Faculty of Technology, Design and Environment

OXFORD BROOKES UNIVERSITY

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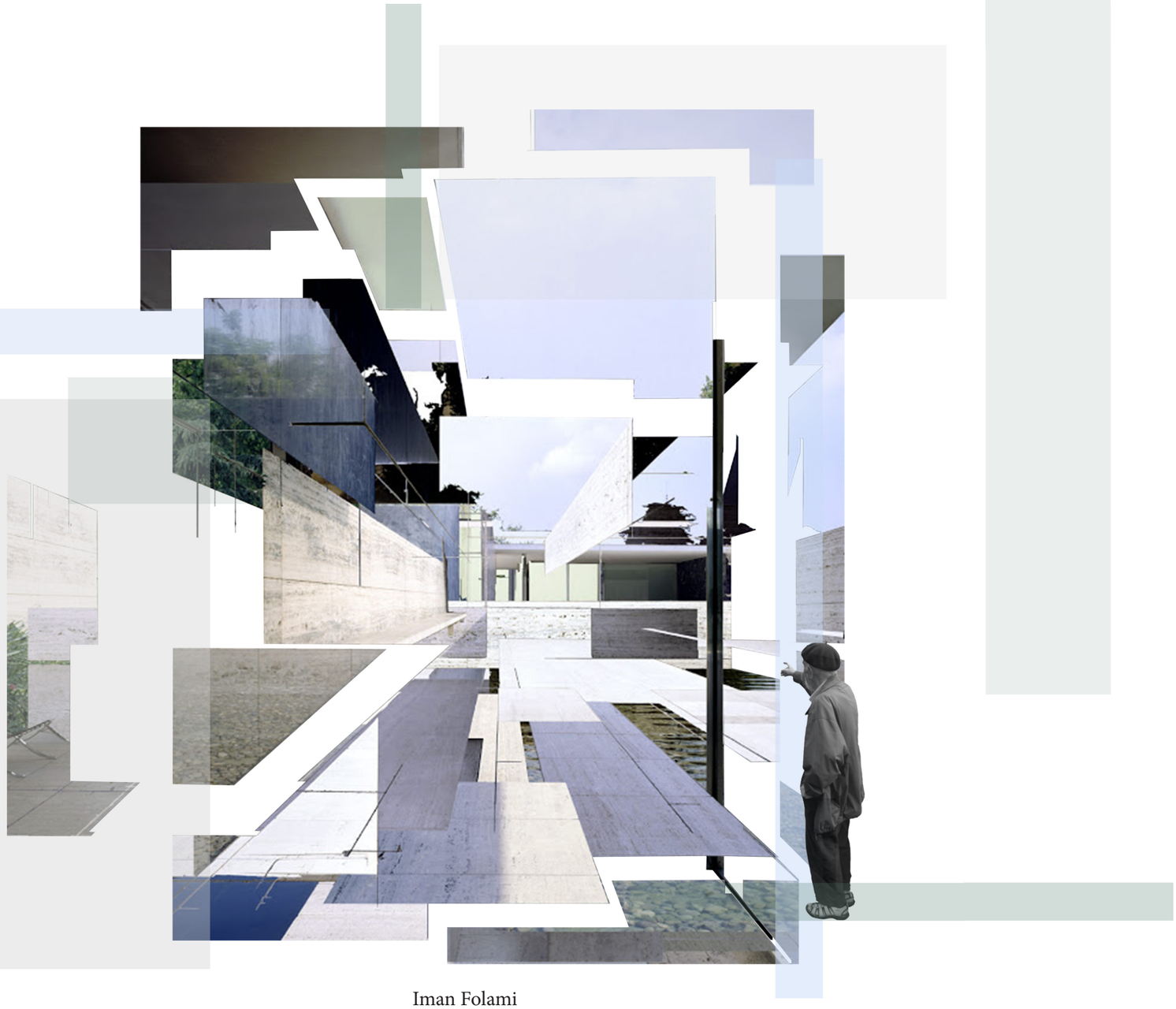
Signed

Iman Folami

The Design of Space

Phenomenology / Experience /Participation



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18058614
ARCH6008 Dissertation

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Cover Photo: Barcelona Pavilion Collage
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Fig.1 Frank Lloyd Wright - Courtesy of Crystal Bridges Museum of American Art, 1954

OUTLINE

Compared to Architecture and Interior Design, Spatial Design is a relatively new design discipline that focuses on the flow of people through interior and exterior environments. It provides a set of valuable concepts for the understanding of the functioning of overlapping spaces across both private and public realms. However, the concept of space and the main principles behind the methodology of spatial design have been debated in architectural theory since the XIX Century.

Although 'spatial design' is not a new concept, its methodology has only recently been increasingly utilised in the design of buildings and public spaces, instead of relying solely on aesthetics. Therefore it is important to understand its purpose in the context of use (social and historical), as well as seeing its design application in relation to buildings, landscape and surrounding architecture. Specifying users' requirements allows designers to strengthen the relationship between humans and space.

The idea of space originated in Germany with the term Raum (meaning space and/or room) which signifies both the "material enclosure, and the philosophical concept" (Forty, 2019). However, space is more than an interior enclosure and unlike other architects, Camillo Sitte applied it to the design of exterior space. While the meaning of space in architecture is constantly changing, the space that architects and writers speak of is not space in general, but designed space specific to themselves and their works. This is how Henri Lefevbre made it clear that architecture is a social practice "part of a dominant discourse of power" (Lefebvre, 2016), and further stated that architects do not produce 'lived' space nor does it exist to serve its purposes.


Fig.2 Peter Zumthor, Thermal Vals, 1996

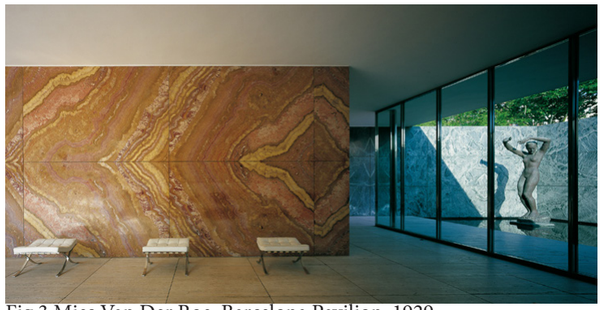


Fig.3 Mies Van Der Roe, Barcelona Pavilion, 1929


Fig.4 Alvar Aalto, Säynätsalo Town Hall, 1949

KEY TERMINOLOGY:

SPACE : The idea originated in Germany with the term 'Raum' which signifies both the "material enclosure and the philosophical concept" (Forty, 2019). However space isn't limited to enclosures, and it is continuous ie. from interior to exterior.

SPATIAL DESIGN : The concept of 'spatial design' is that of a discipline blurring the boundaries between design sectors such as architecture, interior design, and urban landscape design. It challenges the way a designer thinks about space and people. Keeping experience as the nucleus of the design, it focuses on the flow between interior and exterior, and the functional relationship between context, design, and most importantly end-users (Rice,2018).

SOCIAL SPACE : Space is a complex social construction based on values, and therefore it implies the social production of meanings. "Social space is a social product [...]; space thus produced also serves as a tool of thought and of action ... in addition to being a means of production it is also a means of control, and hence of domination, of power." (Lefebvre, 2016)

ATMOSPHERE : Atmosphere refers to the sensorial qualities that a space emits. It is the immediate form of perception through emotion and experience. Peter Zumthor stated that it was "this singular density and mood, this feeling of presence, well-being, harmony, beauty...under whose spell I experience what I otherwise would not experience in precisely this way." (Zumthor, 2008).

PROSPECT & REFUGE : Humans seek out to satisfy two conflicting innate conditions when reviewing a space — to have opportunity (prospect) whilst being safe (refuge). Examples of prospects may be a "distant vista or an elevated view, whereas refuge may be an interior space or a bench seat with a wall behind …" (Sugihto, 2016).

Fig. 5 Frank Lloyd Wright, Fallingwater

"This is not an anonymous container with a regular structural framework into which rooms fit like drawers in a Medical Office Building chest. The pilasters are coupled, and when required, they slide into a horizontal position expanding into beam-walls to envelope the auditorium, the cantilevered seminar rooms, the double-height foyers, and the periodical library. The result is an organism structurally engaged in modulating the interlocking continuity of the spaces and displaying their spatial volumes both inside and outside." (Bruno Zevi cited in Graebner, 2013)

The seven invariables:

1) Listing as Design Methodology
2) Invariable / Asymmetry and Dissonance
3) Antiperspective Three-Dimensionality
4) The Syntax of Four-dimensional Decomposition
5) Cantilever, Shell, and Membrane Structures
6) Space in Time
7) Reintegration of Building, City, and Landscape

INTRODUCTION

There has never been a reunifying concrete term defining space, either philosophically, mathematically or scientifically, which has led to the notion of space being fragmented into multiple possibilities. This ultimately reduces space to an abstract entity, which it is not. Henri Lefebvre states that space (also referred to as 'social space') is where cultural life and activities take place, and are thus susceptible to analysis (Lefebvre, 1991). Therefore knowledge of space is essential for the production of space, and factors such as historical, social, political and economic context must also be considered. However, space is not a container nor is it natural, material or a void waiting to be filled, even though it is where cultural life and societies take place within. It is socially produced and must be understood as "at once both at work and product" (Lefebvre, 1991).

As space has become the dominant form of which production, consumption, reproduction and circulation are organised and structured through in capitalism, it has become more abstracted. Space is produced in an attempt to shape, manipulate, and dominate the people as well as the activities that use it. This is specifically the "space of scientists, planners, urbanists, technocratic sub-dividers and social engineers... the dominant space of any society (or mode of production)" (Lefebvre, 1991, p. 38–9). By controlling space with nothing but their own interests at heart, the resulting spatial provision lacks the values, needs and priorities needed to suit the individuals and not the capital. However architects do not own space. The space an architect designs has already been produced, as "it has nothing innocent about it: it answers to particular tactics and strategies; it is quite simply the space of the dominant mode of production and hence a space of capitalism." (Lefebvre, 1991, p. 360).

Bruno Zevi (An Italian Architect who was a critic of the classism of modern architecture, postmodernism and founder of the Association for Organic Architecture (APAO)) introduced his seven spatial invariables in response to this lack of active participation, which had occurred when spatial boundaries were enforced back in the 15th century with the advent of perspective and social hierarchy. The design constraints imposed by the classical style were beauty, symmetry, rhythm, proportion, architectural style, balance and harmony, to which each of Zevi's invariables proposed a counter position.

