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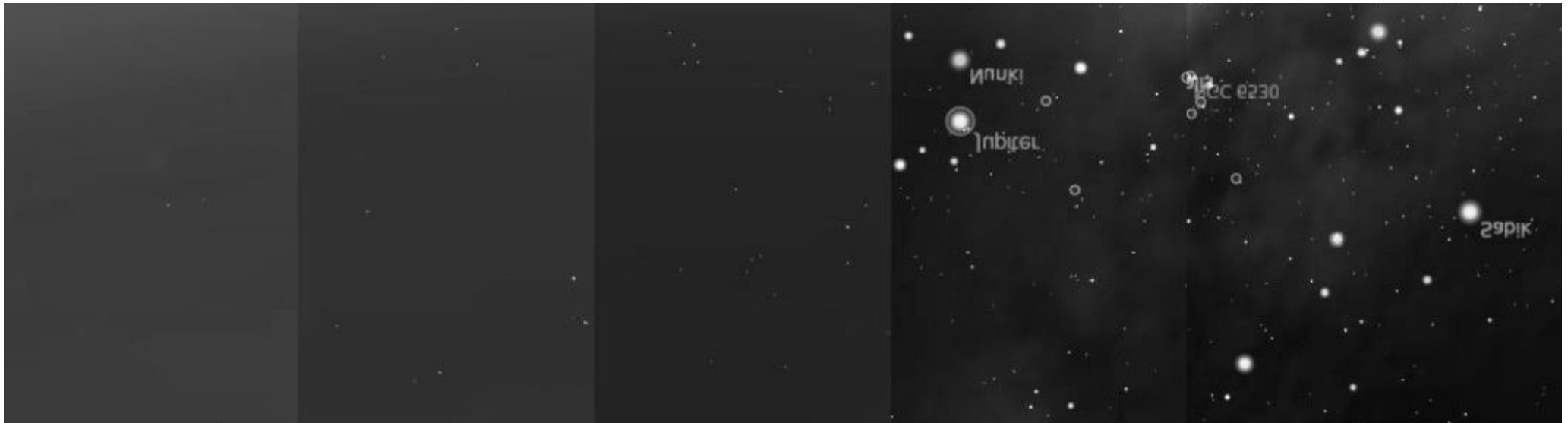
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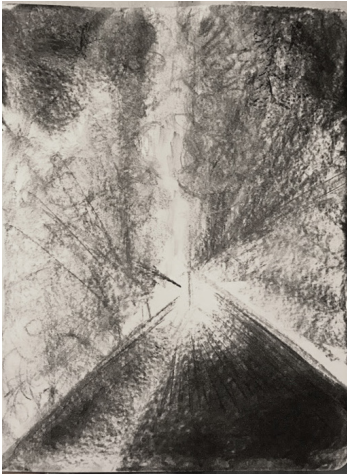
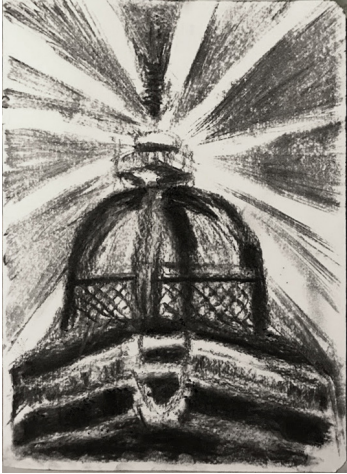
ENLIGHTENED HOUSING WITHOUT ARTIFICIAL LIGHT

HISTORY OF LIGHT -
FROM GUIDANCE TO DISORIENTATION

Lights were intended as beacons or guides, rather than illuminate the night, but now we banish darkness from the night. Already in the early eighteenth century, proposals had been made to illuminate the entire city of Paris using some kind of artificial light set high on a tower. Now we think that we should shine the strongest and largest beam of light in the sky to stand out as much as possible. This happened recently in Eindhoven. Photos with long exposure show birds and bats hunting moths and insects. Which makes visible the social interaction light provides. Not only bats, birds, moths and insects are attracted but also the human being.

According to the World Atlas of the Artificial Night Sky Brightness, created in 2001 by Italians Pierantonio Cinzano and Fabio Falchi, two-thirds of the world's population—including 99 percent of people living in the continental United States and western Europe—no longer experience a truly dark night, a night untouched by artificial electric light. The International Dark-Sky Association (IDA) defines light pollution as "any adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste." Netherlands is located in the middle of the most light polluted areas.





ONE SKY CONNECTS US ALL - STEP OUTSIDE YOUR OWN INDIVIDUAL REALITY

We prefer to socialize in the lights instead of the dark corners of the city, but we cannot experience light without darkness, or darkness without light. I think nowadays we forgot about this fact, because when you never see the milky way in your life, you will start thinking of your own environment as all there is -are you aware of the fact, the stars you see at the southern hemisphere are different then we see in Europe- we lose connection and got isolated from each other. So if that's how you think about where you are, then it rises to an artificial level of unimportance to you. But when you first experience the night sky, you realize how small we are in the cosmos, one sky connects us all. It is this experience of such special moments which are able to reset your ego, to realize you are not the center of the universe.

Experience or experienced? In Dutch "ervaren" now refers to the one-off. Something is a 'whole experience' instead of 'i am very experienced'. A shift from an experience that is based on gradual learning processes in a collective sense coherence (Aristotle) to an experience that is based on shocks and their processing or defense. Also the capitalist economy promote a whole new experience of time and space in which chance, the fleeting and the new play a leading role. Modernity is explained by Charles Baudelaire as; "The passing, the fleeting, the contingent, that part of art whose other side is eternal and unchangeable. This changeable and eternal paradoxical program of modernity can only be expressed by interpreting, by the city, urbanites are subjected to this."

If experience is based on sustainability and therefore on memory, the shock is

the destruction of our ability to appeal to the memory. The introduction of the design should prevent this shock. When these bring a calm, there is more room for a lasting impression and thus also room to call on remembrance.

A DEEPER SEEING - 3D WORLD WITH 2D EYES

For me light shapes a space by casting shadows and makes it possible to understand depth, the same as painters do on their 2d canvas. It has been suggested that Dutch Old Master Rembrandt may have been stereo-blind, which would have aided him in flattening what he saw for the production of 2D works. I want to be the painter in a 3D environment which I can only see when there are shadows. By linking this fascination -the urges of seeing depth- also towards the modern society -which is strongly individual and disconnected from here and now- an architecture can appear which enlightens its user.

LIVING - CONNECTION BETWEEN INDIVIDUAL AND CONCRETE EVERYDAY LIFE

Living is the connection between individual and everyday life. With this function you are able to make a design that puts you, or with both feet into everyday life, or can drag you out of it, because it is a very personal experience.

But what is a house? It is not only a place to live within. The house is not necessary one physical house, it can be a room, a city or the world, inside and outside at the same time. The house that houses the function housing is lived by more than one user, and is constantly redesigned by

the "phantasmagories" of the interior as Gaston Bachelard calls them. It is a register of images that create an illusion of your own stability.

Houses precede our consciousness and show a projection of our future. They are about vague memories, dreams and projections. But are they able to accommodate the human experiences within, the modern society? Gaston Bachelard states that there are no houses in the city, only stacked boxes. The house envelops and reassures, it also determines our worldliness, the outdoor participation, it reminds us of the expressions of our youth, and so it is able to call on remembrance, but it also provides the shell, to keep alive our own individual reality.

Constant Nieuwenhuys with new babylon, created situations which are meant to break the vicious circle of spectacle and passive consumption and to enable people in a playful way to get active grip on their own lives. Can you enforce something like this in a design? A paradox quickly arises in his design of the playful space that works like a machine.

In response to architecture and modernity, Hilde Heynen gives a crucial meaning to communities that protect us from the bottomlessness of our existence, they make from "Het Unheimliche" something livable and recognizable.

Christiaan Norberg-Schulz, states that man in the Heideggerian view only 'lives' when he experiences his existence as meaningful. This significant experience is made possible when the architectural design of a place offers the opportunity for

orientation and identification.

The task of architecture is to make these genius loci visible, therefore architecture is location specific and not generic. We have to find forms that do not harden so easily and which are able to create a contact moment. To give you a feeling that rises above the daily, an intensity in feelings, a flashing insight where the image stays in the memory, the enlightenment of a moment of recognition that is immediately belied.

EXPERIENCE OF THE NATURAL ELEMENTS

For me personally, what rises above the daily intensity in feelings are the natural elements like, the sunset-rise, see the stars and smell the different seasons. That is why Boullée's design intrigued me, his theory is making my sphere round in a sense that, the experience I want to bring users, is an experience of nature.

We are exposed to nature continuously, but are you aware of all the changes we can experience during the day? Light, smell and sound are natural elements which are very location specific but are often reduced to a minimum in housing projects, we are not aware of them anymore.

The design approach is to make visible the changes of the daily natural atmospheres, during day, seasons, years. As said for me architecture is location specific because the influences of the natural elements are. So if you place a design in several locations and it interacts with the natural elements it becomes location specific. Therefore it is important to understand what kind of conditions the

design has to interact with. In this sense it is less important to know what the exact location of the project will be. But the decision of the location will depend on the fact that the introduction and departure are an substantial part of the experience of the design.

THE CITY OF LIGHT - "PHILIPSDORP" AS A MAZE OF LIGHT

My challenge is to create housing in the urban context -where only stacked boxes are build- which don't harden so easily by creating everyday experiences which rises above your daily routine. Provided by the changes of nature, and so the changes of light conditions.

This said the location is chosen is such a way that it is exposed to different kind of light intensities. Not only by the elements of nature but also by its external influences from the city.

The Philips stadium -which was originally planned as a greenfield sports area- developed over the years as one of the biggest light polluters of Eindhoven. The neighborhood around called "Philipsdorp" was build for the workers of Philips, -the biggest light bulb producers of the world- in 1910. Today's purpose of the neighborhood is changed in a way that not only workers of Philips live there anymore but the social aspect still remained. The buildings are owned by a social housing corporation which means they are meant to be for the lower income classes. This you still experience when you walk around the blocks, there is a lot of social interaction and control, neighbors know each other and organize their own social activities. People are proud to be part of this com-

munity and of the places they live in. But what you also notice walking around in Philipsdorp is the insane glare hanging in the sky in the end of the streets.

Instead of a green park introduced by the green alley of Hulstlaan, you get exposed to a light generating monster -sorry to the PSV-fans-. But what else can you expect from a stadium build by the light bulb producer? Over the years the stadium has had various expansions to provide enough seats for the fans. During the one of 1988 a complete street was sacrificed to create room. This street, called the Elisabethstreet, contained 8 houses which were part of the masterplan of Philipsdorp. Philips developed not only the stadium but also the lighting over the years and now it is one of the energy efficient in the world. A total of 296 led lights generate the light for the best view on the field. Placed under or on the edge of the roof. Next to this installation, a light installation for keeping the grass healthy is portable in action during nights to keep up the best performance on the field.

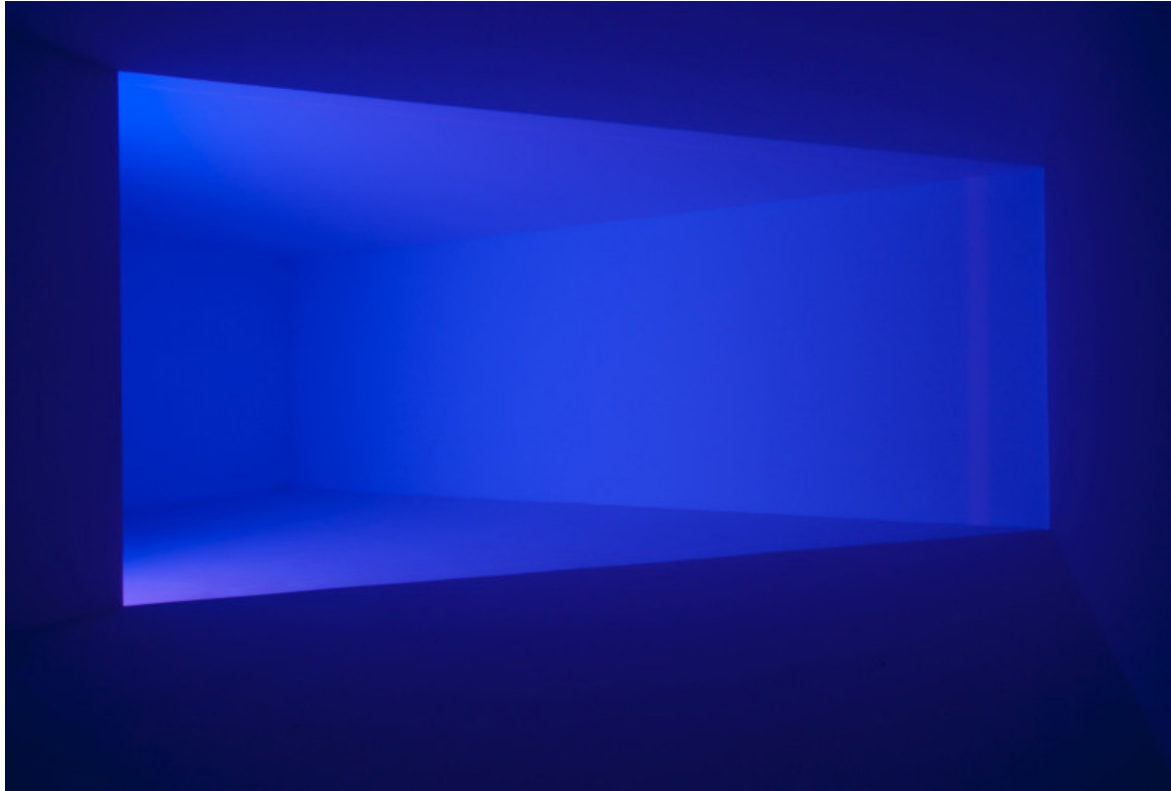
The historical aspect of the 8 demolished houses, both artificial light installations the stadium is providing and the urban location within "the city of light" Eindhoven provide challenging conditions to design the 8 enlightened houses on top of the south ring.

L I S ▲ V ◀ R H O ◀ V ◀ N
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L O G B O O K

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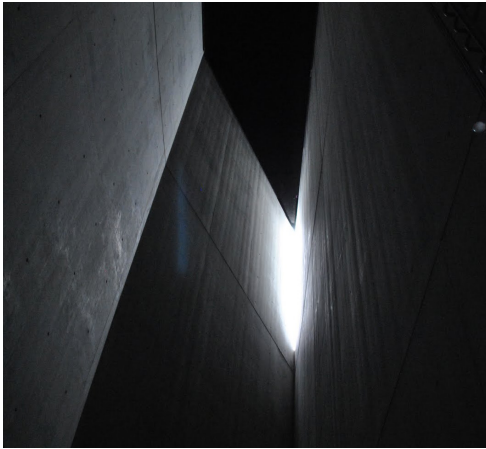


Turrell, J. experience dimensions that go further than the third and Vos, G. wordless thoughts like falling stars. Both light artists call architecture static and formal. Turrell, J. stated that only when they are sculpturally cleared and Vos, G. when they are broken down by art, we can create a much wider space generated by thoughts. The role of light is influencing the atmosphere by adding an emotion. It can bring us new insights and create an extra dimension, but it will always has to deal with the existing 3rd dimension.

The visitor of Zumthor's projects create memories of that specific setting. By studying his theory of composing atmospheres I tried to understand which factors are needed to set up a certain atmosphere which provokes emotions and so memories. Literature; atmospheres by Peter Zumthor.

Besides this theory I found it interesting to understand what it means to be moved by a building. Psychologist Bohme and architect Bille wrote several papers about this topic and their theory.

Turrell, J.
Wedgework III, 1969,
Installation with fluorescent light Retrieved from: http://www.ornotmagazine.com/?mtheme_portfolio-light-art-una-definizione



Libeskind, D.
Jewish museum Berlin
Retrieved from: <https://libeskind.com/work/jewish-museum-berlin/>

"Looking becomes true seeing - a seeing that can legitimately be called cognition. The physical presence of the space, the aspects of its existing form, are reduced to a minimum. The formal architecture, as also the surfaces of the walls, must be scrupulously cleared so that the space as an area with a measurable identity of its own recedes into the background. Only then are the conditions right for an architecture of space in which space generated by thought become possible."
Turrell, J.¹

"There is no interruption of the overall impression by small parts which have nothing to do with the object statement. Our perception of the whole is not distracted by inessential details. Every touch, every join, every joint is there in order to reinforce the idea of the quiet presence of the work."
Zumthor, P.²

"What do we mean when we speak of architectural quality? - Quality architecture to me is when a building manages to move me. What on earth is it that moves me? - How do people design things with such a beautiful, natural presence, things that move me every single time." Zumthor, P.³

1 Turrell, J. Wick, O. (1990) Retrieved from Long Green. Zurich, Switzerland : Turske & Turske
2 Zumthor, Peter. (1998). Thinking architecture. Basel, Switzerland: Birkhauser. (transl.: Maureen Oberli-Turner.) u.d.T.: Zumthor, Peter: architektur denken

3 Zumthor, Peter. (1998). Thinking architecture.

"Architecture has traditionally understood space geometrically and considered the human in it as a body. Today, the focus must by contrast be on strengthening the vantage point of the experiencing individual and underscoring what it means to be mindfully present in spaces. This vantage point will open up a new level of creative potential for architecture. However, neither the one nor the other side should be given absolute priority. For truth lies in the interplay between them; between mindful physical presence and the body, between sensitivity and activity, between the real and reality."
Bohme, G.⁴

It is no longer the formal design of a building that determines its quality, but rather its powers of affecting and engaging users, emotionally, bodily, and mentally. What does it mean to be affectively moved by a building or space?"
Bille, M.⁵

ture. Basel, Switzerland: Birkhauser. (transl.: Maureen Oberli-Turner.) u.d.T.: Zumthor, Peter: architektur denken

4 Oase #91, building atmospheres Mathieu, Bereloot. Patteeuw, Veronique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

5 Bille, Mikkel (2016). Elements of architecture, London, United Kingdom: Routledge Taylor & Francis Group

B A C K G R O U N D

INFLUENCE LIGHT IN SPACE

Lisa Verhoeven

Art and architecture have always been intertwined and it has always been hard to determine where one ends and the other begins. Giny Vos identifies architecture first of all as an interior space, a place enclosed by borders, the walls. "It is a defined space as opposed to the external space, the space outside the borders. It is only a later state, by art, that these borders can be broken down." (Vos, 2010, p. 133) 11 The difference between art and architecture is the influence of the user. While experiencing art, the user is more free to do an interpretation of the area. By using light, the artist leads the visitor to experience a much wider space. The capacity to remove a set of associations from a familiar place and to recreate a fictive environment. You can enjoy the space without actually being part of it. Daria Ricchi (2010) explains Vos' art as it is present and you do not necessarily have to pay attention to it, but we could unconsciously enjoy it. Architecture which is a 3 dimensional discipline is putting the user in a specific direction. It is unchangeable, whereas visual and new media art which is a 2 dimensional discipline tend to be constant motion and can create its own 3 dimensional world. A building and its surfaces are by definition static, whereas the work of Giny Vos is not. Its consistent element is one of Vos, G. White noise, 2009. Photographer, Van Rooij, G. Retrieved from: <http://www.ginyvos.nl/werken/in->

[dex/White_Noise](http://www.ginyvos.nl/werken/in-dex/White_Noise) movement achieved through lights. Vos' work makes architecture move. She is adding an imaginable extra dimension, which can be not only social dimension, but also the dimension of time. Giny Vos work is changing during a specific time-laps, If architecture is static, it won't age, in a manner that is visible from day to day. Also Giny Vos's work is not, it is performing during a set time but the set time is unknown, it is sometimes stretched or cut but it remains unpredictable, the same happens in dreams. In that way she is adding an extra dimension. It can become the fourth dimension to an already 3 dimensional work. Even-though both artworks may have a different presence there are similarities between the artist thoughts behind it. Turrell and Vos are both talking about a dimension that goes further than the third one.

Turrell calls them the experience of wordless thoughts, and Vos is referring to falling stars. While the work of Turrell is more abstract, the theory behind his works goes so far that the total meaning is still not completely understandable. The work of Vos is easier to understand, which is also what she wants to achieve. Nevertheless in both works you can experience the so called fourth dimension, even though Turrell does not want to call it like that, because he is not literally add-

ing the dimension of time, with a time-laps like Vos does. But by making the visitor of his work move, out of curiosity or by creating a route, his work changes in a more abstract way. By eye perspectives that changes by time and gets enlarged by the implementation of the The Purkinje-effect, Turrell approaches the wordless thoughts in a theoretical way, but most of the visitors in the museums have no clue what is happening with their imagination and are flabbergasted. Vos is creating this dimension in a more literal way, by introducing movements. The work is changing by set time periods, without moving the visitors perspective. Or better to say for Vos' work, spectator passer-by.

The contradictions in the works are mostly based on the difference of perceiving. Vos' audience are people who maybe don't even want to get confronted with art work. While Turrell's audience are people who buy tickets for a museum. Therefore the choice of making her art understandable for every passer-by without knowing about her concept is very important, even a small intervention in the area can make people smile. That's why my first opinion was that her work is more superficial. But behind this outspoken light interference there is this extra layer where she is creating her extra dimension, which can be social or time wise.

What surprises me is that both artists call architecture static and formal. An interior space surrounded by the walls, the boundaries are "the architecture". Only when they are scrupulously cleared (Turrell 1990) or broken down by art (Vos, 2010) we can generate a much wider space by thoughts.

The influence of light in space, is more than only scattering, spreading and lighting up in an interior. It has the role of influencing the atmosphere by adding an emotion. It can bring us new insights and create an extra dimension. But it will always have to deal with the relation of the existing 3rd dimension

B A C K G R O U N D

ATMOSPHERES

Lisa Verhoeven

Today it is no longer the formal design of a building that determines its quality. We are aware of the lack of personality in the pure functionalistic modernistic buildings. The quality of a design is now determined by its powers of affecting and engaging its users, emotionally, bodily, and mentally.¹ States Mikel Bille.

But what does it mean to be affectively moved by a building or space? Also Bohme says that "Architecture has traditionally understood space geometrically and considered the human in it as a body." But that today, "The focus must by contrast be on strengthening the vantage point of the experiencing individual and underscoring what it means to be mindfully present in spaces." Nowadays we are flexible in mobility, in time and have a lot of travel opportunities. We are able to have meetings by video conferences, but still the amount of travelling is increasing. The human being wants to be mindfully present in a space.

