European Journal for Semiotic Studies
Revue Européenne d'Études Sémiotiques
Europäische Zeitschrift für Semiotische
Studien Vol. 14 (3,4) 2002

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System-forming Processes in the Semiotic Studies of Architecture

Summary: The typology of processes enclosing the emergence and functioning of semiotic formations of architecture (signs, codes, and texts) is suggested. Different types of processes of human behavior and activity in a given environment are specified, together with corresponding informational processes. The informational processes are regarded in connection with the architectural activity and communicative processes of culture as a whole. In order to substantiate the suggested typology, the processes are examined as interrelated with characteristic types of communicative situations, signs, codes, messages, and texts. The architectural activity is represented as the formation of conditions, which provide the functioning of processes and the direction of their changes and development in a society.

Zusammenfassung: Es wird die Typologie der Prozesse umrissen, in denen sich semiotischen Formationen und Funktionen der Architektur (Zeichen, Codes, Texte) herausbilden. Zu spezifizieren sind verschiedene Arten von Prozessen des Verhaltens und der Tätigkeit in gegebenen Umwelten, samt den hiermit verbundenen Informationsprozessen. Es werden also die Wechselbeziehungen der architektonischer Tätigkeit und der kommunikativen Prozesse in der Kultur insgesamt betrachtet. Um die angebotene Typologie der Prozesse zu begründen, werden die Wechselbeziehungen der charakteristischen Arten der kommunikativen Situationen, der Zeichen, der Codes, der Mitteilungen, der Texte untersucht. Die architektonische Tätigkeit stellt sich dar als Formung der Bedingungen, die das Funktionieren der Prozesse gewährleisten und die Wege ihrer Veränderung, ihrer Entwicklung in der Gesellschaft leiten.

Different semiotic formations – codes, signs, or texts – participate in specific processes. In architecture, these processes are more apparent, as compared to verbal information or art. In architecture, the following phenomena can be specified: (a) the processes of human behavior and activity in an artificial environment, with different goals; (b) the perceptions corresponding to these processes – selective or esthetic; and (c) the orientations in vitally important objects, space, social interrelations, etc. Architecture appears as a multiple and holistic information "replying" to these processes. The need of their classification and description in connection with the investigation of information and signs was outlined by a well-known theoretician of design, T. Maldonado. We will try here to represent the whole range of these processes, using empirical studies of architecture and considering some models of basic semiotics.

Based on generalized empirical material, we should distinguish several classifications of processes (*Fig. 1*). The sequence of their description can be different. The aim of our description is to condensate and elucidate the contents of this diagram.

Vital processes (1) are the processes of behavior and activity in an artificial environment. They include various informational processes (2), which actualize the meanings. (The term "informational processes" is used because we have no other general term denoting any actualization of meanings conducted by an addressee. In this interpretation, the communicative act is also regarded from the viewpoint of an addressee). By their complexity, the informational processes must be divided into communicative acts (3) and individual informational processes (4).

The communicative acts of architecture (3) are similar to other communicative acts. Their structure is represented in terms of basic semiotics by the model of K. Bühler (5, 6, 7) and its modifications. At the same time, unlike verbal information or perception of art masterpieces, the communicative acts of architecture have no temporal limitations (communicating persons live in different epochs, and the communicative acts include individual processes separated in time), and the meanings are more free. As a result, the organization of conditions of communicative acts (communicative situations localized in space and time) becomes important. Their formation proceeds in both syntagmatics and paradigmatics. In syntagmatics, this is the allocation of points, grounds, and perception fragments along basic courses of people's movement, providing the vision of landscapes, fragments of architectural environment

