From an Architecture of Sign to an Architecture of Consciousness

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Introduction

This paper introduces our current project *From an Architecture of Sign to an Architecture of Consciousness*. The work-in-progress investigates the influence of the *linguistic turn* on the development of *responsive architecture* focusing mainly on the exploration of the object/subject, user/architecture-relationship.

The term *responsive architecture* was coined by Nicholas Negroponte in the late sixties, when he proposed to overcome the architectural restraint, enabling everybody to articulate his or her own spaces by interacting with a technical augmented architecture. In the course of our investigations the question arose how this interaction between architecture and its user operates. Therefore, it touches upon the question how the architectural user understands the environment. On the other hand, it attempts to throw light on the question in which ways a responsive system – architecture – replies to its user. As far as these aspects are concerned, it must be stated that feasible answers are not only relevant to *responsive architecture*, but also to architecture in general.

The current definition of the user/architecture-relationship within the responsive architecture theory is based on the cybernetic idea of the sixties. Thus the interaction between architecture and its user is equalized to the communication between human and machine. This mechanical communication theory, however, lacks of precision when describing user/architecture-relationship. For that very reason the following paper attempts to refine this relationship by using various concepts of neuro- and cognitive sciences.

Pask's Present

In the early sixties the British architecture theorist Cedric Price developed an architecture that does not require permanence, but is about change and fluidity[1]. Based on the idea of Joan Littlewood[2], Price designed a huge open steel-construction called the *Fun Palace*. Price intended the *Fun Palace* as a "university of the streets – not a gracious park, but a foretaste of the pleasures of the future"[3]. Consequently, this construction was not intended to be a space for consumption. On the contrary, it was designed to be a space to try new skills, waste time pleasurably and broaden one's horizon[4]. As a result, Price developed the idea of an interactive changing environment. In order to implement this concept, he got support by the English cyberneticist Gordon Pask.

In the early fifties Gordon Pask proposed a notable new cybernetic understanding of the relationship between human and machine, subject and object. Pask developed the idea of an adaptive technique environment, in which automatic and human systems "communicate" with each other. Pask's definition of interaction, he called it "conversation", is based on the human ambition to learn. Although Pask's *Conversation Theory* can be described in terms of a cooperative and competitive "Game", the attributes of his theory remain identical with real conversation. [5]

Gordon Pask's cybernetic concept is still present in the ongoing debate of *responsive architecture*, though it was developed fifty years ago.[6]

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[1] Sailer, p 93.

[2] Joan Littlewood, born in London in 1914, was a famous theatre activist, actress and director. She died in 2002.

[3] Mathews, p 39.

[4] Littlewood, p 704.

[5] Rosen, p 161.

[6] Usman Haque, for example, promulgated the architectural relevance of Gordon Pask's work in 2007. He stated,"now, at the beginning of the 21st century, Pask's *Conversation Theory* seems particularly important because it suggests how, in the growing field of ubiquitous computing, humans, devices and their shared environments might coexist in a mutually constructive relationship", see Hague, p 55.

Pask's *Conversation Theory* has a strong affinity to language. For Pask stressed the fact that interpretation and context are particularly important elements to be considered for any design process, it becomes obvious that this relationship plays an important part in the construction of architectural experience in particular.[7] Considering this aspect of interpretation and context, Pask's definition of the user/architecture-relationship can also be applied in the field of linguistic concepts.

The architecture of sign

Parallel to Cedric Price's and Gordon Pask's approaches, Kenzo Tange, a representative of structuralism, developed a different architectural understanding based on the linguistic concept of communication: "The necessity is forced upon us of comprehending the elements in the mutual relationship in space and time. We call a concept of this kind structural. We observe that we must not only allocate a function to space, but that we must also provide with a structure. [...] When we ask what name of that thing is to give structure to space, the answer is to be found in communication"[8].

This structural understanding of the user/architecture-relationship can be associated with the term *Linguistic Turn*, having its origin in semiotics. Thus Ferdinand de Saussure's development of the system of sign, unfortunately rather imprecisely published by his students Charles Bally and Albert Sechehaye in the *Cours de linguistique*[9], can be seen as the fundamental principle for many architectural theories like structuralism or post-structuralism. [10]

All in all, there is a notable strong importance of defining the user/architecture-relationship as a system of sign. A traditional means of conferring meaning to architectural forms that refers to a sign,

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[7] see Haque, p 55.

[8] see Lüchinger, p 50.

[9] Fehr, p 145.

[10] Cf. Jormakka, p 35.

is to turn architecture into a code for something else, in the way the alphabet or a set of pictograms are codes. This *architecture of sign* is dominated by the Cartesian logic.

