

The influence of structuralism in the field of architecture

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Abstract: This essay will analyse the influence of structuralism on the field of architecture from a linguistic perspective. Structuralism as a scientific method has had an important influence in a number of fields. The essay begins with an introduction to the development of structuralism by Saussure, Chomsky, Le'vi-Strauss and Jean Piaget. The second part of the essay describes the challenges to functionalism due to the Second World War and the need for more flexible and resilient solutions to post-war needs. The Centraal Beheer building, by Herman Hertzberg, is an excellent structuralist building. It has three characteristics: flexibility, succession and inclusiveness. This flexible structuralist architecture is more human and socially oriented than the previous functionalist architecture. The article concludes by mentioning a problem with structuralism, namely the tendency to be overly concerned with the relationships between elements rather than the elements themselves, but Herman Hertzberg is aware of the problem and avoids it well.

Keywords: Structuralism, Architecture, Linguistics, Saussure, Chomsky, Le'vi-Strauss, Jean Piaget, Herman Hertzberg, The Centraal Beheer building

1. Background

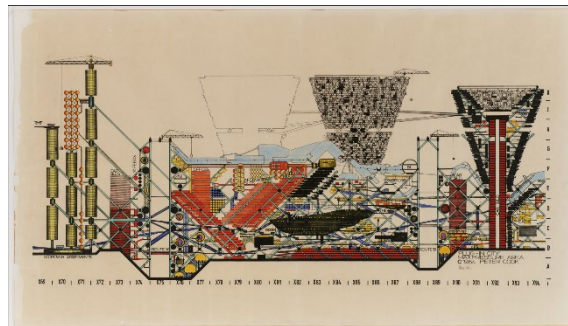


Figure 1: Plug-in City^[3]

With the end of World War II, structuralism replaced existentialism as an influential intellectual trend in France in the 1960s and 1970s [1]. Originating in the study of linguistics and extending to anthropology and theology as a scientific method [2], structuralism has been influential in several fields as it continues to develop [1]. Structuralism also seems to have influenced architecture, with many architectural and urban planning projects in the 1960s and 1970s that may have a structuralist ideology. Le Corbusier's design of a hospital in Venice called the 'flying carpet' using the concept of primary and secondary structures[4]. The Plug-In City [3], designed by Peter Cook of Archigram, makes the most of structuralism by combining industrial prefabricated abandoned housing with concrete load-bearing structures[4]. This essay will first introduce the origins and development of structuralism. Secondly, explain how structuralist ideas are reflected in architecture by analysing Herman Hertzberg's case. Thirdly, a summary of the essay will be presented , as shown in Figure 1.

2. Theories related to structuralism

2.1. Saussure's theory

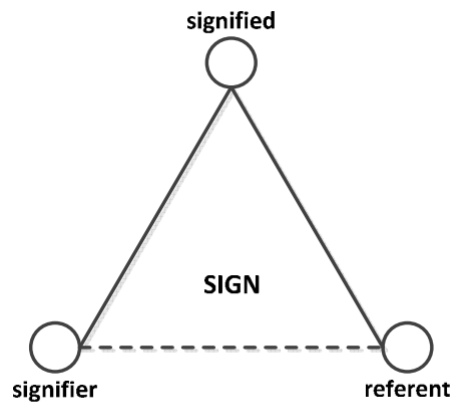


Figure 2: Semiotic Triangle^[5]

Structuralism has its origins in Saussure's linguistic studies. Saussure introduced three concepts. The first is a relation between signifier and signified, which is better understood in Semiotic Triangle [5]. When a child points to a tree and asks what the object is called, the tree referred to in the real world is the 'referent'. From this referent, the signifier (*significant*) is the phonetic and literal symbol that is given to the tree, and different people give it various referents, in English as 'tree', pronounced as /tri:/, it is written as "树" and pronounced as /shù/in Chinese. In contrast, signified (*signifié*) is all the abstract concepts that arise when people refer to trees [6]. The relationship between the signifier and signified is not entirely rational; the relationship between them is arbitrary, and humans can create a new word such as 'ahdih' instead of 'tree'. The essentially conservative nature of language derives from the arbitrary nature of the referent and the referent since it may be unacceptable to use 'ahdih' to represent a plant that grows leaves on the earth. These suggest that language is a self-regulating, integral structure, and components seem valuable only if contained within the structure [7], as shown in Figure 2.

