THE CONSCIOUS USER OF ARCHITECTURE

To Kerstin, Emilian, Benedict and Nikolaus and my Parents

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The Conscious User of Architecture

A conceptual framework for the exploration of the relationship of architecture and its user based on the current neuroscientific debate.

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1. INTRODUCTION

1.1   Prologue

The following doctoral dissertation attempts to investigate the relationship between architecture and its user. The main hypothesis states that in order to obtain knowledge of this relationship, the focus has to lie on the *user* rather than on the built environment. Accepting and validating the *user* as a subjectively perceiving and consciously processing 'actor' on the stages which architectural environments provide, the central claim is that architecture is a consciously experienced subjective product, emerging out of the *user's* emotional perception. This process of subjective experience is what we have to understand in order to achieve knowledge of the relationship between architecture and its *user*. It is not my aim to develop a complete theory, but to establish a starting point for the field of architectural research on the *first person perspective* of the *user*.

My goal is to determine foundations for a theory of the subjective experience of architecture, one that is not only conceptually convincing, but also empirically plausible. To achieve this goal conceptual instruments (or experiments) have to be developed, simultaneously the proposed theory has to be explored and constantly evaluated. I believe that empirical data is relevant and enhancing to architectural issues and a considerable amount of academic research should be allocated to experimental examination. Architecture as a science has ignored such data for much too long.[01]

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01   In an interview the American scientist for environment behaviour research Amos Rapoport accuses architects of being ignorant about objective research. He says: Research will never be used unless architects change totally, in every way and become a totally different profession. (1992) *Interview with Amos Rapoport*, Arch. & Comport. I Arch. & Behav., Vol. 8, no. I, p. 93.

The aim and objective addressed in my research was ignited and fuelled by Thomas Metzinger's theory published in *Being No One, The Self-Model Theory of Subjectivity.* In *Being No One,* German philosopher Metzinger considers neuroscientific research to demonstrate a representational and functional analysis of what consciously experienced *first-person perspective* actually is.[02] The significance of Metzinger's model lies in his development of a new conceptual toolkit, interlinking the humanities with the empirical sciences of (the) mind. My doctoral dissertation explores the capabilities, opportunities and implications for the architectural user which Metzinger's studies in *philosophy of mind* have, as it links empirical findings with a consistent philosophical theory.

This thesis employs two different strands of examination. The first strand can be termed as 'a theoretical study of the development of human consciousness and self-awareness' within the architectural context, which is rooted in the philosophy of *phenomenology.*[03] The phenomenological approach to inner experience and perception is both delicate and profound.[04] *Phenomenology* has not been extensively considered from a philosophical perspective,[05] but I believe it is deeply relevant for an informed architectural debate. According to Thomas Metzinger, *phenomenology* sparked advances in the methodical and autonomic sciences of mind.[06] Based on the project of *pure enquiry*[07] by Rene Descartes, the phenomenological approach utilizes a subjective method of observing and describing the *user's* architectural experience. *Architectural phenomenology* aims to construct the physical and mental reality of an architectural environment, deriving its information from sensory observations. This is a specific field of academic research based on the experience of building materials and their sensory properties.

02   Metzinger, T.(2003), *Being No One, The Self-Model Theory of Subjectivity*, MIT, Booklet.

03   Merriam-Webster dedicates the part of philosophy called *phenomenology* to the 'study of the development of human consciousness and self-awareness', http://www.merriam-webster.com/dictionary/phenomenology, 15.08.20210

04   Metzinger, T.(2009), *The Ego Tunnel, The Science of the Mind and the Myth of the Self*, Basic Books, New York, p. 14.

05   Metzinger, T.(2009), p. 3.

06   Metzinger, T.(2005), *Bewußtsein, Beiträge aus der Gegenwartsphilosophie*, Mentis, Paderborn, p 41.

07   Williams, B.(1978), *Descartes: The Project of Pure Enquiry*, Penguin, Harmondsworth.

Evidence of introspective perception within the phenomenological strategy has proven to be an unsustainable assumption. The phenomenological approach of collecting data has not provided a methodically safe and valid technique,[08] criticism and evaluation of the phenomenological approach now leads towards one main question. Is it possible to measure the experience of architecture in the first place? The ongoing popularity of the phenomenological field of architectural research correlates with architects' general scepticism that the experience of architecture can be analyzed and measured by empirical studies. Through philosophy of mind and its representatives such as Thomas Metzinger we could now find a new 'image' of the experience of architecture, one that is already based on relevant data generated by science of mind.

The main thesis of this doctoral dissertation is that the experience of architecture is an issue of our inner nature. Today, philosophy of mind presents a lot of important issues in our quest of exploring inner nature – new exciting theories about emotions, empathy, dreaming rationality, recent discoveries concerning free will and the conscious control of our actions, even machine consciousness; these are all available, as building blocks for a deeper understanding of our selves.[09] Within the first strand of this doctoral dissertation I will touch upon some of these notions to construct a theoretical framework for a new definition of architecture and its relation to humans, one that is based on the new image of humankind illustrated by philosophy of mind.

The second strand pursued in my research is the attempt of developing a strategy of generating and collecting empirical data about the *user/architecture relationship* to support my theoretical approach. It has become apparent that generating objective empirical data is not simple and obstacle free; most notably, *first person perspective* and *consciousness* are nothing but a subjective phenomenon. So-called naturalistic objectivism or analytical behaviourism, for instance are governed by a *third person perspective* and the collected information is limited in its objectivity by an external perspective. Factors such as personal behaviour, which would support the development of a theory of the *user/architecture relationship,* are disregarded. Objective analysis uses a methodically reliable technique to gain knowledge on the *user/architecture relationship.* The question remains - is it possible to speak of procurement of knowledge using an objective method? Can subjective experience

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08   Metzinger, T.(2005), p. 41.
09   Metzinger, T.(2009), p. 1.

be investigated by means of an objective method? Can a subjective method be considered and explored by a naturally subjective examiner attempting objectivity? The architectural product, a building for example, is part of the objective 'outer' world, which is experienced through the subjective 'inner' perspective of the *user*. Therefore any appraisal by the *user* cannot be universally valid. On the contrary, an objective analysis of the complex situation of the architectural environment and its relationship with the *user* needs to be abstracted to a certain degree to produce a universally valid statement. It is difficult, if not impossible, to deduce subjective experience from abstract data.

In the experimental work I tried bridging this dichotomy of the subjective and the objective as far as possible. The strategy followed in the experimental settings evolved from Henri Lefebvre's assumption that knowledge about space can only be achieved through the production of space. In his book *The Production of Space*[10] Lefebvre states that only if you produce space you can learn about it. Therefore the second part of my work deals with different spatial experiments, based on neuroscientific issues to explore the inner nature of the architecturally experiencing *user*.

1.2   Questions

In this section I want to develop a small set of questions in order to guide through the complex theoretical landscape associated with the phenomenon of subjective experience of architectural environments. The first and most important questions deal with the *epistemological* problem. It is important to define the approach and mode of gathering of objective knowledge about subjective experience. Additionally I will suggest a range of questions which deal with experiencing subjects, how the objective world presents itself to the self and their relationship and correspondence. The final set of questions concerns itself with the relation of *epistemologically* oriented work for ongoing architectural research debates.

In 2007 my colleagues - Birgit Brauner and Andrea Hörl - and I were presented with a problem. Working in an interdisciplinary fashion with colleagues from the psychology department we were aiming to prepare a research paper called 'Architecture designs presence'.

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10   Lefebvre, H.(1991), *The Production of Space,* English Translation by Donald Nicholson-Smith, Blackwell Publishing Ltd., p. 7.

United in our wish of obtaining knowledge of how architecture evokes the spatial experience called *presence,* the team's idea centred itself on employing psychological measurement techniques to surpass the present level of discourse and reach the next step on 'the ladder of knowledge'. After devoting six months of work to research, meetings, and the outline of a set of concepts our psychology partners opted to withdraw from our collaboration. They argued that they would not be able to measure *presence* in the same way in which they are able to measure IQ levels. This problem has a long-standing tradition within the *science of consciousness.* In epistemological-philosophical thinking there exists one major problem, which is the ontology of different proposals aiming to investigate and grasp the question of consciousness, both from an internal and an external point of view. The phenomenon of *presence* or *subjective experience* is vested to the subject or the *first person perspective.* The main question is if scientifically viable *third person perspective* can provide access to a subjective phenomenon?

> *- Is there a way of objectively investigating the subjective experience of architecture?*
> *- How would one investigate the subjective experience of architecture?*
> *- How can we investigate the user's subjective experience within the objective physical world of architecture?*

As stated in my introduction the proposed question is 'how do you as a *user* of architecture subjectively experience your built environment?' Sometimes you catch yourself in a certain place without any conscious knowledge of having gotten there, perhaps you walked there lost in thought, paying no active attention to the architectural environment; you might have passed a door or climbed stairs as you moved through your respective environment, devoting no attention to the architecture. In another scenario you might find yourself in a position of feeling your current surrounding's presence, time stops and each of your senses pays full attention to the environment, you feel you are one with the room and its *presence.* Architects' current focus lies on how a person subjectively experiences architecture; therefore the second set of questions has to address the *user's* cognitive process.

> *- Do we differentiate our levels of attention, adapting to varying spatial situations?*
> *- Are people constantly aware of their spatial surroundings?*

The outcome of these questions is thereby tied to spatial concepts of the relationship between *user* and architecture.

> *- Do you 'read' a room?*
> *- Do you interpret the architectural environment?*
> *- What does it mean to speak of spatial experience called presence?*

The last set of questions deals with the architectural relevance of a new user-concept, based on a new image of humankind established by the sciences of mind. It would be interesting to see if there presently exists a user/architecture debate and what image of the user is portrayed in this debate.

> *- Does a user/architecture debate presently exist and what does the current image of the user look like?*
> *- Does an architectural debate exist at this time which deals with the phenomenon of consciousness?*

1.3   Overview: The architecture of this doctoral dissertation

The first part of my thesis outlines the debate of the *user/architecture relationship* and its alteration within the interconnection of human and architecture. Clarification and explanation of the terms *architecture, user* and *relationship* is the aim of the first chapter. Due to the fact that a theory concerning the *user* is one of the central objectives of this investigative work, differentiation including the historical development of the term *user* within architectural history is one of the main parts of the first chapter. Starting with Jonathan Hill's definition of the *passive user* I will explore the development of the *user/architecture relationship* during the course of these past years. In the first chapter I will extend Hill's definition of the *passive user*[11] by adding two additional definitions, the *communicative user* and the *partaking user*.

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11   In his book *Actions of Architecture* Jonathan Hill outlines three different types of user, or definitions of the user, the passive user, the active user and the creative user.

Accepting the *user* as a consciously experiencing entity, the second chapter integrates a third user definition, *the conscious user*, focusing the investigation on the subjectivity and consciousness of users in relation to architecture. Relevant theories drawn from *philosophy of mind* will be presented and outlined. Thomas Metzinger's concept of the *self-model theory* is part of the third chapter, leading to a specific differentiation between the objective and the subjective point of view. The dichotomy of *objectivity* and *subjectivity* becomes important when you introduce empirical data in support of the main theory. The problem of this dichotomy is addressed in the forth chapter and dealt with in the fifth chapter by means of presenting three experiments. These experiments were set up to try and overcome the gap between *subjectivity* and *objectivity* from different angles. Their unifying aim was the exploration of an adequate analysis of *user/architecture relationships.* A chronological outline of the development of new experimental strategies of integrating empirical data into architectural research is provided. The experiments correlate with the different *user* definitions and *neurophilosophical* theories. The sixth and final chapter establishes a basis for the discussion of the architectural relevance of my theory. I believe it to offer a new take on architectural space deduced from both theoretical and empirical work. Based on the concepts of desynchronisation, sub-phenomenal experience, and subject-directed systems I conclude with a specific definition of architectural space, based on *neurophilosophical* theories. I will briefly explore architectural strategies such as *responsive architecture* and *architecture and media.*

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2. USER/ARCHITECTURE RELATIONSHIP

The goal of this chapter is to outline the different concepts of the relationship between human and architecture. As we will see, there exist several concepts within the *user/architecture* debate and they all differ from one another in a specific way. It is not my aim, however, to provide a complete outline of all prevailing concepts of the *user/architecture relationship.* By selecting three specific concepts I will illustrate a problem which can be found in the majority of these notions. I will begin by explaining why it is a *user* rather than an observer, owner, consumer, or inhabitant of architecture we need to think of when we talk about the relationship between human and architecture.

This view of a relationship is rather modern and fresh in architectural theory, since the first concepts concerning themselves with the relation between a *user* and architecture are to be found in *Modernism*. Therefore, I will start by introducing the modern *user* debate which defines the *user* as an essentially passive element combined with aspects of *functionalism*. The *user* defined as somebody who communicates with the architectural environment is the second idea I will discuss. Based on the concepts of the *linguistic turn* this definition of the *user/architecture relationship* continues to have great influence on architectural theory, defining architecture as a medium that communicates information. Alongside the theories of *structuralism, poststructuralism,* or *deconstructivism*, linguistic concepts within architecture can be found in the ideas of *critical architecture.*[12] This frame of reference has found itself under scrutiny in recent years, in particular its self-referential attitude ignoring life[13] as a major element within architecture. Living, using, participating, and introducing *performativity* have been responses to *critical architecture*, validating the *user* as a living entity. The *postcritical* concept of *performativity* is the third concept of the *user/architecture relationship* I will turn to. The *user* is defined as holding a strong relationship with

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12   Fischer, O. W.(2005), *Critical, Post-Critical, Projective,* Archplus 174, *OMA Pro-jekte,* ARCH+ Verlag, Aachen, p. 92.

13   Cf. GAM.03, *Architecture meets Life*, Springer-Verlag, Wien.

the respective architectural environment, influenced by factors such as *atmosphere, ambiance, presence, participation,* or *performativity.*

Again the perspective comes from an architectural viewpoint, neglecting one important aspect. Reflecting on architecture means reflecting on an object, which is a subjective reflection on an object. Every subject/object consideration unequivocally leads to an *epistemological* observation. An *epistemological* observation which only investigates the outer environment and neglects the observing system is out-dated. A current major *epistemological* goal that science is devoting energy to is the phenomenon of *consciousness.* The *science of consciousness* already utilizes models of human consciousness which provide fascinating insights into the *subject/ object relationship.* These models shed a different type of light on the *user/architecture relationship*, portraying architecture as a profoundly subjective product of human perception. This leads me to extend my categories of the *passive*, the *communicative*, and the *partaking user* and originate the *conscious user* in my endeavour to describe the *user/architecture relationship.*

2.1   Why the *User*?

Taking a closer look at the meaning of architectural space it becomes apparent that space is not an entity removed from the subject contained (and its life). Particularly when we refer to lived-in space we must add man as the *user* to the concept of mere constructed space (considering of room definitions, materials etc.), as well as his way of using space. In order to obtain a more complex understanding of space the meaning of space is thus determined by its use. 'The physical is only brought to life through its usage.'[14] Architecture without life - architecture that is not needed – has no meaning, or at least not yet. It acquires its meaning through its *user*.[15]

Talking about a relationship between *human* and *architecture* you find a great variety of different assumptions. Generally speaking the *human/architecture relationship* indicates political, sociological, or proportional relevance.

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14   Lerup, L.(1986), Das Unfertige bauen. Architektur und das menschliche Handeln, Vieweg Verlag, Braunschweig, p. 101.

15   Deusser A. &, Friedrich K.(2006), Geplante Unbestimmtheit, Zur Architektur in ungewohnter (Not-) Lösung, Planned Non-Specificity, On Architecture Solutions to Unfamiliasr Problems, published in GAM.03, Architecture meets Life, Springer-Verlag, Wien, p. 112.

It is therefore important to define the multifaceted expression *human/architecture relationship* more precisely. Both the term *human* and the term *architecture* offer a variety of different significations. The word *human,* for instance, can represent a customer, a receiver, a user, an inhabitant, an occupier, or a passenger. Every signification of the term *human* will indicate a different relation to *architecture* and thus a different way in which the architect conceives his design.

The word *architecture* offers an array of different meanings. This ranges from the occupational field of architects and a description of the creations by architects, to the scientific debate about buildings and architecturally produced space.[16] Architecture can be a subject, an exertion, or a certain type of object and/or space. In his book *Actions of Architecture, Architects and Creative Users* Jonathan Hill considers each of these definitions, but settles his focus on one claim: Hill states that the unifying essence of architecture lies in its property as a type of object and space which is *used.* The term *used* includes the full range of ways in which buildings and cities are experienced, such as habitation, distraction, and appropriation.[17] According to Hill, a space or object qualifies as architecture, if it is usually experienced in ways associated with buildings and cities. He writes:

'… the experience of the building is a reference point to compare architecture to the experience of other objects and spaces. But even a building is not architecture, if an experience primarily associated with another discipline but part of the experience of buildings and cities, such as contemplation, dominates other types of *use*, the less a building is architecture. However, an object or space not usually considered to be architecture, such as an artwork, is architecture if the experience of it is similar to that usually expected of a building.'[18]

Relating to Hill's definition of the term *architecture*[19]*,* a space or an object is *architecture* only in relation to the experience by a *user*. His definition states that the relationship between a *human* and *architecture* actually proves to be a relationship between a *user* and *architecture*. Central to Jonathan Hill's idea we find that architecture is made by *use* and by design.

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16   Hill, J.(2003), Actions of Architecture, Architects and Creative Users, Routledge, London, p. 2.

17   Hill, J.(2003), p. 2.

18   Hill, J.(2003), p. 3.

19   Hill: 'Drawing on the work of a wide range of architects, artists, and writers, it considers the relations between the architect and the user, which it compares to the relations between the artist and viewer and the author and reader.' Hill, J.(2003), p. 2.

The connotations affiliated with the term *user* hold strong disadvantages, as the user is always an unknown person and therefore in this context an abstraction without *phenomenological* identity. According to Adrian Forty, the *user* does not tolerate attempts to be given particularity: 'as soon as a *user* starts to take on the identity of a person, of specific occupation, class or gender, inhabiting a particular piece of historical time, it begins to collapse as a category.'[20] Forty deduces negative connotations of the term *user* from Henri Lefebvre. Meriting the term is the fact that discussions of people's inhabitation of a building, while suppressing all the differences defined by backgrounds, can be pursued free of circumstantial influence. By way of abstraction describing inhabitants simply as *users* gives them a homogenous unity. Forty quotes a passage from Lefebvre's *The Production of Space,* where Lefebvre states his suspicion about the *user*. Lefebvre writes: 'the word *user* has something vague – and vaguely suspect – about it. *User of what?* one tends to wonder. … The *user's* space is lived – not represented (or conceived)' [21] According to Forty, Lefebvre's remarks from 1974 are among the earliest attacks on the term *user*. In spite of this Lefebvre saw the expressions of *use* and *user* by no means as exclusively negative concepts – indeed Lefebvre's ultimate desire was to see *users* regain the means to appropriate space and make it their own. He was, as he himself put it, 'For appropriation and for use, … and against exchange and domination.'[22] *Use* is what would unify spatial practice against all the forces that dispersed it:' *use* corresponds to a unity and collaboration between the very factors that such dogmatisms insists on dissociating'[23]

However, the term *user* contains another dissatisfying point, which is the unsatisfactory way of characterizing the relation people have with works of architecture: no one would talk about *using* a sculpture, yet for architecture there remains to exist no better alternative. Hill however reinstated the word, 'as a more appropriate term… than either occupant, occupier or inhabitant because it also implies both positive action and the potential of misuse'[24]

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20   Forty, A.,(2000), *Words and Buildings, A Vocabulary of Modern Architecture*, Thames & Hudson, London, p. 318.

21   Lefebvre, H.(1991), *The Production of Space,* English Translation by Donald Nicholson-Smith, Blackwell Publishing Ltd., Oxford, p. 362.

22   Lefebvre, H.(1991), p. 368.

23   Lefebvre, H.(1991), p. 369.

24   Hill, J.(1998), *The Illegal Architect*, Black Dog, London, p. 3.

2.2   The Passive User

According to Adrian Forty, the *user* was one of the last terms to appear in the canon of modernist discourse. Before 1950 the term *user* was not part of the ongoing architectural debate. The term started to gain influence in the late 1950s and 1960s, its purpose during the *modernist* era was different to the purpose it has served since the 1990s.[25]

In modernistic discourse concepts of the *user* appeared more and more to be essential; hence the duality of a building and a *user* was clarified as a *relationship*; the development of this duality appeared to gain importance. The relationship was, however, accompanied by a rather pronounced hierarchy between the *architect* and the *user*, defining the *user* as a necessary evil. This hierarchy was communicated by the architects of the *modernist* movement and a degree of disregard. As Riklef Rambow and Jörg Seifert state in their article *Lackschäden und Krähenfüße*[26], *modernist* concepts disregard the presence of a *user*. To underpin the problematic absence of the *user* within *modernist* discourse Rambow and   refer to an anecdote, which is retold not without argument concerning Le Corbusier's intent. They write: 'One evening, water was dripping into the lounge at Villa Savoye. A leaky roof on Saturday. The man of the house summons the architect; site manager and contractor to come too. On the floor: a puddle. Clueless faces search for enlightenment from the architect. L-C asks for a sheet of writing paper, sits down in the corner of the room, then returns with his answer. He puts a carefully folded paper boat on the tiny pond, clicks it with his finger and says 'Voilà!', then leaves.'[27]

Rambow and Seifert illustrate the obvious disregard of the user within the concepts of Modernism by exposing architecture's self-image as 'construction art'. According to Rambow and Seifert, this is a fundamental reason for the purported division between design and use.[28]

A similar position is adopted by Reyner Banham, discussing his relationship with *Modernism* and its architects in the introduction to *Age of the Masters*, 'I had the good luck to meet them all – Le Corbusier, Frank Lloyd Wright, Walter Gropius, Richard Neutra, Mies van der Rohe – and for me, as for three generations of architects, they were father-figures who commanded awe and suspicion, affection,

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25   Forty, A.(2000), p. 320.

26   Rambow, R. & Seifert, J. (2006), *Lackschäden und Krähenfüße, Painting Damage and Whiskering*,
     in GAM.03, *Architecture meets Life*, Springer-Verlag, Wien, p. 11.

27   Rambow, R. & Seifert, J. (2006), p. 11.

28   Rambow, R. & Seifert, J. (2006), p. 12.

respect and the normal pains of the generation gap.'[29]

To Jonathan Hill it is rare to find credence in the moral authority of the contemporary architect equivalent to that expressed in *Modernism* and *Age of the Masters,* but the hierarchy of *architect* and *user* is evident in the discourse pursued by architects, even if it is expressed with less conviction.[30] 'The related ideas maintain this hierarchy. The first, the denial of the user, assumes that the building need not be occupied for it to be recognized as architecture and the second, the control of the *user*, attributes to the user forms of behaviour acceptable to the architect. To imply that they can predict use, architects promote models of experience that suggest a manageable and *passive user*, unable to transform use, space and meaning.'[31]

To Hill the *passive user*, as he calls the *user* in the age of *Modernism*, accommodates form and behaviour and is based on the principal concern of functionalist theory.[32]

Functionalist theory, Hill continues, first became important to architects in the nineteenth century. Referring to the architect Durand, Alberto Pérez-Gómez writes, 'The architect's only concern should be … the most convenient and economical "disposition". Here is the direct precedent of twentieth-century functionalism… The architecture of the Industrial Revolution owed to Durand the first coherent articulation of its principles and intentions'[33]

Following this notion Hannes Meyer proposed an organizational, non-aesthetic role for buildings, 'All these things are the product of one formula: function time economics. So none of these things are works of art. Building is not an aesthetic process.'[34] In conclusion, Ligo writes that, 'the idea of absolute functionalism' became 'a synonym for "modern architecture"'.[35]

According to Hill, barring a few exceptions such as Le Corbusier's Le Modulor, the early twentieth-century modernists ignored visual references to the body; instead

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29 Banham, R.(1975), *Age of the Masters: A Personal View of Modern Architecture*, Architectural Press, London, p. 3, in Hill, J.(2003), p. 10.

30 In chapter 6 - *Architectural Relevance* - I will pick up on this hierarchy again and compare the relationship between architecture and user with a relationship of a master and his servant.

31 Hill, J.(2003), p. 11.

32 Hill, J.(2003), p. 11.

33 Pérez-Gómez, A.(1983), *Architecture and the Crisis of Modern Science,* MIT Press, Cambridge (Mass.), p. 302-311, in Hill, J.(2003), p. 12.

34 Schnaidt, C.(1965), *Hannes Meyer: Buildings, Projects and Writings,* Arthur Niggli, Teufen, p. 95

35 Ligo, L.(1984), The Concept of Function in Twentieth-Century Architectural Criticism, UMI Press, Ann Arbor, Michigan, p. 12.

< **4   Le Corbusier with the abbot of
    Saint-Marie de la Tourette**
    Photogroph: unknown

they focused on the body's action(s).[36] It was *Taylorism* and *Fordism* that influenced architecture in the early twentieth century. The *user* of *Taylorism* - within the concept of *Functionalism* - is passive and has constant, yet 'universal', needs. The *passive user* learns to operate space in the same way in which a technician learns to operate a machine – the 'correct' way. Le Corbusier's phrase, 'a machine for living in', is only accurate of *functionalist* sensibilities if the human is a component of the machine; the human is not seen as a servant of the machine, neither is the machine a servant of the human.[37]

Henri Lefebvre writes that, 'Functionalism stresses function to the point where, because each function has a specially assigned place within dominated space, the very possibility of multifunctionality is eliminated.'[38] It is common for architects to describe a building as a sequence of emotive spatial experiences shared by all users. But users are, according to Hill, far from being uniform and the experience of the user is unlikely to conform to that of the architect.[39]

Sometimes the user's actions can be measured, for example in a factory. Although not an everyday occurrence, the user can be equivalent to an actor, as the scenario of a university graduation ceremony illustrates. It is also possible to experience a building in circumstances similar to the contemplation of art, for example when visiting a famous building. Each of these model situations defines the user as passive and offers a limited understanding of the experience of a building.

Rob Imrie writes that architects commonly ignore bodily diversity, because they conceive the body as a machine and consequently as passive. He notes that such a conception is not particular to architects, it is equally evident in western science and medicine. Irmie writes: 'These conceptions of the body have their root in the Post-Galilean view, which conceives of the physical body as a machine and subject of mechanical law. The body, in this view, is little more than an object with fix, measurable, parts; it is neutered and neutral, that is, without sex, gender, race, or physical difference. It is residual and subordinate to the mind, or that realm of experience that is characterized by what the body is not; such as self, thought, and reason.'[40]

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36   Hill, J.(2003), p. 12.
37   Le Corbusier (1927), *Towards a New Architecture,* Rodker, London p. 10, in Hill, J.(2003), p. 12.
38   Lefebvre, H.(1991), p. 369.
39   Hill, J.(2003), p. 18.
40   Imrie, R.(not published), *Architects' Conception of the Human Body – Draft for Society and Space*, p. 3, in Hill, J.(2003), p. 24.
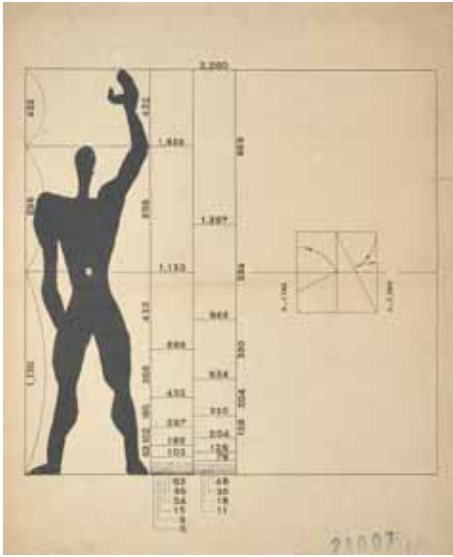
5   Le Corbusiers 'the modulor', 1945
Photograph: FLC/Bildkunst

6   LiMa, Housing by Hertzberger, H.
Berlin

Lefebvre argues that the practice of architects is but one element in the abstraction of space and its user, 'the dominant tendency fragments space and cuts it up into pieces. Specializations divide space among them an act upon its truncated parts, setting up mental barriers and practico-social frontiers. Thus architects are assigned architectural space as their (private) property, economists come into possession of economic space, geographers get their own place in the sun, and so on.'[41]
The space assigned to architects is the space of the dominant mode of production and hence the space of capitalism.[42] Adrian Forty writes, 'For Lefebvre the capitalist domination of space, both by imposing functional categories upon it physically, and by imposing an abstract schema through which the mind perceived space, was one of capitalism's most innovated acts'[43]

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41   Lefebvre, H.(1991), p. 89.
42   Lefebvre, H.(1991), p. 360.
43   Forty, A.(2000), p. 9.

Jonathan Hill continues along this notion, proposing different types of users, the *reactive user* and the *creative user*. According to Hill, a number of individual architects recognized the influential role played by the *user* in the formulation of *architecture*. Though *functionalism* is no longer the dominant theory in architecture, its history continues to cast a long shadow over architectural design. *Functionalism* poses a dilemma even for those who reject it - how can an architect propose a design strategy that refers to use without being deterministic?[44]

In the late sixties of the last century an architectural movement picked up this question, trying to bridge the gap between the particular and the general in the process of designing architecture. This group circling around Nikolas Negroponte used the emergence of computer technology to evoke change in the *functionalistic user/architecture relationship.*[45] The general aim of this architectural development was, in an emancipatory sense, the activation of the *user's* possibilities for participation. By integrated them into the architectural environment, new computer systems were meant to enable the *user* to communicate with the built environment.[46]

A similar view on the emancipatory power of *use,* as opposed to functional determinism, is to be found from the 1960s onwards in the writing of the Dutch architect Herman Hertzberger.[47] *User* is a recurrent term in Hertzberger's articles and it is clear that he sees the purpose of architecture as to enable '*users* (to) become inhabitants'[48], to create for, 'the user … the freedom to decide for themselves how they want to use each part, each space'[49]. The measure of an architect's success for Hertzberger is the way spaces are used, the diversity of activities which they attract, and the opportunities they provide for creative reinterpretation. Hertzberger's analogy for describing this process is language. 'The relation between a collective given and individual interpretation as it exists between form and usage as well as the experience thereof may be compared to the relation between language and speech.'[50]

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44   Hill, J.(2003), p. 30.
45   Negroponte, N.(1973), *The Architecture Machine*, The MIT Press, Cambridge Massachusetts, p. 3.
46   I will explore deepen on this issue in the last chapter of this doctoral dissertation, since the
       Nicolas Negroponte's concept of an responsive architecture draws on the idea of giving attributing architecture
       elements of subjectivity.
47   Forty, A.(2000), p. 320.
48   Hertzberger, H.(1991) *Lessons for students in Architecture*, 010 Publishers, Rotterdam, p. 28.
49   Hertzberger, H. (1991), p. 171.
50   Forty, A.(2000), p. 92.

7 **The Literal Space, exhibition curated by Hörl, A., Plank, C.**
Experimental Space Design Studio, 2004
Frisch, A., Lafite, A., Marte, B., Rapp, Ch., Haid, E., Walch, U.

2.3   Communicative User

Both concepts - Negroponte's and Hertzberger's - draw on the analogy of architecture and language. Kari Jormakka states that this linguistic analogy was not a diachronic (i.e. historical), but a synchronical (structural) understanding of phenomena.[51] The philosophy of *structuralism* was fashionable in the 1960s and what is known as theory is still very much descendent from *structuralism*, or its mannerist phase *post-structuralism*. Jormakka writes,' A traditional means of conferring meaning to architectural forms is to turn architecture into a code (…) architecture can easily be turned into a code and filled with meaning.'[52] The linguistic analogy of architecture, however, allocates the concept of the *user/architecture relationship* to the *theory of communication*. In this concept the *user* is therefore a *communicative user*.

Hertzberger developed his own understanding of architecture, following in the footsteps of the linguist Ferdinand de Saussure, who differentiated between *language* itself ('langue') and *speech* ('parole'). Language is a collective tool comprised of structure (grammar, syntax), which is interpreted individually through the act of speech.[53] Similarly, architecture can give expression to an objective structure of form, so-called 'archeforms', as interpretations of collective needs, which again provide sufficient room for individual and personal interpretation and can also provide stimuli for *use* and occupancy.[54]

Considering the issue of code within architecture, the *communicative user* reads architecture like a text.[55] According to the philosopher Tomas Maldonado, every sequence of perceptual experience can, in a metaphorical meaning, be called an event of reading.[56] The concept of comparing architecture and text, architecture and writing, architecture and reading, or architecture and language was repeatedly picked up in the 1960s and 1970s.

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51   Jormakka, K.(2001), *Methodology,* not published, p. 35.
52   Jormakka , K.(2001), p. 35.
53   Hetzenberger, H.(1995), *Vom Bauen, Vorlesung über die Architektur*, Aries Verlag, München, p. 88,
      in GAM 03, *Architecture meets Life*, p. 92.
54   Lüchinger, A.(1981), *Strukturalismus in Architektur und Städtebau*, ed. by Jürgen Joedicke, Karl Krämerverlag,
      Stuttgart, p. 64.
55   In a metaphorical meaning, this is a possible way to describe the perceptual connection of
      the *architecture/user relationship*.
56   Maldonado, T.(2007), *Digitale Welt und Gestaltung*, Birkhäuser Verlag AG, Basel – Boston – Berlin, p. 273.

<   **8   The Literal Space, exhibition curated by Hörl, A., Plank, C.**
      Experimental Space Design Studio, 2004
      Ausserlechner, Ch., Bachmann, J., Huber, M., Klettenhammer, M., Scheiber, J.

Under the auspices of the *linguistic turn* the study of nonverbal communication – and in particular the analysis of visual communication – was seen as fundamentally important.[57]

However, the concept of comparing architecture to language dates back beyond the 20th century. Kari Jormakka writes, 'The linguistic analogy of architecture can be dated back at least to the eighteenth century.' To outline his statement, Jormakka quotes Claude-Nicolas Ledoux's declaration that architecture is to masonry as poetry is to *belles-lettres.* To Jormakka it does not seem impossible that the more recent mode for the linguistic analogy is also connected to problems when the task of architecture appears to be in danger of being overtaken by engineers.[58]

In line with the tradition of comparing architecture to language it was inevitable that semiotics would then be extended to architecture as well. In his outline of semiotic methods in architecture Jormakka presents Charles Morris's definition of language as a system of sign; another well-known definition of semiotics and architecture was given by Umberto Eco in his writing *Function and Sign: Semiotics of Architecture.*

'If semiotics, beyond being the science of recognized systems of signs, is really to be a science studying *all* cultural phenomena *as if* they were systems of signs – on the hypothesis that all cultural phenomena *are*, in reality, systems of signs, or that culture can be understood as *communication* – then one of the fields in which it will undoubtedly find itself most challenged is that of architecture.'[59]

Perhaps the most relevant and immediate inspiration for both linguistics and architecture was the work of the aforementioned Swiss linguist Ferdinand de Saussure. In his book *Cour de linguistique* he remarks that a linguistic unit is similar to a determined part of a building in the respect that a 'Doric column, for example, is in a syntagmatic relation to the architrave it supports and in a paradigmatic relation to Ionian, Corinthian, etc columns.'[60]

More recently (1974) structural understanding of the *user/architecture relationship* as nonverbal communication – and in particular the analysis of visual communication – was most notably proposed by Donald Preziosi, one of the foremost semioticians

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57 Preziosi, D.(1979), *Architecture, Language and Meaning,* Mouton Publisher, The Hauge, Paris – New York, p. 1.

58 Jormakka, K.(2001), p. 36.

59 Eco, U.(20021973), *Einführung in die SemiotikFunction and Sign: Semiotics of Architecture*, Publications of the Graduate School of Fine Arts, vol. 2 (University of Pennsylvania: Philadelphia), pp. 131-53 , Fink Verlag, München, p. 295.

