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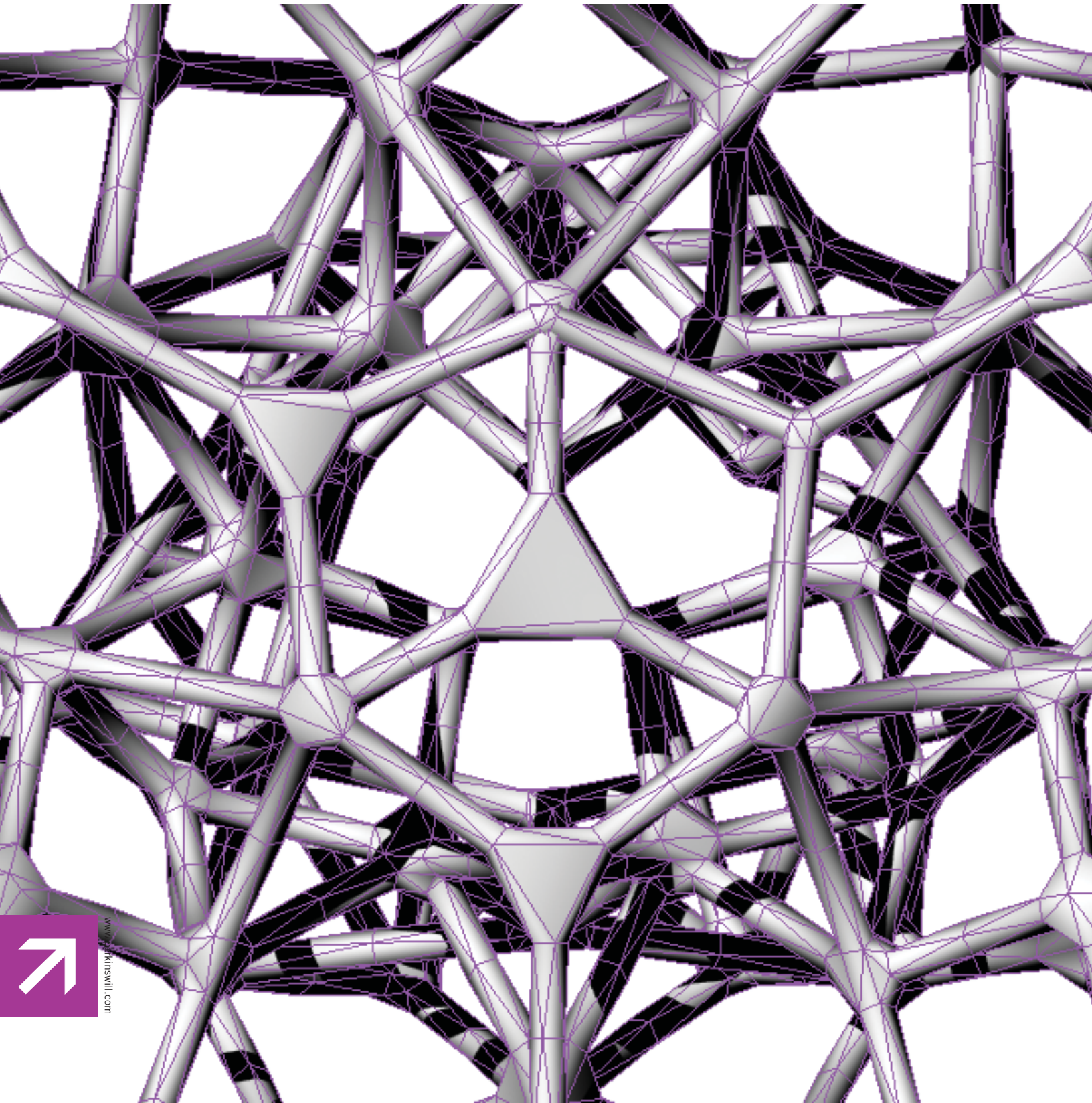

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03.
CRAFTING ARCHITECTURAL EXPERIENCES:
Exploring Memory Places

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ABSTRACT
This article discusses the importance of perception of spaces, and involvement with spaces during the design process. Over the last decade, mapping the relationship of architectural spaces to human experience has become popular as a successful design methodology. The beginning phase of the design process is characterized by perceptual integrity; unfortunately, this integrity often fades away or is even eliminated once the spaces become real and occupied.

The availability of advanced visual representation techniques has created a realistic clarity of visual experience in space. However, emphasis on the visual has resulted in the possibility that other sensory modalities will be ignored. The goal of the craft of architecture as a profession is to create experiential qualities. If well designed, an architectural space can effectively shape experiences and evoke feelings. This paper focuses on design processes and outlines a series of phenomenological arguments that arise in contemporary architecture. These arguments are presented through literature reviews, theoretical interpretation, and the building case studies that support findings. The purpose of this paper is to clarify the importance of imaginative perception in architecture, and to demonstrate how ideas are developed for the creation of impressive architectural spaces.

KEYWORDS: experience, memory, imagination, perception, design process, interstitial

1.0 INTRODUCTION:

The power of architecture as a practice lies in the impressiveness of the experiences that it shapes. Architects arrange spaces and create physical and cultural environments that we, as users, constantly interact with. We nurture our perceptions, memories, emotions, and feelings through our constant engagement with our environments. Our embodied experience of the world around us does not depend solely on the interpersonal relationship of our bodies to our minds; equally important are the atmospheres that we engage with. It is obvious that walking into the heavy and dim atmosphere of a cave temple gives a different effect than does being in the bright and airy interiors of a Gothic church. What we experience in these different environments is dependent on the moods that they evoke.

The intention of architectural design is to bring about complete satisfaction in users' experiences of spaces. In order to design with a specific effect in mind, architects should identify and perceive the experiential quality of spaces early in the design process. Quality and craftsmanship in a work of architecture must be thoroughly concerned with the quality of spatial experiences. We often admire a work of handicraft art for the practical skills involved in its creation. However, a piece of fine craftsmanship also involves the abstract quality of artistic talent. Similarly, the craft of architecture is not just about writing specifications to set up standards of quality for the construction of a project. Craftsmanship in architecture also involves creativity and the imagination of the architect. Architects imagine the experiential quality of spaces and articulate them by utilizing aspects of sound, light and color. To put this in another way: Architects craft spaces through perceiving the qualitative dimensions of experiences.

Perception of an object, and equally of an experience, only occurs once our mind assembles the related memories associated with these objects or experiences[1]. When architects seek to evoke experiences of space during the design process, they engage their memory to recollect spatial qualities that had previously been recognized and recorded. Theorists and scholars of philosophy see memory as a power of the human mind with two dimensions: natural and artificial. Frances Yates said that our artificial memory seeks to memorize through a method involving impressive places and images[2]. We comprehend architecture through our remembered spatial experiences. A memory of our interaction in space may "inspire" an idea or understanding of a complex concept that we had already experienced in the past.

This paper discusses the importance of the "inspirational mind" for architects during the design process as they attempt to create impressive architectural spaces. It includes a literature review that evaluates the qualitative dimension of architectural spaces. It also examines four selected case studies to demonstrate how the creative minds of architects have mediated the set of processes involved in design.

2.0 OBJECTIVES

Our knowledge about the overall quality of architecture is often restricted to functionality, planning principles and technical conditions of the buildings. When we praise an architectural design, we immediately admire all sorts of theoretical and practical values, but hardly ever recognize the emotional quality involved in the entire process of architectural design. The power of a good architectural design lies in both its technical values and in the elusive qualities of creativity and perception. This article highlights the importance of considering the emotional qualities of architectural spaces, and of doing this early in the design process. This aspect is critical because "emotion" is the multisensory medium through which we experience the world and equally the built environment[3]. This paper aims to highlight the importance of the sensory aspects of the design process, and how these aspects should be prioritized by architects in order to create architectural spaces with emotive experiential qualities.

Understanding the concept of "experience" and "experiential quality" involves a comprehension of human nature and its role in appreciating the quality of architectural spaces. The following section reviews the research methodology.

3.0 METHODOLOGY

This paper's research methodology involves a literature review, as well as an examination of building case studies. The collected works reviewed in this paper include theories related to memory, perception and imagination, and focus on the subject of phenomenological approach in architectural design processes. The arguments presented here derive from interpretation of findings from case studies, and use supporting literature to tie them to theory.

A literature review examines existing theories and gives insight into the potential role that re-imagining experiences can play in creating architectural spaces. This section is structured as follows: initially, it provides a brief chronological background study of the tension between the human body and mind, and architectural spaces. Subsequently, it reviews qualitative dimensions of human experiences and explains how they make architecture meaningful. The last part describes the importance of memory and of the perception of users' experiences during design processes in the creation of "memory places". For the purposes of this paper, the term "memory place" refers to an architectural space with memorable spatial qualities.