Secondly, *la langue* and *parole*. "*la langue* describes language as it exists as a structure without positive terms" and "*parole* describes language as a process" (Smith, 2020, p.32). Saussure argues that *parole* needs to be understood in the context of the structure of *la langue*.

Thirdly, synchronic and diachronic. The synchronic study is the relationship between factors within that system at a particular moment in time, whereas diachronic study is the historical change in the development of a system. The structure of *parole* in *la langue* becomes valuable, hence Saussure's distinction between the study of synchronicity and diachronicity and emphasis on the importance of synchronicity [1].

2.2. Chomsky's theory

In the second half of the 20th century, Chomsky developed the theory in a new way, declaring that the most important theme was the distinction between 'competence' and 'performance' [7] since linguistic competence is the object of synchronic analysis. In contrast, performance is the object of a diachronic approach [8]. Language is a means of expressing ideas and is capable of responding appropriately in changing situations[9].

The elements and internal relations of language are not static. They take on an 'initial state' in certain situations and tend to evolve 'under the triggering and shaping effect of experience', eventually entering a new state of relative stability [10].

2.3. Le'vi-Strauss's theory

Le'vi-Strauss invented structural anthropology citing Saussure's structural linguistics, a theory he applied to the social sciences, such as kinship, myth and the 'savage' mind [7]. He may found that people across ethnicities, time and space, seemed to share the same structures, such as the prohibition of incest

as the basis of kinship. This basis allows social alliances to be formed [1].

2.4. Jean Piaget's theory

Jean Piaget suggests three essential words for finding structure: wholeness, transformation, and self-regulation [1]. Wholeness implies that no part of a structure has an independent form outside the structure. Otherwise, the independent form would be present within the structure. Transformation means that the structure can be transformed by intrinsic principles for new components, as humans use language to communicate and produce new words according to the society of the time. However, the new words still conform to the basic structure. At the same time, structures are 'self-regulating' when they transform new components.

3. Herman Hertzberg's practice of structuralism

3.1. The early development of structuralism in architecture

With the disintegration of CIAM, the rise of Team10 and the shift in values after the outbreak of World War II, there was a need for a more flexible order. Some architects began to challenge functionalism, trying to respond to post-war needs with a developmental, flexible approach. Structuralist architecture attempts to start by establishing a monolithic building and combining many identical elements. It organises the relationships between elements while retaining the individual's unique expression, expressing respect for the human[4], as shown in Figure 3 and Figure 4.

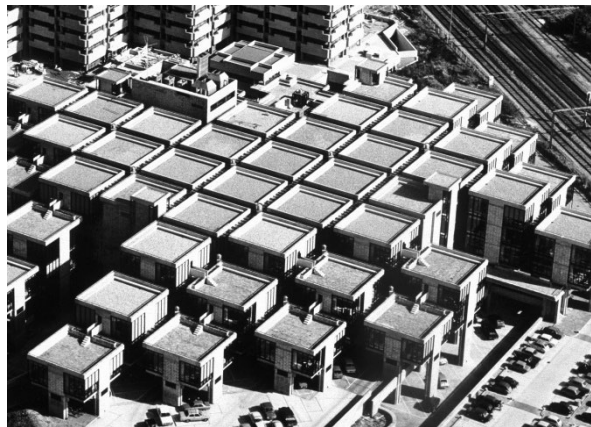


Figure 3: Centraal Beheer offices exterior view^[11]