60 Jormakka, K.(2001) p. 36.

of architecture. According to Preziosi, the subcellular units of architecture are like the phonemes and morphemes of language, while space-cells (i.e. rooms) are like words, cell-matrices (buildings) are like phrases and structures (neighbourhoods). Jormakka asserts that it has become popular to assume that non-verbal languages, such as architecture, work in the same way as 'verbal' language (parole), the main difference being that the meaning of non-verbal signs is not as well defined or clear as the meaning of words.

Essentially non-verbal signs distinguish between the signifier[61] and the signified, much like signs in language. The signifier (i.e. room) signals the signified (i.e. function). Following Saussurian spirit and dividing the signifier from the signified, this dualistic structure is one of the key issues of *architectural structuralism*. This distinguishing point of view is the main reason for *structuralism's* integration of interpretation into its concepts. Different levels of meaning make it possible to think about an architectural *user* who is able to interpret architecture; if there are no levels of meaning within the presence of an object, interpretation would be pointless; this means that the concept of the *communicative user* is based on the linguistic idea of signs. During the 1960s the linguistic concept of signs influenced not only architectural theory, but also the humanities and philosophy. This intellectual turn is known as the *linguistic turn.*

One figure of prominence in the *linguistic turn* was Ferdinand de Saussure. In his book *Ferdinand de Saussure, Linguistik und Semiologie* Johannes Fehr most notably investigates de Saussure's theoretical heritage. De Saussure's foremost publication is *Cours de linguistique générale*. Due to this publication de Saussure is recognized as the founder of modern linguistics.[62]

Saussure's structural thinking within the linguistic sciences was later established as a new humanistic route by such thinkers as Merleau-Ponty, Lévi-Strauss, Lefebvre, Barthes, Lacan, or Foucault.

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61   Mardy S. Ireland defines a signifier as a unit of something (i.e., a word, gesture), that can carry ambiguous/ multiple meanings (e.g., as U.S. President Bill Clinton once said, "It depends on what the meaning of the word 'is', is") Ireland, Mardy. S. (2003),. *The Art of the Subject: Between Necessary Illusion and Speakable Desire in the Analytic Encounter*, Other Press, 159051033X, p. 13.
Wikipedia: http://en.wikipedia.org/wiki/Sign_(semiotics)#cite_note-definition-1, 15.08.2010.

62   'If any one person is to be called the founder of modern linguistics it is the great Swiss scholar, Ferdinand de Saussure, whose lectures (reconstructed from notes by his students following his death) were published in 1915 as *Cours de linguistic générale.* Many different schools of linguistics can be distinguished at the present time, but they have all been directly or indirectly influenced (in various degrees) by de Saussure's *Cours.'*
Lyons, J.(1968(2001)), *Introduction to theoretical linguistics*, Cambridge University Press, Cambridge, p. 38.

Johannes Fehr, however, notes in the introduction to his book that de Saussure's *cours* was published post-mortem. *Cours* is a reconstruction of de Saussure's lore, primarily based on notes from his three Genevan lectures about general linguistics.[63] Ferdinand de Saussure himself never published a book and it is assumed that he would not have accepted the publication of *Cours*. Johannes Fehr argues that one possible reason for de Saussure's reluctance to publish his work was his doubt of his own grasp of the linguistic question. Johannes Fehr compares, in a very precise way, notes, letters, and original documents by de Saussure with the content of *Cours*, which was in fact published by de Saussure's former students Charles Bally and Albert Sechehaye. The outcome of this comparison is surprising, especially when examining de Saussurse's precise differentiation between words and objects in relation to his concept of signs. According to Fehr, this precise differentiation within the concept of signs, however, cannot be found in *Cours*.

2.3.1   Ferdinand de Saussure

Beside his linguistic field of research Saussure had a second field of interest, the investigation of the *Lied der Nibelungen*[64]. Saussure explored the legend of the *Nibelungen* and their connection to historical figures. Commencing his research Saussure was certain that he could connect characters from the *lay of the Nibelungen* with historically confirmed Helvetian *Burgundians*.
'In Anbetracht der Häufigkeit von Ortsnamen in der Romandie und in Sovoyen, denen man mit mehr oder weniger Wahrscheinlichkeit einen burgundischen Ursprung zuschreiben konnte, war anzunehmen, dass die Burgunder nicht vor dem achten Jahrhundert romanisiert worden waren, und deshalb stellte sich für Saussure die Frage, welchen Anteil das burgundische Helvetion und der Genese und deren Ausbreitung der epischen Legende der *Nibelungen* hatte.'[65]

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63   Fehr, J.(1997*), Ferdinand de Saussure, Linguistik und Semiologie*, Suhrkamp, Frankfurt am Main, p. 18.

64   Lay of the Nibelungen

65   'Given the frequency of place names in Romandie and Sovoyen which can be traced back to Burgundian roots, it is safe to assume that the Burgundians were not Romanized before the eighth century, this led Saussure to wonder to what extent the Burgundian Helvetion influenced the genesis and distribution of the epic legend of the Nibelungen'
Bally, Ch. & Gautier L.(1970), *Recueil des publications scientifiques de Ferdinand de Saussure,* Editions Sonor, Genf, p. 606, in. Fehr, J.(1997), p. 95.

He did not, however, accomplish his task. The traditional legend cannot be relied upon as a truthful report of historical events and this led Saussure to subsume his realization in the term *symbol.* Two duelling commanders, for instance, embody two opposing armies; their fights are symbols for the outcome of a conflict - *aliquid stat pro aliquot.* [66] This is all the more interesting as Saussure pointed out that symbols are not 'stabile', but in a constant state of circulation. Saussure became aware of the fact that the traditional legend solely exists because of its repetitive narration. Saussure continued to conclude that for its repetitive narration alone the *symbol* exists.[67]

Saussure discovered similar circulation in languages. A language is not stable. According to de Saussure, language exists because of its circulation. Therefore, it was necessary to Saussure to differentiate between language itself ('langue') and speech ('parole'); a speaking 'mass' is imperative for the existence of language. Fehr continues that therefore language never exists outside of social relation; the social nature of a language is an inherent attribute.[68]

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66 'Saussure begreift das, wovon in der Legende die Rede ist, zum Beispiel >das Duell zwischen Anführer A und Anführer B< als *Symbol*, insofern dieser einzelne Kampf für das ganze Ergebnis der Schlacht steht'
    (Saussure interprets the episodes told in legends, such as a duel between leader A and leader B, as symbols, where an individual fight stands for die outcome of a battle.),
    Fehr, J.(1997), p. 106.

67 'ein jedes Symbol existiert nur, weil es in die Zirkulation hineingeworfen wurde'
    (every symbol only exists as such, because it was inserted into the continuous circulation (of symbols))
    Fehr, J.(1997), p. 108.

68 '… die Sprache ist sozial oder existiert nicht'
    (...language exists in a social context, or it does not exist at all)
    Fehr, J.(1997), p. 111.

2.3.2   The System of Sign

Saussure assumed that the words of a language are subjected to the same laws as *symbols* and conceived the social nature of language as a circulation of words. In addition to Saussure's theory of *symbols* (of legends), a *symbol*, respectively a word, only exists if it is part of a social mass. According to Fehr, this assumption is a semiological one, since Saussure named this circulation the 'semiological life' of language.

Semiology was of particular importance to Saussure, since the circulating word (parole) is not - contrary to an object - sensuously perceivable. The phoneme is of course sensuously perceivable, but according to Saussure it is impossible that the phoneme itself belongs to language.

In this respect, a material word is, from a linguistic point of view, an abstraction. The word as a concrete article does not belong to linguistic science.[69] A sequence of phonemes is linguistic only if the sequence carries meaning, on its own it is a matter for physiological exploration. Phonemes and words are, as stated by Saussure, only a medium for notion. The classical definition of the sign within semiology is identified as, 'Something that stands for something else.' - *aliquid stat pro aliquo*[70]

Most notable to Saussure's derivation is his development of the duality of the signifier and the signified, because a phoneme is not comparable with an object. Saussure uses this dual definition like an interface to overcome the problem of a missing physical existing object. By following de Saussure's argumentation architecture - as an existing object - does not require this duality (of the signifier and the signified).[71] Architecture does not rely on metaphysical articulation, as its very nature lies in physical properties. Applying this conclusion to the usage of architecture would mean that even if the *user* does not 'know' the intended meaning of the built environment, he is still able to use the environment, since the physical existence of an object (or architecture) is not oblique to its meaning.

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69   Fehr, J. (1997), p. 126.

70   Fehr, J.(1997), p. 127.

71   'Weil die Zeichen in der Sprache so beliebig sind, unterscheidet sich die Sprache von jeder menschlichen sozialen Institution und zweitens entzieht sich die Sprache, wegen ihrer Beliebigkeit ihrer Zeichen jeder vom menschlichen Geist korrigierbaren oder dirigierbaren Regel. Bei den anderen menschlich sozialen Institutionen gewinnt letztlich immer der natürliche Bezug der Dinge oberhand.'

(Because signs in language are so very random, language distinguishes itself from every other human social institution. Language removes itself from every humanly conceivable notion of correction or direction by the mind. Concerning other human social institutions, natural reference to objects prevails.)

Fehr, J.(1997), p. 147.

(You can always walk through a door, even if you do not understand its function.) The natural relation of physical objects and the human socio-cultural institution challenges the representative understanding of signs (objects). However, the origin of this challenge lies not in the socio-cultural usage of signs, but rather in the physicality of an object, since every representation is at first a presentation. In contrast to a word, an object does not tell, but indicates its meaning.[72] Formulating and appreciating a distinction between words and objects prompted my doubting of the concept of comparing the relationship between *user* and *architecture* to language. The debate now has to introduce the question if a theory of communication is an adequate way of a describing the *user/architecture relationship*; if architecture simply indicates its meaning we need to speak of a theory of perception, or of a theory of appearance, rather than of a theory of communication.[73]

The theory of communication is a concept frequently utilized to articulate the relation between meaning and architecture. Taking *semiotics* into account, Umberto Eco applies his general semiotic theory to the question of architecture and the built environment. 'Architecture', Eco notes, 'presents a special case as it is often intended to be primarily functional and not to be communicative. Nonetheless, architecture does function as a form of mass communication.'[74] Eco bases his *semiotics* on theories of codes. He notes that architecture communicates its function through form,[75] translating form into the signifier and function into the signified. This structural understanding has in the past led architects to deconstruct form and function in the architectural environment. *Deconstructivism* separates form from its meaning. The *user*, who is now not able to understand the function of an architectural environment, first has to interpret the meaning of the architecture he finds himself in. Interpretation by the *user*, however, offers a more individual expression of usage and architectural usage is relieved of its hierarchical structure; function follows individual interpretation.

72   Krämer, S.(2004) *Performativität und Medialität*, Wilhelm Fink Verlag, München, p. 20.
73   Krämer, S.(2004), p. 20.
74   Leach, N.(1997), *Rethinking architecture: a reader in cultural theory*, Routledge, London, p. 181.
75   Cf. Eco, U.(2002), *Einführung in die Semiotik* , Fink Verlag, München.

2.3.3   Bernard Tschumi

According to the architect Silke Ötsch, 'similar ideas were taken up by architects and architectural theorists, who (…) give particular weight to spatial practices and the appropriation of space by the *user*. Bernard Tschumi's work illustrates this particularly well.'[76] In his anthology *Architecture and Disjunction,* Tschumi lists different design methods, which enable architects to create space that promotes the subversive appropriation of buildings by their *user*. In a theoretical context, Silke Ötsch sees Tschumi's reference to ' s' as the destructuring and questioning of the system of order, work at the limits of the discipline, decontextualization and overlaying of special programs, and the creation of turning points.[77] In Tschumi's sense, disjunctions are constant mechanical operations that result from the collusion of the program with architectural elements and that change architecture on an ongoing basis. For architects 'destructuring' means moving away from formal composition, i.e. a radical decoupling of traditional correlations of space and action or form and function.[78] The decoupling of space and action is only possible if you think of duality, the duality between forms and their meaning (i.e. function). The *user* needs to interpret form, 'reading' its function. If the traditional duality of form and function was decoupled by the architect, the *user* would need to reinterpret the form; this would refer architecture to the autonomy of language. 'Today we have entered the age of deregulation, where control takes place outside of society, as in those computer programs that feed on one another endlessly in a form of autonomy, recalling the autonomy of language described by Michel Foucault'[79].

In her article, '*Of overestimated Users and Underestimated Strategists',* Silke Ötsch evaluates the subversive potential of practices, considering the work of Bernard Tschumi. [80] Drawing on Michel de Certeau's work '*The Practice of Everyday Life*'[81]*,* Ötsch questions the influence of strategic designs on the user which are executed from a position of power.

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76   Ötsch, S.(2006), *Von überschätzten NutzerInnen und unterschätzten StrategInnen, Of Overestimated Users and Underestimated Strategists*, in GAM.03, *Architecture meets Life*, Springer-Verlag, Wien, p. 188.

77   Ötsch, S.(2006), p. 188.

78   Tschumi, B.(1996), *Architecture and Disjunction,* MIT Press, Cambridge, p. 207.

79   Tschumi, B.(1996), p. 224.

80   Ötsch, S.(2006), p. 187.

81   de Certeau, M.(1988), *The Practice of Everyday Life,* University of California Press, Berkeley, p. 96, in Ötsch, S.(2006), p. 187.

<   9   Lerner Student Center
Photograph: GAM.03*, Architecture meets life,* p. 186.

De Certeau argues that (…) the influence of spatial practices on the determining conditions of social life will be particularly strong. In his book *Architecture and Disjunction* Bernard Tschumi claims - much like de Certeau - that usage is controlled in a decentral manner. For Tschumi, his theory finds proof in that in a traditional symbolic relation things have meanings[82]. Modern *functionality* however, the synthesis of form and function, which has tried to turn the whole world into a homogeneous signifier, objectified as an element of signification, was destined to be attacked. Tschumi writes: 'Architecture is constantly subject to reinterpretation. In no way can architecture today claim permanence of meaning. Churches are turned into movie houses, banks into yuppoe restaurants, hat factories into artists' studios, subway tunnels into nightclubs, and sometimes nightclubs into churches. The supposed cause-and-effect relationship between function and form (form follows function) is forever condemned the day function becomes almost as transient as those magazines and mass media images in which architecture now appears as such a fashionable object.'[83] According to Tschumi, there is no cause-and-effect relationship between an architectural sign and its possible interpretation. The (de)regulation of architecture is thus defined via the *performative* practice that generates it.[84]

At this point I will not address Tschumi's practical work in detail, but rather reflect on his definition of the *user*. I support Silke Ötsch in her opinion that Bernard Tschumi's concept of the *user* is problematic from a bifocal perspective. Tschumi's criticism of *determinism*, or the cause-and-effect relationship, culminates in his concept of *disjunction*. The deterministic strategy of modernist design cannot and did not stop the *user* from changing the usage of buildings. Tschumi concludes that form and function and form and meaning presently no longer exemplify regulated entities, but instable and ephemeral representations.[85] He argues, 'In the Middle Ages, society was self-regulated, auto-regulated. Regulation took place in its centre The prince of the city was the ruler; there was a direct cause-and-effect relationship between rulers and everyday life. … In the industrial era, societies became artificially regulated. … Regulation was not at the centre anymore but at the periphery. …

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82   Tschumi refers to the theories of Ferdinand de Saussure:
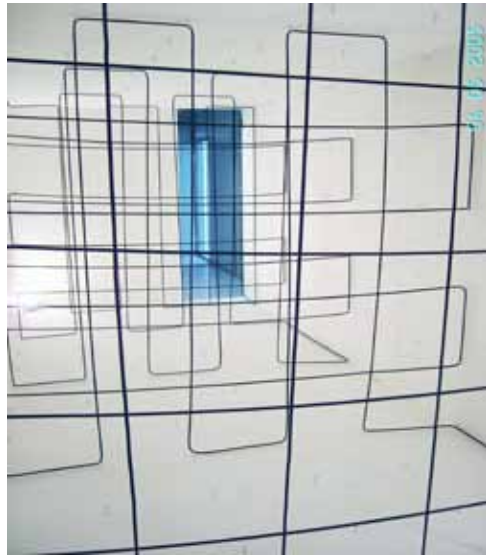   ' …Here, bear with me if I go through a rather tedious but quick recapitulation of '*meaning*' in architecture – without entering into detailed discussion of Ferdinand de Saussure or Émile Benveniste. Ethnologists tell us that, in traditional symbolic relations, things have meanings'
     Tschumi, B. (1996), p. 219.
83   Tschumi, B.(1996), p 216.
84   Ötsch, S.(2006), p. 188.
85   Tschumi, B.(1996), p. 221.

10 The Literal Space
Experimental Space Design Studio,2004

11 The Literal Space
Experimental Space Design Studio,2004

Function, form, and meaning ceased to have any relationship to one another. Today we have entered the age of deregulation, where control takes place outside of society, as in those computer programs that feed on one another endlessly in a form of autonomy, recalling the autonomy of language described by Michel Foucault'[86] Tschumi refers to the autonomy of language. However, flux within architectural function can be related to the cultural circulation of meaning which de Saussure alleged to every symbol. As mentioned before, language never exists outside of a social relation; the social nature of a language is an inherent attribute. This concept is related to Tschumi's idea that architecture is defined via the *performative* practice that it generates.[87] The question of the *duality* of meaning and architectural form is now unsettled, since *instability* and *ephemerality* are part of cultural circulation.[88]

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86   Tschumi, B.(1996), p. 225.

87   Ötsch S.(2006), p. 188.

88   Tschumi argues that today we face a continuously-changing environment. The speed of this ever changing environment is increasing, since we continuously use existing architectural structures in different ways. However, cultural circulation increased speed.

The concept of *deconstruction*, however, excludes the new form from cultural circulation. The *user* has to reinterpret the meaning of the architectural environment, but he will do this only once. Thereafter the existing form will again be part of the continuous circulation in the system of signs.

2.3.4 Differentiation

Adrian Forty calls for a general distinction. 'First of all, there is a difference in the world between saying architecture is like a language and saying it is a language. Or to put the point slightly differently, it is one thing to say that architecture has certain things in common with language, for example that it can mediate things apart from what is contained within its own materiality; but it is quite another thing to say that architecture fully conforms the various syntactical or grammatical rules that are found in spoken language.'[89]

In my opinion it is safe to say that the definition of the *architectural user* as one who communicates with the architectural environment is too imprecise a description, accrued as a consequence of the neglected value of perception. This does not mean, however, that we should disregard de Saussure's theories, but only under the condition that we focus on his theory of cultural circulation of meaning.

In de Saussure's notes we can find different considerations, thinking of language as an inexorable movement in time.[90] As mentioned before, to Saussure language is social or else it does not exist. Of equal value is the surmise that each symbol solely exists because of its circulation. This amounts, regardless of the question of communication or perception, to the inference that the meaning of architecture as part of cultural circulation in time always refers to an older pre-existing understanding and designation.

Kari Jormakka most notably writes, 'that the notion of language as primarily constitutive categorization rather than the communication of referential meanings is directly applicable to a study of architecture. In addition to language, architecture is one of many activities that contribute to the ontological constitution of the world, reproduce and reconfirm it time and again. Yet architecture does not simply carry meaning linguistically, i.e. through the meaningful, proportionally ordered assembly of its constituent parts. Instead the physical, material and spatial qualities

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89   Forty, A.(2000), p. 319.
90   Cf. Fehr, J.(1997), p. 94.

experienced sequentially as one moves through an architecture enforces a bodily understanding on a wholly different level than the cognition and interpretation of signs and symbols.'[91]

Overall it appears that the definition of the *architecture/user relationship* has changed in the course of the historical development of architectural theory. As far as *Modernism* is concerned, the *user* himself does not actively participate. In the 1960s the *user's* position gained importance, as various academically minded architects drew attention to this specific interaction.[92] Peter Eisenman in particular, who Charles Jencks characterized as the 'Le Corbusier of the late twentieth century, as far as the formulation of theories is concerned',[93] promulgated concepts integrating the *(communicative) user*. This approach resulted in so-called *critical architecture*.

91   Jormakka, K.(1995), *Heimlich Manœuvers: Ritual in Architectural Form,* HAB Weimar – Universität Redaktion
      & Verlag, Weimar, p. 22.
92   Jencks, Ch. ed.(1997) See *Theories and Manifestoes of the contemporary architecture,* Academy Edition,
      London, p. 8.
93   Jencks, Ch.(1997), p. 8.

2.4   The Partaking User

In the course of the last years, *critical architecture,* with its definition of a *communicative user* as well as the *modernistic* concept of the *user,* has been increasingly challenged and questioned.
Rambow's and Seifert's article *Lackschäden und Krähenfüße,* however, triggered further discourse on the connection between *architecture* and *user.* Criticism of disregard for the *user* in Modernism is further extended to the *critical architecture* debate, as *critical architecture* is accused of neglecting life in its autonomous debate. [94] Ulrich Schwarz states that the connection between life and architecture seems to require some explanation, even if we were to translate life simply as usage, utilization, and appropriation.[95] The socio-politically orientated faction of the twentieth-century architecture avant-garde refused to concede any elbowroom to the inhabitants of their buildings, i.e. to 'life'.
'A 2006 issue of the architectural magazine *archplus, Die Produktion von Präsenz,* outlines the ongoing critique of *critical architecture* and follows the *Projective Landscape Stylos Conference,* which aimed at compiling the various and diverse positions within the discussion, bringing together representatives from Europe and the United States. A debate on *post-critical architecture* emerged in the late 1990s, evolving concepts described as *new pragmatism* or *post-Utopian pragmatism*; this has been reactivated most notably in the essay *Notes around the Doppler Effect and Other Moods of Modernism* by Robert Somol and Sarah Whiting. Somol and Whiting propose the idea of a 'projective' architecture arguing against the autonomous discourse of *critical architecture.*
'The Doppler-effect shifts the conception of the disciplinarity of architecture as being autonomous towards an understanding of disciplinarity as performance and practice. (…) Rather than looking back or criticising the status quo, the Doppler-effect which is directed ahead projects alternative (not necessarily oppositional) dispositions and scenarios.'[96] The self-reverent and autonomous character of *critical architecture* has absorbed and exhausted the discipline as a result of an architecture that does not refer to important contemporary issues anymore.'[97]

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94   Rambow, R. & Seifert, J. (2006), p. 11.

95   Schwarz, U.(2006), *GAM.03 – Architecture Meets Life,* Springer-Verlag, Wien, 2006, p. 3.

96   Somol, Robert R. & Whiting, SarahS.(2006), *Bemerkungen zum Doppler-Effekt und anderen Stimmungen der Moderne*, in, Archplus 178, *Die Produktion von Präsenz*, ARCH+ Verlag GmbH, Aachen, p. 83-87.

97   Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006), *Architecture designs presence,* Application for funding of the translational research project, p 1-2.

<   12   Japanese Zen Garden, Kyoto
Photograph: Plank, C.

'In consequence architecture looses the ability to produce alternative ways of living, reduced to its own criticality and thus refers to predefined ways of reading and interpreting: 'Look at me! I am critical! Read me!'

Criticism continues by claiming that 'critical' theory has demoted the need for theory in general. Positions now occur which anticipate the end of theory, which is in the end provoked by those who once invented architectural theory as an autonomous discipline. The post critical debate contributes directly to the relation between architecture, critique, and society, reconsidering the capacity of architecture to operate actively within society. The discussion indicates a shift of opinion within architectural theory and practice from concepts based on *user*-distant interpretations, to an architecture that is moving closer towards reality, everyday life, the body, the *user*; an architecture that is perceived much more through sensual cognition than critical thought, an architecture that addresses the issue of perception at large. Overall, there exists notable criticism on the disappearance of the dimension of perception.'[98]

2.4.1   Presence

'In 2004, Hans Ulrich Gumbrecht published a book called *Production of Presence, What Meaning Cannot Convey,* in which he anticipates '*Weltverlust*' as a consequence of the neglected value of perception in our modern culture. The process of the disappearance of the somatic and spatial dimensions is - apart from the dominating metaphysical concept - largely influenced by new media technologies and paradoxically provokes an intense desire for *presence*.'[99] For Gumbrecht, the term *presence* signifies a special way of experience, evoked through different spatial conditions. 'What in contrast we miss in a world so saturated with meaning, and what therefore turns into a primary object of (not fully conscious) desire in our culture, are – very unsurprisingly by now, in the context of my book, I admit (and I hope) – phenomena and impression of presence.'[100]

According to Gumbrecht, the term *presence* does not refer (at least does not primarily) to a temporal, but rather to a spatial relationship of the world and its objects. He states that something that is *present* is intended to be tangible for

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98   Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006),p 2-3.

99   Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006),p 3.

100 Gumbrecht, H. U.(2004), *Production of Space, What Meaning Cannot Convey*, Standford University Press, Stanford, p. 105.

human hands, which implies that conversely it can have an immediate impact on human bodies.[101] The concept of presence not only evokes a record of the things surrounding us solely by means of hermeneutics, which are the interpretation of methods concerning significance and importance, but rather in terms of sensual perception. Simultaneously this notion also refers to criticism towards the dominating centralisation of interpretation in the humanities.[102] (Accumulation of criticism of a culture branded by meaningful allocation of purpose, interpretation, critical theories) Where once there existed positions within the philosophical debate which questioned the dominant position held by hermeneutics and the accompanying dichotomy of subject and object (Heidegger, Luhman, Habermas), one can now find considerable alienation within the media-debate as well as the study of literature towards this exclusively meaning-oriented characterization of the world, be it only by a minority. Criticism is directed mainly towards an emerging process of estrangement of the objects inhabiting this world as a consequence of a singularly metaphysical viewpoint, as well as growing influence and repercussion by the media on our environment. Gumbrecht describes this process of the disappearance of physical and spatial dimensions as a yearning for presence.[103] He does not, however, question the meaning of interpretation and does not understand his writing as a pamphlet opposing ideas and sense, or even comprehension and interpretation, it does also not disapprove of the Cartesian inheritance of our culture, he rather formulates the hypothesis that 'the Cartesian dimension does not cover the complexities of our existence.'[104]

Gumbrecht makes it plausible that the different aspects of 'meaning culture' and aspects of 'present culture' are due to the fact that they both operate with different concepts of what a sign must be. 'Of course, a sign in a meaning culture needs to have precisely the metaphysical structure of Ferdinand de Saussure contends is the universal condition of the sign: it is the coupling of "purely material" signifier with a purely spiritual signified (or meaning).'[105] Gumbrecht adds that in a 'meaning culture', the 'purely material' signifier ceases to be an object of attention as soon as its 'underlying' influence has been identified. Of interest for 'present culture' is a much less familiar form of the sign, where a sign is a coupling of a substance (something that requires space) and a form (something that makes it possible for

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101   Gumbrecht, H. U.(2004), User's Manual, p. xiii.
102   Cf. Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006).
103   Cf. Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006).
104   Gumbrecht, H. U.(2004), p. 141.
105   Gumbrecht, H. U.(2004), p. 81.

the substance to be perceived). This Aristotelian sign-concept avoids a distinction between the purely spiritual and the purely material in favour of the two sides of what is brought together in a sign. Consequently, Gumbrecht writes, there is no side in this sign-concept that will vanish once a meaning is secured.[106]

‚In accordance with Hans Ulrich Gumbrecht's argumentation, in her essay *Affekt und Begehren oder: Was Macht den Affekt so begehrenswert?* Marie Luise Angerer constitutes that the emerging reappearance of the sensory is in the first place provoked by the digital revolution. A shift from language to affects and emotions occurs; 'linguistic turn' and 'pictorial turn' are now followed by *somatic and emotional turn*.[107]'[108]
Awareness to focus more on sensual perception, or *aesthesis,* was picked up by the humanities, the social sciences, but also the arts. In her article *Against Interpretation* Susan Sontag most notably attacks the 'meaning culture' and interpretation. 'What is important now is to recover senses. We must learn to see more, to hear more, to feel more. Our task is not to find the maximum amount of content in our work or art, much less to squeeze more content out of the work than is already there. Our task is to cut back content so that we can see the thing at all. The aim of all commentary an art now should be to make works if art – and, by analogy, our own experience – more rather tan less, real to us. The function of criticism should be to show how it is what it is, even that it is what it is, rather than show what it means."[109]

2.4.2   The Corporalized Performativity

'Ongoing research projects, such as *Kulturen des Performativen* as well as the *FWF* research project *Philosophy on Stage* and an increasing number of publications on the matter of performance, especially in relation to media studies,[110] emphasize the value of this issue within cultural studies. In this regard, the term performance or performativity gains in importance.'[111]
The origin of the term performativiy is again to be found in the linguistic sciences.

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106 Gumbrecht, H. U.(2004), p. 81.

107 Angerer, M-L.(2006), *Affekt und Begehren oder: Was macht den Affekt so begehrenswert?*, e-Journal Philosophie der Psychologie.

108 Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006),p 3.

109 Sontag, S.(1964), *Against Interpretation*, http://www.coldbacon.com/writing/sontag-againstinterpretation. html. 15.08.2010

110 Cf. Krämer, S.(2004).

111 Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006),p 3.

John Langshaw Austin was the first to talk about the linguistic feature he called performativity, he stated that language does not only describes the world, but even – within certain preconditioned circumstances – generates conditions of the world. The act of speech, utterances such as dismissals, baptisms, declarations of war, and judgement fulfil exactly that which they mean to. Therefore, according to Austin's theory of performativity, each language offers - aside from the stating of utterances - an operative dimension.[112] Performatives are utterances that do not describe a state of affairs in the way that pictures do. Instead, performatives do something. They may or may not work, but they cannot be true or false. The constative proposition 'There is a boat in the harbour' is true or false, depending on whether there is a boat in the harbour or not; the performative utterance 'I name this boat Elizabeth' cannot be true or false, only more or less successful or 'felicitous' in effecting what its claims. A performative does not have its referent outside of itself, it produces a transformation of a situation, which is co-constituted with the understanding of the conventional understanding of the expression. Hence the performative transformation in principle co-exists with the expression, though it may not be experienced as being co-existent.[113]

At this present time, the term performativity cannot be determined as a linguistic concept. In her article *Was haben Performativität und Medialität mit einander zu tun* Sybille Krämer presents an aspect of performativity which she terms *Korporalisiernde Performativität (corporalized performativity).* According to Krämer, who bases her idea of a *corporalized performativity* on *art performance,* characteristic for *corporalized performativity* is the aspect of event and *presence.* Different from linguistic performativity, which operates with metaphysical structure and the universal condition of the sign, the *corporalized performativity* uses the physical existence of the body.

'In acts of performance the physical – the actors' bodies as well as all sensually visible attributes - no longer remains a sign for an underlying immateriality which simply appears in the materiality of the exhibited performance.'[114]

Sybille Krämer's concept of the *corporalized performativity* implements both, the dimension of *presence* implicating a reawakening experience of the world through our senses, as well as the performative qualities of these sensual experiences. This

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112 Austin, J.(1986), *Performative Äusserungen,* in: *Gesammelte philosophische Aufsätze,* Reclam, Stuttgart, p. 305 -327, in Krämer, S.(2004), p. 14.

113 Jormakka, K.(1995), p 19-29.

114 Krämer, S.(2004), p. 18.

13   Kunsthaus Graz, Night Alien, BIX
Photograph: Universalmuseum Joanneum, Lackner, N.

means that the metaphysical structure is not essential for a performative relation
between an object and its human counterpart. The physical appearance of the object
indicates the object's function (assuming that this object is part of the cultural
circulation).

At this point of the debate I will extend the architectural *user* definition and
introduce the term *performative*. The *performative user* defines the *user* as one who
responds to architecture simply concerning its physical appearance. This definition
already constitutes a part of the ongoing architectural debate, 'even though the term
and the associated idea of a performative architecture is characterized by a variety
of different concepts and as a consequence has not been articulated very clearly
to date. Performative architecture in general implicates an architecture that is not
autonomous, abolishes the inflexible sender-receiver model and therefore produces
a more active *user*. It anticipates a shift from representation to presentation, leading
to a reduction of the conception of architecture perceived through the user as a
mere object. 'Performative architecture distinguishes itself from an architecture of
representation in that it does not wish to be a record of events, a description, or

information about a concrete state or occurence.' [115]

There are an increasing number of architectural projects which incorporate distinguishing features of performativity, provoked by the astonishing possibilities new technologies offer. A theory of *performative users* has not yet been explored exhaustively; existing concepts and buildings categorized as performative range from projects which 'achieve a shift in attention away from symbolic, image-orientated or diagrammatic strategies towards context of actions and effect.'[116] In the process of design facades and installations interact with the environment in the sense of technical infrastructures, as well as - in a more artistic way - building performance simulations, to kinetic structures reacting directly to the observer or *user*.[117] David Leatherbarrow distinguishes between two categories of performative architecture: 'the kind that can be exact and unfailing in its prediction of outcomes, and the kind that anticipated what is likely, given the circumstantial contingencies of built work. The first sort is technical and productive, the second contextual and projective.'[118] [119]

2.4.3   The Cave

In his book *Heimlich Manœuvres, Ritual in Architectural Form* Kari Jormakka argues that embedded in buildings there exist tacit performative rituals, which do not represent or symbolize anything, but rather insidiously partition and organize our world. In the book's preface Jormakka references the image of the cave from Plato's *Republica,* Book VII.

Jormakka writes:' … Plato images a cave with prisoners chained so tightly they cannot move at all. They sit away from the opening, staring at the dark black wall. Behind them, there is first a low parapet, then a bridge crossing the cave at a right angle, and further away a fire illuminating the space. On the bridge, people are walking by, carrying status, which may be partly hidden by the wall. Seeing only the shadows the objects cast, the prisoners take the shadows to be reality, as they have

115   Gleiter, J.(2002), *Urban Bodies, Vom speechact zum sketchact, Architektur als Technik des Körpers* http://www.tucottbus.de/BTU/Fak2/TheoArch/Wolke/deu/Themen/021/Gleiter/Gleiter.htm, 15.08.2010.

116   Fitz, A.(2003), *Performative Materialism*, Triton Verlag, Wien.

117   Cf. BIX, *communicative membrane*, Kunsthaus Graz; NOX/Lars Spuybroek, *D-Tower*, Doetichen, Netherlands; Mark Goulthorpe/dECOI, *Aegis Hyposurface.*

118   David Leatherbarrow, *Architecturte's unscripted performance*, in: Kolarevic, B. & Malakawi, A. M.(2005), *Performative Architecture. Beyond Instrumentality,* Spoon Press, p. 6-19.