This vantage point will open up a new level of creative potential for architecture says Bohme. However, neither the one nor the other side should be given absolute priority. "For truth lies in

the interplay between them; between mindful physical presence and the body, between sensitivity and activity, between the real and reality." The very notion of architecture in this view is, essentially, about sensuous, ephemeral matter, such as sound, light, smell, humidity, draught, temperature and so on." States Bohme.² Also architect Peter Zumthor argued "Affect, emotions, moods, rhythms, light, air and weather are in essence part of a building as much as, if not more than, the actual walls and ceilings"³ The sensuous experience of a building are created by less tangible phenomena such as light, sound and air. These elements can manipulate the architectural form. They can be seen as something purely materialistic and shape a sense of place states Mikel Bille.

The combination of the these less tangible phenomena can form together with other elements the term atmospheres. But what does this term actually mean?

Mikel Bille, "A building is in the first place

² Oase #91, building atmospheres Mathieu, Bereloot. Patteeuw, Veronique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

³ Zumthor, Peter. (1998). Thinking architecture. Basel, Switzerland: Birkhauser. (transl.: Maureen Oberli-Turner.) u.d.T.: Zumthor, Peter: architektur denken

its atmosphere, to which solid and immoveable elements add a structure of support, much as in the vertebrate world, the skeleton supports the body." Tim Ingold calls this "flows the aura of the building which can be breathed by those who come within range."⁴ Bohme argues atmospheres as "spaces tintured by the radiations or ecstasies of things as they pour themselves out into the affective environment". That atmospheres are in some sense intermediate between environmental qualities and human states.⁵ They are nothing, he insists, 'without the sentient subject', and are 'perceived only in subjective experience', and yet 'the subject experiences atmospheres as something "out there", something which can come over us, into which we are drawn, which takes possession of us'.⁶

Zumthor compares atmospheres with our first impression of a person. "What I

⁴ Bille, Mikkel (2016). Elements of architecture, London, United Kingdom: Routledge Taylor & Francis Group

⁵ Oase #91, building atmospheres Mathieu, Bereloot. Patteeuw, Veronique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

⁶ Bille, Mikkel (2016). Elements of architecture, London, United Kingdom: Routledge Taylor & Francis Group

learned was: don't trust it – give the guy a change. Years passed I got a bit older. And I have to admit that I'm back to believing in first impressions." According to him it is a bit like that with architecture too. We perceive atmosphere through our emotional sensibility – a form of perception that works incredibly quickly, and which we humans evidently need to help us survive. What first comes to his mind of the theme of atmospheres, it is this presence of history: old factories, industrial buildings, pure constructions full of atmospheres.⁷

Atmospheres can be approached in two different ways. A building is in the first place its atmosphere, to which solid and immoveable elements add a structure of support, the skeleton supports the body Mikel Bille. Or a building is a static architecture where you add an extra layer, a new dimension of the space. James Turrell

⁷ Zumthor, Peter. (2006). Atmospheres. Basel, Switzerland: Birkhauser. (transl.: Lain Gallbraith Wiesbaden.) u.d.T.: Zumthor, Peter: Atmosphären

¹ Bille, Mikkel (2016). Elements of architecture, London, United Kingdom: Routledge Taylor & Francis Group

B A C K G R O U N D

ATMOSPHERES - THE ARCHITECTURE OF ATMOSPHERES

Lisa Verhoeven

As mentioned before by Bohme, "For truth lies in the interplay between mindful physical presence and the body, between sensitivity and activity, between the real and reality." "This vantage point will open up a new level of creative potential for architecture".¹

If we want to understand this creative potential Bohme is talking about, we need to analyze the theory of an architect which literally builds atmospheres. For me this is Peter Zumthor, not that surprising since he wrote a book called atmospheres.

The architecture of Zumthor stands in a landscape that itself is not built up as an abstraction, but as an approach to reality. The landscape is a realistic condition for the design process. An approach that characterizes all realized projects. In their materiality, execution and dimensioning, the scale models emphasize that anchoring in a specific context. Designing by computer software is something Zumthor is very skeptical about. "The quality of a building or a built ensemble cannot be determined in the final analysis by the eye or the central vantage point in a photo. For the visual senses

¹ Oase #91, building atmospheres Mathieu, Bereloot. Patteeuw, Veroique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

distances, while the quality of architecture can essentially only be judged by corporeal presence." Bohme The image is not able to represent its reality,

Within the office of Zumthor they treat the many different elements that together form the real things separated. Such as material, texture, sound, temperature, rhythm, light, and shadow. During the design process you have to be able to fully focus on one aspect; "We learn from psychology. Do not do two things at the same time! There is interaction between the part and whole and not only from large to small." Explains Zumthor.²

Zumthor designs a building by recalling memories from the past. These memories are linked to a certain atmosphere from a design which moved him in the past. They will help create a vibrant atmosphere for the new design. He wants to be moved by his new design. We are more familiar with getting moved by a piece of art and especially with music, the composer's music has that quality, the ability to touch us Zumthor refers often to it, for example "The first movement of Brahms's viola sonata, when the viola comes in – just two seconds and we're

² Oase #91, building atmospheres Mathieu, Bereloot. Patteeuw, Veroique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

there!" (sonata No 2 in E major for viola and Piano) But what moves you while listening to it? For Zumthor it is "Everything. The things themselves, the people, the air, noises, sound, colors, material presences, textures." - "My mood, my feelings, the sense of expectation that filled me while I was sitting there."

Buildings can create memories; Only when there is no interruption or distraction. When there is peace, openness and emptiness. When they reach beyond signs and symbols. Our perception is able to create memories, which we can recall and link to a certain atmosphere.³

We can understand Zumthors architecture best by replacing horizontality with the emphasized horizon, base materialism with the hollowed out mass, entropy with the rooted structure, and pulse with another temporarily, and consider its relation to form – the hegemonic architectural concept. The formless creates confusion because they declassification the project, but this anti idealist attitude creates the sublime experience when visiting Zumthors architecture. Our per-

³ Zumthor, Peter. (1998). Thinking architecture. Basel, Switzerland: Birkhauser. (transl.: Maureen Oberli-Turner.) u.d.T.: Zumthor, Peter: architektur denken

ception is free to create memories.⁴

⁴ Oase #91, building atmospheres Mathieu, Bereloot. Patteeuw, Veroique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

B A C K G R O U N D

ATMOSPHERES - THE ELEMENTS OF ATMOSPHERES

Lisa Verhoeven

Ingold focuses on air and light, arguing that air, in particular is a forgotten element. This is a problem states M Bille because air and light intrinsically allow us to connect two different versions of the term atmosphere: the meteorological and the affective one.

But merging these two understandings through focusing on air, we may see how the world we inhabit is far from condensed into fixed form. It is, to Ingold, in a continuous flow and becoming, or what he terms a 'weather-world'.¹

This integral nature is also part of what makes architecture an affective experience in that light is not something you see, but something you see in. Air, in other words, is a way of saying 'I can breathe'. But if that is so, then light is a way of saying 'I can see'. Bille, M.²

Zumthor composes atmospheres considering 9 elements, the magic of the real is the first element, "Beauty is in the eye of the beholder. Meaning: it is all in me. But then I perform an experiment: I take away the square – and my feelings disappear." People interact with objects as an architect zumthor deals with it ev-

ery moment. The real has its own magic. the magic of things, the magic of the real world "Radical diatonism, forceful and distinctive rhythmical pronunciation, melodic clarity, harmonies plain and severe, a piercing radiance of tone color, and finally, the simplicity and transparency of is musical fabric, the stability of his formal structures." Zumthor³

For Peter Zumthor, the setting of his projects in the landscape or urban environment is of utmost importance, and he is in the fortunate position to select his commissions and advise his clients in order to create the best conditions for the work to come about. If one is determined to construct atmospheres, it starts with the creation of excellent conditions. The idea of anchoring a building in its surrounding landscape also has to do with a sense of history. The sense of familiarity that often is at stake in Zumthor's buildings probably has to do with his notion of history.⁴

History is a good thing for human beings without it we would feel alienated and displaces. we all come from somewhere

and most things around us are older than we are. Zumthor is not interested in the history taught at universities but in the history which is stored in the landscapes, in cities and buildings, stored in the objects we live with.⁵

First and greatest secret of architecture for Zumthor is that the building is a collection of different things in the world, different materials, and combines them to create space.⁶

"The body of architecture" he means the word body quite literally. It's like our own bodies with their anatomy and things we can't see and skin covering us. The combination of different materials in a building has a lot to do with a love relationship, the material compatibility. You can combine different materials in a building but there is a certain point where you will find they are too far away from each other to react. And there's a point where they are too close together, which kills them.⁷

Plastic for example offers a different sensuous encounter from metal. And this is not simply about what meanings are attached to the materials, but also the kind of thermal insulation, sonic qualities, reflection and so on offered by particular materials.

"As anyone who has played a musical instrument will recall, the tiled toilet may offer one type of recording quality, the carpeted room another." The important distinction here is the difference between what emotions a room triggers and the fact that it triggers emotional responses says Mikel Bille.⁸

Focusing on the way materials shape the sense of place is also what Gernot Böhme has called 'ecstatic' – the ability of an object to stand out and impose itself onto its surroundings. In this perspective, an object is not something that merely occupies a given geographical space, with clear physical boundaries, but may indeed step beyond these boundaries. Mikel Bille gives the example that this may for instance be by casting a shadow onto other things that are then perceived differently.

Taking the materials seriously doesn't

¹ Ingold, Tim (2016) *Lighting up the atmosphere*, London, United Kingdom: Routledge Taylor & Francis Group

² Bille, Mikkell (2016). *Elements of architecture*, London, United Kingdom: Routledge Taylor & Francis Group

³ Zumthor, Peter. (2006). *Amotspheres*. Basel, Switzerland: Birkhauser. (transl.: Lain Gallbraith Wiesbaden.) u.d.T.: Zumthor, Peter: *Athmosphären*

⁴ Oase #91, building atmospheres Mathieu, Bereloot. Patteeuw, Veronique. (2013). *Form/Formless*. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

⁵ Zumthor, Peter. (2006). *Amotspheres*. Basel, Switzerland: Birkhauser. (transl.: Lain Gallbraith Wiesbaden.) u.d.T.: Zumthor, Peter: *Athmosphären*

⁶ Oase #91, building atmospheres Mathieu, Bereloot. Patteeuw, Veronique. (2013). *Form/Formless*. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

⁷ Zumthor, Peter. (2006). *Amotspheres*. Basel, Switzerland: Birkhauser. (transl.: Lain Gallbraith Wiesbaden.) u.d.T.: Zumthor, Peter: *Athmosphären*

⁸ Bille, Mikkell (2016). *Elements of architecture*, London, United Kingdom: Routledge Taylor & Francis Group

B A C K G R O U N D

ATMOSPHERES - THE ELEMENTS OF ATMOSPHERES

Lisa Verhoeven

directly reveal why it is emotions that are involved. "Yet this is the case with atmospheres, as atmospheres are, in the simplest definition, tempered spaces." Bohme⁹

But zumthor chooses the materials location specific and so, taking in account the weather and light conditions. He is taking in account the history of the place. The instrument for the composition is the interior, they collect sound, amplifying it and transmitting it elsewhere. "Imagine the sound they make with all their proportions and materials in a stillness of their own." Depending on the materials and shape of the interior they create sound, the sound of space. "Imagine extracting all foreign sound from a building, and if we try to imagine what that would be like: with nothing left, nothing there to touch anything else. The question arises: does the building still have a sound?" Buildings can have wonderful sounds, tell you that you can feel at home. Or buildings can create overwhelming sounds and want to dominate you. The interior aka the instrument needs to be tempered like you can do with a piano, the search for the right mood. "Temperature in this sense is physical,

⁹ Oase #91, building atmospheres Mathieu, Bereloot, Patteeuw, Veronique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NA1010 publishers.

but presumably psychological too. It's in what I see, what I feel, what I touch, even with my feet." The temperature of a space.

As an architect you design for other people, people with their own objects. "What's needed is a design that prevents things becoming too leisurely and nice." These surrounding objects have to find their rightful place within your design, which has a future without you as the designer. "Architecture is a spatial art, as people always say. But architecture is also a temporal art. My experience of it is not limited to a single second. Wolfgang Rihm and I are in full agreement about this: architecture, like music, is a temporal art."

This means thinking about the way people move in a building, It is about the way lights fall. How they give you a direction, seduction, letting you go, or granting freedom. This guidance has to support the uses of the building. "Guidance, preparation, stimulation, the pleasant surprise, relaxation – all this, I must add, without the slightest, whiff of the lecture theatre. It should all seem very natural." There are spaces of anxiety that seem narrow and hemmed in, limiting our room for manoeuvre, and spaces of optimism in which, to the contrary, everything easily gives way as if you were

flying through the air. These are spaces of volatility (Bollnow 2011: 217). P167 Bille A balance has to be found between composure and seduction. The camera team and directors assemble sequences in the same way.

Then the main characters all have a different script, depending on the use of the building, they all say different things to their environment. "They can say to the square: I am really glad to be situated on this square. Or they could say: I am the most beautiful building here – you lot all look ugly. I am a diva." The tension between interior and exterior obtains at the moment we become aware of being enclosed. of something enveloping us, keeping us together, holding us, an unbelievable feeling of concentration. It is the way architecture takes a bit of the globe and constructs a tiny box of it, suddenly there's an interior and an exterior.

Zumthor always tries to create buildings where interior form, of the empty interior, is not the same as outdoor form. Where you have the feeling of the interior as a hidden mass you don't recognize from the exterior. It all has to do with proximity and distance. The classical architect would call it scale. He refers to various aspects; Size, dimension, scale, the building's mass, by contrast to himself.

Because the exterior has something else to say, to a different audience than the interior. The levels of intimacy are different within these different groups of audience.

"When the sun comes up in the morning and casts its light on things, it doesn't feel as if it quite belongs in this world."

¹⁰

Zumthor has two ideas how to shape the space by light. His first approach of light in the design is by hollowing out the darkness of a plan of the building. The other approach is to pick the materials of the different surfaces depending on the way they reflect on the environment and fit everything together. "Thinking about daylight and artificial light I have to admit that daylight, the light on things, is so moving to me that I feel it almost as a spiritual quality."¹¹

¹⁰ Zumthor, Peter. (2006). Amotspheres. Basel, Switzerland: Birkhauser. (transl.: Lain Gallbraith Wiesbaden.) u.d.T.: Zumthor, Peter: Athmosphären

¹¹ Zumthor, Peter. (2006). Amotspheres. Basel, Switzerland: Birkhauser. (transl.: Lain Gallbraith Wiesbaden.) u.d.T.: Zumthor, Peter: Athmosphären

B A C K G R O U N D

ATMOSPHERES - CONCLUSION

Lisa Verhoeven

Turrell Bohme, Bille, Ingold and Zumthor all talk about atmospheres when they are getting moved by a building. The term atmospheres can be approached in two different ways. A building is in the first place its atmosphere, to which solid and immovable elements add a structure of support, the skeleton supports the body Mikel Bille. ¹Or a building is a static architecture where you add an extra layer, as something purely materialistic, a new dimension of the space. James Turrell. ²For me Zumthor's architecture is a skeleton which supports the atmospheres. A skeleton is purely functional and to me Zumthor's architecture is purely functional, not in the sense of modernism but in a sense that only elements are there when they are necessary to generate the atmosphere.

The atmospheres are created by less tangible phenomena such as light, sound and air by Ingold and Bille, "the weathered world" ³and Zumthor composes atmospheres considering 9 elements, the magic of the real, The body of architecture, the material compatibility, the sound

of space, The temperature of a space, surrounding objects, tension between interior and exterior, The levels of intimacy and light on things. ⁴

All these elements are very location specific and so is the history of the place involved which is not literally named in these elements but is mentioned in the several papers. For me all the elements to compose an atmosphere are thus, the elements which are present at the building location. The sound of space won't be the same in a rural area as in a city. Which applies to all elements mentioned before.

Bohme says that it is no longer the formal design of a building that determines its quality ⁵ But is now determined by its powers of affecting and engaging its users, emotionally, bodily, and mentally. States Mikel Bille. ⁶The new level of creative potential for architecture lays between the interplay of mindful physical presence and the body, between sensitivity and activity, between the real and

reality. Says Bohme. ⁷ This creative potential is what I'm looking for when translating a problem other than by words.

We are aware of the lack of personality in the modernism and this is why we are looking for experiences. But also as Bohme mentioned, even though we are more flexible, we still want to meet up in person. The human wants to be bodily present and not only mentally. This is also why I want to go to a library for study and to the office to work and not doing everything at home.

Spaces generate the atmosphere which are linked to a human behavior. But this behavior is very personal and subjective. However, because of a historical value of a place the behavior is guided.

The architecture of Zumthor stands in a landscape as an approach to reality. An image is not able to represent its reality, only material, texture, sound, temperature, rhythm, light, and shadow form the real things. He designs a building by recalling memories from the past, and so from history. The memories you carry with you are created by a space which moved you in the past, which impressed you in a way that the memory was important enough to stick to your mind.

⁷ Oase #91, building atmospheres Mathieu, Bereloot, Patteeuw, Veronique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

This happened to me when visiting the Neu national gallery in Berlin by Mies van der Rohe. I visited the building the same day as the Jewish museum by Liebeskind. Never ever will I forget how much this huge black columns impressed me. The big almost surrealistic lifted roof on a pedestal in the middle of the city moved me more than the Jewish museum. But why was that?

The approach and expectations you have before visiting a building influence you and enlarge the subjectivity on perceiving atmospheres.

Zumthor states that buildings can create memories; Only when there is no interruption or distraction, when there is peace, openness and emptiness, when they reach beyond signs and symbols. For me this is true in a sense that I got moved by architecture which doesn't shout. By shouting I mean contradictions between the function and the environment by the choice of materials, the scale and a complexity in details.

The formless architecture of Zumthor creates confusion because they declassification the project. but this anti idealist attitude creates the sublime experience when visiting Zumthor's architecture.

¹ Bille, Mikkell (2016). Elements of architecture, London, United Kingdom: Routledge Taylor & Francis Group

² Turrell, J. Wick, O. (1990) Retrieved from Long Green, Zurich, Switzerland : Turske & Turske

³ Bille, Mikkell (2016). Elements of architecture, London, United Kingdom: Routledge Taylor & Francis Group

⁴ Zumthor, Peter. (2006). Atmospheres. Basel, Switzerland: Birkhauser. (transl.: Lain Gallbraith Wiesbaden.) u.d.T.: Zumthor, Peter: Atmosphären

⁵ Oase #91, building atmospheres Mathieu, Bereloot, Patteeuw, Veronique. (2013). Form/Formless. Peter Zumthor's models. (transl.: Colin MacWhirter.) Rotterdam, The Netherlands: NAI010 publishers.

⁶ Bille, Mikkell (2016). Elements of architecture, London, United Kingdom: Routledge Taylor & Francis Group

B A C K G R O U N D

ATMOSPHERES - CONCLUSION

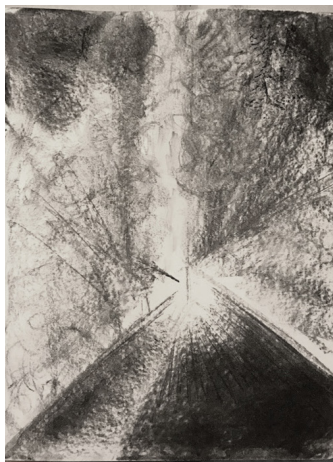
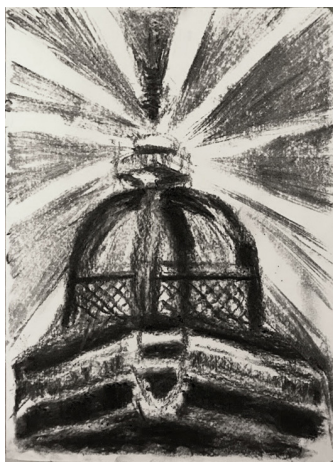
Lisa Verhoeven

You are not able to pre judge the building anymore. This is what happened to me with the Jewish museum in Berlin, I hated the façade because it was poor detailed. When entering the narrow hallway which disorientate you, the details of the façade were still in my mind. I was not ready for creating memories because I was distracted. my perception was not free to perceive the atmosphere.

Lights were intended as beacons or guides, rather than illuminate the night, but now we banish darkness from the night. Already in the early eighteenth century, proposals had been made to illuminate the entire city of Paris using some kind of artificial light set high on a tower. The most famous of these was the Sun Tower proposed by Jules Bourdais for the 1889 Paris Exposition that would stand at the city's center near Pont Neuf and cover all of Paris with arc lights.

Now we think that we should shine the strongest and largest beam of light in the sky to stand out as much as possible. This happens in Las Vegas -one of the most light polluted areas in the world- and recently in Eindhoven. Photos with long exposure show birds and bats hunting moths and insects. Which makes visible the social interaction light provides. Not only bats, birds, moths and insects are attracted but also the human being.

According to the World Atlas of the Artificial Night Sky Brightness, created in 2001 by Italians Pierantonio Cinzano and Fabio Falchi, two-thirds of the world's population—including 99 percent of



people living in the continental United States and western Europe—no longer experience a truly dark night, a night untouched by artificial electric light. The International Dark-Sky Association (IDA) defines light pollution as "any adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste." Netherlands is located in the middle of the most light polluted areas.

We prefer to socialize in the lights instead of the dark corners of the city but we cannot experience light without darkness, or darkness without light. The fall equinox is a beautiful, tangible reminder of this fact. The Latin word for Equinox means 'time of equal days and nights'. But I think nowadays we forgot about this fact, because when you never see the milky way in your life, you will start thinking of your own environment as all there is -are you aware of the fact, the stars you see at the southern hemisphere are different then we see in Europe- we lose connection and got isolated from each other. If that's how you think about where you are, then it rises to an artificial level of unimportance to you. But when you start looking at the night sky you realize how small we are in the cosmos, one sky connects us all. It is this experience of special moments which are able to reset your ego, to realize you are not the center of the universe.

We humans are not able to experience the 10 dimensions -the string theory states there are- we only see three

-length, height and width- and we can experience a fourth, time. But there are 6 we cannot get a grip on yet. Are you aware of this dark matter? A Paragraph of Plato's allegory of the Cave, introduces the notion that we are living in a reality of our own creation, subject to our human sensory limitations as well as contextual -for example by language- and cultural norms.

Experience or experienced? In Dutch "ervaren" now refers to the one-off. Something is a 'whole experience' instead of 'i am very experienced'. A shift from an experience that is based on gradual learning processes in a collective sense coherence (Aristotle) to an experience that is based on shocks and their processing or defense. Among other things, the capitalist economy promote a whole new experience of time and space in which chance, the fleeting and the new play a leading role. Modernity is explained by Charles Baudelaire as; the passing, the fleeting, the contingent, that part of art whose other side is eternal and unchangeable. This changeable and eternal paradoxical program of modernity can only be expressed by interpreting, by the city, urbanites are subjected to this.