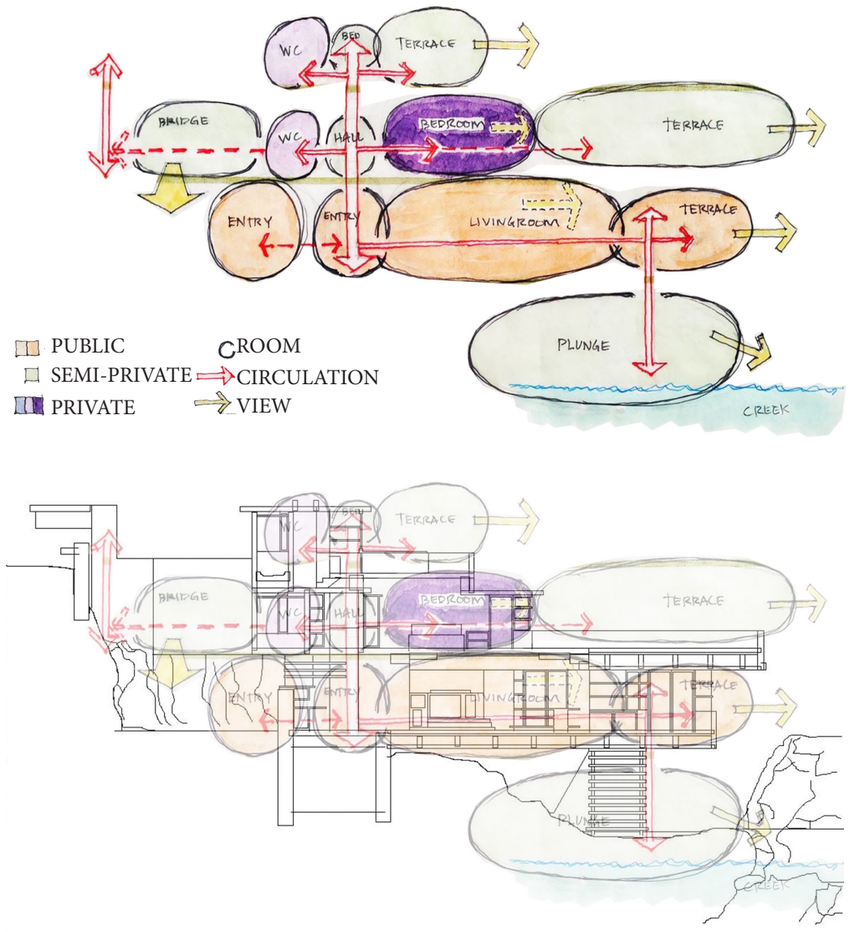
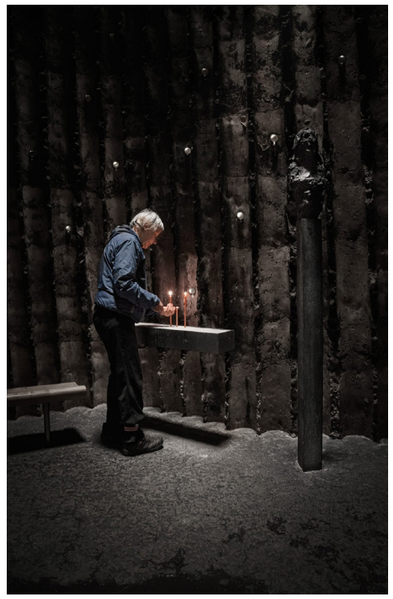


Fig. 6 Diagram showing the fluidity of movement through Falling Water as well as multiple of Zevi's seven invaribales.

When looking specifically at the second invariable, which responded to the concept of symmetry and how architectural elements are placed in a predefined relation to one another, Zevi discusses the necessity for the design to reason with the functionality of its spatial provision. Zevi insists on asymmetry, rejecting traditional geometrical forms with his praise of 'unpredictable complex organisms'. He claims that the desire of a symmetrical form is the result of a lack of flexibility and ultimately a fear of it, as "architects are so influenced by inhuman and artificial geometry that it seems natural and 'spontaneous' to them" (Zevi, 1978, p. 20). This is why Zevi rejects parallel walls, symmetrical rooms and other architectural elements dominated by adherence to a geometric form as "a world perfectly enclosed in rectangles and prisms" (Zevi, 1978, p. 20). However, this wasn't to be confused with one of Le Corbusiers 5 points of architecture, 'Plan Libre' as this granted architects spatial freedom but for Zevi it was purely for aesthetic purposes.

He further refers to Frank Lloyd Wright's concept of organic dissonance, connecting it with basic human requirements by stating that "[…] if every man is different, every house should be functionally different, and a code of dissonances is just what is needed for that purpose." (Zevi, 1981, p 33). This means that by allowing space to become a fluid entity by means of asymmetry, it further allows for the dynamic interaction between people because it favours movement, which in turn ensures a higher functionality. This already is a clear strategy to designing space without giving in to dominant modes of production and
endles formal reproduction.

Hugo Häring (a German architect that explored organic layouts in his functional designs in the 1930s) stated that "the search for the organic form is not about fulfilling the ambition of an architect, but about the desire to produce a functioning architecture as perfected as possible." (Zevi, 1992, p. 184). This therefore means that the current architectural tendencies of conflicting function with the expression of their own design agendas should be questioned for its beneficial effect on people. Form should be the result of the activities that marks human life, but simultaneously be a space in which these can take place. This idea of space being both at work and the product of human interactions further reinforces the idea that suitable architectural spatial forms should be discovered through the deciphering of human life, rather than imposed on it.



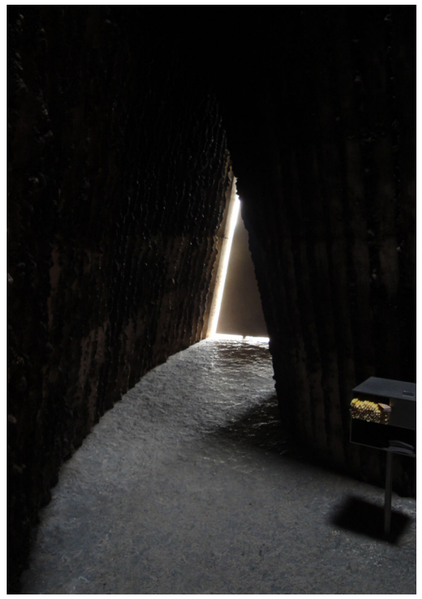


Fig.7,8,9 Peter Zumthor, Bruder Klaus Chapel

An example of manipulation of atmospherical qualities as a response to human nature. For example the embodiment of light which influences a whole room and equally that of shadows which creates a sense of solidarity. The combination of positive and negative interior spaces are also examples and methods of such sensorial qualities.

Architecture has also been known to reduce space to its visual image, and it is responsible for making space appear homogeneous as “the reduction of real to a plan is existing in a void and endowed with no other qualities”(Lefebvre, 1991). The conceptual reduction behind design by drawings is the main reason for the abstraction of social space, homogenised for the purposes of exchange and drained of lived experience. This has led architects to have essentially offered empty spaces, void containers ready to receive only fragmentary social contents and disjointed activities.

This is why Zevi’s third invariable questions the concept of rhythm, specifically referring to the idea that space should depend on the activities of people. Movement through the space should be optimised, and framing ‘real’ specific views in a sequential way is how spaces should be designed, not in the form of drawings which provide for impossible points of views, “rigidifying three-dimensionality to such a degree that it became mechanical and almost useless.” (Zevi, 1992)

It is clear then that space must and does embody many other qualities than just being a designed void. Atmosphere is the main characteristic to the spaces we experience even though it is often not acknowledged. The perceived space, also known as spatial practice, is the experienced space, which we perceive as humans but are also subconsciously unaware of. The space in which we experience has many physical and immaterial qualities operating without our conscious awareness, which can only be “revealed by the physical and experiential deciphering of space” (Anderson, 2007). These experiential spatial qualities, which we are unaware of, are ‘embedded in space’ and are only known through memory, perceptions, judgment and emotions.

Since space will no longer be limited to enclosures but will be assumed as continuous; the role of the spatial designer is to evaluate the different situations to create a flow between interior and exterior spaces. The problem of space often only considered as a void to be filled must be rejected as it is simultaneously a product and a process of social activity and occurs within the structures of society. This concept reinforces the idea that spatial fields ought to be designed instead of buildings. The purpose of a building is not an artwork or a beautiful object, but instead “the ordering of space” (Hillier and Hanson, 2003).

Therefore I will be discussing the research question:

‘Can spatial design (the ordering of space) produce a functional strategy rather than merely a visual one?’

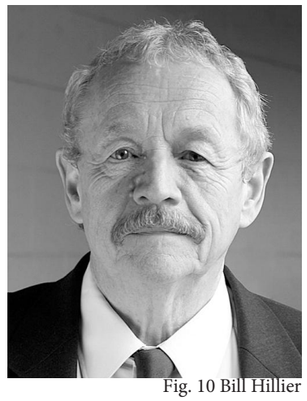


Fig. 10 Bill Hillier

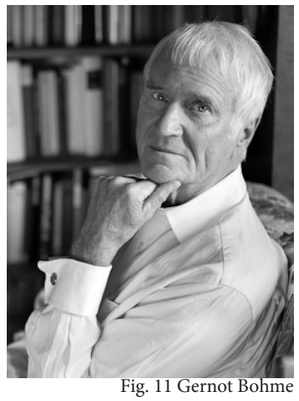


Fig. 11 Gernot Bohme

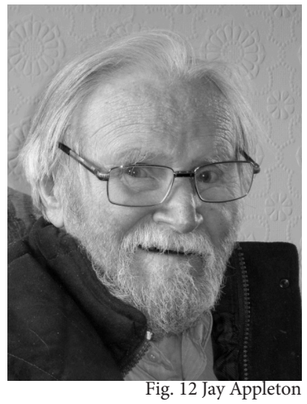


Fig. 12 Jay Appleton

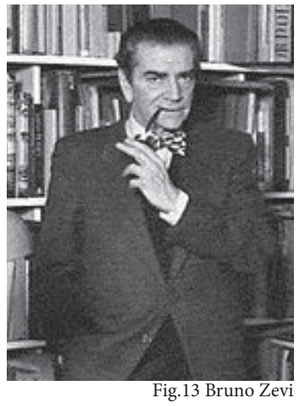


Fig.13 Bruno Zevi

CRITICAL METHODOLOGY

By using multiple methodologies with specific application to spatial design and by investigating the design of spatial fields instead of 'objects or artworks', I will be able to show spatial design as a functional strategy and discuss whether space can be produced, instead of reduced.

Addressing this problem of reduction relies on whether drawing and images can be considered more than just the 3-dimensional planes of a building. This will further determine whether space can be a social product rather than just the by-product of a 'capitalist exchange'. Therefore by referring to Lefebvre's theoretical framework (Lefebvre, 1991) I will be able to show how spatial design is fundamentally the same as his theory on social space, and therefore a necessary practice.

Theories such as Gernot Bohme's Atmospheric Architecture (Böhme and Engels-Schwarzpaul, 2017) provides essential factors to consider in designing, and therefore the philosophical context for spatial design. Jay Appleton's Habit Theory (Appleton, 1996) will provide evidence for the anthropological dimension underling spatial design, whereas theories such as Bill Hillier's Social Logic of Space (Hillier and Hanson, 2003) and Peter Blundell Jones' Architecture and ritual (Blundell Jones, 2016) will be essential to consider how current design practice still lacks an understanding of the concepts of spatial design, even though they have been around for decades.

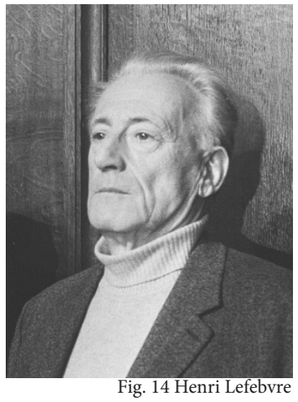


Fig. 14 Henri Lefebvre

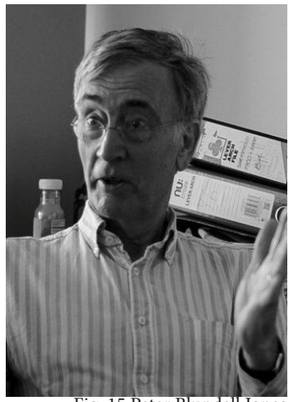


Fig. 15 Peter Blundell Jones

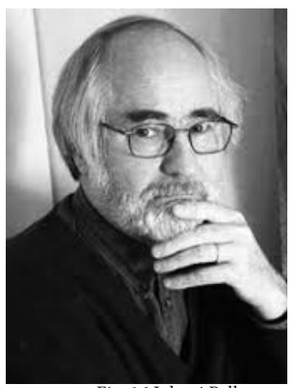


Fig. 16 Juhani Pallasmaa

Lefebvre's 'The Production of Space' (Lefebvre, 2016) exposes the contradictions and differences between 'perceived' space, 'conceived' space, and 'lived' space. Therefore in this dissertation I will be discussing the relationship between these different kinds of spaces, and the way in which they affect not only how space is designed, but also how it is experienced.

