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Abstract

Over the past decades the act of play has taken on an ever-decreasing form of importance in society. This not only leads to the absence of its accompanying architecture, but also to more boring, uniform and hollow spaces. However, there are still a few places where play does emerge, even if it's just for a short moment in time. The question rises what the architectural characteristics of these spaces are, where the act of play still has the opportunity to arise. Through the close examination of 16 precedent projects, six different characteristics could be established, namely *abstract elements*, *sensory experience*, *visual connection*, *contrast*, *human scale* and *wander*. These principles provide a better understanding on how to design for the act of play, which can be a physical activity but also a mental one or a mix of the two aforementioned, and even used as actual design tools for people working in the field of architecture and the built environment.

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I Introduction

“... A free activity standing quite consciously outside ‘ordinary’ life as being ‘not serious,’ but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner” (Huizinga, 1938, p.53).” Play, a phenomenon that since the beginning of time is considered of great significance for a healthy society. Many philosophers, cultural anthropologists and historians were reflecting on this topic, Dutch historian Johan Huizinga (1872-1945) among them. His book *Homo Ludens: A Study of the Play-Element in Culture*, that was published in 1938, was an ode to freedom in which he explained how mankind could not only be seen as Homo Faber (Making Man) and Homo Sapiens (Thinking Man), but also contained a third characteristic, namely playing. Therefore, humanity be seen as Homo Ludens (Playing Man). He argues that play forms the basis culture, as culture arises and develops in and as play. Thus, everything starts with play and is generated from play (Huizinga, 1938).

In the years following Huizinga’s publication, the concept of play in architecture became more and more popular, especially in the 50’s and 60’s, as a counter-reaction to the years of war that preceded it. Europe, as we now know it, was finally free and people wanted to use this freedom to do whatever they wanted. It was in those years that a movement grew which turned its back on the prevailing modernist views on architecture and urban planning. Architects realised they could fulfil an important, facilitating role in inviting the act of play through which this regained freedom could be experienced. *New Babylon* (1956-1974) by Dutch Artist Constant Nieuwenhuys (1920-2005) was one of the projects that explored what architecture should be and look like for the new Homo Ludens. He suspected that over time human labour would no longer be needed because of the increasingly developing industrialisation; the Homo Faber would make way for the Homo Ludens, who is no longer bound by place and time to work and could spend his surplus of free time as a nomad in his living environment. Nieuwenhuys’ suggestion was to construct huge

mega-structures that were lifted far above the existing world of the city and would form this permanent yet continually changing play space, due to its moveable walls, stairs and bridges (Visschers, 2016). Where Nieuwenhuys' utopian city remained only an idea, Japanese-American artist Isamu Noguchi's (1904-1988) so-called playscapes or 'play sculptures' were actually constructed. He saw the design of public spaces as a possibility to bring both play and sculpture into people's day to day life. These sculptures would not only inspire adults, but get children to explore movements, thinking, and feel more connected to their surrounding natural environment at the same time (Larrivee, 2011).

However, the problem is that over the past decades the act of play has taken on an ever-decreasing form of importance in society, hence today play has its difficulties in finding a way to exist, co-exist, alongside phenomena as growing individualisation and competitiveness (Verhaege, 2018). This not only leads to an absence of its accompanying architecture, according to Huizinga the advance of capitalism and the following mass culture and mass consumption led to this competitive society that brings about a penchant for hollow aesthetic and uniformity that leaves no room



Figure 1. Constant Nieuwenhuys, New Babylon



Figure 2. Model of one of the playgrounds by Noguchi

for play (Huizinga, 1938). Architecture should not be boring, but excite and inspire people in the stressful western world of the twenty-first century where it seems to have been forgotten that play can be an important outlet for both young and old.

Even in the seriousness of today's society, (short) moments of play can emerge in certain places. Here, architecture is able to play a facilitating role: creating spaces that get people out of their everyday life and be amazed and surprised, intrigued and challenged. This might be achieved, for example, by an unexpected composition of spaces, sensitive use of materials, an interesting amalgamation of different forms or the presence of artefacts that one can physically interact with. With the aim to get a better understanding of what exactly are these principles in architecture are that provoke some kind of play, the research question addressed in this thesis is: what are the architectural characteristics of spaces where the act of play has the opportunity to arise?

The following chapter will elaborate on the selected method that was used for this research, namely analysis of precedent projects. There is no need to reinvent the wheel and come up with new theories regarding play in architecture, as through looking closely at that what already exists, overarching characteristics will emerge simply by exploring and organising present-day architecture where the act play arises in any way, shape or form. The succeeding chapter presents the conclusion of each of the investigated projects individually, after which the six established

characteristics for play in architecture are presented. These results are subdivided into three chapters according to which type of play corresponds with the particular characteristic. Each of these chapters will start with a short explanatory text on the type of play, what this looks like and what it entails, followed by the characteristics associated with it, explained in through text and supported by one or two of the projects from precedent analysis. Here collages and/or diagrams provide visual clarification of the characteristic. After, a conclusion and discussion is presented that elaborates on the found characteristics and the implementation of them. Finally, the references of both text and images used in this thesis is to be found.



Figure 3. Car-roussel in *Playtime*, by Jaques Tati

II Method

Through the close examination of 16 precedent projects (fig.4) the act of play within the built environment is studied. No abstract theories need to be consulted and translated into architectural forms, as there are, in fact, already places where play still takes place. The case study method provides the basis for this research where, by investigating the architecture of these places, overarching principles will emerge. The projects themselves were chosen on various bases: a difference in scale, a diversity in architect/artist and a distinction in the appearance. Therefore, the selection stretches from artist Richard Serra's *Open ended* (2007), an 18x7 metres artwork, to *Parc de la Villette* (1983) by architect Bernard Tschumi, a giant 55.5 hectares park in the city centre of Paris. Yet, all were chosen for, and thus have in common, that in some way, shape or form, the act of play is invited here.

The analysis of the selected projects consists of three different steps. First of all, the process of careful structuring took place; an intuitive process that contained a rather rough analysis of the precedent projects, due to the lack of existing organisation methods for projects regarding play in architecture available in the body of knowledge of today. The most obvious organization method would be working through the various scales, however when observed side by side, overarching themes can be established. For this research, the selected themes were:

- Contrast,
- Journey through space,
- Dynamic,
- Visual connection,
- Repetition
- Form that invites.

With the presence of this new framework, a more analytical study of the precedent projects could take place, through text and drawing, systematically and thoroughly according to the previously established themes. It revealed a lot of variation and nuance amongst the projects within each theme, for example, journey through space could concern the floor plan of a project, where there maybe is a long corridor, a meandering path or a succession of spaces to be found, but could also regard a

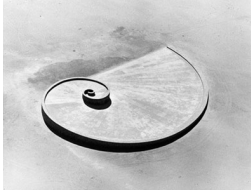



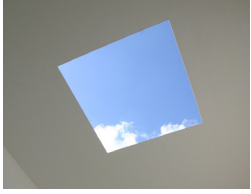



particular way the visitor enters the building, the presence of a door, a step up or a continuous path. Thus, it is important to interpret and explore the themes in the broadest possible way.

Finally, in the last step of the research called 'concluding thoughts', the crux of each projects is tried to be grasped, that particular thing in the architecture that provokes the act of play. Looking closely at all of these conclusions merged, the characteristics of places where play arises can be established. A characterization could respond with one of the earlier established themes, but could also be completely new if a certain aspect of a project really stood out during the analytical investigation of the project.

It is important to note that the entire analysis is repetitive, yet changeable. Only half of the projects were determined from the beginning and thus primarily where the overarching research themes were based on. The other remaining projects were found and chosen during the research itself, as these themes were not entirely fixed from the beginning, could be redefined or slightly altered in the process itself to be more appropriate. If they had all been fixed from the start, the themes would not have been able to alter with the process and thus might have produced superficial results; now it is a continuous process of developing and reflecting.

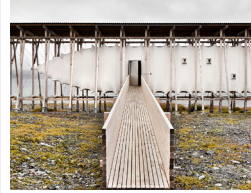
FIGURE 4

PROJECT OVERVIEW

	<p>VOL.1 <i>Goldene Spirale</i> Hanns Jörg Voth Marocco 1994</p>		<p>VOL.5 <i>21st Century Museum of Contemporary Art</i> SANAA Japan 2004</p>
	<p>VOL.2 <i>Wooden chapel</i> John Pawson Germany 2007</p>		<p>VOL.6 <i>Parc de la Villette</i> Bernard Tschumi Architects France 1982</p>
	<p>VOL.3 <i>Skyspace</i> James Turrell The Netherlands 2016</p>		<p>VOL.7 <i>Jantar Mantar Delhi</i> Maharaja Jai Singh II of Jaipur India 1724</p>
	<p>VOL.4 <i>Park vijversburg</i> Junya Ishigami & Studio Maks The Netherlands 2017</p>		<p>VOL.8 <i>Insel Hombroich</i> Bernhard Korte & Erwin Heerich Germany 1996</p>



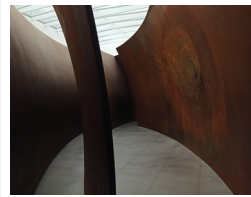
VOL.9
Playgrounds in Amsterdam
Aldo van Eyck
The Netherlands
1968



VOL.13
Steilneset Memorial
Peter Zumthor
Norway
2011



VOL.10
Negev Monument
Dani Karavan
Israel
1963



VOL.14
Open ended
Richard Serra
The Netherlands
2007



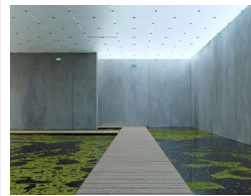
VOL.11
Jardin d'email
Jean Dubuffet
The Netherlands
1974



VOL.15
Selvika Route
Reiulf Ramstad Architects
Norway
2007



VOL.12
The End of Sitting
RAAAF
The Netherlands
2014



VOL.16
The Mediated Motion
Olafur Eliasson
Austria
2001

III Overview of Conclusions

In this chapter an overview of the most important conclusions that were derived from the executed analysis are provided. As elaborated on in chapter II : *Method*, these conclusion, or the crux of each project, were constructed after an analytical study of each project according to overarching themes that were intuitively found in the first general analysis of the case studies. In this thesis, every project's concluding page is to be found, showing the most important characteristic, a small explanatory text and a diagram.

Goldene Spirale // Hannsjörg Voth

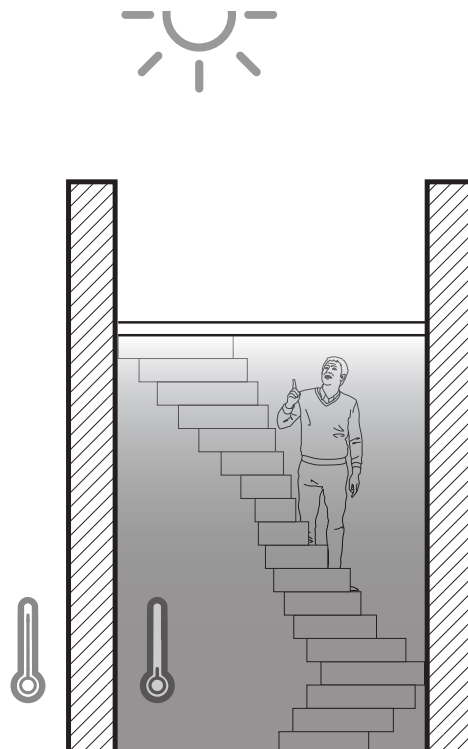


Figure 5. Diagram Goldene Spirale

Sensory Experience

The most outstanding aspect of the *Goldene Spirale* is its continuous succession of the stimulation of senses, both visually and thermoceptively. When one approaches the building, a construct emerges from a plain of nothingness; straight lines standing out from the hills in the background. When the highest point of the building is reached, the descend towards the well starts, moving from a very light and wide environment to a narrow and dark one, while the temperature continues to drop. The succession of visual stimuli repeatedly awakens all the senses does not lead to physical play, but to mental play. A form of play where that is about contemplation, imagination and exploring thoughts.