The case studies presented in the last section deal with two different concepts of "memory places": first, the concept of a memorable place as a highly stimulating environment that challenges users to come to terms with the intensity of their experience; and second, as a comfortable atmosphere that provides users with a sense of relaxation and sociability. The review of selected projects elucidate the argument that the purpose of the built environment is not merely to provide for the physical needs of users, but also to satisfy their psychological needs. The literature reviews presented in this article suggest that a profound architectural design provides more than merely accommodation and can help shape and represent our experiences of life and human existence. The act of representing spatial experiences before a building comes into existence involves approaching the design process with imaginative skills, as architects cannot evaluate experiential qualities without first being able to predict their effects and outcomes.

The four selected building case studies are presented to measure the potential benefits of involving the "imaginative mind" in the perception of spaces in architectural design processes. These case studies illuminate the importance of thinking about the living qualities of spaces very early in design explorations. What these four examples have in common is that, in the very early stages of

design processes, the architects questioned the basic form and content of space from the perspective of users' experiences. In all examples, a series of imagined experiential qualities leads to the design of spaces that are more than just physical structures: they are places that affect the existential sense of users by engaging multisensory perception.

The case studies selected for the purposes of this paper consider users in the center of experiences and demonstrate how physical architectural spaces can be turned into lived spaces. The architects referred to in the examples take the experience of people as a starting point for the perception of quality of spaces. Quality indicators that are measured in case studies include spatial configuration, tension between interior and exterior, material compatibility and textural effects with respect to light, color, scale and proportion of the space.

All the buildings presented together constitute a special category in that they communicate with viewers, residents, and visitors. However, there is no common denominator for spatial qualities that can be applied to all the buildings. Each building presented in this paper has its own individuality and presents a unique experience.

4.0 ARCHITECTURAL EXPERIENCE AND HUMAN PERCEPTION

4.1 Body, Mind, and Architecture

The world is defined through the constant involvement of perception. Its subjective character derives from the projection of our body's image onto it. Throughout history, from the Renaissance to Post-Modernism, there was always a mysterious connection between the human body and architecture[4] (Figure 1). This section briefly reviews this relationship and explores the mental essence of architecture.

Until the Renaissance period, the main intellectual task of architecture was to mediate between the whole (macrocosm) and the part (microcosm). In the words of Rudolf Wittkower: "With the Renaissance revival of the Greek mathematical interpretation of God and the world, and invigorated by the Christian belief that man as the image of God embodied the harmonies of the Universe, the Vitruvian human figure inscribed in a square and a circle became a symbol of the mathematical sympathy between microcosm and macrocosm"[5]. During the Renaissance, the body became a direct projection onto a building; the body was perfection like the Vitruvian Man. Throughout the Renaissance, the celebration of the human body's relation to structure was continued and developed until it became a more involved process[6]. For instance, the projection of the body onto a building and the identification of the soul with the body's center of gravity were concepts found in the work of Francesco di Griorgo's Trattati di Architecttura[7]. Likewise, the 15th-century Italian architect Filarete explored voids, deep spaces and entrances by studying the body as regards its relationship to structure in order to create a more refined atmosphere[6].

Correspondingly, the architecture of the modern period was no longer a simple representation of bodily proportion and functions. During Modernism, the critical analysis of the formal qualities of Vitruvian man incorporated the presentation of sensation and movement in architecture. An example of this abstracted movement is found in Marcel Duchamp's Nude Descending a Staircase. The body in Marcel Duchamp's artwork communicates another language that is not static but dynamic[6]. In fact, the modern period realized a change in architectural theory and incorporated the concept of the body's sensations and movement into the design process.

During Modernism, the human body was understood as a combination of life and geometry, and human existence became a major inspiration in the expression of the quality of life and experience in architecture. Twentieth-century thinkers, such as Frank Lloyd Wright and John Dewey, explored the importance of "embodied experience" in architectural design and education. Wright believed that an experiential foundation was important in learning and practicing architecture. The idea of "to learn by doing", a driving principle for wright's Taliesin school of architecture, was an interpretation of Dewey's philosophy of "embodied experience"[3]. Furthermore, Richard Neutra, in his book *Survival Through Design*, talked about architecture that is more about people rather about buildings. He explains how architecture can bring man into harmony with nature and with himself. Neutra is known as an early proponent of the application of human biological and psychological needs to architectural practice[8].

Subsequently, during Post-Modernism the principles gleaned from human bodily experience projected a sense of aliveness onto architectural spaces. In Post-Modernism, the body is transformed: it is studied as fragmented and reformed; and designs are based on such bodily aspects as perception and consciousness. Likewise, a number of known contemporary architects

like Tadao Ando have manifested corporeal experience in architecture. The importance of the empty cross in Tadao Ando's church of the light, built in 1989, involves the Shintai – a Japanese word for a living body. According to Japanese cultural tradition, Shintai surpasses the limits of sensation. The empty cross integrates natural light as an iconic representation of the standing body as an intangible reality[7]. Using the human body as analogy, Ando expresses a new meaning of light, gives it sense and makes it come alive.

Zumthor's Thermal Bath at Vals, in Switzerland, is a manifestation of architecture as a spatial art. Its spaces create a temporal feeling and produce a sense of freedom of movement for visitors. Zumthor imagines himself walking in space as if he is designing a stage setting and directing a play. His creative imagination follows the laws of sensual experiences: the Bath at Vals provides visitor with the opportunity to experience an exploration of known or unknown places just like as Zumthor himself did when he imagined himself strolling in space.

"Motility of the body in space" is an expression used by the contemporary American architect Steven Holl. He explains that space is defined through the body's movement within it. In his book *Parallax*[9], Holl explains that the spatial awareness of the body represents a fundamental quality for creation of architectural spaces. In his design of the Helsinki Museum of Contemporary Art, Holl has, by means of various design experiments, investigated different spatial perceptions for the moving body in an architectural space. For the museum design, Holl created perceptions of those spatial qualities that visitors in motion will experience.

The term "experience" is often used in contemporary architectural practice to express users' understanding of architectural spaces. Architects should question themselves early in the design process as to who the users will be and what they will want to experience in the created space. To achieve emotional quality in design, it is important for architects to keep questioning spatial qualities and imagining users' experience in space. This applies to all stages of the design process. Pallasma refers to Merleau Ponty's theoretical work and highlights architecture's ability to define spaces and to give them meaning:

"Lived space is both the object and context of the making of art as well as of architecture. The task of architecture is 'to make visible how the world touches us', as Maurice Merleau-Ponty wrote of the paintings of Paul Cezanne. In accordance with Merleau-Ponty, we live in the 'flesh of the world', and architecture structures and articulates this existential flesh, giving it specific meanings"[10].

To give "meaning" to an architectural space, we first must identify the qualitative dimensions of the embodied experiences of that space. Pallasma says: "Architectural quality cannot be derived from a formal or aesthetic game; it arises from experiences and an authentic sense of life"[10]. He suggests that the quality of architecture derives from the quality of the experiences that it shapes. In an effort to understand the qualitative dimensions of those atmospheres that our bodily nature interacts with, the next section identifies some fundamental recurring structures within our cognitive processes that form patterns of understanding relevant

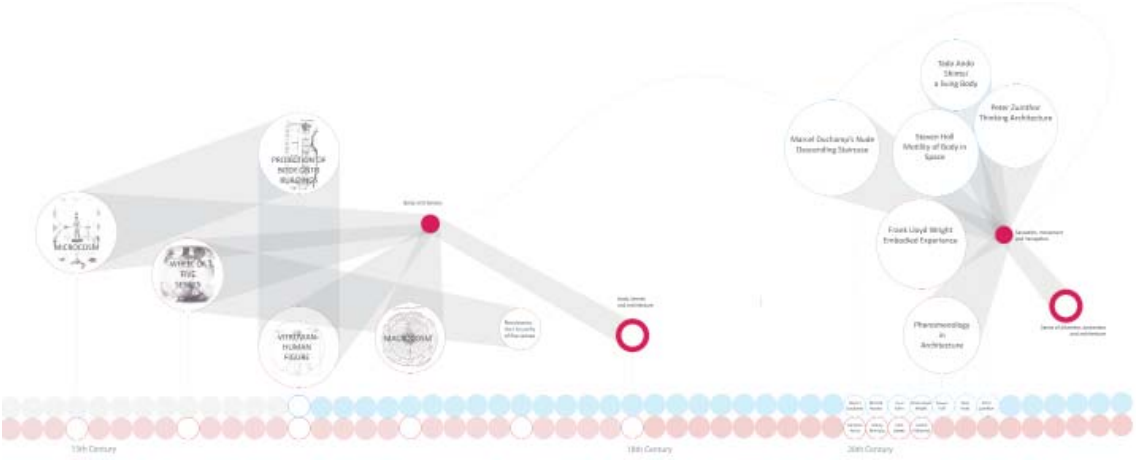

Figure 1: Body and architecture – 13th century to present.

to architectural spaces. The following accounts help us understand how and why architectural spaces can affect our human nature.