In the dissertation, space will not be limited to enclosures but will be assumed as continuous; the role of the spatial designer is to evaluate the different situations to create a flow between interior and exterior spaces. The problem however is that in the design of architecture, space is considered often only as a void to be filled, whereas instead it is "at once both at work and produced" (Lefebvre, 2016). It is simultaneously a product and a process of social activity and occurs within the structures of society. This concept reinforces the idea that spatial fields ought to be designed instead of buildings. The purpose of a building is not an artwork or a beautiful object, but instead "the ordering of space" (Hillier and Hanson, 2003). While it is a process which consists of social relations, it is also the means by which capitalism survives.

The perceived space (spatial practice): Refers to the experienced space, which we perceive as humans but are also subconsciously unaware of. The space in which we experience has many parts operating without our awareness, which can only be "revealed by the physical and experiential deciphering of space" (Anderson, 2007). The combination of everyday reality and man-made settings cohesively form spatial practice.

The conceived space (representations of space): Representations of space are the conceptionalised spaces of planners, architects, interior designers etc. who tend to fail to take into consideration atmospheric qualities. These representations of space nevertheless **dominate the lived experience**, and must be improved, as they are the main cause for the abstraction of space. The problems created by the representations of space are a lack of knowledge towards space to "meet functional ends for the greatest number." Not being accustomed to thinking in terms of space has therefore led to failed methodologies of design (Zevi, Gendel and Barry, 1993).

The lived space (spaces of representations): This is the space of the inhabitants and users. This space is dominated by the representations of space, a space made and controlled by others with the power to do so. There is a difference between architectural drawings and the way space is lived; therefore there is a conflict between the dominant forms of space.

CRITICAL METHODOLOGY : CASE STUDIES

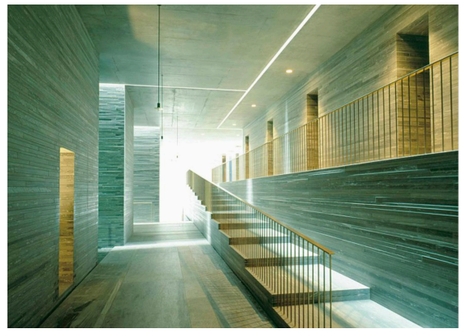


Fig.17 Peter Zumthor Thermal Vals, Switzerland, 1996 is used to show how atmoshperical qaulites are an essential part of experience as they are subconsious and a part of the conceived space. Peter Zumthor focuses on the manipulation of atmospherical qualities as a response to human nature. The combination of positive and negative interior spaces are also examples and methods of such sensorial qualities. Thermal Vals is a clear example of a fluid space and it allows for a focus on the experience, perception, and participation within the space.

Fig. 18 The Barcelona Pavillion by Mies van der Roe, Barcelona 1929 is not only used as an example of a decomposed box, never fully enclosed, it is also used to show how representations of space (perceived space) are often distorted when translated to the lived space as there are many qaulities and varying perspectives that cannot be displayed in a two-dimensional form.

Fig.19 Fallingwater by Frank Lloyd Wright, Pennsylvania, 1939 is used many times as it not only embodies Zevi's seven invariables and aspects of Jay Appleton's habit theory but also incorporates concepts of enclosure, movement, experience, participation and ultimatley spatial design.

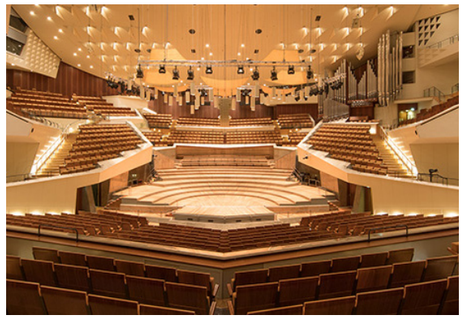


Fig. 20 The Berlin Philharmonie by Hans Scharoun, 1936 is first used to show the importance of participation and social interaction. It is then further used as an example of design as a result of social patterns in order to create a meaningful ordering of space. Terms of space, use, relationships and the experience inside rather than the architectural object are also considered.

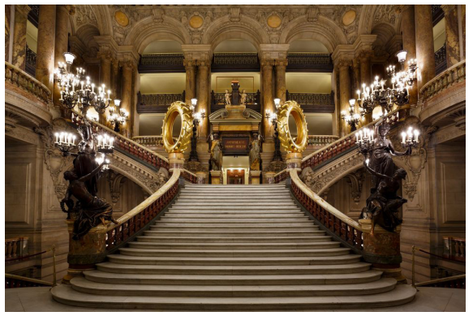


Fig. 21 The Paris Opera by Charles Garnier, 1875 is used as another example of design in relation to social patterns and societal needs. It is also compared to the Berlin Philharmonie as while they are from different time periods and geographical locations, they both incorporate the fundamental aspects of spatial design.

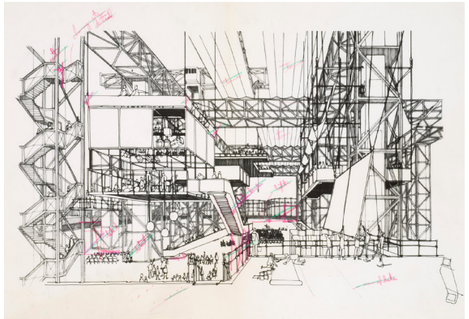


Fig. 22 Fun Palace by Cedric Price and Joan Littlewood, 1961 is a theoretical example used to show that providing as little framing as possible can help encourage people to generate their own social events.

Fig.23 The Centre Pompidou by Renzo Piano and Richard Rogers, Paris, 1977 has the same concepts of the Fun Palace and is further used as an example of how space is a social product. The plaza is therfore discussed as it is essentially a void without the people to fill it. The building also encourages particpation through a variety of experiences but never controls the user. Varied and flexible space is therefore proven to be concept which brings together Henri Lefebvre's idea on social space and spatial design together with phenomenology, experience and participation.

Fig.24 Berlin Philharmonic photograph taken from the front facing seating area.

Fig.25 Photograph of the interaction between the behind stage seating and musicians.

The images show the interaction between the audience and the musicians, and the multiple points of views necessary to create such an environment.

The perceived space (spatial practice): Refers to the experienced space, which we perceive as humans but are also subconsciously unaware of. The space in which we experience has many parts operating without our awareness, which can only be "revealed by the physical and experiential deciphering of space" (Anderson, 2007). The combination of everyday reality and man-made settings cohesively form spatial practice.

Gernot Böhme was a German philosopher and author who researched the philosophy of science, theory of time, aesthetics, ethics, philosophical anthropology and was the main pioneer the study of the relationship between culture and the environment. His theory on atmospheric architecture emphasises the fact that environments are experienced by their users. Atmospheric qualities enhance architecture and are what humans subconsciously embody (experiential response). This is just the nature of the human body and by analysing non-material phenomena such as atmospheric qualities of light, sound colour etc, design can be improved by the provision of a spatial strategy that incorporate them.

Furthermore, by linking this to Lefebvre's theory, space should be understood as social. This means that by focusing on these atmospheric qualities and the human encounter towards them, space can become more focused and more effective than just an 'idealised vision'. This relys on participation as there is no absolute rule to the design of space. As Lefebvre said, space should not be static as it is a means of social interaction, and without the social dimension there is no space and vice versa.

No. 1 Listing as Design Methodology

Zevi's first invariable questioned the concept of beauty which is underpinned by the idea of participation of users. He aimed for architecture to reach the 'zero degree', thinking that independent elements of a building were to be developed separately from each other, each with their own intrinsic value. Each design should therefore focus on combining functional requirements with subjective/experiential meanings within architectural space. This is therefore why architecture should not be about designing buildings but is in fact about designing them in relation to human encounter, embodiment and ultimately experience. This participation of users is seen in examples such as the Berlin Philharmonie where there is an interaction between the musicians and audience as a result of the physical configuration of multiple points of views. The spectators are arranged in a sort of surrounding primordial social circle allowing them to interact with the musicians and each-other. This is evidence of a need for a relationship between people and the architectural form. Zevi himself stated that "space becomes the place of architecture, because the interaction of people is allowed by the way in which content and form successfully define each other." (Zevi, 1992, p. 156). These closely linked concepts of participation and social space allow a way of discovering how we can incorporate atmosphere into the design, as well as a strategy of designing as an extension of the body.

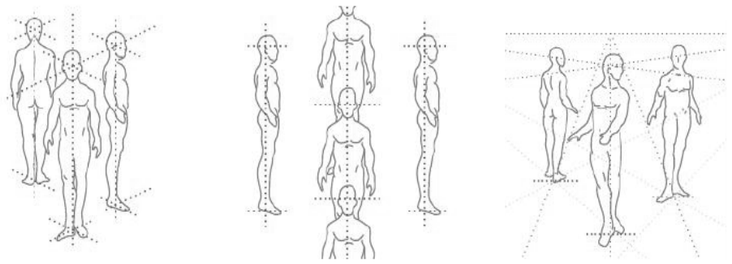


Fig.26 Spatial perception diagrams

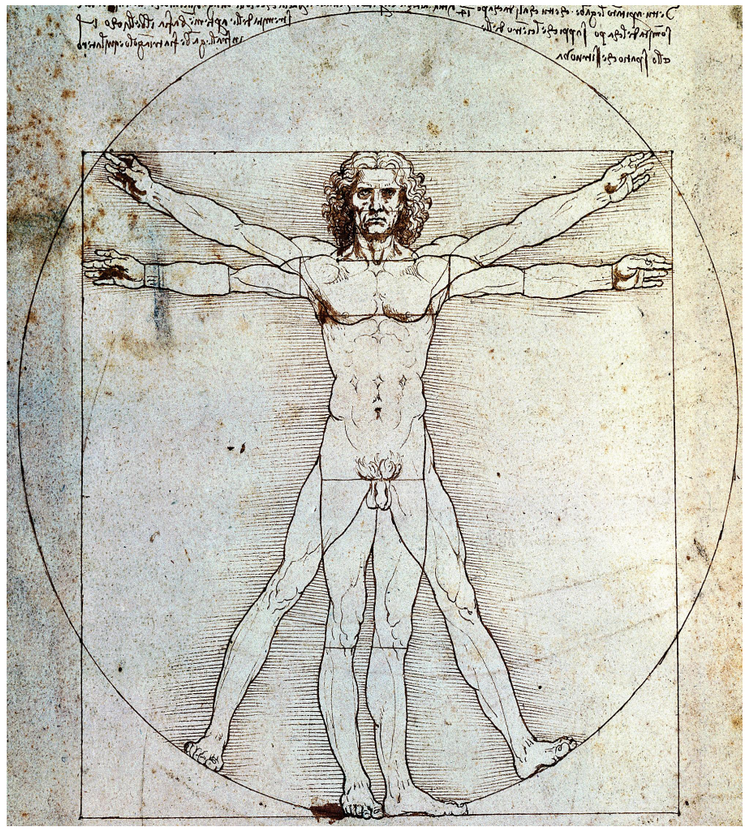


Fig.27 Vitruvious Man

What Is Atmosphere?