119   Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006),p 4.

been deprived of any acquaintance of the external world since birth.'[120]
To Jormakka, Plato uses this image of the cave to illustrate his claim that most
people have an inadequate understanding of the world, mistaking material things
for reality. 'It takes a thinker to realize that material things are mere shadows of
ideas which constitute true reality.'[121] Jormakka believes Plato would not need to
dwell so much on the scenario of the cave to paint this epistemological metaphor.
In consequence Jormakka focuses his investigation on the space of the cave, rather
than on the epistemological allegory. He attempts to understand how the built
environment partakes in the ritual construction of a banal life-world, where the
term ritual refers to the non-linguistic and non-referential 'meaning' inherent to
many kinds of built structures, 'the constitution and perpetuation of quotidian social
relations through the interaction of the body with a structured environment.'[122]
Jormakka views the (Palaeolithic) cave as one of the first structured environments
in noticing such non-referential 'meaning'. The characteristics of caves such as
silence, isolation, privacy, and secrecy made the cave singularly suitable during the
Palaeolithic period of cave paintings as a means of imparting vital information.
Jormakka writes: ' The obstacles to overcome and the dangers to brave in entering
the caves in order to view the grotto paintings might have indoctrinated the
information more deeply than more convenient locations'. Jormakka's goal is to
investigate these effects of physical information on social facts. His method of
investigation Jormakka describes as follows: 'instead of focusing on formal or
experiential aspects of architecture I attempt to look at how the world is engaged and
perceived through the lens of architecture'[123]

Needless to say, the introductive example of Plato's cave was not necessary for
Jormakka to introduce his theoretical approach, since he could have used any cave.
However, it is interesting that Plato's metaphor for an *epistemological* problem was
disregarded and reduced to a cave per se, although the field of investigation was
itself an *epistemological* one. According to the American sociologist Magali Sarfatti
Larson, this solipsistic view within architectural discourse is rife in the debate of
architectural theory. Magali Sarfatti Larson most notably describes the architectural
debate as an 'autonomous' discourse among experts, which adheres to its own

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120 Jormakka, K.(1995), p. 1.
121 Jormakka, K.(1995), p. 1.
122 Jormakka, K.(1995), p. 2.
123 Jormakka, K.(1995), p. 3.
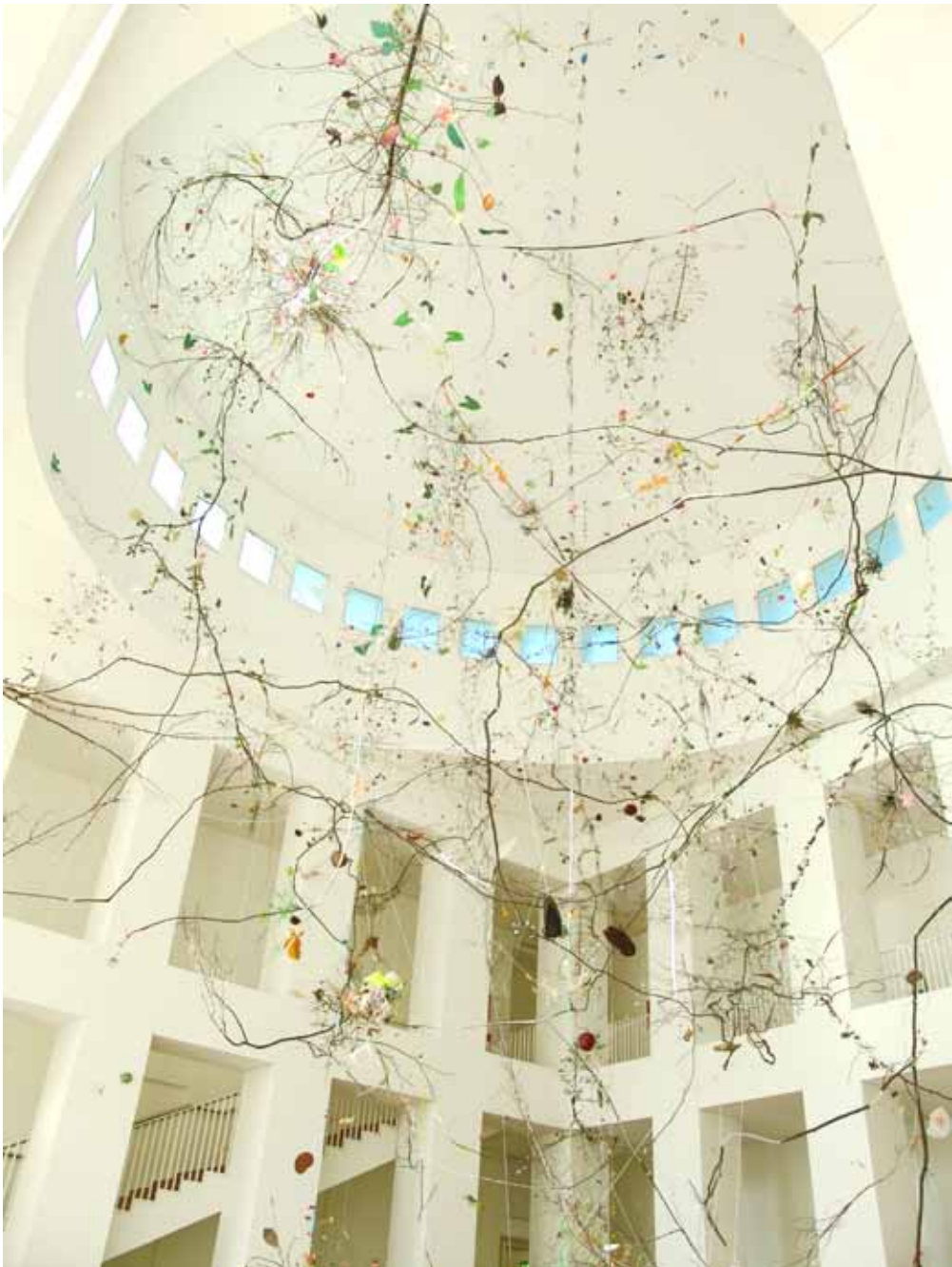
14 Das vegetative Nervensystem - Steiner G. & Lenzlinger, J.
Photograph: Steiner G. & Lenzlinger, J.

rules.[124] She believes the constant tension - which confronts not only society, but also builders and consumers - between an autonomous discourse in architecture and a heteronymous discourse about architecture to be a fundamental characteristic of architecture, which does not exist in this specific form in any other discipline.

'I therefore conceive that this characteristic point of view prompted the treatise of Plato's fruitful metaphor without taking the *users* (prisoners) into account, in an exploration of the effects of physical information on social facts. The integration of the *user* is of immanent importance, as the relation between physical information and social behaviour is rooted in sensual perception. The exploration of *conscious experience* or *consciousness* is the basis for any attended development concerning the *user/architecture relationship* and beyond that the basis for overcoming the autonomous and self-referential debate within architectural theory.
The evolving dimension of sensory perception is comprehended in the wide range of issues addressed by *projective* architecture, such as *immersion, atmosphere, affects,* and *perception*. The term *projective* indicates the capacity of architecture to operate within cultural practice to project alternative ways of living, where the idea of performativity is emphasized.
The debate of a *post-critical* architecture touches on a wide range of merely theoretical concepts, which have contributed to the idea of a *projective* theory and architecture and thus to the issue of *presence*.'[125] Peter Sloterdijk delineates a concept of *immersion*, claiming the architect's ethical responsibility towards the design of *atmosphere*,[126] whereas Roemer van Toorn demands an analytical investigation into urgent social issues, aiming to develop 'strategies and practice that deal with our modernity at large.'[127]
'The quest pursued by *post-critical* architecture is at its dawning stage, outlining ambitious and promising intentions, but simultaneously suffering from the deficiency of more precisely defined qualities which *post-critical* or *projective* architecture should incorporate. Comments on the *Projective Landscape Stylos Conference* lead to the assumption that the debate is highly theoretical and abstract, even contradictory, last but not least due to the lack of building examples. *Projective*

124 Cf. Larson, M. S.(1993), *Behind the postmodern façade. Architectural change in late twentieth-century America.* University of California Press, Berkeley.

125 Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006),p 2.

126 Sloterdijk, P.(2006), *Architektur als Immerionskunst,* Archplus 178, *Die Produktion von Präsenz,* ARCH+ Verlag GmbH, Aachen, p. 58 –61.

127 Cf. *projective theory program* at the Berlage Institute

is perceived as a question rather than an answer, furthermore, as Ole W. Fischer argues very clearly, even the distinction between *critical* and *projective* architecture is not as clear as it seems.[128]

Considering the emerging issue of performativity within the debate, the impression arises that contrary to other disciplines, such as theatre studies, sociology, philosophy of language, linguistics, literature, and media studies, the benefits architecture could gain from a shift in cultural studies towards the notion of performance has not yet been fully explored. As described above, Somol and Whiting refer to the performance of Robert Mitchum, outlining an idea of performance. On first sight this reference and the potential it incorporates for architectural concepts seems vague and abstract. How can an architecture that is cool and easy be imagined? There is an interesting coincidence with Walter Benjamin's writings on the reception of architecture in its daily use. According to Benjamin, architecture is generally perceived in a rather incidental way. 'In confusion and by means of the collective(...). Not so much in intent attention as in a state of haphazard noticing.'[129]

This leads to the assumption that it all circles around perception, the reception of architecture cannot be reduced to a matter of *use* and utilization. *Presence* - in the philosophical sense of *DaSein – ZuGegenSein* – can only be achieved through a subtle, almost subversive infiltration of perception. There is no direct influence of architecture and space on perception and behaviour, albeit the 'critical' variety.[130] A much more specific investigation into the mechanisms of perception and into the reception of architecture needs to be articulated. Prior focus of existing *Post-Occupancy-Evaluations* is set on items such as health, safety, security, function, efficiency, and work flow, whereas psychological, social, and cultural aspects are conceived as being less evident.'[131]

The central aim of my doctoral dissertation therefore is to focus not only on the *user*, but expressively on the *conscious user*.

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128   Fischer, O. W.(2005), p. 92.

129   Benjamin, W.(1963), *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit*, edition suhrkamp, Frankfurt am Main, p. 40.

130   Ulrich Schwarz, U.(2006), p. 5.

131   Brauner, B., Hörl, A., Plank, C., Seifert, G. (2006),p 10.

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3. THE CONSCIOUS USER

The aim of my thesis is not merely to add another theory to the contemporary (*user*) debate, but to alleviate the deficiency of quality of *post-critical* architecture. In response to the desideratum of science, my work has evolved from interdisciplinary research between *architecture*, *philosophy of mind* and the *neuro-cognitive sciences*. The term *perception* assumes an important position and I touch upon the question if the relationship between *user* and *architecture* can be determined using the expression *perception*. To illustrate this notion the philosopher of mind Thomas Nagel[132], offers a rather simple but important phrase: *What it is to be a (bat)*[133].

The phrase consequently points at the subject, in this case a bat, asking how an individual experiences the world. Thomas Nagel's formulation of subjective experience does not exclude *perception*, but includes all variations of perceptual experience, additionally the subject is asserted as a conscious system. In accordance with the *user/architecture relationship,* Thomas Nagel's question can be transcribed into the question: *what it is to be (with)in architecture.* By assuming the *user* to be a *conscious* individual, the following chapter questions the *user's* subjective experience in an architectural environment. Tentative answers to this question are advanced by an ongoing philosophical discourse of mind and its discussion concerning *consciousness*.

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132   Metzinger, T.(2009), p. 26.
133   Using this famous phrase Thomas Nagel, Professor of Philosophy at New York University, explores questions like, 'is my consciousness like yours or is yours like that of an animal?' Thomas Nagel wonders what it would be like to be a bat and goes on to explain how the question bears directly on the mind-body problem. The body-mind problem including the duality between subjectivity and objectivity is part of chapter 5, since one of the main problems within architectural experiments is the production of objective data from a subjective point of view.

3.1   Which Sense of Consciousness?

The term *consciousness* offers a wide range of different significations; since this term plays a prominent role I will clarify which of the many phenomena referring to the word *consciousness* I am referencing. The term *consciousness* is ambiguous. Sometimes *consciousness* is related to the phenomenon of being awake; being awake defines behavioural characteristics of a person like behaviour which responds to externally generated information. This behaviour of a person is adequate to the situation and it is coherent over time. Therefore *consciousness* is, in a first and simple definition, a behavioural characteristic of a person.[134]

Next, the term c*onsciousness* can be related to the phenomenon of being 'aware'. In this case, *consciousness* is defined as a certain range of cognitive capacity. This cognitive capacity can be described as specific knowledge of the outer world. Peter Bieri illustrates variations of this cognitive capacity as such:

'*Collective* knowledge: Consciousness concerning the environment has increased.
Individual knowledge: He was not aware of the consequences.
Perception: In the dark I was not aware of the fence.
Memory: I am aware of having said this.
Attention: Only now did I become aware of the noise.'[135]

Today *consciousness* appears in its behavioural characteristics, as well as in the cognitive sense, no longer intellectually unsolvable. Peter Bieri writes: 'A series of empirical disciplines from cognitiv sion that matter and cognition content are alien to each other.'[136] However, a third definition of *consciousness* that refers to sensing poses a puzzle for *philosophy of mind*. A state of *being sensed* is different from being thought of, believed, or judged.

 Consciousness, Bieri continues, in the sense of sensing is crucial when we experience ourselves as subjects of our actions. 'This experience requires more than control of our movements and more than integrated behaviour as they are exhibited even by a sleepwalker. For a piece of behaviour to be an action in the full sense of the term, it

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134   The definition of the term consciousness follows Peter Bieri's argumentation which he presents in his paper '*Why is Consciousness Puzzling?*', in Metzinger, T. ed.(2005), *Was macht Bewußtsein zu einem Rätsel? In Bewußtsein – Beiträge aus der Gegenwartsphilosophie*, mentis, Paderborn, p. 61.

135   Bieri, P.(2005), p. 63.

136   Bieri, P.(2005), p. 63.

must be experienced as performed by myself.'[137]

This means that *consciousness* describes the subjective experience of an individual; this is the definition I will employ. Hence, talking about the *conscious user* of architecture is part of a discussion about the *subjective* and respective *conscious experience* of architecture. It is my assertion that the definition of the *user/architecture relationship* concerns the subjective experience of architecture when we consider *consciousness*.

3.2   The Subjective Experience

The philosopher Güven Güzeldere presents a variety of different levels of subjective experience. We are all subjects of a multitude of perceptual experiences, thoughts and ideas, pains and tickles, joys and sorrows. Under normal circumstances, there is nothing more familiar than the way our apartment looks or the way a favourite drink tastes. [138] 'We all have, it seems, firsthand, immediate, direct knowledge of the rich phenomenology of colours, sound, tastes, aromas, and tactile sensations that embellish our experience. Moreover, we all seem to have a *privileged* way of knowing about our own thoughts, feelings, and sensations.'[139] All these different sensations like colours and sound, feelings like lust or pain, emotions like hate or angst, moods like melancholy or happiness, or finally wishes, drive, and need are not only present, you can feel them in a certain way. [140] The essence of the phenomenon of conscious or subjective experience is that a single unified reality becomes present. If a world appears to you, you are conscious. This is true in dreams as well as in a state of waking.
Heinz von Foerster, known as the inventor of second-order cybernetics, states the conscious experience as a process, a construction of the brain. Von Foerster, who made important contributions to radical constructivism, postulates that it is the individual brain which invents this single unified reality we perceive as our environment. Therefore to Foerster, the exploration of the Problem of Cognition is a

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137   Bieri, P.(2005), p. 64.
138   Grüzeldere, G.(1997), *The nature of consciousness / philosophical debates,* edited by Block N., Flanagan O., Güzeldere G., MIT Press, Cambridge, p. 25.
139   Grüzeldere, G.(1997), p. 25.
140   Bieri, P.(2005), p. 65.

search for an understanding of the cognitive processes.[141] [142]

In his lecture On Constructing a Reality[143] Foerster started his argumentation with a little experiment called the blindspot, which identifies at least our visual perception as an (optimized) process:

Blindspot: Hold the page in your right hand, close your left eye and fixate the asterisk in Fig. x with your right eye. Move the page slowly backwards along your line of vision until, at an appropriate distance from about 12 to 14 inches, the round black spot disappears. Keeping the asterisk well focused, the spot should remain invisible, even if the eye is slowly moved parallel to itself in any direction.

This localized blindness is a direct consequence of the absence of photo receptors (rods or cones) at the point of the retina of the "disc", where all fibers leading from the eye's light sensitive surface converge to form the optic nerve. Clearly, when the black spot is projected onto the disc, it cannot be seen. Note that this localized blindness is not perceived as a dark blotch in our visual field (seeing

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141   Radical Constructivism - 'What is radical constructivism? It is an unconventional approach to the problem of knowledge and knowing. It starts from the assumption that knowledge, no matter how it is defined, is in the heads of persons, and that the thinking subject has no alternative but to construct what he or she knows on the basis of his or her own experience. What we make of experience constitutes the only world we consciously live in. It can be sorted into many kinds, such as things, self, others, and so on. But all kinds of experience are essentially subjective, and though I may find reasons to believe that my experience may not be unlike yours, I have no way of knowing that it is the same. The experience and interpretation of language are no exception.' Von Glasersfeld, E.(1995), *Radical Constructivism - A Way of Knowing and Learning*, Routledge Falmer, London, p 1.

142   von Foerster, H. (1984), *On Constructing a Reality*, http://grace.evergreen.edu/~arunc/texts/cybernetics/heinz/constructing/constructing.html, 15.08.2010.
This is an abbreviated version of a lecture given at the opening of the Fourth International Conference on Environmental Design Research on April 15, 1973, at the Virginia Polytechnic Institute in Blacksburg, Virginia. Reprinted in: Heinz von Foerster, Observing Systems, Intersystems Publications 1984. 288-309.

143   von Foerster, H. (1984), p. 1.

a dark blotch would imply "seeing"), but this blindness is not perceived at all, that is, neither as something present, nor as something absent: whatever is perceived is perceived "blotch-less".[144]

In his experiments[145], Heinz von Foerster shows that what we see (or hear) is not 'there', or what we do not see (and hear) is 'there', unless coordination of sensation and movement allows us to 'grasp' what appears to be there.[146]

Since the physical nature of the stimulus—its *quality*—is not encoded into nervous activity, the fundamental question arises how our brain conjures the tremendous varieties with which we experience the world at any moment while awake, and sometimes in our dreams as we sleep. Foerster's constructive proposal means that subjective experience is the product of a physical mechanism by the body; id est. mind is identical with body. But how can a body be conscious and how can we explain the *subjective experience* of an individual through materialism?

3.3   Reductive Exploration

There is traceable doubt concerning the possibility of developing a reductive exploration of the mental phenomenon of *subjective experience*. In 1872 Emil Du Bois-Reymond outlined the boundaries of natural knowledge in his famous lecture entitled *Über die Grenzen des Naturerkennens (About the limits of natural knowledge).* He said:' … at some point in evolution of life – a point we do not know and need not try to determinate – something new appears, something so far unknown, something … incomprehensible. The thread of understanding spun in negatively infinite time is disrupted, and our knowledge of nature reaches a gap to be crossed by no bridge, no wing: We face the limits of our wits. This incomprehensible thing is consciousness. I shall now show very conclusively, as I believe, that consciousness cannot be explained from its material conditions, not only – as everyone will admit – at the present state of our knowledge, but according to the very nature of things.'[147] One hundred years later, the *body/mind problem* is seen from a different pointof

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144   von Foerster, H. (1984), p. 2.

145   In his paper von Foerster describes 4 different experiments, all showing a certain discrepancy between the environment and perception.

146   von Foerster, H. (1984), p. 3.

147   Translated and quoted by Bieri, P. Metzinger, T., ed.(1995), *Conscious Experience,* Ferdinand Schöningh, Paderborn, p. 45.

view.[148] Computer sciences and research in *artificial intelligence* open possibilities for new strategies in resolving the seemingly insuperable question of *body* and *mind*. In the early 1970s interest for the field of *consciousness* as a serious research topic began to rise. 'In several scientific disciplines, the topic of subjective experience became secret research frontier. Until recent days many have argued, consciousness is the most fascinating research target conceivable, the greatest remaining challenge to the scientific worldview as well as the centrepiece of any philosophical theory of mind.'[149] Today, increasing attention of philosophers and researchers working in the neuro- and cognitive sciences opens up a broad and interesting dialog, which not only presents new theories about *consciousness*, but also produces empirical data. These results do, however, strengthen von Foerster's constructive concepts and thus weaken the traditional position of the *mind-body problem*.

3.4   Turning a Tool on Itself

Additional to the apparently insurmountable gap between the mental phenomenon and the physical body, we face a second problem in our examination of *subjective experience*, namely our autonomic self.[150] Within every investigation of the *conscious user* or of *consciousness* in general, it is a *conscious system* which is looking at itself (in a mirror). The declaring person affiliates with the issue of declaration.[151] The unique difficulty involved in an understanding of *subjective experience* is both the phenomenon we are trying to investigate and the very tool we need to use to pursue this investigation.[152]

George Miller writes that this kind of investigation is like 'Turning a tool on itself'. He continues:' perhaps we become confused because whenever we are thinking about consciousness, we are surrounded by it, and can only imagine what

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148   There still exist pessimistic statements. As an example, in 1974 Thomas Nagel expressed this view in his influential article What is it like to be a bat?

    'If we acknowledge that a physical theory must account for the subjective character of experience, we must admit that no presently available conception gives us a clue how this could be done. The problem is unique. If mental processes are indeed physical processes, than there is something it is like, intrinsically, to undergo certain physical processes. What it is for such a thing to be the case remains a mystery.'

    Nagel, T.(1974),*What is it like to be a bat*, The Philosophical Review, Vol. 83, No. 4 (Oct., 1974). p. 435-450.

149   Metzinger, T.(2003), p. 5; Metzinger, T.(2009), p. 17.

150   Singer, W.(2006),*Vom Gehirn zum Bewußtsein,* Suhrkamp, Frankfurt am Main, p. 11.

151   Cf. Singer, Miller, Güzledere and the chapter 5.3 *Epistemic Asymmetry.*

152   Grüzeldere, G.(1997), p. 25.

consciousness is not. The fish, someone has said, will be the last to discover water'[153]
This leads me to question to what extend we possess the ability to identify what
constitutes us. According to the neurobiologist Wolf Singer, this *epistemological*
problem confronts everyone who wishes to explore the nature of things. At this point
in the debate I have to state how important it is that we integrate this *epistemological*
problem into the architectural *user* debate. The analysis of the architectural
environment is an exploration of the nature of things, so an investigation of the
conscious user always points at an *epistemological* problem.
Singer draws the conclusion that regarding this *epistemological* problem we see only
what our cognitive apparatus - *the brain* - is able to think, to reconstruct, to imagine,
so the content of our conscious experience is not only an internal construct, but also
an extremely selective way of representing information.[154] Thomas Metzinger uses
a metaphor for *conscious experience*, the *Ego Tunnel.* He writes: 'What we see and
hear, or what we feel and smell and taste, is only a small fraction of what actually
exists out there. Our conscious model of reality is a low dimensional projection
of the inconceivably richer physical reality surrounding and sustaining us. Our
sensory organs are limited: They evolved for reasons of survival, not for depicting
the enormous wealth and richness of reality in all its unfathomable depth. Therefore,
the ongoing process of conscious experience is not so much an image of reality as a
tunnel through reality.' [155]

Facing the *evolutionary* process that generated the brain, Singer states that the
principles of selection in this process did not design cognitive structures to explore
what is possibly masked by *conscious experience*.
The human brain has been measured (and analyzed) only concerning functional
criteria which keep the organism alive. For that very reason the cognitive functions
of our brains have adapted to a macroscopic world.[156] It is the world of metres that is
of importance and the mayor task for our cognitive system is to grasp and produce
rules when observing the world. We observe the construct of the outer world
much like we observe architecture through inter-subjectively arranged methods of
observation, yet these methods of observation are designed by us.
However to Metzinger, this evolutionary perspective helps in solving the puzzle

153   Miller, G.(1962) *Psychology: The Science of Mental Life,* Harper and Row, New York, p. 25,
      in Grüzeldere, G.(1997), p. 25.
154   Metzinger, T. (2009), p. 6.
155   Metzinger, T. (2009), p. 6.
156   Singer, W.(2006), p. 12.

16 displacement.13
Spatial Experiment 2005

presented by *naïve realism*. Metzinger writes:' Our ancestors did not need to know that a bear-representation was currently active in their brains or that they were currently attending to an internal state representing a slowly approaching wolf. Thus neither image required them to burn precious sugar. All they need to know was "Bear over there!" or "Wolf approaching from the left!"'[157]
Considering Singer's assumption that our method of observing the outer world is conducted by an immanent ignorance of *phenomenal awareness*,[158] we deduce the *phenomenon of reality* not from the inter-subjective way of *perception*, but rather from the very same phenomenon we want to understand - *reality*. 'The fact that there is a reality out there and that you are present in it is unavailable to you; you do not even know that you exist.'[159]

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157 Metzinger, T.(2009), p. 43.

158 'It is proposed that phenomenal awareness, the ability to be aware of one's sensations and feelings, emerges from the capacity of evolved brains to represent their own cognitive processes by iterating and reapplying on themselves the cortical operations that generate representations of the outer world.'
Singer, W., *Phenomenal Awareness and Consciousness from a Neurobiological Perspective,* http://www.mpih-frankfurt.mpg.de/global/Np/Pubs/metzinger.pdf, 15.08,2010.

159 Metzinger, T. (2009), p. 15.

3.5   Naïve Realism

In 1953 Wittgenstein alluded to *naïve realism* in his *Philosophical Investigations*.

'Schau auf das Blau des Himmels, und sag zu dir selbst "Wie blau der Himmel ist!" – Wenn du es spontan tust – nicht mit philosophischen Absichten – so kommt es dir nicht in den Sinn, dieser Farbeindruck gehöre nur dir. Und du hast keine Bedenken, diesen Ausruf an einen anderen zu richten. Und wenn du bei den Worten auf etwas zeigst, so ist es der Himmel. Ich meine: Du hast nicht das Gefühl des In-dich-selber-Zeigens, das oft das 'Benennen der Empfindungen' begleitet, wenn man über die private Sprache nachdenkt. Du denkst auch nicht, du solltest eigentlich nicht mit der Hand, sondern mit der Aufmerksamkeit auf die Farbe zeigen. (Überlege, was es heißt, mit der Aufmerksamkeit auf etwas zu zeigen)[160]

Naïve realism follows the question why we experience the outer world, such as a blue sky, not as a representation, but as a present reality. For *philosophy of mind naïve realism* is certainly one of the (if not the) most important constraints in achieving a theoretical understanding of what *subjective experience* (phenomenal experience) really is.[161]

In summary, the ability to be aware of one's sensations and feelings, so-called *Phenomenal Awareness,* is covered by the phenomenon which *philosophy of mind* calls *naïve realism*. Following this line of argumentation means that every *conscious* person, and therefore the *user of architecture*, is a naïve realist. The architectural environment that the naïve realist, namely the *conscious user of architecture,* experiences is a subjectively constructed version of the architectural environment as a result of an evolutionarily optimized process we call subjective experience. This leads to the question if a legitimate discussion of the *communicative principles* of

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160   'Look at the blue of the sky and say to yourself "How blue the sky is!"—When you do it spontaneously— without philosophical intentions—the idea never crosses your mind that this impression of colour belongs only to you. And you have no hesitation in exclaiming that to someone else. And if you point at anything as you say the words you point at the sky. I am saying: you have not the feeling of pointing-into-yourself, which often accompanies "naming the sensation" when one is thinking about "private language". Nor do you think that really you ought not to point to the colour with your hand, but with your attention. (Consider what it means "to point to something with the attention".)
Wittgenstein, L.(1953), *Philosophical Investigations*, transl. by G. Anscombe, Basil Blackwell, Oxford, §. 275.

161   The discussion about naïve realism is better connected to the term *transparency* and I will present this discussion within the context of Thomas Metzinger's *Selfmodel Theory of Subjectivity.*

architecture, the *semiotic attributes* of architecture, or the *performative qualities* of architecture can even be conducted outside of the content of *naïve realism.*

In his book *Heimlich Manœuvers: Ritual in Architectural Form* Kari Jormakka investigates the constitution and perpetuation of quotidian social relations through the interaction of the body with a structured environment. Jormakka attempts to look at how the non-referential 'meaning' of architecture is engaged and perceived through the lens of architecture.[162]This is only one example of a number of architectural observations investigating the relationship between *human* and *architecture* which ignores the *epistemological* relevance that inheres in any architectural observation. This self-reverent and autonomous discussion about architecture does indeed pose a problem.

As the expression *subjective experience* indicates, this type of experience is a private and subjective element owned by the user. Therefore an objective observation of architecture is not possible until the process behind *subjective experience* is understood. It is needless to say that we can assume the evolutionary development of our cognitive process to affect every single *subjective experience* in the same way. If we were to 'discover' this optimized process of filtering sensations, then we could describe the relationship between *user* and *architecture* in a more general way. There is a second strand and according to *philosophy of mind,* it influences the cognitive process, namely personal development, birth, cultural imprint. Cultural imprint, however, makes it impossible to generalize *subjective experience* of architecture, especially when the process of *subjective experience* is based on the personal development of each individual. The significance of this influence presents a very important research question.

3.6   The Phenomenological Problem

In phenomenological research we are faced with a similar problem. As mentioned above, phenomenology is a popular strategy for architectural observation and this strategy consequently operates from the first *person perspective.* The phenomenal approach works with a subjective method of observing and describing the *user's* architectural experience. Since it is the aim of architectural *phenomenology* to describe the *physical and mental reality* of an architectural

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162   Jormakka, K.(1995), p. 2.

environment based on sense-related information, we again face the very same problem described earlier. Taking *naïve realism* into account, the question is how subjectively experienced observation is able to produce generally acceptable objective descriptions. *Phenomenology* lacks the awareness that in the first instance everyone's own observation is a preconditioned and filtered reality. *Subjective experience* is an optimized product of our personal *consciousness* that masks information we do not need to recognize. This process enables the system to concentrate its attention on events of importance. Knowledge about purposeful attention exists within *phenomenology* and different methods of directing concentrated attention upon elements in reality have been developed. The basic principal of selection within cognitive structures persists in a concealed manner. In other words, *phenomenology* develops strategies to acquire knowledge of an object outside of a subjective *being* in accordance with the masked information which our own perception provides. Every new strategy in overcoming this basic principal of selection provides further information about that specific object. Again we comprehend rules of observances of the world by way of a more detailed observation. Without questioning the whole system of *conscious experience* by taking *phenomenal awareness* into account, the developed 'knowledge' is based on a circulating statement. Questions about the purpose of the principals of selection, however, cannot be answered, nor can the relationship of the non-referential 'meaning' of architecture if the focus of investigation remains on the observing object and not on the observer's (observing system) self.

Philosophy of mind presents interesting concepts which should be entered into the *user/architecture* debate. The revolutionary aspect of these concepts is that their outcome is not only theoretically documented, but also empirically proven. Progress within neuroscience has made traceable data available which has in turn influenced this philosophical movement. Theoretical brain research, with its new non-invasive imaging methods, already provides fascinating insight into the function and role of the brain in the human body.

17   **Brain and Neurons**
Photograph: http://www.landonwerks.com

3.7 Brain and Consciousness

According to recent discoveries the brain and *consciousness* are inextricably connected, hence the phenomena we subsume under the term *consciousness* are undoubtedly cognitive functions which are based in the brain.[163] Therefore it seems of importance to outline what cognitive science and neuroscience believe to know about the evolution and the functions of the brain. Taking the evolutionary development of the brain into account, a fascinating element is the resistance of specific constructs which were developed billion of years ago.[164] According to Wolf Singer, one can find the same nerve structures dating back to the beginning of the evolutionary process in the nervous system of all mammals. About ninety percent of the genes expressed by a human neuron can be found in the nerve cells of a slug, barring a few slight, though functionally irrelevant modifications.[165] The way nerve cells communicate with each other was conserved over billions of years in a general blueprint of brains, especially in the brains of chordates, species with a spinal cord. Particularly remarkable, however, is the affinity of the brains of different mammals. The size of the cerebral cortex varies in primates and other mammals, hence the size of the brain cannot be deduced to provide an adequate understanding of complexity and performance; primarily it is of importance how neurons are interconnected. Over forty thousand neurons are packed into one cubic millimetre of the cerebral cortex and all of them are connected to each other. One single nerve cell is connected to approximately twenty thousand other neurons and receives signals of almost the same amount.

Contrary to technical systems, differentiation between hardware and software within the brain is not possible. The program for operation sequences inside the brain is exclusively defined through the neuronal pattern of connection. The structure of the neuronal net is the program. According to Singer, the cerebral cortex can be divided into different areas based on anatomical and functional criteria. Different parts of the cerebral cortex process visual, acoustic, and tactile signals. The frontal lobe generates programs of movement, while the dominant hemisphere additionally manages the production of language.[166] Finally, the prefrontal cortex coordinates the program of action but also the integration of social arrangements. In this area

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163   Singer, W.(2006), p. 10.
164   Singer, W.(2006), p. 10.
165   Singer W.(2006), p. 17.
166   Bertram, W.(2008), *Wo geht es hier zu Hypocampus?*, in Spitzer, M. & Bertram W., (2008) *Braintertainment*, Suhrkamp, Stuttgart, p. 20.

neurobiologists identify temporal memory, an important instrument to suspend excitability and deliberate upcoming actions. The internal structure of the different cerebral areas is - and this is most impressive - almost identical, even though they operate differently, carrying out a variety of functions. According to Singer, fine differences between the different areas can be found, but the general organisation, the wiring, is almost identical. Singer draws the conclusion that the processing algorithm of the cerebral cortex is able to implement all different matters and the iteration method is solely responsible for its emergent cognitive attainments.[167]

Until recently it was accepted that there exists a centre where all signals collected by the sense organs converge to deduce a unitised interpretation of these signals. This centre was seen as responsible for all concepts of actions and was regarded as the decision maker. Modern neurosciences, however, argue that this is a misconception; the organisation of the system of neurons is dramatically different from the idea of such a centre.[168] Singer illustrates principals of information processing with the help of the example of the human visual system: The first steps of information processing within the visual system follow a serial principal. Inside the eye, light is converted via photoreceptors into neural activities. Electric signals first arrive, via a system of fibre, the thalamus to continue its way to the visual cortex. Not till then the principal of processing works parallel. The ways of processing branch out to parallel arranged areas and very often these areas are reciprocal connected, hence the amount of feedback channels is impressive, too. A forward connection is always parallelized by a more powerful backwards connection.[169] Different aspects of visual content, like movement and the localisation of objects in space or the analysis of the form of objects, are executed within different areas of the brain. A centre of convergence at the end of these pathways of processing is not to be found. In connection with all other sensual systems and all motor skills systems, neuroscience has found no pyramidal organisation of the neuronal network, instead a highly distributive and correspondingly organized system has been determined, which is structured in a extraordinarily reciprocal way.

167 Singer , W.(2006), p. 23.
168 Singer, W.(2006), p. 25.
169 Singer W.(2006), p. 26.

3.8   The Binding Problem

In the course of this discussion, the problem of how these sets of parallel neuronal processes are coordinated has been advanced, how reasonable decisions are made, and how purposeful acts are programmed, because agents who control, interpret, and command cannot be found.[170] Coordinated behaviour and coherent perception may be understood as an emergent quality or as the performance of a self-organizing process that equally links each neuronal centre to another.
The problem outlined is termed the *binding problem* and according to Wolf Singer this problem is a major challenge for neurobiological science. [171]

The *binding problem* can be described by asking if there is a 'seat' of consciousness. Güven Güzeldere asks this question and continues as follows: 'This question in its various incarnations has been discussed from the time of the ancient Greeks. What was once the question of the organ of reason in humans (e.g., the brain versus the heart) has now transformed into the question of the whole brain or a module in it, and if the latter, which?'[172]
The *binding problem* is related to the problem of the *homunculus* - a supposed inner 'little man' who is the true subject within the brain.[173] The proposed question is how the organized parallel processing of visual input can be 'experienced together' as a single event. Implication would suggest that 'something' is experiencing all this data. Neurobiology disproves the assertion of the *homunculus*. To René Descartes nothing is more certain than that there is an internal observer (*Cogito ergo sum*), but this observer has not yet been localized. What is more is if the internal observer is kept hidden, there can be no localization of the *phenomenon of consciousness*. Again the debate touches upon the question of how our brain not only represents what exists in our environment and how we can be aware of having sensations, experiences, and feelings from a subjective perspective, but how we know that we do.[174]

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170   Singer W.(2006), p 26.

171   See also Metzinger, T.(2003), p. 104 & Metzinger, T.(2005), p. 435.

172   Güzeldere, G.(1997), p 34.

173   http://en.wikipedia.org/wiki/Binding_problem, 15.08.2010.