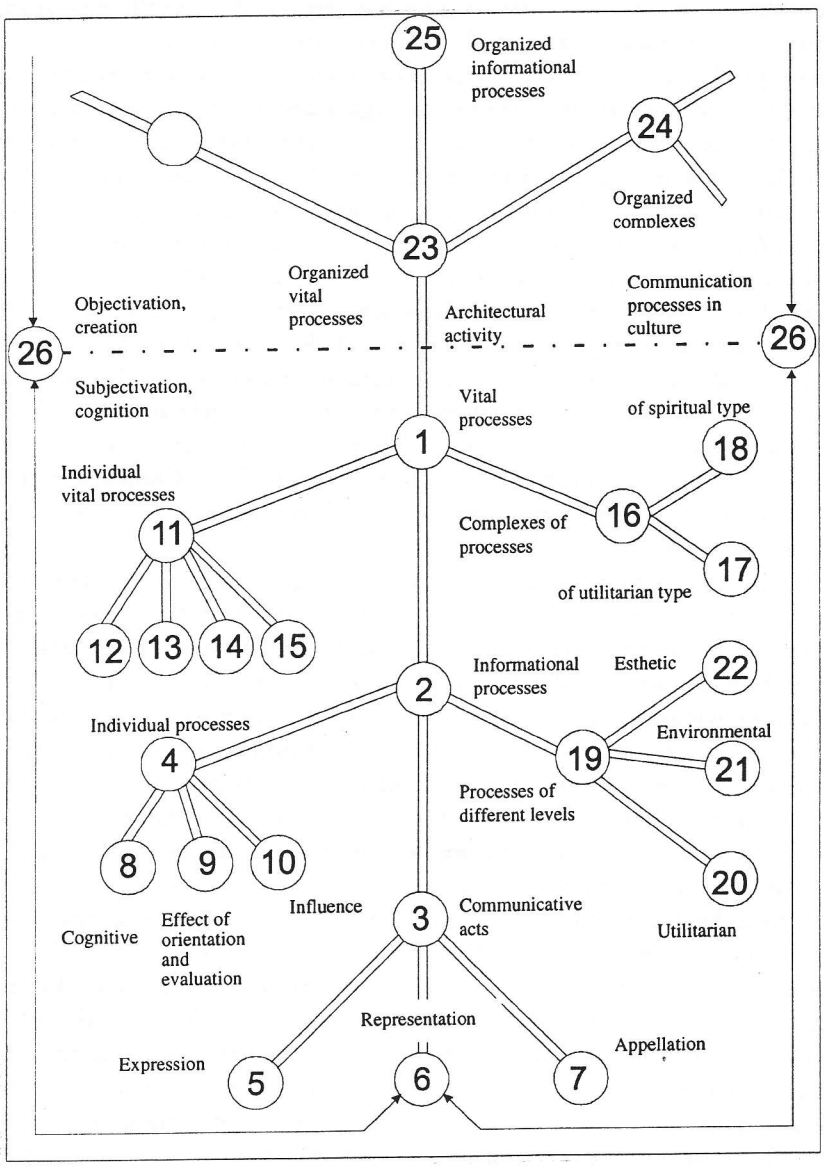

Fig. 1: The interrelations of system-forming processes in architecture

and the organization of sequences of events, especially along the way of gala ceremonies. In paradigmatics, stable communicative situations are formed, which are typical to architectural cultures and architectural history in general. Gala ascension to the top, provided by the organization of this way, is a typical communicative situation, which is created by the means of architecture and implemented in different cultures (ascents of the Acropolis, ancient Slav sacraria, tops of Buddhist temples, pompous stairs of Stalinist neoclassicism, etc.). A general communicative situation of gala ascension becomes specific in each culture because of certain sign concretizations (installation of sacral images, broad stairs, number of ascension levels, terraces, porticos, etc.). Other typical situations are the formation of a symbolic picture of a landscape from an internal space with the help of architectural means of vision. This includes the formation of an architectural frame surrounding a landscape, symbolic elements of this landscape, its spatial planes, and so on. Such tendencies and techniques, having multiple forms in history (especially in Chinese and Japanese traditions), point to the formation of stable communicative acts with their basic functions and general logic.