Hermann Schmitz was one of the first to introduce the concept of atmosphere with philosophy, stating that it had "moving emotional powers, spatial carriers of moods." (Herman Schmitz as cited in Böhme and Engels-Schwarzpaul, 2017). The way spaces are designed have been known to affect humans physically and mentally. Spaces can be seen as "heavy or uplifting, serious and serene, festive, sublime, cool, cosy" (Böhme and Engels-Schwarzpaul, 2017), and many other characteristics. These types of characteristics are the perceptions of atmospheres, the perceptions of the individual experiencing, generated through 'geometry, shape, proportions, dimensions, (but) and also light, colour and sound' (Böhme and Engels-Schwarzpaul, 2017). However while many atmospheres are a result of cultural lifestyle, it is the reality of the perceiver and perceived that gives them value, as a cosy space in one culture may seem cold and uninviting to another. Therefore the way that atmospheres are conceived affect the perception of the viewer and in turn spatial practices. This combination of everyday reality and man-made settings cohesively form spatial practice, and by studying these natural rhythms in space, we can understand their inscriptions in it and therefore suggest modifications.

Vitruvius stated that 'Man is the measure of architecture'. However the spaces designed for the 'bodily presence of people' provided in most architectural work most often require to be represented in drawings, computer renderings, and models. While these are necessary in portraying a proposed space, architecture itself is not a visual art but instead a spatial one. A space is best understood physically and through the experienced senses evoked on the body (Böhme and Engels-Schwarzpaul, 2017). Alvar Aalto's work recognises this embodiment nature of the human condition. By focusing on human encounter, Alvar Aalto's drawings are sometimes considered 'unresolved' (Pallasmaa, 1996). However, by appreciating space as an actual physical encounter "in the flesh of the lived world" (Pallasmaa, 1996), it again makes space more than an idealised vision of itself. It is therefore clear that the tendencies of thinking in abstracted form must come secondary as the main concern is the spaces experienced and created within.

Although aesthetics is one of the most prevailing reasons for design, architecture which recognises the realms of hearing, smell and taste is essential. The architectures of Le Corbusier and Richard Meyer tend to favour sight whereas Erich Mendelsohn and Hans Scharoun favour "muscular and haptic plasticity" (Pallasmaa, 1996). Frank Lloyd Wright's and Alvar Aalto's architectures however are "based on a full recognition of the embodied human condition and of the multitude of instinctual reactions hidden in the human unconscious" (Pallasmaa, 1996). This multitude of sensory experiences is further heightened in the works of Steven Holl and Peter Zumthor in todays world of architecture. This variation is what allows atmosphere to be created (Pallasmaa, 1996).

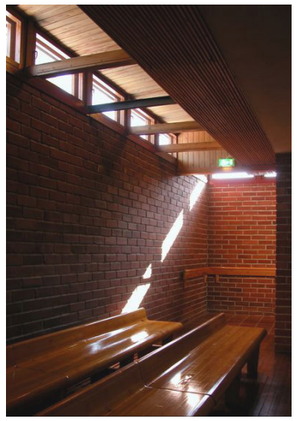


Fig.28 Alvar Aalto Säynätsalo Town Hall, 1949. A combination of shadow and light seeping in through the small openings.

Fig.29 Juhani Pallasmaa, Gando Campus Library, 2012

Alvar Aalto was consciously concerned with the senses within architecture and furniture design. His architecture incorporates "dislocations, skew confrontations, irregularities and polyrhythms in order to arouse bodily, muscular and haptic experiences" (Pallasmaa, 1996). Surfaces, textures and details are also elaborately crafted for the hand to provide an inviting sense of touch and an atmosphere of intimacy and warmth. Instead of focusing on the aesthetics of architecture (that of the eye), Aalto's architecture is based on sensory realism. Instead of his buildings being based on a single dominant concept, they are 'sensory agglomerations' (Pallasmaa, 1996). They are conceived to be appreciated in their actual physical and spatial encounter as he considers the eye as "the organ of distance and separation, whereas touch is the sense of nearness, intimacy and affection" (Pallasmaa, 1996).

However, while atmospheres are not visible, they are a result of visible characteristics and subconscious feeling. Atmospheres are emotional manipulations intended by these strategies of light, acoustics etc. and are always "spatially unbounded and placeless" (Böhme and Engels-Schwarzpaul, 2017). By saying that it is a shared reality of the perceiver and the perceived, it is stating that atmosphere is not for example 'serene' but in fact emits feelings of serenity. The production of a serene mood in the perceiver is what establishes an atmosphere and in turn connects the perceiver and the perceived. What is felt in these moments is a "formless, seamlessly diffused atmosphere" (Böhme and Engels-Schwarzpaul, 2017), It is not a condition of the body.

Peter Zumthor stated that Architecture should be "like free space, permeating people to live in, creating memories. Surrounding atmosphere to be felt rhythmic and coherent while staying within the boundary"(Zumthor, 2006). Zumthor himself focuses on materiality, the activation of senses, quality of details and the creation of atmosphere within space. When arriving at the Thermal Vals "right from the start, there was a feeling for the mystical nature of a world of stone inside the mountain, for darkness and light, for the reflection of light upon water, for the diffusion of light through steam filled air, for the different sounds that water makes in stone surroundings, for warm stone and naked skin, for the ritual of bathing." (Zumthor, 2007).

This is because architecture is not about form but instead is about materials and creating an atmosphere. This is why he designs from the inside out. The different layers of a building and its materials is what he calls the 'Body of Architecture' (Zumthor, 2006). These are the components that create space. These materials however have endless capabilities and depending on how they are paired, certain materials have acoustic qualities whereas others embody thermal qualities, emphasising the importance of variable conditions when creating an atmosphere. This is how Zumthor differentiates between which materials he may use as the aesthetics and vision of the surrounding objects have nothing to do with the design, it is in fact the qualities they provide and ultimately the atmosphere created by them.

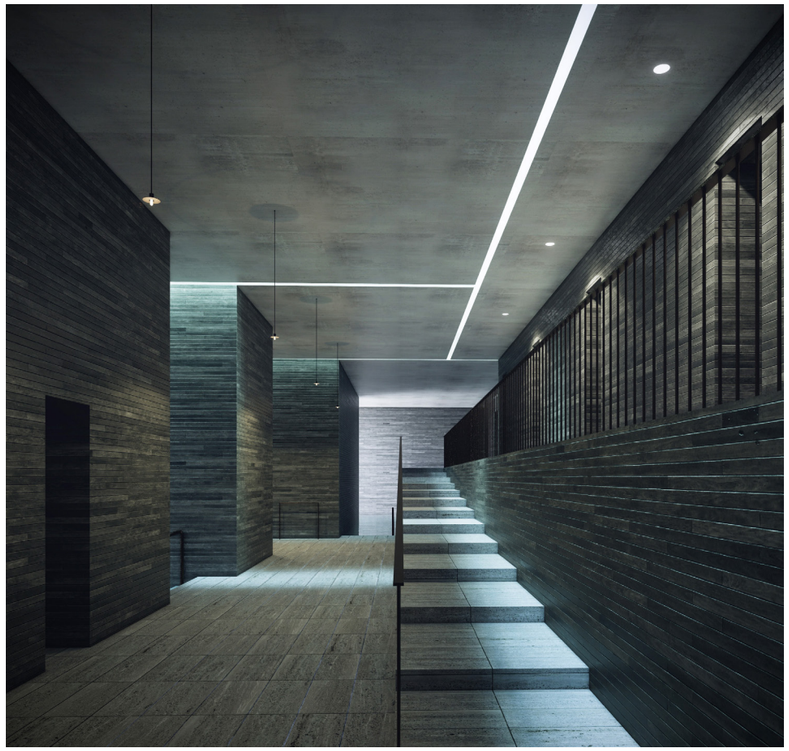


Fig. 30 Peter Zumthor, Thermal Vals, 1996

"Architecture is an art when one consciously and unconsciously create aesthetic emotion in the atmosphere and when this environment produces well-being." Luis Barragan (Böhme and Engels-Schwarzpaul, 2017) .

No. 4 The Syntax of Four-dimensional Decomposition

Movement is also a key factor in Zumthor's designs reinforcing the idea that space should not be designed statically as it is experienced dynamically. In the Thermal Vals, freedom of movement was key in his design especially between spaces. He created tensions between the interior and exterior reinforcing the feeling of transitioning through thresholds without ever fully going through a door or from interior to exterior (Atmospheres and Construction: Peter Zumthor's Philosophy on Architecture, 2019). This is an example of Zevi's Fourth invariable 'proportion', as the relationship between solids and voids are immaterial, allowing for the spaces to become the 'connective visual element of design' (Zevi).

However these thresholds are defined by wall density, materiality and proportions, ultimately creating an internal mass and different levels of intimacy. This therefore leaves the distinction between outside and inside irrelevant, as there are no conventional openings in the walls, but instead disconnected partitions that allow for the penetration of multiple lights and successive views. This type of deconstruction is also seen in the Barcelona Pavillion by Mies van der Rohe as it is a reversal of spatial elements, essentially a decomposed box, broken into panels to avoid closed volumes. "Once the box has been dismembered, the planes no longer form closed volumes, containers of finite space. Instead the rooms become fluid and join up and flow in a moving continuum. The static quality of classicism is replaced by a dynamic vision, with the element of time added, or, if you will, replaced by a new 4-dimensional space/time …" (Zevi, 1978, p.32). This fourth variable is not an exercise of deformed shapes, but a response to a profound human instinct, one that allows people to be able to reconnect with their own physical context. It therefore should consist of continuous fluid spaces which are divided but never fully separated. This formation of sub-spaces are then made "functionally and visually connected between themselves and the outside." (Oppenheimer Dean, 1983, p. 67).

The way Zumthor (and many other architects) combines architecture and phenomena to evoke feelings is clearly portrayed in his buildings. This need for atmosphere is a reinforcement of the need for spatial design to be seen as a functional strategy rather than just a visual one (Atmospheres and Construction: Peter Zumthor's Philosophy on Architecture, 2019).

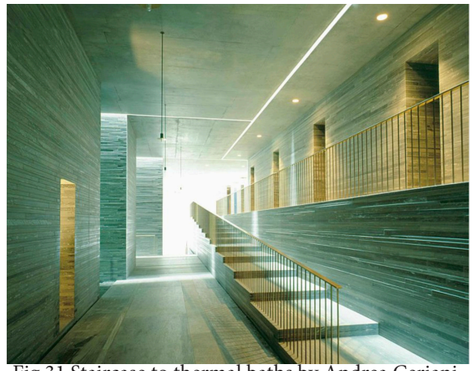


Fig.31 Staircase to thermal baths by Andrea Ceriani

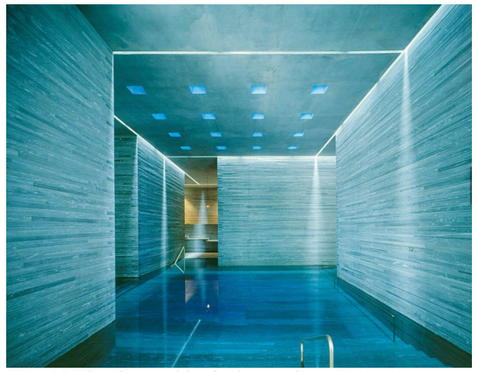


Fig. 33 The thermal baths by Andrea Ceriani

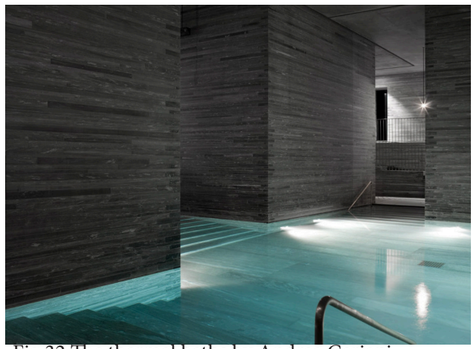


Fig.32 The thermal baths by Andrea Ceriani


Fig.34 The exterior of Thermal Vals by Andrea Ceriani

The stone continues throught the building even on the exterior emhasising the idea of a continous fluidspace which is never enclosed. It is essential to provide a sequential flow between these public and private spaces, barriers must be minimised.

