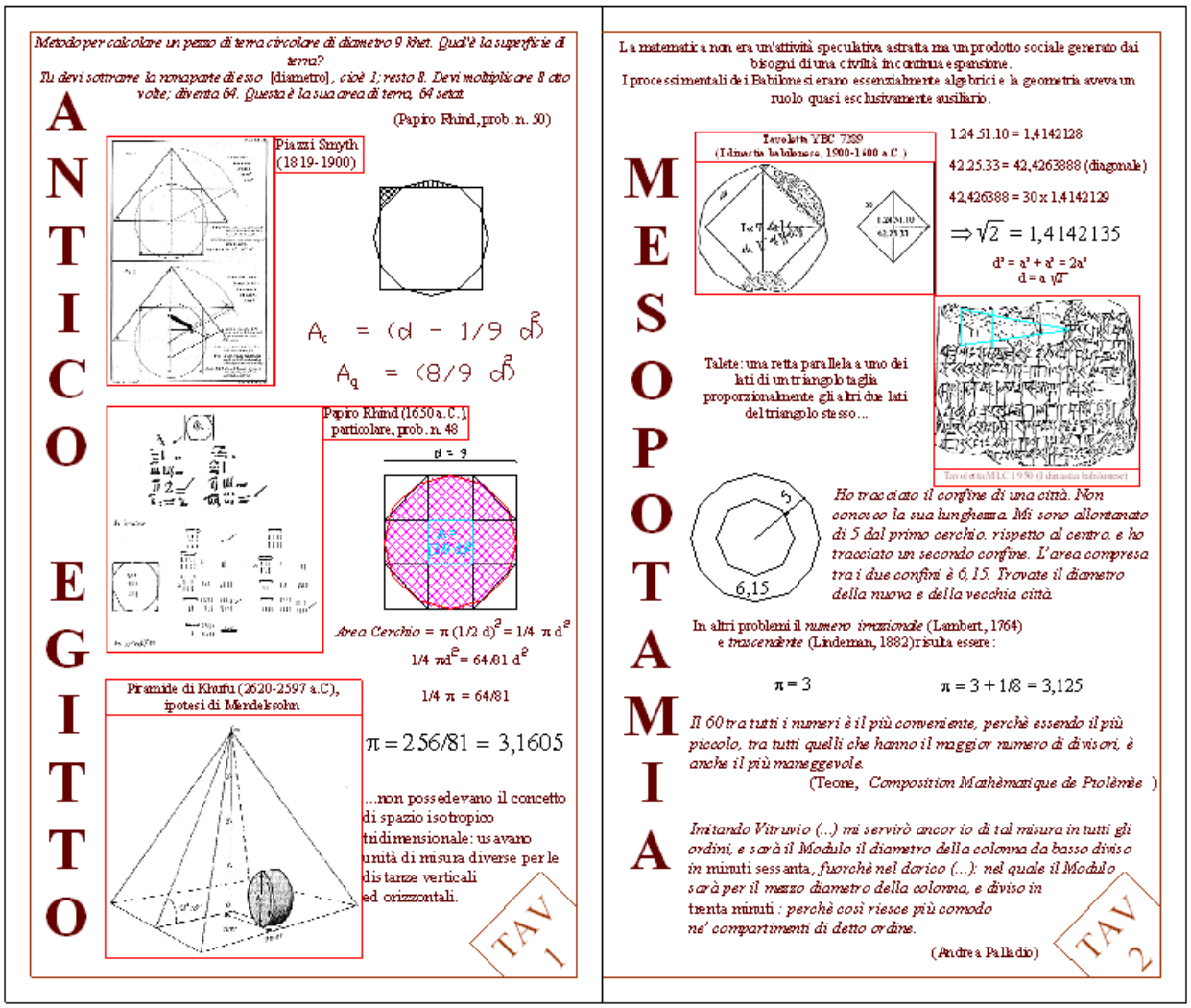
Platone was used to say: “The Surveyor are using perceptible figures (materials) and argue over them, not thinking about them but to their image”.

Must pass about two thousand years before others researchers, already in full modern age, took substantial and radical newness form the Euclid’s studies, that are still an essential reference point.

The developed historical period goes to the roman period. It can be gathered the more applicable aspects of the scientific knowledge inherited from the past, addressed principally towards the perfecting of the technical quality more than the speculative or logic investigation. In fact they couldn’t improve in pure mathematics and philosophy but they could, for their advanced organisation, mark the territory in a indelible way.

Coming back to the a.D.: for understanding how the interest in the mathematics could complete the education of an architect in the roman age, it can not avoid to read the only treatise on architecture came from the ancient: *De Architectura* of Marco Vitruvio Pollione. Was focalised the attention on the terms *mathematics* and *geometry*, and on the communications modality of the architectonics form, taking off the more significant steps.

It is understood how the geometric process could help the ancient civilisations for practical problem solving. By the way the evolution and the capacity to reproduce a project drowning, to implement the way for projecting, the raising up of some construction material carrying on new expressive value, eliminate the described geometric draw and slowly eliminate the geometric-deductive support as a methodology for projecting of architectonic opera.



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