4.2 The Qualitative Dimensions of Architectural Experience

The act of "crafting" requires specific skills and knowledge on the part of its creator, as does architecture. Crafting architectural spaces requires architects to enhance their knowledge regarding the qualitative dimensions of the embodied experience. It also helps them hone their skills for the inclusion of the human dimension in their designs. The attempt to manifest architectural spaces as "lived" spaces arises from the fact that architectural spaces can act upon users by affecting their feelings and sensations. Pallasma refers to Louis Kahn's works and identifies them as buildings that are not "metaphysical symbols" but that are, rather, "a form of metaphysical meditation through the medium of architecture". The term "meditation" here refers to an inner exercise, which in words of Pallasma "leads us to recognize boundaries of our own existence and to deliberate on the essence of life"[10]. This concept of meditation suggests an inner experience of architectural spaces, one that cannot be achieved by the symbolic use of values, but rather by promoting a specific way of perceiving these values.

In order to develop a framework for understanding how humans perceive qualities of architectural spaces, we need to become familiar with the roles of our "emotions", our multisensory media, in understanding a situation or experience. In Renaissance times, five senses were introduced and formed in a hierarchical system. These senses were understood in relation to the universe. Vision was linked to light and fire, hearing to air, smell to vapor, taste to water and touch to earth[11]. However, giving a ranking to human sensory systems based on their importance or effectiveness does not fit into an interpretation of that perceptual quality by which we recognize the world around us. Pallasma suggests that "an atmospheric perception involves judgement beyond the five Aristotelian senses, and would include the sensations of orientation, gravity, balance, stability, motion, duration, continuity, scale and illumination"[12]. Pallasma refers to Merleau-Ponty's emphasis on unity and interaction of senses, and recommends that "the immediate judgment of the character of space and calls for our entire embodied and existential sense".

In fact, Pallasma's criticism regarding the isolation of senses notes that experiencing architecture involves an embodied and unified realization of sense and quality. Walking through the quaint streets of an old city, we may immediately feel a mystic atmosphere developed from a multi-modal reflection on our experience. We feel the rough patterns of paving stones, the warmth of the sun, the smells of aromatic herbs, the weightiness of ancient stone walls, the sounds of our footsteps, the chatter of the locals, and countless other factors that, when taken together, create an overall atmosphere.

It has been suggested that the human ability to experience, create and share meaning is not just an outcome of our bodies and minds, but rather is dependent on the quality of the environment that we interact with. It is through our bodily and cultural interactions with the physical and cultural environments that our experiences become meaningful and significant. The senses of orientation, balance and motion are initially formed from our bodily interaction with the environment around us. For instance, our sense of orientation is developed through our understanding of gravity. It is through this sense that we understand that the act of rising up involves power, strength, and balance. The motion of rising up itself makes us aware of our bodily movement. We feel our own rhythms in various movements, we feel the difference between gradual accelerations and deceleration and eventually we develop an understanding of "perceptual motion" in a physically static arrangement[3]. An example of the "perceptual motion" experience can be seen in Marcel Duchamp's Nude Descending the Stair Case, which conveys rhythm and an illusion of movement through demonstration of an abstract movement of the body parts.

In the same context of perceptual quality of an experience, empathy is one of our functional capacities that allows us to understand and share the feelings of others. It is empathy that enables us to recognize a work of art and to perceive the experiencing of architectural spaces. A sense of "empathy" can be fused throughout practice and experience[3]. All types of experience would involve the three components of attention: recognition, forming memories, and the ability to recall information[1]. It is through the senses of empathy and memory that we identify ourselves with a place and a moment[11]. In memorable experiences of architecture, the quality of space matters immensely. In order to achieve this quality, architects must imagine spaces during the design processes, and fuse them with felt experiences.

4.3 The Memorable Dimensions of Architectural Spaces: Exploring Intervals

If we question the quality of architectural experiences in regards to how they define the emotional characteristics of spaces, we must also consider what settings are required for the shaping of memorable conditions. As Rasmussen states, the architect is a kind of theatrical producer; at the beginning of design process, the scenario is usually incomplete. The architect plans the settings and articulates them during design processes to find the missing parts and to reveal the "transitions" between the parts[13].

The living quality of the built environment is lacking if it is designed based on external appearances. The practice of architecture should reveal interior voids and manifest their potential as *intervals*. Many interpretations throughout history have classified architecture along with sculpture and painting as one of the fine arts. However, architecture is not simply produced by manipulation of external appearances, such as form. It is a functional art that shapes the forms around our bodies. An architectural design creates "interstitial" spaces between the human body and the material body of structure. The art of architecture has the power to reveal interior voids and to manifest their potential as *intervals*.

We may need to ask what "interval" or "interstitial" means in terms of experiencing architectural spaces. The term "interstice" refers to an intervening space, or an interval between parts. Interstitial space can be recognized as a borderline between two contrasting aspects. It can represent various types of oppositions, such as multiple and zero, solid and hollow, sound and silence, positive and negative. An interstitial space can signify juxtaposition and it can be a midpoint between two opposing factors. Frances Yates in her book, *Art of Memory*, refers to *intervals* as one of the rules that helps us remember places[2].

The recent neuroscience engagement with phenomenology has resulted in the introduction of a software to measure the responses of the brain, mind and body while they are interacting with a full-scale virtual or physical model of a building. In relation to the discussion of intervals, it is useful to refer to a neuroscience experiment that tested the role of "cues" or "wayfinding strategies" in the memory-forming process. In this experiment, brain activity was documented while participants moved through a full-scale, immersive three-dimensional virtual environment. The methods included two different experiential conditions: one with "no prominent visual cues" and the other with "rich visual cues". The results of the experiment suggested that brain dynamics are dissimilar under each of these differing conditions. As described by the researchers, "in the case where obvious cues were not presented the subject looked for any distinguishing features that might indicate location, including shadows around doors, or patterned finishes. This suggest a continuum of cue effectiveness dependent on the surrounding context and the opportunity to repeatedly search for cues"[15]. Human beings unconsciously notice changes and differences between things. It is humans' ability to identify the transitions from one thing to another that enables us to understand the relationship between things. Architecture holds the power to make these transitional experiences so exceptional that they will never be forgotten.

In this context, and by means of recognizing the design intention that seeks to provide participants with a memorable spatial experience, a question to take into account is how much a static grid-based space can facilitate such objection. One of the traditional scientific accounts of spatial perception is Descartes' Cartesian philosophy. According to Descartes' hypothesis, spatial perception is achieved by presuming a given space, and it is understood by reconstituting measures of that given space. Descartes' explanation, along with his analysis on Cartesian geometry and coordinate system, ties the two-and three-dimensional understandings of space together by using geometrical inferences. A Cartesian mind can comprehend a three-dimensional space from a range of recognized two-dimensional facts[16]. This geometrical-based strategy relies on flat images and on the mind's presumption of the three-dimensional space. Does this approach deny the living experience of space? Does it disregard the living energy of the body - the "perceiver"? In a similar manner, do conventional architectural spaces designed based on Cartesian grid neglect the body and the tangible dynamics of lived space?

Traditional architectural spaces usually have a common concept of separation between floor plan, structure and skin of buildings. In conventional architectural designs, the structural grid often outlines a predetermined rule in defining exterior and interior spatial experiences. Does such an approach render built spaces flat, immaterial and unreal? The answer to this question depends on the approach taken during the design process. Taking a phenomenological approach in considering the experiential quality of spaces throughout the design process can help architecture to create emotions and to change the way we experience spaces. A phenomenological approach suggests that experience of spaces is naturally rooted in our bodies' movement, and therefore perceiv-

ing a built space is a practice in living, not in a geometry or Cartesian Grid[16].

There are many contemporary architectural practices that intend to soften and emotionalize the architectural perception of spaces by challenging the conventional concepts of pre-determined architectural grids. Their level of success will depend on the approach taken during the design processes. There is a common design intention for all architectural projects that involve phenomenology, and that is to reflect the ideas and senses of life. Common in all case studies selected for the purpose of this article, is the creative approaches that the architects take in understanding the interplay between experiential phenomena and design intention. In the following sections, projects are presented not as wholes, but as a series of partial experiences. Discussions are organized thematically according to the concept of intervals and interstitials. The following project examples confirm that if human experience is the architect's initial design inspiration, the spaces can come alive for the visitors, much as they were initially envisioned in the imagination of the architect.

5.0 CASE STUDIES

5.1 Case Study 1

The Light Pavilion, Chengdu, China
Lebbeus Woods, 2012

Lebbeus Woods challenges conventional concepts of pre-determined architectural grids in order to create impressive spatial experiences. In the design of the Light Pavilion, in Chengdu, China, Lebbeus Woods brings an intervention or relief for the existing grid-based buildings. Like most of the Lebbeus Woods' proposals, the Light Pavilion is an experimental space. The installation's irregular form is set against regular rectilinear architectural geometries to create a moment of exception (an interval) in structure (Figure 2). The pavilion provides opportunities for users to experience new and unfamiliar spatial qualities.

The original renderings illustrate a dynamic quality; the illuminated supporting columns for the stairs and viewing platforms have a non-rectilinear grid, which frees the space from the conventional static stability of architectural settings. The irregular geometry of the columns, their change of scale, and altering orientation, in combination create an effect of motion in space. The drawings propose a sense of tension and edginess. Just as it was initially intended by the architect, the Light Pavilion is a presentation of something unknown. It is up to the visitor to explore the experiential potentials hidden in each moment of transitional spaces. As we climb up the space, the voids turn to solids and vice versa. Walking up the staircases, the columns open or enclose the views from one side to the other (Figure 3). Parallel to the architect's original design intention, the act of moving up the stairs to create a new orientation evokes our consciousness. Woods and Kumpusch describe the Light Pavilion as an example of experimental architecture, and by that they mean architecture that invites people in and encourages them to explore[17]. The Light Pavilion clarifies their preliminary design concept for creating architecture that is undecided, unrestricted, experimental and exploratory.

