

Anwendungen

Gerald R. Blomeyer & Rita M. Helmholtz **Semiotic in Architecture** **A Classifying Analysis of an Architectural Object**

1. Semiotic Conceptions in the Field of Architecture

Since the end of the 1960s there have been numerous attempts to apply *semiotic* terms, patterns and rules to the field of *architecture* (e.g. *de Fusco* 1967, *Kiemle* 1967, *Eco* 1968, *Bense* 1968, *Kiefer* 1970, *Speidel* 1973). Within the 'Stuttgart School' the theoretical instruments for an application were elaborated by *Bense* (1971, 1975), *Bense & Walther* (1973) and *Walther* (1974). With this the theoretical basis is available for a systematic analysis of design objects.

In various studies architecture has been considered as an object in a communicative process, their individual emphasis has, however, been on different communicative relations. Several authors were interested in the "meaning of architecture" as experienced by an individual with a certain motivation (cf. e.g. *Jencks & Baird* 1969) whereas others have tried to analyse the function of a building in a more abstract way considering principal (physical, structural, conventional) perspectives (for example *Eco* 1971 or *Bense's* seminars at the HfbK in Hamburg since 1969, initiating e.g. *Blomeyer & Helmholtz* 1973, 1974).

In an architectural theory — based on a communicative situation or a functionally equivalent schema, e.g. a cognition or creation process (cf. *Bense* 1971) — *the communication schema must always be propounded as a subject-object relation* that can be described as follows:

a certain architectural or urban situation is transmitted to an observer or user by an architectural object considered as a sign, and accordingly is used as such ("signs become tools"; *Sieverts* 1971).

It seems to us that there are two main motivations for attempting the semiotic analysis of an architectural object:

- a) to find out semiotic laws and principles for better understanding on a theoretical level, and
- b) to plan 'better' houses for certain uses or to find an acceptable new use for an already existing building.

In the following we will show how semiotic classifications can help to find new uses and functions for a notable historic building, *Reinbek mansion*. The analysis will demonstrate the applicability of semiotic to a practical field and in doing so confirm the claims of the theory. The relevance of this for an architectural theory lies in the possibility to apply a principally complete classifying system thus being able to determine the processes between the classified elements.

2. Transformation of Semiotic

Conceptual notes

Semiotic was developed as a universal, instrumental theory which is methodically applicable as a descriptive, differentiating, superizing, classifying, combining, communicative and regulative system of terms and processes (Bense 1975).

If one conceives semiotic as such a "meta-method" — as far as one is referring to its use — then it is only applicable in connection with specific architectural theories that can construct a framework in which semiotic methods, rules and systems of terms may be embedded (to obtain a higher degree of precision by differentiating and systematizing). To speak of "architectural semiotic" as of a separate theory thus seems inadequate.

Semiotic terms define specific aspects of an analysed architectural object in relation to a given or chosen situation. A semiotic analysis always depends on or defines a singular situation resp. singular relations. This relation is consequently different in each situation. The development of individual aspects therefore figures as the actual task of a semiotic analysis. A semiotic structure is thus not impressed on an object but extracted from the object by determining the individual relations.

On the premises that the Semiotic Dictionary (Bense & Walther 1973) and the presentation of the 'General Sign Theory' by Walther (1974) have elucidated the general theoretical basis adequately we will confine ourselves to the transformation of semiotic terms and concepts.

General Schema for Semiotic in Architecture

The transformation of an architectural object into a relational, semiotic object (sign) is undertaken by determining its three sign relations: the medium relation (M), the object relation (O) and the interpretant relation (I) on the background of the medium, object and interpretant repertoires (cf. table 1).

	M	O	I
architectural object	all constitutive elements (material, formal & ideal)	designated architectural object	the architectural context (environment) as the basis for the object's use

Table 1: Transformation of an architectural object into the triadic sign schema

We define as follows:

The *medium M* comprises all material, formal and ideal means that constitute the realized object in the sense of a configuration.

The *object relation O* includes all the generated, definable (delimitable) and designated things, that can be looked upon as specific architectural objects.

By the *interpretant I* all contextual (material, energetic, ideal) connections are meant that become recognizable between the designated objects and refer to their use.