Any design location is situated in an environment which forms the entrance and exit of the design. As a designer you have less influence on this, but it contributes to the experience of the work. By choosing a location where the user perceives an introduction and abolition, the design will be able to im-

plement the paradox.

Georg Simmel states that lasting impressions, the slowness in their difference, consume so to speak less mental energy than the rapid telescoping of gaining images. The metropolis creates these psychological conditions. It creates a deep contrast with the slower, smoothly on the sensory mental phase of small town rural existence.

If experience is based on sustainability and therefore on memory, the shock is the destruction of our ability to appeal to the memory. There is a transformation going on in our perception device. The introduction should prevent this shock and goes more into a gradual learning process. So when the introduction and abolition of the design brings a calm, there is more room for a lasting impression and thus also room to call on remembrance.

LIVING - CONNECTION BETWEEN INDIVIDUAL AND CONCRETE EVERYDAY LIFE

Living is the connection between individual and everyday life. With this function you are able to make a design that puts you, or with both feet into everyday life, or can drag you out of it because it is a very personal experience. The fact that we are flexible and do not want to permanently reside, has made a home a temporary place to stay. The house that houses the function housing is lived by more than one user, and is constantly redesigned by the "phantasmagories" of the interior. The house forms a register of images that create the illusion of stability. A House can be a cell and the world. In a dynamic house the universe comes to live. The house envel-

ops and reassures, it also determines our worldliness, the outdoor participation, it reminds us of the expressions of our youth, and so it is able to call on remembrance. But it also provides the shell to keep alive our own individual reality.

But what is a house? it is not only a place to live within. The house can be 'the place and universe' inside and outside at the same time. Houses precede our consciousness and show a projection of our future. They are about vague memories, dreams and projections. 19th-century bourgeois interior betrays tension in the existence of the modern individual. There is a contradiction between private personality, work and economy. After the first world war, all traces were erased literally. Similarly in architecture, transparent bare and pure functional housing. When the home becomes more of a temporary residence. But are they able to accommodate the human experiences within, the modern, reducing, abstracting and calculating perspective of scientific thinking? Gaston Bachelard states that there are no houses in the city, only stacked boxes. Is an anti-modernist attitude a way to reconnect 'living' again? This attitude rejects technique/planning, bureaucracy and the large-scale, in favor of a more local community and artisanal way of being.

Constant Nieuwenhuys with new Babylon, for example, created situations which are meant to break the vicious circle of spectacle and passive consumption and to enable people in a playful way to get active grip on their own lives. Can you enforce something like this in a design? A paradox quickly arises in his design of the playful space that works like a machine. In

response to architecture and modernity, Hilde Heynen gives a crucial meaning to communities that protect us from the bottomlessness of our existence, they make from "Het Unheimliche" something livable and recognizable. That is why they should disguise and reveal at the same time.

Christiaan Norberg-Schulz, states that man in the Heideggerian view only 'lives' when he experiences his existence as meaningful. This significant experience is made possible when the architectural design of a place offers the opportunity for orientation and identification. As a result, the built environment must be oriented so, that concrete places are created. Places characterized by a specific genius loci. The task of architecture is to make these genius loci visible, therefore architecture is location specific and not generic. We have to find forms that do not harden so easily and which, through the intelligence of their approach and the grace of their game, succeed in creating a contact moment. To give you a feeling that rises above the daily, an intensity in feelings, a flashing insight where the image stays in the memory, the enlightenment of a moment of recognition that is immediately belied.

ETIENNE-LOUIS BOULLEE - CENOTAPH ISAAC NEWTON

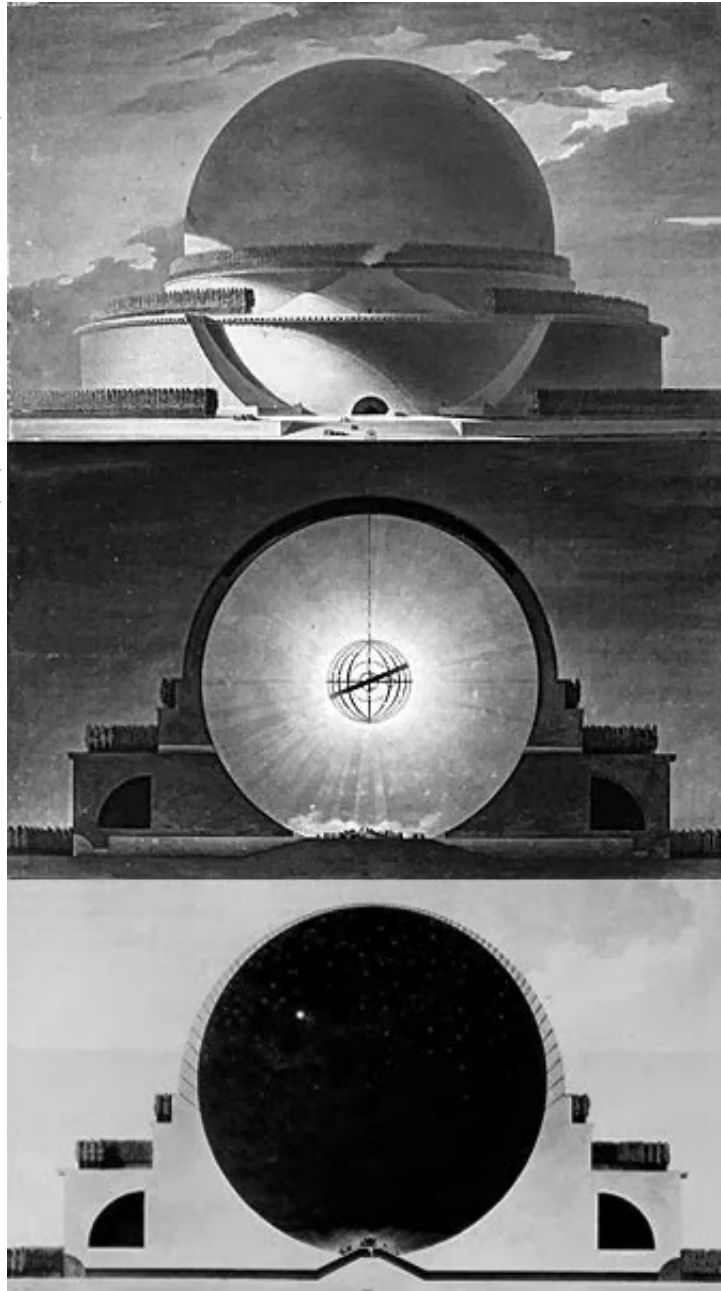
"I have conceived the idea of enveloping you with your discovery. That is as it were to enveloping you in your own self. How can I find outside you anything worthy of you? It was these ideas that made me want to make the sepulcher in the shape of the earth." Boullée.

The cenotaph is a poetic homage to scientist Sir Isaac Newton who 150 years after his death had become a revered symbol of Enlightenment ideals. Boullée's approach to design signaled the schism of architecture as a pure art from the science of building. He rejected the Vitruvian notion of architecture as the art of building, writing "In order to execute, it is first necessary to conceive... It is this product of the mind, this process of creation, that constitutes architecture...". The purpose of design is to envision, to inspire, to make manifest a conceptual idea though spatial forms.

Driven by his search for pure forms derived from nature, he looked back into history to the monumental forms of cultures that predated the Greeks. For Boullée the sphere represented perfection and majesty, creating soft gradations of light across its curved surface and having an "immeasurable hold over our senses".

The spherical entry portal at the lower level gives way to a dark, long tunnel that runs below the central volume. Rising up as it approaches the center, a final run of stairs brings visitors into a cavernous void.

Boullée creates an interior world that inverts exterior lighting conditions. At night, light radiates from an over-size luminance suspended at the center point of the sphere. Vaguely celestial in form, its light spills through the long the entry tunnels. During the day, a black starlit night blankets the interior. Points of light penetrate the thick shell through narrow punctures whose arrangement corresponds with locations of planets and constellations.



"It is easy to imagine the natural effect that would result from the possibility of increasing or decreasing the daylight inside the monument according to the number of stars. It is also easy to imagine how the somber light that would prevail in this place would favor the illusion. The effect of this magnificent composition is, as we can see, produces by nature. One could not arrive at the same result with the usual techniques in art. It would be impossible to depict in a painting the azure of a clear night sky with no cloud, its color scarcely distinguishable for it lacks any nuance, any graduation, the brilliant light of the stars standing out garishly, brilliantly from the darkened tone. In order to obtain the natural tone and effect which are possible in this monument it was necessary to have recourse to all the magic of art and to paint with nature, i.e. to put nature to work; and I can say that this discovery belongs to me."

The sections begin to suggest a negotiation of forces, as the dome appears to attenuate or hollow out at the top and thicken towards the supports. The bare walls and lack of ornament create a sombre impression. Changes in tone and fog-like elements bolster the sense of mystery.

"How is it possible to Imagen that with five or six different colors, the multitude of colors, the nuances, all the effects of nature can be reproduced! How is that man can convey the warmth and freshness of the air, can reproduce the effects of light? How can he have succeeded in drawing the passions that move us and by revealing them to us alive on the canvas, make us feel them in our very being?"

Boullée states that the other art forms are closer to nature and can therefore more likely to move us. "What I understand by art is everything that aims at imitating nature." Boullée

A DEEPER SEEING - 3D WORLD WITH 2D EYES

Stereoblindness is the inability to see in 3D using stereopsis, or stereo vision, resulting in an inability to perceive stereoscopic depth by combining and comparing images from the two eyes. Looking at the world through one eye at a time automatically flattens the scene. That appears to give people with stereo blindness a natural advantage in translating the richly three-dimensional world onto a flat two-dimensional canvas. Instead you use monocular depth cues like motion, relative size, shadows and overlapping figures to stimulate a 3-D world.

I am stereoblind for me light shapes a space by casting shadows and makes it possible to understand depth, the same as painters do on their 2d canvas. It has been suggested that Dutch Old Master Rembrandt may have been stereoblind, which would have aided him in flattening what he saw for the production of 2D works. I want to be the painter in a 3d environment which I can only see when there are shadows. By linking this fascination -the urges of seeing depth- also towards the modern society -which is strongly individual and disconnected from here and now- an architecture can appear which enlightens its user.

INTENSIVE FEELINGS - EXPERIENCE OF THE NATURAL ELEMENTS

For me personally, what rises above the daily intensity in feelings are the natural elements like, the sunset-rise, see the stars and the different smell of the seasons. That is why Boullée's design intrigued me, his theory is making my sphere perfect in a sense that, the experience I want to bring users, is an experience of nature. We are exposed to nature continuously, but are you aware of all the changes we can experience during the day? Light, smell and sound are natural elements which are very location specific but are often reduced to a minimum in housing projects, we are not aware of them anymore.

The design approach is to make visible the changes of the daily natural atmospheres, during day, seasons, years. As said for me architecture is location specific because the influences of the natural elements are. So if you place a design in several locations and it interacts with the natural elements it becomes location specific. Therefore it is im-

portant to understand what kind of conditions the design has to interact with. In this sense it is less important to know what the exact location of the project will be. But the decision of the location will depend on the fact that the introduction and departure are an substantial part of the experience of the design.

I experience its hard to state what is architecture or when can u call it architecture. In the project I want to achieve a personal life changing experience and I feel the urge to involve other disciplines to make this possible. Sound is manipulated by musicians, light is manipulated by light artists, then is space manipulated by architects? But light and sound are influences by a space, so as an architect we have the privilege to design with all these natural influences. Third is the influence of the location, does architecture have to be site specific or can it become generic? But then what is the difference with product design? Architecture can be designed without a site but the design will be enriched by natural influences when you put it on site. Then design becomes a canvas where the present puts its sign and only then the work is finished.

E X P E R I E N C E S

WHAT MOVES ME?

Lisa Verhoeven

TERSCHELLING

Last Easter I visited the waddenislands of the Netherlands for the first time of my life. After a travel of 5 hours I arrived at Terschelling. Without any expectations or deep research about the place, I got overwhelmed by the beauty of the landscape. Most people visit Terschelling to get a breath of fresh air, walk, bike or for horseback riding and so did I.

The first evening I joined a shimmer walk in the "boschplaat" dark sky nature reserve, which started in the daylight and ended in the dark. The change in the experience of the landscape and how your eyes have to get used to the darkness is something that inspired me.

Light can only influence a space when there is darkness. The area of the boschplaat is a dark sky nature reserve and so the contrast of natural light, by the sun, moon, stars and even the northern light can be experienced there with a way bigger influence.

CAPE TOWN

Darling,

De Vlei

The memory of the De Vlei is the feeling of unity. Which is lacking in the daily living environment I experience. The project should drag people outside their own individual reality by making new connections or interactions.

Top of Table mountain

Reaching the top after a 8 hours hike and arrive at an enclosed red colored lake is a feeling you should perceive every now and then in the hectic modern world. A feeling that rises above the daily, an intensity in feelings, a flashing insight where the image stays in the memory, the enlightenment of a moment of recognition.

Signal hill

A night view looking over an enlightened city makes visible the big scale. While living the city on eye perspective you are not aware of this. The view reminds you of the fact that you only have a very small influence on this mega structure.

ARCHITECTURE

Mies van der Rohe

Galerie

The proportions, cast of shadows by details, beacon of peace next to crowded street.

The essence of architecture is to open the hearts of the people and to move them in such a way that they are glad to be on earth. The central question is how to deLIGHT with architecture? T. Ando

Souto de moura Pavillion

There is no interruption of the overall impression by small parts which have nothing to do with the object statement. Our perception of the whole is not distracted by inessential details. Every touch, every join, every joint is there in order to reinforce the idea of the quiet presence of the work." P. Zumthor

The subtlety in the details of the joints and the representation of the cross.

Holgaard arkitekter , Kopenhagen.

"Architecture is the masterly, correct and magnificent play of masses brought together in light.

Light and shade reveal forms; cubes, cones, spheres, cylinders or pyramids are the great primary forms which light reveals to advantage; the image of these is distinct and tangible within us without ambiguity. It is for this reason that these are beautiful forms, the most beautiful

forms. Everybody is agreed to that, the child, the savage and the metaphysician." Le Corbusier.

The change of reflection by using two materials, is enough to impress with a row of cubes.

EMBRACE THE DARKNESS

NO LIGHT WITHOUT DARKNESS

PROBLEM

Light pollution is the increased brightness of the nightly environment through the use of artificial light. Light nuisance is the inconvenience that people and animals experience.

FUTURE

Energy consumption Joshua Filmer of Futurism.com reported in 2013 that at least 30 percent of street lighting is wasted — light that shines up into the sky, where it does no good. "Calculations show that 22,000 gigawatt-hours a year are wasted. At \$0.10 per kilowatt-hour, the cost of that wasted energy is \$2.2 billion a year," Filmer wrote. "That's 3.6 tons of coal or 12.9 million barrels of oil wasted every year to produce this lost light."

Wildlife John Metcalfe at Citylab.com reported last year that lights are disorienting birds, with deadly results. "Many species migrate by night and are perilously dazzled by artificial illumination, for reasons we don't yet completely understand," Metcalfe wrote. "Lights on skyscrapers, airports, and stadiums draw birds into urban areas, where they smack into walls and windows or each other, or flap around and eventually perish from exhaustion-related complications."

Human health According to an article published in the journal *Environmental Health Perspectives*, several studies over the past two decades have suggested that the modern practice of keeping our bodies exposed to artificial light at night increases cancer risk, especially for cancers that require hormones to grow, such as breast and prostate cancers.

ADDED VALUE awareness showing solutions/alternatives improve human health link architecture to other fields such as visual arts light-dark-contrast

multi sensory design

Designers who intentionally try to create specific experiences for people, are more likely to succeed if they are aware of the messages conveyed by the different sensory channels and of their contribution to the overall experience.

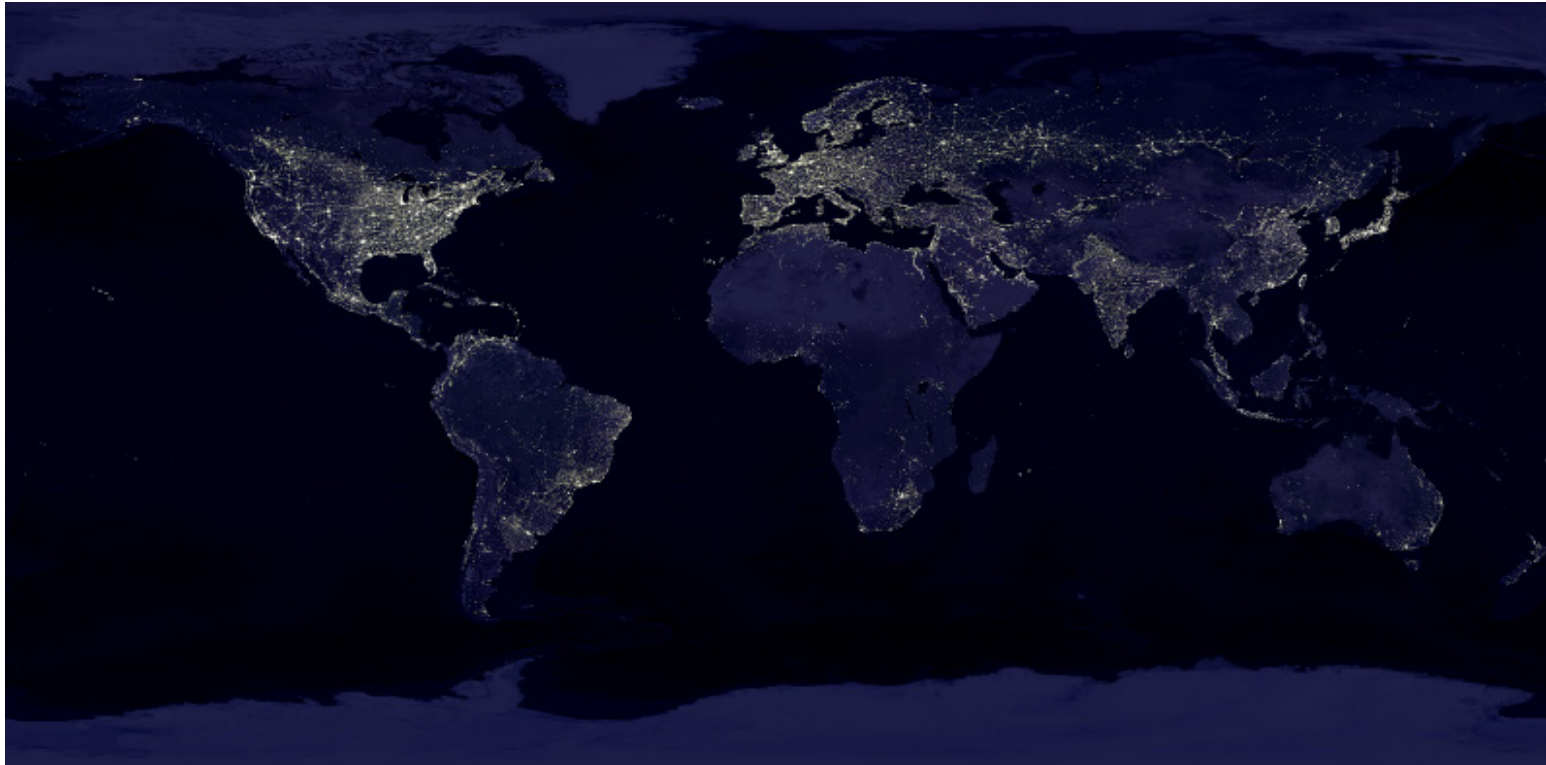
light pollution

is a side-effect of industrial civilization. Its sources include building exterior and interior lighting, advertising, outdoor area lighting (e.g. car parks/parking lots), offices, factories, streetlights, and illuminated sporting venues. It is most severe in highly industrialized, densely populated areas of North America, Europe, and Japan and in major cities in the Middle East and North Africa like Tehran and Cairo, but even relatively small amounts

of light can be noticed and create problems. Awareness of the deleterious effects of light pollution began early in the 20th Century (see e.g. Beston[8]), but efforts to address effects did not begin until the 1950s.[9] In the 1980s a global dark-sky movement emerged with the founding of the International Dark-Sky Association (IDA). There are now such educational and advocacy organizations in many countries worldwide. 12. clarify what your design contribution would be, what urban/architectural design it would need from your hands,

LITERATURE

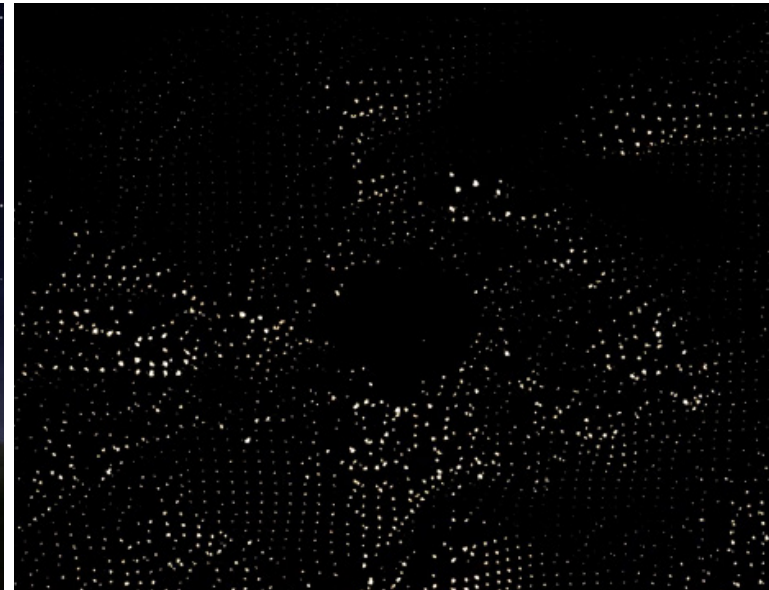
A starry night is one of nature's most magical wonders. Yet in our artificially lit world, three-quarters of Americans' eyes never switch to night vision and most of us no longer experience true darkness. In *THE END OF NIGHT*, Paul Bogard restores our awareness of the spectacularly primal, wildly dark night sky and how it has influenced the human experience across everything from science to art.



Data courtesy Marc Imhoff of NASA GSFC and Christopher Elvidge of NOAA NGDC. Image by Craig Mayhew and Robert Simmon, NASA GSFC.



magnitude scale by International Dark Sky Association



printscreen from the movie territory by Lisa Verhoeven

HYPOTHESIS

My challenge is to create housing in the urban context -where only stacked boxes are build- which don't harden so easily by creating everyday experiences which rises above your daily routine. Provided by the changes of nature, and so the changes of light conditions.

The historical aspect of the 8 demolished houses, both artificial light installations the stadium is providing and the urban location within "the city of light" Eindhoven provide challenging conditions to design the 8 enlightened houses on top of the south ring.

The houses will make use of its environmental light and so the light pollution becomes a solution.