In the Light Pavilion, what visitors experiment is a series of progressively increasing or decreasing differences as they climb up or down the stairs. The unbalanced structure of the Pavilion invites visitors to participate in the space, engage and experience it. The spatial and temporal contrasts of the structure are so strong and sharp that they stir the visitors' minds, awake their memories, and evoke their emotions (Figure 3). The architect achieved striking moments through the use of irregular forms, in accordance with Quintilian's description of memorable places. He said that in order to shape a series of places in our memories, a building must be able to evoke various memories[2]. The preliminary sketches of the pavilion suggest a very distinct and experimental space, leading visitors to experience it with a strong awareness of contrast. The Light Pavilion creates a *memory place*. When we see ordinary things in our everyday lives, we usually fail to notice and remember them. To remember things, our minds must be inspired by something novel or marvelous[2]. The novel and marvelous experiences in the Light Pavilion are achieved by the use of irregular spatial qualities within the regular spatial quality of the Cartesian Grid.

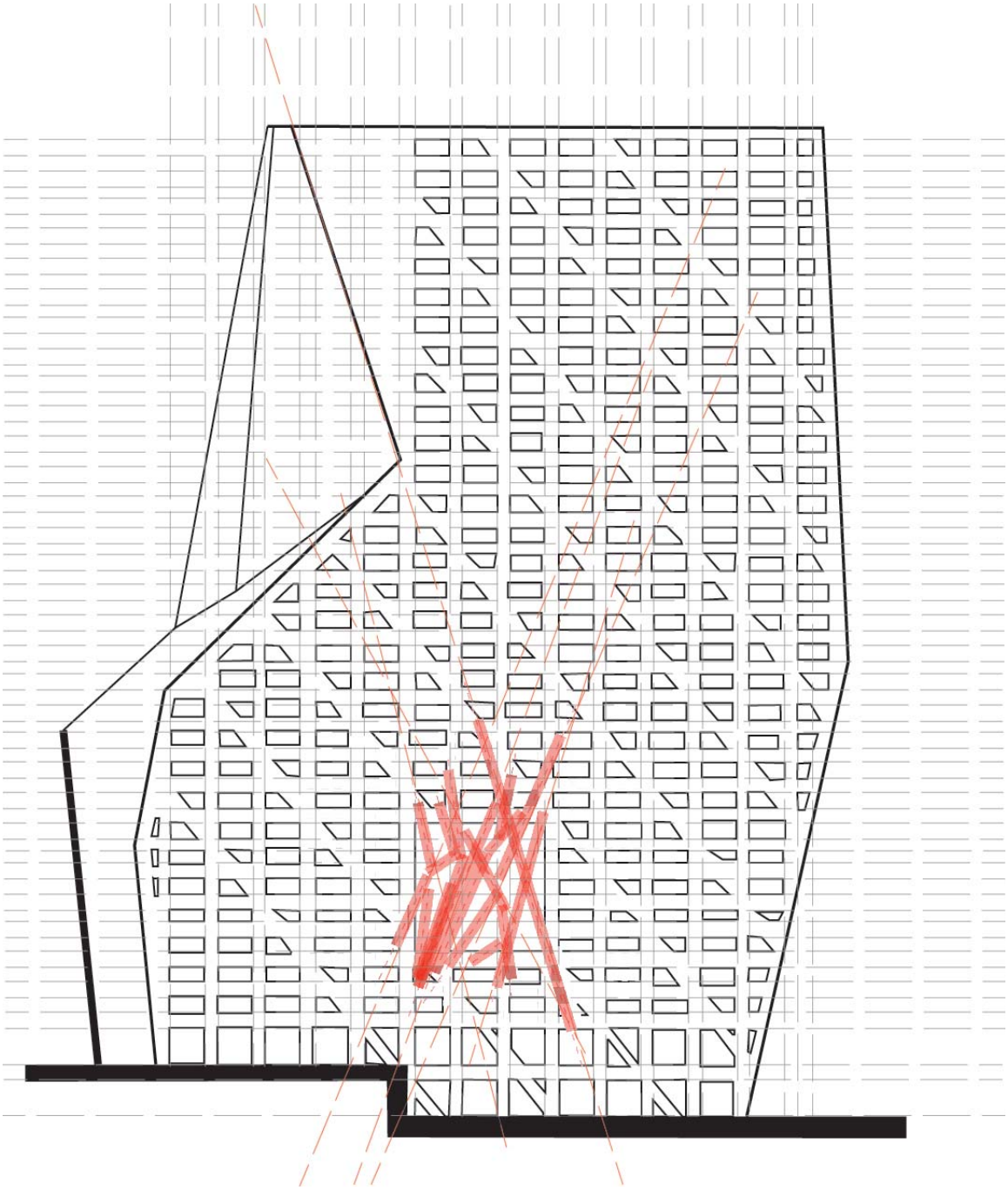

Figure 2: Elevation view, installation's irregular form set against regular rectilinear architectural geometries (derived from initial design process sketches).

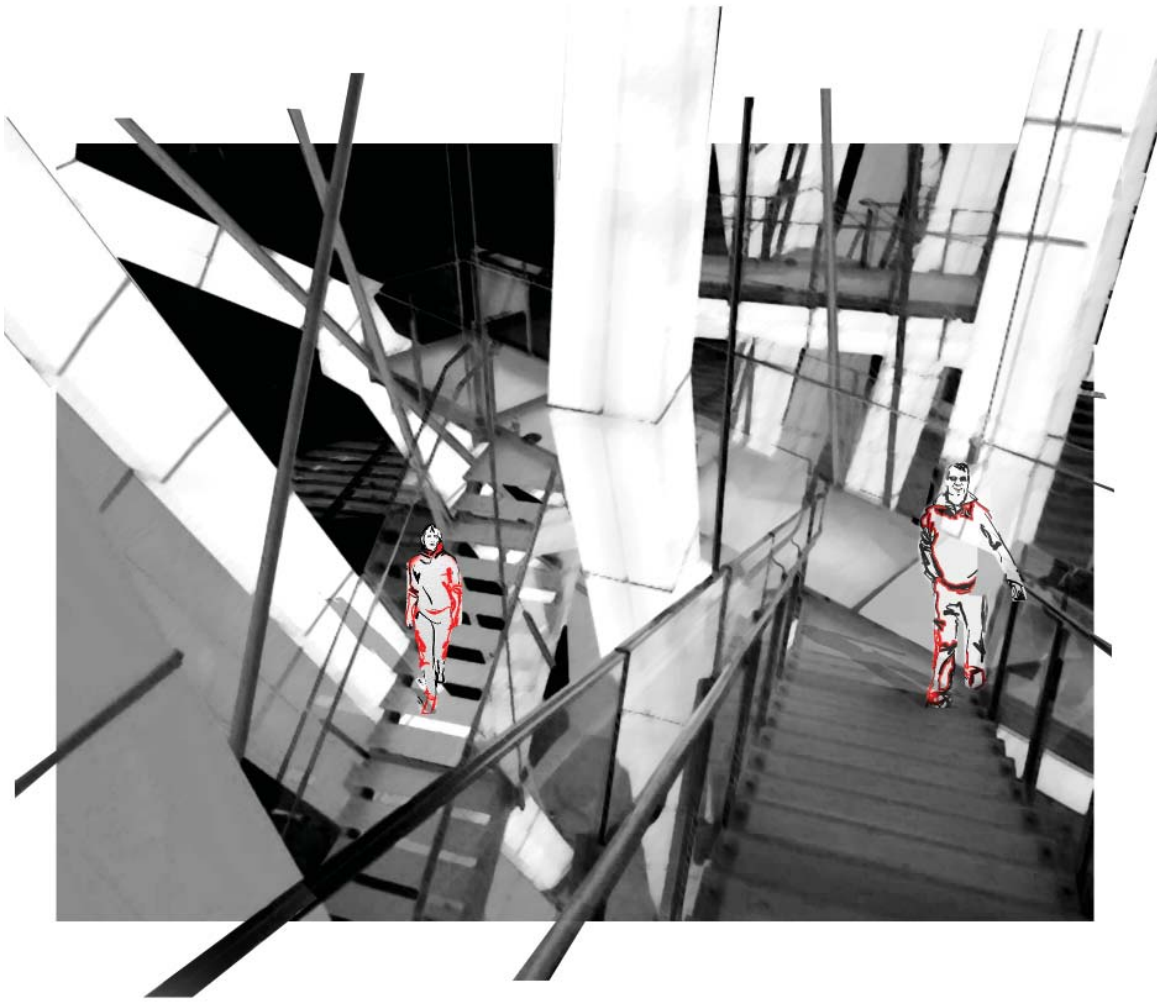

Figure 3: The Light Pavilion, an interior view.