Beyond the Cartesian logic

In contrast to the *architecture of sign* mentioned above, there have been several concepts within the history of humanities which indicate a position that replaces, or at least diverges from the dominating metaphysical concept of communication. This view, however, results in an abolition of the dichotomy between subject and object, between intellectual thought and immaterial qualities.[11]

Taking the media debate and more recently literary studies into account, a more distinct argumentation against the exclusiveness of the *linguistic analogy* in the architectural understanding occurs. Already in 1964, Marshall Mc Luhan coined the famous sentence „the medium is the message", proclaiming that the content is implemented in the medium itself and will be perceived through sensory perception at first, not through a process of decoding the message.[12]

This debate is also reflected in architecture itself, in the ideas of *performative architecture* in particular. Although the term and the associated idea of *performative architecture* are characterized through a variety of different concepts, *performative architecture*, however, has not been articulated very clearly to date.

All in all, *performative architecture* implicates an architecture that is not only autonomous but also abolishes the inflexible sender/receiver-model. As a consequence, it produces a more active consumer and anticipates a shift from representation to presentation, leading to a reduction of the conception of architecture as a mere object.[13]

At this point the debate touches upon the question whether the linguistic analogy and the semiotic method are an adequate definition for the user/architecture relationship.

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[11] Cf. Gumbrecht

[12] Cf. Brauner, Hörl, Plank, p 7.

[13] Krämer, p 20.

Johannes Fehr expresses evident doubts in his precise treatise of de Saussure's scientific remains. To Fehr Saussure's system of sign was not meant to define the relation between human and objects: "*Damit der Prozess der Weitergabe der Sprachen gedacht werden kann, muss die Ordnung der Zeichen als eine von der Ordnung der Objekte oder Dinge unterschiedene und eigenen Gesetzen gehorchenden Ordnung (an)erkannt werden*"[14].

According to Saussure, objects are at least present and can be investigated by any science. On the contrary, a phoneme is indeed perceivable, but the natural element of it does not belong to language. Therefore, it becomes obvious that the material word is, from a linguistic point of view, an abstraction. This sequence of phonemes can only be part of linguistic discussion when it is used as a medium for content.[15]

The system of sign was necessary for Ferdinand de Saussure in order to describe the human/language-relationship. His concept, however, was not meant to be extended to the subject/object-relationship. Unfortunately this precise distinction between the subject/object and subject/language-relationship was neglected by Bally and Sechehaye, who had published Saussure's scientific remains in the *Cours de linguistique.* The great influence of the *Cours* on the *Linguistic Turn* , however, is undisputable.

Cognitive science

Besides Ferdinand de Saussure's development, a complementary wing of scientific self-understanding emerged in the early twentieth century. This path is characterized by regarding a human being as a complex and subjective entity. This new aspect results in a focus on cognitive science rooted on perception and apperception as the fundamental principle for cognitive actions.

[14] Fehr, p 145.

[15] Cf. Fehr, p 124.

During the last three decades of the twentieth century cognitive sciences have gained an increasing attention not only of philosophers but also of researchers working in neuro- and cognitive sciences.

At this point the debate touches upon the question whether neuro- and cognitive scientific knowledge is a feasible way to state the user/architecture-relationship more precisely.

Architecture as an active user process

Within the concepts of *responsive architecture*, the architectural environment is stated not as a thing but as a process. Hence a system that is able to respond requires subjective experiences; not only it has to recognize the opposite but it also has to react on what the subject in the opposite does, in other words, each communicative unit has to have *consciousness*. Taking consciousness into account, we have to consider what it means of any system, for instance a person, a biological or an artificial system, that is conscious.

According to Thomas Metzinger, a philosopher and cofounder of the *Association for the Scientific Study of Consciousness*, a reality in conscious experience is present.

"But what does it mean to say that, for all beings enjoying conscious experience, necessarily a world appears? It means at least three different things: In conscious experience there is a world, there is a self, and there is a relation between both – because in an interesting sense this world appears to the experiencing self"[16].

For that very reason Metzinger distinguished three different aspects from his origin question. First, he investigated what it means that a reality appears. The second aspect deals about how it can be possible that this reality can appear to a subject of experience. Last it throws light upon the question how this subject becomes the centre of its own world, in other words how it transforms the appearance of a reality into a truly subjective phenomenon by turning it to an individual first-person perspective.

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[16] Metzinger, p 5.

Being no one[17]

Metzinger treated these questions in detail, which result in his *Self-Model Theory of Subjectivity*: "a phenomenally subjective experience consists in transparently modelling the intentionality relation within global, coherent model of the world embedded in a virtual window of presence"[18].