Individual informational processes (cognitive, orientational-evaluative, denotative, identification, motivation, and others) are formed by specific signs. This understanding corresponds to the traditions of a fundamental semiotics, which usually attribute the types of signs to different processes (Morris 1946). Their individual manifestations in connection with the holistic communicative acts are important for the description of these processes in architecture. In semiotic studies of architecture, substantial deviations are found between the meaning of architectural objects for their creators and consumers (Krampen 1979). This is connected to the fact that the meanings are often implemented not in a holistic communicative act, but in an individual informational process. Many architectural objects are rather included into the cognitive or orientation processes than interpreted as interagents, i.e. the works representing the ideas of architects. Therefore, the classification of signs by T. Milewskii (Bühler's model modified) is the most adequate one for the semiotic description of architectural objects. A wider classification including symptoms, semantic signals, and asemantic appellations (Milewskii 1965) covers a larger set of processes. Here, the symptoms correspond with cognitive and denotative processes (8), the semantic signals with the processes of orientation and evaluation (9), and the asemantic appellations with effects (10). Empirical studies demonstrate

that the architectural objects usually are organized as signs which correspond with these three types of processes. The three types of sign formations and corresponding processes are the most significant ones for an architectural composition. A semiotic analysis of architectural styles demonstrates that their principal differences are related to the development of symptoms (the role of the expression of social phenomena, utility functions, tectonic basis, and specific spatial structure of architectural objects). The desire to understand an architectural object and simulate its structure appears via the interpretation of different symptoms. The role of these and many other substantial denotata in the creation of architectural forms is analyzed in architectural semiotics (Weber/Zimmerman 1980). They need to be manifested via different characteristics of architectural objects.

The role of the organization of semantic signals (meaning spaces, expressive accents, and holistic forms with basic information) is of the same importance. The signals descend from primary behavior processes of orientation and evaluation, which are differentiated into cognitive and communicative processes.

The influence of active asemantic appellations on a person appears in architecture via emotional effects of volume and space rhythms and contrast surfaces (glass, glossy, and semi-transparent). In general, it means the organization of perceptively active elements and proportions of architectural objects.

Logically, the primary position of processes of orientation and evaluation presumes that special attention should be paid to their expression in architecture. In connection with this, different demands, intentions, directions for the selection of information are related to signs, messages, and sign expressions of an architectural environment. This is a kind of question asked by people unconsciously; the answers are emotional reactions. This corresponds with the main idea of a scientific school which sees emotions as a reaction upon information about the possibility to satisfy the demands (Simonov 1981). In connection with this, different demands, intentions, and sets towards the selection of some information are related to the signs, messages, and sign expressions of an architectural environment (Somov 1985b). Architecture replies to fundamental needs, motives, intentions, and feelings, which must be supported unconsciously. On the one hand, this is manifested via emotional reactions of a person upon the architectural environment; on the other hand, via the trends in the materialization of sign formations of semantic signals. In particular, the

intention to self-protection develops via the creation of semi-closed spaces, which are isolated from external effects. These are, for example, yards carrying information about safety: they are protected from winds, regards of strangers, etc. Protective characteristics of materials are represented by architectural means enhancing these characteristics on the level of information and signs. Deep arcades, galleries, and abat-jours develop in connection with their protective properties. In medieval Russian cities, porches and protected passages were decorated by complex and developed overhangs and ends, not only protecting from rain and snow, but also providing a visual demonstration of this protection from bad weather and enclosing the passage from both sides and top. Another function of the same phenomena is represented by threatening architectural signs designed to frighten an enemy. Darksome and severe medieval fortresses of Europe and the Middle East illustrate these signs under the conditions of constant danger. In the 20th century, the same functions are carried by the means of composition of state administrative buildings, deterring very persistent visitors. The official austerity of administrative buildings orients a visitor to the communication with high-placed functionaries. Converse meanings and functions of an architectural environment (the expression of care) reply to the demand for emotional compassion; the peculiarities of dwelling houses and regions support the feeling of home and fundamental needs in searching for the sense of life and emotional sympathy. Relying upon the classification of fundamental demands of a person (Obukhovskii 1972), I managed to describe their manifestation in typical semantic signals of architecture (Somov 1985b). Such elementary relations are included in the holistic human intentionality and its semiotic whole. However, the semiotic intentionality of architecture can also be regarded as the development of these elementary relations.