5.2 Case Study 2

Thermal Bath at Vals, Graubunden
Peter Zumthor, 1990 – 1996

"The stone rooms should not compete with the body, they should flatter it and give it space."[18]

As opposed to Lebbeus Woods, Zumthor's creative imagination follows the laws of ideal geometry, but remains very complex with many layers of transitions (intervals). The design approach for Therme Vals expresses the notion of architecture as not being mainly visual. Throughout the whole design process journey, the architect takes a multisensory design approach in order to create a series of experiential intensities. With the focus on sensual experience, the Thermal Bath at Vals provides the opportunity for visitors to experience their own exploration of known or unknown places. In the previous case study, the Light Pavilion provided an *interval* through the inactive geometry of Cartesian grid in an attempt to enhance experiential qualities of the built spaces, whereas the Thermal Bath at Vals presents a different level in its representation of *intervals*. The experiential intensities are expressed through *transitions* between two opposing qualities; light to dark or sound to silence. The bath's mystical use of materials and its sensual architectural experiences contribute to making it a masterpiece.

In this design, Zumthor's methodology engaged a phenomenological approach in the very beginning of the design process. As Zumthor explains, the process of design for Therme Vals was a "playful but patient process of explorations."[19] The experiential qualities of spaces are a vibrant showcase for Zumthor's fantastic imagination during the design process. Right from the start, he conceived a scenario that gave particulars to the scenes, characters, situations, etc. The series of preliminary sketches show a mysterious journey of design explorations accompanied by the perception and visualization of physical events. The methods used in the entire design process of the bath are perfect examples for the Merleau-Ponty's definition of "perception", which includes the act of imagining and remembering[20]. The sensory animation of the *memory places*, developed throughout the design process, is an outcome of the imagining and remembering of the heritage of bathing complexes built by the ancient Romans.

A pure geometric pattern was initiated to define spaces. These spaces included the block spaces accommodating the baths, as well as the interconnected web of interstitial spaces between them. The initial sketches make clear that the bath should be conceived in terms of both blocks and interstitials (Figure 4). In a series of preliminary floor plan sketches, the voids between the blocks were recognized as moments of transitions: hot to cool, dark to light (Figure 5), sound to silent. While working on the design, the interstitials were conceived as potentials to create transitional moments in between contrasting experiential qualities[18]. Throughout the design exploration, the free configuration of the blocks continually became broken in pieces and arranged in a different way. Zumthor perceived each space in tight relation to its neighbor. Each programmed block expresses an extreme experiential quality, which is heightened through its proximity to a moment of pause or relief. The informal and tension-free quality of the voids between the programmed spaces prepares the bathers for the next experiment on their journey of explorations.

Frances Yates, in her book *Art of Memory*, refers to spaces between places and to five rules for remembering them. She explains the importance of these interstitial spaces as "pausing for reflection"[2]. The elaborate spatial design of Bath at Vals follows the same phenomenological rules, and provides a balance between tension and relaxation.

The building interprets the existing presence of the mountain and eventually becomes part of it. The totality of the building creates a powerful connection to the site, which mediates between the bodies of the bathers and the natural context of surrounding. One of the most impressive experiences happens at the connecting point between the inside pool and the outside pool. A visitor can swim through an opening in a large glass wall and suddenly encounter a mountainous climate and alpine conditions. Here the bather's body is put through a tension between interior and exterior. The interior experience that the bather got through--the humid and misty environment with "atmospheric illumination"--is now challenged by the bright, cool and crispy atmosphere of the mountain. The sudden change in temperature, light, sound and views, in conjunction with the close proximity of the bather's body to nature, creates an extreme experiential quality.

When one arrives at the bath, the entire journey from the entrance to the internal spaces is a continuum of sensual experiences. The consistency of the material between interior and exterior intensifies the continuality of the building as whole. As Zumthor explains, "the exterior of the building, the large stone block protruding from the mountainside, evolved and acquired its form from inside out"[18]. In the design of Thermal Bath,

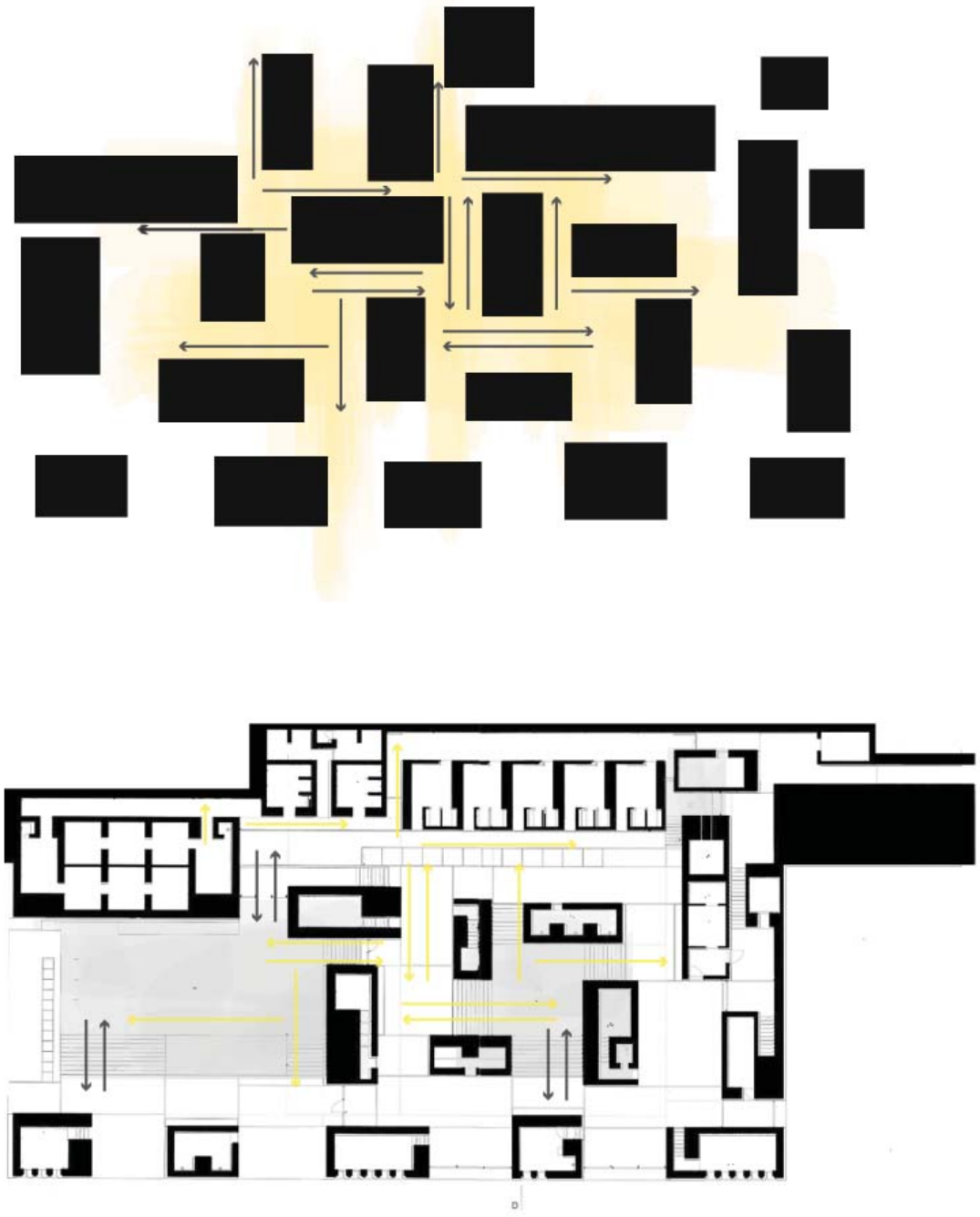

Figure 4: Preliminarily block studies, derived from early design sketches.

Figure 5: Thermal Bath at Vals, showing the void between the blocks.

the architect did not work on form to create spaces. Instead, the design process started with the understanding and perceiving of spaces in all their experiential qualities including sound, light and materials – all of which generated the building form. The power of design for the Thermal Bath derives from its manipulation of spatial qualities, through which it influences the bather's experiential qualities.

5.3 Case Study 3

Kiasma Museum of Contemporary Art, Helsinki, Finland
Steven Holl Architects, 1992-1998

The Kiasma Museum of Contemporary Art reveals Holl's distinctive approach in putting forward experimental designs within a phenomenological framework. The Museum represents an exclusive articulation of spaces, forms, and details an attempt to create particular experiential qualities in a continuum of linked spaces. The museum is located at the center of the city of Helsinki, a very important urban site. The design concept was developed through various levels of study and experiments. The very first step for the design process included in-depth research of the site, its context and its history. The accumulated information concerning the site was accompanied by an understanding of the purpose and perception of the experiential qualities of spaces. Similar to the previous case study, The Thermal Bath by Zumthor, the design process for Kiasma Museum was a long, experimental journey.