As far as Metzinger is concerned, the *Self-Model Theory of Subjectivity* consists of three elements, globally available model of the world, the virtual window of presence and transparency.

To begin with, it is stated that every conscious system operates with globally available information, in other words all information that is associated with being in a world. Therefore, a system that is conscious has to have an internal and dynamic model of the world. Consequently, this model is a consistent internally representation of the world as a whole. According to Bernard Baas and his hypothesis of the *Global Workspace Theory* [19], the content of conscious experience is the content of a global workspace that offers the system a fast and flexible control of its outer but also inner behaviour.

Secondly, the system experiences this integrated model from a virtual centre point through a virtual window of presence. Whatever you experience, you always experience it now. The experience of presence coming with our phenomenal model of reality is the central aspect. If the global model of a world or a part of it, is embedded into the virtual window of presence of the system, then the produced representational content is the presence of a world. A conscious experience is the presence of a reality. Therefore, a conscious system could also have a great unconscious model of reality, namely the part that is not globally available. It is obvious that this unconscious model of reality influences causal the behaviour of a system.

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[17] This headline is taken from Metzinger.

[18] see Metzinger, p 15.

[19] see Metzinger, p 120.

Last, the system needs a functional implementation of a naive realism, the so-called transparency. Phenomenal transparency in general, however, means that something particular is not accessible to subjective experience, namely the representational character of the contents of conscious experience.[20]

Architecture and the Self-Model Theory of Subjectivity

The *Self-Model Theory of Subjectivity* is all the more astonishing, as you look how this theory gives us a direction to the user/architecture-relationship. It is still a structural understanding, describing the relationship between the human (user) and the environment (architecture) as a reflexive circulation.[21] According to Metzinger, the human self features preconfigured models of the reality in order to evaluate every impulse beyond its own inner reality. This process is a circulating production of reality-hypothesis, based on the outer impulse. Comparing the reality-hypothesis with the internal world model of the human self, important discrepancies or attractions are recognized and become the centre of attention. Moreover, the human perception is attracted to a large extend by affine systems. Consequently, the attention or apperception is primarily centred on humans or systems, which appear to be conscious.

Metzinger's *Self-Model Theory of Subjectivity* leads to the assumption that architecture belongs to the great unconscious model of reality, namely the part that is not globally available. In other words, the relationship between architecture and its user is based on perception. It is the physical presence of architecture that influences the behaviour of the user in a subtle way. The differentiation between apperception and perception within the human mechanism of perception can be substantiated by a neurobiological economy. The unconscious control of behaviour, relayed on the principal of apperception, offers the system capabilities for target-oriented apperception. The

[20] see Metzinger, p 169.

[21] Cf. Fehr, p 94.

subtle way of perceiving the environment is important for the ability to communicate with a chosen opposite. This seems to be important for the social competence of a human.

Relating to *responsive architecture*, the user/architecture-relationship is based on apperception. Even if responsive environments pretend to be alive, they will attract attention. For that very reason, the responsive user/architecture-relationship refers to the principals of communication. The neurobiological economy of the human mechanism of perception will be affected.

Referring to Negroponte's proposal of the *responsive architecture* we have to suggest that technical augmented architecture has to be desynchronized with the user. The response of the environment must be unnoticed by the user.

Desynchronised authorized reactive systems

In conclusion, we do not lay claim on an architecture that is conscious. In addition, we refuse the development of conscious systems even though it might be possible to succeed. Nevertheless, a great amount of prototypes would be necessary before the first complete conscious system would arise. All these prototypes would have an uncompleted consciousness. As a result, they would be mentally disabled. Our ethical position, however, claims a reduction of global affliction and not a rise by producing mentally disabled systems.

There is no denying fact that it is rather difficult to judge whether a system is conscious. The philosopher D.C. Dennet, however, stresses the fact that only if we have to ask the system about its next steps, are we able to call it a conscious system. By analysing the system's next movements the constructors of conscious systems lose their supremacy over their artificial products.[22]

As far as *responsive architecture* is concerned, we would lose the authorship for the relationship between architecture and its user.

[22] Cf. Metzinger, p 18.

To conclude, it is worth pointing out that all current responsive environments lack of individual first-person perspective. Therefore, these systems are no responsive systems, but complex reactive systems, authorized by an architect or engineer. In regard to our investigation, it has become obvious that these systems should not be entitled to pretend responsiveness. On the contrary, they should not be noticed by the user. In brief, we are of the opinion that Nicholas Negroponte's concept of an individualised space through technical augmented architecture can only work by using desynchronised authorized reactive systems.

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