Fluid space: is a continuous and dynamic space through interior, exterior, public and private.

"It is the articulation and differentiation of solids and voids."
(Zevi, Gendel and Barry, 1993)

No. 6 Space in Time

While Zevi's fourth invariable is a way of spatial design by focusing on form, it is not to be confused with the sixth invariable which is a way of designing with human participation and embodiment in mind, focussing on man being at the centre. The sixth invariable refers to balance by making reference to Vitruvius' idea of the human body being the source of balance and proportioning architecture. Balance is not found by perfect geometric forms as the human body (when dynamic) is constantly changing, shifting the equillibrium. This is why traditional forms of balance, and also symmetry, induce a static attitude toward perception and movement. This lead Zevi to define architectural space as a "perceptive continuous dynamic spatial field where people can live in harmony with their environment, as stipulated by the principles of Organic Architecture" (Zevi, 1992).

By establishing this notion of **fluid space**, it allows for a focus on the experience, perception, and participation within the space. It doesn't focus on design properties like the other five invariables, but instead the space that is truly lived in. This is all however a result of atmospherical qualities. Atmosphere is what affects experience, perception and participation. Sensorial perception through atmosphere is what gives different connotations to various spaces without the need for labels, doors or walls. This is again what Peter Zumthor has done in his Thermal Vals.

Seeing as atmosphere affects the body and evokes feelings, it is no doubt that they shape a person's being-in-the-world as a whole: the relationships to environments, to other people, to things, and to works of art. That is why atmospheres are extraordinarily significant for the theory and practice of architecture and essentially spatial design (Böhme and Engels-Schwarzpaul, 2017).

There is a social familiarity with atmospheres such as a tense atmosphere in an exam or the gloomy atmosphere of a funeral. These atmospheres of the social realm are shared and are created by the non-material phenomena of certain environments. The social consequences of atmospheric qualities therefore further reinforce Lefebvre's idea on social space and designing with reference to human encounter. Spatial Fields are where cultural and societal life take place within, and it is our human perceptions and experiences of the world which are significantly altered by architecture. If architecture is ultimately the production of atmospheres, then the most genuine way of understanding such has to be through bodily presence (Böhme and Engels-Schwarzpaul, 2017). By integrating our being with architecture and therefore the world, it allows awareness of our own self being and ultimately proving the notion that without the social dimension there is no space and vice versa.

Fig.35 Aalvar Aalto Säynätsalo Town Hall, Finland, 1949

Alvar Aalto described the "problem of spatial design as one of connecting the form of the building to the structure of the site, or of twisting and turning the buildings facades to create positive exterior space." (vuruskan, 2008) In his town hall, the outdoor court holds the whole composition together.

The main material used for the exterior as well as for the representative areas of the interior is bare red brick. Similar to Peter Zumthor's Thermal Vals in the sense that there is a continuity in space (nature through the courtard) and materials (brick throughout the interior and exterior)

No. 7 Reintegration of Building, City, and Landscape

If architecture is essentially spatial design, then it does not belong to the visual arts as one cannot see a space, all that is seen is the images provided by two-dimensional forms of representation. A vision not experienced by bodily presence or physical movement through a space but in fact by a static representations (Böhme and Engels-Schwarzpaul, 2017). However a space requires variation, that of varying perspective to encapsulate every sense of an environment. This is because statically perceived spaces are harder for social interaction. They are designed without the ability to see varying perspectives and in turn lead to a space disconnected from the user. A space should be dynamically designed, incorporating a variety of qualities dependant on the use. This is what allows us to have a shared familiarity with atmospheres such as these cosy atmospheres in for example a Maggie Centre. By acknowledging how certain types of environments are to be created, desired activities can thankfully take place in them allowing for a meaningful social interaction and the ultimate production of a spatial field.

"By arranging spatial sensorial features, an architect can lead occupants through the functional and aesthetic rhythms of a created place. Architectural building for all the senses can serve to move occupants – elevating their experience."(Böhme and Engels-Schwarzpaul, 2017). This is a concept of harmony also known as the seventh invariable. In architecture a composition is harmonious when the inter-connection between its parts fulfils aesthetic requisites. This invariable specifies the importance of the process of (re)integration of the building in its setting. A building has many levels, each interacting with its physical (location), cultural (purpose), and functional (strategic) context. Since buildings should not be restricted or confined by their physical dimensions, they should expand to contain a multiplicity of different functions and accommodate a variety of communities. This idea of Reintegration had been already used by Adolf Loos, who introduced the principle of 'vertical reintegration in Raumplan [the interlocking of different heights]'. This functional agenda of reintegrating architecture and nature depends on the interaction between architects and sociologists, urban planners, and local communities. 'The task is to design architectural spaces and buildings, which are not static and visually 'pure', but flexible, fragmented, and ready to change function and shape in response to a variable set of requirements and aspirations.' (Zevi, 1992, p. 269).

While Atmosphere, Phenomenology and Experience have been deemed essential in the processes of design, every invariable demands participation. This formative process (not with form), with 'an architecture that is not isolated but interconnected' (Zevi, 1978, p. 66) is fundamental in architecture and therefore a motive for making spatial design a functional strategy.

Fig. 36 Le Corbusier's Villa Savoye on a sunny day

Fig.37 Le Corbusier's Villa Savoye, on a dull day.

An example of the varying spatial conditions within Le Corbusier's Villa Savoye and how these can affect the atmosphere created within a space.

CHAPTER 2: CONCEIVED SPACE

The conceived space (representations of space): Representations of space are the conceptionalised spaces of planners, architects, interior designers etc. who tend to fail to take into consideration atmospheric qualities. These representations of space nevertheless **dominate the lived experience**, and must be improved, as they are the main cause for the abstraction of space. The problems created by the representations of space are a lack of knowledge towards space to "meet functional ends for the greatest number." Not being accustomed to thinking in terms of space has therefore led to failed methodologies of design (Zevi, Gendel and Barry, 1993).

After making it clear that architecture and in fact spatial design is not a visual art, this chapter therefore rejects representations of space such as the technical drawing, computer models etc. as these forms of representation often have a negative effect on the way space is perceived, designed and ultimately lived. The ability to depict atmosphere through forms of representation is extremely difficult as these two dimensional forms can never show the varying conditions and perspective of an individual who is actually experiencing the space. While it is extremely easy to view a picture of a space on a sunny afternoon, there are endless other variables which alter it and in turn alter the experience as well.

The conceived space also known as representation of space is the space of architects, planners and more who don't take into consideration the atmospherical qualities mentioned before. They provide a two dimensional form of space, abstracting it all for the aim of reproduction, "meeting functional ends for the greatest number." (Lefebvre, 1991)

This is therefore why spatial design has been proven necessary as, as Lefebvre stated, space is a social product and should be an extension of the body. Space is the materialisation of social being and must suit the needs of society. If this is the case, forms of representation such as a single plan will never show sufficient variable conditions. Throughout time, occupation changes as less or more people enter a space, lighting throughout the day changes, activity and use, noise levels and many other conditions controlled by human and environmental factors. The space produced must therefore not only consider the experience of inhabiting a spatial environment but also allow for individuals to be actively involved in its creation and allow for the potential of changing it. This shift in objective space (the space of the architect) to subject space (the space influenced by the users personal opinions, tastes and needs) is achieved through participatory design.

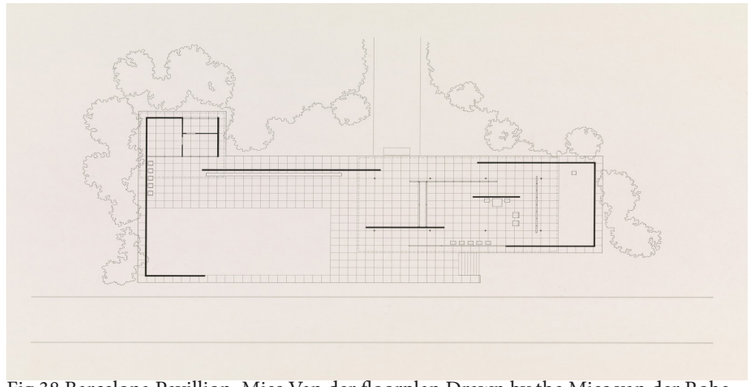


Fig.38 Barcelona Pavillion, Mies Van der floorplan Drawn by the Mies van der Rohe Chicago office

Fig.39 Interior and exterior voids created by panels in the Barcelona Pavillion

Fig.40 Interior spaces of the Barcelona Pavillion Image by Nacho Alegre

Problems of Representation and The Reduction of Space

Bruno Zevi claimed that while modern architects have a passion for the subject, they can rarely find the problem in contemporary architecture because they lack the cultural background to be deemed knowledgable. The eyes of today do not see the beauty of the purist forms, “les yeux qui ne voient pas” (Zevi, Gendel and Barry, 1993). He stated that modern architecture must restore cultural order by designing and integrating individuals with social needs, freedom, planning, theory and practice. It is essential to understand how social structure, social action and social interactions, are not only framed in space but are shaped, moulded, delimited and delineated by it.

The knowledge of how space is produced, by whom, for whom, for what functions, purposes, and to what ends etc. is crucial in the design of space as such knowledge allows for the possibility of space to suit the needs and priorities of society. This is ultimately the concept of spatial design which needs to be considered as more of a functional strategy. The current satisfactory knowledge the architect has is a result of not being accustomed to thinking in these terms of space and in terms of impossible representation. The failed method in studying from a spatial point of view and illiteracy that derives from the modes of representation ie. plans, sections and elevations etc. are one of the main causes for the abstraction of space. Pallasmaa insisted that architects must work with their sense of body and self as architectural works should not be experienced “as a series of isolated retinal picture but in its full and integrated material, embodied and spiritual essence.” (Pallasmaa, 1996). He also agreed that computer images tend to “flatten our magnificent, multi sensory, simultaneous and synchronic capacities of imagination by turning the design process into a passive visual manipulation, a retinal journey” (Pallasmaa, 1996).

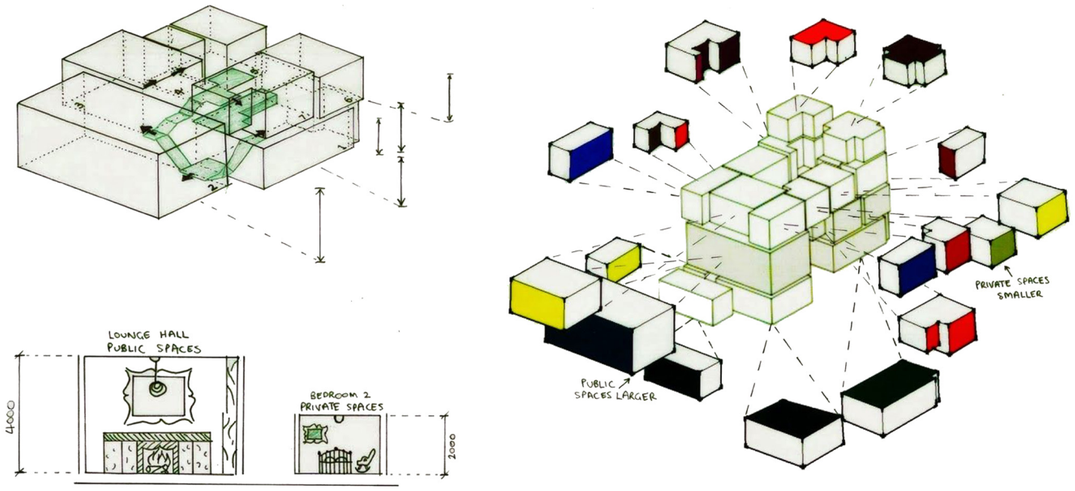


Fig. 41 Adolf Loo's Raumplan shows its rooms evolving around the central steps, allows visual connection among the different areas. Between the spaces, pierced walls frame the views on a diagonal direction

"My architecture is not conceived by drawings, but by spaces. I do not draw plans, facades or sections… For me, the ground floor, first floor do not exist… There are only interconnected continual spaces, rooms, halls, terraces… Each space needs a different height… These spaces are connected so that ascent and descent are not only unnoticeable, but at the same time functional" Adolf Loos (Fabrizi, 2014)

These modes of representation represent architecture in a two dimensional way, breaking it down into horizontal and vertical planes, enclosing and dividing it. But architecture is not just the width, length and height of a structure, it is the void itself, the enclosed space in which man lives and moves. This leaves representation as a practical device and space abstractly imagined which is what Lefebvre also stated. This is a major issue as facades, walls, roofs and other elements focused on in representation methods are only a frame. The content is the internal space as "space is the protagonist of architecture" (Zevi, Gendel and Barry, 1993 p24). While a container and the contained are interchangeable, the focus has been on the container instead of the architectural space and this shouldn't be the case. The focus should be on the space and its spatial fields.