Let us remember that the informational processes (2) are included in various processes of human behavior and activities, i.e., vital processes (1). The vital processes can be divided into stable individual processes (11) without any localization in space and time, and complexes of processes (16) localized in space and time. The effect of these different types of vital processes on the informational processes generates various types of semiotic formations in architecture. The codes (16) are formed in paradigmatics, and a definite information, which is indispensable for forming a holistic complex of processes (e.g., messages and texts), appears in syntagmatics.

Individual vital processes (11) affecting the informational processes generate different codes. The reality and difference of codes was demonstrated by U. Eco. In different spheres of semiotics, some attempts were undertaken to describe the interrelations between processes and codes (Fiske 1982). Today, we may specify some interrelations between processes and codes in architecture. The codes are often regarded as systems of two planes. And, vice versa, the relations of the planes of expression and content, which were found in semiotic studies of architecture (Broadbent 1977), can be represented as mechanisms-codes and related to the informational processes of different types. Therefore, the typology of codes in architecture represents the bridge between the processes and various types of signs. Let us reconsider that the interpretation of signs occurs in accordance with the codes (Hall 1980) and that "the concept of code is very useful when dividing the signs into groups" (Bignell 1977: 10).

I do not want to examine here the problem of the formation of code typology in architecture. However, there are several fundamental code types based on the idea of mutual dependence of vital and informational processes. These codes can be denoted by specifying the types of orientation in vitally important objects, spatial structure of environment, the interrelations and intentions of people, other living creatures, or some forces in general. These orientations, which are the most important for life, involve the sphere of artificial human environment. The types of orientation processes can be divided into the orientations in: vitally important objects (12), structural and spatial construction of the environment (13), attitude of surrounding persons (14), and social relations (15).

The need for orientation in the functions and location of basic environmental objects (12) leads to the differentiation of the design of these objects through external characteristics and its fixation in a stable sign system. Their formation in different types of buildings was shown in several publications (Krampen 1979).

Codes of another type are based on the modeling of the structural and spatial construction of the environment. They appear clearly in architectural research. In particular, my study of mass city buildings revealed stable planes of expression and content, which were significant for the shaping of information about the structure of the environment (the layout of façade surfaces representing the spatial structure of dwelling complexes). These and other similar

codes seem to play an important part in the formation of informationally intact urban environments (Somov 1986). The orientation in the environmental space and the modeling of the structure of perceived objects are two aspects of this type of process. This makes it possible to reveal the homogeneity of codes representing the spatial structure of the environment, the volumes of buildings and edifices (their tectonics), and codes representing natural dimensions of object (their scale).

The orientation in the human environment, in human interrelations, or in the environment of living creatures in general is the next condition of formation of important architectural codes. In ordinary apprehension, human movements, poses, gestures, or countenances are very important for life. Therefore, the codes and signs of this environment become very significant in architecture, where they are shown to be the major way of formation of metaphorism (Somov 1990). Like other signs, human signs usually preserve only a few denotative features. Architectural images are based on an implicit representation of these or those features in architectural forms (intimations of anthropomorphism of warriors, saints, or prayers); these iconic signs are included in mythological cultural concepts.

Finally, substantial codes represent the structures of socially significant denotata (e.g., different characteristics of the social status of house owners are represented in different cultures by size, richness, special details, color, sculptures, etc.).

Enumerated types of architectural codes correspond with fundamental behavior processes. How are they related to cultural codes?