The *trichotomic* determination of the architectural sign follows this fixation of the

Medium Relation M	Quali-Sign sensory (haptic, visual) perceptible substance	Sin-Sign realization in an individual, singular form and its aesthetic states	Legi-Sign physical, constructive and static laws, conventions
Object Relation O	Icon frame systems habitation systems	Index directional systems, access systems	Symbol selective systems metric systems
Interpretant Relation I	Rhema object interpreted as an element of an open connex (reper- toire)	Dicent object interpreted as an element (part) in a closed connex (unit)	Argument object interpreted as a necessary part for a complete connex

Table 2: Transformation of an architectural object into the trichotomic sign-schema

Object Relations

Object oriented considerations must evidently accentuate the object relation of the resp. sign or sign system. This requires an exact determination (analysis) of the trichotomic object relations within an architectural sign system.

Architectural objects can only take on a semiotic function as a system, i.e. as a complex of elements. On account of this we will only refer to the *sign systems* of an architectural object and no longer to an "architectural sign".

According to *Bense* architectural sign systems can be developed over the trichotomic object relations in analogy to the general systems classification. The general classification determines sign systems with:

iconic object relations as *frame systems*,
indexical object relations as *directional systems* and
symbolic object relations as *selective systems*.

Iconic frame systems are constituted by architecture in the sense that they divide the environment into sections, or more precisely, separate exterior from interior space, which forms habitable units. We can thus also call architectural frame systems "*habitation systems*".

All energetic, anthropological or informational transportation systems (roads, railways, tubes, telephone lines, stairs, doors, etc.) function as indexical, directional systems by connecting the iconic habitation systems, i.e. by making them accessible so that we will refer to them as "*access systems*".

Finally the selective systems designate the architectural object systems symbolically with metric specifications that definitely determine individual size and proportions, hence "*metric systems*".

3. Analysis of a Building Under Semiotic Aspects

Reinbek Mansion

In the past years people have become more interested in historic buildings, in their preservation and what is most complicated of all, in their functional integration into everyday life. The development of concepts for such an integration includes questions of reinterpretation and reevaluation, e.g. how to adapt the building to modern standards of living. As these questions are also basic semiotic themes we have chosen a "renovation-restauration-rebuilding-revitalizing" project to discuss some semiotic aspects in architecture.

Reinbek mansion, situated on the outskirts of Hamburg, was built about 1572 and has since then passed through several processes of restauration, alteration, enlargement, refitting, etc. It was used for governmental offices with residences till 1874, as a hotel till 1919, as a hospital till 1939 and as an institute for forestry of the University of Hamburg. Each change of owner or each new use caused alterations.

In 1974 the town of Reinbek, owner since 1972, commissioned an architect (1) to analyse the present state of the mansion, (2) to suggest new uses for the building and (3) to develop a plan for their realization (cf. "Schloss Reinbek", 1975). The planning had to integrate the historical background, legal building standards and requirements, the owner's expectations and financial capability and finally the possibilities of modern building materials and techniques.

In this situation we can define the problem's fundamental *realization pattern* (after Peirce; cf. Bense 1975) as follows:

The realized object (corresponding to the modal category of "Secondness") is selected from the repertoire of possible alternatives ("Firstness") under certain regulative conditions ("Thirdness"). It is obvious that the repertoire of alternatives *primarily lies in the media, objects and object connections* of the already existing building and *only secondary in today's building potentials* thus being the reverse order of a new design. The repertoire (Firstness) also contains comparable historic buildings as well as renovation and restauration concepts which already exist. The planning necessities (Thirdness) which regulate the creative selecting process are defined by restauration principles and then by building legislation. The resulting "products" (Secondness) themselves can then be anything from a historic monument to a modern building integrating original old elements, depending on the emphasis of the historic inputs from Firstness and Thirdness.

Aspects of Use

Reinbek mansion — its ground floor plan is shown in fig. 1 — resp. one of its parts will be analysed under a communicative-semiotic aspect. This reflects the process of perception, understanding and estimation of an object in respect to a possible use, so as to find out whether a thing is suited for certain activities or not. On the basis of Bense's object theory (1971, 1973) we shall analyse a first general impression of the mansion and then specify its semiotic "dimensions".