The initial idea concept was an outcome of interpreting the site-related inquiries, inspirations from phenomenological theories, and perceptions of interior spatial qualities. The building creates a metaphoric connection between the historic city center and the neighborhood. The mass of the building includes two intertwined volumes knotted with an atrium between them. The atrium or the void between the two volumes is an interpretation of an interval. The interstitial space between the two large volumes facilitates the sensual experiences of internal spaces. Placed at the lobby, between curved and the rectilinear volumes, a gently curved ramp creates a smooth connection to the next level and induces a sense of movement. The curvilinear shape of the building encompasses exhibiting galleries of various sizes, which heightens the dynamic atmosphere of the interstitial space.

The intertwining concept between the two volumes of the building is inspired by the idea of kiasma derived from Merleau-Ponty's concept of chiasm – a study of perception[14]. Holl's phenomenological approach in the design of the Helsinki museum imagines the building as a "knot" of combined perceptions; he perceives spaces through "sensation, intuition and comprehension"[14].

During the design process, Holl imagined the moving bodies of the visitors in space as a multi-sensorial experience. The spatial qualities of spaces were not perceived in a purely one-dimensional way. Rather, their perception involved a series of phenomenological components that included light and materials. While working on the design, understanding the visitors' expectations and needs had primary impacts on design decisions. Holl identifies with Merleau-Ponty's concept of chiasm, while creating intertwined relationship between the visitors' bodies and the built spaces. The phenomenological idea of the body and its movement in relation to a space is carried over into the whole process of design in an attempt to reveal the experiential potentials of spaces.

Design explorations included various spatial experiments that investigated perceptions of the moving bodies in space. The design concept emphasized the idea of "parallax", a term that defines a design exploration involving a series of surfaces created by the sequential movement of a body in space. The purpose of this exercise was to perceive the effects of material and light in spaces in an attempt to investigate the sensual qualities of visitors' experiences. A series of preliminary water color sketches represent the idea of "parallax" and reveal the design intention for the creation of fluid architectural spaces. The dynamic qualities of spaces are expressed through grades of light and shadow. The effect of natural light in regards to its creation of spatial qualities is dependent on the time of the day. Initiating the design on the concept of movement and body added a poetic dimension to the built spaces; the interstitial space between the two closely programmed volumes expresses an emotional style for the presentation of form, light and shadow (Figure 6).

In this architectural design, interpretation of phenomenological aspects played an important role throughout the entire design process journey. The design intension is mainly developed from perceiving a direct relation between the building and the visitors. The conceptual quality of initial drawings was carried over to the end of design process, with the result of an architectural creation with many layers of intervals. The strength of design intention arose from perceptions of spatial qualities through both reason and sensation.

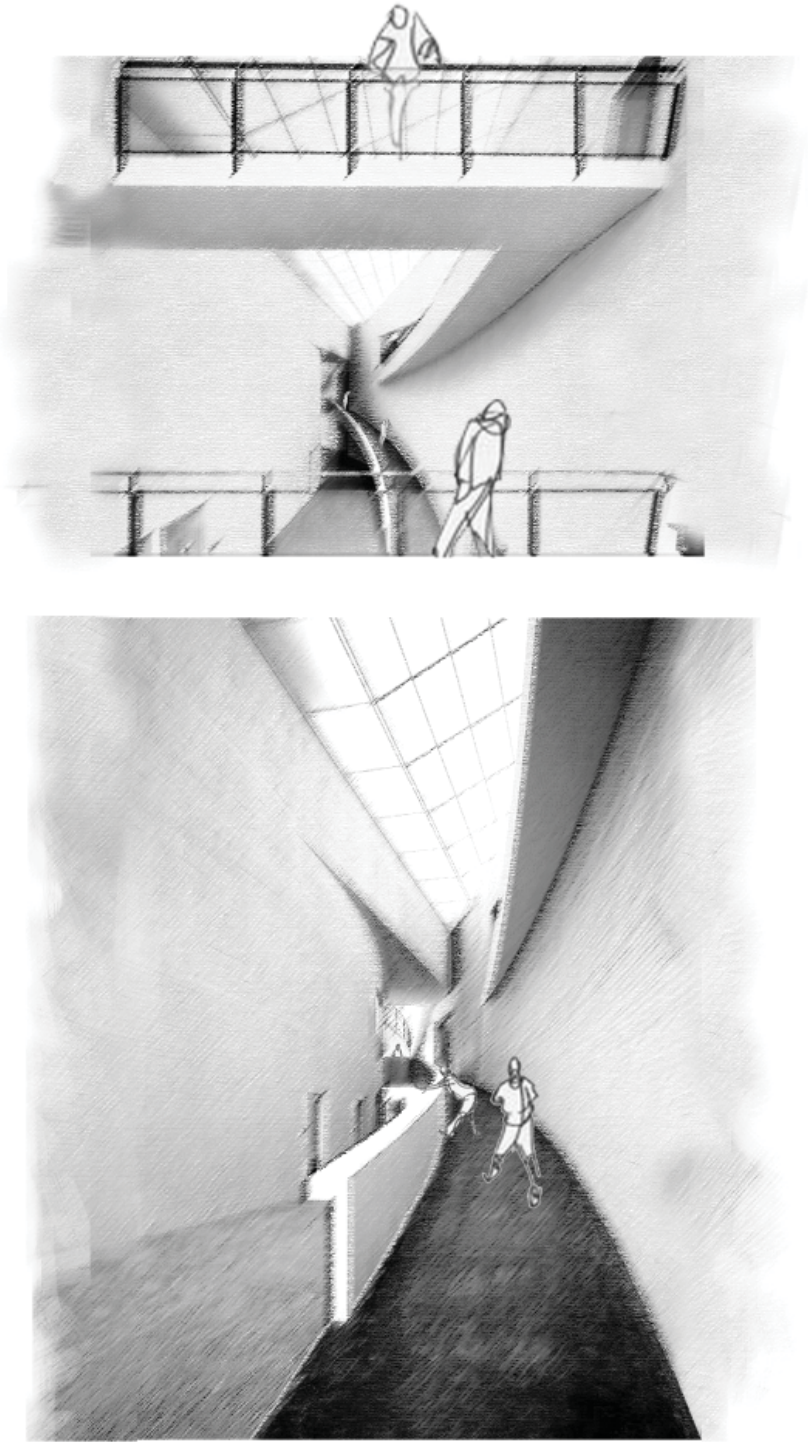

Figure 6: Kiasma Museum of Contemporary Art, interstitial space between two programmed volumes.
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5.4 Case Study 4

Instructional Centre, University of Toronto, Mississauga
Perkins+Will (2009 – 2011)

"Although the building is large and stands out, the well-executed design maintains a human scale that is friendly and generous.… The architect has chosen attractive building materials, which are further enhanced by their details, patterns and juxtaposition. The copper, wood and granite provide a harmonious palette that relates to the natural setting in a sophisticated and refined manner. This university building, along with the other newly built structures, demonstrates how an institute of higher learning can create high quality architecture that will be an inspiration and a symbol for future generations of students." (Noted jury members for the Urban Design Award of Excellence, 2012)

A multiple award-winning building, the Instructional Centre at the University of Toronto, Mississauga (IC UTM) expresses a poetic dimension of building and site relations. Like Holl's Kiasma Museum of Contemporary Art in Helsinki, the initial design study concentrated on the dynamics of the site and situation. From the very beginning, the design intention was identified as the creation of a strong sensory reaction to the surrounding natural context. The preliminary design concept emphasized on transitions, spaces in between and the experience of passing through. The spatial fabric of the interior is the result of making strong connections to the physical references of the site, its history, and the program. The design process demonstrates a clear dialogue between the initial perception of spatial qualities and the experiential qualities of the built form.

The study of the first drafts identifies that the most striking factors influencing primary design decisions were the present needs of the campus, possibilities of its future expansion, and the character of the surrounding landscape. The initial conception phase of the design started with block studies. One important rule in this exercise was to use the space between the blocks (intervals) as substantial design features that would affect the placement of the blocks. The overall physical form of the building, the distribution of the programs, and the building position in the site are clear outcomes of early explorations in block studies. The smaller and bigger blocks, and narrower or wider interstices, provided a balance in scale and proportion, which guided the formation of both interior and exterior spaces. The blocks represented the teaching spaces of various sizes that are stacked vertically and organized into three towers. The interstitial spaces between these densely programmed blocks represented intervals squeezed between the masses of the three towers (Figure 7).

Moving forward with explorations in design process, three major types of spaces were identified for the design of IC UTM building: *internal, interstitial,* and *peripheral*. The experiential qualities of these spaces take their cue from the initial spatial articulations and the understanding of relations to the site (Figure 8).

The *internal* space is calm, cool and symmetrical. The pure geometry of the internal space facilitates potentials to grade the effects of light and shadow.

The *interstitial* space includes a deep light-filled atrium located in-between architectural masses. The void reveals transitions between the two densely programmed areas even as it facilitates a passage of light. The mood of the patinated copper interior walls changes throughout the day, merging the poetic and pragmatic values of daylight. The uniformity of materials for interior walls induces a sense of transitional movement. The *interstitial* space makes a clear spatial flow to the forest and creates a strong sensory relation to the surrounding natural context.

