

Structuralism (architecture)

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Structuralism as a movement in architecture and urban planning evolved around the middle of the 20th century. It was a reaction to CIAM-Functionalism (Rationalism), which had led to a lifeless expression of urban planning that ignored the identity of the inhabitants and urban forms.

Two different manifestations of Structuralist architecture exist. Sometimes these occur in combination with each other. On the one hand, there is the *Aesthetics of Number*, formulated by Aldo van Eyck in 1959. This concept can be compared to cellular tissue. The *"Aesthetics of Number"* can also be described as *"Spatial Configurations in Architecture"*.

On the other hand, there is the *Architecture of Lively Variety (Structure and Coincidence)*, formulated by John Habraken in 1961. This second concept is related to user participation in housing. The *"Architecture of Lively Variety"* can also be called *"Architecture of Diversity"* or *"Pluralistic Architecture"*.

Structuralism in a general sense is a mode of thought of the 20th century, which came about in different places, at different times and in different fields. It can also be found in linguistics, anthropology, philosophy and art.



European Space Centre ESTEC in Noordwijk, restaurant conference-hall library, 1989 (Aldo van Eyck and Hannie van Eyck)

Contents

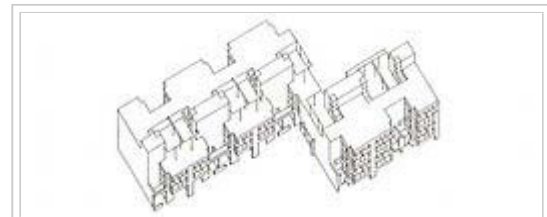
- 1 Origins
- 2 Manifesto
- 3 Otterlo Congress, Participants
- 4 Theoretical Origins
- 5 Housing Estates, Buildings and Projects
- 6 Bibliography
- 7 Further Configurations in Architecture and Urbanism
- 8 Amsterdam, Barcelona, Manhattan and Venice

Origins

Structuralism in architecture and urban planning had its origins in the Congrès International d'Architecture Moderne (CIAM) after World War II. Between 1928 and 1959, the CIAM was an important platform for the discussion of architecture and urbanism. Various groups with often conflicting views were active in this organization; for example, members with a scientific approach to architecture without aesthetic premises (Rationalists), members who regarded architecture as an art form (Le Corbusier), members who were proponents of high- or low-rise building (Ernst May),

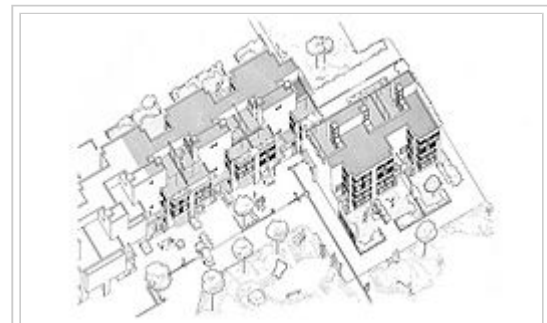
members supporting a course of reform after World War II (Team 10), members of the old guard and so on.

Individual members of the small splinter group Team 10 laid the foundations for Structuralism. The influence of this team was later interpreted by second generation protagonist Herman Hertzberger when he said: "I am a product of Team 10." As a group, Team 10 was active from 1953 onwards, and two different movements emerged from it: the New Brutalism of the English members (Alison and Peter Smithson) and the Structuralism of the Dutch members (Aldo van Eyck and Jacob Bakema).



Diagoon housing in Delft, Basic structure for participation, 1971 (Herman Hertzberger)

Outside Team 10, other ideas developed that furthered the Structuralist movement - influenced by the concepts of Louis Kahn in the United States, Kenzo Tange in Japan and John Habraken in the Netherlands (with his theory of user participation in housing). Herman Hertzberger and Lucien Kroll made important architectural contributions in the field of participation. In this context, Hertzberger made the following statement: "In Structuralism, one differentiates between a structure with a long life cycle and infills with shorter life cycles."



Participation of the inhabitants

In 1960, the Japanese architect Kenzo Tange designed his well-known Tokyo Bay Plan. Reflecting later on the initial phase of that project, he said: "It was, I believe, around 1959 or at the beginning of the sixties that I began to think about what I was later to call Structuralism", (cited in *Plan 2/1982*, Amsterdam). Tange also wrote the article "Function, Structure and Symbol, 1966", in which he describes the transition from a functional to a structural approach in thinking. Tange considers the period from 1920 to 1960 under the heading of "Functionalism" and the time from 1960 onwards under the heading of "Structuralism".