Keywords: sensory, dynamic, contrast, wonder, refuge

Wooden Chapel // John Pawson

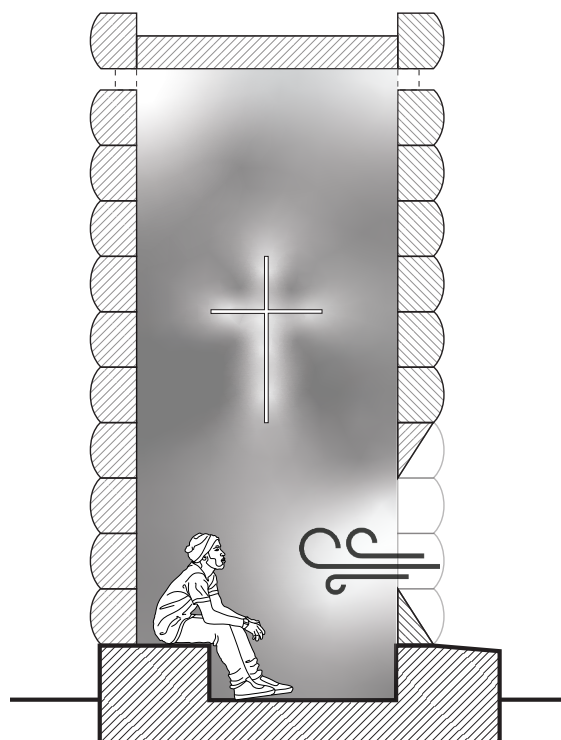


Figure 6. Diagram Wooden Chapel

Sensory Experience

The *Wooden Chapel* does not provide physical play, but mental play provoked through a sensory experience. This journey already starts at the narrow doorway, where a sense of closeness can be experienced, one that is recognisable from being among the trees in the dense forest. Next, a space is entered where the light infiltrates in different ways; a constantly changing visual image. The temperature of this space also stimulates wonder, as through the absence of glazing in the opening, temperature fluctuations and the wind can be felt. Further, even the smell of the sawn trees adds intensity to this sensory experience.

Keywords: sensory, wonder, visual connection, imaginative

***Skyspace* // James Turrell**

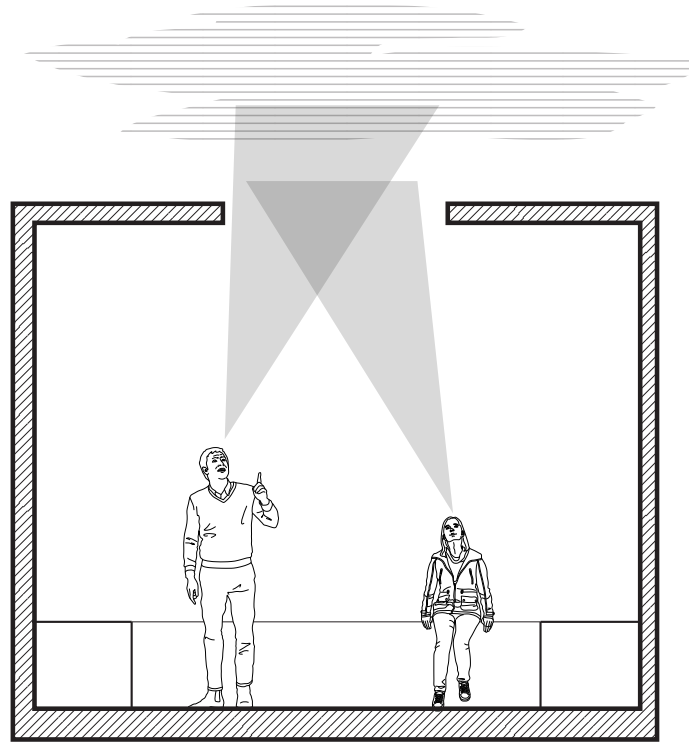


Figure 7. Diagram Skyspace

Visual Connection

The framing of the sky in a further closed room, ensures a strong visual connection with the outside world and makes the space static yet changeable, as the clouds and light continuously alter throughout the day. In *Skyspace*, this ephemerality amazes, provokes wonder encourages thinking, daydreaming and reflection. A moment of peace in which one sits quietly and gazes upwards, but at the same time (mentally) plays; daydreaming while the clouds pass by.

Keywords: visual connection, wonder, dynamic

***Park Vijversburg* // Ishigami + Studio Maks**

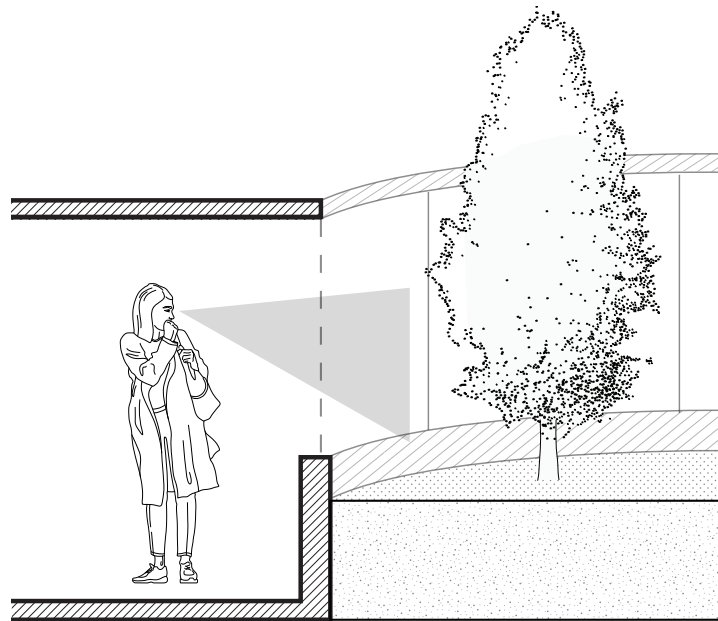


Figure 8. Diagram Park Vijversburg

Visual Connection

The two architects together have ensured that in the experience of their pavilion at *Park Vijversburg*, mental play is provoked through the continuous and undisturbed view of the surrounding nature. By lowering the floor under ground level, the fully glass façades provide an ever changing view on its neighbouring environment; a new perception of nature. Between the feet of the trees, one's view one the world around changes, leading to play of the mind.

Keywords: visual connection, wander, wonder, new perspective

21st Century Museum of Contemporary Art // SANAA

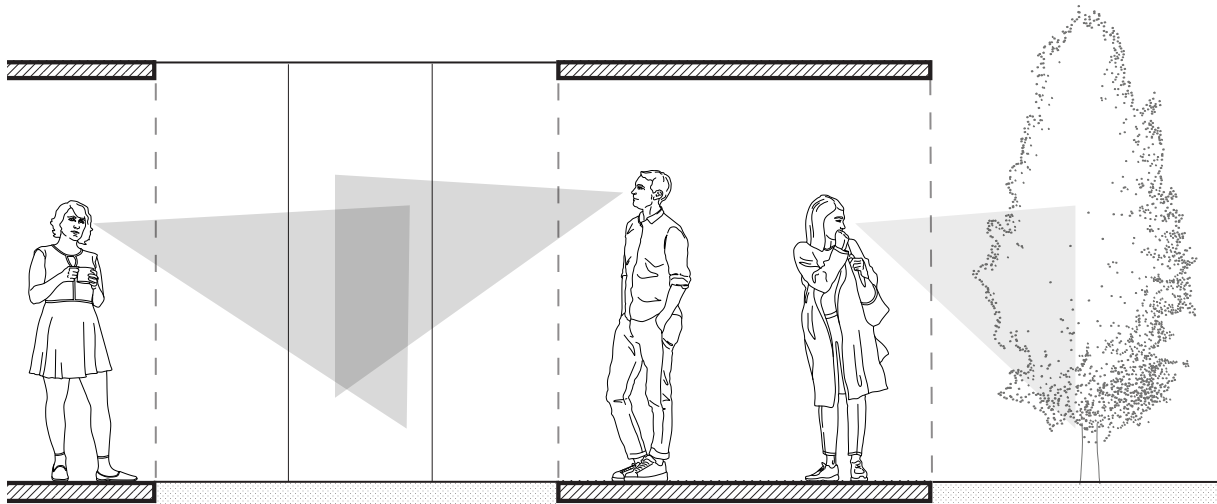


Figure 9. Diagram 21st Century Museum of Contemporary Art

Visual Connection

In the *21st Century Museum* the phenomenon of play is provoked through the experience of wonder. This wonder is caused by the visual connection between the people within the museum (glass courtyards), but also with the people walking past on the outside (glass envelope). The reversible membrane creates awareness among visitors of each other's presences but also possibly leading to new encounters. The glass façades also (visually) connect the surrounding park on the outside to the visitor on the inside and as a result one's imagination is continuously triggered, a form of mental play.

Keywords: visual connection, wonder, interaction, closeness

Parc de la Vilette // Bernard Tschumi

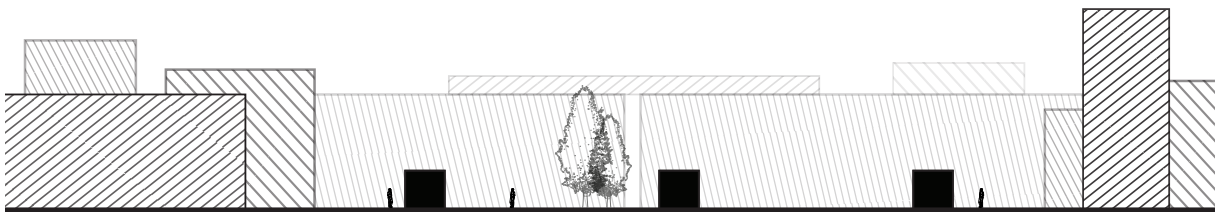


Figure 10. Diagram Parc de la Vilette

Contrast

Parc de la Vilette's strongest asset lies in provoking play through the change in environment: from the dense and narrow city centre of Paris to an open, green field. All of the sudden the visitor is just a small dot in the universe, surrounded by large green plains in which the red follies form the only points of recognition.

This contrast in surroundings brings about a mental change, a trigger for imagination, making one suddenly see other possibilities in this new space and thus play of the mind.

Keywords: contrast, wander, imaginative, affordances

Jantar Mantar Delhi // Maharaja Jai Singh II

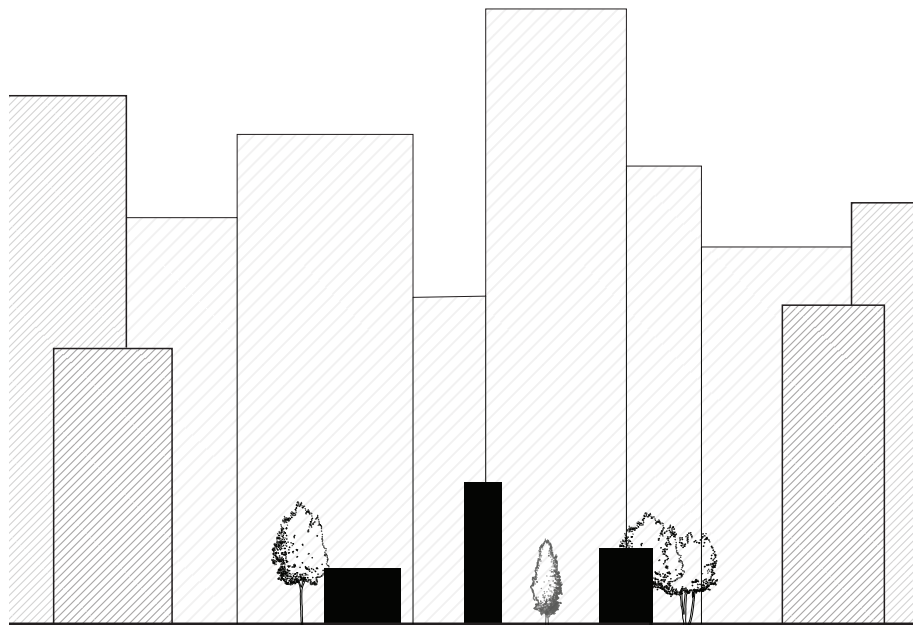


Figure 11. Diagram Jantar Mantar Delhi

Contrast

The most striking aspect of *Jantar Mantar* in Delhi, is the way it contrasts so sharply with its surroundings in terms of layout. The busy, new built-up city suddenly makes way for an oasis of green in which objects are given space to exist. The visitor ‘escapes’ from the busy city and suddenly has space to breathe and relax, making this a refuge for Delhi’s inhabitants. In this state of mind people have the headspace to play again, either through using their imagination, aimlessly wandering over the entire site or actually using the objects to explore movements.