The position of the houses is oriented on the grid of the stadium but it has its interior orientation towards the south which create the main axes of the floor plan.

The daylight has different qualities compared to the artificial light. The daylight moves during season and day and casts sharp shadows. The artificial light is more diffuse and cast the constant shadows, because the positions won't change. Also the color of the artificial light -especially in the stadium- has a constant color, which is very yellow

because of it's purpose, to maintain the grass. Besides this, during the matches and special events the led's provide various colors.

The architecture of the house reacts on this environmental light by creating several ateliers which enlarge the different light qualities.

The shadows in the house are created by its construction. But every house will have their own shadows, added by its user when they bring their personal belongings.

W H ▲ T I S L I G H T T O M ◀ |



Photo of the presentation



1. Introduction

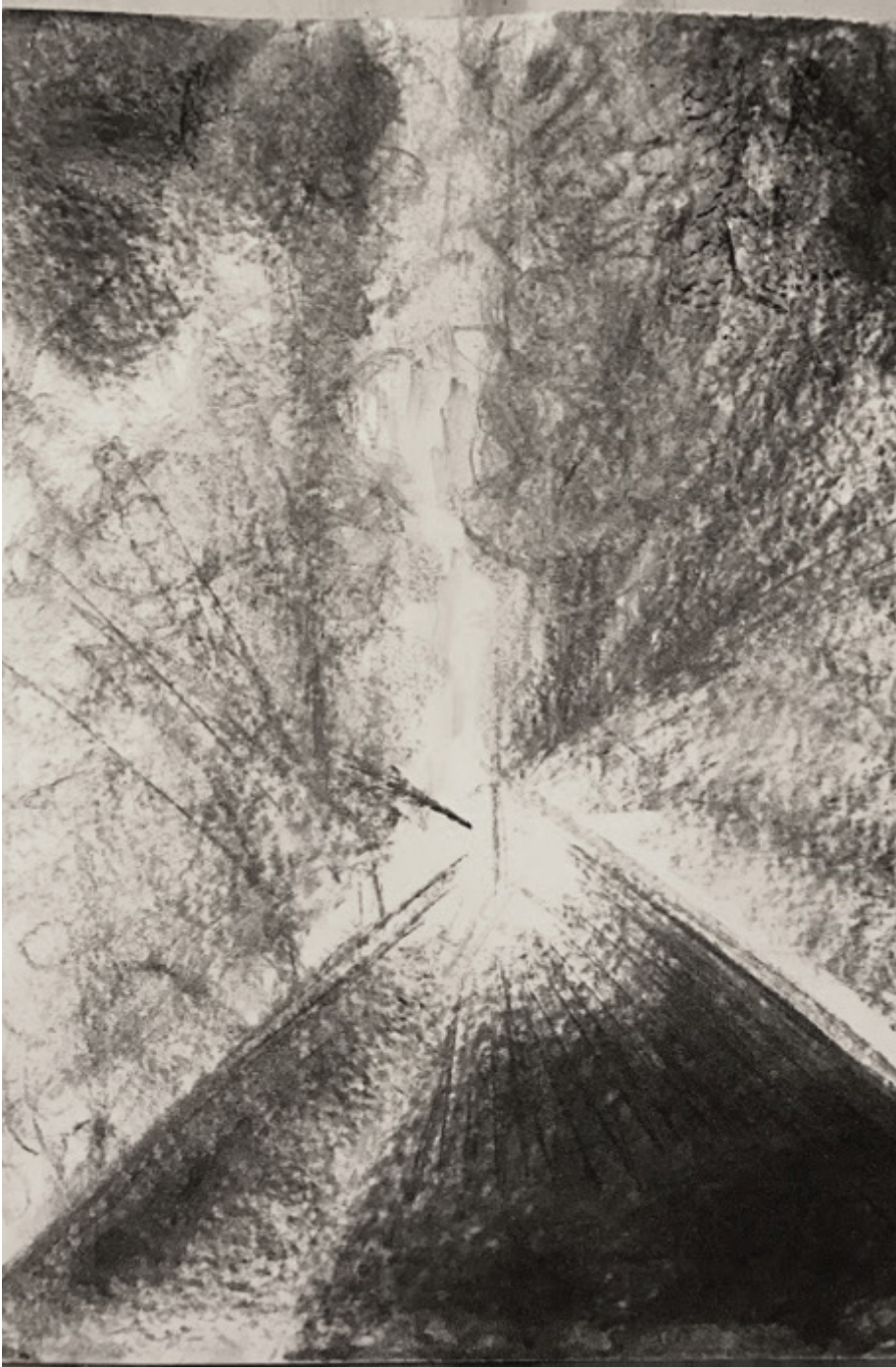
From the start of my study at the academy I am fascinated by the influence of light on space. Mainly how it makes visible and how it influences the atmosphere. A Deeper research about the topic light brought me new insights about how it influences our urban environment and how it is integrated and plays a big role in architecture,



2. History of light

Lights were intended as beacons or guides, rather than illuminate the night. But now we banish darkness from the night.

In the early eighteenth century, proposals had been made to illuminate the entire city of Paris using some kind of artificial light set high on a tower. The most famous of these was the Sun Tower proposed by Jules Bourdais for the 1889 Paris Exposition that would stand at the city's center near Pont Neuf and cover all of Paris with arc lights.



2. History of light

Now we think that we should shine the strongest and largest beam of light in the sky to stand out as much as possible. This happens in Las Vegas, one of the most light polluted areas in the world.

A photograph with long exposure shows birds and bats hunting moths and insects amid the Luxor Casino's beam. (Tracy Byrnes)

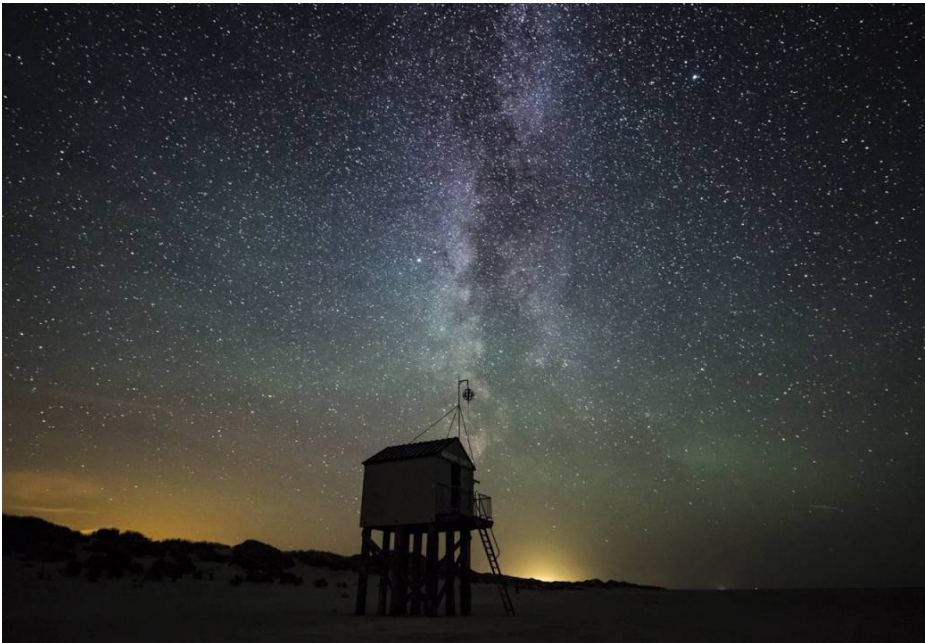
Which makes visible the social interaction light provides. Not only bats, birds, moths and insects are attracted but also the human being. We prefer to socialize in the lights instead of the dark corners of the city.

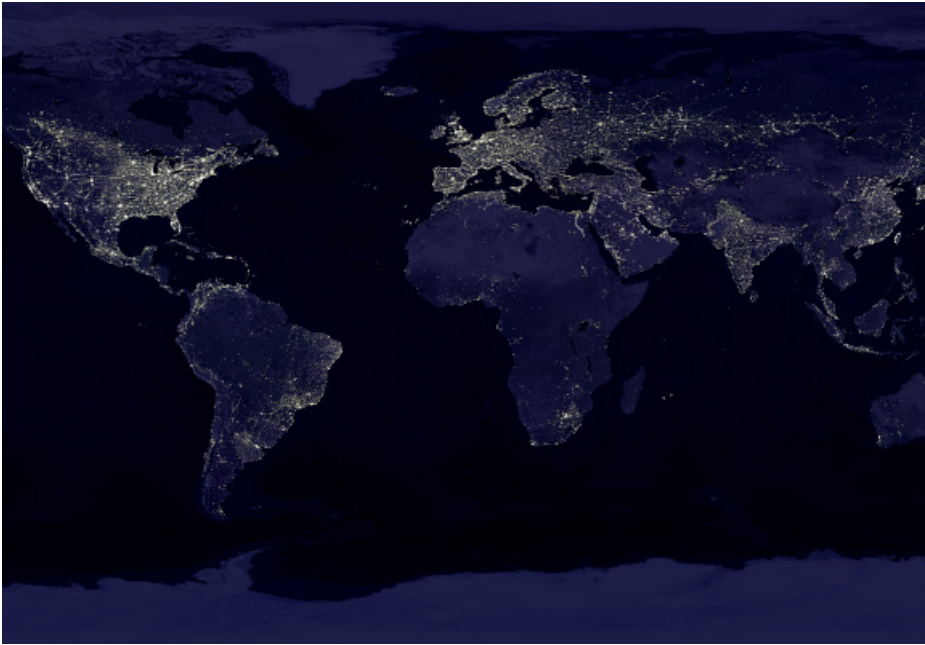


3. Beauty of the night

We cannot experience light without darkness, or darkness without light. The fall equinox is a beautiful, tangible reminder of this fact. The Latin word for Equinox means 'time of equal days and nights'.

But I think nowadays human forgot about this fact because when you never see the milky way in your life, you will start thinking of your own environment as all there is and we lose connection, we got isolated from each other. If that's how you think about where you are, then it rises to an artificial level of unimportance to you. But When you start looking at the night sky you realize how small we are in the cosmos, one sky connects us all. It is this experience of special moments which are able to reset your ego, to realize you are not the center of the universe.



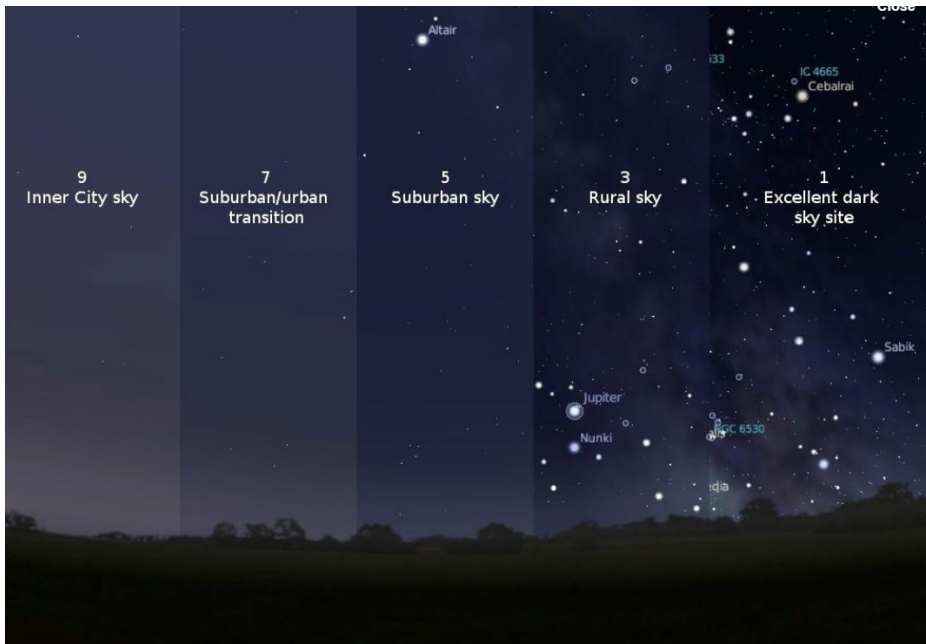


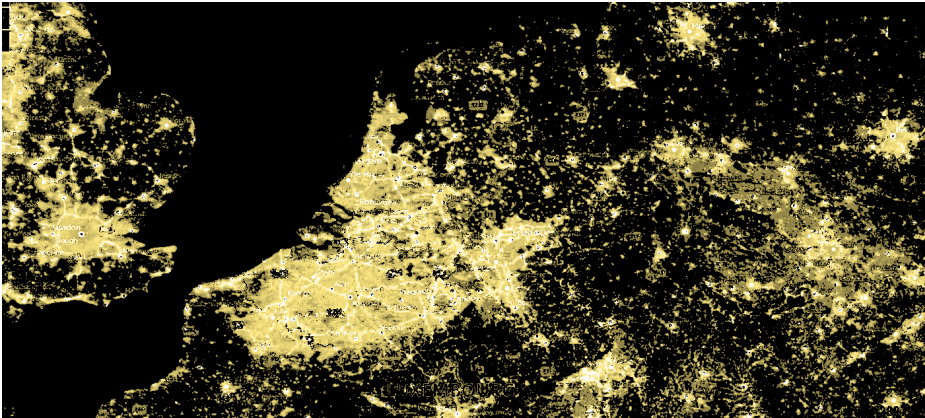
3. Beauty of the night - what we cannot see anymore

According to the World Atlas of the Artificial Night Sky Brightness, created in 2001 by Italians Pierantonio Cinzano and Fabio Falchi, two-thirds of the world's population—including 99 percent of people living in the continental United States and western Europe—no longer experience a truly dark night, a night untouched by artificial electric light.

The International Dark-Sky Association (IDA) defines light pollution as "any adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste."

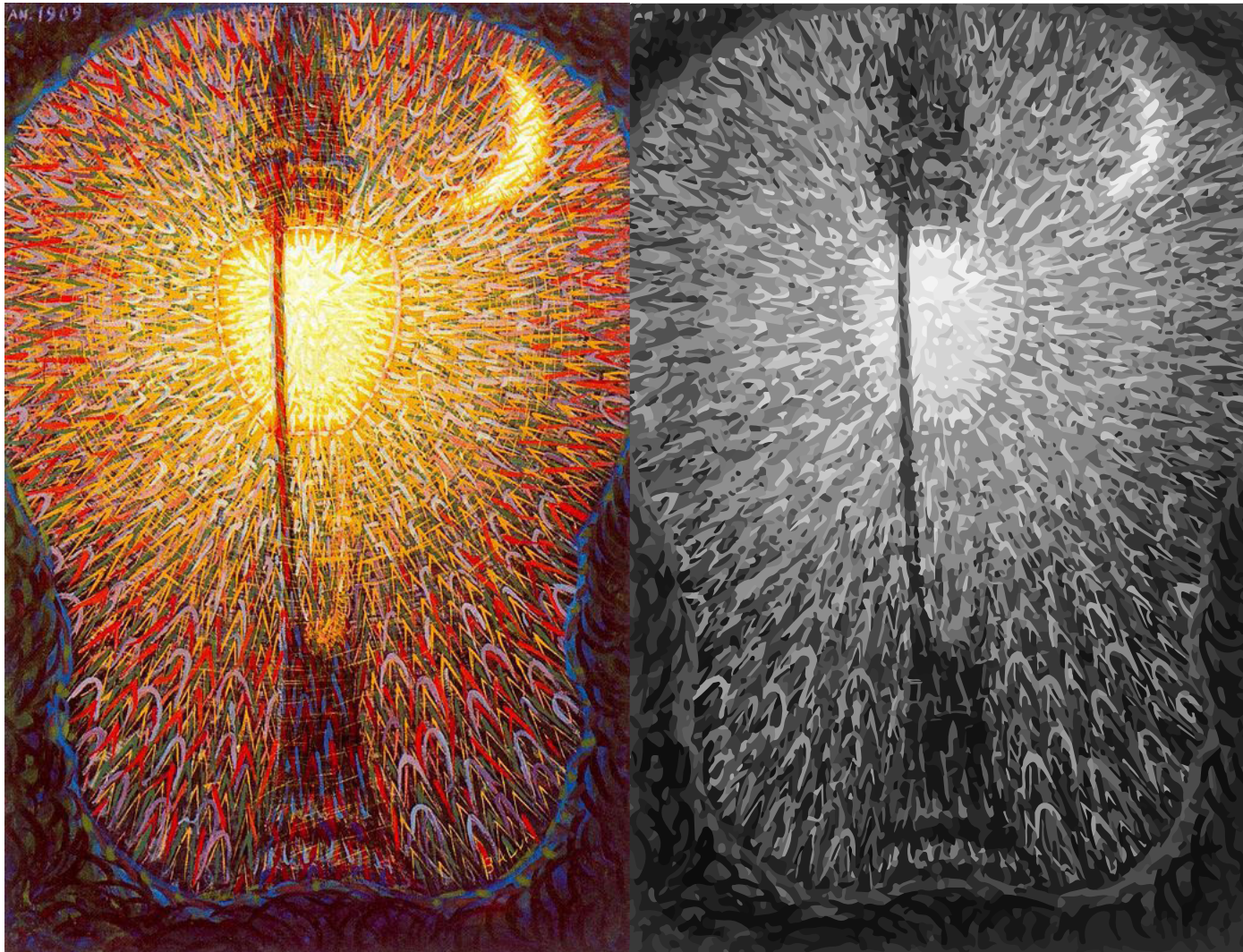
As shown on the map, Netherlands is located in the middle of the most light polluted areas.





3. Beauty of the night - what we cannot see anymore

As shown on the map, Netherlands is very dense polluted, especially in the "randstad" and "westland" together with Belgium- Antwerp we are very bright during the night. But it is not only the cities which are polluted as in the first images, basically our whole land experience glare. only the deeper parts of the north sea is not polluted..



4. Natural vs artificial light - importance of color

Giacomo Balla's Street Light from 1909

When night began to change from something few of us have ever known. because it was too dangerous into the night we know so well, we don't even notice darkness anymore.

We see the importance of the color of light when we leave out the color of these paintings. We can not define if we look at night, day artificial or natural light.

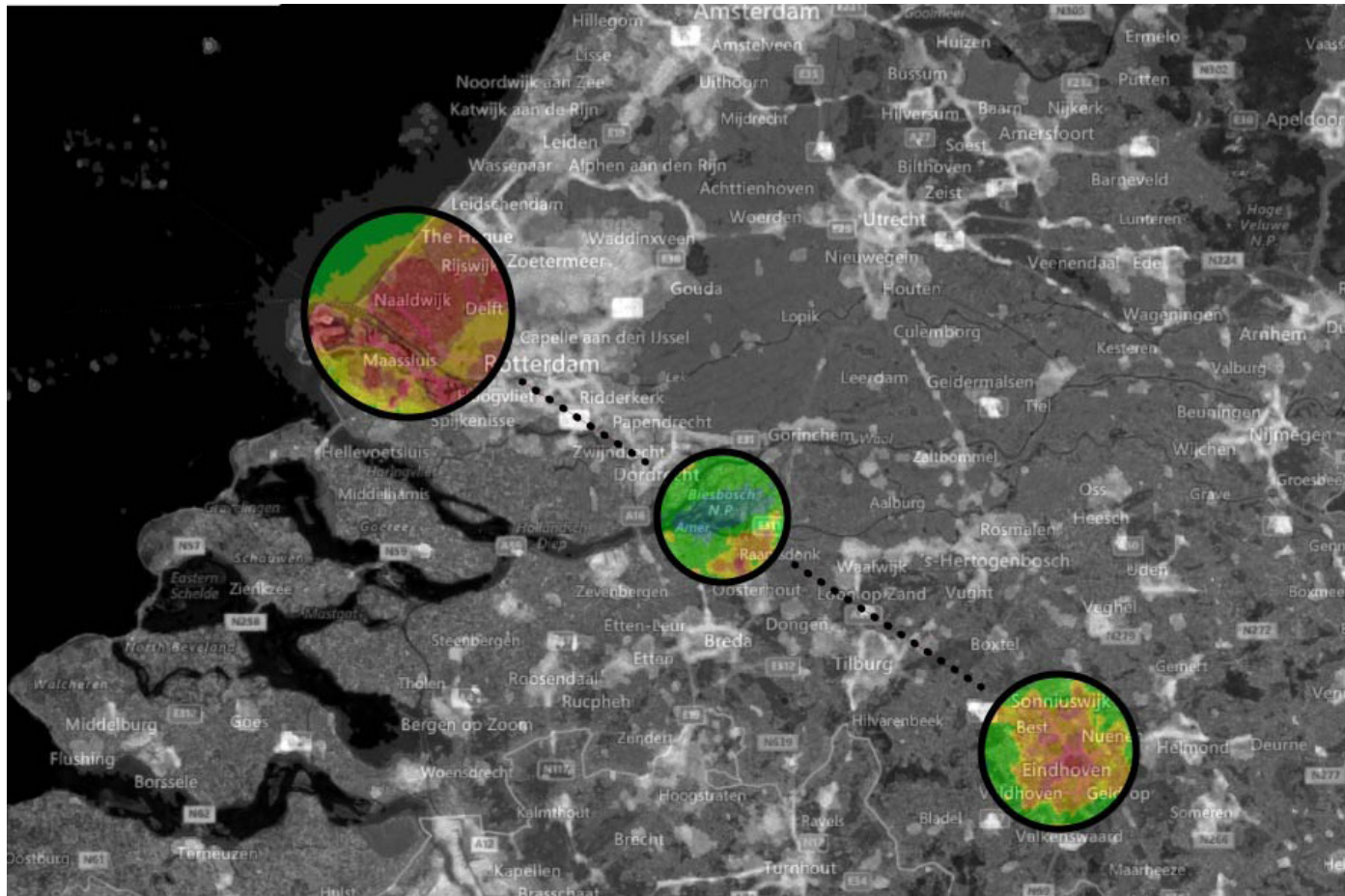


4. Natural vs artificial light importance of color

Vincent van Gogh Starry Night from 1889

People are too quick, to imagine the story of this painting and so the night sky.

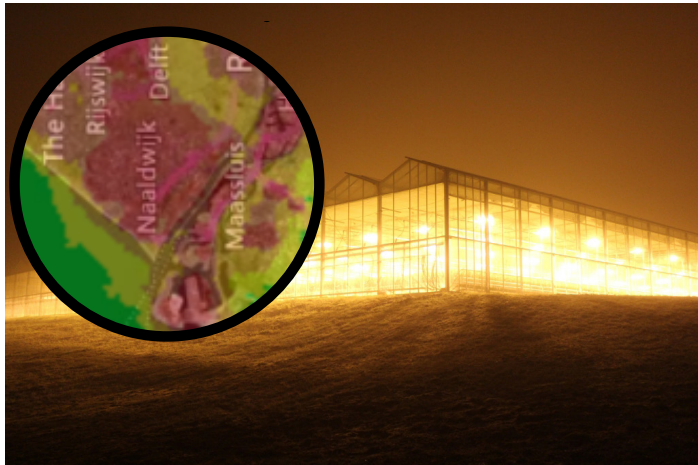
When we look at a starry sky, the sensitive but color-blind rods do most of the work, and so the stars appear mostly white. We seldom stay outside long enough for our eyes to adapt to the dark, and most of us live with a sky deafened by light pollution. The idea that stars come in different colors seems wildly impossible, but actually it is and so saw van Gogh.