The bad condition of the mansion can (according to the schema of the design object) be documented in three "dimensions":

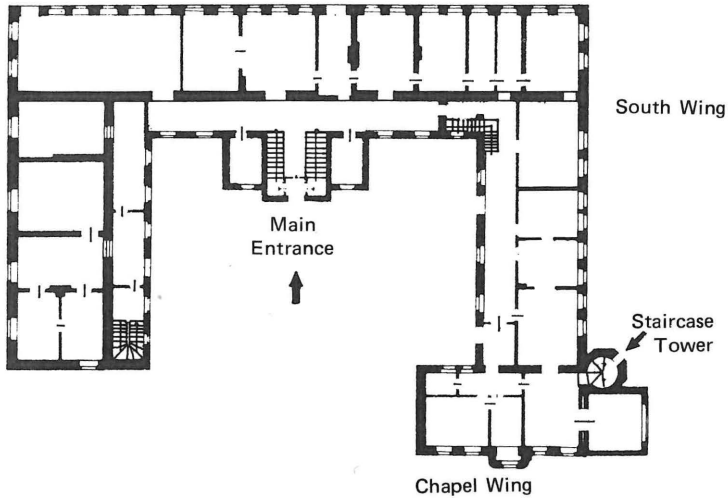


Fig. 1: Ground Floor Plan of Reinbek Mansion 1 : 500

(1) state of the material ("*hyletic*"), (2) state of the formal components (historic, esthetic, functional, etc; "*morphic*") and (3) state of the static-technical functions ("*synthetic*"). The "*pragmatic function*" comprising all "*dimensions*" mentioned above, and according to theoretical expectations and practice observations, show that its *use* is impaired under normal conditions. The semiotic analysis will exemplify this by applying a pattern of classification to the selected data, and, on the basis of a generative semiotic process, will then show ways to relate and combine the various elements.

Reinbek Mansion as a triadic sign relation

The mansion is defined as a triadic relation by the dicentric-indexical-sin-sign-class (3.2 – 2.2 – 1.2; cf. semiotic notation in *Bense & Walther 1973*). It is regarded as a *sin-sign* (1.2) when referring to individual characteristics. These are (a) the fixed place in Reinbek, (b) the singular material and (c) form elements (exemplifying the difference to all other mansions). When viewed as a mansion in general it would of course be classified as a *legi-sign*.

The various building elements indicate (*index*, 2.2) the period and style it was built in, the architect and builder (indicated by the type of wooden beams, roof structure, etc.) and finally the general use it had in former times.

A definite *dicentric* (3.2) interpretant connection is given when the building complex is assessed in respect to its meanings. Meanings are e.g. developed in a context of use, of historic edifices, of the town it belongs to.

Semiotic Determination of a Tower

Between the south wing and the chapel there is an old staircase tower with an entrance from the park; cf. fig. 2 and 3. The stairs connect several rooms (not corridors) on different floors. As part of the expertise mentioned above several questions had to be examined:

- (a) What was the original (historic) form?
What is its present physical and structural state?
- (b) As what could it be used nowadays?
Which alterations are needed to make these functions possible?

The town wishes the mansion to be used for public activities and to restore the historic shape as far as possible.

This gives the main concepts or 'foundation contexts' ("Begründungszusammenhang") which are (a) on optimal integration of the desired new function and (b) the relatively complete restoration according to ancient documents.

In (a) we'll analyse the material, formal and functional connexions between tower and main building (functional foundation context) and in (b) we'll analyse similar buildings of the same period, same style and other restoration projects (historical foundation context).