Keywords: contrast, refuge, wander, movement, interpretation

Insel Hombroich // Erwin Heerich

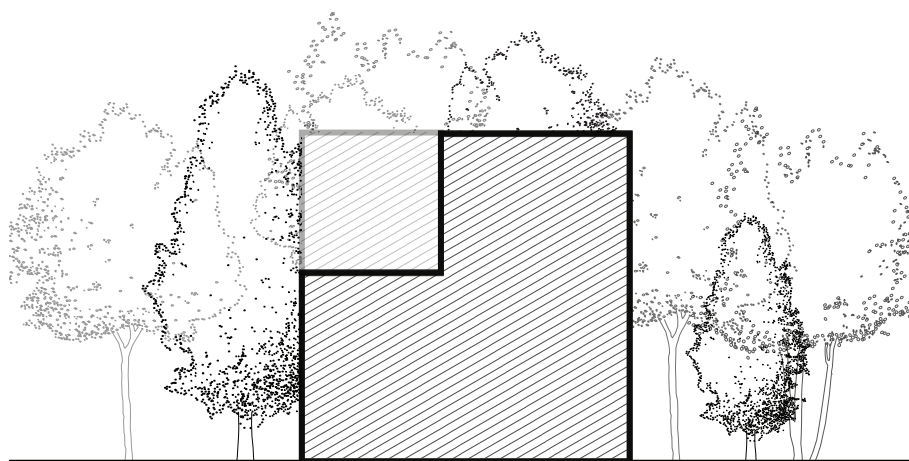


Figure 12. Diagram Insel Hombroich

Contrast

Wonder continuously takes place at the museum of *Insel Hombroich*, in different ways. The most striking form of wonder that is provoked is through the architecture itself, as the numerous pavilions stand in strong contrast to their surroundings; the geometric buildings seem to become autonomous works of art, almost chapels in the green and natural landscape. This wonder by contrast triggers play of the mind, where one's imagination is suddenly allowed to take on an important role.

Keywords: contrast, wander, connection, closeness, sensory

Playgrounds Amsterdam // Aldo van Eyck

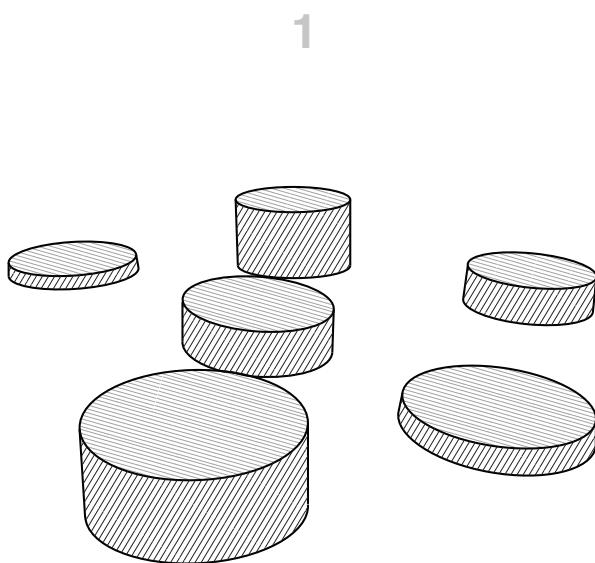


Figure 13. Diagram Playgrounds Amsterdam 1

Imaginative

In contrast to the playgrounds often seen today, Van Eyck's playgrounds were sober in form and material. This, however, was done deliberately, stimulating the children's imagination instead of immediately showing what the object is and how it should be used. Van Eyck's strategy thus provides a form of mental play through the use of imagination.

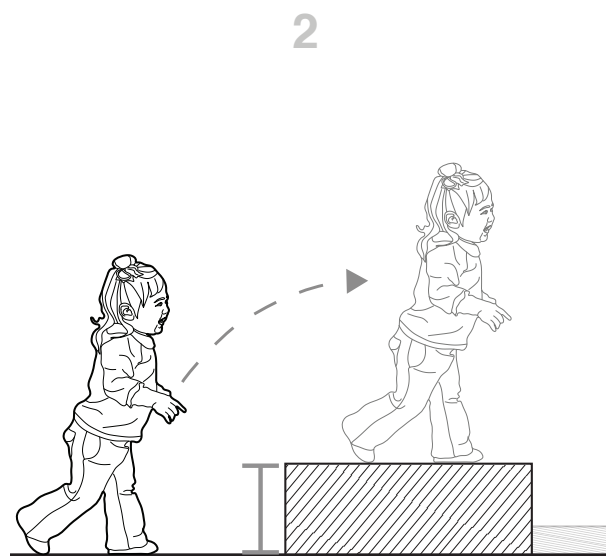


Figure 14. Playgrounds Amsterdam 2

Movement Exploration

Through activating children's imagination, a landscape of affordances is created; a place where many different actions can take place, such as jumping, running and climbing. Childlike dimensions are taken into account here; the objects must of course be usable, leading to the most common type of play, namely physical.

Keywords: imaginative, movement, affordances, interpretation

Negev Monument // Dani Karavan

1

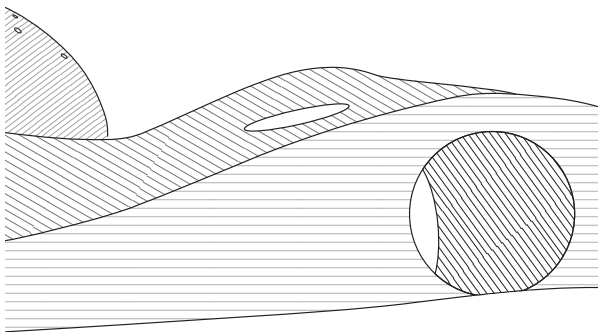


Figure 15. Diagram Negev Monument 1

2

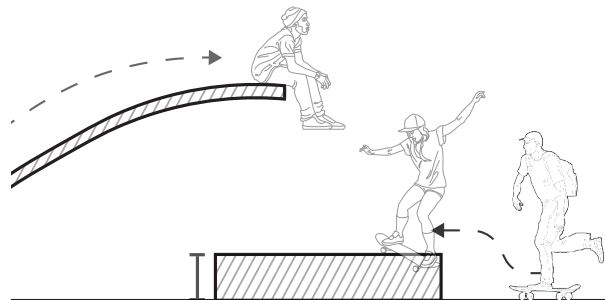


Figure 16. Diagram Negev Monument 2

Imaginative

The geometric shapes of *Negev Monument* concrete create an imaginative landscape atop a hill. The objects are open to interpretation; one can make an assumption about how to use them: run or climb, or just look at them.

Movement Exploration

Hence, first mental play prevails, possibly provoking physical play as a result. The objects are specifically designed to also make use of; the human scale for sitting heights has been taken into account for example, but also the concrete forms emerging from the landscape, creating an easy and inviting access for them to be used.

Keywords: movement, imagination, interpretation, affordances

Jardin d'email // Jean Dubuffet

Figure 17. Diagram Jardin d'email 1

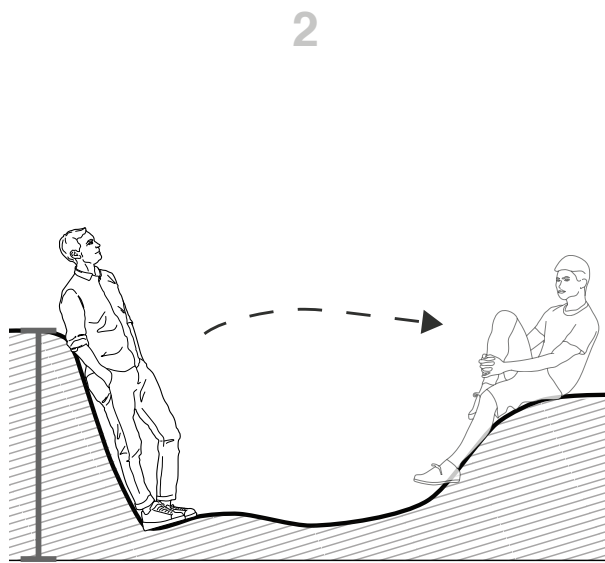


Figure 18. Diagram Jardin d'email 2

Imaginative

Jardin d'email is a gigantic white plain, with black continuous lines and height differences in the middle of the green woods of the Veluwe. A landscape where wonder takes arises due to its imaginative emergence; one discovers different shapes and forms in the abstract landscape that is completely open for one's own interpretation leading to an imaginative state of mind and thus mental play.

Movement Exploration

The physical aspect of play is embodied in the exploration of movements, for which this artwork is a catalyst. Through the mental play that precedes, the visitors discover the possibilities of action, also due to the visible human dimensions implemented, after which physical play may follow, in form of running, jumping, sitting and leaning.

Keywords: imagination, movement, affordances, contrast

The End of Sitting // RAAF

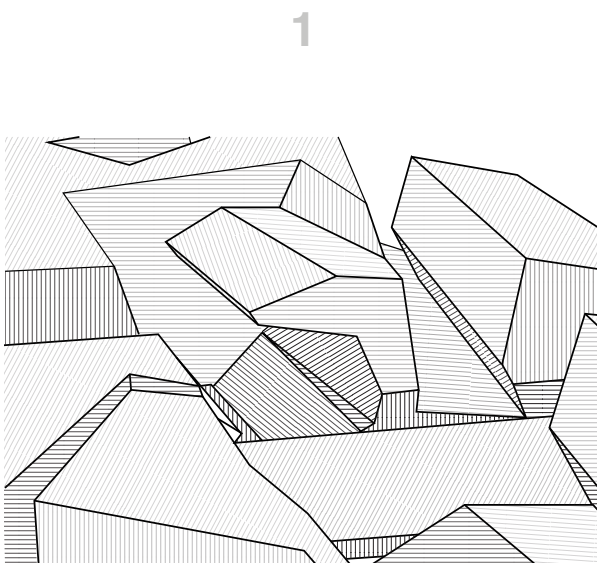


Figure 19. Diagram The End of Sitting 1

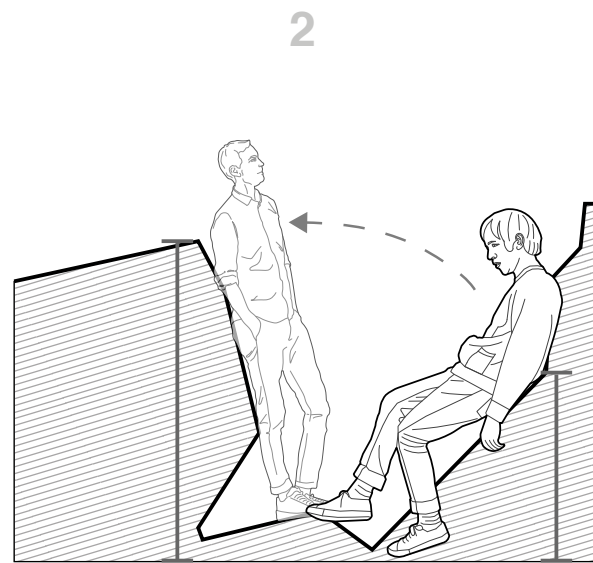


Figure 20. Diagram The End of Sitting 2

Imaginative

The End of Sitting touches upon two different forms of play, namely mental play and physical play. First, one wonders about the landscape that presents itself. The simplicity of the material triggers the imagination, hence the visitor can suddenly imagine how to possibly use certain objects.