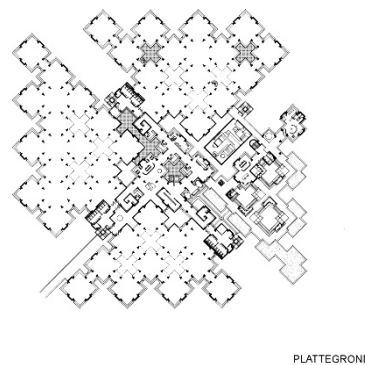


Figure 4: Centraal Beheer offices flat view^[12]

3.2. Concept of 'polyvalence' in Centraal Beheer

Herman Hertzberg, a representative of Dutch structuralism, has a structuralist quality to his work and introduced the concept of 'polyvalence' to structuralist architecture[4]. Polyvalence is often used to describe buildings that have different ways of using the same space, in other words, spaces that can be

adapted to meet different needs with minimal physical modifications [8]. Polyvalence can be summarised basically in two characteristics, and the first is flexibility. Flexibility in "Polyvalence" means that architectural spaces change over time. The Centraal Beheer building [11], for example, was built in 1970[4] and consisted of several 9x9m units, which can be re-sized through the gaps between them [13]. Hertzberger has designed this building with spaces that can be adapted and rules that are constructed between the units [12], invisible rules that are similar to the meaning of Saussure's '*la langue*'. The second is the succession, the building space and the specific use of each unit, reconfigured in a way that uses the decisions of each user [8]. The relationship between the unit and the whole building is similar to Saussure's '*parole*', the idea that the *parole* is an independent expression of each individual within the overall principle and that the user can change the unit's space into a more familiar environment without changing himself. At the same time, the emergence of new needs by the user drives the *parole* into what Chomsky refers to as 'evolution', followed by a new state of relative stability [8].

3.3. Adapted basic spatial units in Centraal Beheer



Figure 5: People in the Centraal Beheer building^[14]

In the Centraal Beheer building, the users can adapt the basic spatial units to meet their needs [14]. The Centraal Beheer is more concerned with providing the ability to resolve the unexpected than meeting conceived needs with over-engineered buildings, as shown in Figure 5. The 'triadic', self-adapting, transformative quality of the building is partly derived from structuralism. At the same time, the unit spaces within the building seem to be inclusive, with people attracted by the simplicity and flexibility to adapt them to their own needs, giving each unit its character while still conforming to the rules of the building as a whole. In addition, the user can also adapt the relationship between the units and other units. The units can be presented publicly through different combinations, inviting others in or privately, not wanting to be disturbed, allowing the user to perceive and define the space and stimulating their interest in adapting it [15]. Compared to functionalist architecture, structuralist architecture is more human, more flexible and more concerned with the social relationships between users. Structuralist architecture seems to be considered part of the structure at the beginning of their use of the building. It is more concerned with the relationships between elements than the elements themselves [16], as shown in Figure 6.

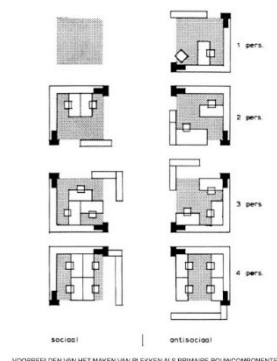


Figure 6: Voorbeelden Van Het Maken Van Plekken Als Primaire Bouwcomponenten^[15]

Structuralism in the field of philosophy has the limitation that it can focus too much on '*la langue*' at the expense of '*parole*'. By focusing too much on the relationships between elements rather than on the elements themselves, it can seem easy to overlook the individual's unique personality as an element

involved in the structure. Hertzberg seems to have remarked on this and give each power to transform the building in the design.

4. Conclusion

Structuralism, which originated in linguistics and spread to all areas of society [2], tries to find universal patterns and causes between things. The currents of thought that emerged from the development of society may have influenced other fields. Structuralist architects were influenced by shifts in thought and post-World War II values and opposed functional architecture under the influence of modernism. Structuralist architecture, represented by Herman Hertzberg, was full of concern for humanity [4]. The Centraal Beheer building follows structuralist ideas in its organisation, using individual spatial elements to combine and vary to meet the changing needs of users and to influence the social relationships between users.

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