Le Corbusier created several early projects and built prototypes in a Structuralist mode, some of them dating back to the 1920s. Although he was criticized by the members of Team 10 in the 1950s for certain aspects of his work (urban concept without a "sense of place" and the dark interior streets of the Unité), they nevertheless acknowledged him as a great model and creative personality in architecture and art.

Manifesto

One of the most influential manifestos for the Structuralist movement was compiled by Aldo van Eyck in the architectural magazine *Forum 7/1959*. It was drawn up as the programme for the International Congress of Architects in Otterlo in 1959. The central aspect of this issue of *Forum* was a frontal attack on the Dutch representatives of CIAM-Rationalism who were responsible for the reconstruction work after World War II, (for tactical reasons, planners like van Tijen, van Eesteren, Merkelbach and others were not mentioned). The magazine contains many examples of and statements in favour of a more human form of urban planning. This congress in 1959 marks the official start of Structuralism, although earlier projects and buildings did exist. Only since 1969 has the term "Structuralism" been used in publications in relation to architecture.

Otterlo Congress, Participants

Some of the presentations and discussions that took place during the Otterlo Congress in 1959 are seen as the beginning of Structuralism in architecture and urbanism. These presentations had an international influence. In the book "CIAM '59 in Otterlo", the names of the 43 participating architects are listed:

L. Miquel, Alger / Aldo van Eyck, Amsterdam / José A. Coderch, Barcelona / Wendell Lovett, Bellevue-Washington / Werner Rausch, Berlin / W. van der Meeren, Bruxelles / Ch. Polonyi, Budapest / M. Siegler, Genf / P. Waltenspuhl, Genf / Hubert Hoffmann, Graz / Chr. Fahrenholz, Hamburg / Alison Smithson, London / Peter Smithson, London / Giancarlo de Carlo, Milan / Ignazio Gardella, Milan / Vico Magistretti, Milan / Ernesto Nathan Rogers, Milan / Blanche Lemco van Ginkel, Montreal / Sandy van Ginkel, Montreal / Callebout, Nieuport / Geir Grung, Oslo / A. Korsmo, Oslo / Georges Candilis, Paris / Alexis Josic, Paris / André Wogenscky, Paris / Shadrach Woods, Paris / Louis Kahn, Philadelphia / Viana de Lima, Porto / F. Tavora, Porto / Jacob B. Bakema, Rotterdam / Herman Haan, Rotterdam / J.M. Stokla, Rotterdam / John Voelcker, Staplehurst / Ralph Erskine, Stockholm / Kenzo Tange, Tokyo / T. Moe, Trondheim / Oskar Hansen, Warszawa / Zofia Hansen, Warszawa / Jerzy Soltan, Warszawa / Fred Freyler, Wien / Eduard F. Sekler, Wien / Radovan Niksic, Zagreb / Alfred Roth, Zurich

Theoretical Origins

- Built structures corresponding in form to social structures, according to Team 10 (Working group for the investigation of *interrelationships between social and built structures*).
- The *archetypical behaviour of man* as the origin of architecture (cf. Anthropology, Claude Lévi-Strauss). Different Rationalist architects had contacts with groups of the Russian Avant-Garde after World War I. They believed in the idea that man and society could be manipulated.
- *Coherence, growth* and *change* on all levels of the urban structure. The concept of a *Sense of place*. Tokens of identification (identifying devices). *Articulation* of the built volume.
- Polyvalent form and *individual interpretations* (compare the concept of *langue et parole* by Ferdinand de Saussure). User participation in housing. Integration of "high" and "low" culture in architecture (fine architecture and everyday forms of building). Pluralistic architecture.



Yamanashi Culture Chamber in Kofu, 1967 (Kenzo Tange)

The principle *Structure and Coincidence* remains relevant until now, both for housing schemes and urban planning. For housing schemes the following images were influential: the perspective drawing of the project "Fort l'Empereur" in Algiers by Le Corbusier (1934) and the isometric drawing of the housing scheme "Diagoon" in Delft by Herman Hertzberger (1971). At city level, important projects were: the Tokyo Bay Plan of Kenzo Tange (1960) and the fascinating images of the model of the Free University of Berlin by Candilis Josic & Woods (1963). Also worth mentioning are the utopias of Archigram and Yona Friedman. In general, instruments for urban structuring are: traffic lines (e.g. gridiron plans), symmetries, squares, remarkable buildings, rivers, seashore, green areas, hills etc. This methods were also used in previous cities.