Movement Exploration

This activation of the imaginative brain ultimately leads to discovering and trying out different actions and positions. Here, it is crucial to maintain certain human dimensions, such as sitting and leaning heights, so that people can trace the abstract objects back to something they vaguely think they know.

Keywords: imaginative, movement, affordances, interpretation

***Steilneset Memorial* // Peter Zumthor**

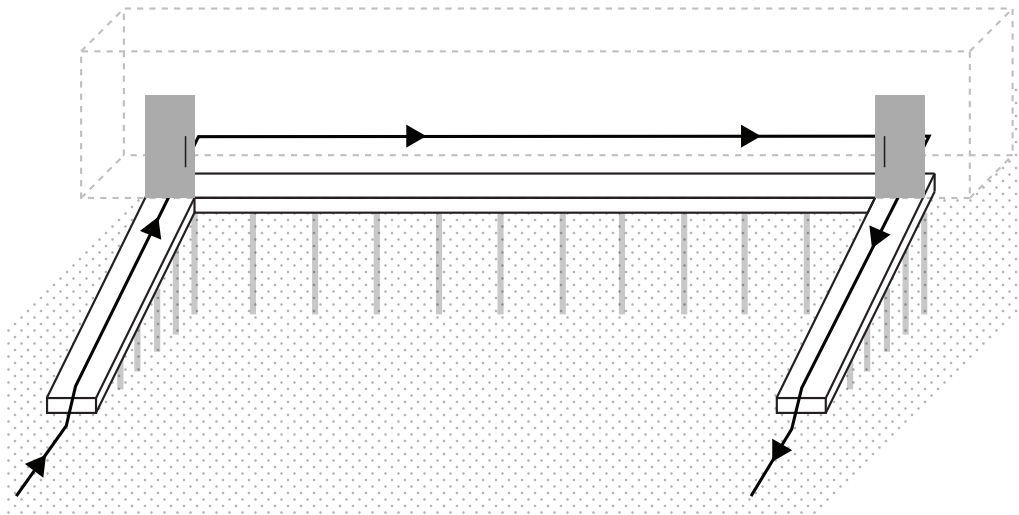


Figure 21. Diagram Steilneset Memorial

Wander

At *Steilneset Memorial*, the visitor is taken on a journey. A journey to show the beauty of nature, but also a journey of introspection to commemorate the victims that were accused of witchcraft. The exploration already begins outside, at the first step up towards the long ramp. Subsequent, a steel door needs to be opened, where one sees an even longer corridor than the one faced outside. With each step, the visitor is invited to contemplate the beauty of nature and victims, through the openings along the way that cause wonder. Wander is thus not only a phenomenon that can only take place on a large scale; this building is proof of that.

Keywords: wander, (visual)connection, closeness, wonder

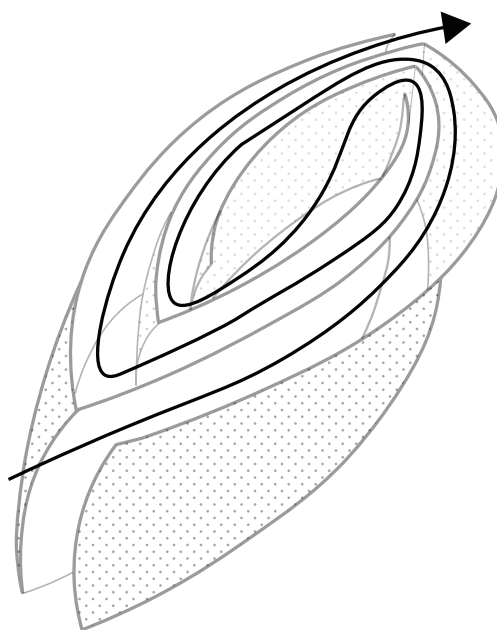
Open Ended // Richard Serra

Figure 22. Diagram Open Ended

Wander

While the visitor wanders through the artwork and step after step enters this completely different world. While walking, the stimulation of the senses induces wonder. Tension builds up through the echo of one's own footsteps, the ever narrowing corridors provoke closeness, when suddenly a wide central space is entered where light fills the space. It is the wandering experience together with the trigger of senses that provoke the act of play in both a mental and physical way.

Keywords: wander, sensory, imagination, contemplation, wonder

Selvika Tourist Route // Reiulf Ramstad Architects

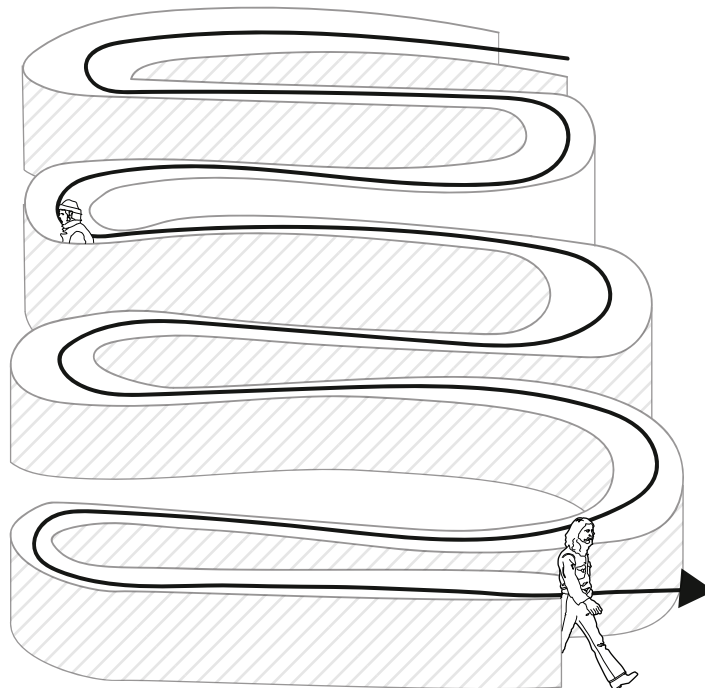


Figure 23. Diagram Selvika Tourist Route

Wander

The journey that the visitor make through this heavy concrete structure from the road to the seaside is the most intriguing aspect of *Selvika National Tourist Route*. Walking through the geometrical shaped and meandering pathway, the journey through the landscape is extended and slowed down. At the same time wonder is provoked, through framing of the vast landscape but also through the implementation of seating as meeting places. This brings about play of thought and imagination during the conscious act of walking, providing a deep experience of the space and surrounding landscape.

Keywords: wander, imagination, interaction, wonder

The Mediated Motion // Olafur Elisasson

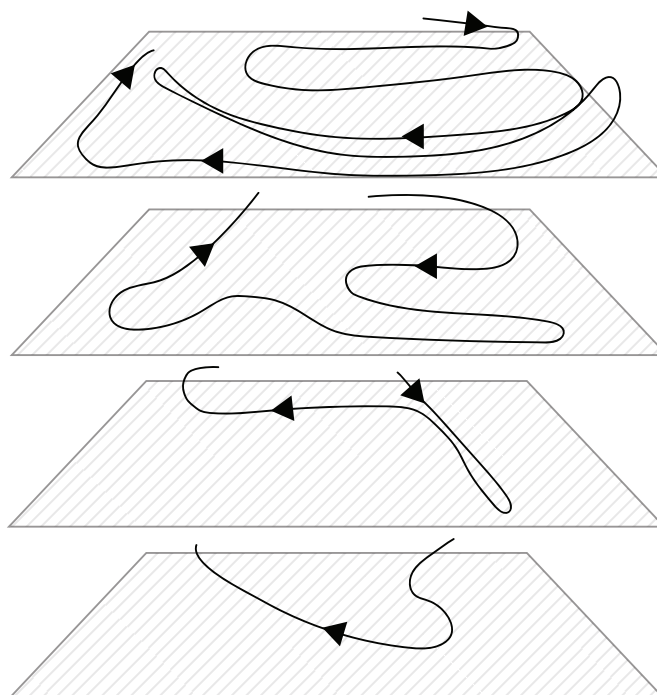


Figure 25. Diagram Mediated Motion

Wander

Inside Kunsthaus Bregenz designed by architect Peter Zumthor, visitors are confronted with ever-changing landscapes in the exhibition *Mediated Motion*. These landscapes are experienced through physically walking through them, not just by looking at them. During the movement, which consists mainly of free routes through space, one is confronted with dynamic landscapes that provoke a strong sensory experience. Hence, the act of mental play arises; people become aware of the space and are conscious of their thoughts and movements.

Keywords: wander, sensory, dynamic, contrast, wonder

IV Results

The characteristics shown in the previous chapter, together form the basis of the main results of this thesis. They are systematically ordered by three different types of play and every characteristic is explained through a general text, followed by presenting in what different ways this is to be found in architecture, with examples from the precedent project.

IV.I Mental Play

According to Huizinga, play is confined to a place; it occurs in a predetermined space that is bounded. This space can be physical, but also imaginary. Mental play is the phenomenon that occurs in this fictional space, which is primarily about the occurrence of wonder: a feeling of great surprise and admiration caused by seeing or experiencing something that is strange and new (Cambridge Dictionary). Here, one lets go of the 'common sense' reality notion and transitions to the world of imagination, that leads to thought experiments that are parallel to the actual experience. The complete focus on an object or activity reduces time- and self-awareness, allowing the use imagination to blossom.

Architecture has the potential to stimulate and provoke mental play in various ways. An architect or designer could use *abstract artefacts*, provide a *sensory experience*, focus on *contrast* and/or a strong *visual connection* as means to evoke wonder.

IV.I.I Abstract Artefacts

Because the concept of play is very extensive, the places in which it appears can look very different from each other. However, the use of abstract artefacts could be universally used as a means to provoke some form of mental play; the simplicity in form and colour triggers the use of imagination. The object itself doesn't show what it exactly is and how it should be used, one has to connect the dots themselves and thus the imaginative part of the human brain is be stimulated.

In architecture, abstract artefacts can be recognised in distinct ways, either as *individual abstract elements* in a certain landscape or, on the contrary, by connecting them to each other. Through these *interconnected abstract elements* an entire new landscape can be constructed.

Individual abstract elements

Separate elements placed in a landscape, that are abstract in form and simple in materialisation. With the presence of these artefacts, new space is created in the space in-between. How the elements relate to each other and the way the space in-between is activated can look very different from place to place.

In the playgrounds of architect Aldo van Eyck (1918–1999) in Amsterdam, the spaces is composed with multiple individual elements (fig.26). In contrast to the playgrounds made today, Van Eyck's playgrounds were sober in form and material. The elements themselves were designed without a designated function; they could be used in different ways and with their simple, abstract forms they stimulated use of the imagination. His designs therefore did not aim to show what they are or how they should be used, they rather suggested what they could be. The create non-hierarchical, non-symmetrical compositions create an entity with a balance between the play elements and the space in-between them. The form was as important as the counter form, because in the empty spaces 'in-between' leave room for interpretation and imagination and therefore, spontaneous games could take place.