174   Singer W.(2006), p 39.

3.9   Iteration

The competence of a *first person perspective*[175]*,* where the peripheral areas process sensorial signals coming for outside and inside the body, seems to indicate that the brain has cognitive structures which reflect the representation of the outside over again. To Singer, the function of *first person perspective* could be imagined as a result of *iteration,* a reapplication onto itself of the same cognitive operations which underlie the non-reflected primary representations based on the outside. In fact Singer states that there is evidence to show that subsequently developed evolutionary areas of the cerebral cortex receive their input signal not directly from the sensory organs, but from phylogenetically older areas, whereby it is these phylogenetically older areas which are connected to the sensory organs. Nevertheless, evolutionarily newer areas of the cerebral cortex process the signals from these older areas in the same way as the cerebral cortex's older areas process the signals received by the sensory organs. The principal of *iteration* is a representation of a representation, a representation of an internal cerebral process and not a representation of the outer world. Singer called this representation a *metarepresenation.*[176]

Working with *metarepresentations* promises rich findings. A brain which is able to produce *metarepresentations*[177] could estimate the need for action or defer a reaction based on a stimulus. This brain could develop internal models of measurement for the expected success of a given reaction. The ability to develop internal *metarepresentations* qualifies a brain to react carefully and to prevent and avoid danger.
Singer writes: 'With the assistance of non-invasive imaging research methods like the magnetic resonance imaging, today the neuroscience is able to investigate the complex relation between the different cerebral areas. Based on the results of these physio-perceptual investigations the concept of the internal metarepresentations has been validated in a very imposing way. According to the neurobiology, perception can't come across as a passive illustration of the reality.'[178]
In fact conscious experience can be seen as the result of an extraordinarily active and constructive process initiated by the brain. The brain constantly constructs

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175   Metzinger T.(2003), p 6, 157, 205.
176   Cf. Singer W.(2006), p. 41.
177   Cf. Metzinger, T.(2003), p. 36.
178   Singer, W(2006), p. 42.

hypothesis of how the world should be and compares signals provided by the sensory organs with these hypothesis. If this process affirms the predictions, the perceptual process is executed very quickly, if the process does not affirm the predictions, then the brain has to remediate its hypothesis and this demands more time.[179]

3.10 Internal Pictures

The characteristic arousal pattern of each sensation that occurs in the sensory areas of the cerebral cortex is forwarded to associative cerebral areas. The impulse of these new arousal patterns activates older already existing arousal patterns, which were formed by former sensations. The overlap of these two patterns prompts the already stabilized neuronal networks and the new arousal pattern to merge, forming a novel, specific, and expanded arousal pattern based on the sensual input.[180] According to German neurobiologist Gerald Hüther, this characteristic flicker of neurons represents the new sensation in form of an 'internal picture'. He writes: ,Aus dem bisher bereits Gesehenen und dem nun neu Hinzugekommenen wird so ein bestimmtes inneres "Sehbild", aus dem Gehörten ein inneres "Hörbild", aus dem Gerochenen ein inneres "Geruchsbild", aus dem Ertasteten ein inneres "Tastbild".'[181]

Only if one of these arousal patterns is strong enough to reach areas of the cerebral cortex which are responsible for the evaluation of generated arousal patterns, the attention of the person is focused on the internal picture produced within the associative areas; only now is the person consciously perceiving sensations.[182] Sensations which approach human 'awareness' in this manner are rare. Essential to a consciously perceived experience is not the relation to the truth content of the sensation, but if the sensation is evaluated as important input for the person.

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179 Singer, W.(2006), p 42.
180 Hüther, G.(2008), *Die Macht der inneren Bilder,* Vandenhoeck&Ruprecht GmbH&Co.KG, Göttingen, p 22.
181 'Already existing visual images and new visual images are combined to create specific inner "visual pictures", acoustic input create "auditory pictures", smell produces "aroma pictures", touch leads to "haptic pictures".' Hüther, G.(2008), p 22-23.
182 Hüther, G.(2008), p. 23.

Gerald Hüther writes: 'Im Gehirn wirkt ein entstandenes sensorisches Erregungsmuster umso „mächtiger", je stärker es sich auf andere Bereiche des Gehirns ausbreiten und die dort normalerweise generierte Erregungsmuster überlagern kann. Das gilt vor allem dann, wenn sich die Erregung auf ältere, tieferliegende Hirnregionen ausbreiten, deren Nervenzellenverschaltungen für die Regulation körperlicher Funktionen zuständig sind. Dazu muss der Sinneseindruck besonders unerwartet, einschneidend oder neuartig sein – oder das Gehirn muss sich in einem für neue Eingänge besonders offenen Zustand befinden – in freudiger Erwartungshaltung …'[183]

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183 'The impact a sensory arousal pattern has on the brain is all the more pronounced the more effectively it can spread to other areas of the brain, superimposing itself onto arousal patterns typically generated in the respective areas. This applies particularly to arousal directed towards older deeply rooted regions of the brain where nerve-cell connections are responsible for the regulation of bodily functions. For this to occur, sensory impressions need to be especially sudden, dramatic, or novel – alternatively the brain needs to be outstandingly receptive for input - in a state of joyful anticipation...' Hüther, G.(2008), p. 23.

18   displacement.15
Spatial Experiment 2007

3.11 Perception and Apperception

   In accordance with this neurobiological proposal we have to distinguish
between two different types of *subjective perception* of architecture, assuming that one
requires devoting attention to it and one does not. Consequently the question arises
which kind of *architectural sensation* is 'strong' enough to prompt an architectural
user to focus on the architectural environment. Obviously this works with buildings
the *user* does not yet know and which are new to him or her.
Entering such a new building can be a great event; you experience a new space, a
not yet encountered sequence of rooms, or a new composition of materials. The
unknown environment attracts your attention. The new arousal pattern - the
internal pictures - produced by the sensual input of the architectural environment
does not match up with existing arousal patterns. Older internal pictures need to be
edited and attention is drawn towards 'unknown' architectural objects.

The attention directed towards architecture by an architect entering a building for the very first time is perhaps even more distinct than the focus placed on the respective environment by someone who has no occupational connection with buildings. Most of the buildings we as architects visit are basically 'analysed' from an architectural point of view. It is interesting to investigate how colleagues solve technical, functional, urban, and atmospheric challenges; additionally, we most definitely search for mistakes, a task which requires undivided attention when entering and exploring a building for the very first time. At times visiting a building necessitates 'preparation'. You may simply read up on it prior to your visit, you might need to travel a considerable distance to tour a specific architectural piece. According to Gerald Hüther, a very deep and powerful influence on the neuronal network comes into play if sensual input and related *internal pictures* need to span a large divide to existing *internal pictures*, a case in which the brain enables a certain 'open' status for new input signals; gleeful anticipation is often associated with plans of visiting a 'special' piece of architecture.

In the philosophical debate purposeful attention provoked by new sensual experiences is called *apperception.* The opposing internal process that does not emanate any attention from the origin of these sensations is termed *perception*[184].

In *Critice of Pure Reason* Imanuel Kant distinguishes pure, original, unchangeable consciousness from 'mere sensibility', calling it pure *apperception.*[185] Taking the *user/architecture relationship* into account*,* the term *perception* is appropriate for our typical interaction with the (built) environment, since we do not enter buildings for the first time on a daily basis. Generally we do not remember every room we pass (through), as we are often engrossed in thoughts, everyday life in/of architectural environments is not always imminently present and does not attract our immediate attention. We typically inhabit a well-known particular kind of architecture and it is our daily contact with it which causes a loss of attraction. We do not repeatedly experience each building as we did when we entered it for the very first time.

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184 'The passing state which involves and represents a multitude in the unity or in the simple substance is nothing other than what one calls *perception,* which should be distinguished from apperception, or consciousness, as will be evident what follows. This is where Cartesians have failed badly, since they took no account of perception that we do not apperceive.'
Leibniz, G.W.(1989)[1714], *Principles of Nature and Grace,* in Garber, D. & Ariew, R.(1989), *G. W. Leibniz: Philosophical Essays,* Hackett Publishing, Indianapolis.

185 Kant, I.(1781/2009), *The Critique of Pure Reason*, Bibliobazaar, Charleston, p. 131.

Norton Nelkin details the disjunction of the different states of *consciousness* in his paper *The Dissociation of Phenomenal States from Apperceptio,n* which was published in 1995. He argues that *consciousness*, rather than naming a single indivisible state, describes three different and dissociable states that simply often occur simultaneously: phenomenal states (CS *consciousness*), first-order propositional-attitude states (C1 *consciousness*), and *apperception* (C2). Of these dissociations, Nelkin argues, perhaps the most controversial are the states CS and C2. According to Nelkin, many philosophers and psychologists find it extremely difficult to understand how *phenomenal* states could occur in a state of *un-apperception*. 'They claim not to be able to conceive how one could experience a mental image or some other "feelings" but not be apperceptively aware that one is in that state.'[186] Nelkin most notably claims that *consciousness* has two dissociable types of awareness, *phenomenal awareness* and *apperceptive awareness*. The problem with *perception* (CS) is that the only CS experiences we attentively notice are ones we are also aware of. 'Indeed, they are the only ones we can directly attentively notice. And so it seems to us if CS and C2 are inseparable.'[187] Nelkin illustrates this with an example, to show how hard it is to distinguish between *perception* and *apperception*. He writes: 'Konzentrieren Sie sich zum Beispiel auf Ihre Fußsohlen. Wenn Sie das tun, dann erleben sie bestimmte Phänomene. Nun konzentrieren sie sich auf Ihre Magengrube. Wieder werden ganz bestimmte Phänomene erlebt; und sie unterscheiden sich von denen, die im ersten Fall erlebt wurden.

Kehren Sie nun zu ihren Fußsohlen zurück. Ich nehme an, dass sie ein weiteres Mal Phänomene apperzipieren, die den ursprünglichen Phänomenen ähneln. (…) Meiner Auffassung nach, liefert uns dieses "Experiment" Beispiele dafür, wie wir Phänomene *entdecken,* die schon immer ein Bestandteil unseres Erlebens waren, auch wenn sie nicht apperzipiert wurden.'[188]

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186   Nelkin, N., (1995), *The Dissociation of Phenomenal States from Apperception*, in Metzinger, T. ed.(2005), *Was macht Bewußtsein zu einem Rätsel? In Bewußtsein – Beiträge aus der Gegenwartsphilosophie*, mentis, Paderborn, p. 374.

187   Nelkin, N.(1995), p. 375.

188   'Concentrate on the soles of your feet. By doing this you will experience certain phenomena. Now concentrate on the pit of your stomach. Again, you will experience certain phenomena and they will differ from the ones experienced previously. Return to the soles of your feet. I assume you will now encounter feelings of apperception which are reminiscent of your original experience. (...) I understand this "experiment" to illustrate how we discover phenomena which have always been part of our experience, despite our lack of apperception'

Nelkin, N.(1995), p. 375.

19 displacement.15
Spatial Experiment 2007

According to Thomas Metzinger, the majority of cases in which properties of the world are represented by generating specific internal states in principle take place without any instantiation of *phenomenal* qualities or *subjective awareness*.[189] A large number of these processes have a biological background. These mechanisms are necessary for the regulation of bodily processes, for instance immune system activity or heart rate regulation and never become the content of *subjective phenomenal consciousness*. It is impossible to focus *subjective awareness* on these regulating body processes, but there exist some bodily functions which are not typically governed by subjective control, although you are able to take control. Breathing for example is something you do not have to actively control, but you can take a deep breath. If the function of breathing is not part of your subjective experience you will not collapse, your body will continue breathing without your attention. Since there are functions you do not consciously control, the question arises where to place the boundary between operations based on *purposeful attention (apperception)* and those based on *internal processes (perception)*?

The philosopher David Armstrong touches upon the problem of unconscious action. He stresses the fact that many daily activities are executed unconsciously and gives driving a car as an example:
'Bei längeren Fahrten ertappe ich mich gelegentlich dabei, wie ich ganz in Gedanken verloren einige Kilometer zurück gelegt habe. Während dieser Zeit halte ich den Wagen auf der Straße und vielleicht bediene ich sogar die Gangschaltung, jedoch bin ich mir des Autofahrens nicht bewusst. Später komme ich "zu mir" und mir wird klar, dass ich einige Zeit gefahren bin ohne ein klares Bewusstsein dieser Tätigkeit gehabt zu haben.'[190]

Transferring Armstrong's example to the field of architecture generates one single question: Are you constantly aware of the architectural environment that surrounds you?

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189 Metzinger, T.(2003), p. 17.

190 'Driving long distances I find myself on occasion covering several kilometres lost in thought. I certainly continue steering my vehicle along the course of the road and perhaps I even change gears, but I am unaware of my driving a car. When I then "come to", I realize that I have been driving all this time without being conscious of my doing so.'
Armstrong, D., *A Materialist Theory of Mind,* Routledge, London, p. 93, in Tye, M.(1995), *Das Brennende Haus,* in Metzinger ,T.(2005), *Bewußtsein, Beiträge aus der Gegenwartsphilosophie*, mentis, Paderborn, p. 104.

Walter Benjamin feels confident:

'Bauten werden auf zwei Arten rezipiert: durch Gebrauch und deren Wahrnehmung. Oder besser gesagt: taktil und optisch. Es gibt von solcher Rezeption keinen Begriff, wenn man sie sich nach Art der gesammelten vorstellt, wie sie z.B. Reisenden vor berühmten Bauten geläufig ist. Es besteht nämlich auf der taktilen Seite keinerlei Gegenstück zu dem, was auf der optischen die Kontemplation ist. Die taktile Rezeption erfolgt nicht auf sowohl auf dem Wege der Aufmerksamkeit als auf dem der Gewohnheit.

Der Architektur gegenüber bestimmt diese letztere weitgehend sogar die die optische Rezeption. Auch sie findet vom Hause aus viel weniger in einem gespannten Aufmerken als in einem beiläufigen Bemerken statt. Diese an der Architektur gebildete Rezeption hat aber unter gewissen Umständen kanonischen Wert. Denn: Die Aufgaben, welche in geschichtlichen Wendezeiten dem menschlichen Wahrnehmungsapparat gestellt werden, sind auf dem Wege der bloßen Optik, also der Kontemplation, gar nicht zu lösen. Sie werden allmählich nach Anleitung der taktilen Rezeption, durch Gewöhnung, bewältigt.'[191]

According to Benjamin, *subjective experience* of architecture is subtle. *Apperception* or purposeful attention is usually not part of the general[192] relationship between *user* and *architecture*. Nelkin identifies this as a difficult assumption, since we are not aware of our unconscious relation to architecture. It is my opinion that a subtle hint that architecture incurs a more *perceptive* part in the *user/architecture relationship* is to be found in the debate about the performative quality of architecture. Architecture makes us act. These actions, however, are basically reactions to the given architectural situation. *Apperception* seems not to be absolutely necessary for the *use* of a building.

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191 'Buildings are appropriated in a twofold manner: by use and by perception – or rather, by touch and sight. Such appropriation cannot be understood in terms of the attentive concentration of a tourist before a famous building. On the tactile side there is no counterpart to contemplation on the optical side. Tactile appropriation is accomplished not so much by attention as by habit. As regards architecture, habit determines to a large extent even optical reception. The latter, too, occurs much less through rapt attention than by noticing the object in incidental fashion. This mode of appropriation, developed with reference to architecture, in certain circumstances acquires canonical value. For the tasks which face the human apparatus of perception at the turning points of history cannot be solved by optical means, that is, by contemplation, alone. They are mastered gradually by habit, under the guidance of tactile appropriation.' Benjamin W.(1977), p. 41, trans.: UCLA School of Theater, Film and Television,Transcribed: by Andy Blunden 1998; proofed and corrected Feb. 2005, http://www.marxists.org/reference/subject/philosophy/works/ge/benjamin.htm, 05.07.2010

192 By using the term general I wish to exclude any 'special' event of entering an unknown architectural environment.

I am convinced that exploration of the themes of *apperception* and *perception* is of great importance. I can identify analogies with *naïve realism*, both reference operations which distinguish sensual information into elements which require a certain type of directed attention and other elements which can be handled internally and 'automatically'.

> *- Where can insight into the architectural environment in this unconscious process be found?*
> *- How does my body (brain) know 'instinctively' how it is supposed to react, what does being in architecture feel like?*

Questions which deal with the quest of our inner picture like *naïve realism*, *internal pictures*, the *binding problem*, *apperception* and *perception* or *iteration* are important in understanding the phenomenon of *consciousness* or the idea of a *conscious user*. What all these cannot provide is one all-encompassing hypothesis. In his theory *the Self-Model Theory of Subjectivity* Thomas Metzinger operates with a more general framework, one we can work with beautifully. His theory - which I will focus on in the following chapter - is in my opinion crucial in terms of the relation between the individual and the outer world.

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4. SELF MODEL THEORY OF SUBJECTIVITY

According to Thomas Metzinger, who is a philosopher (of mind) and the 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'[193]. For that very reason Metzinger distinguishes three different aspects in his original question. First, he investigates what it means for a reality to appear. In the second aspect he deals with the question of how it can be possible that this reality can appear to a subject of experience. Finally, he sheds light upon the question of 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 towards an individual *first-person perspective*.

4.1   Being No One[194]

Metzinger treats these questions in detail, explaining his 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'[195]. As far as Metzinger is concerned, the *Self-Model Theory of Subjectivity, (subjective experience)* consists of three elements, a globally available model of the world, the virtual window of presence, and transparency.

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193   Metzinger, T.(2003), p. 5.

194   You can find a complete description of this theory in Metzinger's book *Being no one, The self-model Theory of subjectivity*

195   Metzinger, T.(2003),p. 15.

Metzinger states that every conscious system operates with globally available information, in other words information that is associated with being in a world. Therefore, a system that is *conscious* has to possess an internal and dynamic model of the world. Consequently this model is a consistent internal representation of the world as a whole. According to Bernard Baars and his hypothesis of the *Global Workspace Theory*[196], the content of *conscious experience* is the content of a global workspace which offers fast and flexible control of its outer but also inner behaviour to the system.

Next, the system experiences this integrated model from a virtual centre through a *virtual window of presence*. Whatever you experience, you always experience it right now. The experience of presence which comes with our *phenomenal* model of reality is the central aspect and if the global model of a world (or a part of it) is embedded into the system's *virtual window of presence,* the produced representational content is the presence of a world. *Conscious experience* is the presence of a reality. Therefore a conscious system could also harbour a grand unconscious model of reality, namely the part that is not globally available. Thomas Metzinger states that (even) this unconscious model of reality causally influences the behaviour of a given system.[197]

Finally, the system needs functional implementation of *naive realism*, 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 *Global Workspace Theory*.

4.2   The Global Workspace Theory

Conscious systems means all systems which operate using globally accessible information and therefore experience themselves as living in one unified single world. As a result, every conscious system requires an integrated global model of the world which makes subsets of currently active information available simultaneously, in aid of specialized processes such as introspective attentiveness, memory, or symbolic thought. A prominent hypothesis was outlined by Bernard Baars in his

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196   Metzinger, T.(2003),p. 120.
197   Metzinger, T.(2003),p. 17-18.

Global Workspace Theory.[198] The content of conscious experience is simply the content of a global working memory which enables fast and flexible access to a variety of subjects and especially fast and flexible supervision or control of our external and internal behaviour.[199]

'Global Workspace Theory suggests a fleeting memory capacity that enables access between brain functions that are otherwise separate.'[200] Similar to Thomas Metzinger's metaphor of the Ego Tunnel, Bernard Baars compares his theory to a theatre. To Baars the theatre metaphor is simple, but offers useful approximation. 'Consciousness in the metaphor resembles a bright spot on the stage of immediate memory, directed there by a spotlight of attention, under executive guidance. The rest of the theatre is dark and unconscious.'[201]

How is this integrated and dynamic model of the world created, where does it originate?

All knowledge maintained by a brain resides in the functional architecture of the specific wiring of billions of nerve cells (>hardware=software).[202] This intelligence does not only encompass what is known about the world, but also includes a system of rules for utilizing the structure of our perception, thought processes, decisions, and actions. We need to distinguish between innate knowledge and knowledge which is procured through experience.

The former was acquired in the course of evolution by way of trial and error, is anchored in our genes, and is expressed in the genetically determined basic wiring of our brains. Knowledge which is added in one's lifetime leads to modification of said hereditary wiring.

As long as the brain is in a state of development - right through puberty – upbringing and experience mould the structural implementation of the network of nerves within the genetically determined space of configuration. Later, when the brain has matured, such elementary changes in its architecture are no longer possible. All acquisition is now restricted to changes in the efficiency of existing connections. Intelligence on the condition of the world which is added at the start of

198 Baars, B.(2003), T*he global brainweb: An update on the global workspace theory*, Guest editorial, Science and Consciousness Review, October 2003, http://cogweb.ucla.edu/CogSci/Baars-update_03.html, 15.08,2010.

199 Metzinger, T.(2008), *Anders Denken – Das Rätsel Bewußtsein,* Audio CD, 1. Lecture: *Die elementaren Bausteine des menschlichen Bewußtseins,* Hoffmann und Campe, Hamburg, transl. by author.

200 Cf. Baars, B.(2003).

201 Cf. Baars, B.(2003).

202 Cf. Singer, W.(2006), p . 26.

cultural evolution - intelligence of a social reality - manifests itself in culture-specific peculiarities of an individual brain's architecture.

Early impressions program brain operations to the near same extent that genetic factors do, as both processes manifest themselves equally in the specification of wiring patterns.

It is important for the process of making decisions that genetically transmitted knowledge is implicit in character, as we cannot consciously remember acquiring it. The same holds true for knowledge gained early on in life, as the very structures of the brain which are necessary for the make-up of declarative memory mature later in our development.

'Declarative memory' denotes the ability to consciously remember learning and also retaining the respective context in which this process was embedded. Infants procure intelligence of the world, they do not, however, consciously remember this process. This is called infantile amnesia and it is this which determines that not only innate knowledge, but also a considerable amount of culture-specific knowledge based on education and upbringing, is ascribed absolute and unchallenged truth which cannot be reversed or relativised in each new situation. This implicit body of knowledge incorporates inherent and acquired thought patterns, behavioural strategies, values, and religious convictions.[203]

One system of values is of particular importance when viewed from an architectural aspect. In my opinion and taking Singer's assumption into account, we have to reconsider the term *aesthetics*. Applying Singer's theories, this would mean that value systems such as the golden ratio, harmonics, and theories of colours or proportion are not fixed but culture-based properties. This means that different *users* of architecture operate with different value systems in terms of proportion, materiality, or systems of colours. Based on the individual cultural imprint received in early childhood, the *aesthetic sensation* of *users* with different cultural backgrounds would vary. *Aesthetic sensations* are part of *what it is to be in architecture,* respectively the *subjective experience* of architecture. Therefore the *subjective experience* of architecture is influenced at least in part by cultural imprint.

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203   Singer, W.(2004), *Entscheidungsgrundlagen, Keiner kann anders als er ist. Verschaltungen legen uns fest: Wir sollten aufhören, von Freiheit zu reden,* in Geyer, C. ed.(2004), *Hirnforschung und Willensfreiheit, Zur Deutung der neuesten Experimente,* Edition Suhrkamp, Frankfurt am Main, p. 30-65.

21 displacement.15
   Spatial Experiment 2007

Since the *subjective experience* of architecture is not absolute but culture related, we can identify the activation of this cultural imprint in a toddler's first contact with the built environment. On the one hand the toddler will start to sense different types of qualities, on the other hand it will learn by imitating various spatial habits which are based on the built environment. At this point I have to recapitulate de Saussure's concept of the circulating meaning of language ('parole') within cultural context. He states that language never exists outside of social relation; the social nature of a language is an inherent attribute. I do not want to compare language and architecture anew, but I do want to stress the fact that de Saussure's assumption of the development of language has an affinity to the concept of the *Global Workspace Theory*. The analogy between language ('parole') and the *subjective experience* of architecture exists because both are products of one and the same system, which is a conscious one.

4.3   Virtual Window of Presence

The second element of Thomas Metzinger's *Self Model Theory of Subjectivity* is called the *virtual window of presence*. In his book *The Ego Tunnel* Metzinger starts his argumentation concerning the problem of perspective as follows: 'The biological *consciousness* tunnel is not a tunnel only in the simple sense of being an internal model of reality in your brain, It is also a time tunnel – or, more precisely, a tunnel of presence.' [204]

According to Metzinger, a complete scientific description of the physical universe would not contain information as to what time is 'now'. 'Indeed, such a description would be free of what philosophers call 'indexical terms.' There would be no pointers or little red arrows to tell you 'You are here!' or 'Right now!' In real life this is the job of the conscious brain: It constantly tells the organism harbouring it what place is here and what time is now. This experiential 'now' is the second big problem for a modern theory of *consciousness*.'[205]

Let us again start from a *phenomenological* viewpoint. Without exception all states of *consciousness* are experienced as 'now', regardless of specific content and context. *Conscious memory* is equally relived in a state of 'now'. Attributing *consciousness* to human properties will always imply the existence of the present.[206] The meaning of the present lies on a system's intellectual content being up to date. Presence and the present are temporal immediacies of existence of such. Without temporal immediacy *consciousness* would not exist, as we would not appear to reality and it not to us. *Phenomenological* appearance always refers to appearance within the present. By talking not about single states, but about people or information-processing systems, one will come to realize why the discrepancy between *consciousness* and *unconsciousness* is of such meaning for the beings that we are. The existence as psychological subjects is exclusive to people who are in a *phenomenological* condition. Only people who hold a subjective state of 'now' are beings of the present, both for themselves and for others. Contents of *phenomenological* experience thus create not only a world, but also a present. 'I myself (the content of a transparent self-model) am now seeing this object (building) (the content of a transparent object-model), I am seeing it "now" (the

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204   Metzinger, T.(2009), p. 34.

205   Metzinger, T.(2009), p. 34, Metzinger, T.(2003), p. 25.

206   Cf. Metzinger, T.(2008).

perceptual content is integrated into a virtual window of presence), and I am seeing it with my own eyes (the simple story about immediate sensory perception, which sufficed for the brain's evolutionary purpose).'[207]

Conscious experience does not mean being in the flow of the physical world, but living on an island of presence[208] in an operationally manufactured private world, which implies processing information in a very specific idiosyncratic manner.[209] The state of 'now' is indeed an extraordinary type of inwardness; current presence is in fact a peculiar type of memory. This distinguishing kind of globalized short-term memory, a 'memory of now', is needed by every *conscious* individual, as a representational resource with which different contents can be brought together and portrayed simultaneously in apparent and direct given facts. This is what Metzinger calls the possession of a *virtual window of presence*. The two criteria of the *Global Workspace Theory* and the *Virtual Window of Presence* can now be merged, embedding the global model of the world into the system's virtual window, the emerging product being the relative present.[210]

For each pertaining system there now exists a single cohesive reality which is depicted as being currently given and with which the system appears to be in direct correspondence. *Conscious* experience is the presence of a reality. It is easy to now envisage how a system would have as a part of it a comprehensive model of reality, the very part which is at that moment not globally accessible and not embedded in its *conscious window of presence*. Obviously such an unconscious model of reality could causally influence the system's behaviour and this unconscious model of the world would then be the part currently not displayed as being present.

In order to create consciousness it is not sufficient to simply install a global dynamic model of the world into a *virtual window of presence*, it is necessary to manufacture a genuine inner reality, as this is the essence of consciousness. This is the emergence of reality.[211]

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207 Metzinger, T.(2003), p. 416.

208 One of Metzinger's metaphors for *consciousness* is an island emerging out of an ocean of globally integrated data. See chapter 6, *The Architectural Relevance*.

209 Cf. Metzinger, T.(2008).

210 Cf. Metzinger, T.(2008), Metzinger, T.(2003), p. 128 -135.

211 Cf. Metzinger, T.(2008).

4.4   Transparency

The classical location of the notion of *phenomenal transparency*, Metzinger writes, is usually given as it is in G. E. Moore's paper, *The Refutation of Idealism*: '…the fact that when we refer to introspection and try to discover what the sensation of blue is, it is very easy to suppose that we have before us only a single term. The term 'blue' is easy enough to distinguish, but the other element which I have called 'consciousness' – that which a sensation of blue has in common with a sensation of green – is extremely difficult to fix. … And in general, that which makes the sensation of blue a mental fact seems to escape us; it seems if I use a metaphor, to be transparent – we look through it and see nothing but the blue; we may be convinced that there is something, but what it is no philosopher, I think, has yet clearly recognized.' [212]

The third criterion is *transparency*: functional implementation of *naive realism*. How does one arrive at an actual and consciously experienced reality starting from a complex 4-dimensional representation. The solution is to be found in what philosophers sometimes call *phenomenal transparency*. What does this mean? The instruments employed by the system need to be *phenomenally transparent*, which expresses that they are models which do not exhibit this fact on the level of their content. The first issue one needs to understand is that only conscious representations can be transparent or opaque. An unconscious representation in the brain or in a robot is neither transparent nor opaque. Next, *transparency* has nothing to do with knowledge and it is not a notion of *philosophical epistemology*, but rather with the structure of experiencing, the feeling of reality, and *naive realism*. It is therefore a concept of *philosophical phenomenology*. A complete transparent representation is validated by the fact that inner mechanisms have lead to its activation and by the fact that there exists a concrete inner state which carries meaning and cannot be recognized introspectively. In an ordinary state of waking this pertains to our *phenomenal* image of the world as a whole. The means of representation cannot be displayed over as such, as this would entail the entanglement of the experiencing system in *naive realism*; it would be forced to observe itself in direct contact with the content of its awareness. What it cannot appreciate is the matter that its own experience always occurs within a medium. Let us assume you are looking at an apple in your hand. The representational carrier

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212   Moore, G. E.(1903), *The Refutation of Idealism*, Aberdeen University Press, Aberdeen, p. 446, in Metzinger, T.(2003), p. 163.

of experience is a specific process in the brain. You do not experience this process consciously. It is transparent in the sense that – when functional – you can see right through it. What you are indeed looking at is its representational content, the sensory existence of an apple, here and now.[213] The content is therefore an abstract quality of a concrete condition in your head; if the representational carrier is a sound and reliably functional instrument for obtaining knowledge, then it will allow you to see through the world onto the apple by means of its *transparency*. It renders the attached information globally accessible, but does not need you to attend to the procedure. What makes the *phenomenal* version of representation exceptional is that you will always experience the content – even if you are in fact hallucinating or the apple does not really exist – as concrete, absolute, direct, and immediate. *Phenomenal representations* are virtually always representations which we cannot distinguish into medium and content concerning subjective experience. Metzinger claims humans to be systems which are not capable of recognizing their own sub-symbolical self-models as self-models which trigger a real phenomenal self in the first place.[214] According to Metzinger, it is clear that even an artificial system, such as a robot or even the internet, could possess a self-model, possibly a substantially more comprehensive, flexible, and faster one than humans. It now becomes obvious what we would need to do to ensnarl or simply integrate a machine into an 'undeceivable' *naive realism*. We would need to impede the possibility of representation - for a substantial part at the very least - in its internal world-model, including its temporal features and the contents of its window of presence as a simulation of presence; the fact is that all this is simply the content of an internally constructed fabrication.[215]

This means that the *phenomenon of transparency* or *naive realism* is a basic requirement for *consciousness.*
Metzinger originates three illustrations - the *Global Workspace*, the *Virtual Window of Presence,* and *transparency* and combines them in his *Self-Model Theory of Subjectivity* which presents a complete image of self.

213 Cf. Metzinger, T.(2008).

214 '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.'
     Metzinger, T.(2003), p. 169.

215 Cf. Metzinger, T.(2008).

4.5   Architecture and the Self-Model Theory of Subjectivity

The *Self-Model Theory of Subjectivity* is all the more rewarding when you consider how it gives direction to the *user/architecture-relationship*. It is a structural understanding, describing the relationship between human (*user*) and environment (*architecture*) as a reflexive circulation.[216] According to Metzinger, the human self features preconfigured models of reality in order to evaluate every impulse beyond its own inner reality. This process is a circulating production of a hypothesis of reality based on outer impulse. Comparing this hypothesis with the internal-world model of the human self, important discrepancies or attractions are recognized and become the centre of attention.

Metzinger´s *Self-Model Theory of Subjectivity* leads me to the assumption that architecture is part of 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 subtly influences the *user's* behaviour. The differentiation between *apperception* and *perception* in the human mechanism of perception can be substantiated by neurobiological economy. *Unconscious* control of behaviour, relayed on the principal of *apperception*, offers capabilities of target-oriented *apperception* to the system. The subtle way in which the environment is perceived is important to the ability to communicate with a chosen 'opposite' (another human) and this seems to be valuable to a human's social competence.

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216   Cf. Fehr, p. 94.

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5. EMPIRICAL METHODOLOGY

It is remarkable that the content of *philosophy of mind* is not only based on a theoretical discussion, but also on empirical studies of modern neuroscience and neurobiology. Furthermore, modern neuroscience and neurobiology have started extending their work towards a philosophical and *epistemological* debate, since the outcome of experimental research in these disciplines poses *epistemological* questions. Due to new technologies such as non-invasive imaging research methods which provide fascinating insight into the function of the brain, the philosophical field of *epistemology* invited new continuative discussions. Interdisciplinary work of *philosophy of mind* and sciences of the mind originate an extraordinary combination of theoretical approaches and empirical studies. One remarkable study, the *rubber-hand illusion*, conducted by the psychiatrists Matthew Botvinick and Jonathan Cohen[217], works without extensive techniques like fMRI[218] or MEG[219]. This experiment - which was executed in 1998 - strongly suggests a purely experiential nature of (the) self.[220]

Before commencing the second main strand of my doctoral dissertation, which follows the possibilities available to extend knowledge of the *user/architecture relationship* by means of empirical research models, I will expand on Botvinick and Cohen's study to highlight the importance of their interlinking work of empirical and philosophical studies.

Thomas Metzinger describes the *rubber-hand illusion* in his book *The Ego Tunnel* as follows:

'… Matthew Botvinick and Jonathan Cohen conducted a now-classic experiment in which healthy subjects experience an artificial limb as part of their body. The subjects observed a rubber hand lying on the desk in front of them, with their

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217 Botvinick, M., Cohen, J.(1998), *Rubber Hand 'Feels' Touch That Eyes See,* Nature 391:756.

218 Functional Magnetic Resonance Imaging

219 Magnetoencephalograph

220 Metzinger, T.(2009), p. 3.

own corresponding hand concealed from their view by a screen. The visible rubber hand and the subject's unseen hand were then synchronously stroked with a probe. The experiment is easy to replicate: After a certain time (sixty to ninety seconds, in my case (Metzinger)), the famous rubber-hand illusion emerges. Suddenly, you experience the rubber hand as your own, and you feel a full-blown "virtual arm" – that is, a connection from your shoulder to the fake hand on the table in front of you.'[221]
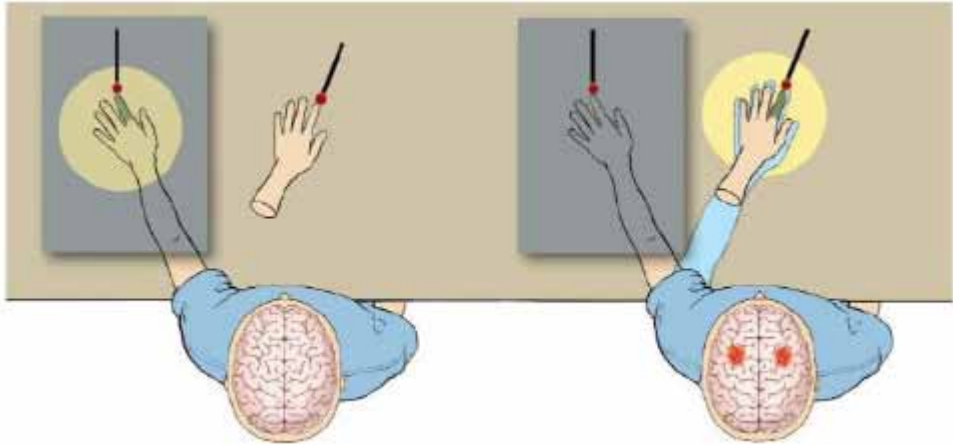
24 The rubber-hand illusion

A healthy subject experiences an artificial limb as part of her own body. The subject observes a facsimile of a human hand while her own hand is concealed (grey square). Both the artificial rubber hand and the invisible hand are stroked repeatedly and synchronously with a probe. The light areas around the hand and the dark areas in the index finger indicate the respective tactile and visual receptive fields for neurons in the premotor cortex. The illustration on the right shows the subject's illusion as the felt strokes are aligned with the seen strokes of the probe (the dark areas show areas of heightened activity in the brain; the phenomenal experience, illusory position of the arm is indicated by the light outline). The resulting activation of neurons in the premotor cortex is demonstrated by experimental data. Botvinick, M. & Cohen, J.(1998), *Rubber Hand 'Feels' Touch That Eyes See*, Nature 391:756, 1998.
Photograph: Litwak illustrations studio, 2004.