The third type of space, identified in IC UTM building, is the *peripheral* at the outer edge of the building. A series of intimate student lounges and break-out spaces are positioned along the perimeter of each of the towers. The *peripheral* spaces challenge the visitors' perception for making sense of tension between interior and exterior. Placing the body in direct relation to the forest, the outer edges of the building create an abstract transition from a definite place to an infinite confusion of trees. Merleau-Ponty explored the role of the body as a sensory apparatus through which we understood the world around us; he proposed that there is always a give-and-take between our bodies and the world. His theory of perception suggests that any objective and subjective explanation of the world, in which we find ourselves, can challenge our understanding and experience of life. In a similar manner, the architect's use of phenomenology in *peripheral* spaces provides a new level of spatial quality that challenges the visitors' understanding and experiencing of architecture.

Very distinct from the interstitial lateral movement, there is a connecting gallery of student services and study lounges, which faces the campus green to the south. The gallery is positioned parallel to the landscape. The white, cool and luminous bridges cross over the intes-

tinal space of the atrium and create a contrast between the depth of the forest and the depth of the interstitial copper cladding. Situated perpendicular to the lateral movement of the atria, the connective bridges induce the sense of movement – the experience of passing over to create a real, sensible and dynamic atmosphere. At the bridges, once again the visitors are positioned between the two contrasting voids: the intricate form of the nature and the pure geometry of the atrium.

Beside the pure geometric expressions and effects of light in the atrium, stairs have been placed in a manner that celebrates movement. The staircases put emphasis on a moving body's perception of architectural spaces, within which light and texture act as space-defining elements. The movement is measured against strong horizontal datums: the fine vertical grain of the copper panels and the organic texture of the material. The long, slow journey of walking up the stairs heightens the perceptions of surrounding spaces (Figure 9). The staircase arrives at the point of overlook into landscape, thereby projecting the visitors' attention deep into the forest. When we stand by the large window, the distant view, the light from the window, and the impressions of interior architectural materials start to merge perceptually. The outcome as a unified whole is the creation of a new dimension for experiential quality of the space.

Walking through the space, the haptic sensibility in geometry, space, and materials is clearly evident. The effects of natural and artificial lights provide a sensible spatial depth.

The IC UTM building as a whole provides a poetic and mythical meaning through its physical presence on the site (Figure 10). Derived from initial design explorations, the pure geometry of the building marks the spatial formation of intervals, which provides experiential intensities. The ongoing dialogue between the visitors and the forest constantly gives to the built spaces an experiential realm. Pallasma, in his essay "An Architecture of the Seven Senses", explains the memorable quality of architectural experiences. He states that "we identify ourselves with this space, this place, this moment and these dimensions as they become ingredients of our very existence. Architecture is the art of mediation and reconciliation"[11].

The same sources of inspiration are recognized in the design of IC UTM building. The experiential qualities of spaces add new values to the transient dimension of visitors and connecting spaces. The built spaces with their internal, interstitial, and peripheral aspects appeal to the senses and help us re-assess the ways in which we perceive and enjoy architecture.

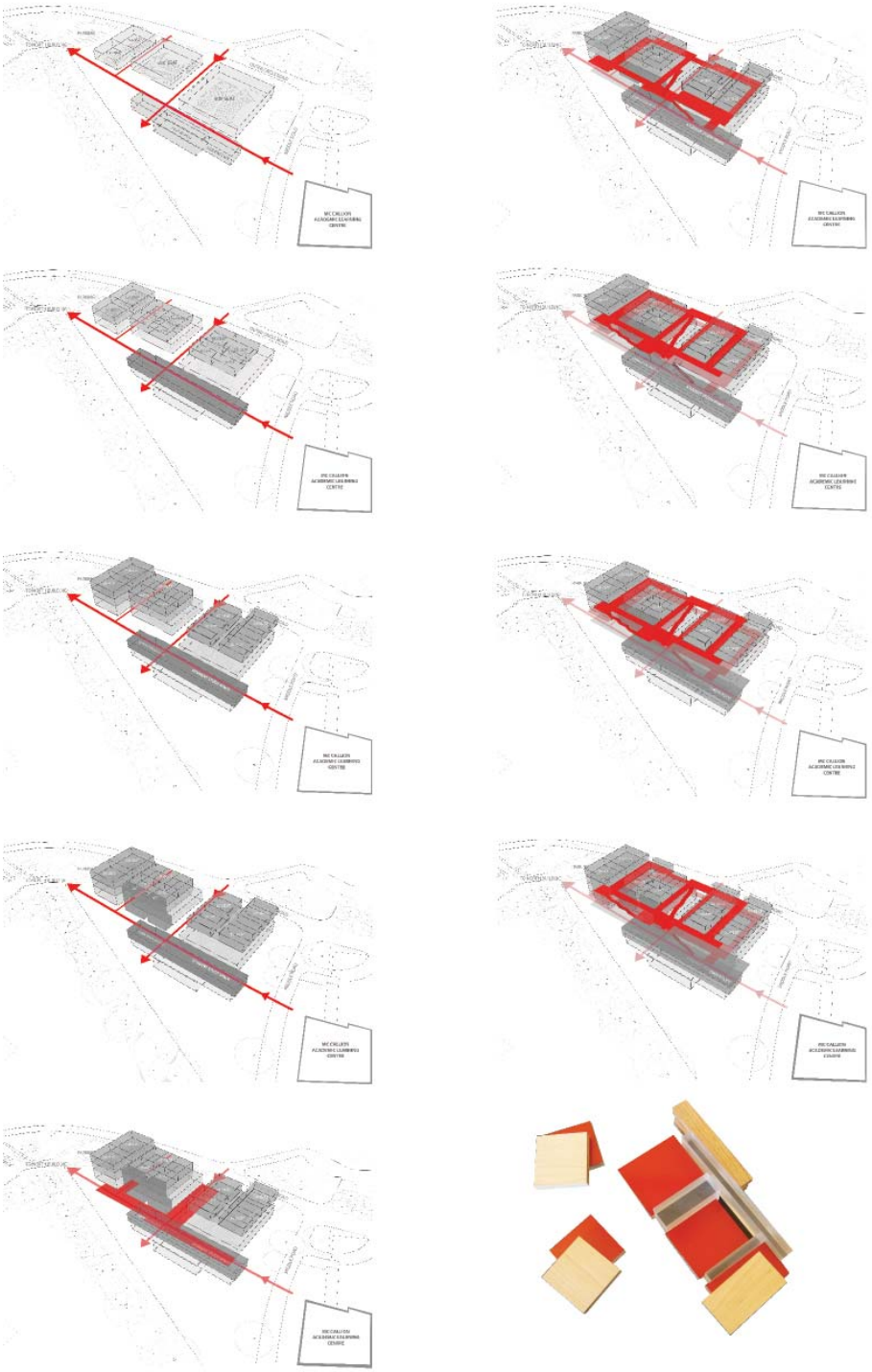
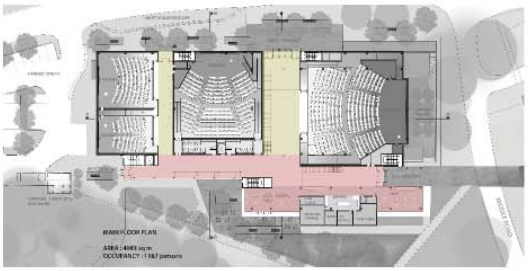
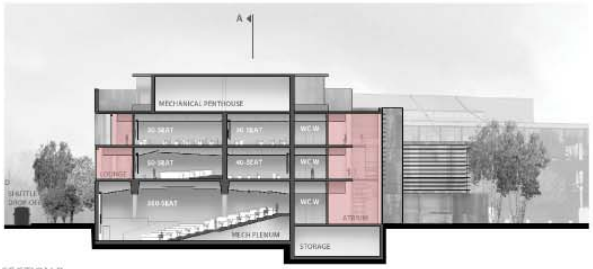


Figure 7: IC UTM, showing preliminarily block studies and exploring intervals.

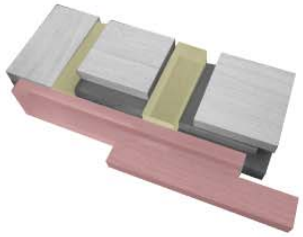


MAIN FLOOR PLAN

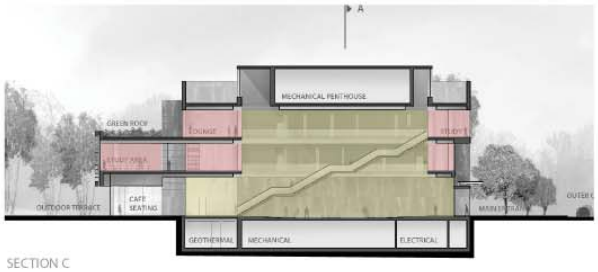


SECTION B

SECOND FLOOR PLAN



THIRD FLOOR PLAN



SECTION C

SECTION A

Figure 8: IC UTM spatial configuration (internal, interstitial and peripheral spaces).