The principle *Aesthetics of Number* proved to be less useful for structuring an entire city. However, exemplary articulated configurations did arise, both in architecture and housing schemes. The first influential images for this direction Aldo van Eyck provided with aerial photos of his orphanage in Amsterdam (1961). Later he built another inspiring configuration for the Space Centre Estec in Noordwijk (1989). These two compositions can be counted among the most beautiful "icons" of structuralism.

Housing Estates, Buildings and Projects

Atelier 5: Halen housing estate near Bern, 1961

Van den Broek & Bakema et al.: New Rotterdam districts: Pendrecht project 1949 / Alexanderpolder projects 1953 and 1956

Piet Blom: Kasbah housing estate Hengelo, 1973 / Urban district Oude Haven Rotterdam, 1985

Candilis Josic & Woods: Free University of Berlin, 1963-73

Giancarlo De Carlo: Student housing Collegio del Colle Urbino, 1966

Adriaan Geuze et al.: New urban district Borneo-Sporenburg Scheepstimmermanstraat Amsterdam, 2000 (*participation*)

Herman Hertzberger: Centraal Beheer office building Apeldoorn, 1972 (*participation, inside*) / Diagoon, eight experimental houses Delft, 1971 (*participation*)

Louis Kahn: Jewish Community Center Trenton, project 1954 / Kimbell Art Museum Fort Worth, 1972

Lucien Kroll: Students' Centre St. Lambrechts-Woluwe Brussels, 1976 (*participation*)

Le Corbusier: Perspective drawing of new city district Fort l'Empereur Algiers, project 1934 (*participation*) / Weekend house Paris, 1935

Moshe Safdie: Habitat '67 housing estate, World Exposition, Montréal, 1967

Alison and Peter Smithson: Golden Lane housing estate London, project 1952 / Hierarchy of Association, urban-planning scheme 1953

Kenzo Tange: Tokyo Bay Plan, project 1960 / Yamanashi Culture Chamber in Kofu, 1967

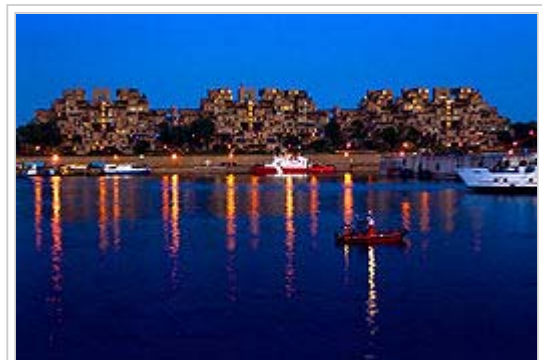
Aldo van Eyck: Orphanage Amsterdam, 1960 / European Space Research and Technology Centre Estec, restaurant conference-hall library, Noordwijk, 1989

Verhoeven Klunder Witstok & Brinkman: Housing estate in Berkel-Rodenrijs near Rotterdam, 1973

Stefan Wewerka: New city district Ruhwald Berlin, project 1965



Kimbell Art Museum in Fort Worth, 1972
(Louis Kahn)



Habitat 67, Montreal World Exposition,
1967 (Moshe Safdie)

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"Urban planning can never be determined by aesthetic considerations but exclusively by functional conclusions." This formulation in the CIAM-declaration of 1928 came from architects of the Rationalist movement. The first *"Statement Against Rationalism"* was written by Aldo van Eyck, for CIAM VI in 1947.

Further Configurations in Architecture and Urbanism



Urban district Oude Haven in Rotterdam, 1985 (Piet Blom)



Salk Institute in La Jolla California, 1965 (Louis Kahn)



Office building Centraal Beheer in Apeldoorn, 1972 (Herman Hertzberger)



Free University of Berlin, 1963-73 (Candilis Josic & Woods)



Memorial in Berlin,
2005 (Peter Eisenman)



Memorial in Jerusalem,
2005 (Moshe Safdie)

Amsterdam, Barcelona, Manhattan and Venice



Barcelona, Gridiron
Plan



Manhattan, Gridiron
Plan



Amsterdam, Basic
structure: U-shape



Venice, Basic structure:
S-shape

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Categories: Architectural styles | Structuralism

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