By limiting architecture to four dimensions (in modes of representation), you are limiting it to the same dimensions of paintings and sculpture to which it transcends. Architecture has multiple perspectives, it is not just the exterior as that essentially leaves it as a large sculpture. Representation forms record the building statically and exclude the dynamic and musical succession of points of view (Zevi, Gendel and Barry, 1993 p54-55) when in fact Architecture constitutes to a boundary, a pause in the continuity of space. The addition of bridges, fountains, monuments and many other factors also play a role in the design, as the space that surrounds us and includes us is the basis for our judgement. "Architecture is an environment, the stage on which our lives unfold" (Zevi, Gendel and Barry, 1993 p32) therefore the design of buildings needs to stop as it is reducing architecture to an artistic form. Spatial fields must be designed as the essence of architecture is "the way space is organised into meaningful form through the process of limitation" (Zevi, Gendel and Barry, 1993 p49). The space produced should be a creative process made by and for human experiences not for the capital or in fact for the designers who have conceptualised views of space with forgetful tendencies of taking atmospherical qualities into consideration.

Fig.42 Image of the Barcelona Pavillion, Mies van der Rohe, 1929 showing a collection of broken panels which create a fluid space, never enclosing and dividing it.

Atmosphere, Experience and Social Being

The environment in which architecture provides is much more than an enclosure but in fact an active environment. In relation to form, the 1929 Barcelona pavilion by Mies van der Rohe and its decomposition of broken panels to avoid closed volumes avoids such forms of enclosure. “Once the box has been dismembered, the planes no longer form closed volumes, containers of finite space. Instead the rooms become fluid and join up and flow in a moving continuum.” (Zevi, 1978, p.32). This role of proportion in Zevi’s invariables is an aim to avoid a balance and promote ‘dis-equilibrium’ (Zevi, 1978, p. 33). Frank Lloyd Wright’s Fallingwater is also a clear example of this imbalance as it consists of balconies extending in different directions in “a sort of suspended dynamism, that respects the degree of activities and requirements of its habitants” (Zevi, 1978).

This is closely related to why Jay Appleton’s habit theory provides a basis for designing in relation to our social being. Not only in the rejection of enclosures but also in the incorporation of human nature within a space. We must accept that architecture can be a frame for experience but we also must design acknowledging that space is more than a container. Jay Appleton shows that there is more to space than this and what we experience. He claimed that humans have five basic needs; physiological, safety, belonging, self esteem and self-actualisation. Within the five needs, safety and security is the second most important after breathing, eating and the other main aspects of survival. By acknowledging that security was a major necessity in human life, he introduced the prospect refuge theory which provides an understanding of human psychological factors and in turn a design strategy, one very similar to that of spatial design.

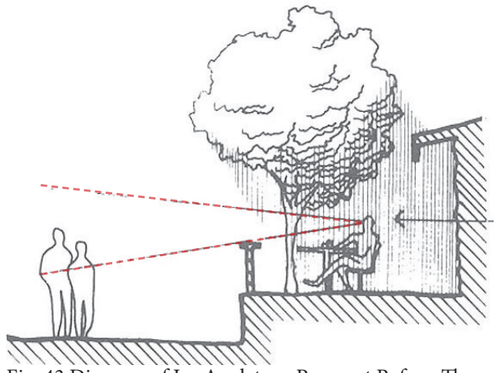


Fig. 43 Diagram of Jay Appletons Prospect Refuge Theory

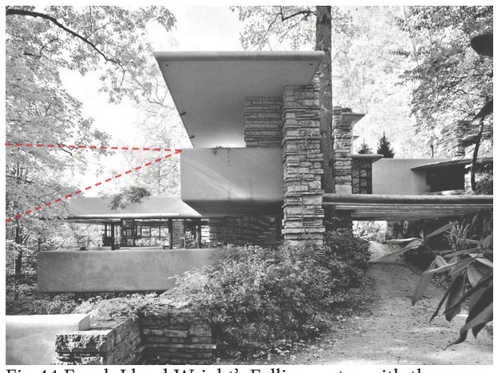


Fig.44 Frank Lloyd Wright's Falling water with the same prospect refuge qaulities to Fig.37.

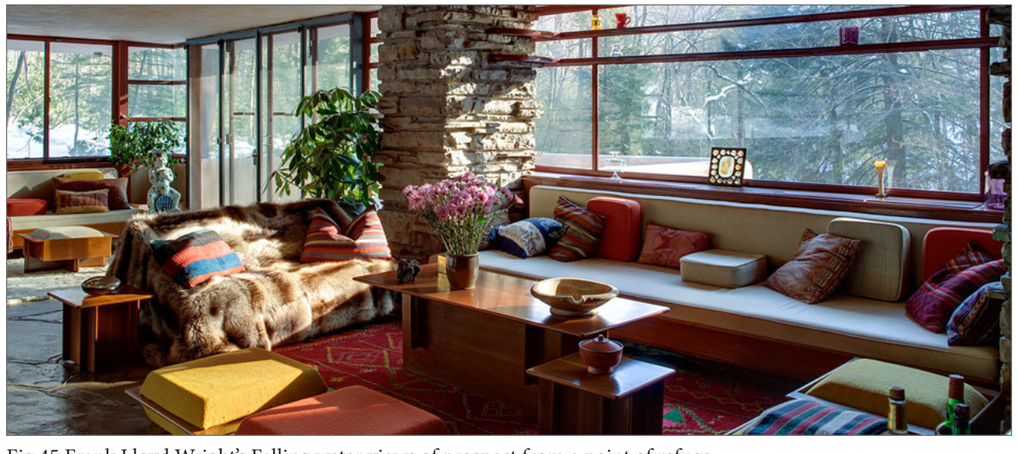


Fig.45 Frank Lloyd Wright's Falling water views of prospect from a point of refuge.

'This house is paradoxical genius. It dramatises the peril of its setting and itself while insisting with unparalleled intensity that it is a haven of safety' (Hildebrant, 1991)

The theory proposes the idea that humans seek out to satisfy two conflicting innate conditions when reviewing space; to have opportunity (prospect) whilst also being safe (refuge). Finding a balance between these two environments is what is most preferred. Prospect environments may be on hills, mountains, open settings or more specifically at human scale: deep terraces, balconies or generous use of windows and glass. However environments of refuge would be enclosed spaces such as caves, alcoves and places with barriers. By combining the two, designers are left with spaces mostly covered with high ceilings and few access points to provide a sense of safety and concealment but which also allow for unobstructed views with multiple vantage points. This is ultimately a semi enclosure, a space where internal and external spaces are simultaneously viewed yet are hidden. From the refuge we must be able to survey the prospect and from the prospect we must be able to retreat to the refuge.

This is why Frank Lloyd Wright's houses often come across as refuge dominant as there is a "paramount urge to snuggle up in spaces of peerless cosiness" (Hildebrant, 1991). However the work of le Corbusier contrasts as it is often prospect dominant, for example, each floor of the Villa Savoy has either a window or window light opening across its entire extent so a view is available in any direction.

Frank Lloyd Wrights buildings are considered as architectural expressions of this theory especially Fallingwater (Hildebrant, 1991). Fallingwater has an abundance of refuge and prospect symbols such as a "profusion of deep overhanging eaves, windows, alcoves, and recesses that suggest penetrability and protection" as well as "generous balconies to suggest a sweeping outlet the project east and west from the south edge of the living room and even more dramatically south from the main bedroom upstairs" (Hildebrand, 1991).

However when looking at fallingwater, the modes of representation merely suffice in showing what the actual building is like or its qualities. While some aspects such as surfaces and volumes are well represented, many are not as the the current forms of representation are not enough to show every aspect that can be physically experienced. Forms of representation are clearly shown to over-simplify versions of space when looking at Fallingwater. What is drawn never corresponds to what is experienced as it has been distorted in translation from one dimension to another.

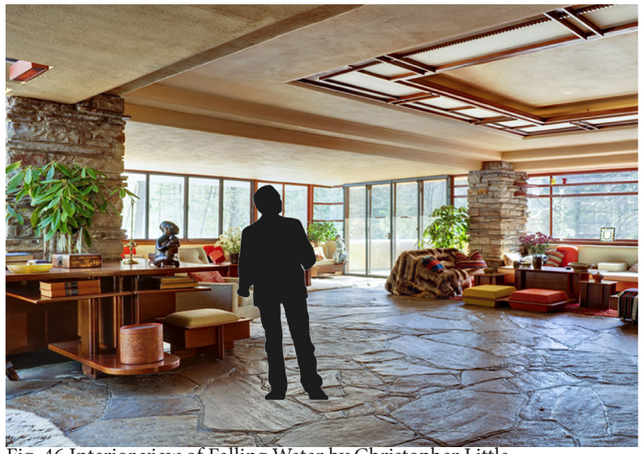


Fig. 46 Interior view of Falling Water by Christopher Little

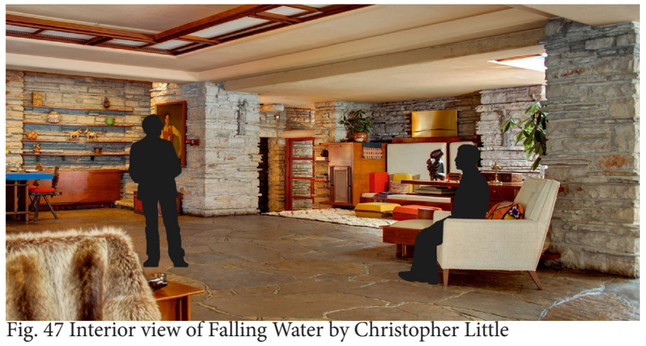


Fig. 47 Interior view of Falling Water by Christopher Little


Fig. 48 Prospect and refuge in Falling Water by Christopher Little

'Fallingwater is a projection of the future upon the present time ... Its voids have no enclosures, and there are no facades. There is no distinction between structure and load, because all the elements are involved in the resolution of the static diagram, which coincide with the spatial articulation. For the first time in the history of architecture, the composition of the voids coincides with the articulation of the volumes' (Zevi, 1992, p. 219).