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221   Metzinger, T.(2009), p. 3.

This rubber hand illusion points at the conscious model of man that is, as a whole, activated by the brain.[222] It identifies, similar to Heinz von Foester's *blindspot* experiment, our subjective experience as a process, as a product of the brain. What the *blindspot example* and the *rubber-hand illusion* have in common is their correspondence to the body of the observing subject. An experiment like this stresses the general source of all subjective experiences as the subject's own brain and that the effect of everything you see, hear, or feel, as an optimized product of the *outer world.* The beauty of this experiment is that while the test-person engages in the *rubber-hand illusion*, the subject actually experiences the phenomenon of sudden change within subjective reality. This feels like an adjustment in the process Thomas Metzinger calls *the ego tunnel* and this fine correction of the reality experienced is indeed a subtle hint that you, who is experiencing this, are a *naïve realist*.

When we now look towards possible strategies for the development of empirical research methods to investigate the *user/architecture relationship,* there are indications that these types of methods need to differ from experiments like the *rubber-hand illusion* experiment. An experiment such as this – much like non-invasive imaging research methods - observes the functional process of what we call *consciousness*. An investigation of the relationship between a conscious self and its (built) environment however, focuses more on the product of this process than on the process itself. The *rubber-hand illusion* experiment indicates effects within conscious experience just like *naïve realism.* The phenomenon of *naïve realism* does in fact become one of the major obstacles when you investigate the relation between subjective experience and the objective (outer) world.

Every concept of knowledge-based empirical strategy in the *user/architecture relationship* has to deal with this obstacle; this is known as the dichotomy between the subjective and the objective. We have to focus on this problem in the first instance, before we can seriously discuss a knowledge-based strategy of an *architecture/user* observation.

I will therefore expand some more on this problem before I continue looking at existing strategies of knowledge-based architectural research.

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222   Metzinger, T.(2009),p. 4.

5.1   What is it like to be a Bat?[223]

Once again, the distinction between an investigation of the process and the product of what we call *consciousness* is important, since the product is the private and subjective reality of only one single person. There is always only one individual in the universe that has the capacity to make its own specific content available (to itself). Only you can become conscious of the content of your own processes exemplifying your own property.[224] The philosopher Thomas Nagel describes this (*body/mind*) problem in his paper *what is it like to be a bat.* [225]

In his famous article Thomas Nagel writes that since conscious experience occurs at many levels of animal life, we cannot be sure of its presence in simpler organisms and it is difficult to generalize what provides evidence of it. To Nagel there is no doubt that conscious experience occurs in countless forms unimaginable to us. One of the forms of conscious experiences Nagel discusses is that of a bat. He writes: '(…) we know that most bats perceive the external world primarily by sonar, or echolocation, detecting the reflections, from objects within range, of their own rapid, subtly modulated, high frequency shrieks. Their brains are designed to correlate the outgaining impulses with the subsequent echoes, and the information thus acquired enables bats to make precise discrimination of distance, size, shape, motion, and texture comparable to those we make by vision. But sonar, though clearly a form of perception, is not similar in its operation to any sense we possess, and there is no reason to suppose that it is subjectively like anything we can experience or imagine. This creates difficulties for the notion of what it is like to be a bat. We must consider whether any method will permit us to extrapolate to the inner life of the bat from our own case, and if not, what alternative methods there may be for understanding the notion.' [226]

According to Thomas Nagel, this directly pins down the *body/mind problem.* The facts of subjective experience –what it is like for the experiencing organism – are accessible only from one point of view, it is a mystery how the true character of experiences could be revealed through objective facts, the kind that can be observed and understood from many points of view and by individuals with different perceptual systems.

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223   Therefore the analogical form of the English expression "what it is like" is misleading. It does not mean "what (in our experience) it resembles, but rather "how it is for the subject himself."

224   Metzinger, T.(2003), p. 267.

225   Nagel, T.(1974), *What is it like to be a bat*, The Philosophical Review, Vol. 83, No. 4 (Oct., 1974). p. 435-450.

226   Nagel, T.(1974), p. 438.

In the case of experience the connection with a particular point of view seems axiomatic. It is difficult to understand what the objective character of an experience could mean, apart from the particular point of view from which its subject apprehends it. After all, what would be left of what it was like to be a bat if one removed the viewpoint of the bat?[227]

5.2 Subjective -Objective Dichotomy

The differentiation between the objective and the subjective character of an observation is not the one single problem within the debate of the phenomenon of *consciousness*. Thomas Nagel is concerned that the dichotomy of the subjective and the objective is a problem that continuously leads us towards a philosophical error in the following way: one part of our being, the rational part, naturally seeks a unified view of the world. Our capacity to reason in an objective way suggests this ideal to us and this is due to the connection between the idea of unity and an intuitive conception of objective understanding. Nagel thinks that this ideal cannot in fact be attained when we try to attain a unified worldview.[228]

In his book *Thomas Nagel,* the philosopher Thomas Alan most notably subsumes Nagel's work on the dichotomy of the subjective and the objective. Alan writes that the impulse to adopt a unified worldview arises in this way: we have an intuitive idea of what it is to understand something objectively. 'The intuition is that if something can be understood objectively, then it is maximally to a range of different points of view. This idea of representing the world from a particular point of view leads naturally to the idea of a *perspective.* The connection between the two ideas is that occupying different points of view on one and the same reality will have the consequence that representations of the reality will be, in a various ways, perspectival.' [229]

Alan writes that Nagel's idea of perspective also plays a role in our ordinary thinking about our place in a world that is not our making. Each of us, as a *user* or thinker, moves through or thinks about a real world that is independent of our will and our thought. 'One natural way to conceive of what we are doing is to (think) of our

227 Nagel, T.(1974), p. 443.

228 Nagel, T.(1986), *The View form Nowhere,* Oxford University Press, Oxford, p. 4.

229 Alan, T.(2009), *Thomas Nagel*, MacGill-Queen's University Press, Montreal, p. 2.

representations of the world, in our experience and thinking, as various different perspectives on a single objective reality. Nagel's metaphor of perspective and this intuitive realism about the world seem intrinsically tied together.'[230]

Furthermore, Alan continuous his exploration of Nagel's concept of the *subject/object dichotomy,* stating that the world we find ourselves in is a world shared with other subjects of experience just like ourselves. As you strip away perspective to think of someone else's world, so do other people; they have thoughts about the world that contains you. Objectivity seems to consist of overcoming perspective: in stripping it away to find a conception that is maximally perspective free. The underlying thought is that there is a conception of the world that is perspective free, because the world itself is a unified and substantial whole. The metaphor of perspective invites this thought, because of its connection to realism: perspectives have to lay perspective on something, indeed something beyond all perspectives. We intuitively think that perspectives are someone's 'angle' or 'take' on a subject matter, where the subject matter itself is not perspectival (in a variation of the last thought, not as perspectical).

This is Nagel's idea of an underlying unity and its connection to our faculty of reason. A world made up solely of perspectives (if we could make sense of that idea) would appear to be a fractured multiple reality. This is not our intuitive understanding of what we mean by real. Reality is unified and substantial. Our methods of understanding it, our ways of being objective, are dependent on this feature. It seems that we should seek a maximally unified worldview, but that, Thomas Nagel argues, is an aspect of our being that leads us into philosophical error. [231]

The world may well be a single, substantial thing that underpins our many representations of it. Nagel thinks it is, but he also thinks that our ways of understanding it are not. A unified worldview is not a legitimate aspiration. When we take the method of thinking objectively that has succeeded so well in understanding the physical world, particularly through modern science, and try to extend its scope, we fail repeatedly. The impulse to apply this model to everything conflicts with our aim of living reflectively in the light of the truth:

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230   Alan, T.(2009), p. 2, cf. Metzinger, T.(2003), p. 582.
231   Alan, T.(2009), p. 3.

'The right attitude in philosophy is to accept aims that we can achieve only fractionally and imperfectly, and cannot be sure of achieving even to that extent. It means in particular not abandoning the pursuit of truth, even though if you want the truth rather than merely something to say, you will have a good deal less to say.'[232]

Alan states that according to Nagel there exists tension which is deeply rooted in our very nature. On the one hand, our capacity for reason leads us to seek a naturally unified view of the world. On the other hand, our overall goal of truthfulness provides insight into the fact that this is not always appropriate. We can go further in diagnosing what goes wrong: the impulse to a single overall worldview leads us into error, if it causes us to apply a single model of objectivity to all our problems in philosophy. [233]

Nagel thinks that we are often guilty of a particular kind of intellectual mistake, namely false objectification.[234] We tend to apply an objective method of understanding to a subject matter that does not tolerate this and can only be distorted by such treatment. Our underlying impulse is to promulgate a unified way of understanding the world and hence to a single worldview. But this is simply unattainable. One reaction to this situation is that of denial and bad faith.[235]

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232   Nagel, T.(1986), p. 9.

233   Alan, T.(2009), p. 4.

234   Nagel, T.(1986), p. 4.

235   Nagel, T.(1979), *Subjective and Objective in his Mortal Question* , Cambridge University Press, Cambridge, p. 210-211.
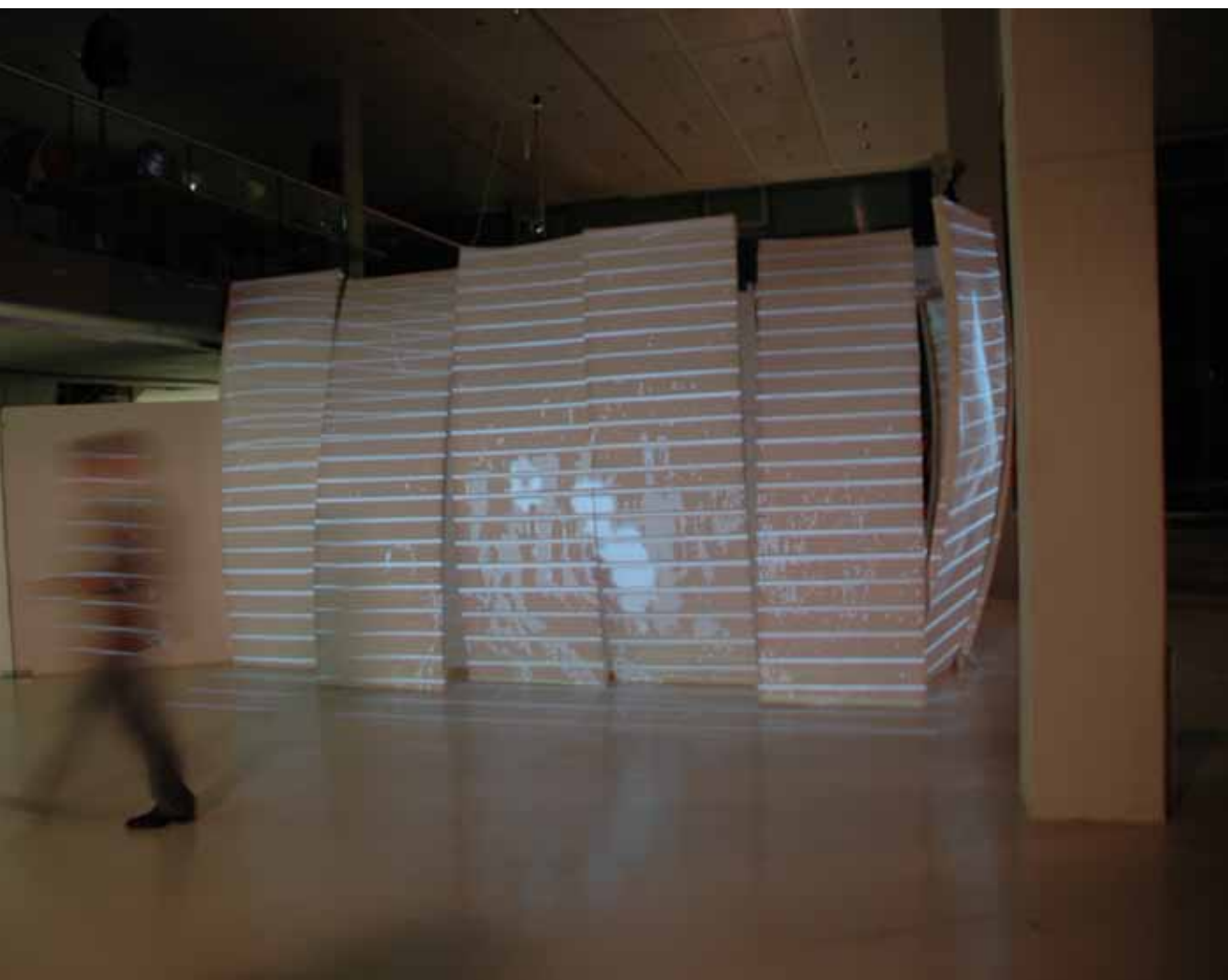
25 displacement.13
Spatial Experiment 2005

5.3   Epistemic Asymmetry

Thus the puzzle of (architectural) subjective experience and its problem of an objective analysis can be attributed to the *epistemic* element of perspective. Perspectivity, or the fact that *consciousness* is a phenomenon which 'admits' a distinction between 'perspectives' or 'points of views' in its explications, is rooted in an attitude of puzzlement.[236] Concerning the *epistemology* of the matter, the philosopher Güven Grüzeldere believes that there appears to be genuine asymmetry between the mode of access to facts of one's own *consciousness* and the mode of access to facts about others' conscious states. 'This asymmetry is what grounds the important distinction between systematic approaches to *consciousness* from the *first person perspective* versus the *third-person perspective.*'[237]

Its seems to Grüzeldere there is no 'ordinary' way to peek into the inner life - the subjective experience - of others. 'There is an epistemic impossibility for anyone to have direct access to the qualia of others – literally share their *first person perspective*, in short, to partake in the mode of what it to be them. These are the limitations of the *third person perspective*: *from the outside.*'[238]

This asymmetry of *first-person perspective* and *third-person-perspective* is called *epistemic asymmetry.*

When we now look at the architectural field of academic research we find two different strategies that treat the *user/architecture relationship.* One is the attempt to proceed in a very subjective way. The previously mentioned strategy known as *phenomenology* consequently operates from a *first person perspective*. In contrast, a research strategy has been developed that works primarily with empirical studies, so-called *naturalistic objectivism* or *analytical behaviourism* and it operates from a *third-person-perspective*. Since the *user/architecture relationship* is characterized by the fact that the *user* of architecture has privileged access to *architecture*, the question arises who the *epistemological* authority owns, the experiencing subject or the science that operates from an objective external perspective. These two entirely different approaches, *phenomenology* on the one side and *behaviourism* on the other side, typify the explanatory gap of *epistemological asymmetry.*

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236   Grüzeledre, G.(1997), p. 4.

237   Grüzeledre, G.(1997), p. 25.

238   Grüzeledre, G.(1997), p. 25.

5.4   Two Different Strategies

Taking a closer look at the two approaches it appears that the explanatory gap of *phenomenology* and *behaviourism* cannot be bridged.
The *phenomenal approach* works with a subjective method of observing and describing the architectural experience of the *user*. Architectural *phenomenology* aims to construct the physical and mental reality of an architectural environment, based on sense related information. It is a specific field of academic research, based on the experience of building materials and their sensory properties. *Phenomenology* provided the first extended approach to a methodical and autonomic science of consciousness.[239] In the early 1970s, writings by Maurice Merleau-Ponty or Martin Heidegger began to influence architectural thinking as a counterweight to the ongoing analytical debate of the time. An important figure of the movement was the Norwegian architect Christian Norberg-Schulz, who in his book *Genius Loci* focuses on the problem of a scientifically analyzed architecture. 'When we treat the architecture analytically, we miss the concrete environmental character, that is, the very quality which is the objects of man's identification, and which may give him a sense of existential foothold.'[240] Norberg-Schulz continues his critic by writing that qualitative totalities of a complex nature or places cannot be described by means of analytical 'scientific' concepts, since science 'abstracts' from the given to arrive at neutral 'objective' knowledge. 'What is lost, however, is the everyday life-world, which ought to be the real concern of man in general and planners and architects in particular. Fortunately a way out of the impasse exists, that is, the method known as *phenomenology.*[241] The perspective of this method is that of the *first-person perspective,* this evidence of introspective perception within phenomenal strategy turned out to be an unsustainable assumption, since this *phenomenal* approach of collecting data is no methodically secure technique.[242] Norberg-Schulz, for instance, writes: 'The words of Trakl[243] (also) serve our purpose very well, as they make present a total life-situation where the aspect of place is strongly felt. (…) In general, Trakl uses *concrete* images which we all know from our everyday world.'[244]
The problem we find here is that Norberg-Schulz argues from his own subjective

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239   Metzinger, T.(2005), p. 41.
240   Norberg-Schulz, Ch.(1980), *Genius Loci, Towards a Phenomenology of Architecture*, Rizzoli, New York, p. 5.
241   Norberg-Schulz, Ch.(1980), p. 8.
242   Meztinger, T.(2005), p. 41.
243   In this passage, Norberg-Schulz had presented the poem *A Winter Evening* by Georg Trakl.
244   Norberg-Schulz, Ch.(1980), p. 8.

perspective. The *concrete* images Trakl uses in his poem are 'snow', 'window', 'house' or 'threshold', but it is difficult, maybe impossible, to generalize these terms and depict them as *concrete* images. Criticism of the *phenomenal* approach points towards a big question: Is it possible to measure the experience of architecture in the first place?[245] However, one of the big problems of the *phenomenal* approach is the gap between subjective observation and an expansion of knowledge.

Concerning architecture, what does knowledge refer to? This query is treated in Seifert and Rambow's article *Lackschäden und Krähenfüße*[246], where they state that this question may appear trivial at first glance, but is in fact significant and difficult to answer. They write: 'In architecture the practice-knowledge relationship has always been more precarious than in other disciplines. This is firstly down to its character as an artistic venture. Within the arts, the relationship between knowing and doing is noticeable looser than in those disciplines which are irrefutably applied sciences. Where the practice element is too strongly knowledge-determined, it results in undue restrictions being placed on creative possibilities.'[247]
A second argument why science-based production of knowledge is rather unusual can be traced back to the fact that architects have been described as generalists since the time of Vitruv. 'This also means, however, that the architect – now more so than in Vitruv's time – must dabble in most areas and thus his architectural knowledge base has become disparate, and less exclusive in comparison.'[248]

In an interview from 1992 Amos Rapoport, an environment-behaviour researcher whose work in this field is widely known, vented anger when asked about the relationship between architecture and the field of environment-behaviour research: 'In the seventies, it looked for a while as though architects were really beginning to pay attention to this field, but today I think there is a complete rejection of the field. Architects have become very formalist, very esoteric and they are not concerned with users at all, they essentially just make their projects for themselves.'[249]
Arnos Rapoport implemented an objective analytical research strategy for

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245 The ongoing importance of the phenomenal field of architectural research correlates with architects 'general scepticism' that the experience of architecture can be analysed and measured by empirical study.
246 Cf. Rambow, R. & Seifert, J.(2006).
247 Rambow, R. & Seifert, J.(2006), p. 14.
248 Rambow, R. & Seifert J.(2006), p. 16.
249 Interview with Amos Rapoport, (1992), p. 93-102.

environment behaviour research.[250] Today, disciplines working on environment and behaviour studies range from environmental psychology, geography, architecture to urban design, sociology, social psychology, interior design, and planning. The IAPS, the International Association for People-environment Studies, describes that the scope of IAPS reflects the scientific and practical capabilities and aspirations in work concerning people in their environments. Areas of interest include: spatial cognition and way-finding, ecological aspects of human actions in places, evaluation of buildings and natural landscape, meaning of built environments, theories of place, place attachment and place identity, urban design, architecture, landscape architecture, and the effect they have on people.[251]

In my opinion the general peradventure within the architectural community towards empirical study still exists, since the architectural experience is based on a subjective and therefore privileged process of perception. It is possible, however, to collect important information about the *user/architecture relationship*, but this information will hardly reveal *what it is like to be in architecture*.

'If we try to understand experience from an objective viewpoint that is distinct from that of the subject of the experience, then even if we continue to credit its perspectival nature, we will not be able to grasp its most specific qualities unless we can imagine them subjectively. We will not know exactly how scrambled eggs taste to a cockroach even if we develop a detailed objective phenomenology of the cockroach sense of taste. When it comes to values, goals, and forms of life, the gulf may be even more profound.'[252]

The collected information is limited in its objectivity. From an external perspective factors such as personal behaviour can be attended to develop a theory about the *user/architecture relationship*. This method uses a methodically secure technique to achieve knowledge on the *user/architecture relationship*. According to Thomas Alan and his analysis on Nagel's philosophy, we are over-impressed by a Cartesian model of objectification and tend to mistakenly generalize its application. However, Alan writes, this model is right as an account of modern, mature, and mathematicited physical science. In its appropriate place, this model of objectivity is correct and it is very important that it is correct.[253] Thomas Nagel writes: 'I shall offer a defence and also a critique of objectivity. Both are necessary in the present intellectual climate,

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250 Broadbent, G. & Llorens T,(1980), *Meaning and behaviour in the built environment,* John Wiley & Sons, Toronto- Brisbane-New York-Chichester, p. 20.

251 http://www.iaps-association.org/what-is-iaps/, 13.07.2010.

252 Nagel, T.(1986), p. 25.

253 Alan, T.(2009), p. 32.

for objectivity is both underrated and overrated, sometimes by the same persons. It is underrated by those who don't regard it as a method of understanding the world as it is in itself. It is overrated by those who believe it can provide a complete view of the world on its own, replacing the subjective views from which it has developed. These errors are connected: they both stem from an insufficiently robust sense of reality and of its independence of any particular form of human understanding.'[254]

254   Nagel, T.(1986), p. 5.

< 26 displacement.14
Eye Glaze Experiment 2007
Photograph: Kubo, M. & Prat, R.(2005), *Seattle Publice Library OMA/LMN*, Altar,
Michigan.

6. THE DISPLACEMENT SERIES

During the course of these past years the research group[255] Birgit Brauner, Andrea Hörl, and Fiona Zisch, who supported the development of the different experiments with great encouragement, has tested different types of experimental settings. From the very beginning one main question was how we would 'set up' our experiments. Taking the dichotomy of the subjective and the objective into account, the question arose if we could 'manage' all the given obstacles and bridge the explanatory gap.

First and foremost, the *displacement* series of experiments follows the question how an architecture-based investigation can be approached and realized (in principle). I will therefore term this series a series of 2nd order experiments, since each experiment is an *investigation of an investigation*. For that reason one of the first questions we had to deal with was how to produce knowledge in the *user/ architecture relationship.* Today I believe we need spatial experiments supported by the theory of *philosophy of mind* to answer this question. *Philosophy of mind* is important, since its theories about subjectivity are interlinked to the *epistemological* field of philosophy, a necessary precondition for talking (thinking) about growth of knowledge. Additionally, *philosophy of mind* dispenses the phenomenon of subjective experience in different aspects, aspects such as the three basic requirements Thomas Metzinger outlines in his *Self Model Theory of Subjectivity*[256]. It is then possible to focus on one of these aspects to develop a 'pointed question' or 'directed searching' for information within an experiment.

When conceiving a set of experiments my opinion is that it is important for this set of experiments to be laid out and then continue to deal with 'real space' conditions. Taking into account the explanatory gap between *first person perspective*

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255   Most of the experiments where developed as coursework for a design-studio at my University's Institute for Design – Studio2. My students participate in the coursework with a combination of enthusiasm and skepticism, but without their persistence and motivation none of the displacement experiments would exist. Special thanks goes to my brother Florian Plank, as well as Andreas Parschalk for their technical support.

256   Cf. chapter 4, *The Self-Model Theory of Subjectivity* or Metzinger, T.(2003).

and *third person perspective*, an experiment that investigates the subjective experience of architecture is virtually asking for a complete spatial environment. A test subject needs to be imbedded in an environment that offers every aspect a built environment provides. As a next (important) step, I suggest merging this 'real space' situation with empirical measuring instruments to collect comparable information. The concept of producing a 'real space' situation is related to Henri Lefebvre postulation[257] that only through the production of space it is possible to achieve knowledge about it.

In addition to Lefebvre's postulation I need to state that we have to produce a preconfigured space equipped with the ability to change its configurations to explore a specified research question. Similar to the *rubber-hand illusion* experiment, the space created should be able to undergo well defined manipulation to gain insight into the relationship between the *user and the architecture.* (Probably it is not the only way to gain knowledge on this relationship, but at the very least it is one which is close to the architectural profession and the production of space.) The concept of a 'real space' situation is important, since the test-person or *user* is able to experience the architectural environment from a *first person perspective,* yet empirical measuring ensures an objective view, a *third person perspective.*

In this chapter I will outline the development of the research strategy, so far three different experimental settings have been explored. These three experiments depend on each other, but all three of them have a different focus. At the beginning of the development of the experiments it was not clear that a 'real space' experiment holds crucial advantages. The first experiment I will present, the *displacement.14* investigation, was not conducted in a 'real space' situation and it was also not the first experiment we undertook. It is the objective research method employed which I find interesting and important as a foundation for the understanding of our exploratory aims. Therefore I have chosen to present my work not chronologically, but rather in terms of the resulting interpretation of their content.

27 displacement.14
Eye Gaze Analysis Experiment, 2007

28 displacement.13
Spatial Experiment, 2005

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257 Cf. Lefebvre, H. (1999), p. 7.

29 displacement.15
Spatial Experiment, 2007
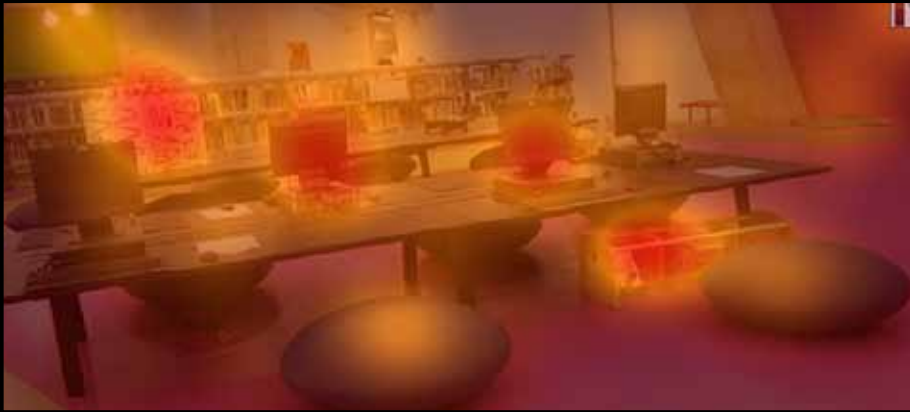
30 Seattle Publice Library
Photograph: Kubo, M. & Prat, R.(2005), *Seattle Publice Library OMA/LMN*, Altar, Michigan.

Team   displacement.14
Architecture Department
Brauner, B. Hörl A., Plank, C.

Psychology Department
Sachse, P., Furtner, M.

Students (Architecture)
Indrist, W., Reheis, B., Jöchl, A.

6.1 Displacement.14

The initial intent of the *displacement.14* experiment was an analysis of the Seattle library by Rem Koolhaas. The background for this analysis was formed by Koolhaas's affinity to concepts of *projective architecture*.[258] As mentioned before, projective architecture tends to promote the development of a special relationship between *user* and architectural environment. Space within projective architecture hopes to offer a multiplicity of alternative scenarios. This type of architectural space initiates unexpected behavioural patterns, seduces the user, or can even incite him/her.[259]

Koolhaas's spatial productions favour unexpected encounters and the unpredictable; Koolhaas loves the element of surprise in space(s), positioning objects adjacent to one another in an unconventional way that tricks anticipation and assumption. The unpredictable and the moment of surprise are directly translated into the allocation of functions within the library's spatial program.

'Our first operation was to 'comb' and consolidate the library's apparently ungovernable proliferation of programs and media. By combining like with like, we indentified programmatic clusters – five of stability, and four of instability.'[260] In an interview, Rem Koolhaas formulated this distinction of space: 'For me it's a building that accommodates both stability and instability. The things you can predict and the things you can't.'[261]

OMA[262] designed five 'platforms', each of which forms a programmatic cluster that is architecturally defined and equipped for a maximum of dedicated performance. 'Because each platform is designed for a unique purpose, their size, flexibility, circulation, palette, structure, and MEP (mechanical, electrical, and plumbing) vary.'[263] (Figure 28/30)

Spaces of stability are defined architecturally and designated to a specific purpose, such as the 'book-spiral'. These areas were conceived from the beginning to never change or extend their volume (in spite of expansion), which is why they are seen

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258 Cf. chapter 3.1

259 Fischer, O.W. (2005), p. 94.

260 Ramus, J. (2004), *Seattle Public,* in Koolhaas, R. & Ramus, J.(2004), *Content*, Taschen Verlag, Köln, p. 141.

261 Interview with Rem Koolhaas, http://www.time.com/time/magazine/article/0,9171,993920,00.html, 13.07.2010.

262 Office for Metropolitan Architecture, OMA was founded in 1975 by Rem Koolhaas, Elia and Zoe Zenghelis and Madelon Vriesendorp.

263 Ramus, J.(2004), p. 141.

as being 'stable'. 'Depending on their purpose the stable spaces are distinguished by issues of size, allotment/infrastructure, construction, and building materials.'[264]

The spaces in between the platforms function as trading floors, where librarians inform and stimulate and where the interface between the different platforms is organized – spaces for work, interaction, and play.[265] Koolhaas demands spaces of instability to work for the public – there exist no constraints for *users* and *use*. Instable spaces should be able to provoke spatial sensations by means of the *user's* actions. (Figure 29/31)

6.1.1   Eye-Gaze Analysis System

Rem Koolhaas and his partner Joshua Ramus designed two different types of spatial conditions, the 'stable' and the 'instable', and this triggered our interest for the question whether this differentiation has any effect on the relationship between the *users* of the library and the architectural environment. The debate led us to be curious about how Seattle Library's *users* know the difference between a 'stable' room with assigned functions and an 'instable' room for interaction and play?
It is probable that space which offers a multiplicity of alternative scenarios for play and interaction would occur a user's special attention. Considering the distinction between *perception* and *apperception*[266] within the process of subjective experience, the question quickly arose if we could identify different levels of attention in the diverse concepts of 'stable' and 'instable' rooms. What would motivate or trigger *users* to respond to the specific offer of an open-function architectural environment, how would this manifest itself? This idea and interest provided the first challenge for our experimental concept.
The team and I decided to use an eye-movement tracking technique, a research strategy that is often used in the domain of science. In this research technique an observing system follows the movement of the eye to shed light on questions prevalent of perception. The technique of tracking eye-movement (by way of placing and monitoring test subjects in a set-up of specially designed technical surveillance

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264   Koolhaas, R. & Ramus, J. (2005), *Seattle Public Library,* Archplus 174,*OMA Pro-jekte,* ARCH+ Verlag, Aachen, p. 37.
265   Ramus, J. (2004), p. 141.
266   Cf. chapter 3.11, *Perception and Appercetion.*

31   Stable Space
Photograph: Kubo, M. & Prat, R.(2005).

32   Instable Space
Photograph: Kubo, M. & Prat, R.(2005).
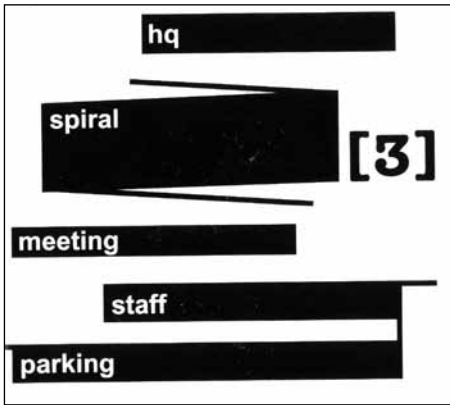
33 Stable Space
Photograph: Koolhaas, R.(2004),
Content, Taschen Verlag, Köln.
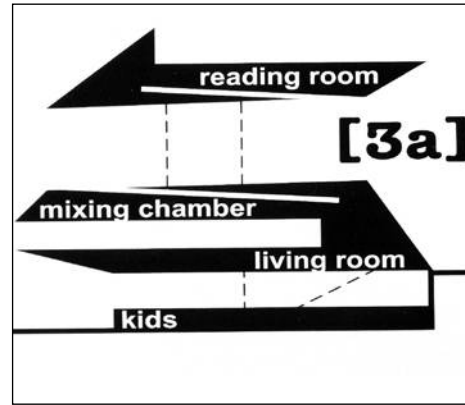
34 Instable Space
Photograph: Koolhaas, R.(2004),
Content, Taschen Verlag, Köln.

equipment) has been used since the middle of the last century and most experiments use a set of preselected pictures, which are shown to the subjects with the aim of generating distinctive patterns or trails of eye-movement. The Russian psychologist Alfred L. Yarbus, who worked with this technology in the 1950s, showed that any given task has a large influence on the subject's eye-movement. (see figure 32) He writes:' 'Records of eye movements show that the observer's attention is usually held only by certain elements of the picture.... Eye movement reflects the human thought processes; so the observer's thought may be followed to some extent from records of eye movement (the thought accompanying the examination of the particular object). It is easy to determine from these records which elements attract the observer's eye (and, consequently, his thought), in what order, and how often.'[267]

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267 Jarbus, A.(1967), *Eye Movement and Vision,* Plenum Press, New York, p. 190.

We required an investigative tool that would look behind possible cognitive processes in relation to different levels of attention and the eye-tracking system offered this, since a variety of investigation results from the past alluded to our assumption. 'The observer's attention is frequently drawn to elements which do not give important information but which, in his opinion, may do so.'[268]
For our investigation we had access to use the 'Institute of psychology of everyday action's' (PsyAll) Eye-Gaze Analysis System. With the support of Prof. Pierre Sachse and his team we developed a research setting, laying out a combination of pictures with a corresponding questionnaire. For the image observation we sampled twelve pictures of Seattle Library, six of them showed 'stable' rooms and six 'instable' ones. Forty test-persons between the ages of twenty to thirty looked at each of these pictures consecutively for exactly ten seconds a piece. In addition to the distinction between 'stable' and 'instable' rooms, we discerned between coloured and monochromatic pictures. (see Figures below)
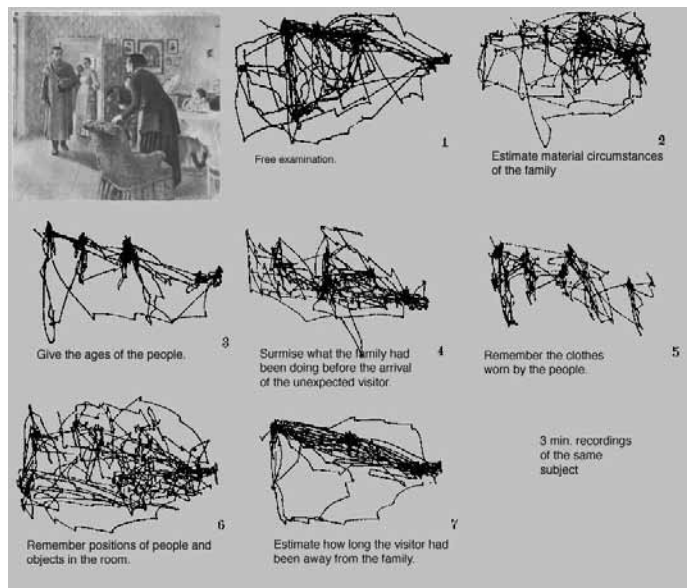
35 This study by Yarbus (1967) is often referred to as evidence of how the task given to a person influences his or her eye-movement.

