31.3. – 1.4.2022 Werner Oechslin Library Foundation Einsiedeln, Switzerland

Workshop (For members only)

Biased Drawing. "Representation bias" in spatial orders from the 1950s to the 1980s

▷ View Programme

The workshop's title implies a bias in the practice of drawing, a bias through which the invention of the computer in the post-war period has challenged and changed traditional patterns of spatial order. Information transmission and cybernetic control systems initiated a paradigmatic shift in representation. This new paradigm later became more firmly established as the transition to digital technologies and computer-based processes in art and architecture normalized, after what is now called the "digital turn", at the end of the 1980s.

The competition between so-called analog and digital processes is reflected in the architectural debate between Peter Eisenman and Christopher Alexander at the Graduate School of Design, Harvard University, on November 17, 1982. Both identify their choice of tools and methods as a search for the "ordering system of things," which to this day marks a fundamental tension in the systematic nature of the design process. While Eisenman elects to traditional geometric projection methods, Alexander relies on the synthesizing power of the computer in the process of inventing things, which entails a whole new order, organization, and form of spatial representation. Linear graphs and axonometric visualizations represent the newly-ordered and now visible "inner structures of things," which according to aesthetic criteria, are both elements of a formal language *and* its rules.[1] For a simultaneity of "image and logic"[2] is reflected in the graphic representations, which are not only the result of epistemological changes, but of competing mimetic-illustrative and mathematical-modeling techniques. The computer is only apparently able to overcome the discrepancy between the two techniques. Since computers carry out instructions for action, and the planning of spatial orders is then carried out with semi-automated procedures, traditional representations dissolve into patterns and form-giving data.

Being able to analyze the complexity of the world at all scales with the help of the computer was the hope of cybernetic sciences, a hope that had already disappeared in its nascence, into the closed systems of its "black box".[3] Instead of being able to show and explain the processes taking place within the black box as intended, exactly the opposite occurs: as science and technology work together successfully, the actual processes become more and more opaque. Presumably, this realization also contributes to the debate that Christopher Alexander provoked with his experiments based on mathematical applications and the computer program HIDECS in the 1960s, and that still accompanies the discourse between analog and digital processes today. Digital configuration and reorganization of space is characterized by the resort to algorithms, which automate part of the process. While some parameters of the algorithms are directly accessible to the user, some others remain hidden. This creates a distance between the user and the digital artifact due to the effects of "black-boxing",[4] leading the user to relinquish part of the control over the algorithm. What remains hidden are the generative and abstract processes, structures, and orders that are visualized when drawing with the computer as a tool. But invisible relations, primarily not representable, are given a vivid visibility. Highly reduced, computer-based drawing reveals transparencies of order and structural properties of space. Thus, a significant paradigm shift of presentation takes place, which can be referred to as "representation bias".

An early turning point is marked by the cybernetic ideas of feedback loops and information transfer, which Norbert Wiener incorporates into an infrastructural plan proposal for U.S. cities, making evident the possibility of a nuclear event and the necessary precautions to safeguard against it. Holistic and global thinking also characterizes Buckminster Fuller's work, as he develops his geometric basic bodies under the imposition of minimal principles. In drawn form, they reveal spatial patterns from which he can derive new physical models for his experimental domes. From the analog drawing, Fuller generates complex geometries that Zaha Hadid and Frank Gehry are able to build a few years later with the help of new modeling and CAD software, such as Maya or CATIA. Algorithms transfer the hand-drawn, flying expressive objects into a digitized model and ultimately into a building. In the comic strip, Richard McGuire reflects Microsoft Windows' operating system, which was widely popularized in the 1980s, by superimposing opening "windows" on a perspective drawing. They tell the contemporary history of the plot in flashback and projective layering, leading to a loss of orientation in the traditional spatial structure of the comic strip.

By exploring objects from an interdisciplinary realm, the workshop takes a look at the paradigmatic change of graphic representation and aims to fathom its artistic-scientific concepts from the 1950s to the 1980s.

[1] *Stephen Grabow: Christopher Alexander. The Search for a New Paradigm in Architecture, 1983.*
[2] *Peter Galison: Image and Logic. A Material Culture of Microphysis, 1997.*
[3] *W. Ross Ashby: An Introduction to Cybernetics, 1956.*
[4] *Bruno Latour: Pandora's hope: Essays on the Reality of Science Studies, 1999.*

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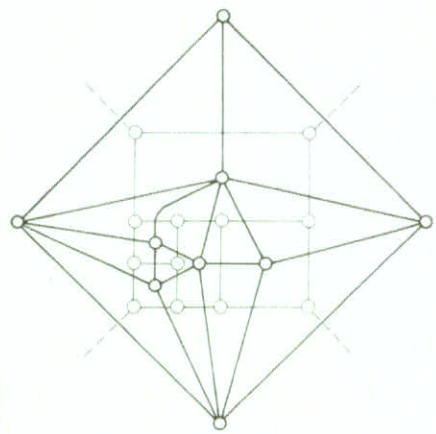

Philip Steadman: Graph-Theoretic Representation of Architectural Arrangement; in: Lionel March: The Architecture of Form (1976), S. 99