Movement and Embodiement

It is impossible to demonstrate better than what has already been shown in modes of representation as they are 'hopelessly inadequate' (Zevi, Gendel and Barry, 1993) and still lack the quality that moving dynamically through a building and experiencing it provides. This however is not to say that his building has been designed statically and in a two dimensional way. Frank Lloyd Wright's falling water is in fact one of the most fluid spaces designed while also embodying the concepts of prospect, refuge, semi enclosure and ultimately spatial design. This is because he doesn't 'believe' in empty space, the space in which people live in is his motive for design. Fallingwater's low ceiling, central fire place and distribution of furniture around the edge of the rooms allow for a sense of security as while the vast windows and balconies overlooking the Bear Run Nature Reserve are provide feelings of prospect. "Such space is fluid, fluent, and dynamic, continuous with and belonging to the environment. All elements are in a state of flux: man, life, building, landscape, and materials. Change is the only law that we may know. Events are related no longer only to time but also to space. So architecture can register human events and stimulate their enrichment" (Zevi, 1981, p. 36).

However, while there are an array of beautiful looking photographs which seem to capture some of these elements and more than what a plan or section do atmospherically, they still fail to provide a "musical succession of points of view movingly experienced by the observer" instead, **each photograph is a like a "single phrase take out of a poem"** (Zevi, Gendel and Barry, 1993). While methods of representations limit the building making it seem much less than what it is, the space itself is not a container designed for the capital but a space which actually embodies human life and ultimately an extension of the body.

This is why Lefebvre's theory on social space has a good design strategy as by following the principles of spatial design, the building becomes a framework for experience rather than an object reproduced for the capital. Space needs to be designed in reference to humans as after all it is a by-product of social interaction. Space is the medium of experience and it cannot be designed in a two dimensional way without reference to experience.

Fig.49 An image promoting the rejection of capatilst space, a space endlessley re-produced By TECHNO_LOGIC_CITY by Charly Duchosal and Boris Lefevre for Post+Capitalist City 4# Move

Fig.50 A capitalist City (New York) Image by Maks Erlikh

The capitalist space aims to "meet functional ends for the greatest number." (Lefebvre,2016) such as the apartment blcoks shown.

While these problems of designing stem from a dominant discourse of power which reduce space, they paradoxically are also the height of social exchange as the pinnacle of the capitalist space is the shopping mall.

CHAPTER 3: LIVED SPACE

The lived space (spaces of representations): This is the space of the inhabitants and users. This space is dominated by the representations of space, a space made and controlled by others with the power to do so. There is a difference between architectural drawings and the way space is lived; therefore there is a conflict between the dominant forms of space.

Confliction with Capitalist Space

The issues of the perceived and conceived space have a knock on effect on the lived space: the space of the inhabitants and users. This space is dominated by the representations of space, a space made and controlled by others with the power to do so. While there are symbolic orderings of space and time which help provide framework for the spaces we inhabit, there is a tendency to assume there is a time and place for everything, essentially making social interaction rigid and "into a set of prescriptions which replicate the social order by assigning social meanings to spaces and times." (Harvey, 1990, p. 214). The space of the capital and that shown through architectural representations differ from that which is actually lived. This is therefore why the meanings and values within society essentially conflict with the dominant forms of space. Society is forced to inhabit space created by and for the needs of the capital instead of being able to use social space freely.

Architects and critics are handicapped by forms of representation as from the current point of view, plans, drawings, words or images are all "opaque and diffuse" (Hillier and Hanson, 2003). They provide no sense of the experienced reality of a building as the dimensions of the proposed space are never even experienced themselves. There are multiple dimensions of space which are never captured in the representations of space and therefore fail when translated to the lived space.

Edward Soja developed Lefevbres idea on socially produced space with the idea of the 'third space'. This was a way of interpreting socially produced space. He stated that there were a limited two modes of analysing space: a dominant approach that "interpreted human geography primarily in terms of the configuration of material forms, mappable things in space, and a more subjective alternative that emphasised thoughts about space, mental or ideational representations of those material, mappable forms." This is essentially the perceived and conceived space or in other words spatial practices and representations of space. Lefebvre himself claimed these as insufficient to simultaneously understand the real and imagined of space, the space "in which social relations are played out, in which they develop and change, and in which history is made." However the third space is not distinct from the other forms of space but is a combination of the perceived and conceived. For example, a person's home has emotions, feelings and memories when thought of (when away from it), but more importantly, it has these same feelings while being simultaneously present and imagined. The third space is therefore the experience of living, making it important to consider the sociology of social pattern and how they change in different societies, as currently, the dominant forms of space have oversimplified it. It is "itself the outcome of past actions, social space is what permits fresh actions to occur, some serve production others consumption....Social space implies a great diversity of knowledge" (Lefebvre, 1991, p. 72).

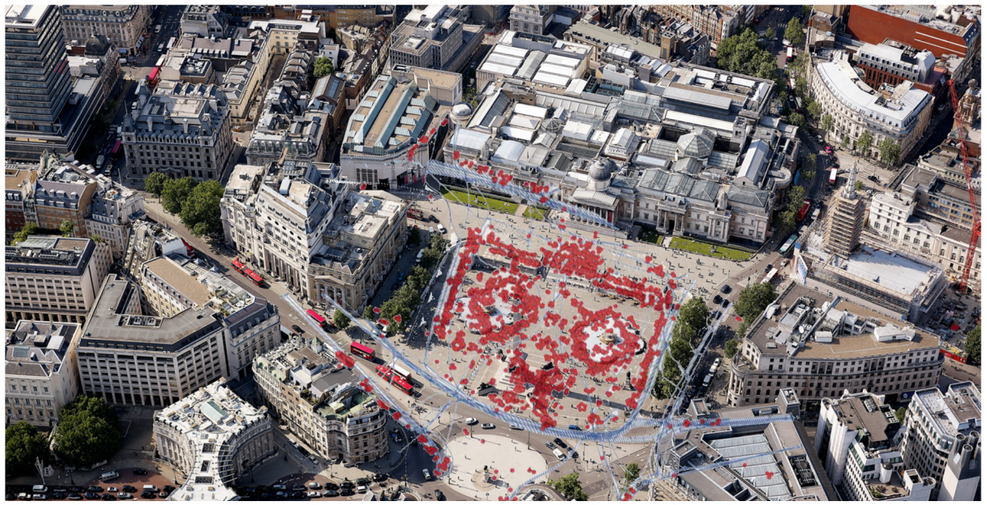


Fig. 51 Social patterns in Trafalgar Sqaure, London. A study by The Bartlett's Space Syntax course. As shown, there is a formation of people around the fountain seating areas and edges.

Fig. 52 Social occupation in trafalgar sqaure

Variation in Space

Bill Hillier made it clear that design has a certain logic to it, purpose followed by style. Therefore we need not to talk about 'objects' but instead systems of spatial relations which embody social purpose (Hillier and Hanson, 2003). Architecture is very often criticised visually when it should be in terms of space. However when providing a theory of space, the varieties and similarities in the relationship between architectural forms and spatial patterns must be considered. For example in small regions there are wide variations in architectural and spatial form but there are also similarities which jump across time and regions. It is therefore obsurd to see architecture as a by-product of factors such as climate, topography, technology or ecology. "Societies vary not only in the spatial type of configuration but also in the degree to which the ordering of space appears as a dimension of culture" (Hillier and Hanson, 2003).

The absence of spatial structure is a result of the conceptualised space of planners who fail to incorporate these social dimensions within a space. Bill Hillier's ideas on space are therefore exactly the same to that of the Lefebvre as he also stated that without the social dimension there can be no space and vice versa. Furthermore, by placing human life and social patterns at the centre of design, it is reinforced that space is a social product. Societies encompass the earth encountering each other and spreading their knowledge of material. While they exist in this space, they also take on their own spatial form. Therefore arranging space in relation to patterns of movement and encounter was what Bill Hillier was ultimately suggesting. He claimed the purpose of buildings was in the ordering of space rather than the current ordering of human movement. Conventionally, spaces are used to guide people from A-B, governing our behaviour and turning what used to be a 'work environment' into something that is endlessly reproduced (Hillier and Hanson, 2003). This not only reduces buildings to objects, but also restricts our human condition and creativity. By acknowledging this issue of controlled space we need to re-assess the way space ought to be designed, particularly focusing on human life, movements, and the spaces that allow for human expression.

The inability to live freely and imaginatively is a result of a habitat created for the needs of capitalist society. Architects tend to have oversimplified understandings of social activities and still lack the knowledge of social patterns of use. This consideration of human movement through space and ability to dynamically design is essential, as the design process for public spaces also tend to lack the ability for relationships to be formed between the user and space. When buildings are designed independently from this experience, the end result is poor as architecture is just an empty void without people.

Fig. 53 The Staircase of the Opéra Garnier, Louis Béroud(1877)

"the spectators suffer a kind of moral impression that they can hardly avoid. Contained and surrounded by this sort of elegant atmosphere, their thoughts, their character, even their speech and deportment are influenced. They sense instinctively that a certain dignity is required, and that loose behaviour will be unseemly. This feeling of reserve, this elevation of the spirit which arises spontaneously on entering the room, prepares one for the reception of great works. The influence of the setting dominates, and anything done carelessly brings to the risk of finding oneself unwelcome. We can never lose interest ourselves completely from our surroundings, for the pleasures and pains we feel are excited already reduced by the character of the place, even if they are not perverse or troubling." (Blundell Jones, 2016)

Social Patterns, Movement and Interaction

The Berlin Philharmonie is an example of showing that by placing human life and patterns at the centre of design, there is a much more beneficial and focused ordering of space. When comparing it to other Opera and concert halls such as the Paris Opera by Charles Garnier, they belong to very different but closely related musical traditions. Rituals of arriving into a foyer, meeting, and then progressing to the auditorium and seats are clear in Garnier's Opera Hall. However the different stages of development in music has shown changes not only in types of performance but in "representation and social mores" (Blundell Jones, 2016).

Garnier's building intended to represent the idea of a "shared culture and national dignity" (Blundell Jones, 2016) while also developing the social rituals of opera-going. By visiting multiple opera houses in the flesh, he was able to asses advantages and disadvantages of certain structures especially when regarding the experience of the spectator. This empathy for the audiences experience was clearly shown in his design throughout the building.

It is clear that Garnier was concerned with designing for the people. He acknowledged social conventions and took a deeper understanding into psychological patterns allowing his building to thrive physically and socially. The constant concern for "ease of movement, multiple walking roots, and avoidance of congestion and cross flows" not only allows for our human nature to experience a space freely and spontaneously, but it also "opens up new social possibilities for people to parade and display themselves" (Blundell Jones, 2016).

However the Berlin Philharmonie changed the nature of performances and the environment in which they were performed. As music was widely available by this time, opera houses were less used and were attended only by small and exclusive audiences. Hans Scharoun however had a sort of organic architecture which was concerned with specificity as opposed to generality. He followed Aldo van Eyck in thinking in terms of 'place and occasion', essentially meaning that he thought of terms of space, use, relationships and the experience inside rather than the architectural object. Scharoun therefore examined people and acknowledged that when improvised music is heard, for example performers in the street, people tend to gather around in a circle. While this is a natural process it is a clear form of spatial pattern being formed by societies. This led him to making music the optical centre of his concert hall. His deep interest in the relationship between the audience and the design is therefore shown through incorporating ideas of participation with design while also "extending the flexibility of staging" (Blundell Jones, 2016). He called this the 'aperspective theatre', one where each person has a different view but all of them are equally good. As the Berlin Philharmonie and ultimately all space is varied, it reinforces the lack of variation in forms of representation as these endless perspectives can never be captured causing the space to seem oversimplified to someone who hasn't physically experienced it.

Fig. 54 Greater social integration and mobility, substantially were main elements of the design and Mary Cassatt wanted to capture this with her Woman in Black at the Opera (1879). (McQueen, 2017)

Fig.55 The circular formation of spectators in the Berlin Philahrmonie as seen and experienced in public social spaces

Fig. 56 Image showing the vast potential for social interaction between the spectators themselves and performers

Freedom

Scharoun was also one of the first to react against the formal disciplines, for example; that of the beaux arts formal grades or Gropius' constructional rationality, as his buildings follow the lines of movement and social processes embodying concepts of fluidity. This concern for the user experience was shown in Garnier's Paris Opera Hall as well. The design was "not just functional but served for the experience." (Blundell Jones, 2016).