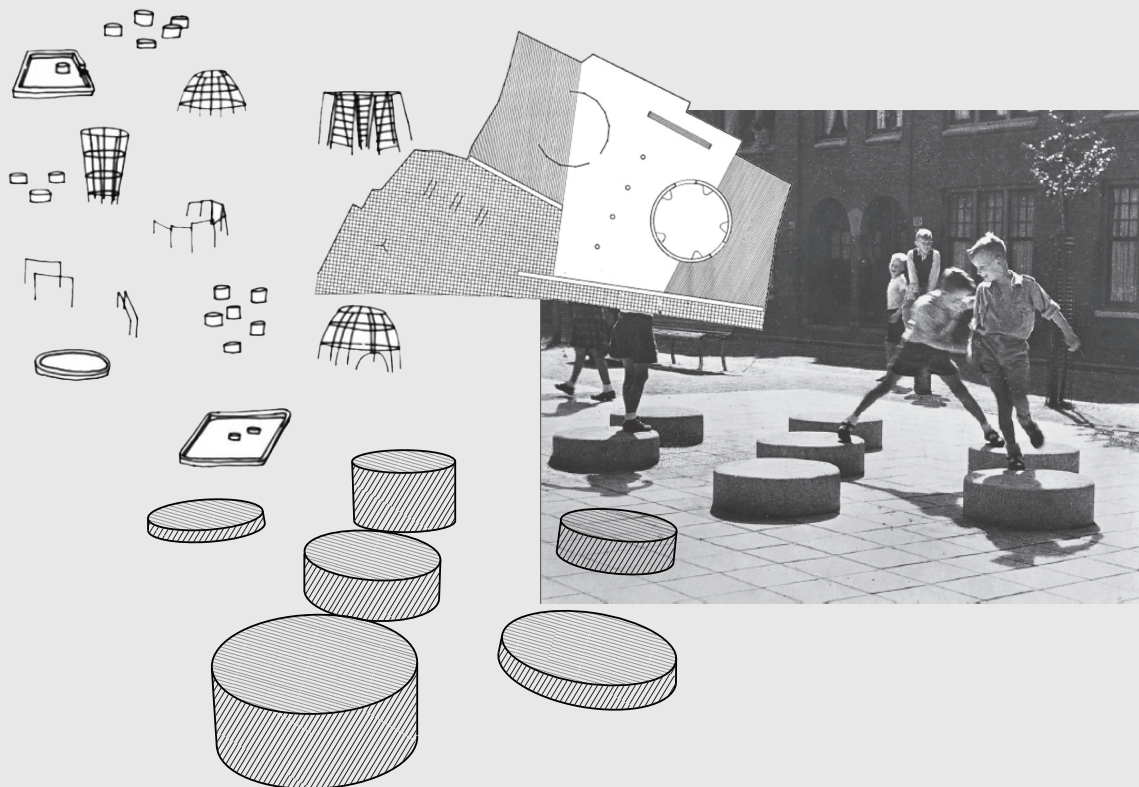


Figure 26. Collage of Aldo van Eyck's abstract elements

Interconnected abstract elements

“It is treacherous to walk there, the white forms and black lines follow independent patterns, thus creating a spatial disorientation. But one can also sit there quietly, in the midst of this entirely ‘other’ environment, in the midst of the white, with green trees in a wide circle around it [...]. It is a garden, which the artist intended for one person, for you, for everyone who wishes to meditate over the relationship between art and nature or simply to be there.” (Oxenaar). Jardin d’email is a space where various abstract objects are linked together to form a new, artificial white landscape with black continuous lines (fig.27). This new landscape is completely open for the visitors own interpretation, hence someone’s imagination can flourish. When one looks at the space for a long time, recognizable shapes automatically emerged: human figures, utensils and landscapes. The Artist, Jean Dubuffet (1901-1985) , called this l’hourloupe, a word he associated with to “hurler” (to roar), to “hululer” (to hoot), to “loup” (wolf), to “Riquet à la Houppe” (a French fairytale) and the book “Le Horla” (inspired by mental aberration) (Foundation Jean Dubuffet).

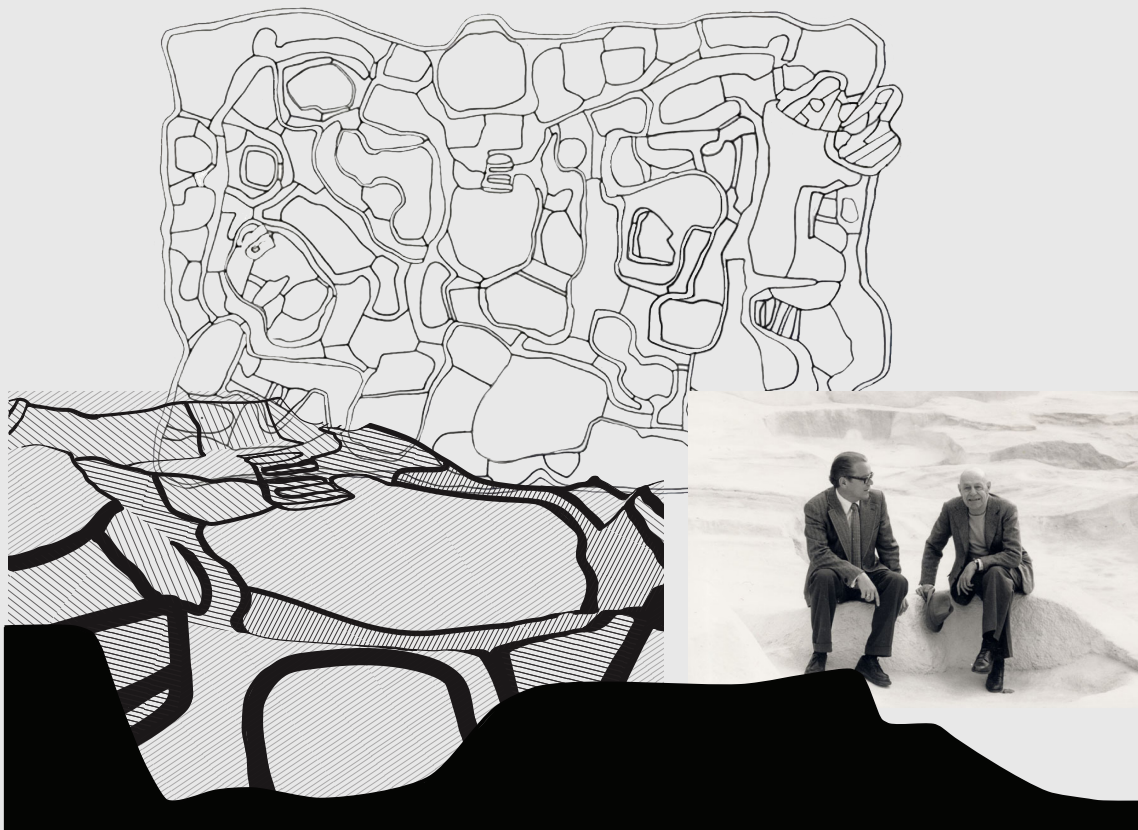


Figure 27. Collage of Jardin d’email landscape of abstraction

IV.I.II Stimulation of Senses

A space is lot more than simply its appearance, more than just the visual experience. Finnish architect Juhani Pallasmaa (1936-) published a book in which he proposes the seven senses of architecture, two mores senses then what is assumed to be common knowledge. Next to sight, hearing, smell touch and taste he added movement and bodily awareness when it comes to the field of architecture. He elaborates on how smell is one of the strongest senses one contains, for its direct link to memory; one can easily recall a place from a particular smell. With touch one is able to feel the texture, weight, density and temperature of surfaces and with sight a human can instantly identify the tactility of a surface, hence they are closely related. Furthermore, Pallasmaa argues that the human body is able to taste the gentle coldness of a delicately polished stone surface with the tongue and with hearing he suggests the idea that tranquillity is the key experience of architecture. The sense of bodily awareness links to the fact that human bodies react to their surroundings genuinely, for example one's natural ability to measure the steps we take before climbing a staircase or feel spaciousness within when walking through an infinite park. This is all about bodily identification in architecture, which involves self-consciousness and awareness of a person within a space. Last, the sense of movement, which is felt by architects unconsciously within their skeleton, muscular system and inner organs through balance, distance and scale (Pallasmaa).

It is clear that through architecture a *sensory experience* can be constructed, that stimulates one or more senses. With this stimulation, one become more aware of the self and its surroundings which leads to a play of thought through the act of wonder.

Sensory Experience

There are an infinite number of ways to awaken senses through architecture. A number of possible options are to be found in two of the projects investigated. Firstly, the Goldene Spirale by Hannsjörg Voth (1940 -); a large, spiralling building on a desert plain. Here the senses are stimulated to intensify the experience towards the 'sacred boat' at the bottom of a well. One first walks on top the building towards the highest point, after which one starts to descend to this deep well. The visitor makes its way from a very bright, sunny and wide surroundings towards a dark and narrow place where the soft glistening of the water at the bottom is to be experienced. Apart from the visual stimulation, one is triggered thermoceptively. The extreme heat of the plain outside makes way for a continuously dropping temperature on the inside of the building. Also one of Pallasmaa's added senses occurs: the shift from vast landscape, in which spaciousness is to be experienced, to a very narrow staircase provokes bodily awareness. John Pawson's (1949 -) Wooden Chapel triggers a variety in sense's in its own way. The sensory experience already starts at the narrow doorway where one can experience a sense of closeness, recognizable from being among trees in the dense forest, that enhances bodily awareness. Subsequent, one arrives in the interior space where light enters in different ways: soft light through the small slit between the wall and the roof, coloured light through the amber glass of which the cross is made, and harsh light through the rather large and single opening in the façade. This provides a constantly changing image for visitor and is visually challenged. Furthermore, elements of nature like wind, rain and temperature fluctuations, can be experienced in this space, due to the absence of glazing and doors and the use of sawn wood gives an stimulation in tactility, smell and perhaps even taste. All together contributing to evoke the act of mental play.

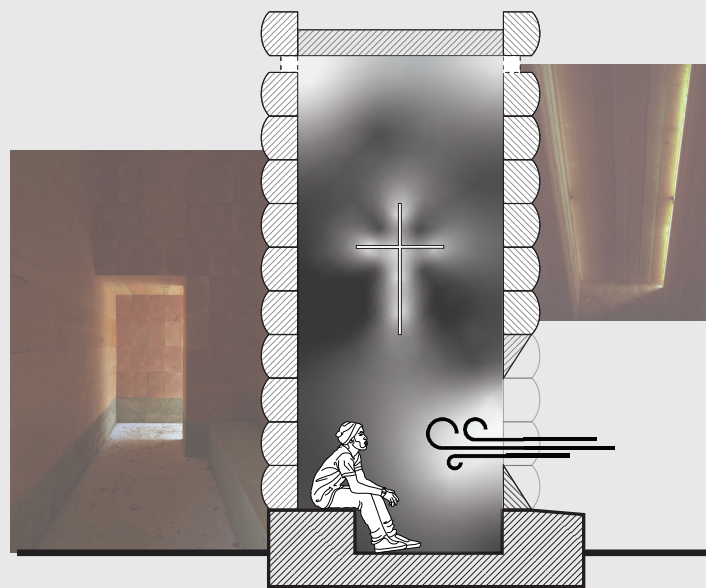


Figure 28. Collage of the wooden chapel

IV.I.III Visual Connection

A strong visual connection nourishes mental play. Glass has the quality of softening the border between two different sides, often an inside and outside area, so that a connection between the both can arise. This visual connection can provoke the act of mental play through wonder. It is noticeable that often the natural landscape is where a strong visual connection is made with; its dynamics astonish, making people pause for a moment to look and reflect.

In architecture, a dialogue between these two sides can be established through a *framed view*, with the focus on one particular object or landscape, through a *continuous view*, where one keeps a continuous visual connection with the outside world, and through *two-sided visibility*, where a visual connection from both sides, through glass, is maintained.

Framed View

A *framed view* within a space can be a real eye-catcher. The visual relationship with what the architect considers important is inescapable. In the work Skyspace by James Turell (1943-) the sky is clearly framed, immediately catching the visitors gaze. The space is static but unpredictable; the ephemerality results in wonder, encourages thinking and reflecting. A moment of hiatus in which one observes quietly, but at the same time (mentally) plays; daydreaming while the clouds pass by, providing a different artwork every second.