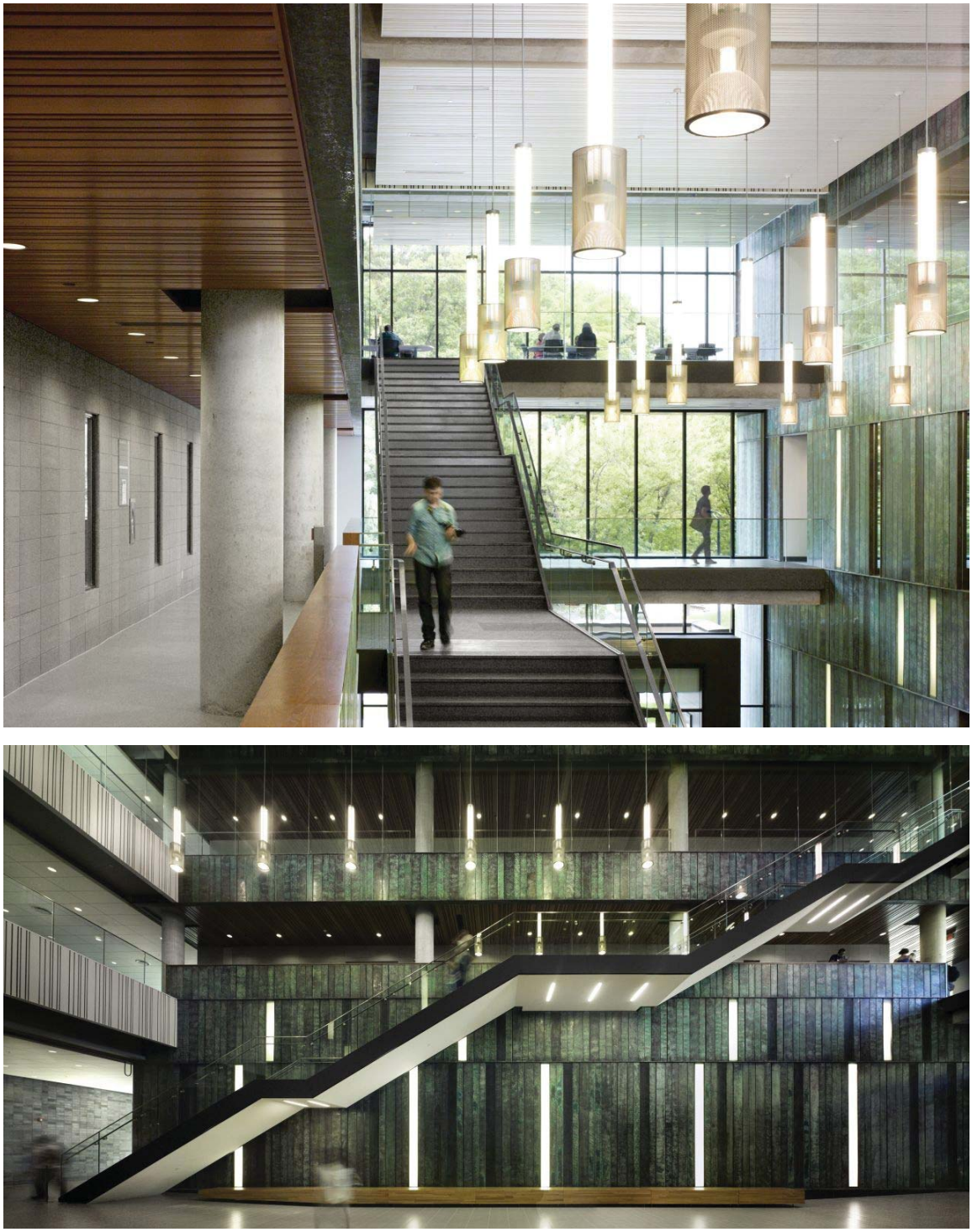


Figure 9: IC UTM, feature stairs.

Figure 10: IC UTM, exterior perspective.

6.0 CONCLUSION

The main objective of this article was to reveal the importance of the phenomenological approach in architectural planning and execution. The discussed case studies confirmed that a phenomenological approach in architectural design demands a continuous exploration of the experiential potential of spaces. All four projects demonstrate that the ways in which architects perceive spatial qualities lead them into experimental explorations, all of which aid in the creation of a meaningful articulation of spaces and forms.

While conducting the case studies, each project was distinctive, considering driving factors and constraints, such as site and program. Therefore, each case study had to be approached in a distinctive manner. The initial inspiration for architects in the development of a design concept may vary from one project to the other. However, what should be consistent and always present in the creation of built spaces is a phenomenological approach in their conception and creation.

Designing poetic architecture is not a process that can be defined by certain skills or techniques. It is dependent upon those inspirational moments when architects perceive the "sense of a place". Architectural design processes can mirror delightful emotional memories and, in this way, are derived from our understanding of the world around us. The connections between our memories and our experience of architecture can become a foundation for designing and creating new architectural spaces. Architects can associate memories according to their clients' needs, and their designs can represent architecturally the most touching moments experienced by them or by their clients. Although the notions of "empathy", "perception", and "memory" are old topics in the architectural field, many contemporary architectural scholars and architects have elaborated on them and have explored their potential to fulfil the needs of contemporary architectural design practice. Recent cognitive neuroscience studies, such as the way-finding experiment, also reveal the qualitative dimensions of human experience contribute to the evaluation of the importance of memory, and help to determine the memorable dimensions of architectural spaces. Expanding these theories with new knowledge can help architects to create functional buildings that also evoke emotional states.

This article introduced its topic by raising the question of whether or not architects are failing in craftsmanship skills by underestimating the notion of emotion in their designs. For architects, crafting does not merely mean that they must be physically involved in the act of construction by hand. Architects can craft inspirational spaces by using such phenomenological components as sound, light or color. An architectural design can be a phenomenological journey of exploration that takes us from the raising of an issue to the proposing of a solution to it. Each finding can be followed by an analysis that reveals the next step on the road. The act of designing in architecture is a multi-layered process within which major conceptual shifts should be responsive to human desires. If architects can engage the element of human perception throughout the entire design process, then they can continue to have a positive influence on the built environment that mediates between people and their surroundings.

REFERENCES

[1] Eberhard, J. P., (2009). *Brain Landscape: The Coexistance of Neuroscience and Architecture,* Oxford Scholarship Online.

[2] Yates, F., (1966). *The Art of Memory,* London, UK: Pimlico Random House.

[3] Pallasma, J., and Robinson, S., (2015). *Mind in Architecture: Neuroscience, Embodiment, and the Future of Design,* Cambridge, MA: The MIT Press.

[4] Perez-Gomez, A., (1986). "The Renovation of the Body – John Hejduk and the Cultural Relevance of Theoretical Projects", *AA Files,* Vol. 13, pp. 26-29.

[5] Wittkower, R., (1965). *Architectural Principles in the Age of Humanism,* New York, NY: Random House, pp.16.

[6] Vidler, A., (1990). "The Building in Pain: The Body and Architecture in Post-Modern Culture", *AA Files,* pp. 3-10.

[7] Dodds, G., and Tavernor, R., (2002). *Body and Building: Essays on the Changing Relation of Body and Architecture",* Cambridge, MA: MIT Press.

[8] Neutra, R. J., (1954). *Survival through Design,* New York, NY: Oxford University Press.

[9] Holl, S., (2000). *Parallax,* New York, NY: Princeton Architectural Press.

[10] Pallasma, J., (2002). "Lived Space: Embodied Experience and Sensory Thought", *OASE Journal for Architecture,* Vol. 58, No.13, p. 18-34.

[11] Holl, S., Pallasma, J., and Perez-Gomez, A., (2006). *Questions of Perception: Phenomenology of Architecture,* San Francisco, CA: William Stout Publishers.

[12] Pallasma, J., (2014). "Space, Place and Atmosphere. Emotion and Peripheral Perception in Architectural Experience", *Lebenswelt: Aesthetic and Philosophy of Experience,* No. 4, pp. 230-245.

[13] Ramussen, S. E., (1962). *Experiencing Architecture,* Cambridge, MA: MIT Press.

[14] Merleau-Ponty, M., (1968). *The Visible and the Invisible,* Evanston, IL: Northwestern University Press.

[15] Edelstein, E. A. Gramann, K., Schulze, J., (2008). "Neutral Responses during Navigation in the Virtual Aided Design Laboratory: Brain Dynamics of Orientation in Architecturally Ambiguous Space", Report Series of the Trasnregional Collaborative Research Center SFB/TR8 Spatial Cognition, University of Bremen/University of Freiburg, Germany.

[16] Morris, D., (2004). *The Sense of Space,* Albany, NY: State University of New York Press.

[17] Woods, L., and Kumpusch, C. A., (2011). "Lebbeus Woods. A Space of Light", Retrieved on 4/2016, from https://lebbeuswoods.wordpress.com/2011/02/15/a-space-of-light-2/.

[18] Zumthor, P., and Hauser, S., (2007). *Peter Zumthor Therme Vals,* Zurich, Switzerland: Verlag Scheidegger & Spiess.

[19] Zumthor, P., (1998). *Peter Zumthor Works,* Switzerland: Lars Muller Publishers.

[20] Casey, E. S., (1977). "Imagining and Remembering", *The Review of Metaphysics,* Vol. 31, No. 2, pp. 187-209.