5. Light locations

Light map, light pollution, noticed several things.

- + Westland, greenhouses, most polluted area.
- Biesbosch, dark spot in between light pollution.
- o Eindhoven, lichtstad, brainport. average light polluted city



5. Light locations

Light map, light pollution, noticed several things.

+ Westland, greenhouses, most polluted area.



5. Light locations

Light map, light pollution, noticed several things.

- Biesbosch, dark spot in between light pollution.



5. Light locations

Light map, light pollution, noticed several things.

o Eindhoven, lichtstad, brainport. average light polluted city
Enlighten give (someone) greater knowledge and understanding about a subject or situation. Can balance the two other location as a starting point.

6. Theory

Being enlightened by architecture is a combination between knowledge and experience/presence of space.

Without light we experience disorientation and isolation.

When you never see the milky way in your life, you will start thinking of your own environment as all there is and we lose connection, we got isolated from each other. If that's how you think about where you are, then it rises to an artificial level of unimportance to you. But When you start looking at the night sky you realize how small we are in the cosmos, one sky connects us all. It is kind of a resetting of your ego, to realize you are not the center of the universe.

Sting theory.

10 dimensions, we see 3, length Height width, we experience 4, time. But there are 6 we cannot get a grip on yet.

The Parable of Plato's Cave to introduce the notion that we are living in a reality of our own creation, subject to our human sensory limitations as well as contextual and cultural norms.

The project contains the paradox, step outside your cave and begin to experience here and now.



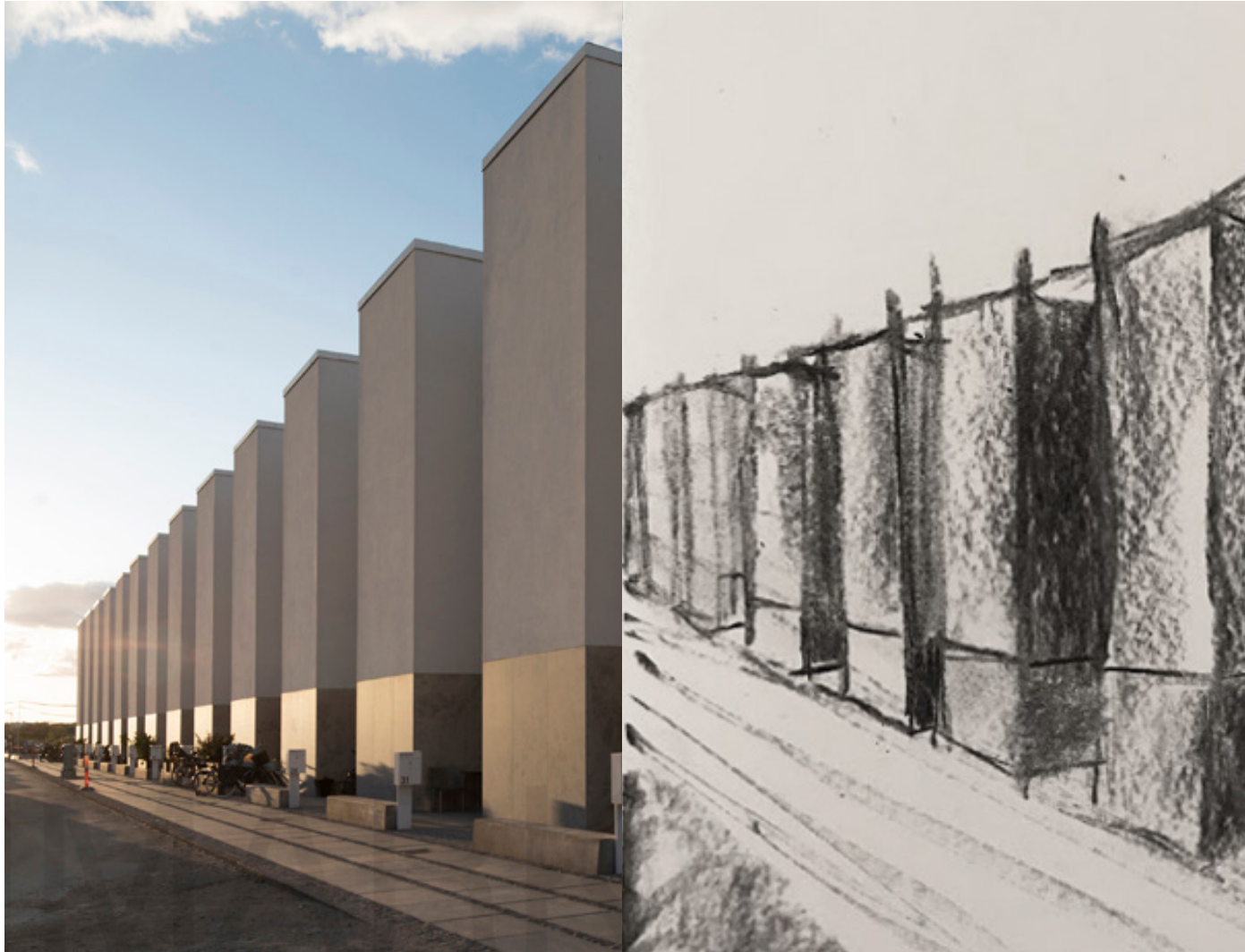
7. Move people / what moved me?

Architecture has the ability to move people. A space that creates a deeper seeing.

Souto de moura venice biennale

There is no interruption of the overall impression by small parts which have nothing to do with the object statement. Our perception of the whole is not distracted by inessential details. Every touch, every join, every joint is there in order to reinforce the idea of the quiet presence of the work." P. Zumthor

The subtlety in the details of the joints and the representation of the cross.



7. Move people / what moved me?

Holgaard arkitekter , Kopenhagen.

"Architecture is the masterly, correct and magnificent play of masses brought together in light. Light and shade reveal forms; cubes, cones, spheres, cylinders or pyramids are the great primary forms which light reveals to advantage; the image of these is distinct and tangible within us without ambiguity. It is for this reason that these are beautiful forms, the most beautiful forms. Everybody is agreed to that, the child, the savage and the metaphysician." Le Corbusier. The change of reflection by using two materials, is enough to impress with a row of cubes.



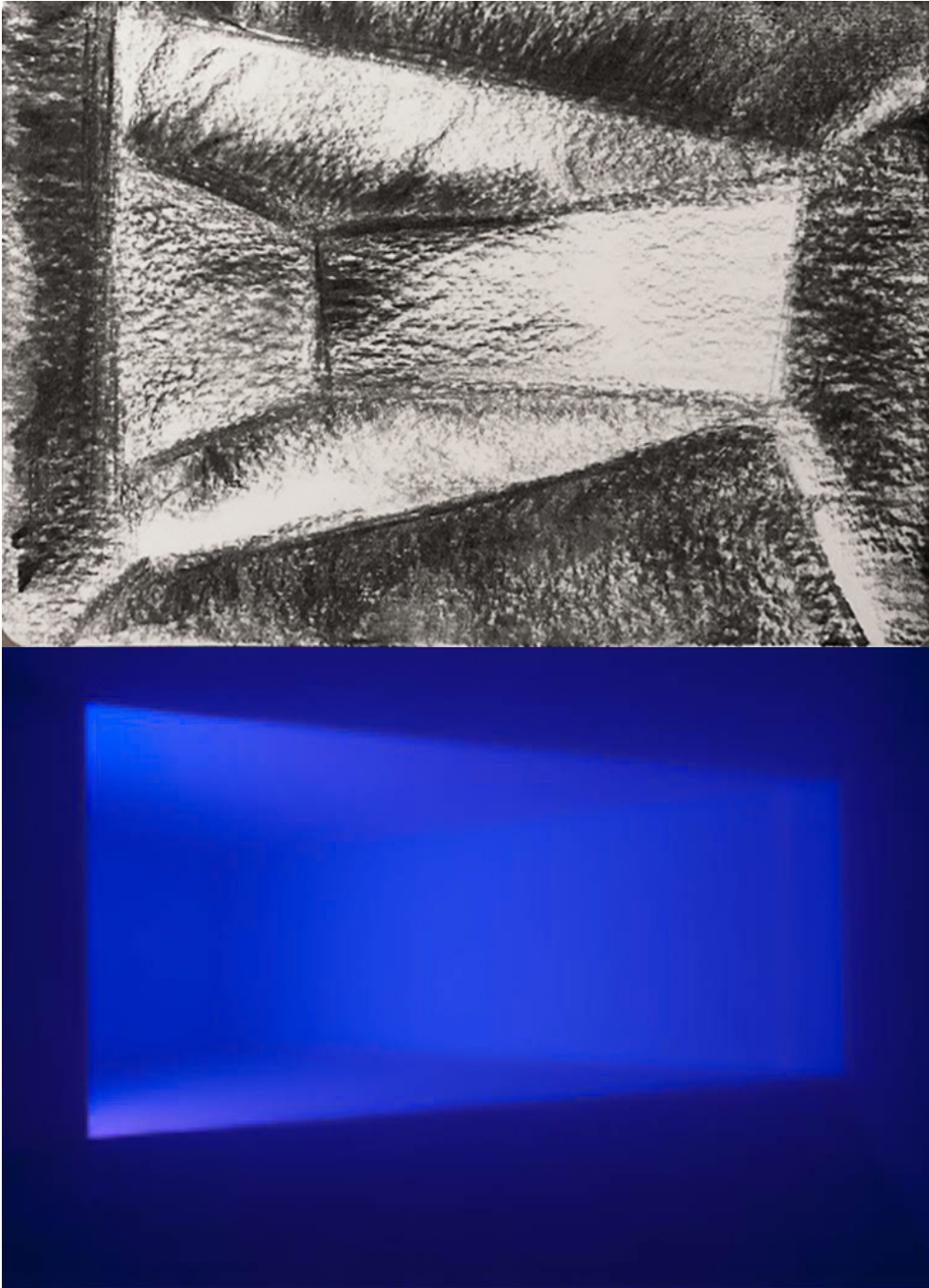
7. *Move people / what moved me?*

Mies van der Rohe Neue Nationalgalerie Berlin.

The essence of architecture is to open the hearts of the people and to move them in such a way that they are glad to be on earth. The central question is how to delight with architecture? T. Ando

The proportions, cast of shadows by details, beacon of peace next to crowded street.





7. Move people / what moved me?

James Turrell, Wedgework 3 De pont, Tilburg

Turrell's medium is pure light. He says, "My work has no object, no image and no focus. With no object, no image and no focus, what are you looking at? You are looking at you looking. What is important to me is to create an experience of wordless thought." J. Turrell

Confusion, disorientation of the space.

8. Conclusion

We enlighten the city, urban environment, to feel safe, accommodate social interaction and where you can find your direction

The word light is used in 243 other words to explain an atmosphere. One of them is enlighten

- 1. Give (someone) greater knowledge and understanding about a subject or situation.**
- 2. Shed light on (an object)**

L I G H T L O C A T I O N S |

RESEARCH FOR THE PROJECT LOCATION

LIGHT LOCATIONS

On the light map of light pollution I noticed several things.

- + Westland, greenhouses, most polluted area.
- Terschelling dark sky nature reserve

o Eindhoven, also known as "lichtstad" or brainport. Is an average light polluted city. This is the balance point between the two extreme.

Also I grew up here and live in Philipsdorp, as the name states, Philips build it for their employees in 1910 because of the lack of good housing.

Today there is also a housing shortage in Eindhoven, among others for employees of ASML. Who is providing their houses?

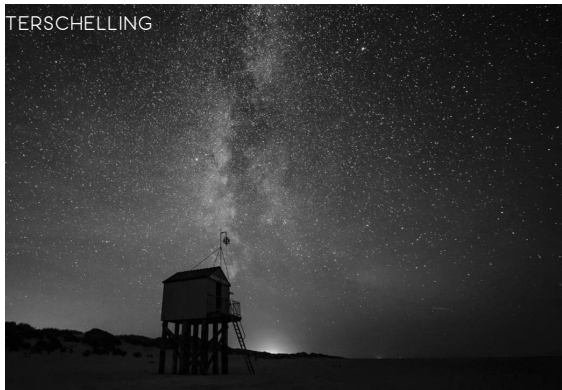
EINDHOVEN



LOCATION FOCUS - THE INNER CITY CENTRE

In the inner city center we are exposed to the shocks of every day life. high density provides routing with appealing conditions for the introduction and the departure of the project. The light tower, Philipsdorp and a first discovered potential site the light city also provides darkness- are all situated here.

TERSCHELLING



WESTLAND



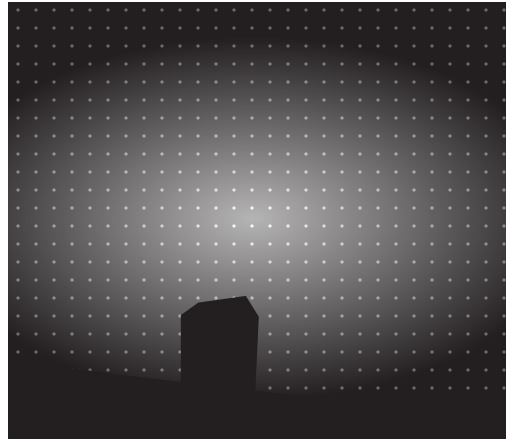
LIGHT LOCATIONS

Instead of building the project in tree locations the two extremes of Westland and Terschelling can be projected as the "toverlantaarn" in the city of light where you can experience then the darkness and the brightness.

Projected can be, virtual, physical or recreating the atmosphere.



RECREATE THE ATMOSPHERE



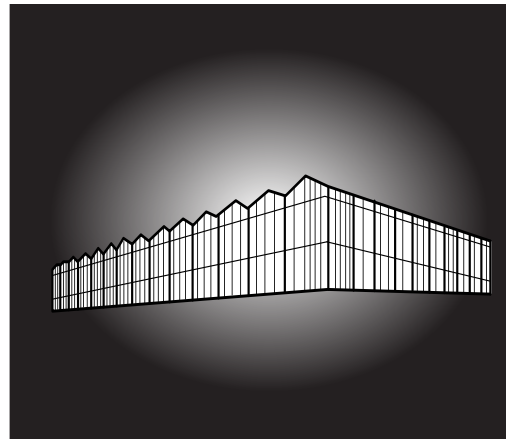
PHYSICAL



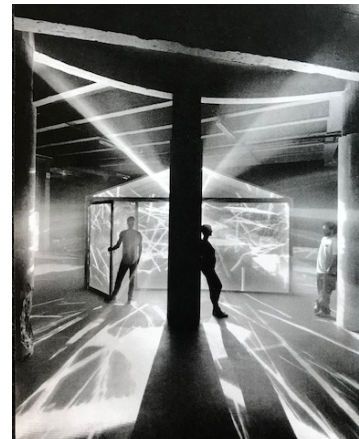
VIRTUAL



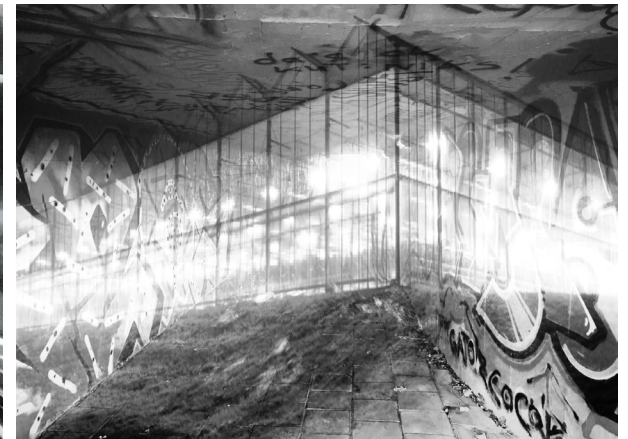
RECREATE THE ATMOSPHERE

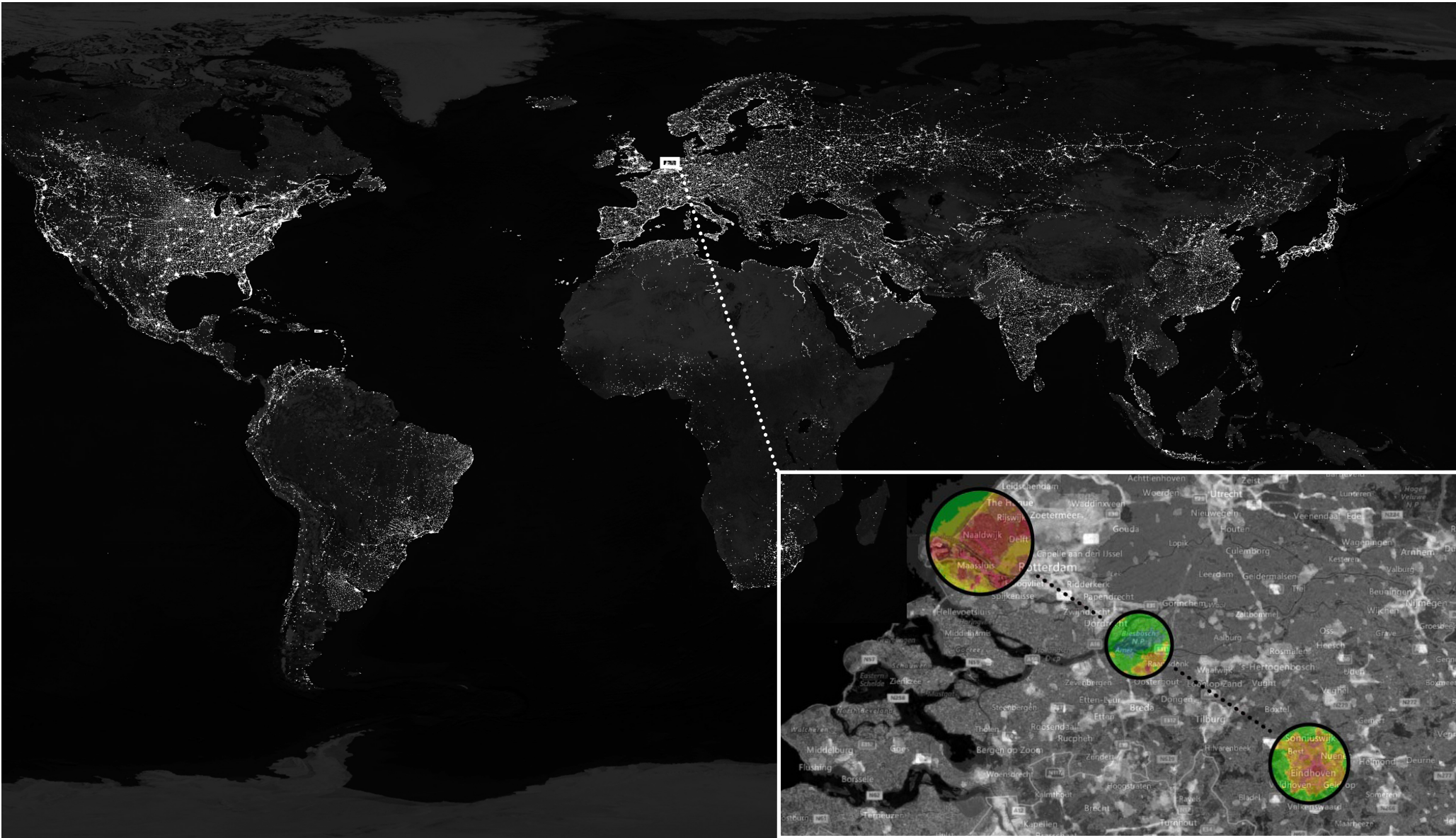


PHYSICAL



VIRTUAL

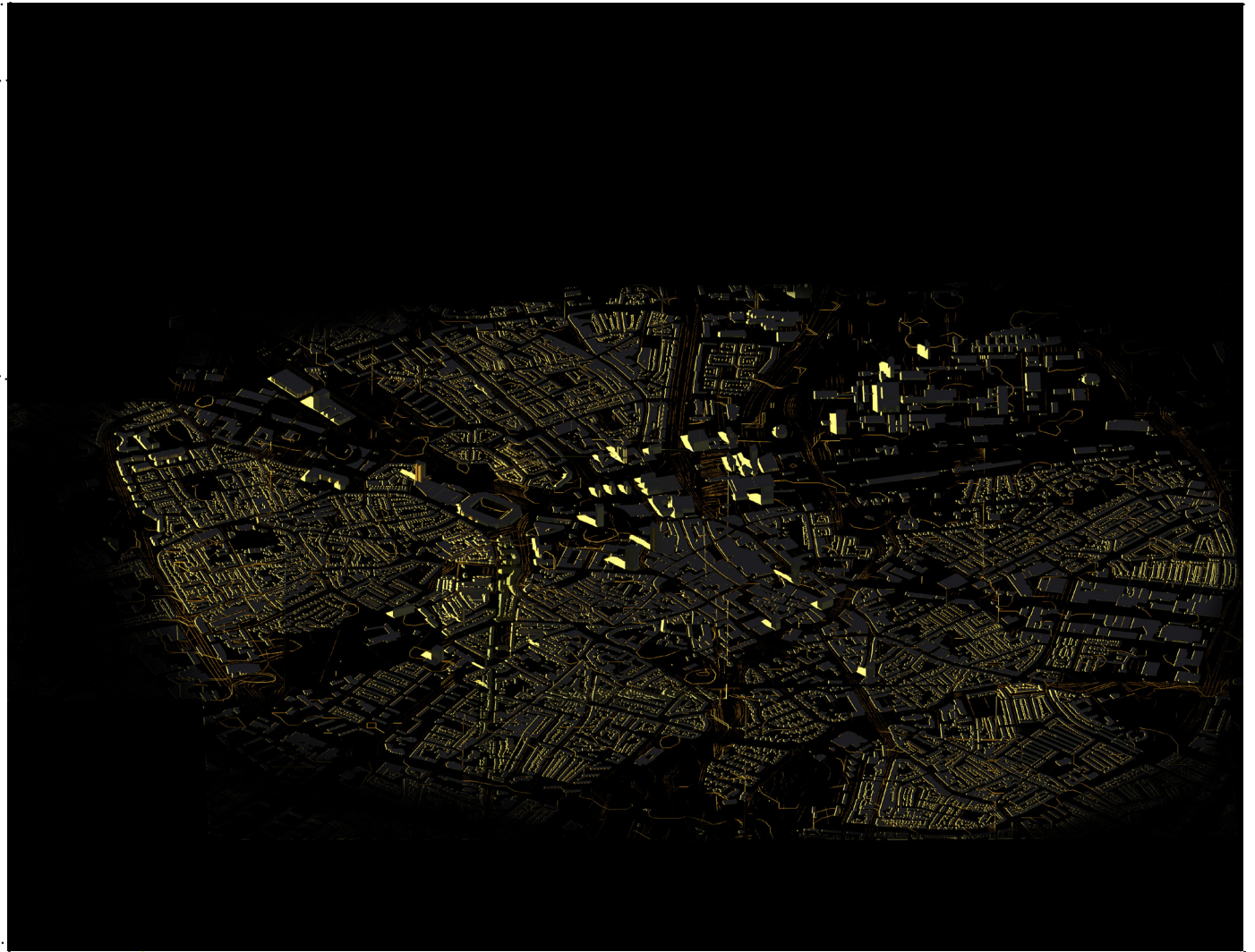




INVERT THE LIGHT MAP, EMBRACE THE DARKNESS



LIGHTS OF EINDHOVEN



SHADOWS OF EINDHOVEN

Lights were intended as beacons or guides, rather than illuminate the night, but now we think that we should shine the strongest and largest beam of light in the sky to stand out as much as possible, we banish darkness from the night and got disorientated.