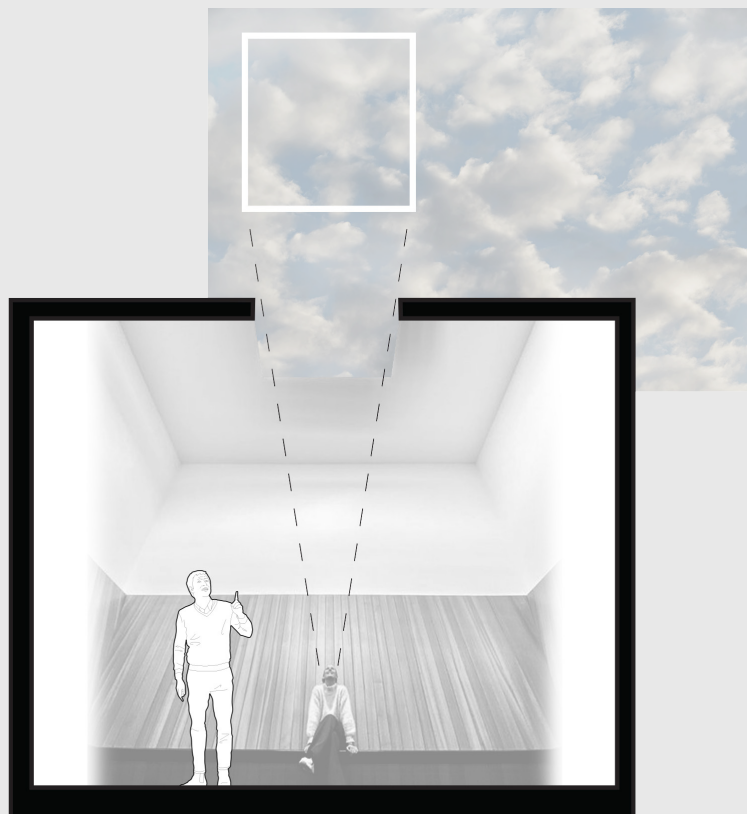


Figure 29. Framed view of Skyspace

Continuous View

Provoking play in a space can be established through creating a meaningful relationship with nature, or any other surroundings. Here, a continuous visual connection with this environment can generate a consciousness of the moment that leads to thought experiments. This can be seen at the extension of a old monumental building at Park Vijversburg, designed by Junya Ishigami + associates and Studio Maks, where the connection with nature is the main objective. The continuous and distorted visual connection with the surrounding nature allows careful observing and an intimate experience of nature, which is even more emphasized by the use of structural glass. Hence, there is no need for columns or closed walls, which creates an undisturbed view for the visitor and wonder can arise, which will ensure mental play.

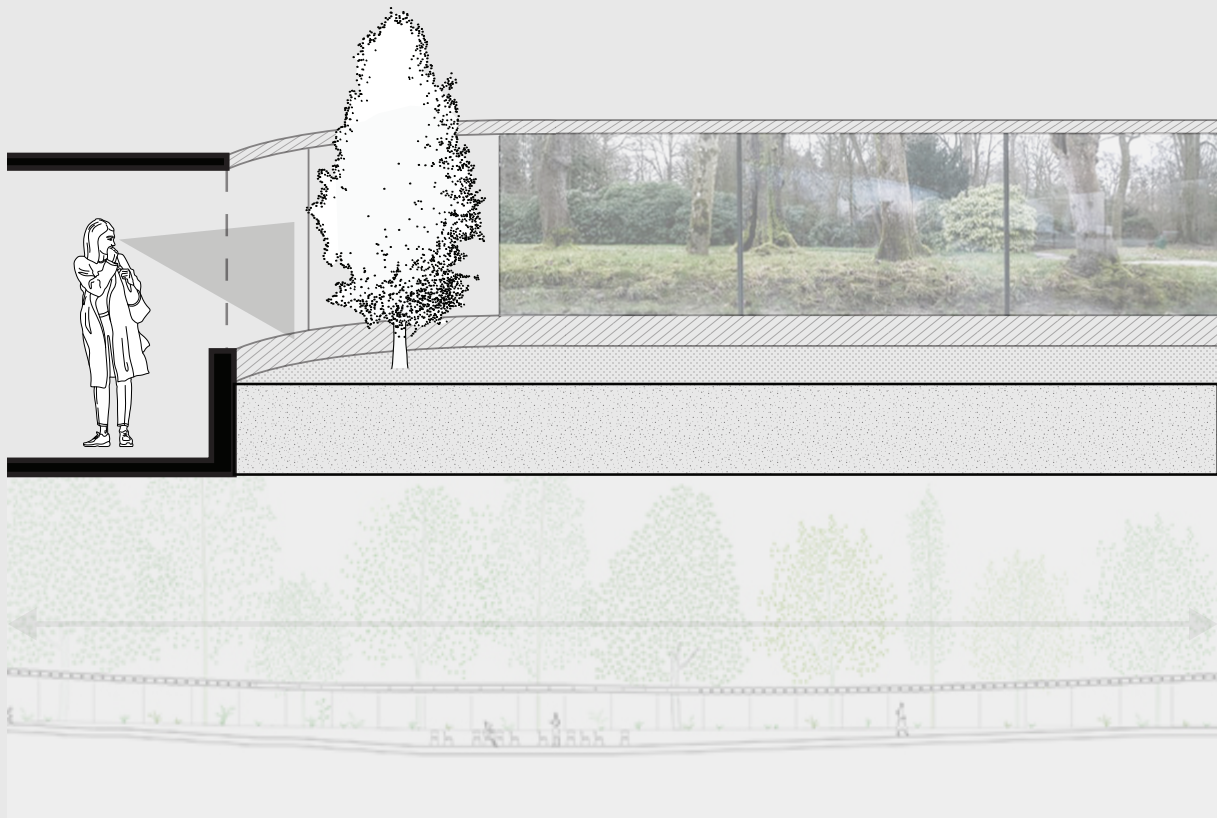


Figure 30. Continuous view within Park Vijversburg

Continuous View

Glass could be perceived as a reversible membrane, through which people can sense each other's presence. Through this consciousness and interaction, amazement arises which invites mental play is stimulated. The 21st Century Museum of Contemporary art by Japanese architecture firm SANAA uses glass to not only connect its visitors visually to the surrounding park, but also to each other. Through the fully glazed courtyards the visitors inside can observe each other, as well as the passer-by on the outside of the building. This not only stimulates encounter and interaction, but also an awareness among visitors of each other's presence, with the aim to revitalize the community through architecture.



Figure 31. The reversible membrane of the 21st century museum in Kanazawa

IV.I.IV Contrast

Since time immemorial, contrast has been a crucial aspect in architecture: a distinct difference between, at least, two elements within a composition. The more difference between these two elements, the more easy they are to compare and comprehend. Today, architecture often contains multiple layers, dimensions even; a surface-level simplicity that gets more and more complex upon further inspection. Throughout architectural history, many architects have worked with this principle, Swiss-French architect Le Corbusier (1887-1965) for example. He thought the contrast between large collective spaces and smaller individual spaces was important, but also the classical proportion opposed to Renaissance architecture and geometrical forms in the architectural design in contrast to its surrounding landscape (Nirman, 2016).

Within architecture and the built environment, contrasts can be experienced in different ways. Often it is explained as something purely visually, but it most definitely also has a sensitive component. When a place contains a strong *contrast with its surrounding area* on a large scale, a shift in thinking can be established and a difference in perceiving things. However contrast can also exist on a much smaller scale, a building in *contrast with its direct environment* due to a distinction in form or material. Contrast leads to the world of wonder, where imagination can be set free and mental play flourish.

Contrast with surrounding area

Play is a phenomenon that takes place temporarily, in a certain place. However the journey towards this place can already cause a change in one's mental state. When one move from the city to nature; we step into another environment, a sort of second reality; the reality of our dreams, imagination, hopes and history (Barrie, 2010). This is what happens when one moves from the dense urban city centre of Paris and enter the Parc de la Villette by architect Bernard Tschumi (1944-), where all of the sudden Buildings make way for open fields and gardens in which Follies are placed; the surrounding city is no longer recognizable. This contrast brings about a mental change, making one suddenly see other possibilities in the space, stimulating mental play and the imaginative mind.

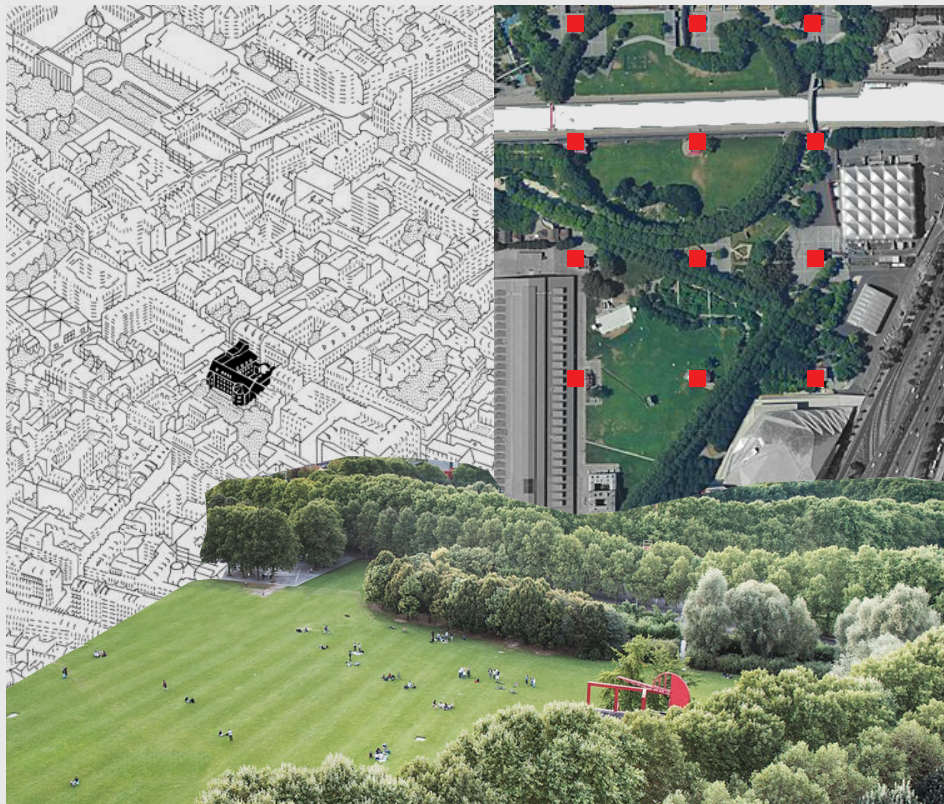


Figure 32. Contrast between the highly dense city centre of Paris and the green Parc de la Villette

Contrast with direct environment

On the scale of the building and its direct environment, contrast creates a certain tension, which can result in mental play. At Insel Hombroich this tension could be observed between the pavilions and their neighbouring natural setting. The geometric buildings seem to become autonomous works of art, almost chapels in the landscape, and really standing out. The phenomenon of wonder is triggered; one's imagination is suddenly allowed to take on an important role. Not only does their shape create a clear distinction, also the materials used hold contrast as brick, glass and concrete are common to be found. All of these contrast lead to wonder, and wonder provokes mental play.



Figure 33. Turm pavillion; a square brick building that stands in contrast to the surrounding nature

IV.II Physical play

Unlike mental play, physical play is about moving the human body itself through movements; it gets a visible expression in reality. For this type of play one can be moving by itself, with big movements like running and jumping or small movements such as picking up a pen, but surely also be moving with artefacts within the built environment. Literally physically engaging with the world around us.