In architecture, there is a certain distance between natural codes of vital processes and cultural codes. This boundary lies between the types of processes related to behavior and activity (11) and individual informational processes (2). In addition, cultural codes of architecture must relate it to the whole culture, which is based on linguistic systems, while perceptual codes reject intentional conditional interrelations (Hall 1980). However, the bond with the whole of the condition-based culture does exist. This is possible because the architectural objects are not only interagents, but also objects of communications (Weber/Zimmerman 1980). In connection with this, the cultural codes in architecture arise from the processes of communication, which are external (26) to the informational processes of the architectural environment. These are the processes of perception of art, reading, mass communications, etc. These

processes relate the features of architectural objects with these or those realities, events, or heroes, i.e., myths and concepts.

This is why even fine allusions to architectural objects of definite cultures, periods, regions, and places are so important in architecture. They involve the perception of architectural objects in the sphere of culture at large. In general, due to these relations, the symbols (interpreted according to Bühler) are involved in architecture. This is the so-called descriptive function, which forms the most perfect human content of architecture. The symbols are materialized in the layers of both symptoms and semantic signals, which form other non-object realities (the images of a traditional culture, fantastic features of the future, etc.). At the same time, the processes of pragmatic cognition and orientation-evaluation are displaced by metaphoric mentality and imagination.

The complexes of vital processes (16) are implemented in the organization of territories, complexes of buildings, and separate buildings, which materialize these processes in space. A temple, a dwelling area, or an industrial building are different complexes of vital processes with their own structural and informational features. The complexes of processes condition the formation of architectural objects. They affect the structure via the organization of material (physical) space and information, via the creation of information corresponding with a given complex of processes in the semiotic systems of an architectural object. By the type of informational dependence, the complexes of processes are divided into the complexes of utilitarian-material (17) and spiritual (18) types. The first type includes the complexes with domination of utilitarian goals (search for goods, movement towards the transport, etc.). The second type includes the complexes with domination of exalted goals, images, and states (temples, palaces, museums, theaters, etc.). The processes prevailing in a complex determine the semiotic formations and the character of information which is structured in the environment. Under the modern conditions of technization and complexity of utilitarian processes, the features of relevant information of complexes are especially pronounced. This concerns the spatial clarity of interior construction where the informational systems (visual communications and different architectural forms) are submitted to basic movements. Typical examples of such constructions are objects in which a person must orient him/herself quickly to choose the direction: airports, stations, traffic circles and other road junctions. The architectural design of large supermarkets is also very demonstrative. For their planning, formalized methods of

determination of functional objects of trade complexes were elaborated, considering their location, size, and form. In particular, these are shops-magnets, which are efficient from the viewpoint of sale and the organization of accompanying processes (orientation, motion, rest, playing with children, etc.) (Maitland 1985).

In general, the most significant moments in the informational organization of a complex are the structure and composition of processes and their differentiation and integration in space, which affect the character of semiotic formations of different complex areas (Somov 1985a, 1985b). The complexes of processes determine the form. The structures of the complexes determine the major elements of space of architectural objects. However, these structures, being included in metonymies due to connotations, simultaneously get semiotic relevance. This is why the spatial structures of building types are so important as symbolic elements of art and culture.

Let us come back to the informational processes themselves (2). Now, their differences are seen better as depending on vital processes of a utilitarian or spiritual type. The strict requirements of utilitarian processes as to information generate corresponding utilitarian messages. The absence of such requirements or the predomination of spiritual motives provide another basis for the organization of information and signs. Hence, the informational processes belong to different levels. I suggested to distinguish three levels, which can be denoted as utilitarian (20), environmental (21), and esthetic (22) (Somov 1990).

The semiotic systems of architecture are formed as corresponding with the organizations of actions in the environment (20), organizing a psychologically comfortable and saturated environment (21), and providing an aesthetic and artistic organization of the architectural medium (22).

The utilitarian level corresponds with the so-called "business information" in verbal system. As in verbal information, the business information of architecture has the character of messages and can be translated into verbal language, represented schematically, or mapped. This refers to passes, locations of functionally significant objects, differences among rooms, levels of comfort, basic, additional, and technical processes, etc.