Our living environment is build as a shell which protects us from nature. We prefer to socialize in the lights instead of the dark corners of the city, but we cannot experience ... fact, because when you never see the milky way in your life, you

will start thinking of your own environment as all there is, we lose connection to the sky which connects us all and got isolated from each other.

Bring back the natural influences in the daily habitat of human creates an experience of special moments which are able to reset your ego, to realize you are not the center of the universe.



PHILIPSDORP

After 1910, this neighborhood was built to meet the need for living space for employees of Philips' rapidly growing light bulb factory.

current residence



PASSAGE

In search for the darker corners of the light city, You find a lot of under road passages for bikes and pedestrians on your way to the station.



EMMASINGEL

One of the brighter spots in the city centre is the corner of the emmasingel with the "blob". The facade reminds me of the repetitive lights of the light polluted "Westland".

D E S I G N C O N C E P T S |

CONCEPT 1



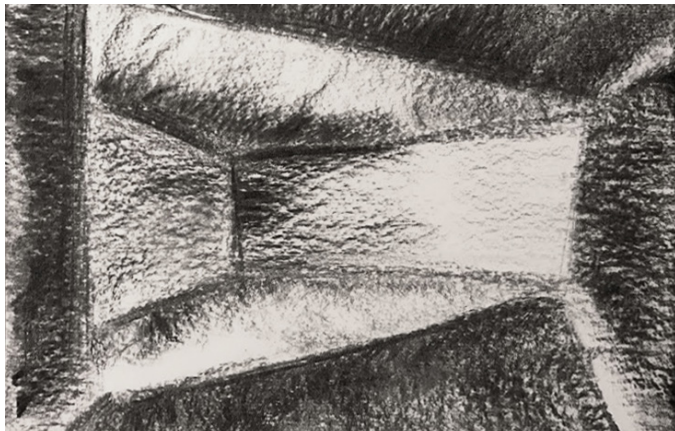
**Eindhoven,
15 December**

The weather reflected the light pollution more than ever before because of the presence of fog.



**Darling,
De Vlei**

The memory of the De Vlei is the feeling of unity. Which is lacking in the daily living environment I experience. The project should drag people outside their own individual reality by making new connections or interactions.



**James Turrell
Wedgework III**

Makes visible the depth of space by the use of light as an material, the same effect as happened in the sky during bad weather.



**Ann Veronica Janssens
States of mind**

This installation of light and fog disorients you. You lose a sense of scale and feel more depended on you senses. An inspiration for bringing connections en dependence between people.

PHILIPSDORP THE MAZE OF LIGHT



SCALE

Including the whole neighborhood
1727 households
42 hectares of land

STRATEGY

DAYLIGHT EXTERIOR INFLUENCE

. Shadows Orientation, Opening positions, Colors, Fog, Materiality. Will manipulate the influence of the present daylight.

PROGRAM

HOUSING

Keep the existing houses and its users. Extend it with extra public functions.



LOCATION

Near the city center of Eindhoven

CONCEPT 2



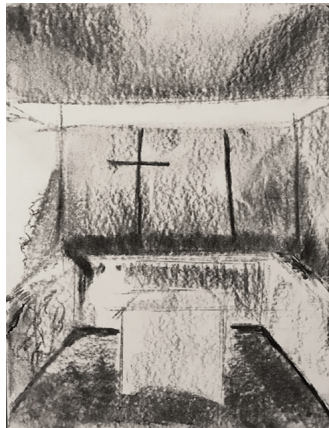
Eindhoven, GLOW

During the light festival in Eindhoven the sky got illuminated by beams of colored light. Visible far beyond the city center.



Cape Town, Top of Table mountain

Reaching the top after a 8 hours hike and arrive at an enclosed red colored lake is a feeling you should perceive every now and then in the hectic modern world. A feeling that rises above the daily, an intensity in feelings, a flashing insight where the image stays in the memory, the enlightenment of a moment of recognition.



Souto de moura Pavillion

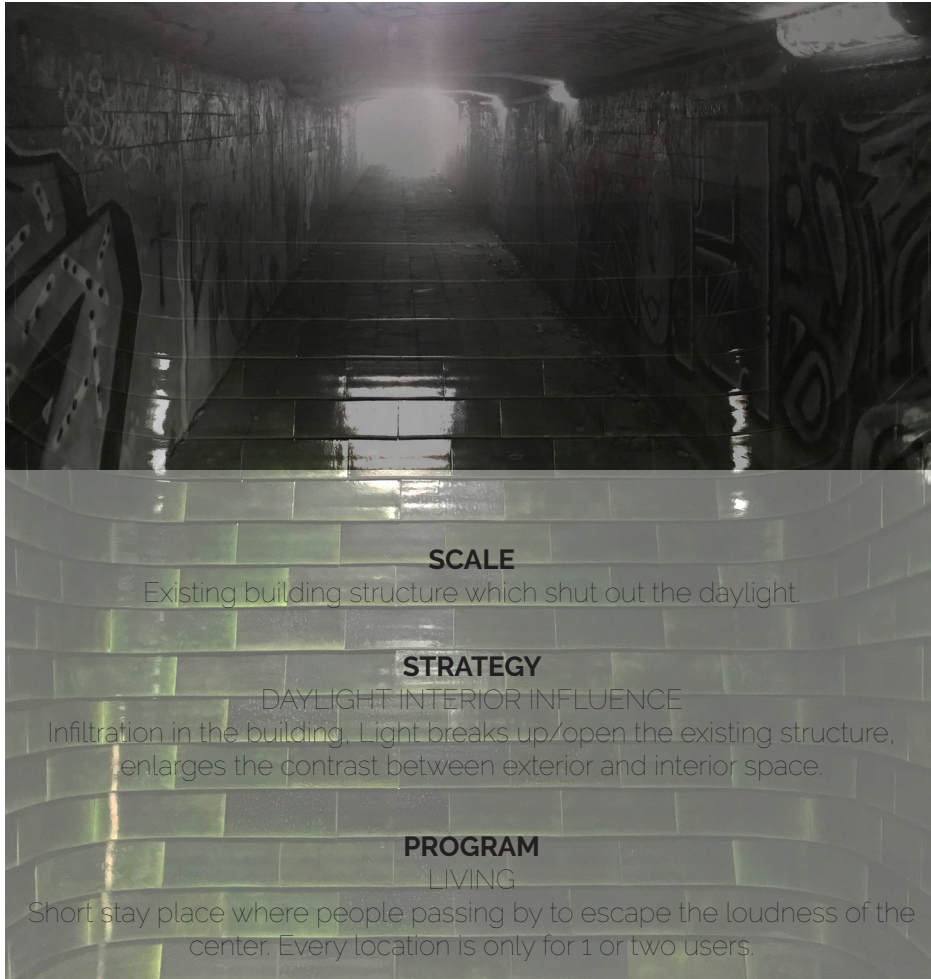
The interior is influenced by the outdoor world. It projects the light influence and enlarges the effect of growing mosses. Reminds on the effect of the light coming in from the end of the tunnel and how the people influenced the space by graffiti.



Aamodt/Plumb Warming hut

Almost the very symbol of home, the room has a unique sound, because of the used materials. The calm and cosines you can feel here should be achieved in the hidden tunnels of Eindhoven, to take a break from the daily routine.

TUNNEL VISION, ENLIGHTENED DARKNESS



LOCATION
Multiple tunnels in the city center of Eindhoven

CONCEPT 3



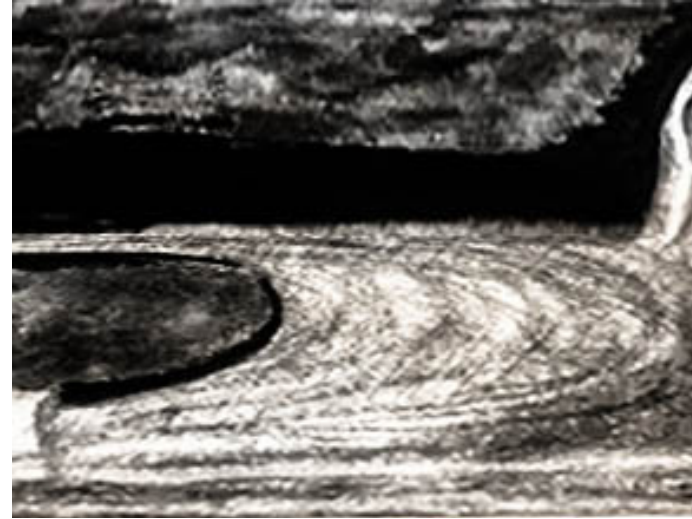
Eindhoven, DAILY

My morning routine route to the office. The road with low street lighting shows a repetitive pattern on eye level, and reduces light pollution.



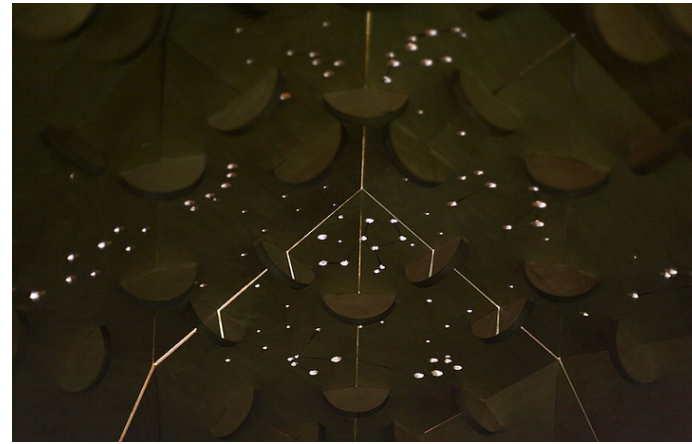
Mies van der Rohe Galerie

How the building is positioned in its context and the use of clarity in the open and closed elements brings the calm, which is missing on the crossroad of Emmasingel.



Cape Town, Signal hill

A night view looking over an enlightened city makes visible the big scale. While living the city on eye perspective you are not aware of this. The view reminds you of the fact that you only have a very small influence on this mega structure.



Engin Ayaz Skylights Dumbo

Skylights reconnects visitors to the notion of the night sky, it biudels the lights of the night sky into stars which perforate the space by constellations. The Emmasingel is very light polluted and intense by advertising lighting and the perfect spot to implement.

A STARRY NIGHT POLLUTION



SCALE

Existing building structure which have a transparent facade and artificial lights 24/7 such as stores or offices

STRATEGY

NIGHTLIGHT INTERIOR INFLUENCE

Cluster the pollution, bundling makes visible, representation of the night, colors of the night.

PROGRAM

HOUSING

Apartments 100m² for expats. Clustered by 5-10, attached or close by the existing light generator. The apartments won't need artificial lights



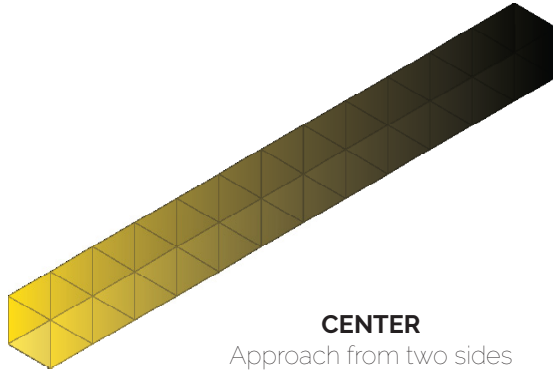
LOCATION

Intense light polluted areas in Eindhoven

M A T E R I A L S T U D Y C O N C E P T 2 |

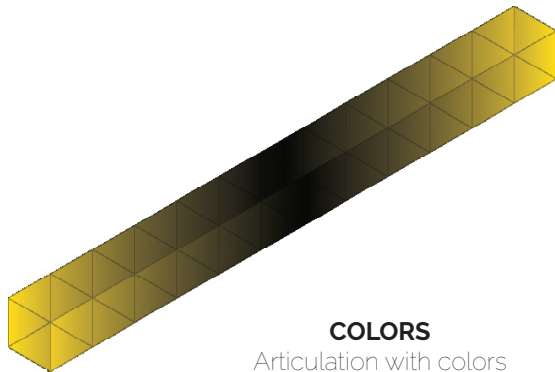
LINEAR

Approach from one side



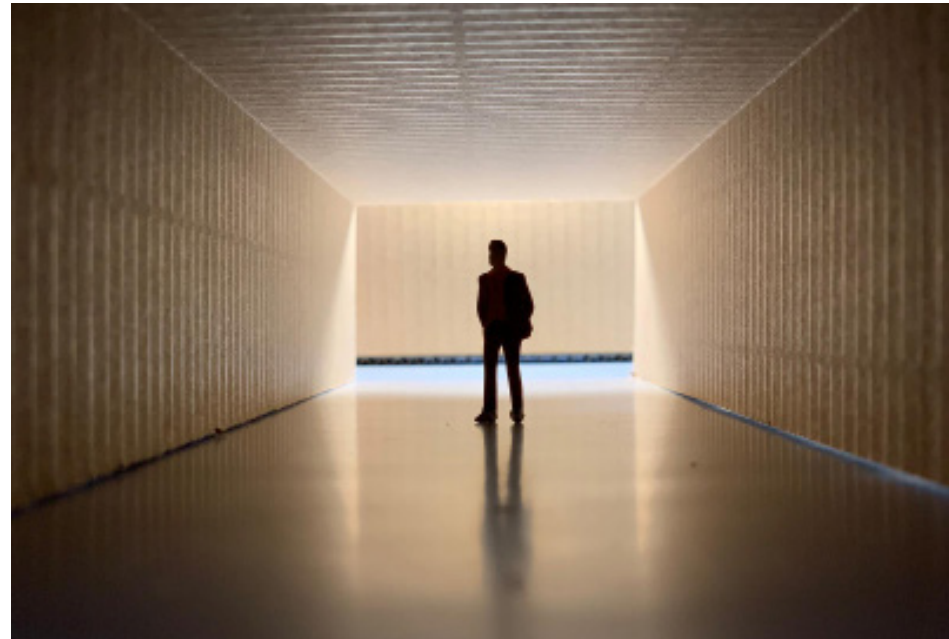
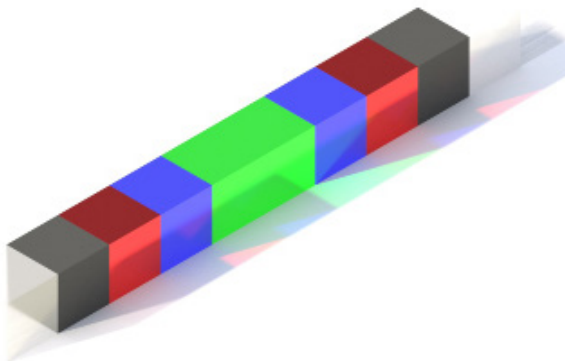
CENTER

