

FROM IDEOLOGY TO METHODOLOGY

The Theoretical Evolution of the Design Methods Group

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1. INTRODUCTION

Design research has never been a popular subject in the Netherlands. Developments in the Anglo-Saxon world were noticed, but not considered relevant for design and building practice. However, design work was done on a comparatively high level. Architects, like many of their professional colleagues in other design areas have little concern about methods and theory.

Even when the designer actually is using *methods* and employs a *theoretical* framework, he is not inclined to mention these techniques in explaining the *structural* and *procedural* aspects of the building he created. This might dissipate the aura of *creativity* and *originality* which are supposedly the trademark of designers, in building and in other areas. This is partly explicable as a strategy to keep control over the design and building process by making their *territory* inaccessible to other participants in the design process. However, mainly, I believe, this is due to the absence of an operational *body of knowledge* which enables them to communicate and share responsibilities with other parties involved.

In the Sixties there were certain socio-economic developments, together with technological developments, which opened the door of the professional world—just for a moment as it seems—to external control and *participation*. Since 1967, the Design Methods Group (GOM) of the Faculty of Architecture and Building Science, Eindhoven University of Technology, played an important role in this respect when John Habraken founded the faculty and occupied the Chair of Architectural Design.

My intention is to give a short description of the development of the scientific work of the group in three episodes. I will indicate these three episodes as *Ideology*, *Theory* and *Methodology*. Of course all three aspects are present in each period, but my point of view is that they are each dominated by one specific concept. At the same time they indicate a *development in phases* of a theoretical framework which is perhaps only visible in retrospect. This historical development maintained its consistency during a relatively long period of time. More important, perhaps, is that due to its origin in architecture and building, it has a certain *autonomy*, so that it doesn't depend on general theories but, on the contrary, can determine its own reference to them.

Each period, or phase, is characterized by a specific *relation* between the theoretical framework and society, the great theories and empirical reality. Respectively these relations are termed here as the *natural relation*, the *cultural relation* and the *structural relation*.

2. IDEOLOGY: 1965-1975

The core of the philosophy of Habraken is the so-called “natural relation” between people and their environment. He takes the point of view that this relation has a *dynamic* nature and that only by an active involvement can the 'massification' of the environment be avoided. Three pairs of groups determine this relation:

- the relation between *individuals and community*, a primarily *social* definition of the field of architecture;
- the relation between *consumers and producers*, a primarily *economic* definition of the field of architecture, which is considered to be a market;
- the relation between *short and a long term*, a primarily *physical* definition of the field of architecture, in which the two first mentioned classifications are summed up, determining support and infill components in relation with social groups and economic conditions in terms of time and process.

The three types of relations define together the so-called *scale concept of planning*, which connects the level of architectural *design* with the higher level of architectural *planning*. It connects, at the same time, architecture with the wider field of urban design and planning. This is through the notions of process and time because of its inherent *explicit* and *public* character which has always played an important role. Physical elements in this ideology only make sense when social and economic *attributes* in the form of the *parties* involved, are defining them, thus providing the basic conditions for a decision making *process*. This *dynamic* definition of architecture in terms of a process provides us with the conceptual tools to think about our environment in terms of *ecology*.

These conceptual tools were made operational by the definition of a set of *representations* in order to make it possible for designers to design supports and infill components. Zones and margins, sectors and sector groups, modular coordination in the form of the well known 10-20cm band grid, and basic variants determined the operational tools in *SAR-methodology*. The same type of representations were used to define urban tissues and building nodes, in addition to Supports, as different *scale levels* of design and decision making. *Coherence* of a building was considered as *harmony* between designs on these various levels.

The influence of SAR thought can be noticed in the *NEN-norm 6000* regulations for modular co-ordination giving a priority to position above exact measurement; in this the *Bouwbesluit* in which buildings actually are defined as supports and which opens the building and design process for the various parties involved. In the near future it will make a connection possible with the *ISO-norm 9000* which emphasizes the procedural aspect of architecture. When these standards are implemented in architectural design the three dimensions of architecture, *Form, Function and Process* are dealt with in a consistent way.

This type of redefinition of the field of architecture is actually what is happening in *post modernism* and *deconstructivism*. The relations between these philosophies and architecture are more basic in SAR thinking than can be found in the fashion of cult architecture with its use of citations and the play with architectural syntax.

However, many methods, techniques and computer programs like the first really form generating computer program, SAR 70, were developed between 1965 and 1975. This period has to be characterized by its *ideological* drive and, in the sense that Peirce used that notion, by its *pragmatic* nature.

3. THEORY: 1975-1995

The following period is characterized by connecting the theoretical framework of SAR thought with other fields of theory building, technology and science in an international European context. That is the reason why I want to refer to the period as that of *cultural relation*, the embodiment in a wider intellectual environment. The period is also referred to as *Theory* for other reasons. In spite of the name of the Design Methods Group, not much work was actually done in design methodology.