The environmental level (21) creates the informational processes and the corresponding semiotic systems. As a result, multiple contacts with the environment occur: positive or negative emotions corresponding with the complex of processes, relaxation, or an active selection of relevant information. This

level includes the semiotic conditions providing a holistic existence of processes at different levels (human feelings, images, and emotions). This is reflected in ordinary characteristics of life conditions such as coziness, humane environment, comfort, a holistic image of the environment, diversity of impressions, etc. Notions like "meaningful backgrounds of life" seem to be the best generalization of this level (cf. Krampen 1979). This level reflects the lower one and organizes it semiotically as its plane of expression. The aesthetic level (22) is formed by processes which usually are called "aesthetic and artistic information". The architectural objects and relevant perceptions are divided into two groups. The first group includes the aesthetic information, which is related, first of all, to the structure and quantitative characteristics of asemantic signals, or the processes of statistical expectation (Jesberg 1972; Somov 1985a, 1986). Another one is the structure corresponding with a model of fundamental semiotics known as the structure of artistic text (Lotman 1970).

The development of semiotic systems as aesthetic and artistic information corresponds to a great extent with the information of the lower communicative and environmental level in different modifications (semantic structures, signs, figures).

In concrete architectural objects, the proportions of semiotic formations of these three levels determine the conditions of completeness of architectural processes providing the perfection of the environment and its spiritual and human characteristics.

Until now, we have examined the processes of the vital functioning of architectural objects. But in order to understand the semiotic systems in architecture, it is necessary to see the changes performed within an architectural activity.

Already simple magic signs of very ancient origin, hidden in different architectural forms, demonstrate that the forms created by means of architecture are not obligatorily designed for addressees. They may represent implicit constructions, which transform reality, or may just be out of any communication.

The architectural activity reflects the vital processes and dependent informational processes with corresponding semiotic formations. But architectural activity (like art in general) cannot be restricted to the answers to the problems of reality. Like other branches of art, architecture organizes life in accordance with some patterns. This principle is formulated in different branches of aesthetics. It is reflected in modern culturology when one discusses the necessity of examining the semiotic systems of culture(s) considering joint goals, mod-

els, and programs, which form the basis of these cultures (Rozin 2000). Methodologically, this position means that action is considered as a central explaining principle in the development of signs and other problems of human semiotics (Shchedrovitskii 1995).

So, the vital processes include the informational processes, which are system-forming for the semiotic formations of architecture. All this represents both the object and material of architectural activity. The latter creates the conditions for the changes and the development of these processes (23, 24, 25) as referred to the physical level of vital processes and semiotic systems. Therefore, the architectural activity implements the programs directed towards the regeneration, transformation, and development of individuals and society.

The architectural activity also tends to alter the semiotic systems of an architectural environment of a person or of society, in general. Hence, these systems appear as "the totality of internal relations and bonds of human social activity" (Shchedrovitskii 1995: 543) and "involve the relations of subject groups" (Sonesson 1997: 1). Transforming changes and system formations proceed via the formation of architectural objects at different levels. These are: (a) the organization of vital objects (20), which is achieved by the systematic character of physical space; (b) the organization of informational processes (21), which is achieved via the formation of communicative situations and other conditions of these processes, and (c) the organization of space and directly perceived elements of architectural objects (masses, surfaces, or silhouettes) (22), which is implemented by groups of differential characteristics of perceived objects. The ability of heterogeneity to express the planes of content turns all the three levels (20, 21, and 22) into the material for the formation of semiotic systems of architecture, i.e., architectural styles and "languages".

Let us consider the existence of two opposite trends, which are especially noticeable in historical perspective. Like temple ceremonies, the dwelling houses of antiquity and the Middle Ages materialized the models of world and symbolic processes. Contemporary dwelling houses only tend to reach the upper level of these denotata. The vital processes aim to be included into the connotations of global symbols, models, and concepts, because the complexes of vital processes usually are formed as the plane of expression of upper levels.

It is natural that the picture of interrelations between processes and semiotic formations in architecture presented here is very schematic. However, it seems to form a certain frame which can be completed and specified.

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