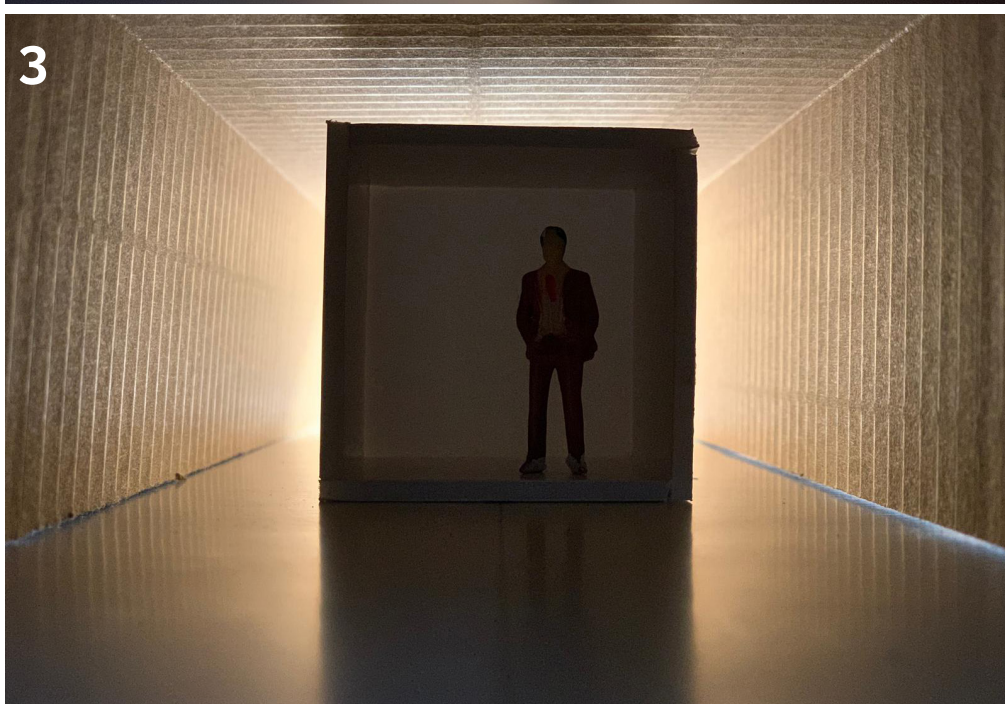
Approach from two sides

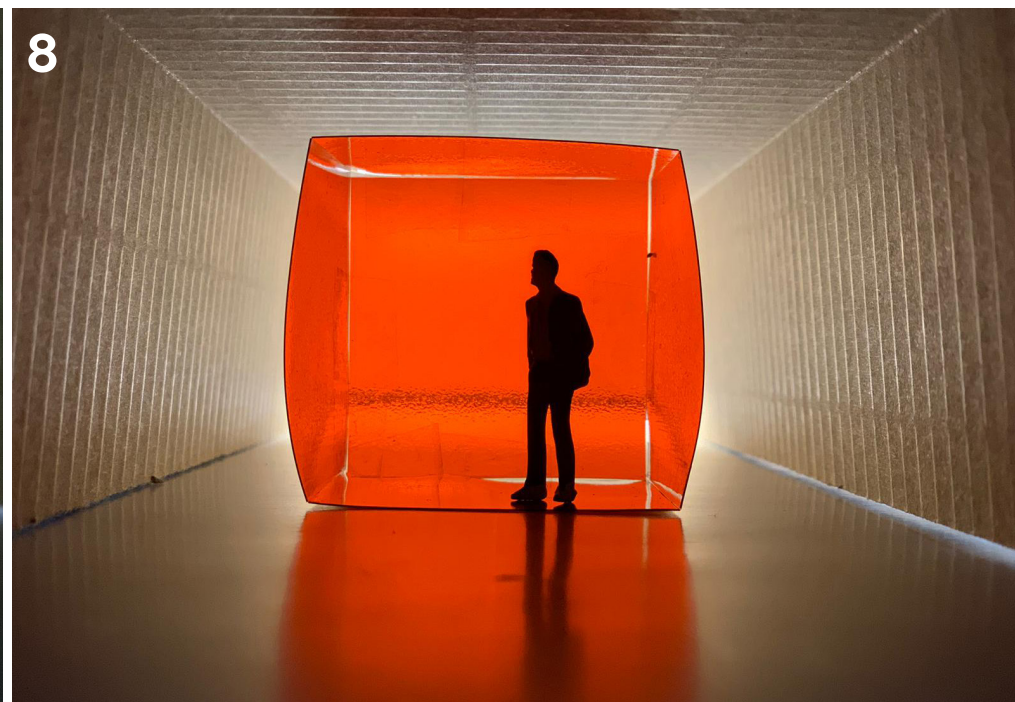


COLORS

Articulation with colors







9



10



11



12



13

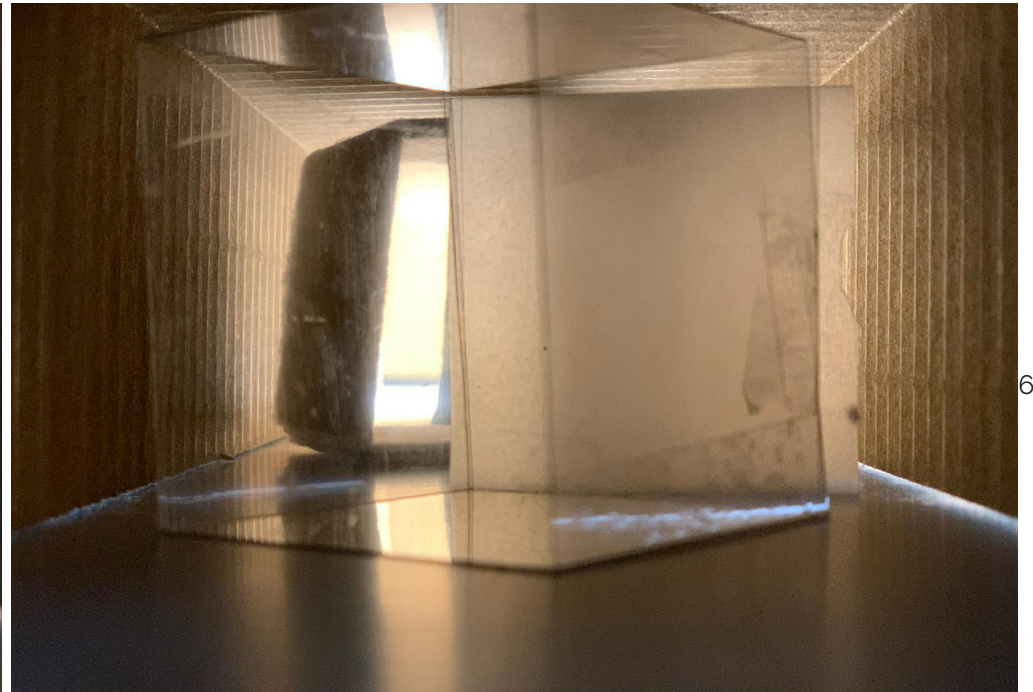
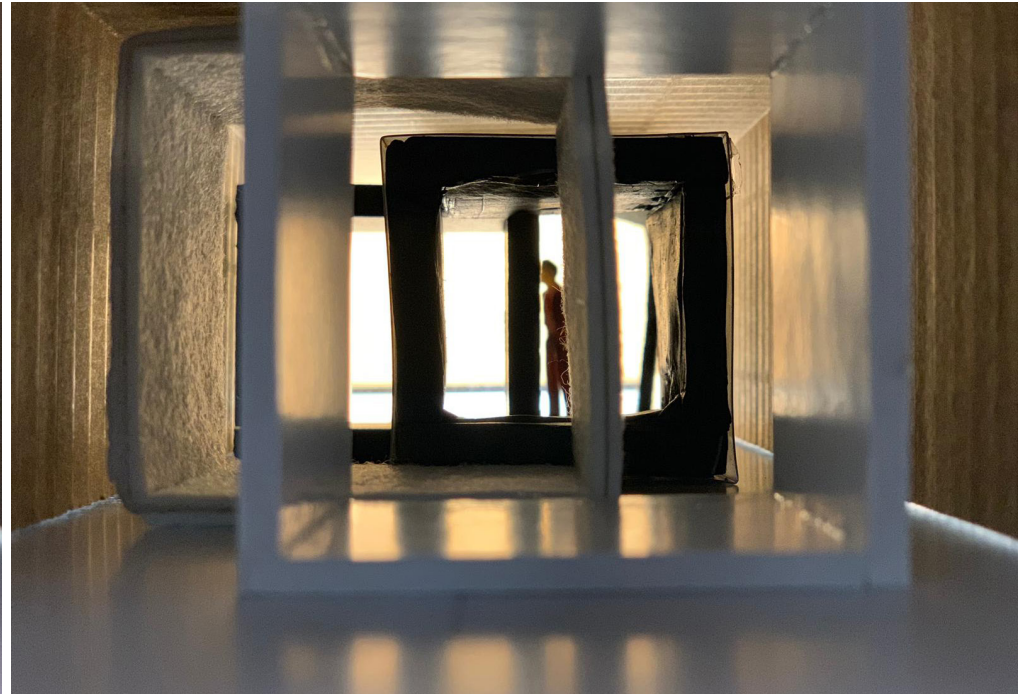
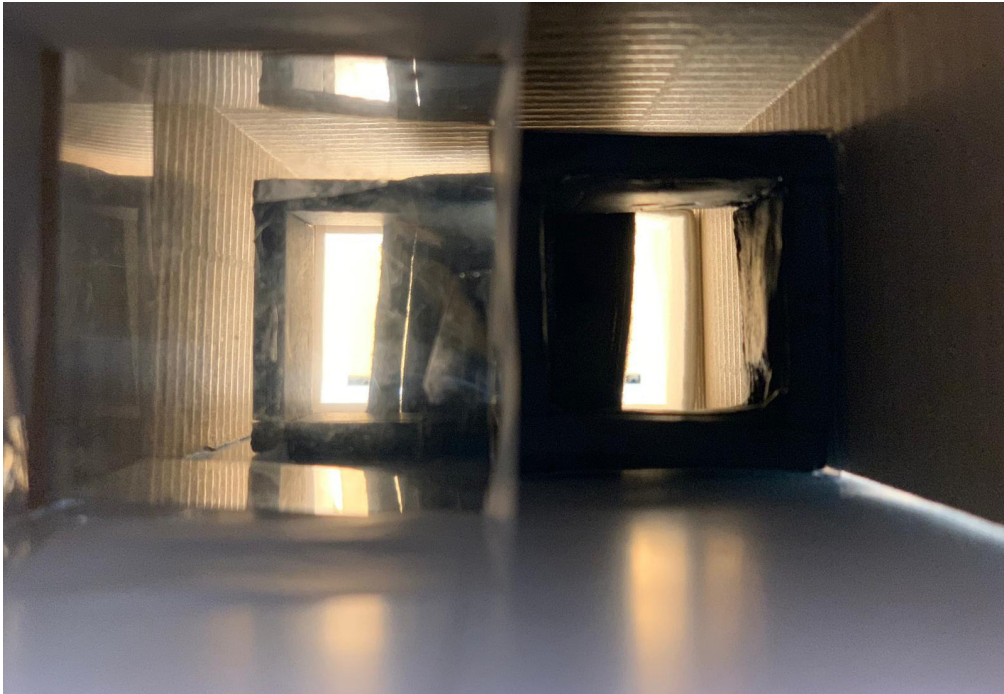


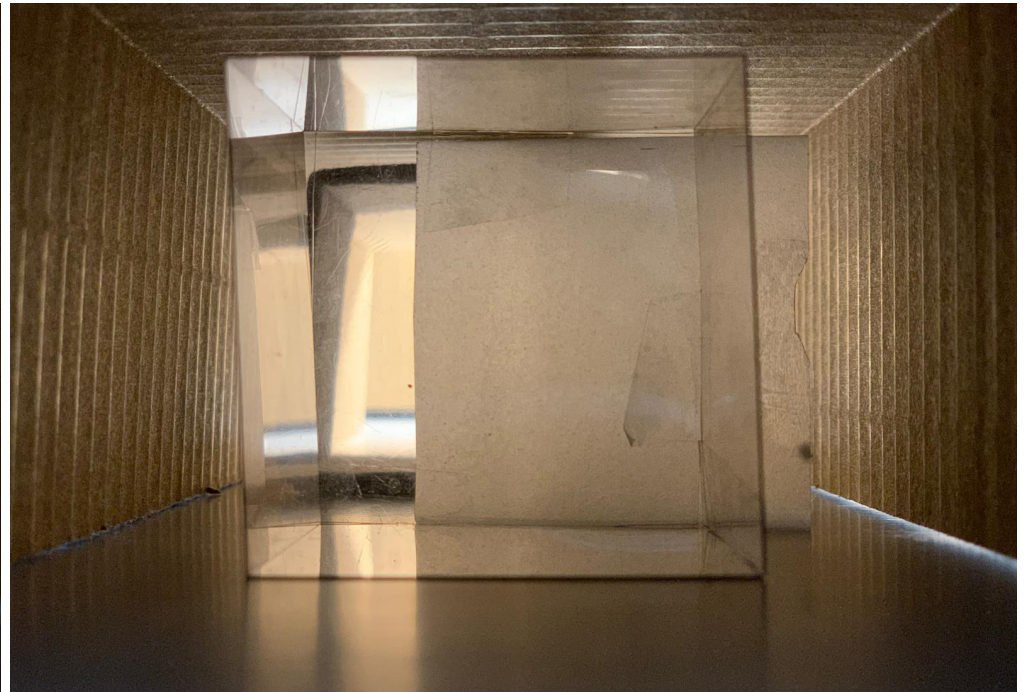
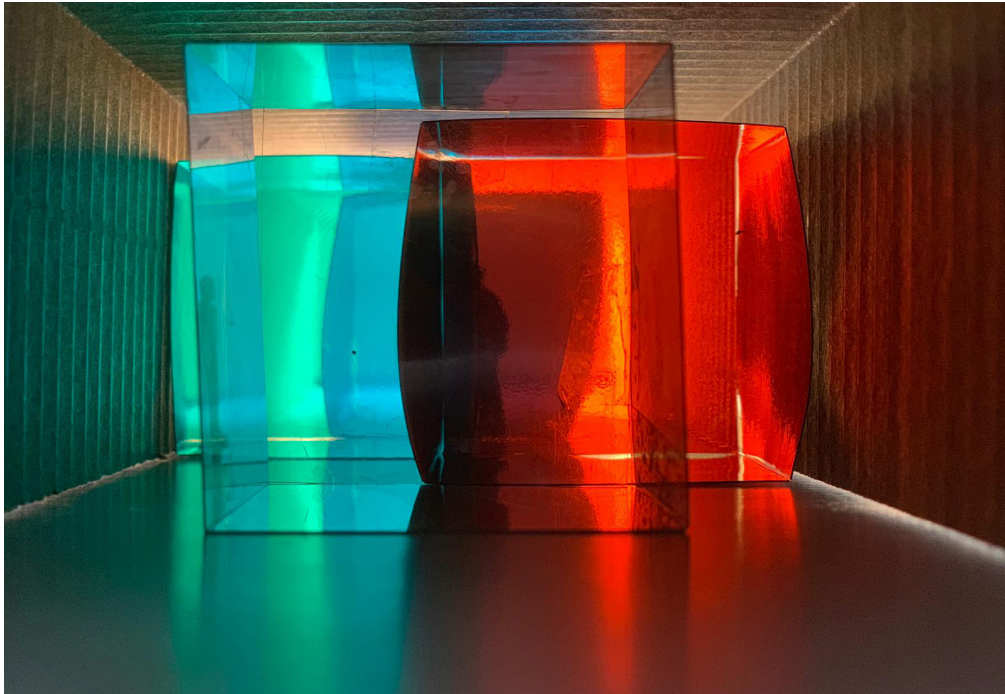
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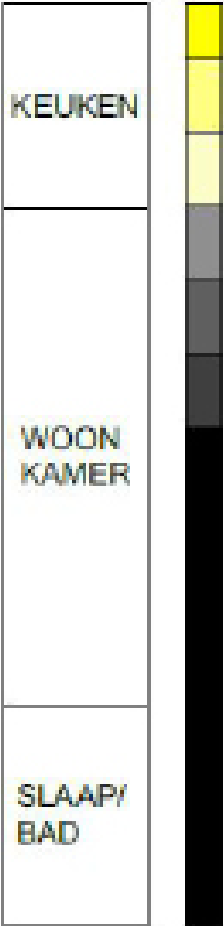
15