IV.II.I Human scale

Physical play is the all-encompassing term to capture various movement explorations. However, this movement exploration does not come about before there is some form of mental play. One must be able to make a certain assumption how to use a certain object, which can be done in a split second. Here, memory is a very powerful means to decide what to do, a recognisable situation occurs again through which one knows how to interact with the object, as it happened before. The other possibility is the occurrence of mental play, where one can make an assumption through the use of imagination on how to possibly use the object. This is where the theory of affordances comes in. Affordances are possibilities for action provided to a human being by its environment, which could be surfaces, substances, artefacts or even other living creatures (Gibson, 1979/1986). By thoroughly examining the artefacts that have been presented, ideas for a possible physical action or sequence of physical actions can arise.

Architecture can aim to provoke a certain action through a specific design of objects or a series of objects. Here, a distinction can be made between separate elements in the landscape, as to be found in architect Aldo van Eyck's playgrounds, or this can be a new landscape where objects are interconnected. Though, what these two differing designs have in common, is the fact that they both utilise the human dimension when creating the elements resulting in the *human scale in separate elements* or *human scale in landscape of interconnected elements* in order to provoke movement exploration.

Human scale in separate elements

To ensure that people make use of the elements in the landscape, it is very important to maintain a human scale within the design of objects. For example, if a chair is three times as high as a normal chair it would be difficult to (easily) use. However, before an element is eventually use, a form of mental play takes, as seen at the playgrounds of Aldo van Eyck in Amsterdam (*IVI abstract artefacts*). Here, mental play is triggered by the use of abstract elements; Van Eyck's playgrounds were sober in form and material. By activating imagination a range of possibilities for use is suddenly to be seen. This phenomenon lowers the mental threshold to eventually physically interact with the object. By taking this idea as a starting point plus giving the autonomous objects children's dimension, Van Eyck triggered through his design the exploration of different movements such as running, jumping, climbing and hanging.

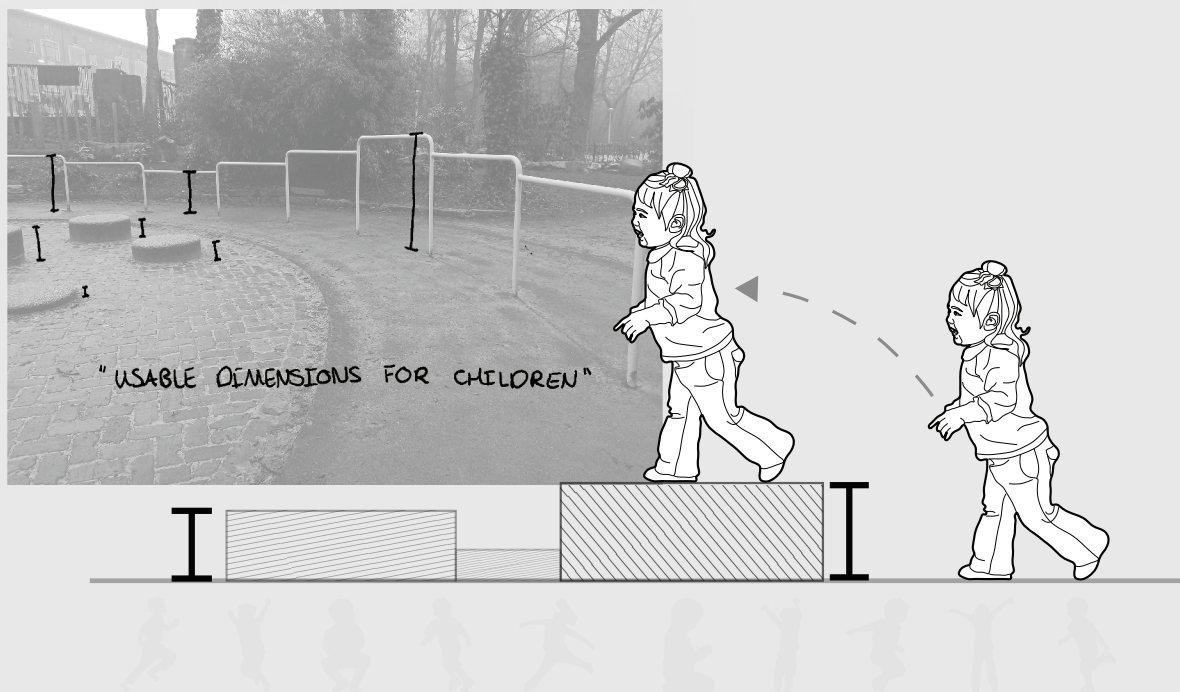


Figure 34. Children's dimensions implemented in the playgrounds of Aldo van Eyck

Human scale in landscape of interconnected elements

The same phenomenon can take place when the elements are not standing separately in a landscape, but interconnected; constructing a completely new landscape of opportunities. In artist Jean Dubuffet's artwork *Jardin d'email*, this is to be experienced. Through the abstract forms (*IVI abstract artefacts*) one can suddenly imagine a whole new landscape of affordances. Through the incorporation of the human scale in the design as a whole, the mental threshold is lowered that invites visitors to physically interact with what is built; it allows different action, like running, jumping and sitting.

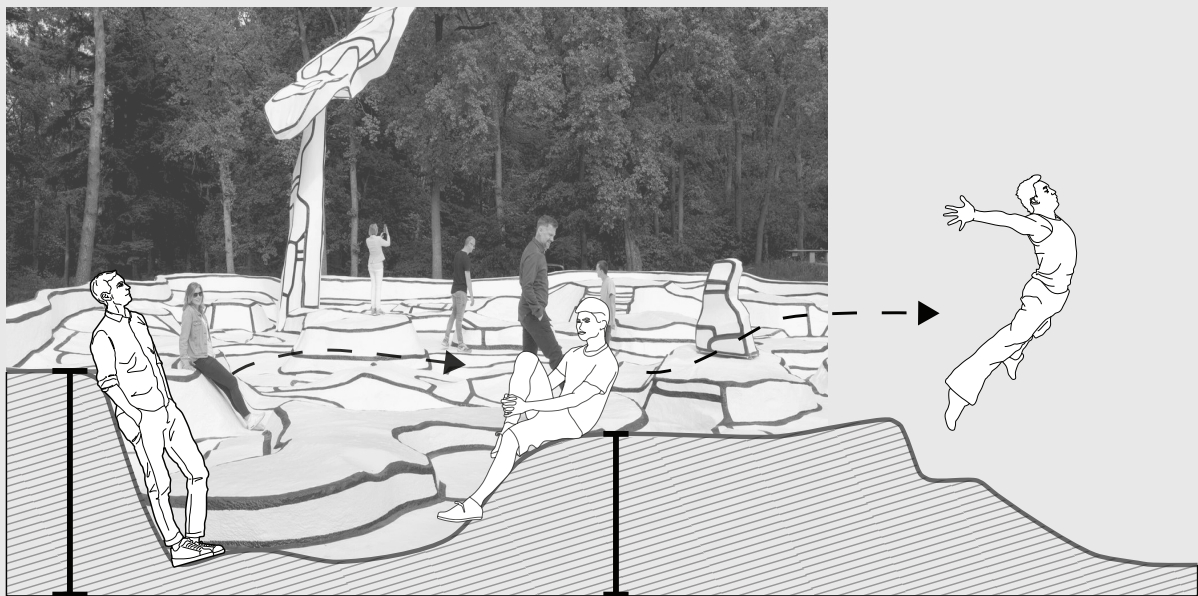


Figure 35. Collage of Jardin d'email landscape of abstraction

IV.III Mental/Physical play

I wandered lonely as a cloud
That floats on high o'er vales and hills,
When all at once I saw a crowd,
A host, of golden daffodils;
Beside the lake, beneath the trees,
Fluttering and dancing in the breeze.

Continuous as the stars that shine
And twinkle on the milky way,
They stretched in never-ending line
Along the margin of a bay:
Ten thousand saw I at a glance,
Tossing their heads in sprightly dance.

The waves beside them danced; but they
Out-did the sparkling waves in glee:
A poet could not but be gay,
In such a jocund company:
I gazed—and gazed—but little thought
What wealth the show to me had brought:

For oft, when on my couch I lie
In vacant or in pensive mood,
They flash upon that inward eye
Which is the bliss of solitude;
And then my heart with pleasure fills,
And dances with the daffodils.

Andrew Wordworth (2015)

IV.III.I Wander

Wander, a combination between mental play and physical play; to walk around slowly in a relaxed way or without any clear purpose or direction (Cambridge dictionary). Movement of the human body without a purpose in itself and step after step entering this imaginative state of mind. Letting the body, as well as the eye wander. Northern renaissance artist Karel van Mander (1548-1606) elaborated on this occurrence in his didactic poem *Den grondt der edel vry schilder-const* (The Foundation of the Noble Art of Painting). He expresses how a painter, by means of a specific staging, should provide a composition that would make the eye wander. This wandering generates a certain attraction that makes the viewer perceive in a different way and it is exactly this shift in perception that causes a form of mental play (Ronner, 2013). Moving and observing, learning to look through different eyes and hence, establish a strong relationship with a place.

Wander does not have to take place outside, in vast nature, ; it can also arise on a much smaller scale, namely at building level. In architecture a distinction can be made between wandering along a created, fixed route (*guided route*), or completely freely through a space (*free route*).

Guided route

A fixed, stagnant route that an architect or artist has mapped out can provoke wander. Because it is set, people cannot move through the space any faster than this route allows; a second can be stretched into minutes here. Through this manner an event can be deepened, slowing down the act of movement and hence a means to refocus one's experimental mode. This phenomenon takes place at Steilneset Memorial by Peter Zumthor(1943-). Here, the route has been constructed to commemorate of the 91 people that were accused of witchcraft and executed in this exact location. A 120 meter long building is constructed that involves movement and sensations along the way. The journey already begins at the first step up towards the ramp on the outside of the building and subsequent enters an incredibly long corridor . As one moves forward (physical), people can be astounded by each one of the small windows (mental), that represents one of the people executed, where a single light bulb is hung from the inside of the window to illuminate, accompanied by a plaque that tells the story of each individual. While moving, the thoughts of the visitors are all over the place. One can reflect, but also fully absorb the beauty of the surrounding nature or commemorate the deceased; the essence of wander.

On a much smaller scale, only 7 metres wide and 18 metres long, the phenomenon of wander takes place when the visitor is guided through the sculpture of Richard Serra (1939-). Six corten steel plates together form a labyrinth that should be experienced by walking through it. Wonder arises through the contrasts within the sculpture; it is heavy yet elegant, industrial but organic, hollow and round, majestic and playful, whilst the narrow passages that follow the curves and abruptly end in a sharp bends. One's footsteps echo through the space as tension rises and play of thought prevails.

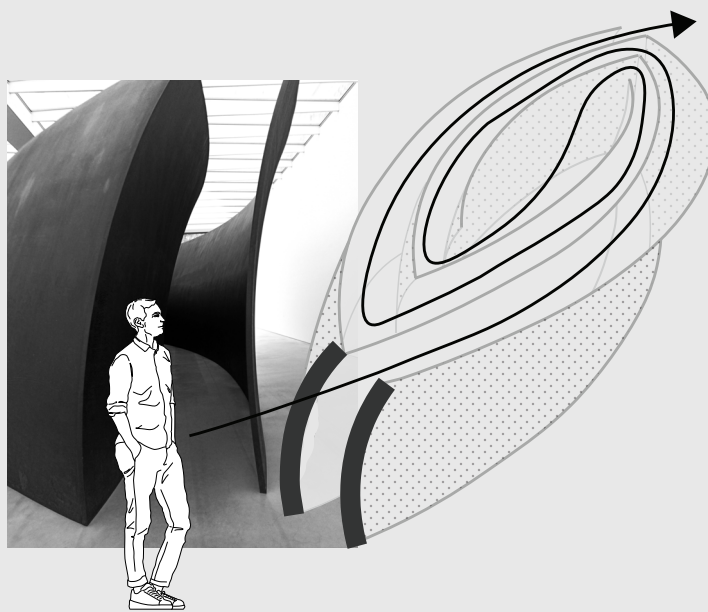


Figure 36. Collage of Jardin d'email landscape of abstraction

Free route

Many associate the concept of wander with a free route. This could be outside in nature, but also on the scale of a building or even a sequence of spaces; the only condition is that there is a sense of wonder while moving through a space. Icelandic-Danish artist Olafur Eliasson (1967-) created a free wandering route through different landscapes over multiple floors, for his exhibition Mediated Motion. To be found was a room full of fog, floating duckweed in water pontoons, wooden logs with sprouting shiitake mushrooms and compressed soils in another space. Whilst experiencing these spaces, visitors are confronted by a diversity of sensory experiences, like smell, textures and sights, provoking wonder whilst moving freely through the spaces.