While there is a clear spatial progression through the Berlin Philharmonie, it is often criticised for its lack of urban integration, Zevi's seventh invariable.There is a clear inward connection and outward disconnection. However, buildings should not be restricted or confined by their physical dimensions, they should expand to contain a multiplicity of different functions and accommodate a variety of communities. While the Berlin Philharmonie does this internally, with its ability to bring people together and share an experience, a building has many more levels, each interacting with its physical (location), cultural (purpose), and functional (strategic) context. "The task is to design architectural spaces and buildings, which are not static and visually 'pure', but flexible, fragmented, and ready to change function and shape in response to a variable set of requirements and aspirations." (Zevi, 1992, p. 269).

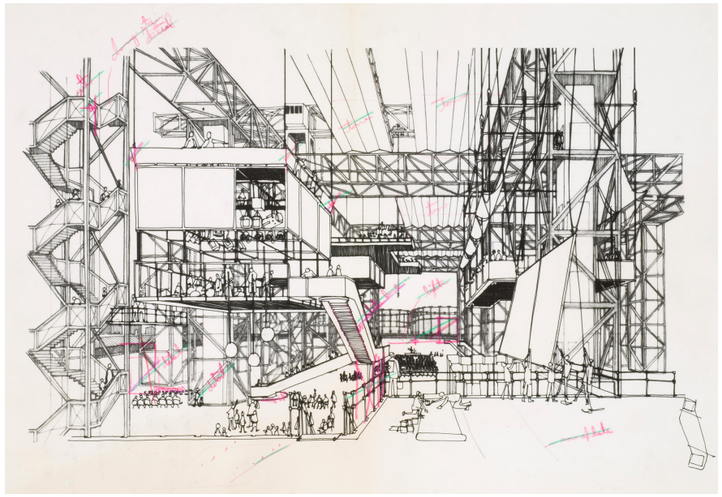


Fig.57 Persepctive drawing of the theoretical Fun Palace, Cedric Price

Fig.58 The Centre Pompidou, Renzo Piano and Richard Rogers exterior facade, incorporating many of the ideas of the Fun Palace. Image by Michel Denancé and Gianni Berengo Gardin

Fluidity

While the Paris Opera and Berlin Philharmonie are extreme versions of specialised architecture, specific to societies and not just empty containers for the capital, Cedric Prices' Fun Palace takes it a step further with 'anti-architecture' an idea that aims to encourage people to generate their own social events with as little framing as possible.

While the Fun Palace was never built many of its ideas are incorporated into the Centre Pompidou by Renzo Piano and Richard Rogers. The building encourages participation through a variety of experiences starting from the arrival by any form of transport, entering the building by walking wherever they feel, choosing whatever they want to do, whether it was painting, dancing, or listening to music and arriving at any time of the day or night, winter or summer. This already suggests a multitude of experiences and different perspectives that the space consists of which most likely differs to that displayed in its forms of representation, as with such a wide scope of activities there can be endless experiences which are impossible to depict in a single two-dimensional form.

The idea of the building focuses on freedom of choice and intends to be a "generous socialist world, egalitarian and levelled, openly shared and with no hint of privilege." (Blundell Jones, 2016). The conditions within the building are therefore temporary, constantly changing and ultimately impossible to be understood in any other type of space other than the lived. Cedric Price's removal of permanent rooms allowing the function to flow entirely through the building avoiding thresholds is a clear example of how spatial design can become a functional strategy. By rejecting traditional ideas of enclosures, such as having a closed roof, it has led to a strategy where the function is the building and "the addition and subtraction of services becomes the essence of its variable life." (Blundell Jones, 2016). While it started as a prescribed design, it was to then change into however society wanted it to be.

Fig. 59 The Pompidou plaza without human and social interaction - a void waiting to be filled

Fig. 60 The Pompidou plaza filled with human and social interaction. A clear example of how space is a social product.

The Social Dimension in Space

In the centre Pompidou however, flexibility was not a primary consideration although it was on the agenda. They wanted society to have 'the possibility of designing their own changing needs into the building, as far as possible freed from the limitation of architectural form' (Blundell Jones, 2016). This freedom began with the vacant public square, as it not only provided a space for public interaction but it is considered as a reawakening of the life in cities. The whole surrounding area therefore became a space of public life, a place of public exchange and every other kind of interaction. Acrobats, ice cream sellers, markets and other kinds of visitors filled the square and brought life back to modern city streets as they had been reduced to roads congested with cars and traffic. This ability to form spatial patterns without the structural elements of a building is evidence for space being a social product. Without people, architecture is just a void waiting to be filled. Therefore social patterns must be examined.

These spatial and social patterns can be found through room hierarchies, gender divisions, personal roles and ceremonial occasions and then used when designing a space. This so-called ordering of space can operate at any scale from the family dining table set up to a national coronation. But to understand the spatial patterns, the relationship between people in the spaces they occupy in time as well as in space must be preserved through memory. Space must therefore be socially produced and at once both work and product.

It is clear in the example of The Centre Pompidou that the empty town square was connected to the city by its occupants. Although it is not an architectural design but instead landscape, it is a dimension of Zevi's seventh invariable and ultimately spatial design as without society, it is just an empty void.

There is no space without the social dimension.

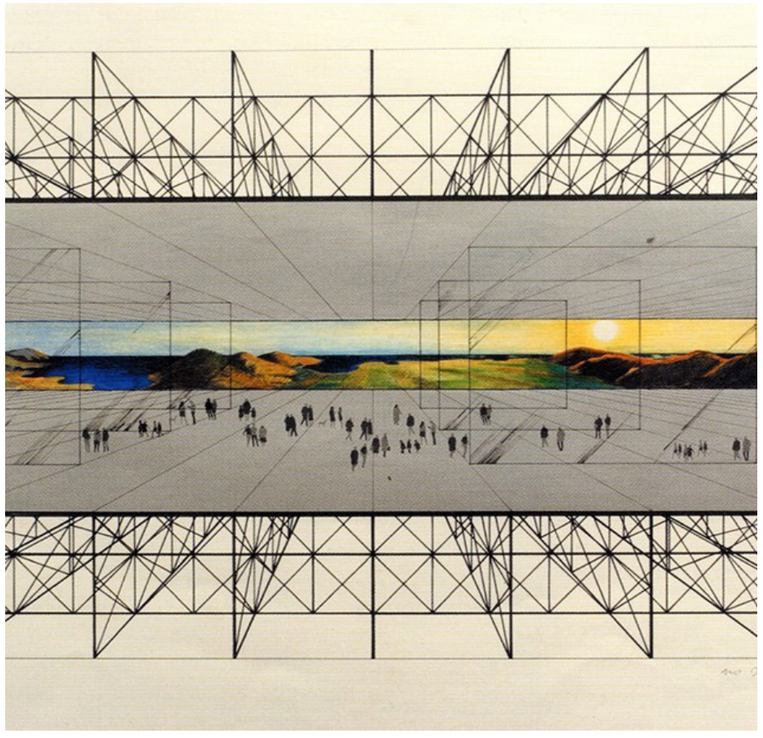


Fig. 61 'No-Stop City. Veduta di città' by the Italian architects Archizoom.

Andrea Branzi described it as "a society freed from its own alienation, emancipated from the rhetorical forms of humanitarian socialism and rhetorical progressivism" (Graaf et al., 2021)

CONCLUSION : VARIED SPATIAL CONDITIONS

It is extremely difficult and dangerous to establish universal laws to design as nothing is the same and having this approach is fundamentally reductive. Modern architects have a tendency to do so as urbanism is the means by which capitalism survives. The increase of planned, designed and rationalised space restricts and regulates society in a rigid form when ultimately space is all varied and in fact flexible in use. Space is a product of history and we must return to these creative processes that ancient and medieval cities followed; the process of spatial design (they developed according to the needs of their inhabitants rather than for profit.)

Spatial order reflects social order and vice versa.

Buildings consist of memories, of relationships, defining roles and identities (Blundell Jones, 2016). People never have to remind themselves of how to walk through a door or set a table, as spatial orderings have been a part of us since birth. They are located and hierarchal, emitting that same familiarity of space that atmospheres do.

This leads us back to why man is the ultimate measure of space. Our memory through basic human existence and perception within the world has helped us in gaining a sense of direction and movement, ultimately providing us with the consciousness of place. By reducing and abstracting space our sense of bodily space is lost. This is the consequence of developing buildings for profit and essentially the capital. "When profit wins over habitability the future occupants are unknown"(Blundell Jones, 2016) and the inhabitants are forced to adapt to space which is completely irrelevant to their culture or lifestyle, in turn crushing of their human nature, spontaneity and freedom. Social and self expression is therefore limited and confined to the spaces provided by the dominant modes of reproduction. It is the Architect's role to take into consideration these social processes but they tend to lean towards self expression which is simply just pattern-making or playing with shapes only for aesthetic affect (Blundell Jones, 2016). By doing such, flexibility within a space is delegated to the users in a rigid container.

CONCLUSION : VARIED SPATIAL CONDITIONS

Fig. 62 Fun Palace: Interior Perspective , 1964
Cedric Price designed the Fun Palace for all the potential 'uses' he couldn't imagine, not for the ones he envisioned for the space. This required engagement with the users of the building (participation). The ability to understand their desires and fears, and then to build contexts to address them is essential. (Slavin, K, 2016) Although the Fun Palace was never built, these concepts of social engagement and participation only consisted with the building and were not carried on throughout the urban context of the surrounding city.

" it was not even a conventional 'building' at all, but rather a kind of scaffold or framework, enclosing a socially interactive machine - a virtual architecture merging art and technology. In a sense, it was the realization of the long unfulfilled promise of Le Corbusier's claims of a technologically informed architecture and the 'machine for living'. It was not a museum, nor a school, theatre, or funfair, and yet it could be all of these things simultaneously or at different times. The Fun Palace was an environment continually interacting and responding to people." (Stanley Matthews, cited in Slavin, K, 2016)

The perceived, conceived and lived space must therefore all take into consideration variability.

Atmospherical qualities within the perceived space must be user specific but never absolute as individuals vary. While there are clear examples of the rejection of abstract space, incorporation of spatial design requires an acknowledgement of how atmosphere not only changes throughout the day due to environmental factors but also how it must change regarding the user.

As well as being designed in relation to the inhabitant, it must also acknowledge physical experience, perspective and movement through a space. The failed articulation of space within the forms of representation is also a result of absolute design. The endless reproduction of plans, sections, computer models etc. is an attempt to control society when space should be and is flexible. The modes of representation which often only show one aspect of a space are insufficient when trying to understand a design due the variation and endless perspectives. These two-dimensional forms when translated to the lived space are also distorted or often irrelevant to the user as they did not fit the mould. This variation from society to society must therefore be translated to space as they coexist. Furthermore, the lack and inability to spatially design can only be stopped by user participation.

Genuine involvement between the architect and future occupants is what is required and ultimatley, a shift from objective space to subjective participation.

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Fig.1 Frank Lloyd Wright - Courtesy of Crystal Bridges Museum of American Art, 1954

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Fig. 5 Frank Lloyd Wright Fallingwater

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Fig. 6 Diagram showing the fluidity of movement through Falling Water as well as multiple of Zevi’s seven invariables.

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Fig.17 Peter Zumthor Thermal Vals, Switzerland, 1996

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Fig.19 Fallingwater by Frank Lloyd Wright, Pennsylvania, 1939

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