3.1 The cultural context and the general theories

Referring to Bill Hillier's famous paper "Systems, Structures and Transformations", these three fields of theory building were found to be relevant for SAR thinking. *General Systems Theory* provided the three dimensions of "architectural space in transition" by defining *hierarchy, aspect, and phase systems*. *Form, Function and Process* determined the anatomy of what was called the *GOM-Model*. A new definition and articulation of space, objects and events, respectively, was required in formal (*level-bound*), functional (*domain-bound*), and temporal, or procedural, (*phase-bound*) systems. The GOM-Model was elaborated in two modalities: a *static* and a *dynamic* one, the latter defining categories of processes in architectural thinking. These are level-bound *ordonnance* processes, domain-bound *integration* processes and phase-bound *differentiation* processes, depending on their direction in the model.

Structuralism provided the working model of structure. The definition of structure contained the three dimensions of form, function and process, by emphasizing the notion that a structure is what *variants* have in common. *Actual* reality and *structural* reality, connected by processes of *induction* and *deduction*, provided a mechanism for the definition of *levels*, and linked modern process oriented thinking with more functional and form oriented thinking in previous stages of *developments in western philosophy*.

Evolution theory provided the notion of *generation* (of variants) and *selection* (by context), and the notion of "relucter pour mieux sauter" which is characteristic for evolutionary process, connecting *ontogenese* and *phylogenese* in one concept. *Transformations of the Site* is the title of the book John Habraken wrote about processes of adaptation and adjustment of the built environment as a living configuration.

It must be clear that it is not possible to deduce the implications for architectural design from these great theories. Only in a reverse process is it possible to make a connection contemplating the similarities which become visible.

Three theses were written in that period in which each dealt with a specific dimension of architectural space:

- Thijs Bax dealt with the concept of levels, based on the notion of structure, in a *generic grid*.
- Henk Trum dealt with the notion of norms and functions, in which he together with Thijs Bax defined the functional domains and orders which became the core of *Domain Theory*.
- Jan Thijs Boekholt dealt with the notion of phases, and, more specifically, connected the notion of levels with phases in the *process-states*: of analysis, synthesis and evaluation.

Together these dimensions form the core of the *GOM-Model* as a basis for the definition of *categories* of design thinking and the notion of *concept*. Following these three works, the dynamics of architectural form became the subject of a thesis by Matthijs Prins on the costs of flexibility.

3.2 European context: the taxonomy of concepts

Developments in Domain Theory and the GOM-Model made it possible to comment adequately on the European Directive of 1985 and more specifically on article 3, enumerating the requirements for architectural *formation* and, at the same time of architectural *design*. The list of twelve components of article 3, describing the content of an architectural project, could be represented in a more consistent way by referring to a number of architectural *phenomena*, which in a later stage of development were termed “Concepts of Architecture”, and were organized in a *taxonomy*. The taxonomy, by identifying and defining *fields of design*, is considered to be a useful tool for the description of the *profile* of any designed object.

3.3 The technological context: design science

General acceptance of the taxonomy by the various European member states, assembled in the Advisory Committee of the European Commission, made possible a wider acceptance of GOM theory. The descriptive theory proved to be applicable in other fields of technological design, like mechanical engineering, electrical engineering, etc. The long neglected possibility in Dutch law to make a *doctoral thesis*, based on design, could now be materialized because of an adequate description of the requirements of such a design.

However, this episode is theory dominated. There still is the ideological content of designing by *participation*. The international Design Participation Conference of 1985, just half way through the period, testified to the belief that design in collaboration is not only associated with the Seventies, but that this is a modern, even post modern notion which provides us with the basis for both social and scientific development in design theory.

4. METHODOLOGY: 1995-2000

This period is indicated as Methodology based on theory and given a motivating spirit by ideology. This period is not pragmatic any longer, not directed to adjacent theories, but seeking the content of designerly thinking. It employs the results and methods of *cognitive psychology* in a quest to discover the very fundamentals of design. That is the reason I have characterized this period as the *structural relation*, based on the observation of the designer at work. Perhaps the body of theory will be substantial enough to deal with the empirical world on a scientific way.

So we now enter the field of *Design Science*, the field of the *homo inveniendus*, and the field of *knowledge systems* which support design activities. There are three topics which seems to be of interest. The implementation of the formal, functional, and procedural have defined *Concepts* supported by the philosophy of Peirce. Currently, the exploration of the field of *generic representation*; is the area in which Henri Achten is writing his thesis on the design of generic grids based on the use of typology. Beside design itself and design theory and cognition, it becomes clear that a more profound knowledge of design thinking provides the means for *design management* and *design didactics*.

Already from the very beginning of SAR and GOM the activities of these groups were supported and stimulated by the use of *computers*. Based on the theory already developed, a concept of design activity is imaginable in which the computer is considered to be an *intelligent medium*, which not only conveys messages, but brings some order and quality in them which is close to the structure of human design.

5. EPILOGUE

This overview from ideology via theory to methodology is mainly historical. The objective is that it provides us with an insight into the evolution of our thinking and work, and opens a perspective on the activities of a group which has already been working for three decades in the field of architectural design theory and methodology. The content of our work always was determined by the content of architecture itself, and was always given a direction by our belief that architectural design will have to be carried out by the *participation* of all parties involved. We hope that our work will provide the *professional world* with the tools they need to adjust their attitude, as mentioned in the beginning, in order to deal with the growing complexity of design.