268   Jarbus, A.(1967), p. 191.

36 monochromatic
Source photograph (colour):
Kubo, M. & Prat, R.(2005).

37 colour
Photograph: Kubo, M. & Prat, R.(2005).

The Eye-Gaze Analysis System used by Innsbruck University's PsyAll is based on a tracking method called 'pupil and corneal reflection'; the eye is exposed to an IR-diode and the eye's image is recorded by an IR-sensitive camera. The resulting picture portrays the pupil as a dark circle and the corneal reflection as a light circle, which is used as a point of reference for calculations. The position of the reference point (to the left or the right, above or below the pupil) enables the identification of the line of sight (to the right, left, top, or bottom).

The system allowed us to map precise x-y coordinates of the subject's gaze-point on the computer screen showing images of Seattle Library and we were able to pinpoint different *areas of interest* which attracted the *user's* affection, like architectural elements, types of colours, or special materials used in Koolhaas's library.

The outcome of our experiment was ambivalent. First, we could not identify a difference in reaction (observing the test subject's eye-movement) between 'stable' and 'instable' rooms. *Areas of interests* were always to be found connected to prominent architectural elements, like colourful staircases or extravagant interior furniture. Omitting the pictures' colour - showing black and white images - did not result in a perceivable change in *areas of interest,* particularly in the staircase pictures. It was all the more interesting then that every observation started with a very quick 'overview', in which test subjects scanned the entire image before settling on
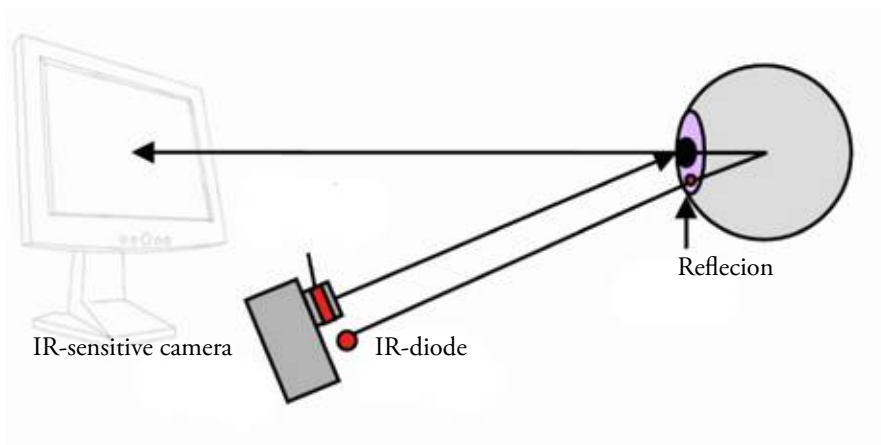
38 Eyegaze Analysis Systems
IR-sensitive camera, IR-diode

certain areas; the architectural structure and the depth of each presented room were observed by the test subject. According to Prof. Sachse, the observing subject first explores the built environment, seeking out safety aspects such as structure, stability, or construction. Shortly after this, the observer starts to investigate the room more thoroughly and tends to get caught by 'interesting' elements.

However, we failed to distinguish different ways of observation for the two contrasting types of spatial conditions. When we started setting up our experiment we did not know how the two types of spatial circumstances would affect eye-movement, but we did expect a variation between 'stable' and 'instable' rooms, however slight it may be. One of our assumptions was that 'instable' rooms would produce longer stages of exploration of the spatial environment by the *user/ observer*. Another assumption was that in 'stable' rooms clearly defined *areas of interest* would show up, while the concept of 'instable' rooms led us to postulate a more homogenous observation and attraction pattern. As mentioned, we found no evident differences in eye-movement and I must conclude that the opposing spatial intentions do not promote a change in processing.

Needless to say there are many possible reasons why we could not identify a difference between the two spatial conditions. One of them might be that the pictures we used were not taken by us - when setting up a research scenario

to investigate the difference between two different spatial conditions it would have proven useful and sensible to take pictures in specific alignment with our 'experimental point of view'. Another point for consideration is that the number of test persons – forty - was probably not high enough. We had access only to a very small range of different test-persons, all of them had an academic background and none were older than thirty years of age. These aspects will have influenced and directed the outcome of our experiment and the results would most certainly be different if we had observed a different set of individuals, perhaps extending the subjects' age range and social and cultural background.

Another reason for our particular result may be similar to an argument (observation), Silke Ötsch describes in her aforementioned article *of overestimated users and underestimated strategies.*[269] Comparable to Bernard Tschumi's *(de) regulation*[270]*,* the 'instable' spaces of Koolhaas's Seattle Library are intended to promote a subversive appropriation by the *user*.

Both cases - Tschumi's (*de)regualtion* and Koolhaas's *instabilisation* - prompt the question what strategy is pursued to determine change in the relationship between *user* and *architectural environment*. Tschumi's strategy is - as mentioned above in the chapter *the partaking user* - termed *dejunction,* offering the ability to reinterpret each function of the built environment. The decoupling of traditional correlations of function and form is intended force the user to (re)interpret the built environment. If you need to (re)interpret the meaning (function) of a given built environment, it is my opinion that purposeful attention is essential. In contrast, this means that without Tschumi's principle of *dejunction* the *user* would not interpret the built environment and would know 'instinctively' how to understand the function (meaning) of it. This distinction between purposeful attention (*apperception)* that comes with the idea of (re)interpretation and the subtle influence of architecture on the *user* and his way of usage (*perception)* led us to the assumption that Koolhaas's 'instable' rooms would require (re)interpretation by the user, the 'stable' ones would not. Interpretation is a cognitive process that requires awareness by the subject concerning the focal element the subject is interpreting. I need to be aware of the architecture I want to (re)interpret. Another possibility why we could not find a different type of 'awareness' for rooms which need (re)interpreting and rooms with a preconfigured function led me to believe that Silke Ötsch's statement in *overestimated users and underestimated strategies* would hold true in this context.

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269 Cf. the chapter 2.3.3, *Bernard Tschumi* or Ötsch, S.(2006).

270 Ötsch, S.(2006), p. 188.

6.1.2   Where do People look

In the course of our investigation we became 'aware' of another interesting fact. If you look at figure 39 you can see that the forty test subjects diverged into two different groups concerning *areas of interest* (beautifully illustrated in this picture of Seattle Library). During the process of selecting the twelve pictures of Seattle Library we were not aware of the fact that a few of the images portrayed people as well as spaces. The empirical outcome of the viewing and analysis of these pictures is interesting, however, since the humans attracted attention every time, even when in the background and rather hard to spot. The people in picture 39 first caught our attention as it was here we realized the manifestation of a second major *area of interest* beside the prominent escalator. In two of the other images the *areas of interest* were even more focused on human presence in the photographs. Architectural elements in these pictures attracted less or no attention by the test subjects. When we first recognized the mixture of images, some with and some without people, we perceived this as a mistake. This observation, which accidentally became part of our investigation, lead me towards the question and examination of different levels of attention (*perception / apperception)* within the *user/architecture relationship*. How purposeful indeed is attention on architecture?

Both observations, the 'missing' difference between the perception of 'stable' and 'instable' rooms and purposeful attention of the test subjects on living individuals, support the aforementioned assumption that architecture belongs to the great unconscious model of reality, in the sense of Bernard Baas's *global workspace theory,* namely the part that is not globally available.

Nonetheless, it is hard to attribute this assumption to the outcome of our test subject's eye-movement tracking. Taking the experimental setting of the *displacement.14* experiment into account, the question arises how to discuss aspects of the *user's* attention on the physical presence of architecture, when each person tested is merely looking at two-dimensional images of architecture. From my architectural point of view the *displacement.14* experiment is vulnerable to scrutiny and attack, since the actual presence of an architectural environment is reduced to a visual experience. Sensory elements like tactility, olfactory, aura, or gravity are not integrated into this type of investigation. Without the physical presence of materiality and form, the experimental setting of the *displacement.14* experiment - with users sitting in front of a computer screen rather than being in architecture - has little in common with real subjective experience of architecture. According to

41   Two Areas of Interest
Escalator and people in the back.

42   Area of Interest focused on human
no attention by the test subjects on architectural elements.

the explanatory gap[271], this would mean that *first person perspective* is not considered properly within this experimental setting and since I would like to conform to *first person perspective* I have to imbed the test person (subject) in an environment that offers the same conditions everyday built environments do. Constructing a spatial environment for the course of an experiment could provide a solution to this problem, which is what we had previously done intuitively in the *displacement.13* experiment. I will proceed to describe this investigation in the following chapter. *Third person perspective* and the corresponding result of objective data was in a way satisfying, since the eye-gaze analysis system offers not subjective but objective information. The movement of the eye is somewhat objective, since generally you are not aware of its movement and do not (always need to) steer it.
(We did appreciate the specific type of investigation with its special focus on architectural environments and the outcome of receiving objective data.)

Real-Space and Tracking

Displacement.14 paved the way for the development of general experimental settings we wished to apply specific focus to from then on. First and foremost, two aspects are now important in the *displacement series,* the spatial conditions in each experiment and the enhancement of tracking and analysing of *areas of interests.* Taking a picture and eye-movement research technology as a metaphor for an 'architectural' concept of investigations, the 'real space' situation becomes the image and the person moving through the spatial experiment is the gaze of the eye, perusing the picture.
Similar to eye-movement analysis, we are able to map the movement of a *user* and record each position passed on test subjects' routes through the environment, their 'dwell time' at specific locations, and the general way they move through the spatial experiment. Comparable to the analysis of eye-movement, we are able to draw conclusions from the bodily movement of a test person, provided that the spatial setting of the experiment is a preconfigured installation.

Beside the requirement of a special setting to possibly bridge the explanatory gap between *first person perspective* and *third person perspective* (Space and Tracking)*,* the *displacement.14* experiment offers insight into which particular aspect within subjective experience - dispensed by *philosophy of mind* - we would like to focus

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271   Cf. chapter 5.2 – 5.3, *Subjective -Objective Dichotomy – Epistemic Asymmetry.*

on. In my opinion, one of the most important aspects we have to deal with is the differentiation between *apperception* and *perception* or, according to the *global workspace theory,* if the experience of architecture is part of the global workspace or even part of the workspace which is not globally available and if it is therefore a fragment of our unconscious process. We need to know when and why architecture occurs purposeful attention and when and why architecture is a subtle element within the perception of a *user*.

One strategy in approaching this question has been mentioned in the debate of the term *interpretation,* since an experiment that deals with different possibilities of *interpretation* could award us direction when analysing architecture's relationships and its belonging to the great unconscious model of the world. A basic requirement for *interpretation* is the linguistic concept of the *duality* between the signified and the signifier. Only when I distinguish between the meaning and the carrier of meaning is it possible to interpret the meaning of the carrying element. Ferdinand de Saussure drew differences between objects and words in his theory of sign, now the question arises if we can use this distinction for our next experiment? What would happen to the movement of the user when two concepts are merged, one that offers a spatial (and assigned) function presented through the physical presence of an object and one that uses a preconfigured 'code' to offer the very same function to the user. Both the idea of a 'real space' experiment and the concept of investigating the interpretational layer of architecture had been implemented in the *displacement.13* experiment, which I will now treat.

43 displacement.13
Box placed in the foyer of the architecture faculty building.

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6.2   Displacement.13

The concept of the *displacement.13* experiment was to design a technically augmented and (physically) accessible object / box and place it in an existing architectural environment. Our reasons for the technical augmentation were at one to use the augmentation for the implementation of an interactive visual display and support our investigation in its quest to examine different levels of attention in the human-architecture and human-information relationship, but also to equip the box with a tracking system. This system mapped x/y coordinates of the movement of each test subject and thus translated an architectural situation into a 'real space' experiment.

6.2.1   Box and Space

The box itself was a simple wooden construction; the inside was covered with black boards, the outside screens were bent slightly to achieve a spherical appearance. The box was placed in the back of the foyer of the Architecture faculty building in Innsbruck, which is seven metres in height and divided by a grid of twelve columns at a distance of seven and a half by seven and a half metres.

The entrance to the foyer is only one storey high, towards the back (facing south) a staircase leads downwards and there the space doubles in height; the box was placed right below the balustrade very close to the stairs (on the lower level), one side aligned with its edge, the object itself jutting out into the lofty southern part of the foyer.

The notion of placing a box inside an existing room followed the ideas of the 'minimal art movement', specifically concepts formulated by one of its leading figures, Donald Judd.

The relation between the containing room, the object placed within it, and the subject (test person) was considered an instrument to expose the subject to the phenomenon of space. The simplicity of the object's form allowed - in the eyes of the artist - the observing subject to concentrate solely on spatial events or conditions.

I was pleased by this concept of having a box, a subject, and a containing room, since the concept was one that states space not as a 'container' which exists independent from the action happening inside of it. Thereby, space or a spatial condition is defined as a relation of positions (Lageverhältnis[272]), the relation

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272   Cf. Löw, M.(2001), *Raumsoziologie,* suhrkamp taschenbuch wissenschaft, Frankfurt am Main, p. 31.
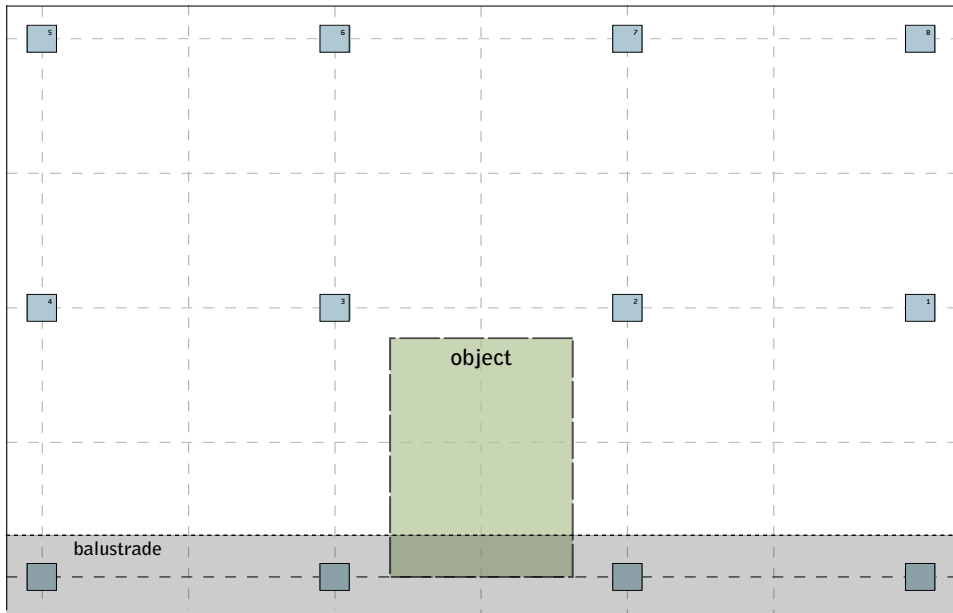
44   displacement.13
Floor Plan

between the box and the subject, but also the relation between the box or the subject and the containing room. A 'real space' experiment within this definition is intended and conceived as a relative spatial situation. Our spatial concept for the *displacement.13* experiment is linked to a group of spatial theories known as *relative space theories,* which contrast theories with an absolute point of view. Absolute space was viewed as a divine uniform reality and precondition against which any material conditions could be measured. Leibniz rejected concepts of 'absolute space' as divine sensorium, a non-material substrate of matter, in favour of relational space. In a series of letters exchanged with Newton-supporting Samuel Clarke, Leibniz argued that space is not a 'thing' in which objects are located, but is instead nothing other than the relationship between bodies. [273]

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273   Hensel, M, Hight, C. & Menges, A.(2009), *Space Reader, Heterogeneous Space in Architecture*, AD Reader bd 3, Wiley & Sons, London.

,Ich habe mehrfach betont, daß ich den Raum ebenso wie die Zeit für etwas rein Relatives halte; für eine Ordnung der Existenzen im Beisammen, wie die Zeit eine Ordnung des Nacheinanders ist.'[274]

A relative theory of space deduces space as the placement of volumes. Space is ascribed a condition of reflexivity, meaning that space and action are locked in a state of permanent correlation and influence one another continuously.[275]

Taking *philosophy of mind* into account, both relative thinking and absolute thinking are products and interpretations of the process of our subjective experience. It is not possible, however, to verify one of these opposing points of views about space as the right one. Albert Einstein, for instance, wrote in the introduction to *Das Problem des Raum*: 'Beide Raumbegriffe sind freie Schöpfungen der menschlichen Phantasie, ersonnen zum leichteren verstehen unserer sinnlichen Erlebnisse.'[276]

It is important to me that within a relative theory of space the condition of space is conceived as a iterative system. This means that space and action are connected by permanent interaction with continuing influence on each other, a process that is termed *iteration*, one that is also described by *philosophy of mind* within the brain.[277]

6.2.2   Augmented Materiality

A second element of the minimal art concept, which we used as a starting point, was its approach to form, since minimal art believes that simple forms of objects meet the aim that an interpretation becomes insignificant or even irrelevant. As a consequence subject and object have the possibility to unify.

In the case of the *displacement.13* experiment we designed a shape which does not immediately use traditional representations of architectural function. The box was accessible and to be 'walked into', but we did not integrate the typical *form* for a door or entrance. One of the bent screens - bent in order to give the black box a spherical shape - was placed at a different angle to the other screens. The slanting

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274 'I have stated repeatedly that I perceive space as well as time as purely relative; (space is) an order for the co-existing, as time is an order for the consecutive.'
Leibniz, G. W.(1966, 1715/1716), *Streitschriften zwischen Leibniz und Clark,* in Cassirer, E.(1966), *Hauptschriften zur Grundlegung der Philosophie,* Hamburg, p. 134.

275 Cf. Löw, M.(2001).

276 'Both notions of space are liberal creations of human imagination, devised to better understand our sensual experiences.' Einstein. A.(1960), *Vorwort,* in Jammer, M.(1960), *Das Problem des Raumes. Die Entwicklung der Raumtheorien,* Wissenschaftliche Buchgesellschaft, Darmstadt, SXIII.

277 Cf. chapter 3.9, *Iteration.*

45   displacement.13
Entrance

position of this screen made it possible for a test subject to enter through the gap created between two screens. The test subject therefore could not identify the entrance by means of searching for or encountering a classical door, since we limited the architectural form to a minimum, excluding any indication of function. We strove to compensate the missing information with an added information system, the aforementioned augmented technology.

We shifted our attention from the form of the object to the surface of the form, since the form itself did no longer represent the function of a door and used the surface of the form to communicate function and the location of said function. In addition, we attempted to draw attention to an extension of the surface or the surface's qualities. Actions in space and the involved (re)action of the object were to be integrated in the material appearance of the surface in order to meet the standards of a process of *iteration*. We hoped to prompt the perception of everything of significance through the material appearance of the surface and thus augmented the box's physical surface with a virtual surface.

The entire surface of the box was enhanced by an interactive video-installation, the function of which was to support the user in entering the box. The first research question of *displacement.13* was obviously very straightforward, since we were simply interested if the user or test person would find the entrance.

6.2.3   The Path

To sensitise the test subject's attention to the interactive surface of the box and to stimulate possible interpretation of the context seen, we directed test subjects on a preconfigured path through our experimental setting. The box – at a height of three metres - divided the foyer into two zones, zone A and zone B; alternation between the zones was possible without restrictions.

The first section of the path was dedicated to the examination of visitors' acceptance of the mixed and augmented reality. Cameras transmitted abstracted images of people not only wandering in the zone they presently occupied, but also in the opposing one (zone A and B). Zone A and B were linked synchronously by a virtual surface and with the help of projected images of the opposite zone test subjects were able to enter into communication and interaction with others in the alternate zone.
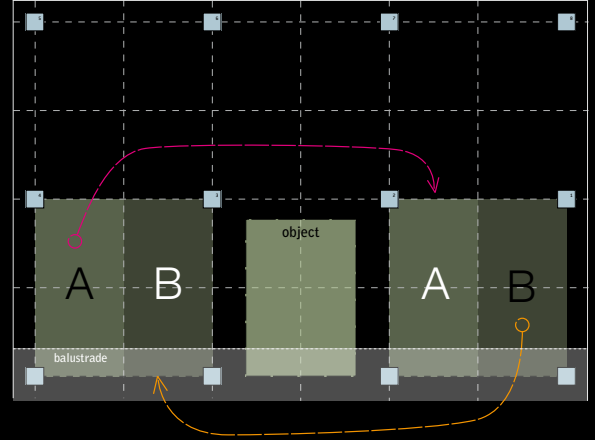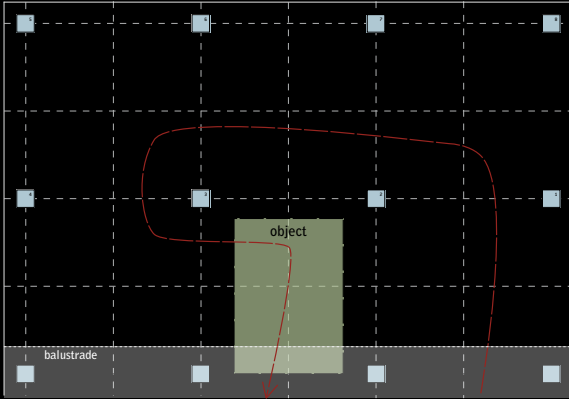
The Path

46 The Path through the Experimantal Setting

The box – at a height of three metres - divided the foyer into two zones, zone A and zone B; alternation between the zones was possible without restrictions

47 Examination of Visitors' Acceptance

Cameras transmitted abstracted images of people not only wandering in the zone they presently occupied, but also in the opposing one (zone A and B). Zone A and B were linked synchronously by a virtual surface and with the help of projected images of the opposite zone test subjects were able to enter into communication and interaction with others in the alternate zone.
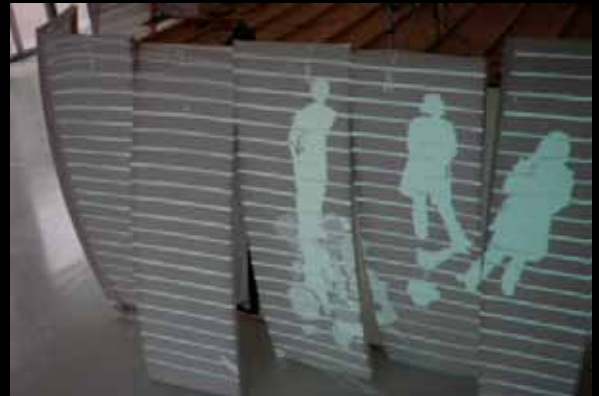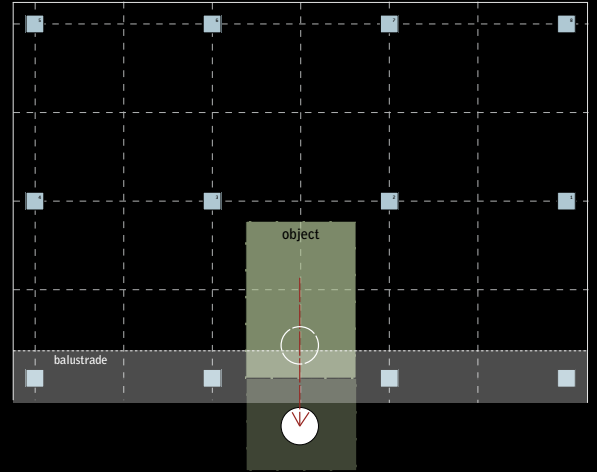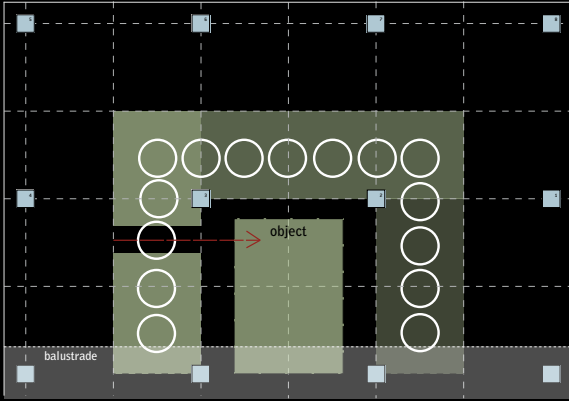
48 Second Layer of Information

Along the lines of this texture simplified spheres moved in even and symmetrical motion, disappearing into the box at the entrance (the implied door)

49 Exit combined with a Motion Tracking System

The user was able to exert influence directly on the virtual installation. When moving towards the screen a picture of a door would draw nearer and open just when the subject was standing right in front of the screen. He could move through the screen to exit the box.

For the next step, we added a second layer of information to the surface, the virtual geometry of a 'striped' texture which referred to the entrance of the object. Along the lines of this texture simplified spheres moved in even and symmetrical motion, disappearing into the box at the entrance (the implied door). Despite our attempt at including the information signalling 'door' on the surface, the second step acted only on the level of sign discourse. Overall, comprehension of the presented information was rather poor and made possible only through interpretation.
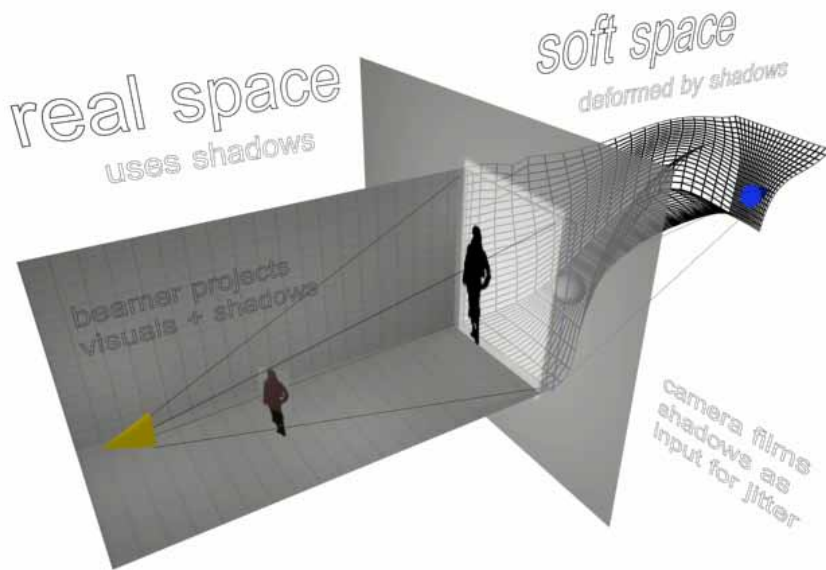
50 displacement.13
Motion Tracking System inside the box.
Movement in real space steers the virtual projection.

Inside the box there was a room which again was augmented virtually by a projection – on a screen – which was where the physical space ended and this was presented to the test subject. A motion tracking system facilitated that the system itself knew exactly where a person remained in the real space and accordingly it controlled and steered the projection. As a result the user was able to exert influence directly on the virtual installation. When moving towards the screen a picture of a door would draw nearer and open just when the subject was standing right in front of the screen. At the rear of the open door the test subject would then see a big

sphere[278] hanging from the ceiling. When the user then moved through the screen the original sphere would appear in the same position as the virtual one.

6.2.4   Lange Nacht der Forschung 2005

In contrast to the *displacement.14* experiment over two hundred test subjects / visitors participated in the *displacement.13* experiment. On the first of October 2005 the *Austrian Ministry for Science and Education* opened the University to the public in one night of research presentation. Over 10.000 patrons visited a large variety of presentations, some of them coming to the School of Architecture to observe (and participate in) our spatial experiment.

For us this was the easiest way to gain access to a large amount of test subjects spanning a substantial age range, as *displacement.13* was open to everyone. We did not limit the amount of people entering the experimental setting simultaneously, since we wanted the experiment to appear as 'natural' as possible. No introduction, no information or hint alluded to the fact that the visitors were actually participants in an experiment. In accordance with *first person perspective,* respectively the subjective experience of architecture, we abstained from any admission control.

For the visitor the whole experiment was more of an interactive installation - much like in a museum or exhibition - but not an architectural experiment. Not until a visitor had completed the entire circuit, around the box and through the box, did we explain the actual background and meaning of the installation.

The imbalance encountered in the *displacement.14* experiment, barring the benefit of *third person perspective,* differed from the concept of *displacement.13*. Since we did not control the flow of people there would be as few to five test persons moving through our experiment, however most of the time there were more than thirty at the same time, walking through and observing our installation. For the first two

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278   'Contrasting the angular appearance of the cube, which is perceived as a symbol of solidity, determination, and immutability, the sphere represents perfection, order, and the universe. Of all bodies with a predetermined volume, the sphere is the one with the smallest surface area. Of all surfaces with a predetermined area the sphere encloses the largest volume. Planets are spheres, because they were liquid in their state of formation and the spherical shape is the shape with the highest gravitational binding energy. Spheres posses an infinite number of planes of symmetry, sectioning through their centres. The rotational axis of spheres is symmetrical when passing through the centre at any given angle, each point in/on a sphere is symmetrical using the centre as a reference. Spatially, the inner box of the installation is to be viewed as a rigid unalterable element which is confronted and contrasted with the fleeting infinite shape of the sphere.'
Hörl, A., Plank, C. (2005), Accompanying booklet - Researcher's Night '05.

steps of our 'path' this large amount of people did not pose a problem. The subjects moved around the object, changing frequently between zones A and B. It became apparent that the interactive installation seemed to be legible and comprehensible and the interactive surface attracted the attention of the test subjects on all accounts. The people in both zone A and zone B were projected onto the screen together and soon started playing games, such as virtual hands shaking or letter writing with their own bodies.

One problem that did occur was, however, the bottleneck created by the 'door'. The system inside the box did not work for this large amount of people and since it employed a tracking system which was able to track only one person at a time, we were faced with the problem of a substantial amount of people waiting outside the installation, yet only one person experiencing the inside of the box.

6.2.5   Where do People look (Take two)

The consequence of this unfortunate circumstance was a queue in front of the 'door'. This queue rendered the whole interactive code-based communication system, which the test subject should interpret to find this 'secret door', redundant. A queue informs human instinct about the existence of something of interest at the end of said queue.

At the beginning of the evening there was no queue in front of the entrance; one of the research questions we were interested in was if the visitors would find the entrance by interpreting the correct meaning of the video installation and I have to say that they did not. Without the queue in front of the entrance visitors would not have found the 'door' on their own, so at the beginning of our experiment - for the first hour - the passage way to the interior of the object was seldom discovered. Only a large number of waiting visitors right in front of the passage revealed the putative door to the arriving audience. Since we wanted the test subjects to investigate the second element of our experiment, the inside of the box, we recommended that they enter by simply telling them to do so.

Today I think that in both cases, with the queue and without the queue, we encountered the same problem I mentioned concerning the *displacement.14 experiment.* People's attention was focused on life, on people, on the other visitors (again). In the case where we had two different layers in the interactive surface, the silhouette of people and the graphical layer of lines and spheres to outline the

51 displacement.13
   People waiting outside the installation.

position of the entrance, the problem occurred that the test subjects or visitors paid attention only to their own silhouettes and the silhouettes of others. The important graphical layer was pushed into inconsequential obscurity. Test subjects did not even start interpreting our graphical hint that there was a door, since they did not register graphics of moving lines and spheres on the surface.

With the existence of the queue the physical presence of waiting people was then even stronger - in terms of attention - than the visual presence of people on the screen. The queue almost disposed test subjects to neglect and ignore the interactive installation. People entered the foyer and straight away started to queue. In view of the fact that we did not present visitors of the *displacement.13* experiment with a questionnaire, I do not know if visitors recognized the second layer of the video installation and if they caught the meaning of it. The outcome of the first element of the *displacement.13* experiment was, however, what we had expected. The second part, the installation inside of the box, was not.
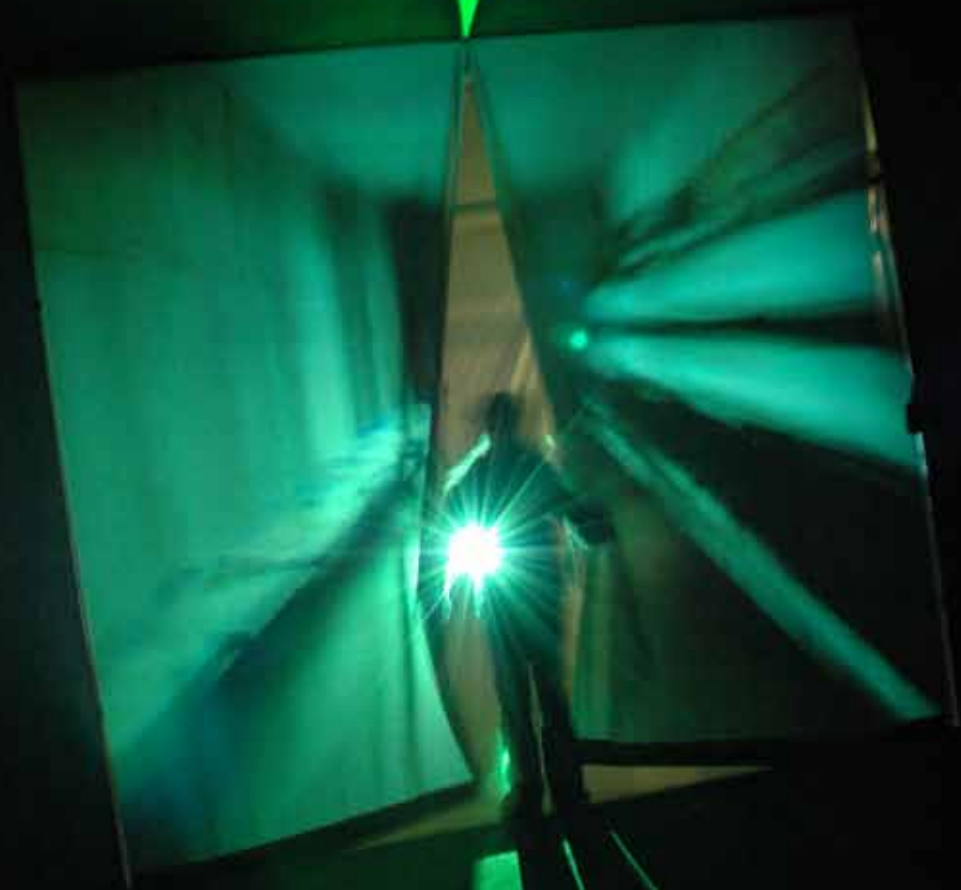
6.2.6   Physical Presence

Inside of the box, the installation invited visitors to leave the room through a screen. The interactive installation showed, contrary to the outer installation, not an abstracted or blurred image of reality, but the video of a corridor. By walking towards the screen the tracking system played a movie showing a corridor and the appearance of a door. When the test subject had reached the front of the screen, the door in the movie would open and since the screen, as aforementioned, was slit down the middle, the test subject was then able to leave the box through the screen, finding the very same situation behind it that was visible behind the opening door in the movie. Despite our visual invitation to emerge through the screen it was striking that the message was not received and readily understood. The majority of people not exit through the screen without further prompting. Even with the correct interpretation of the situation - in terms of having to leave the box through the screen - it was hard for visitors to do so. In my opinion, the missing physical presence of a threshold made it hard for almost everyone to follow their cognitive combination; put yourself in the place of a test subject of the *displacment.13* experiment, standing inside of the box.

You are alone inside of a black box, after having waited for about 30 minutes, queuing in front of an entrance where people enter, but do not leave. You suddenly recognize that it is you(r movement) who is able to move the motion picture back and forth by walking back and forth. You walk forward and on the screen a door appears. You see the door opening in front of you, while you stand in front of the screen which has an obvious slit right down its middle. This slit is the only recognizable 'opening' that indicates an exit. Would you leave?

To me it would appear obvious that you would try leaving the box through the screen, but this did not translate to the visitors of our experimental setting. Since our goal lay in setting up a possible way of exploring the relationship between *user* and *architecture* the observation we made in this part of the *displacement.13* experiment was worthy of note.

