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Le Misure dell'Architettura

Measures in Architecture

Con l'introduzione del sistema metrico decimale alla fine del XVIII secolo in Europa, non sparirono soltanto i precedenti sistemi di misura, ma fu sovvertita la concezione del disegno d'architettura legata ad essi. Il disegno geometrico che la descriveva trovava nelle diverse basi numerali dei moduli antichi lo strumento idoneo a legare l'articolazione formale alle figure della geometria. Queste divenivano trame numeriche legittimate da teoremi, serie, proporzioni che rendevano facilmente memorizzabile, trasmissibile e operativo il progetto ideato. Il rilievo diretto della tradizione passata, restituito per via analogica, non permetteva di recuperare contenuti di conoscenza storica scomparsi con la rivoluzione scientifica, ma ricchi di interesse per l'attualità. Non tutti i contenuti per noi rilevanti sono rintracciabili nei documenti letterari, molti sono conservati nelle testimonianze materiali. L'innovazione tecnologica portata dall'informatica può dare al rilievo scientifico del monumento il valore di strumento di accesso a una nuova inaspettata conoscenza, più rispondente alle domande della cultura attuale.

When the metric system was introduced in Europe in the late eighteenth century, while the previous measurement systems disappeared, the very concept of architecture, tightly connected to it, was subverted. The previous geometric design had found in the various numeral bases of the ancient modules the appropriate framework linking the articulation of the shapes to the figures of geometry. These plots became legitimized by numerical theorems, series, proportions that made it easy to remember, to transfer and to operate the plan. The direct manual survey of the past tradition, described by analogical drawings, did not allow to recover all the contents of historical knowledge, forgotten after the scientific revolution, but attractive for the present. Part of the ancient knowledge is not preserved/stored in literary sources, but in material constructions, i.e. in monuments. Meaningful immaterial heritage is preserved in material records. Technological innovation brought by information technology can give to the scientific survey of monuments the value of means of access to a new unexpected knowledge, more responsive to the questions of today's culture.

In the Age of Enlightenment, two events profoundly influenced the formation of the architect and the esthetic of architecture: the Lessons of Descriptive Geometry of Gaspard Monge and the introduction of the metric system.

The first consolidated and renewed old graphic procedures.

The second conformed the way of measuring lengths, destroying the previous millennial metrologic traditions, with the introduction of a universal measure and a new way to realize multiples and submultiples according to it.

Their association on one hand strengthened our ability to describe the material form of architecture through univocal graphics, on the other made irreparably illegible many of the immaterial issues that generated the form through its design. These were the topics of the project, where often it is hidden a huge wealth of information about the culture behind the monument, the reasons and the purposes of drawing, in a word the quod significat indicated by Vitruvius.

The ratio of the architectural project is geometric shape and geometry is resolved in the measure expressed by the numbers presented in the graphic. From the Enlightenment, numbers lost identity, both as individual and as belonging to a series. In previous centuries the observation of nature suggested special values in numbers and their replica could transfer those virtues in the design of the form.

Measurement and numbers had not generic but specific purposes; they were proposed by the culture of the society.

Officials of the State, with whom, according to Herodotus, born geometry in Egypt, went with

ropes and stakes to restore a social order destroyed by the flooding of the Nile; with the 'staioro' (measurement of surface defined uniquely by Leonardo Fibonacci in Pisa) was decided the surface of architectural and urban interventions that, in the Florence of gothic age, controlled the city development and proportional relationships of the areas covered by buildings and churches; the Fibonacci series proportioned the shape of plans and elevations, and guaranteed the same mechanisms of growth of natural organisms; harmonic ratios controlled that the composition was 'according to nature'.

It was possible to harness keep in mind the remembering of a project, the transmission of the knowledge to others, the handing down of the memory through a network of related geometries, of numbers rich in meanings and connections, in a similar way to that science was doing of the Creation.

Weaving the spatial relationships of an urban fabric was the search for social harmony, that in the Hippodomean city was resolved with the Pythagorean numbers (in the city of the twentieth century it will be resolved with the standards of urban technique).

In the past these patterns were the essence of architectural drawing and constituted the premise of "descriptive geometry" of the architecture. The affinity of architecture with music consisted in these patterns: both are built with numbers and measurement, it at the same time is not necessary they are the same.

Today's culture has lost the sense of the old logic of form; other tools realize our memory and we hold our forms in other ways; now the memory

of past forms is outside of us and the ancient patterns lost their readability.

Up to technological innovations of the last century, this logic was entrusted to the vision and was not handed down in literary forms, because not necessary.

We no longer know how to recognize it. The telling of the story falters each time a form is not immediately congruent with the current expectations, modeled by aesthetics from academy. Today, however, the computer provides tools (both for measuring and for graphic restitution) that give to surveying drawing an added power, not sufficiently taken in advantage: the ability to explore and read the survey with the antique measures of the project, to derive the hidden measures of determinant lengths that cannot be directly taken, to measure the angles of figures not recognizable in their geometric origin, to recognize non-elementary graphic strategies (use of graphic scales related to the measure), revealing the rule so far denied.

The surveyor gets hold of new information that generate new associations of ideas, images, documents, from which could derive unexpected readings of design for architectures also well known and associated for many years to historiographical static studies.

Today's culture is hungry for news, to explain the internal value of what the past has strongly preserved with greater persuasiveness.

The surveyor of architecture is able to offer to historians of different disciplines a wealth of news of geometric nature that may move their research towards new alternative interpretations.