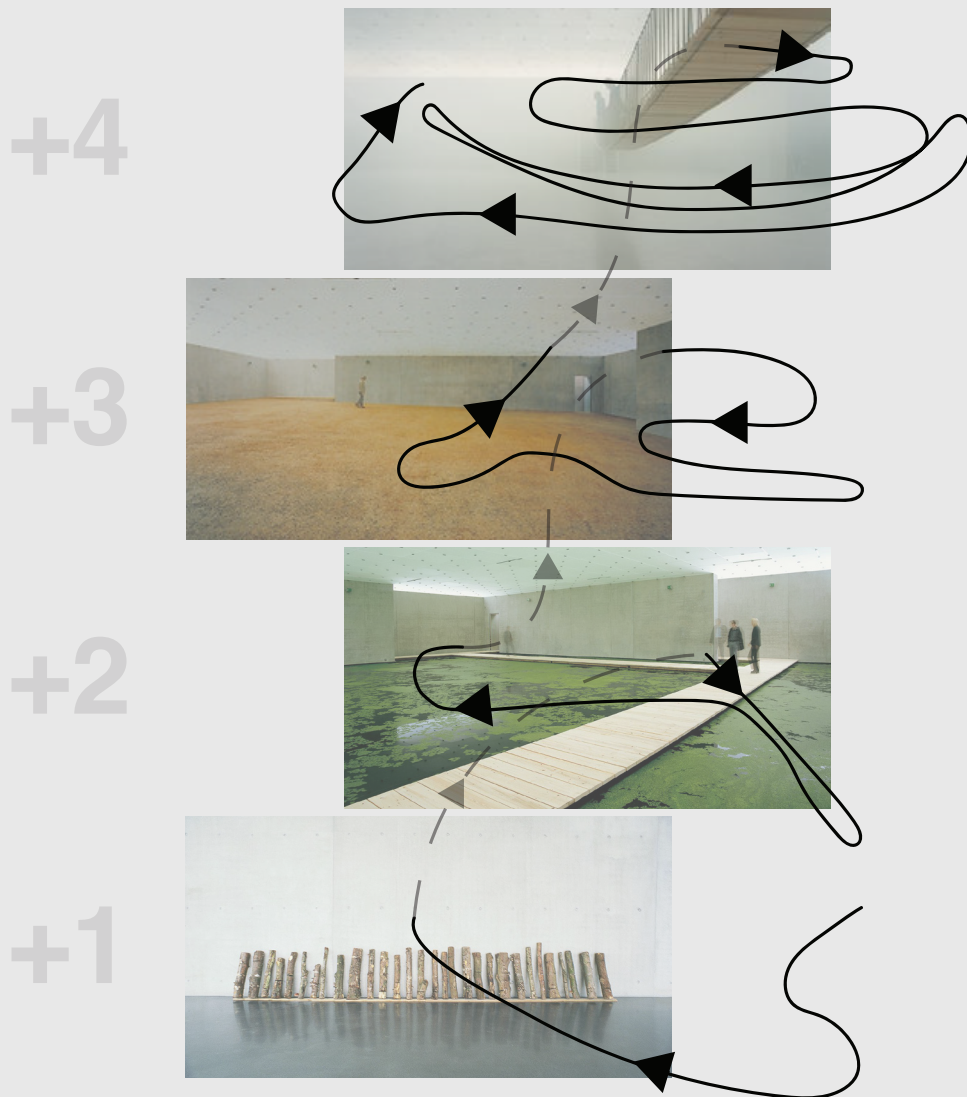


Figure 37. Collage of Jardin d'émail landscape of abstraction

V Conclusion and Discussion

Architecture can be used as a means to construct spaces for people to perform the act of play in. Even though play has difficulties finding its way to coexist with phenomena like individualism and competitiveness in the 21st century, there are still some places where play arises, even for a short moment in time. Yet, the question arises what the characteristics in architecture are of these particular places. This thesis presents six different characteristics of spaces together with examples in architecture of places that exist today, that can be traced back to three different forms of play.

In the first characteristic *abstract artefacts*, it was addressed how simplicity in form, colour and material triggers the use of imagination, followed by *stimulation of senses* in which was explained how the activation of different senses leads to wonder which evokes a play of thought. Further, wonder could emerge through a strong *visual connection* between a person and its surroundings but also through *contrast*, either between difference in density on a large scale or a smaller scale building to its direct environment. Additionally, in places where movement exploration occurs, a physical manifestation of play, the use of *human scale* in the design of the artefact is most important. Finally, *wander* shows how a certain routing together with wonder has an influence on play.

These architectural characteristics may appear in different ways, as seen in the study of the precedent projects. For example, *wander* can be designed by constructing a fixed route, but also a free route. Or *visual connection* that can be established through the clear framing of an object or landscape, a continuous visual relationship or a two-sided visual connection. Each of these means contribute to the provocation of play in their own way, hence it is impossible to create hierarchy between all of these characteristics and propose them in order of importance.

However, the conclusion is multi-layered. During the research on architectural characteristics that would provoke play, a distinction between three different forms of play appeared, namely mental play, physical play, and mental/physical play. In the act of mental play one lets go of the common sense reality notion and transitions to a world of wonder which can lead to thought experiments that form a parallel to the actual

The complete focus on an object or activity that occurs, reduces time- and self-awareness, allowing imagination to blossom. Contradictory, physical play is about moving the human body itself through physical movements; it gets a visible expression in reality. An important thing to notice is that there is a causal link between the two aforementioned forms of play. By the use of imagination through *abstract artefacts*, a determination is made whether and how a certain object can be used. This could then lead to the physical use of an object, physical play, through the use of the human scale in this object. Furthermore, there is a mix between the two preceding types of play; mental/physical play results in the act of wander. Walking around slowly, in a relaxed way without any clear purpose or direction and entering an imaginative state of mind. Letting both the eye and the body wander. These different types of play that were established create a framework for the various characteristics to be organised in which results in a better comprehension of the concept of play in architecture.

The provided characteristics with their examples in architecture can be seen as recommendations for those working in the field of design regarding architecture and the built environment. Although it is not possible to rank them in order of importance, it is attainable to draw lessons from them in their implementation in architectural projects. First of all, it is important to state that mixing and implementing as many features as possible does guarantee the provocation of the act of play. As seen in *Skyspace* by James Turrell only one characteristic, *visual connection*, was implemented through a framed view, which, according to its visitors, successfully causes mental play by the wonder triggered in this room. Furthermore, different characteristics and their possible implementations in architecture may contradict each other or clash with their application in relation to a program of requirements. Take for example the characteristic *sensory experience*: in the architectural execution of this aspect climatological factors are often embraced in the design of a space, through for example by the absence of glazing in window frames or different forms of light penetration, as seen in the Wooden Chapel by John Pawson (IV.I.II Sensory experience). Although there most certainly are buildings

where this is an appropriate means to implement as a designer to evoke the act of (mental) play, it would become more difficult when dealing with the program of, for instance, a school. Here, a comfortable room temperature is desirable for optimal concentration. Or take a museum, where vulnerable works of art must be protected from any form of climatic impact in order to prevent degradation. This could result in the implementation of strong thresholds in order to keep the sun, wind and rain out, which may, however, have implications for a visual connection. At the museum of Insel Hombroich in Germany, one of the projects examined, the art was deliberately exposed to climatic conditions as it was the philosophy of the place itself: merge art, architecture and nature into one continuous experience. Within the spaces the temperature fluctuations of the outside are to be experienced, light penetrates in order to maintain a visual connection to its surroundings and doors are often left open. It shows how different characteristics and their architectural translations relate to the philosophy, function and program of a building and how they always need to be applied with sensitivity and thought. In addition, the application of the proposed tools may not always be possible in existing or monumental buildings. For example, it may be desirable to maintain a strong visual connection with the environment, but a careful examination will be required to determine whether it is possible to implement a continuous view, as these buildings often allow minimal modification. Here it might be more appropriate to use a framed view as a means for mental play or to focus on the realization of another characteristic that provides the same form of play, for example contrast. Furthermore, the architect often has little to no influence on the design location, though it can be of great importance in the opportunity for the act of play to arise. The characteristic *contrast* can namely already be established when moving from a highly urban area to a vast natural landscape and a strong visual connection to nature can trigger an individual. Finally, before physical play takes on a visual manifestation, mental play precedes; one imagines how an abstract element can be used and then does so. However, in between these two steps the mental threshold one holds for the physical

interaction with architecture is of crucial significance and something over which the architect has no control, as it is based on memory and culture. For example, in the present-day Netherlands there is a taboo on playing for adults, as it is seen as an act for children and something that belongs in a playground. An architect can therefore design something with a form that invites usage, but this high mental threshold is difficult to overcome or alter.

In the close study of a series of precedent projects, an attempt was made to provide a representation as complete as possible of the most important characteristics in architecture that provoke the act of play, in any way shape or form. Although a fairly large number of projects with very distinct appearance and scale have been investigated, the characteristics found are not entirely fixed for various reasons. In the research 16 projects were analysed, yet it may be possible that with a larger number of projects new architectural means arise or maybe even additional characteristics arise. The higher the number of projects, the more convincing the established principles become. Furthermore, the method used is reproducible, the different steps undertaken in the research can be carried out in the same way by another person, but subjective. Selecting the projects and deriving conclusions of each of them is based on personal interpretation and prior knowledge. If the same study is carried out by someone else, they will most likely choose different projects and possibly draw different conclusions. Therefore, the list of different principles may be extended or reduced by another person. However, it is likely that these will still have some common ground with the principles stated in this thesis.

In a follow-up study, these characteristics could also be further investigated by carrying out research at the sites themselves. Here, guests could be interviewed and observed, allowing one to see with one's own eyes whether play is indeed taking place for the people present. Furthermore, a possible follow-up study could focus on the specific role that nature plays within places where play arises. It is striking that many of the precedent projects enter into a strong relationship with nature, which

raises the question of whether more play indeed arises here or whether a preference on the part of the author is interwoven. It could therefore be investigated whether the same characteristics can be found in a highly urban environment that has little or no nature around it.

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VI.II Figures

Figure 1. Nieuwenhuys, C. (1971). *Gezicht op New Babylonische sectoren* [watercolour and pencil on photomontage]. Het Kunstmuseum, Den Haag. <https://www.archined.nl/2016/07/de-wereld-is-mijn-speelveld/>

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Figure 3. Tati, Jacques. (1968). *Playtime* (Film). <https://www.pinterest.pt/pin/405112928983732863/>

Figure 4. Image by author.

Figure 5. Image by author.

Figure 6. Image by author.

Figure 7. Image by author.

Figure 8. Image by author.

Figure 9. Image by author.

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Figure 22. Image by author.

Figure 23. Image by author.

Figure 24. Image by author.
Figure 25. Image by author.
Figure 26. Image by author.
Figure 27. Image by author.
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Figure 34. Image by author.
Figure 35. Image by author.
Figure 36. Image by author.
Figure 37. Image by author.
Figure 38. Image by author.