Even though you know where the (unusual) exit of the box is located, you do not leave the box without affirmation that it is right to do so. My assumption is that a missing physical opening is sufficient in prohibiting a *user* - even if the *user* is aware of the possibility - of using an obvious exit. The interpretational layer, communicated through moving pictures, is, in contrast, not able to evoke an alternative function, alternative in the sense of the physical presence of the

< 52 Exit through the screen
Test subject leaving the box through the screen.

room. Individual imprints, determining an architectural element and linking it to the way it is to be used, are so prominent in the *user/architecture relationship* that consequently a dualistic interpretation of function and form seems inadequate. Again I have to refer to Sybille Krämer, who stated that the immateriality of meaning within a physical object is present first and foremost. First, the meaning of the object discloses itself through the physical appearance of the object, before a second representational layer can be deduced through interpretation. 'Argumentativer Kern ist, dass jede Repräsentation zuerst einmal Präsentation ist, also die Physis und die Physiologie eines Signifikanten voraussetzt.(…) Nicht mehr die Theorie der Kommunikation, vielmehr die Theorie der Wahrnehmung al seine Theorie des Erscheinens[279] gibt (nun) den Rahmen konzeptioneller Erfassung (des Performativen ab). (…) Was 'von Bedeutung' ist liegt nicht hinter der Erscheinung, ist keine unsichtbare Tiefenstruktur, welche jenseits der Oberfläche des Wahrnehmbaren durch Verfahren der Interpretation zu erschließen wäre.'[280]

Taking Tschumi's concept of *(de)junction* into account, it is important to commit that Tschumi's concept did not work in the combination of a multi-medially augmented surface with architecture, but with a deconstruction of the classical vocabulary of formality. At this point it is possible to state that this new unknown formal configuration would occur attention of the user and a (re)interpretation would be the consequent result of this destabilisation of known formal language. In terms of *philosophy of mind* this would mean that the new architectural form is 'strong' enough to reach areas of the cerebral cortex which are responsible for the evaluation of generated arousal patterns, the attention of the *user* is focused on the internal picture produced within the associative areas; the *user* is consciously perceiving sensations.[281] Now, as written in the chapter *the conscious user,* the impulse of these new arousal patterns activate older existing arousal patterns which have been formed by former sensations.[282] Through the overlap of both, the already stabilized

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279 Mersch, D.(2002), *Ereignis und Aura, Untersuchung zu einer Ästhetik des Performativen*, Suhrkamp, Frankfuhrt am Main, p. 10.

280 'Every representation is in the first instance a presentation and requires physicality and physiology of significance. (...) It is not a theory of communication, but rather a theory of perception in the sense of a theory of appearance, which provides a framework for a conceptual understanding (of performativity). (...) Whatever is seen to be "of meaning" does not lie behind appearance and is not an invisible structure of depth, which is beyond the surface of the perceivable and would be accessible by means of interpretation.'
Krämer, S.(2004), p. 20.

281 Hüther, G.(2008), p. 23.

282 Cf. chapter 3, *The Conscious User*.

neuronal networks and the new arousal pattern, a new, specific, and expanded arousal pattern emerges, which is based on the sensual input.[283]

This means, however, that a possible (re)interpretation would occur only one time, since the brain stabilizes this new sensual input and further input with the same arousal pattern would not attract attention a second time around. The user instinctively knows what to do with the same *perceptive* dominance.

Concerning the *displacement.*13 experiment, a *user* standing in front of the screen for a second time would just exit the box through the screen without hesitation. Only a continuous reconfiguration of the complete object could occur consequent and continuing (re)interpretation. As a result of the observation we made in the *displacement.13* experiment, it is my opinion that Tschumi's *deconstruction* and Koolhaas's *instabilisation* are only possible by way of implementing this online reconfiguration. This would mean that the whole architectural environment has to change continuously.

A second assumption based on our observation brings forth the theory that we use different 'levels' in understanding the meaning of architecture compared to the ones we use in understanding media.

In addition, it is 'hard' for us to consciously participate in this process of 'understanding' and reacting to the built environment. Internal adjustment and consequent action, based on a perceived sensual input of an architectural element, are part of an unconscious process (*perception*). This relation seems to be an automated one, based on subjective knowledge. This automated process is different, however, to the process of responding to the sensual input occurred by 'communicative' media and it is for that very reason that it is important to not equate the relationship of architecture and humans with the relationship of 'communicative' media and humans. Unfortunately this happens a lot.

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283   Hüther, G.(2008), p. 22.

53 displacement.13
Visitors paying attention only to their own silhouettes
and the silhouettes of others.

The 'channel' used for architecture is based on the principle of *perception,* while the channel for 'communicative' media is based on *apperception*, which distinguishes architecture from media, since architecture does not need attention to work. Conversely, misguiding architecture cannot be 'fixed' by 'communicative' media, for the reason that you cannot stop the autonomous process of architectural *perception*.

The positive aspect of *displacement.13* was - concerning the possible development of future experimental settings - the spatial appearance and the experience we created and received through the possibilities held by this type of experiment. Aside from our subjective observations - and in contrast to the first experiment - the *displacement.13* experiment did not produce suitable data. However, there were yet again aspects within this experimental setting that attracted my attention. The most interesting element - relating to a possible new concept of an experimental setting - was the combination of the tracking system with a

reacting environment. Perception and placement in several spaces simultaneously is now possible, triggered by the movement of one's own body. The body organises the connection of these spaces. Space is now experienced as being discontinuous, constructible, and in motion. One location allows for the emergence of a variety of spaces.[284] The overlapping of different spaces or spatial conditions within one experimental setting would enable access to a variety of different architectural patterns within the neuronal network of the *user*. Movement or pause by the *user* would provide an indication of his or her inner 'architectural pictures'.

The concepts and ideas developed in the course of *displacement.13* and *.14* were used as starting points for the latest 'episode' in our series of experimental settings. I will devote the next chapter of my thesis to its description, making it the final experiment discussed and using its outcome for the initiation of future research.

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284   Löw, M.(2001), p. 266.

54 displacement.15
  The foyer of the Architecture faculty building.

Team   Displacement 13
  Architecture Department
  Brauner, B. Hörl A., Plank, C.

  Psychology Department
  Sachse, P., Unterrainer, Ch.

  Technical Support
  Plank, F., Dokulil, P., Hampel, G.

  Students
  Hillebrand, T., Fender, F., Schön, A., Blum, A., Kandil, K.

6.3   Displacement.15

The *displacement.15* experiment was developed and realized in 2007 in Innsbruck, again as a part of researcher's night. We did not change the venue, the foyer of the Faculty of Architecture, but did lay out a completely new experimental setting for our investigation. In contrast to the *displacement.13* experiment we refrained from adding an object to an existing environment and worked exclusively with the spatial qualities of the existing space of the foyer. Technical equipment was installed in the open space of the Architecture faculty's foyer to create an aesthetic event, which aimed at interweaving effect and affect, space and test subjects interactively. The *user* or test subject was able to actively partake and influence the surrounding space, aberrations in the individual scenarios created were minimal, each subtle change in spatial expression was obscure, unobtrusive, and referred to the already existing space.[285]

6.3.1   Intentions for the Pilot Study Displacement.15

Light was the medium of choice for this architectural design, as it is elusive and ambiguous in its essence and presence. The team and I[286] divided the space of the foyer into 24 zones[287], each with its own light specification. One of the zones was conceived as a 'region of calm'. This area was intended to not only effectuate users to linger for the longest period of time, but also provide the most pleasant experience. Concealed movement sensors tracked test subjects' positions and their respective zone of occupancy, computer-controlled guidance coaxed them towards the 'region of calm'.

In order to guide patrons to this place the experimental design adopted methods of irritation. All but one zone created feelings of discord, only the one remaining zone portrayed an 'ideal' spatial situation.

Using light the design concept was established within the space for experimentation; the Architecture faculty's foyer is surrounded on three sides by glass facades, rising intensity of light in the foyer elevates mirroring reflection. Certain areas were allocated a higher level of brightness, in order to simulate a variety of dimensions. In

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285   Brauner, B. Hörl, A., Plank, C. (2007), Accompanying booklet - Researcher's Night '07

286   I would like to thank Beckhoff (Johann-Georg Hampel), AB Microelektronics and Siteco for sponsorship of equipment and materials.

287   Cf. In the appendix you will find a extract of different light specifications.
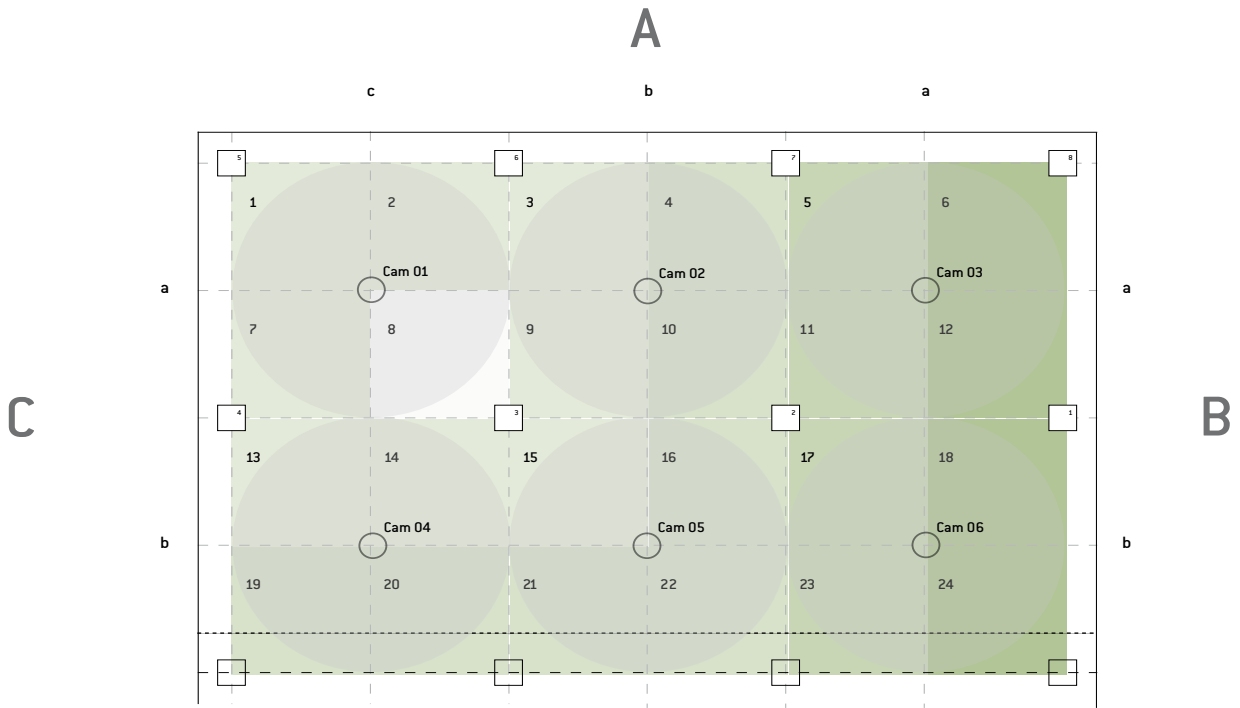
55 displacement.15
Floor plan with 24 zones and camera positions
including area 8, conceived as a 'region of calm'.
Diagram by Brauner, B.

addition to this, other optical phenomena were exerted to characterize the different situations, depending on the configuration of the system's regulation: material properties of the existing columns were accentuated using streaking lights, light sources on the faculty's outer walls imported the external environment into the foyer, etc.[288]

6.3.2 Questions

To level the misbalance between *first person perspective* and *third person perspective* we decided to focus first on obtaining objective data, followed by pure architectural experience. The concept of the *displacement.15* experiment intended the

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288 Brauner, B. Hörl, A., Plank, C. (2007), Accompanying booklet - Researcher's Night '07
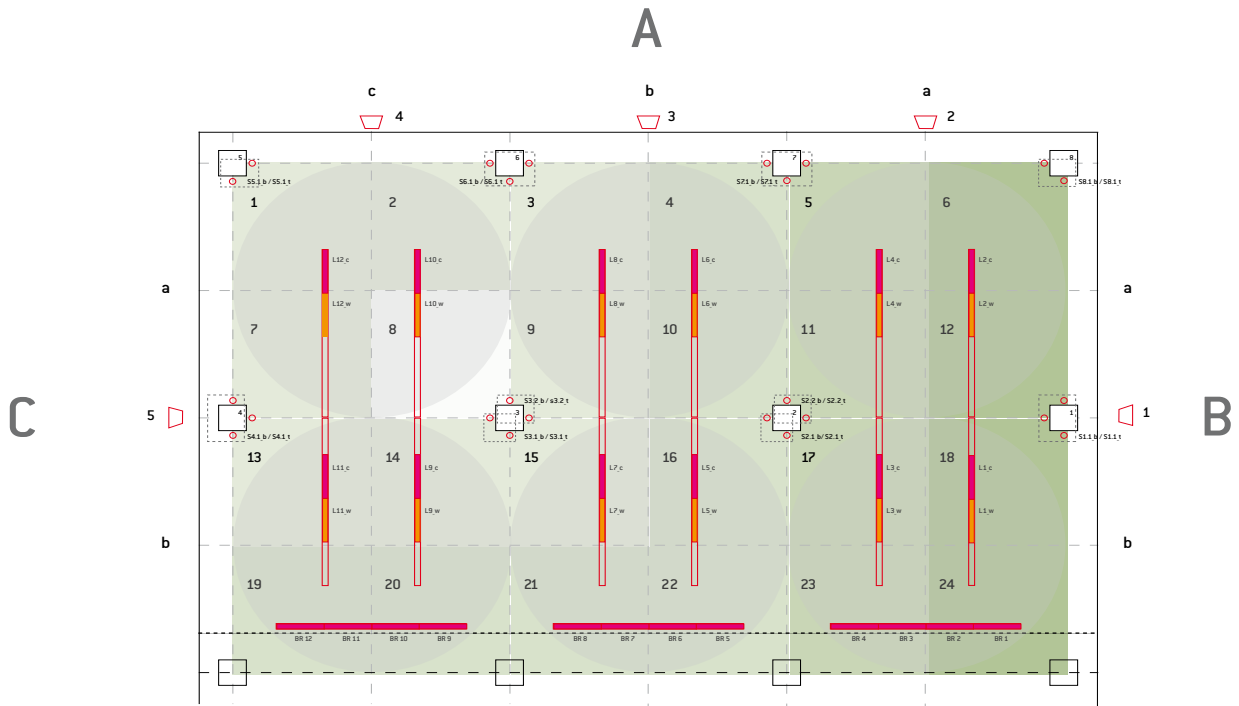
56 **displacement.15**
Floor plan with light specification
72 fluorescent tubes (36 Cool light, 36 Warm light), 48 Spots, 5 construction
spotlights, approx. 500 metres of cable.
Diagram by Brauner, B.

entering of the *user* or test person to be highly controlled; only one person at a time
was permitted to walk through the room, as it was our aim to eliminate attention
laid on other individuals. Subjects were asked prior to their entering to leave the
experimental setting after roughly five minutes. Within these five minutes, the
computer-system tracked and logged each test subject's movements. In concordance
with the spatial experiment's design we outlined a set of questions. In the course of
our debate the first question which arose was if and how we would find an *area of
interest*. Having refined the tracking and mapping system, we were now able to map
the movement of the test subject in a similar way in which the eye-glance system
maps the movement of a test subject's eye. Understandably, the image resolution of
the spatial adaptation of the original eye-tracking system is much lower, but still we
were able to collect data in a comparable way. Our main question concerned *areas of*

interest; would there be a location in our 'testing field' which was more attractive to *users* than the other zones or areas? Additionally, we focused our observations on the 'region of calm' – the ideal scenario – we had designed. Would its qualities be ideal only to us or would this 'region of calm' be perceived as such by the test subjects as well?

A second set of questions dealt with the relation between test subjects and the responsive system implemented in the *displacement.15* experiment. For *displacement.13,* the interactive system was assigned the function of attracting visitors' attention in order for them to read (and decipher) the information displayed on the surface. The interactive or responsive system used in the *displacement.15* experiment was set up to vary the foyer's light ambience, depending on the movement of each respective visitor. However, differing from the *displacement.13* experiment, the visitor's attention should not be irritated by the system, since we were trying to investigate reactions to different spatial atmospheres, but not the interaction between visitor and responsive system.

For that reason one question we had to deal with concerned the moment of realization and understanding of the existence of a computer-controlled system by the visitor. If the test subjects question the system's modus operandi, our first enterprise - the mapping of unconsciously controlled movement through the experiment - would lapse. Our assumption, based on what we experienced with the *displacement.13* experiment, was that the indication of a change (pivoting) within the subject's attention towards the computer-controlled system would be legible when test subjects start playing with the system.

6.3.3 The Displacement Series

Before I address these two issues I would like to state that of all three concepts of investigation presented, the *displacement.15* experiment provides the highest potential for an experimental setting when exploring the *user/architecture relationship* and there are two reasons for this. First, the balance between *first person perspective* and *third person perspective* is better concerted. Test persons were able move through a space. Each subject simply needed to enter the foyer, maunder around and leave again and since one visitor after another entered the room alone we could interview each of them after they had passed through the experiment.
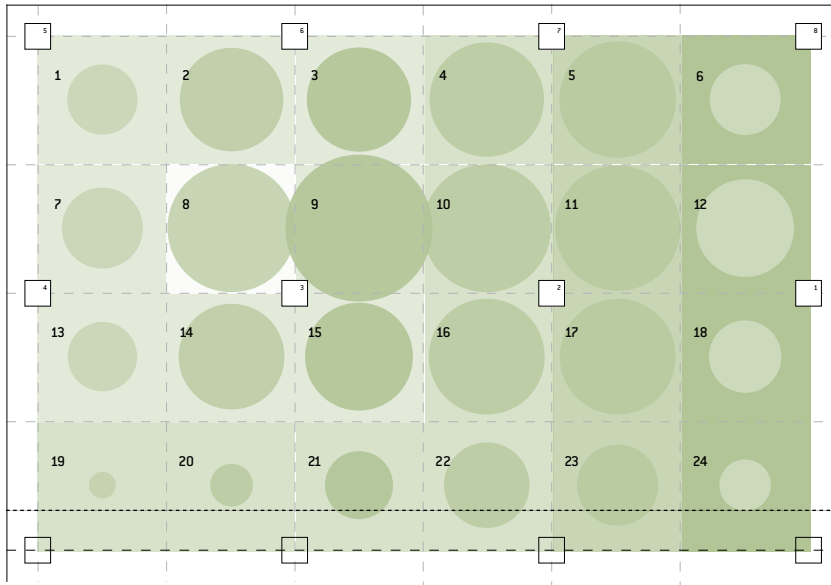
57   displacement.15
Areas of Interest

The second aspect I would like to highlight was the application of the interactive system. By using the system we could change the spatial scenario in 24 different ways, which is like 'cutting' one spatial condition into 24 settings. Walking through the zones, the test subject 'activates' one scenario after the other. The scenarios distill the experimental setting, since you can change the environment based on the research questions you wish to investigate. From a technical point of view, the positive factor of the tracking system used was the second effect - this mapping technology could also be used to control the responsive system. Hence the system which controlled the investigation by responding to the test subject, also supplied us with usable data (or vice versa).

All of this allowed us to arrive at usable data for our first (and main) research question, similar to the eye-tracking system in *displacement.14*, and indeed revealed an *area of interest*. This *area of interest* we found was close to – actually right next to - our intended 'region of calm'. As you can see in diagram 57, zone 9 of our field of investigation was the one inciting the longest length of stay, close to zone 8, which was in fact our preconfigured 'region of calm'.

58 displacement.15
Test Subject, Zone 14

59 displacement.15
Test Subject, Zone 4

60 displacement.15
Test Subject, Zone 12

61   displacement.15
Test Subject, Zone 11

62   displacement.15
Test Subject, Zone 8

167

63   displacement.15
Test Subject, Zone 7

64 displacement.15

Test subject w04, first walking through the experimental fields.

6.3.4 The Area of Interest

The technical equipment[289] we used to track and map the *user's* movement, position, and length of stay worked accurately. Each camera on the ceiling - we had six of them - controlled 4 zones of the foyer's floor. If the system determined an optical change within one of these zones, then it recorded its duration. Therefore, it was possible to track the motion, the length of stay, and the *user's* pathway through the experiment. Simultaneously, the tracking system 'informed' the light system which light specification the system should activate. Our initial apprehension that people would not move or walk around the experimental field did not hold true. Far from it! Every single test subject walked through the experimental field for about five minutes. Some of the test persons maundered through the different zones, some

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289 Hardware: 72 fluorescent tubes (36 Cool light, 36 Warm light), 48 Spots, 5 construction spotlights, approx. 500 metres of cable, 6 webcams

Software: Eyesweb (tracking system), Twincat(light control system)

Regulation of lights Beckhoff: Buskoppler, DALI Busklemme, Universaldimmklemmen

65   displacement.15
Test subject w04, searching for bounderies.

of them started running around, but all the different types of movement and pauses laid on top of each other resulted in one area of interest, zone 9.

6.3.5   Where do People look (take three)

In matters of the second issue, the realization and understanding of the existence of a computer-controlled system, I can report that most people just walked or maundered through the experimental zones without any indication of playing with the responding system. A small amount of test subjects, however, did play and actively interact with the system.

Test subject w04, for instance, first walked through the experimental field in one big circle. After about 45 seconds it suddenly stopped walking and made one big step to the left. Since it was standing in the middle of a zone the system did not change the light ambience. As a result she continued walking slowly until it reached the border of the zone and the system changed the light setting. At this point it began to play

65 The Colloquy of Mobiles
Gordon Pask
Photograph: Joost Rekveld,
http://www.lumen.nu/rekveld/wp/?p=624.

with the computer-controlled system. It searched for boundaries, jumped around, and varied its speed. It appeared the test person was trying to understand the system. The attention displayed by this particular person (*apperception)* was attracted by the responsive system. The outcome of this new purposeful attention brought with it a novel way of moving through the experimental setting. The relationship between the (responding) environment and the subject had changed. This process of interaction with purposeful attention by the *user* to a responsive system was originally described and also applied by the British cyberneticist Gordon Pask.

6.3.6   Gordon Pask

In the early 1950s 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 technical 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 those of a real conversation. In his book *Conversation Theory,* Gordon Pask describes the effect we observed in *displacement.15,* where the test person playing did not do so as we find with 'communicative' media, but as can be observed in a dialog which is overlooked by the user.

'The dialog interferes with progress. The user loses his status as an external observer, since he participates in biases the learning process. Natural language expressions are hard to interpret inherently ambiguously. In fact we proposed that as the classical type of experiment is improved to approximate the idea, the information available to an external observer regarding conscious operations would decrease very rapidly to the vanishing point. Conversely, the information about the conscious operations is maximized by establishing an appropriate kind of dialogue which is overlooked by an external observer.'[290]

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290   Pask, G.(1976), *Conversation Theory*, Elsevier, Amsterdam, p. 2.

6.3.7 Conversation Theory

Interaction is a dialog. In a conversation purposeful attention of the *user* is required, so a technical system is able to communicate information very effectively if it appears to be one which is talking to you. Pask's designs for machines presented information in a very playful way and even implemented human behaviour such as boredom in their systems to amplify the effect of a dialog. In a way, the system pretended to be alive to attract attention.

In my opinion, a similar phenomenon happened within the *displacement.15* experiment. Although I do not assume that any one of the test subjects imagined the computer system to be alive, the interaction of some visitors with the changing environment looked like a dialogue. I believe the reason why Pask's *Conversation Theory* proves true is because *apperception* is attracted by all elements of life, even if these elements are simulated by a machine such as our interactive system. Even if the counterpart to the *user* pretends to be alive, the attention of the *user* will be - supposedly - attracted.

In a way I have to acknowledge that this effect, described in the *Conversation Theory*, was the third obstacle in the *displacement series* and its aim of investigating the *user/architecture relationship*, but all these obstacles have something in common. For the *displacement.14* experiment we confronted people with architectural images and found them interested in the humans occupying these images. In the three-dimensional experiment of *displacement.13* the *user's* attention was also bound to other people. Finally, in our last experiment - *displacement.15* - some of the visitors were attracted by a system which pretended to be alive, pretended to be a being. In order to interpret this observation not simply as three very similar obstacles, but as an indication of how the *user/architecture relationship* is constructed, the consequence would be as follows. In our relationship with the outer world the process of perception acts on different layers. The first layer works with purposeful attention, focusing (for example) on other subjects, on living counterparts. In my opinion, the built environment belongs to a 'lower' level, one that is able to dispense with purposeful attention. Close to the level that is attributed to other people lies the level for communication. I am dividing these into two separate levels, since there exists 'communicative' media, which require purposeful attention by their counterpart. Now that 'communicative' media - but also built environments - come close to being 'alive', the probability of capturing the attention of the opposing individual arises. The question then is what will happen to the classical relationship between *user* and *architecture* when, by using responsive systems like ours, the architectural

environment confronts the 'first' level of our perception. A possible dialogue between a changing environment and a *user* would require a simultaneous activation of both layers; these are the *perceptive* layer and *apperceptive* layer. When we developed the *displacement.15* experiment we aimed at using a responsive environment to generate space with multiple spatial conditions. Today I think that we could and should also use this type of investigation to explore the consequence of an assignment of responsive environments, since it is possible that this assignment could simple overestimate and overexert our (ability of) perception.

In my opinion this issue is an important one, since the development of architecture, where motion, movement, or responsiveness is implemented, is increasing. Beside architectural development, 'communicative' media personalize information more and more. Similar techniques, which simulate a dialog, are combined in an architectural environment. What we need now is precise distinction between the different types of perception. What theory/theories do we have about the subjective experience of architecture and when do we have to distinguish between *perception* and *apperception*?

My own theory of the subjective experience of architecture, based on the concepts of *philosophy of mind*, a distinction between 'communicative' media and architecture, as well as an outline of the development of responsive architecture, will make up parts of the next and final chapter of my thesis, concluding my body of research and work and inviting discussion, observations and thoughts.

7. ARCHITECTURAL RELEVANCE

7.1 Responsive Architecture

Today the relevance of the type of architecture where responsive environments play a decisive part is increasing. Concepts of animated architecture and their actual implementation have been known since antiquity. It is interesting to ponder that the inventive impulse for the development of animated architecture changed over the centuries. In ancient times and until the 18th century, animation of the built environment was intended to enchant the participant/observer. Today, contrary to the beginnings of their development, concepts for responsive environments have a rather emancipated background.

In 1910 Virginia Woolf famously claimed that human nature had changed. Her description seems as apt for the inventive impulse of animated architecture as she felt it to be for the dawn of the twentieth century:
'All human relations have shifted — those between masters and servants, husbands and wives, parents and children. And when human relations change there is at the same time a change in religion, conduct, politics, and literature.' [291]
The desired change for architecture, which comes with modern concepts for responsive environments, is based on a breach of authority, an authority that comes with every built environment where the user is almost forced to use the built environment much like a servant following the master's whishes. By means of technical augmentation of the built environment the *user*, so the presumption of the protectionists of responsive architecture, could partake in architecture more actively. The more the built environment is equipped with responsive human-like features, the more the user is able to participate in his environment, so the supposition. In my opinion, most concepts of responsive or animated architecture present at least

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291   Jordan, T.(2002), *Activism, Hacktivism and the future of society*, Reaktion Books, London p. 14.

two problems. One problem is the claim by responsive architecture's protectionists of an update of objective architecture with subjective elements, or even the turning of objective architecture into a subjective counterpart for the *user*. When defining subjectivity more precisely, by taking the theories of *philosophy of mind* into account, the presumed idea finally culminates in an ethical complication. The second issue I will discuss points towards the aforementioned situation of an element of one's subjective experience of reality, which is usually part of subtle *perception* and which becomes a part of consciously experienced *apperception* due to the support of technical enhancement. I will use the platform of my thesis as a basis for a discussion, which I would like to start by presenting a more detailed theory of how I believe the *user/architecture relationship* works.

7.2   Inventive Impuls

The first documented and described 'responsive' architectural environment dates back to the ancient world. Heron of Alexandria, whose writings have been preserved through the ages and whose name has become a sort of generic name for Hellenistic invention, built and improved oil-presses and fire-fighting pumps, invented lamps with automatically advancing wicks, and water-tube boilers for heating bathes.[292] As Siegfried Giedion describes in *Mechanization Takes Command,* the ancient inventors excelled in combining so-called 'simple machines', such as the screw, the wedge, the wheel and axle, the lever, or the pulley with water and a vacuum or air pressure, to carry out complicated movement or manipulation. One of his essays describes the first known 'automatic' door, which was installed in a temple. '(Thus) the temple gates swung open automatically as soon as fire was kindled on the altar and swung to when the flame died. Religious plays, several acts in length, were staged with mechanically moved figures, which, to minimize the friction, Hero put o wheels gliding over trails of wood. So far as we know, no sign of an application to practical transportation has been found. Wooden rails are said to be appeared (first) in England mines in the early seventeenth century.'[293]

The inventive impulse for the creation of mechanized environments was back then a different one from the motivation followed in modern times. 'Our present-

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292   Giedion, S.(1969), Mechanization Takes Command, The Norton Library, New York, p. 33.
293   Giedion, S.(1969), p. 34.
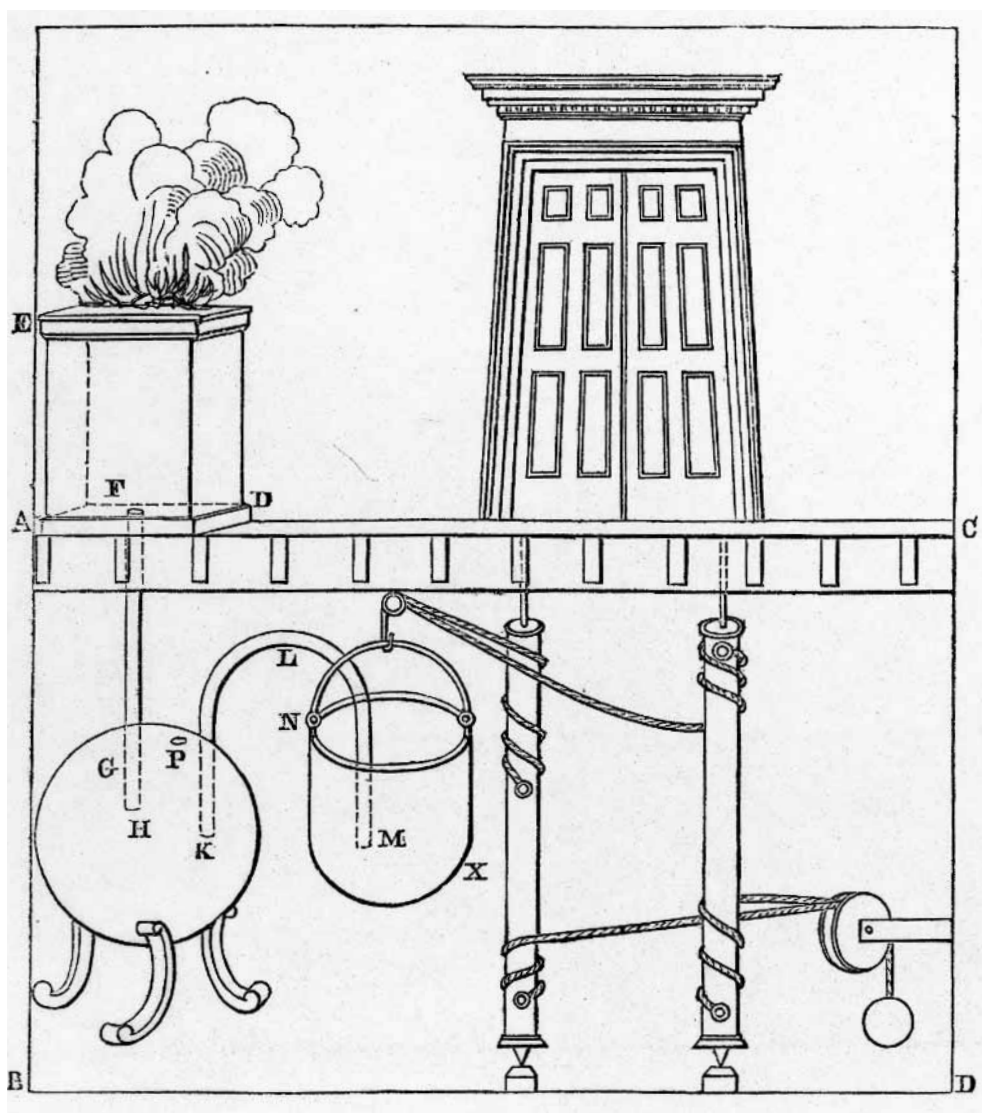
67 **Hero of Alexandria**
Temple Gates
Heron, of Alexandria,   (1851), *The Pneumatics.*
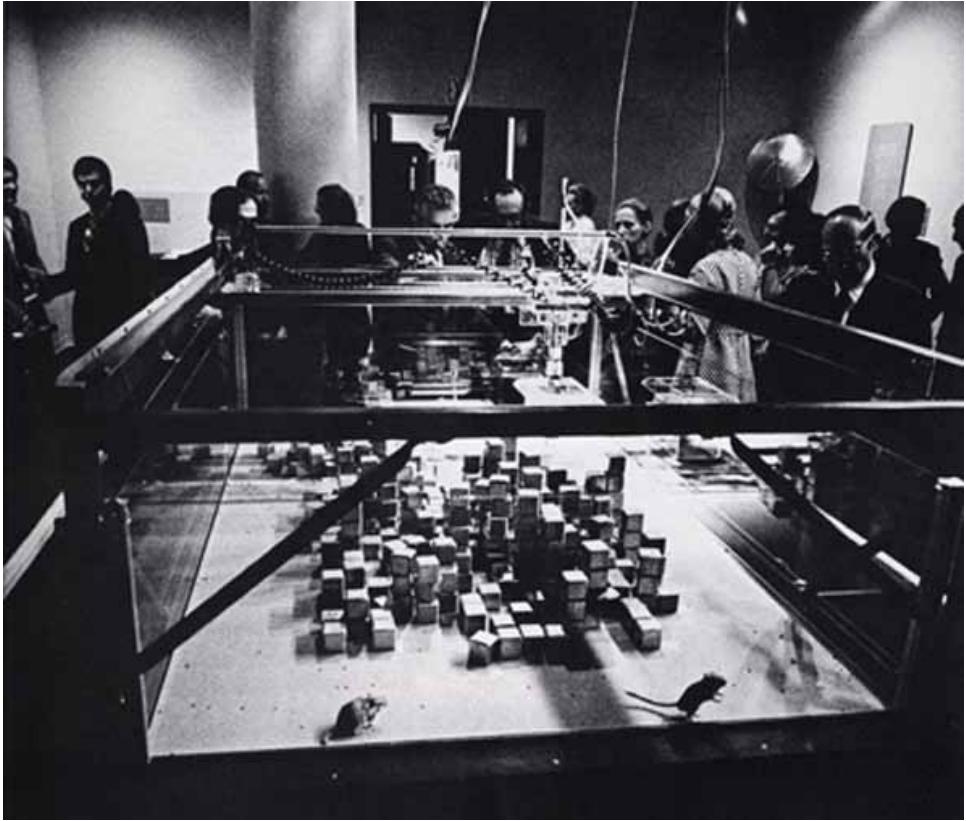
68 seek
Architecture Machine Group, 1969-70

day point of view tends to identify the inventive impulse with the mechanization of production – an identify that cannot be taken for granted. The Ancients thought along altogether different lines; they placed their inventive gifts in the service of miracle. They created magical machinery and automatons.'[294] Animation of the gates breathed life (=animated) into the built environment, a very impressive and miraculous effect for that period of time. Since the orientation of the inventive impulse has changed over time, from the miraculous to the utilitarian, the concept which now comes with responsive architecture deals more with the question of how we can optimize our way of living by implementing technical developments into our spatial environment(s).