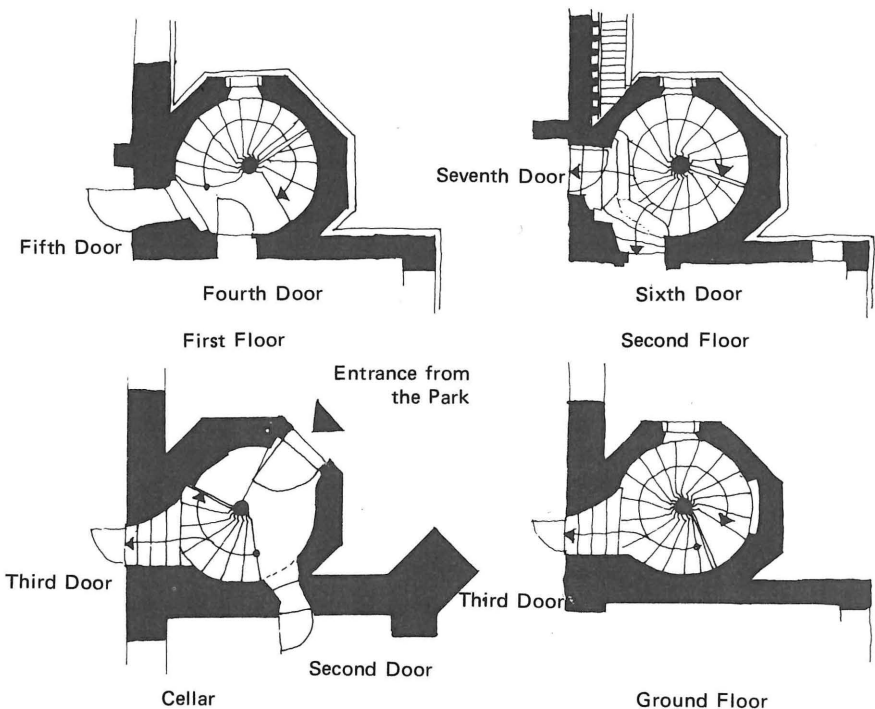


Fig. 2: Floor Plans of the Staircase Tower

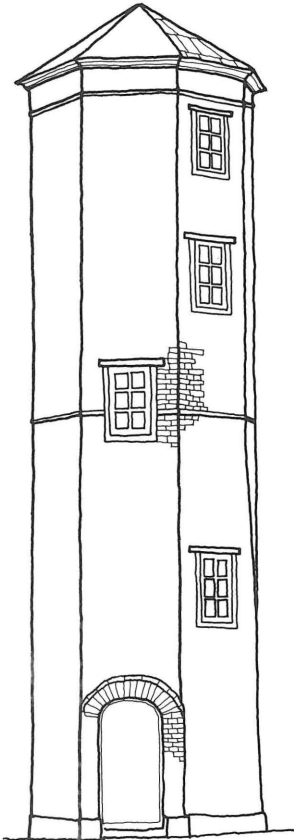
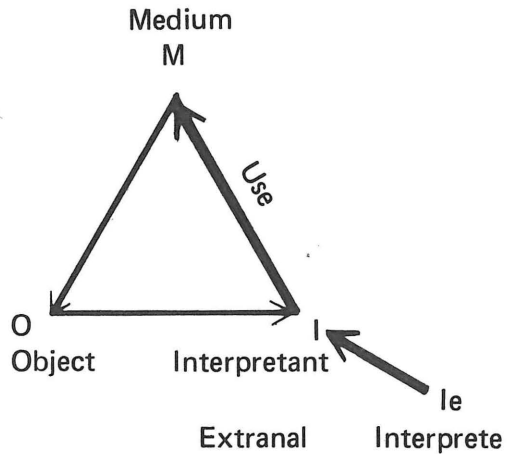


Fig. 3: Front Elevation



Schema: Retrosemiosis

The total project then is organized as a '*retrosemiosis*'. The owner being the '*external interprete*' refers to the '*internal interpretant*' – the contexts mentioned in (a) and (b) – to *use* the '*given media*', i.e. *Reinbek mansion* as such (cf. the schema of '*retrosemiosis*').

Assuming a semiotic principle, the analysis then has to outline the presumed *denotative relation* between the medium (M) and the object (O) as well as the *signifying relation* between O and the interpretant (I).

The semiotic analysis of the object systems of the building show:

- A three dimensional frame system (2.1) separates the inside tower area from its surroundings, i.e. the outside: parks and rooms in the two building sections. This is done by the material components (M), e.g. brick walls (5 outside, 2 inside), windows, a copper roof and steel doors, thus realizing an iconic frame system.
- The human access system is primarily an indexical, directional system (2.2) constituted by stairs, steps in front each door and entrances. Only the doors that can be opened and the stairs that lead to such an entrance belong to the access system. Accordingly doors which are locked or obstructed and steps that lead no where (such as those at the top of the tower) only seem to be parts of the access system.

– The symbolic selective system (2.3) is defined by the list of numeric and metric determinations of the object relation level: *one* coherent encasing system (in the shape of an octogon), *one* human access system (in the shape of a spiral) connecting different rooms (multiple access system).

This general description does not allow an answer to the questions we started from so that a more detailed description and classification as well as empirical measurement and research are needed, e.g. about the material properties, factual system of force vectors, further metric determinations, architecture conventions, etc.

