"The vector-drawing as a means to unravel architectural communication in the past"

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Unlike in painting, in architecture one single person never controls the whole process between conception and realization of a building. Ideas of what the building will eventually look like, have to be conveyed from patron to the actual builders, by way of drawings. Generally the architect is the key-figure in this process of communication of visual ideas. Nowadays many architects design their new buildings by using computers and Computer-Aided (Architectural) Design programs like AutoCad and VersaCAD. Just like traditional *drawings,* all these computer drawings are in fact vector-drawings; a collection of geometrical primitives like lines, circlesegments etc. identified by the coordinates of their end points.

Vector-based computer programs can not only be used to design the future, but also as a means to unravel the architectural communication in the past. However, using the computer as an analyzing tool for a better comprehension of the past is not as simple as it seems. Historical data from the past are governed by unique features of date and place. The complexity of the past combined with the straightforwardness of the computer requires a pragmatic and basic approach in which the computer acts as a *catalytic agent,* enabling the scholar to arrive manually at his own - *computer-assisted* - conclusions. From this it turns out that only a limited number of projects of a morphological kind are suited to contribute to new knowledge, acquired by the close-reading of the information gained by way of meaningful abstraction.

An important problem in this respect is how to obtain the right kind of architectural information. All four major elements of the building process - architect, design, drawing and realization - have their own different and gradually shifting interpretations in the past. This goes especially for the run-of-the-mill architecture which makes up the larger part of the historical urban environment.

Starting with the architect, one has to realize that only a very limited part of mainstream architecture was designed by architects. In almost all other cases the role of the patron and the actual builder exceeds that of the architect, even to the extent that they designed buildings themselves. The position of design and drawing as means of communication also changed in the past. Until the middle of the nineteenth century drawings were not the chief means of communication between architects and builders, who got the gist of the design from a model, or, encountering problems, simply asked the architect or supervisor. From the nineteenth century onwards the use of drawings became more common, but almost never represented the building entirely *"as built".*

In 1991 I published my Ph.D. thesis: *Constructing the past: computerassisted architectural-historical research: the application of image-processing using the computer and Computer-Aided Design for the study of the urban environment, illustrated by the use of treatises in seventeenth-century architecture* (Utrecht 1991). Here, a reconstruction of this historical communication process will be presented on the basis of a project studying the use of the Classical orders as prescribed in various *architectural treatises,* compared to the use of the orders in a specific group of still existing buildings in The Netherlands dating from the late sixteenth and entire seventeenth century. Comparisons were made by using vector-drawings. Both the illustrations in the treatises and the actual buildings were "translated" into computer-drawings and then analyzed.

The study of which visual which visual ideas about classical architecture devised by Italian architect were communicated by way of treatise from Italy to the builders of the north, led with the assistance of the computer to a more precise reassessment of the influences of the treatises used. Contrary to, for example, in England, in The Netherlands the influence of the treatise of Palladio turned out to be almost nil and was entirely overshadowed by that of Scamozzi. More important was the outcome that the treatises were principally used as an example, not leading to an exact copy. Almost always the original examples were subject to *minor adaptations by local architects.* These were, however, always within the general scope of Classical rules, not aimed so much at an *imitation* of the set example, but at an emulated design adapted to local circumstances.

Although never developed that way, vector-based CAD-techniques can be used as a means to unravel architectural communication in the past. The complexity of the past, however, does not allow a totally computational approach, but only a computer-assisted one, in which the computer acts as a catalytic agent. The superior blending-capacity of the computer provides just that much extra to tackle an almost unchallenged field of research.

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