294 Giedion, S.(1969), p. 34.

7.2.1   The Architecture Machine

During the late 1960s, 1970s, and 1980s, a small number of architects started to see the potential of integrating computers into architectural design, these included Cedric Price, John Frazer, Nicolas Negroponte at MIT, and Gordon Pask.[295] In the late sixties the architect Nicolas Negroponte developed a construction he called *Architecture Machine*.[296]   Negroponte`s *Architecture Machine* is a concept for an alliance between computer and architecture, the computer serving as a virtual architecture assistant. The work of Negroponte and his team at MIT was of course an aspiration that still has to be fully realized. According to the architect Nil Spiller, the *architecture machine* was much better at specifying the problem of inherency in designing a designing machine than at delivering a solution.[297] Thus Negroponte defined computers and machines as virtual assistants for the architect, which present three possible ways of assisting the design process: 'First, current procedures can be automated, thus speeding up and reducing the cost of existing practice; second, existing methods can be altered to fit within the specifications and constitution of a machine, where only those issues are considered that are supposedly machine-compatible; and third, the design process, considered as evolutionary, can be presented to a machine, also considered as evolutionary, and mutual training, resilience, and growth can be developed.'[298]   In the *Architecture Machine* Negroponte considered only the third alternative. He dealt with the human-computer interaction as one would with an intimate association of two intelligent systems.[299] The *Architecture Machine* is conceived as an artificial intelligence system assisting the design process, however the design process is integrated into the architecture. Architecture is an intelligent machine that is able to respond to local situation, that being an ever changing situation. 'Imagine a machine that can respond to local situations (a family that moves, a residence that is expanded, an income that decreases). It could report on and concern itself specifically with the unique and the exceptional. It would concentrate on the particulars, 'for particulars, as everyone knows, make for virtue and happiness; generalities are intellectually necessary

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295   Spiller, N.(2006), *Visionary Architecture, Blueprints of the Modern Imagination*, Thames & Hudson, London,
       p. 203.
296   Spiller, N.(2006), p. 206.
297   Spiller, N.(2006), p. 206.
298   Negroponte, N. (1970), p. 3
299   'I shall consider only the third alternative and shall treat the problem as the intimate association of two
       dissimilar species (man and machine), to dissimilar processes (design and computation), and two intelligent
       systems (the architect and the architecture machine).' Negroponte, N.(1970), p. 3.

evils.'[300]   Based on the concepts of artificial intelligence Negroponte presented the idea of *responsive architecture*. He proposed overcoming the architectural restraint, enabling everybody to articulate his or her own space(s) by interacting with a technically augmented architecture. 'An intelligent machine, the *Architecture Machine,* is able to concentrate on the particular, a human designer cannot do this; he cannot accommodate the particular, instead they accommodate the general.' [301]

The architect is forced to proceed in this way because the effectuation of planning requires rules of general applicability and because watching each sparrow is too troublesome for any but god.[302] According to Negroponte, environmental humanism might only be attainable in cooperation and machines have been thought to be inhuman devices, but in fact they are devices that can respond intelligently to the tiny, individual, constantly changing bits of information that reflect the identity of each urbanite, as well as the coherence of the city. Negroponte states that these devices need the adaptability of humans and the specificity of present-day machines. 'They must recognize general shifts in context as well as particular changes in need and desire.'[303] The background of this opinion lies in the wish to change the *user/architecture relationship*. The desired relationship would be not one of master and slave, but rather of two associates which have a potential and a desire for self-improvement. 'Given that the physical environment is not in perfect harmony with every man's life style, given that architecture is not the faultless response to human needs, given that the architect is not the consummate manager of physical environments, I shall consider the physical environment as an evolving organism as opposed to a designed artifact. In particular, I shall consider an evolution aided by a specific class of machine. Warren McCulloch (1956) calls them ethical robots; in the context of architecture I shall call them architecture machine.' [304]

Despite the fact that the concepts of Negroponte and Pask are more than forty years old, the idea of *responsive architecture* is still present today. For example, in 2007 Usman Haque promulgated the architectural relevance of Gordon Pask's work. He stated, 'now, at the beginning of the 21st century, Pask's *Conversation*

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300   Huxley, A. (1932), *Brave New World,* Flamingo, London, p 2., in Negroponte, N.(1970), p. 3.

301   Negroponte, N.(1970), p. 3.

302   Harris, B.(1967), *The limits of Science and humanism in Planning*, Journal of the American Planning Association, Volume 33, Issue 5 September 1967 , p. 324 – 335.

303   Negroponte, N.(1970), p. 2.

304   Negroponte, N.(1970), Introduction.

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.'[305] In Nil Spiller's 'Visionary Architecture' (2006) Pask and Negroponte represent paradigms for the later generation of the 1990s, which was inspired by a rapid genesis of cyberspace. 'Marcos Novak, Greg Lynn and others began to explore new technologies and push visionary architecture onto the knife-edge between the virtual and the actual. Nanotechnology and biotechnology further blurred the distinction between the animate and the inanimate – as it continues to do today.' [306]

Equal to Gordon Pask's *Conversation Theory,* Negroponte states that, in spite of computational efficiency, a paradigm for fruitful conversation must be a machine that can speak and respond to a natural language. The responsive object 'answers' the subject. Responsive architecture therefore is a space or a building that gives the subject, namely the *user*, an 'answer'. However, a system that is able to respond to a subject needs to have the presence of a reality. It requires a *self-model*, *first person perspective*, and *conscious experience* to be able to communicate. The first types of self-modeling machines have already appeared. According to Thomas Metzinger, researchers in the field of artificial life began simulating the evolutionary process a long time ago, but now there exists the academic discipline of 'evolutionary robotics'. In his book Metzinger presents the creation of Josh Bongard and his colleges Victor Zykov and Hod Lipson, who work at the department of Computer Science at the University of Vermont. Their creation - an artificial starfish – is already gradually developing an explicit internal *self-model*. [307] 'Their four-legged machine uses actuation-sensation relationships to infer indirectly its own structure and then uses this self-model to generate forward locomotion. When part of its leg is removed, the machine adapts its self-model and generates alternative gaits – it learns to limp.' [308] What would it be like to build an architectural environment that is in possession of a *self-model*? Taking Metzinger's *self-model theory of subjectivity* into account, the built environment would need a *globally available model of the outer world*, a point of perspective, and the phenomenon of *transparency*. The built environment would then be conscious, it would have a subjective experience. 'The phenomenal property

305   Hague, U.(2007), *The Architectural Relevance of Gordon Pask,* in Bullivant, L. ed.(2007), *4dsocial: Interactive Design Environments,* AD July/August 2007, Wiley-Academy, London, p. 55.

306   Spiller, N.(2006), p. 203.

307   Metzinger, T.(2009), p. 189.

308   Metzinger, T.(2009), p. 189.

69 Seven Screens - Reactive Led-Columns
Photograph: Joachim Sauter, Artcom 2007

of selfhood will be exemplified in the artificial system, and it will appear to itself not only as *being someone* but also as *being there.* It would believe in itself.' [309]

At this point of the debate, we find the aforementioned 'ethical' problem of Negroponte's (and others) desire to change the *user/architecture relationship* from a master/servant relationship into a relationship of two associates (that have the potential and desire for self-improvement). I do not believe that a responsive environment with a *phenomenal* property of selfhood should be allowed to do whatever it wants to do. A responsive environment has to follow the *user's* desire for self-improvement. In other words, the change of the *user/architecture relationship*, to use Negroponte's description, would be a reversal of the roles of master and servant.

In reality, a subjective environment has not come into operation in common everyday architectural practice. Of course, architecture incorporates sensors, displays,

309   Metzinger, T.(2009), p. 193.

and a range of mechanical functions, but these sensors simply detect temperature, humidity, light, fire, and many other parameters relevant to the operation of the facility and the safety and comfort of their occupants.[310]

The development of *responsive architecture* always comes with the development of new technologies. According to Joachim Sauter, architecture that seriously participates and interacts with its *users* has not yet been implemented due to economical circumstances.[311] However, we can often identify ideas promulgated by Gordon Pask and Nicolas Negroponte in art-installations, exhibitions, fair stands, and sometimes light-facades. Joachim Sauter wrote in his paper *Das vierte Format: Die Fassade als mediale Haut der Architektur* that we have to see new technologies not as tools, but as a media. 'This technology, integrated in touch-screens, installations or interactive rooms is a new way of communication'.[312] Interactive technology used as a medium for communication is currently more interesting for an in-depth analysis, since we are faced with this technology in our every-day lives. In chapter five I discussed the recurrent observation that living subjects - or technical effects which simulate life - attract test persons' *apperception*. A new way of communication, described by Joachim Sauter, capitalizes on the subject-orientated structure of human perception.

Thereby, the interactive way of communication challenges *naïve realism*. Evolutionarily developed *naïve realism*, produced to secure the survival of the individual, can now be bridged by a technology that simulates life to attract attention.

7.2.2 Perception and Subject-Orientated Process

The concept of the *conscious user* of architecture states the experience of architecture as a result of a bodily process we call *perception*. This process of *perception* cannot be described as *what you see is what is there*, but *what you see is what you need to see*. *Environment* is the product of an already filtered - even preconfigured - collection of internal and external information, merged in the process of *perception*. In chapter 3.5 I discussed this, pointing out that our consciously experienced reality

310 Cf. Beesly, Ph., Hirosue S. & Ruxton J.(2006), *responsive architectures, subtle technologies*, Riverside Architecture Press, Toronto, p. 7.

311 Sauter, J., (2004), Das vierte Format: Die Fassade als mediale Haut der Architektur, published on www.netzspannung.org, http://netzspannung.org/positions/digital-transformations, 15.08.2010.

312 Cf. Sauter, J.(2004).

is a *naïve reality*. The evolutionary background of *naïve realism* is the structured reconditioning projection of the environment, conferring resources to use, resources we need for matters such as communication. The naïve phenomenon of taking reality for granted permits the subject to concentrate on a dialog with another person. However, these mental resources for communication are limited. It is hard, if not impossible, to listen and answer simultaneously to more than one person at a time.

Since you naturally communicate with subjects, your internal selection that comes with *apperception* (purposeful attention) is again directed towards subjects. This subject-oriented process operates below the level of awareness. My assumption is - after having conducted research through three different experiments - that the process of *perception* is subject-directed. The orientation of *perception* towards living counterparts is a necessary instrument for the development of social structures. Since social structures are and always will be the background for (our) survival, the subject-affine principle of our perception is indeed a strategy of survival.

A responsive environment will, in my opinion, interfere negatively with the process of *perception*. Mental resources you usually need for communication would be occupied for a dialog with the environment. The built environment then does not adhere to *unconscious perception* anymore.

7.2.3   Presence

I do want to state, however, that I do not follow the hypothesis that the experience of architecture is solely perceived unconsciously. One example for a different way of experiencing the built environment is one I introduced in the chapter *presence*. According to Gumbrecht, *presence* means feeling our physical presence melting and merging into place and time. The phenomenon of *presence* comes with purposeful attention towards the built environment, but it is still different to the phenomenon Gordon Pask describes in his *Conversation Theory*, since the effect of *presence* is, according to Gumbrecht's theory, beyond meaning. The idea of *presence* reaches beyond metaphysics, it does not concern meaning, signification, and interpretation and goes further than communication or dialog. However, the term *consciousness* is very closely connected with the idea of *presence*, as the term *consciousness* is often used to state the presence of awareness.
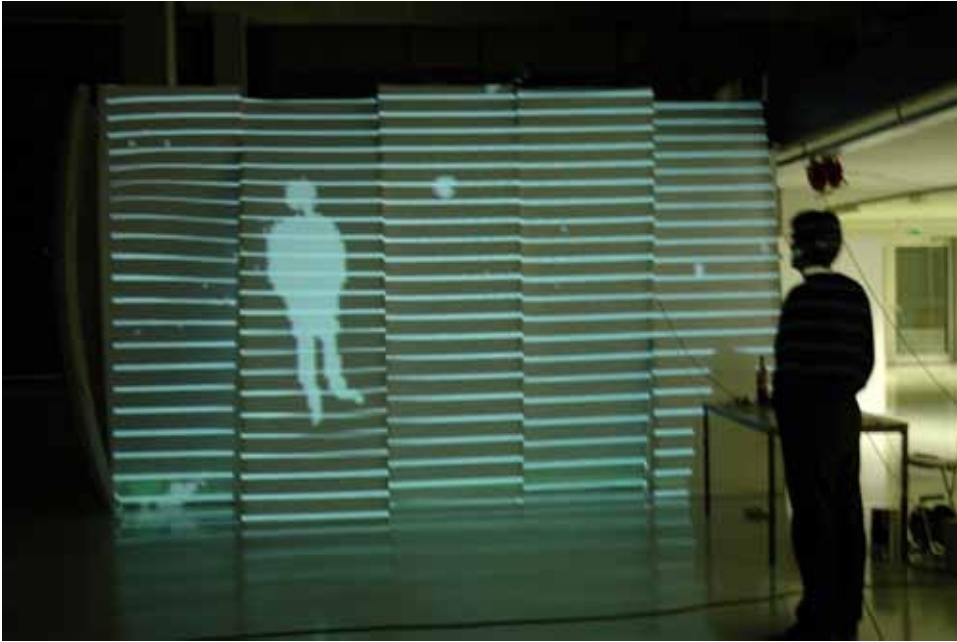
70 displacement.13
Spatial Experiment 2005

Thomas Metzinger uses the metaphor of an island rising out of an ocean to describe *consciousness*. 'The global neural correlate of consciousness is like an island emerging from the sea (…) an ocean made up of a myriad of less integrated and less densely coupled neural micro-events. Whatever information is within this cloud of firing neurons is conscious information. Whatever is within the cloud's boundary (the "dynamical core") is part of our inner world; whatever is outside of it is not part of our subjective reality.' I will borrow Metzinger's metaphor of a rising island, using this metaphor for the phenomenon of *presence*. You are taken and captured by the physical presence of spatial situations. This 'special' feeling appears in your 'normal' way of experiencing the outer world, it lasts for a while and then disappears again. Today, I think what we describe as the phenomenon of *presence* is an accumulation of different aspects within the process of *perception*. For this to occur, sensory impressions need to be especially sudden, dramatic, or novel – alternatively the brain needs to be outstandingly receptive for input, in a state of joyful anticipation. If we follow this line of argumentation, the purposeful production

71 The Swarm
Gert Gschwendtner, 2010
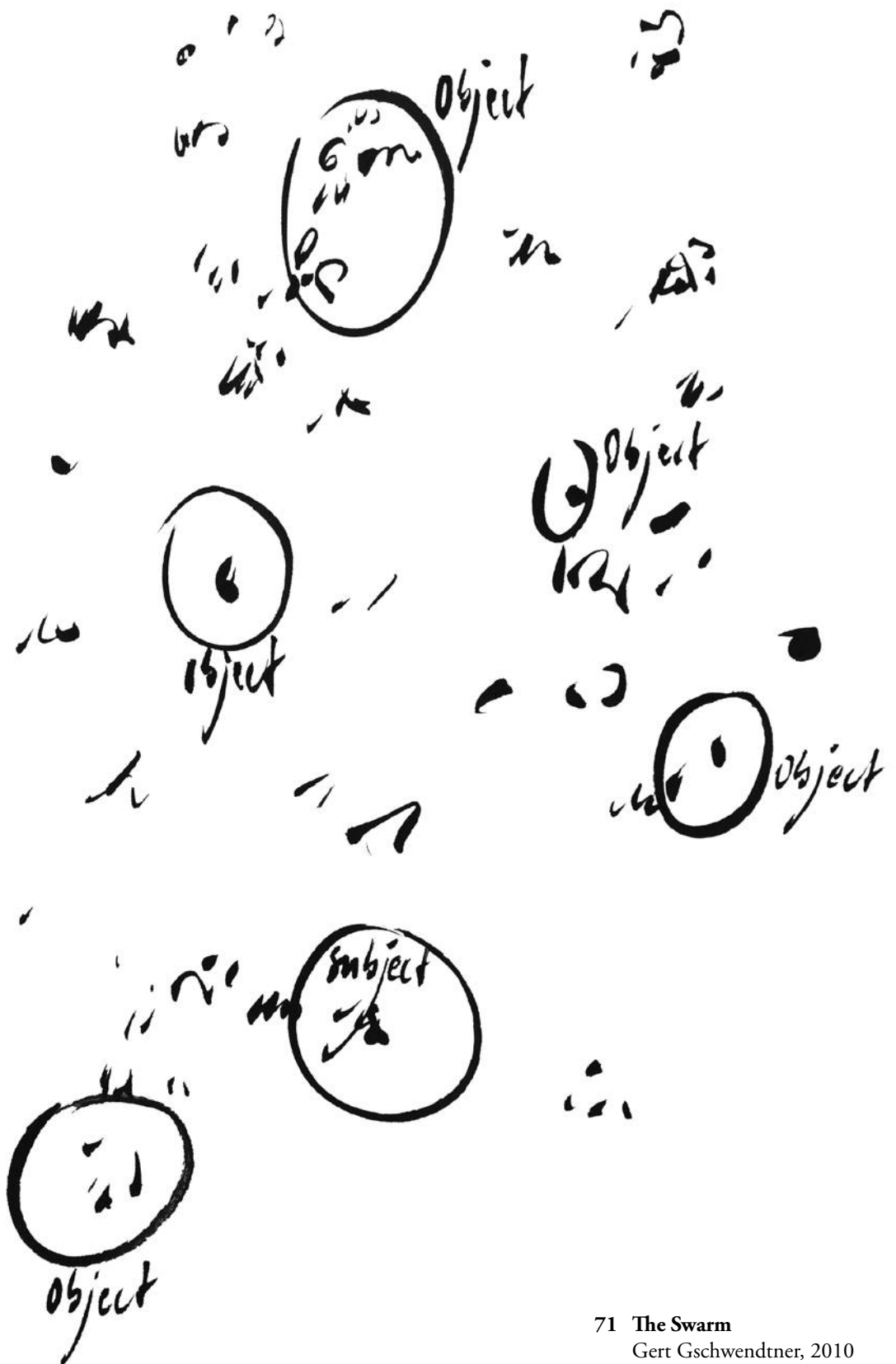
of *presence* is hard to achieve, since this effect of *presence* is connected to former experiences by the subject. Architectural elements which are novel to one subject may not be novel to another. However, this means that *apperception* can focus on the built environment if this built environment triggers 'special' sensory impressions. These impressions, depending on the fortitude of the individual impression, are then manifested in the neuronal cortex in a variety of levels of impact. Strong impact reaches older, deeply rooted, highly emotionally connected regions of the brain, where nerve-cell connections are responsible for the regulation of bodily functions. This means that a strong and important situation has an effect on bodily functions such as the release of hormones. You feel the effect of *presence* in your very body. In an interview the artist Gert Gschwendtner argued that emotion is related to the strength of the actual experience. The stronger the impact on these evolutionarily older parts of the brain, the stronger we can physically 'feel' this impact.

7.2.4   The Swarm

If you return to the respective built environment which was responsible for a particularly strong sensory impression, the impulse of the arousal patterns reactivates already existing arousal patterns, including the areas responsible for the release of hormones. This means that you re-experience a weakened version of the same emotional feelings. It is important to say though that there is not one pattern representing one complete built environment. The internal representation of a built environment is made up by a huge collection of different patterns.

Gert Gschwendtner uses the metaphor of a swarm when he talks about the mental process of *perception*. In the process of *perception* a variety of differently activated neuronal patterns interact with sensory impressions, forming and reconfiguring themselves like a swarm in the architectural reality we experience. This means that you do not need to return to the very same built environment to feel the very same emotions you had upon entering the original built environment for the first time. Similar emotions are triggered when the swarm of the neuronal patterns' configuration draws close to important impressions from the past. If we use Metzinger's metaphor of the ocean one more time, then - under normal circumstances - the swarm would remain in the ocean as part of the unconscious layer of *perception*. The effect of *presence*, in my opinion, describes the point where the swarm leaves the ocean and reaches a part of the conscious level of our subjective

experience. Since the ocean represents the unconscious part of our subjective experience, it is important to state that the emotional aspect of an architectural experience is not bound to the conscious part of our subjective experience. The perception of a built environment always comes with emotion on different levels and of different impact. The emotional aspect of the process of *perception* has as a consequence, a rather subtle effect on the subjective reaction on the built environment. The *displacement* 15 experiment dealt with this emotional aspect, as it attempted to investigate the relation between the movement of the visitors and the different scenarios triggering emotions and subsequent actions. Therefore it was intended to work with a subtle and unconscious *perceptive* way of perceiving a built environment. This was not always the case, since a few visitors began playing with the interactive system. The relationship between visitor and built responsive environment appears to aberate from the classical relationship; the relationship with a responsive environment is not a subtle one and cannot be compared to the phenomenon of *presence.*

In summary I would like to conclude that there is a difference between the perception of architecture and the perception of 'communicative' media. Ferdinand de Saussure already distinguished between objects and words and this differentiation crops up repeatedly in different theories, all from a different background. *Philosophy of mind* supports this theory in a variety of ways. First, it concerns the concept that a subjective reality is a construction of the brain. Next, this process (function) implements a strategy for sustainable handling of the production of reality. Thereby, and this is my assumption, the ability to communicate is so important, that the process of perception has found a way of selecting from outer elements which are important to communicate with and elements in the outer world which are not important for communication. In my opinion architecture belongs to the second group of perceptive selection. Therefore it is important to state the subjective experience of architecture not as a communicative process, architecture is not a dialog.
The second important aspect is that - since the resources within the process of perception are limited and sustainable handling is needed - changing architecture into a communicative element by implementing technology would disrupt our possibility of concentrated purposeful attention.
If we (the architects) design an environment which changes and yet still imagine it to be perceived as architecture and not as a new medium for communication,

we have to desynchronize the architectural system. Response by an architectural environment to the *user* needs to be slow, so slow in fact that the user does not recognize movement as a reaction to his existence in the architectural situation.
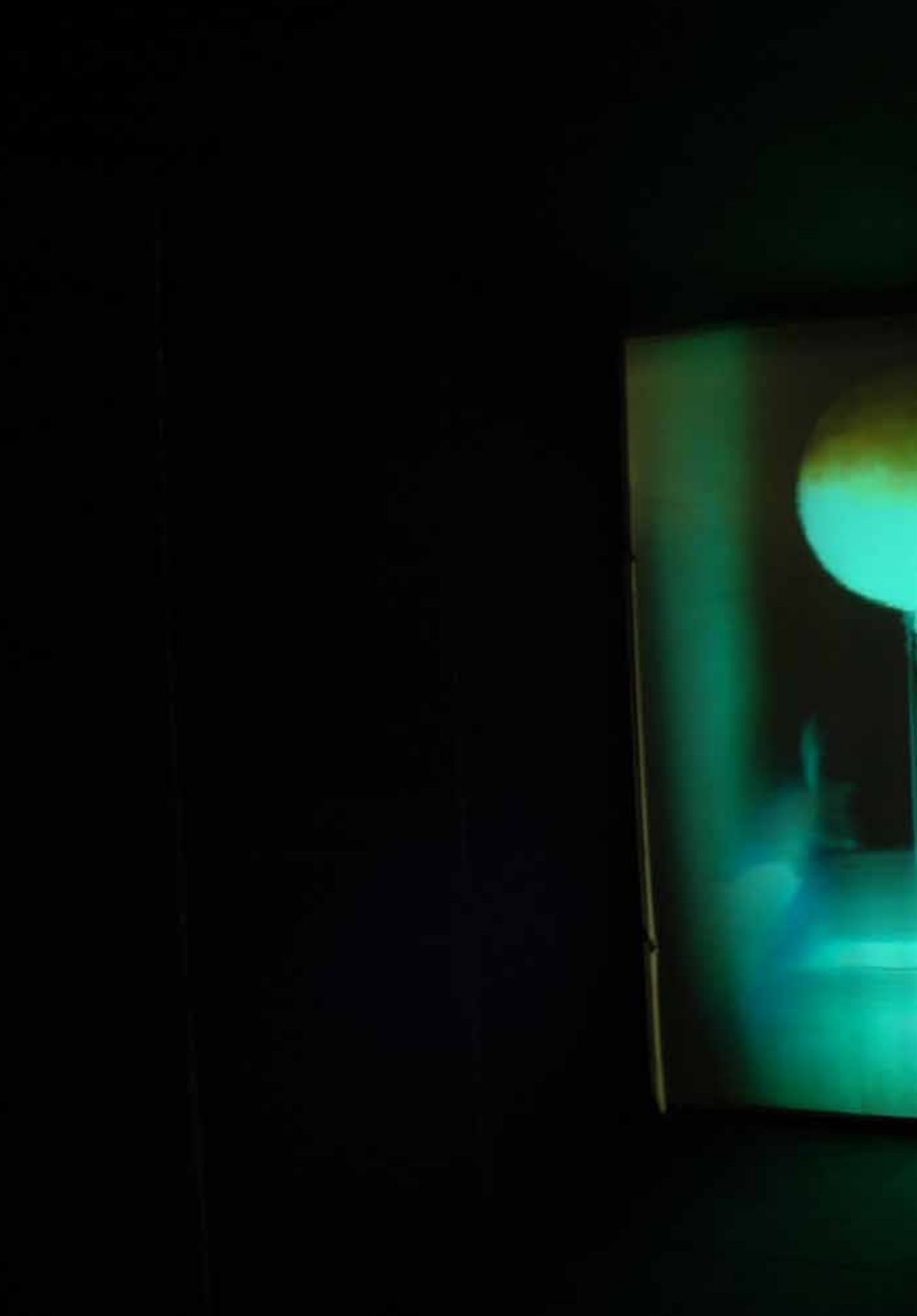
8. CONCLUSION

First and foremost I was taken with the concepts of *science of mind,* where a philosophical-epistemological debate is combined with empirical science. My (architectural) interpretation of this interdisciplinary approach is demonstrated in the *displacement* experiments; that this combination of spatial experiments with a philosophical-epistemological debate could be fruitful and beneficial was demonstrated in my observation of subject-orientated human perception.
The outcome of the *displacement* series needs to be taken as the basis for a toolkit of a '*conscious user* empirical research program'. According to Thomas Nagel's theory of the explanatory gap between *first person perspective* and *third person perspective,* I would assert the development of the *displacement* series as an approximation. In my understanding this gap cannot be bridged entirely, our approximation already draws on possible ways of establishing an objective type of *phenomenology*. Since the complexity of a real spatial environment was incorporated or imitated in the *displacement.13 and 15* experiments, test persons were allowed to experience the architectural environment from their own subjective points of view. For the last experiment - *displacement 15* - we managed to find a way of collecting usable data for an objective point of view. The reception of objective data gave us the possibility of comparing variations within our experimental setting. Augmentation of the reacting system allowed us to vary the spatial conditions in relation to present research questions.

Looking towards future developments, the question of the advancement of individual subjective perception begs to be one of the main issues worth investigating. Which part of our globally available model of the world is part of cultural education and which part of the model is based on evolution? This research question is fairly simple, yet very promising.

Would we find different levels of attention and varying areas or interest when installing one and the same experimental setting in a plethora of cultural environments? The fact that we were able to identify an *area of interest* in our experiment provides an indication that there is indeed a certain concordance in the automatic and unconscious process of the *user/architecture relationship. Internal pictures* and the *iterative* process of comparing and reacting to sensual input - based on the architectural environment - are comparable among different test subjects; since all test subjects observed in our experiments have been natives of central and western parts of Europe, the question arises if we would find different *areas of interest* when studying groups of test subject from other geographical regions.

This research question appertains to the development of *internal pictures* or neuronal networks, which could play on important role in the *user/architecture relationship.* Is the development of these neuronal networks a product of cultural education or pre-established by and in the evolutionary development of the brain? In all probability neuronal networks are organized by both cultural and evolutionary influence; the question we might try and answer by means of an experiment such as *displacement.15* regards the balance between both culture and evolution. Which one is more important for the *user/architecture relationship*, the cultural or the evolutionary aspect, or are they of equal influence?

Considering the cultural imprint which forms our process of perception, we need to reconsider and re-reinforce architecture's cultural responsibility. A new architectural debate based on the concept of the *conscious user* would provide an opposition to current tendencies of an exclusively 'architectural' and self-revering point of origin, which sadly attempts (and often succeeds) at objectifying and structuring architecture into some form of (nonsensical) order, a tradition which is especially reflective of axial (i.e. Western) cultures.[313]

8.1   A New Image of Humankind

In his book *The Egotunnel* Thomas Metzinger writes the following: 'It is clear that a new image of humankind is emerging in science as well as in philosophy. Increasingly, this emergence is being driven not only by molecular genetics and evolutionary theory but also by the cognitive neuroscience of consciousness and

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313   Brown, B, (2009), *A matter of origins,* not published, p. 2.

the philosophy of mind.'[314] I integrated this new image of humankind into the architectural debate in my concept of the *conscious user* of architecture. This new image could advance the architectural debate in a most beneficial way, especially the self-referential part of the debate. I am convinced that the new image of the user - the *conscious user* - will lead the architectural debate into different and new challenges, for example into a new debate on aesthetics and beauty, since the new image of humankind would not allow stating beauty as an absolute and given value.[315]

It is with hope and aspiration that we - as architects and users - should consider the meaning and foundations provided by the sciences of mind in our quest and challenge of building and forming an environment which is pertinent for sustainable and elevating human usage.

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314 Metzinger, T.(2009), p. 209.

315 Beauty or aesthetics are again a product of our subjective self. Hence beauty is bound to the personal development of each of us. There are 8 billion definitions of beauty but not one. It is only collective cultural imprinting which produces the collective impression of what beauty is.

9. APPENDIX

9.1   Biographies

Gert Gschwendtner (*1949)

Gert Gschwendtner is a German artist and founder of the interdisciplinary think tank 'Hochwaldlabor', which provides a platform for artists, architects, designers, philosophers, and intellectuals interested in philosophy of mind.

After graduating from the *Akademie der Bildenden Künste Munich* with a degree in visual communication he worked as an artist and designer throughout Germany, Switzerland, Austria, Liechtenstein, Russia, Tibet...

Gert Gschwendtner currently teaches at the *Fachhochschule Liechtenstein* and the *School of Architecture at the Technical University Innsbruck.*

Thomas Metzinger (*1958)

Thomas Metzinger is a German philosopher. At present he holds the post of director of the theoretical group at the Department of Philosophy at the *Johannes Gutenberg University of Mainz*, as well as being an Adjunct Fellow at the *Frankfurt Institute for Advanced Studies*. Since the early 1990s Metzinger has pursued the promotion of consciousness studies, co-founding the *Association for the Scientific Study of Consciousness* (ASSC). He is the director of the *MIND groups* and, from 2005 to 2007, was the president of the *German cognitive science society*. Metzinger is particularly interested in philosophy of mind, a branch of philosophy which deals with philosophical views on empirical theories in neuro- and cognitive science, the study of ethics in philosophy (of mind) and anthropology. Thomas Metzinger's noteworthy grasp on the relation of mind and body in the context of neurobiology and issues of consciousness have been praised and widely discussed.

Gerald Hüther (*1951)

German neurobiologist Gerald Hüther gained a degree in biology from the *University of Leipzig*, after which he left Eastern Germany at the end of the 1970s, using fake travel documents and settled in Western Germany's Göttingen. From 1979 to 1989 he worked at the *Max-Planck Institute for Experimental Medicine* studying brain development. In 1988 he was awarded his postdoctoral lecture qualification for neurobiology.

Gerald Hüther remains based in Göttingen, where he is the head of the *Department for Neurobiological Research* at the University's psychiatric clinic.

Gerald Hüther's main research interests concern the effects of fear and stress on the brain and human behaviour, nutritional consequences for the brain, ramification of drug abuse and psychotropic drugs in general, the impact of psychosocial factors and psychotropic

drug treatment on the infant brain, the evolution of consciousness and the influence on the human brain presented by the media.

Hüther has written several books and is a member and editor of a variety of trade journals.

Wolf Singer (*1943)

Wolf Singer is a German neurobiologist. He studied medicine at the *Ludwig-Maximilian University Munich*, and received his degree in 1968. In 1975 he completed his doctorate studying human physiology. Singer was named director of the *Department for Neurophysiology* at the *Max-Planck-Institut für Hirnforschung* in Frankfurt am Main in 1981, where he also co-founded the *Frankfurt Institute for Advanced Studies* (FIAS). Wolf Singer currently holds the post of honorary professor for physiology. He is also a member of several organisations and research societies. His daughter Tania Singer also works in neuroscience.

Singer's research interests cover a wide area, such as political, psychological, anthropological as well as philosophical or architectural issues.

Thomas Nagel (*1937)

Thomas Nagel is an American philosopher, who originally hails from Belgrade in present-day Serbia. Nagel studied at *Cornell University, the University of Oxford*, and *Harvard University*. He currently teaches philosophy and law at *New York University*. Nagel's most prominent areas of research interest are to be found in philosophy of mind, political philosophy, and ethics. His most important contribution to the philosophical debate is his essay "What is it like to be a bat?" (1974), as well as his deontological and liberal moral and political theories portrayed in "The Possibility of Altruism" (1970) and subsequent writings.

In 2006 he became a member of the *American Philosophical Society*. Thomas Nagel is also a fellow of the *American Academy of Arts and Sciences* as well as its British counterpart, the *British Academy*. In the past he has held several fellowships and has been awarded a variety of prizes.

Ferdinand de Saussure (1857 – 1913)

Ferdinand de Saussure was a Swiss linguist, whose work provided the basis for a wide area of important linguistic developments in the 20th century.

Ferdinand de Saussure studied at the *University of Geneva, the University of Leipzig*, and the *University of Berlin*. He taught at a variety of Universities throughout Europe. Saussure is considered by many to be one of the fathers of 20th century linguistics and semiotics, his ideas constituting significant meaning for the humanities and social sciences.

Bernard Tschumi (*1944)

Swiss architect, writer, and educator Bernard Tschumi studied architecture in Paris and Zurich and has taught extensively at Universities in Europe and the United States. Tschumi is based in New York and Paris, where he is the director of *Bernard Tschumi Architects*. His most notable contributions to architecture have been in the architectural branch of deconstructivism.

Remment Lucas Koolhaas (*1944)

Rem Koolhaas is a Dutch architect, urbanist, architectural theorist, and journalist/writer. Koolhaas, who worked as a journalist for the Haagse Post before beginning his career in architecture, is the co-founder of OMA (The Office for Metropolitan Architecure) and its research-oriented counterpart AMO. Rem Koolhaas was awarded the Pritzker Prize in 2000.

Nicholas Negroponte (*1943)

The Greek-American architect Nicholas Negroponte is best-known for founding and heading *Media Lab* at the *Massachusetts Institute of Technology*, as well as being the founder of the *One Laptop per Child Association* (OLPC). Negroponte studied architecture at *MIT* where he currently holds a teaching position. He has also taught at *Yale University, Michigan University* and the *University of California at Berkeley*. Negroponte has pioneered the field of computer-aided design. In 1967 Negroponte founded *MIT's Architecture Machine Group*, a lab and think tank dedicated to the studies of human – computer interaction.

Andrew Gordon Speedie Pask (1928 – 1996)

Gordon Pask was an English cybernetician and psychologist, whose contribution to the field of cybernetics, instructional psychology, experimental epistemology, and educational technology has greatly impacted and influenced subsequent developments in a variety of (related) disciplines. Gordon Pask studied at *Cambridge* and the *University of London* and went on to teach at universities the world over. From the 1960s onwards, he directed commercial research at *System Research Ltd* in Richmond, Surrey and later at *Pask Associates* near Clapham Common. Pask's most noteworthy contribution to the field of cybernetics and systems theory lay in his emphasis on the personal nature of reality and the process of learning in an interacting environment between consenting actors, bridging the human – machine gap and devoting interest to the field of artificial intelligence. His foremost development is to be found in the 'Conversation Theory', a cybernetic and dialectic outline of the construction of knowledge. Other work worthy of mentioning is his 'Interactions of Actors Theory', which concerns itself with eternal kinetic processes.

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9.3   Name Index

9.4 Subject Index