Semiotic Determination of a Staircase

A detailed semiotic analysis of a staircase – cf. *Helmholtz & Blomeyer 1975* – would involve the following determinations:

medium relation

quali-sign	material, colour
sin-sign	spatial coordinates, time of analysis
legi-sign	properties of the material, form principle, construction principle, mechanical laws, cultural conventions

object relation

icon	staircase as a frame system segregating different winding levels
index	ascent/descent along a continuous line of nosing, winding clockwise, connecting 6 rooms with each other and with the outside
symbol	the metric determination designates the function of the stairs: one coherent frame system, 7 doors, 5 exterior, 2 interior walls

interpretant relation

rhema	spiral staircase as such
dicent	spiral staircase as the vertical anthropological access system of the chapel wing in <i>Reinbek mansion</i>
argument	necessary metric determination of this particular staircase in relation to the conditions of its use

Table 3: Trichotomic determination of a staircase

Let us return to the questions researched by the expertise.

Possible uses could be an internal service access, an emergency stairway for the public or a document of historic craftsmanship (as a display object). In comparing the empirically found data with modern requirements (static dimensions of the components, safety precautions, etc.) it becomes clear that without extensive measures the staircase is not fit for any sort of public use, so that the only remaining realistic use is that of a display object. A new access system will be built to meet the legal requirements.

These semiotic considerations outline how semiotic can be combined with other methods to classify the various data needed in a restoration project and to describe their interdependencies following a general rule.

4. Possible Use of Semiotic in Environmental Design

Finally we shall consider possibilities for the application of semiotic to architecture in a wider sense, i.e. to the fields of *urban* and *environmental design*.

A noticeable trend in the planning praxis of the past years has been the orientation towards the needs of the users as well as towards an effective use. This tendency appears especially in the various forms of complex or comprehensive planning such as city development, ecological or regional planning as also in the general use of simulation techniques.

These ideas are generally based on the realization of the *interdependency* of the various problem areas and the advantages of interdepartmental and interdisciplinary cooperation in working out strategies.

The use of semiotic in this field as a complete and universally applicable method would lie in the determination of the various levels of planning (e.g. the structuring of data about physical, social, political environments and individual experiences), for example on the basis of a semiotic graduation between "world" and "consciousness" (cf. *Bense* 1975). In this context semiotic could be developed as an important method within social indicator systems by showing the connections and combinations of the various indicators thus helping to assess the "quality of life". In using semiotic one cannot resolve controversial issues or innovatively show new aims or solutions (these being political matters or a question of design); one can, however, illuminate the various aspects of problems, indicate the need for more information and identify potential areas of difficulties.

To come to a *conclusion*: In the development of theories for a humane design of architecture and the environment it has become necessary to develop an abstract methodology to reflect practical problems in connection with their theoretical background. In this article we have shown that semiotic can be used as such a method. For the precise assessment of the most adequate fields of application further expansive research and practice implementation is required.

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Zusammenfassung

Die Betrachtung architektonischer Objektsysteme im Sinne semiotischer Begriffe, Muster und Prozesse kann dazu verhelfen, auf theoretischem Niveau Gesetzmäßigkeiten – insbesondere kommunikativer Funktionen – offenzulegen und in praktischer Hinsicht zum Beispiel Nutzungs- und Umnutzungsmöglichkeiten zu erkennen. Derartige Möglichkeiten werden am Beispiel eines historischen, zur Restaurierung vorgesehenen Gebäudes allgemein und an einem Detail (Treppenturm) erörtert. Eine weiterreichende Anwendung der Semiotik als analytische Methode etwa auf Probleme urbaner Planung scheint sinnvoll.

Résumé

La réflexion sur l'architecture au moyen des concepts, modèles et processus sémiotiques permet de montrer ce qui est faisable sur le plan théorique – en particulier les fonctions de communication – et de voir d'un point de vue pratique ce qui est possible et ce qui peut le devenir. On examinera ce dernier point sur le cas d'un bâtiment historique à restaurer, dans son ensemble et à propos d'un détail (une cage d'escalier). Une application plus étendue de la sémiotique en tant que méthode d'analyse, au problème de la planification urbaine semble fort suggestive.

SEMIOSIS 1

Zeitschrift für Semiotik und
ihre Anwendungen, Heft 1, 1976

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