PLANS
100M²



L O C A T I O N |

PHILIPS STADIUM - EINDHOVEN

INSPIRATION - LIGHT POLLUTION



STRIJP-S ARRIVAL



JOHANNASTRAAT

THE STADIUM LIGHT DURING A FOGGY NIGHT

INSPIRATION - WEATHER

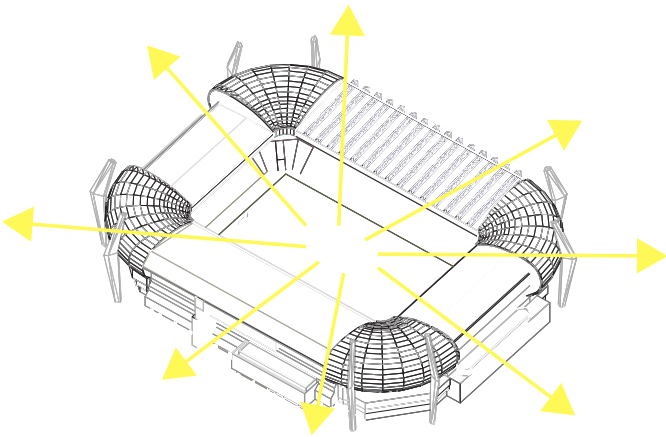


**BACKYARD DURING NIGHT
LIGHT POLLUTION**

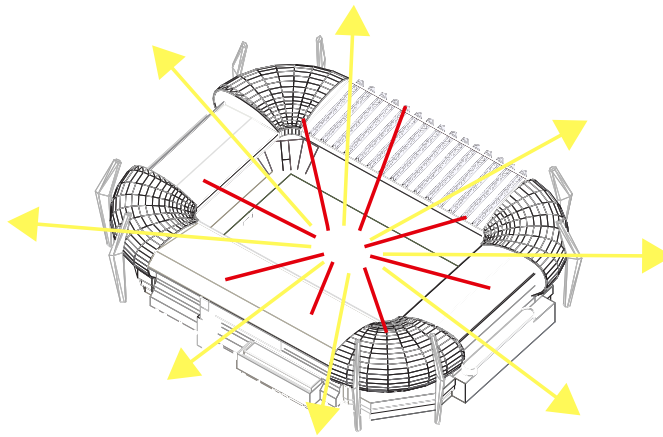


**BACKYARD DURING MORNING
EXPERIENCE OF SUNRISE**

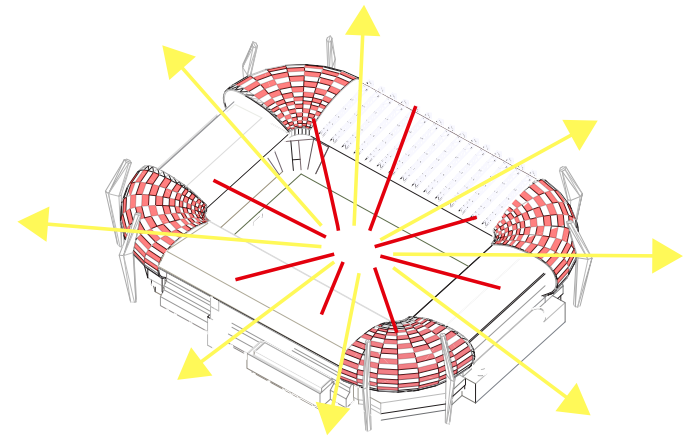
DIFFERENT LIGHT INTENSITIES



24 h glare



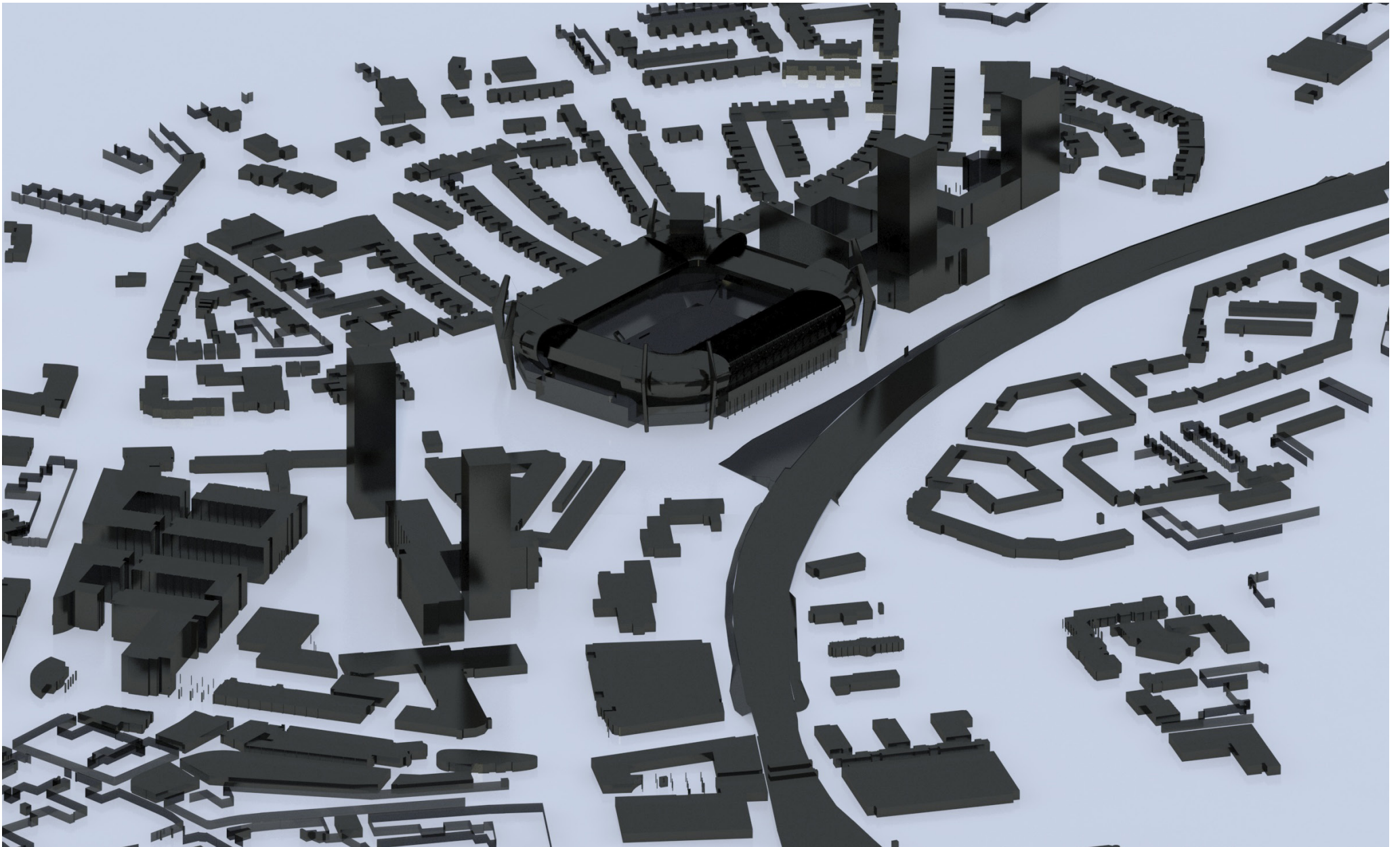
during matches



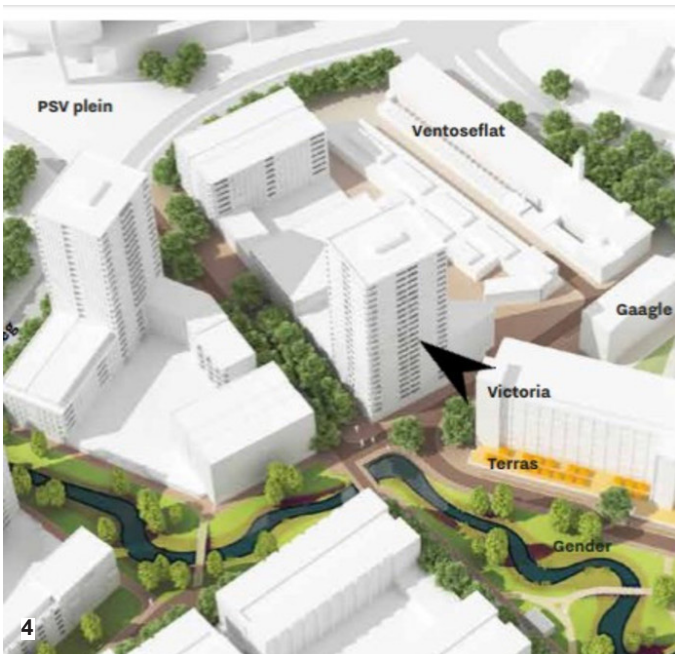
during special events

BIRD VIEW LOCATION EAST








THE STADIUM IS GOING TO BE SURROUNDED BY TOWERS

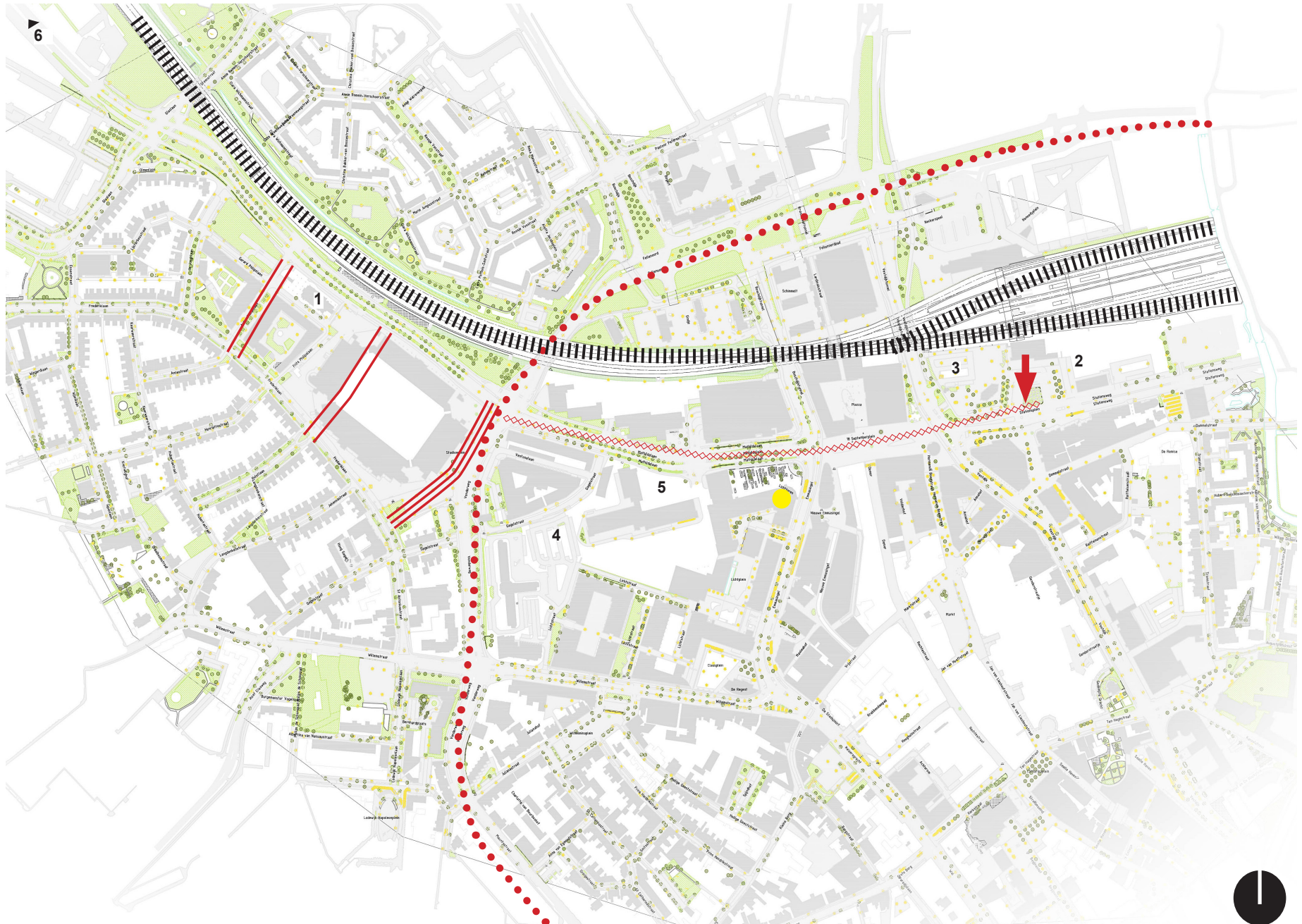


URBAN CONTEXT - UPCOMING HIGH RISE



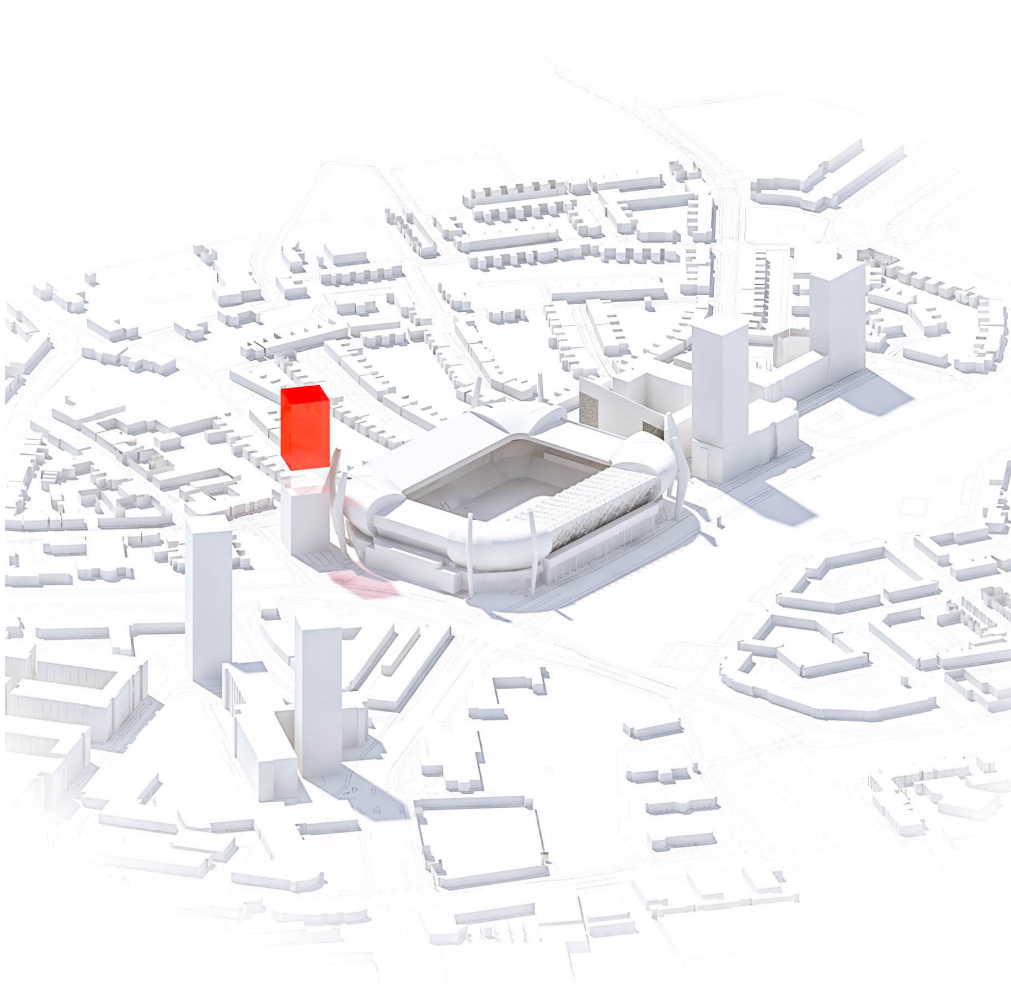
URBAN CONTEXT 1:4000

-  LICHT TOREN
-  ENTRANCE
-  RAILWAY
-  MAIN ROAD
-  ORIGINAL PASSAGE
-  ELISABETH STREET
-  CITY ROUTE



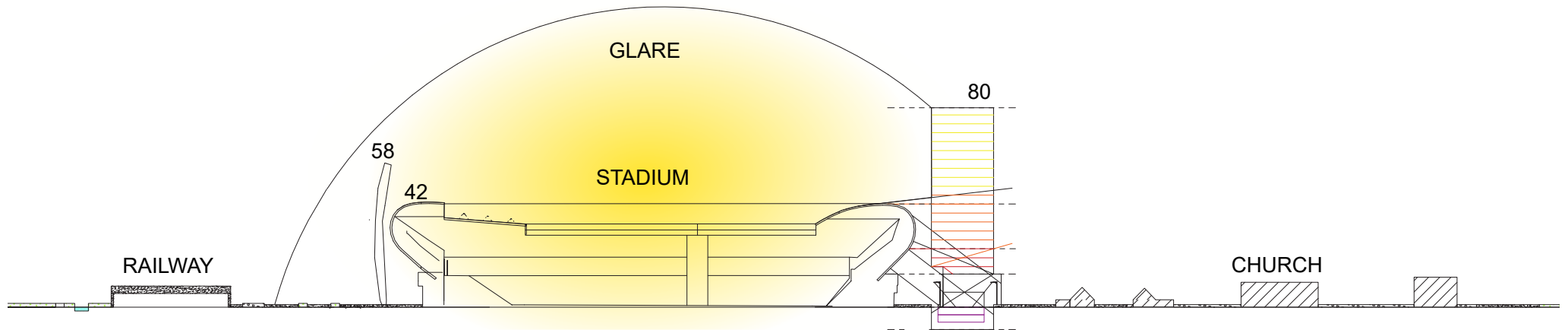
T R A N S L A T I O N 1 |

URBAN CONTEXT - DAY VS. NIGHT



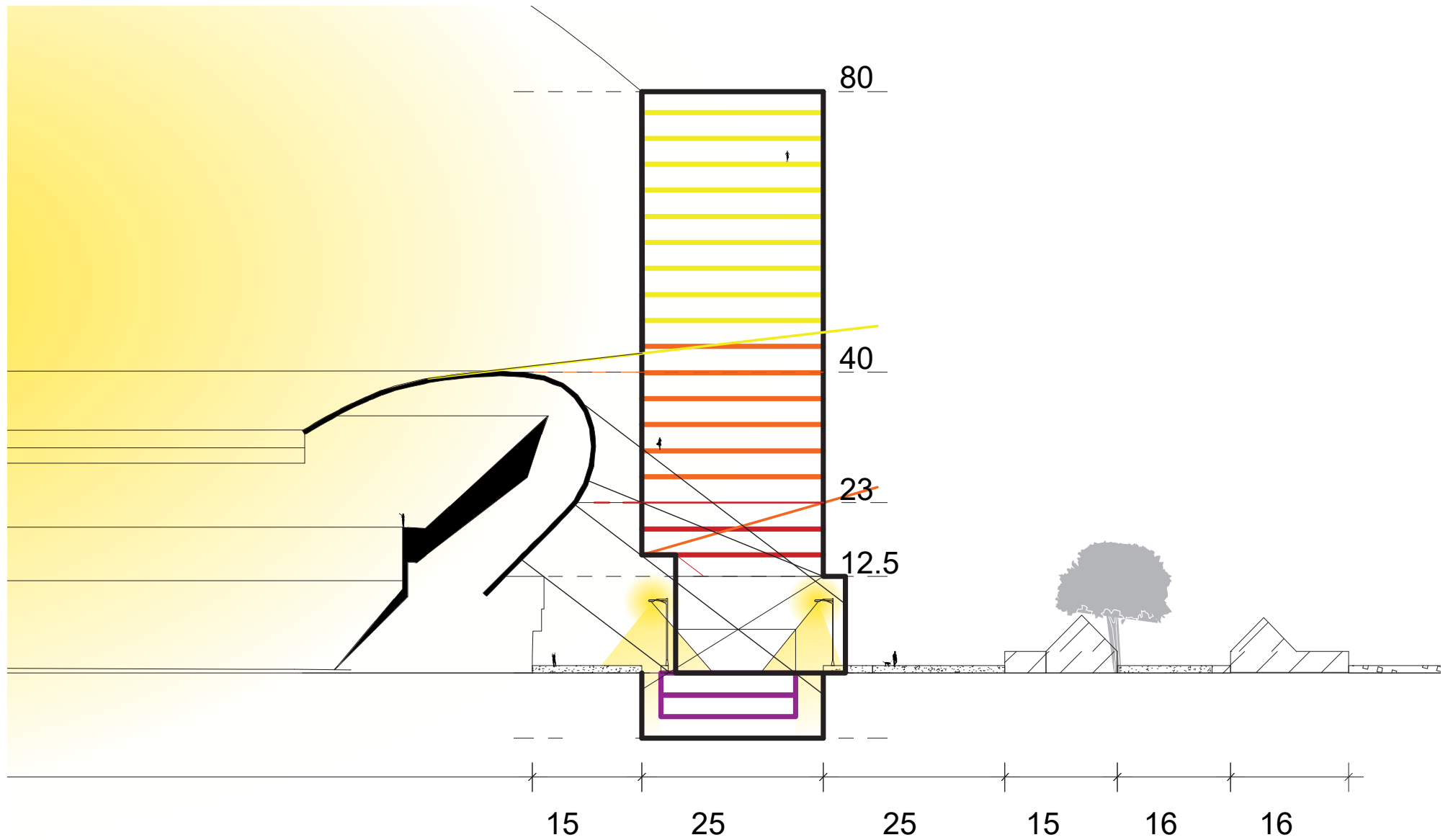
THE TOWER WILL INFLUENCE THE BIGGER SCALE AS A PHANTASMAGORIA

SECTION 1:500

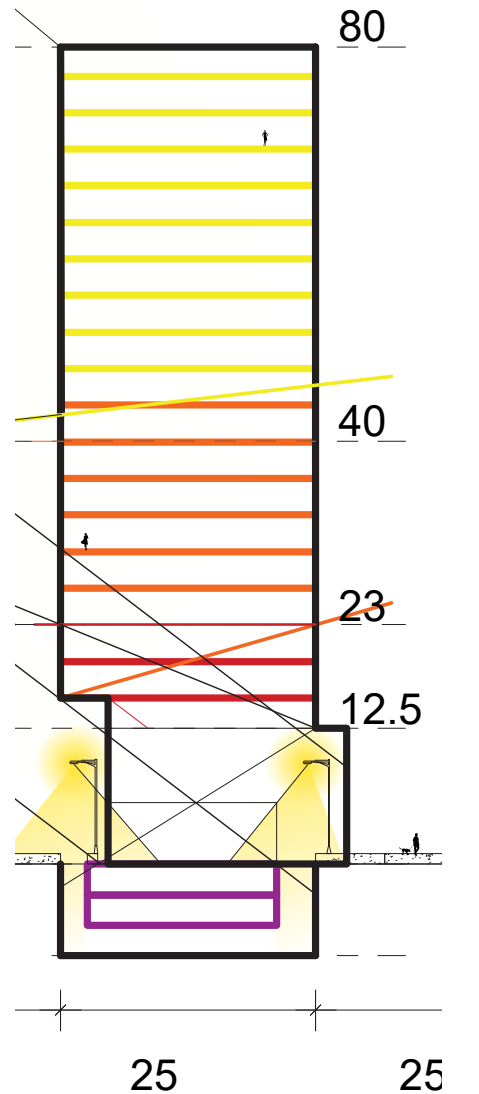


SECTION 1:200

TOWER IS VERTICAL EXPOSED TO DIFFERENT LIGHT INTENSITIES



TARGET GROUP DEPENDING ON LIGHT INTENSITY



YOUNG PROFESSIONALS/STUDENTS

EXPATS WITH FAMILY

NIGHT SHIFT WORKERS
/ SHORT STAY DARK EXPERIENCE

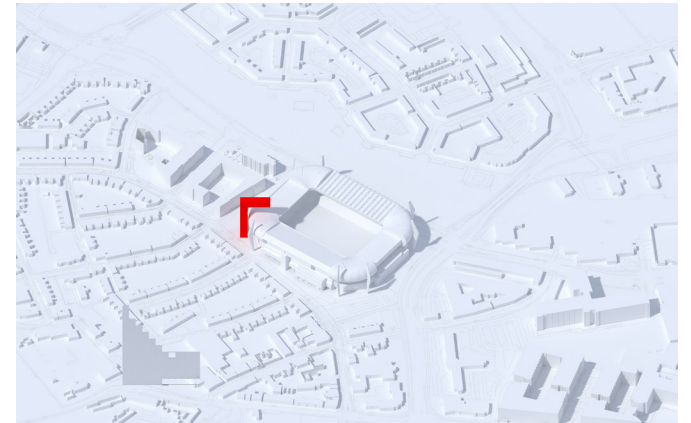
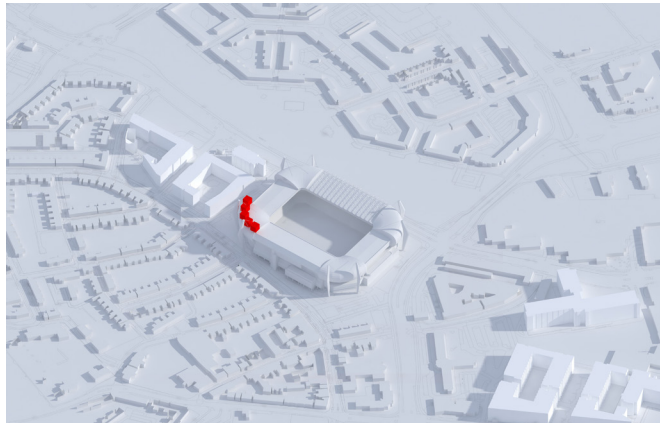
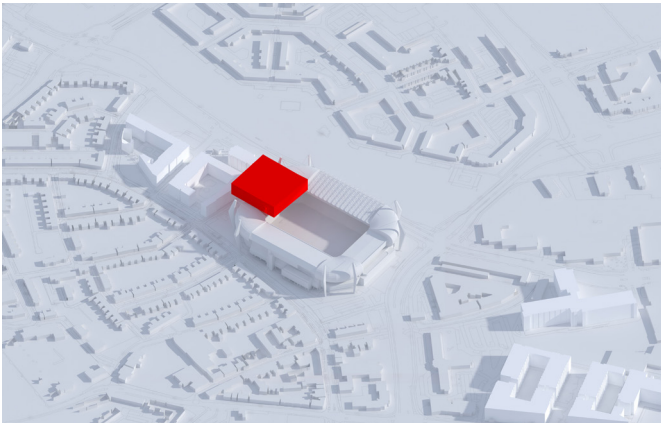
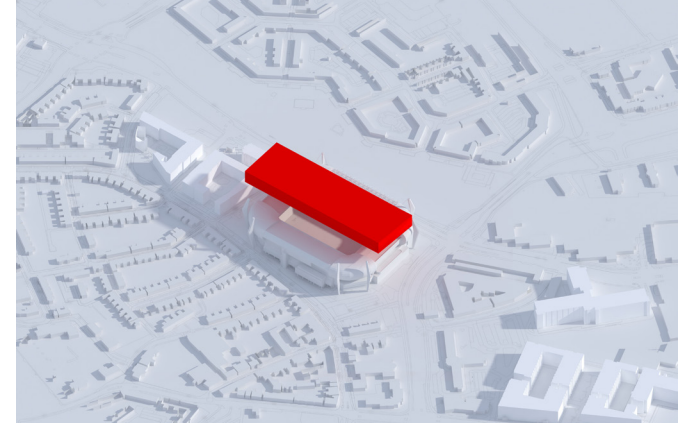
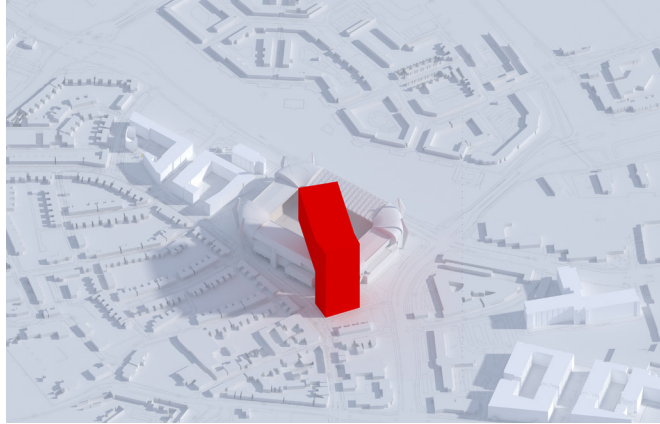
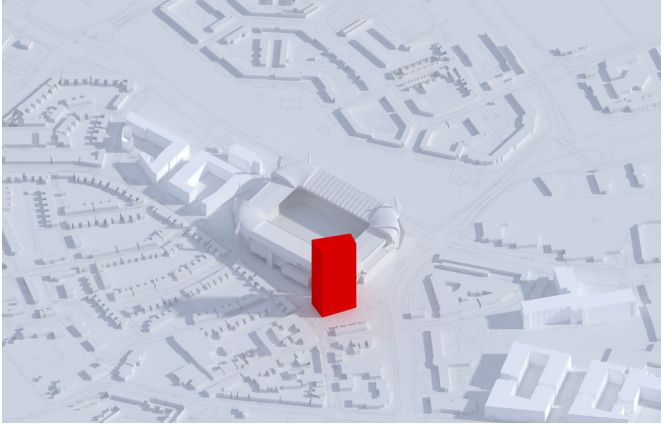
ELISABETH TOWER

HOUSING WITHOUT ARTIFICIAL LIGHT

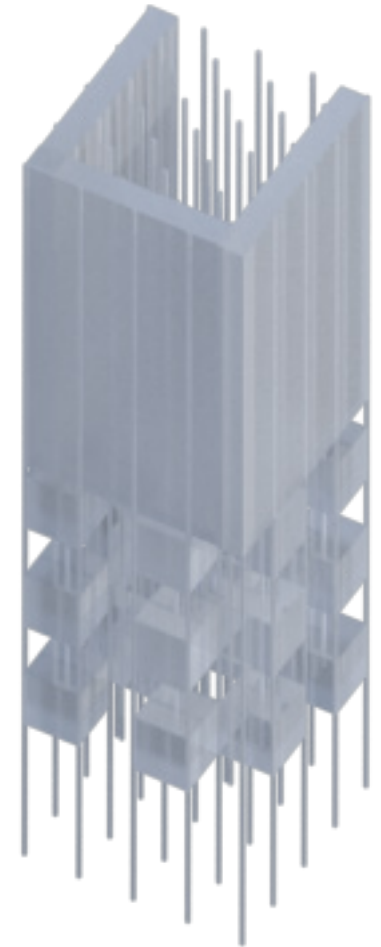
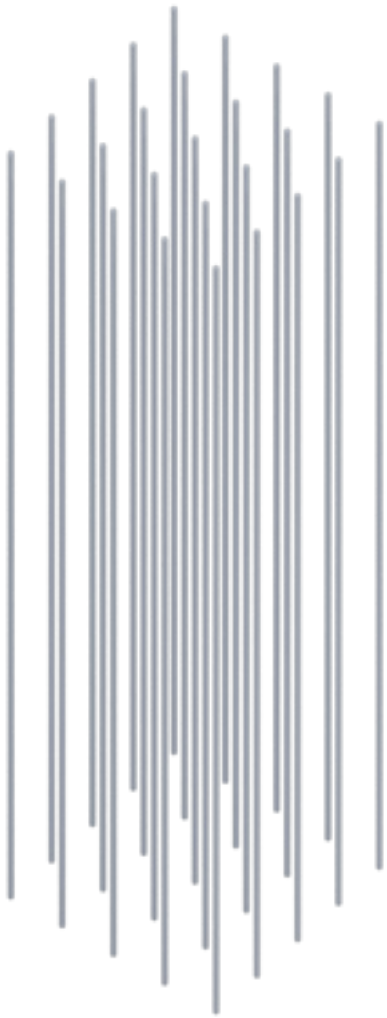


GRADUATION MA+U 2019 | LISA VERHOEVEN | PRESENTATION 4
PRELIMINARY DESIGN

MASS STUDIES



TOWER STUDIES



MORE INTENTS LIGHT MORE MASS?

FROM LIGHT POLLUTION TO SOLUTION

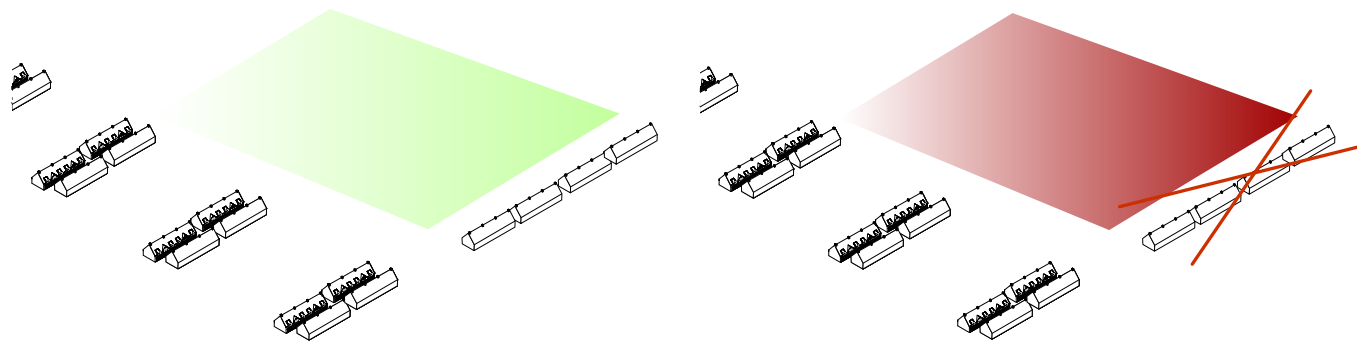
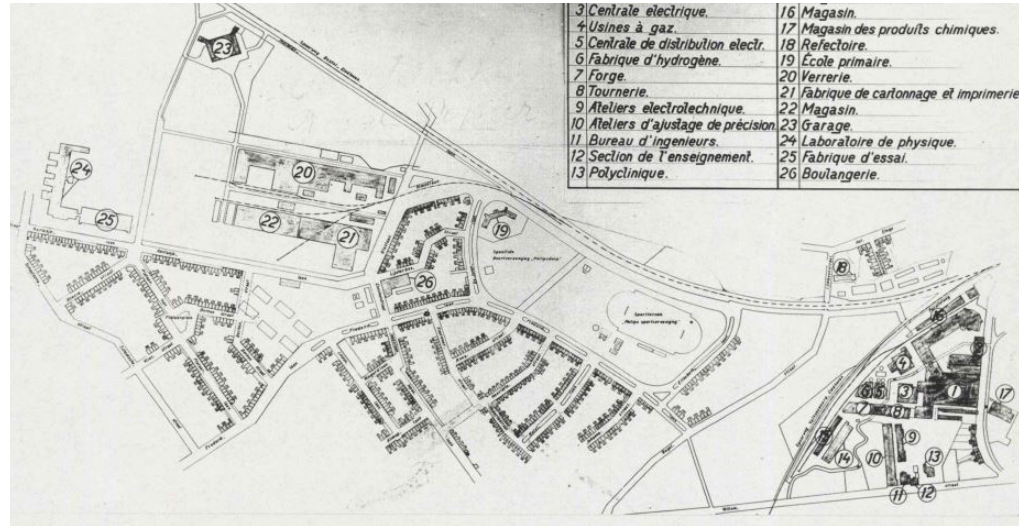


T R A N S L A T I O N 2 |

HISTORICAL ASPECT



HISTORICAL CONTEXT

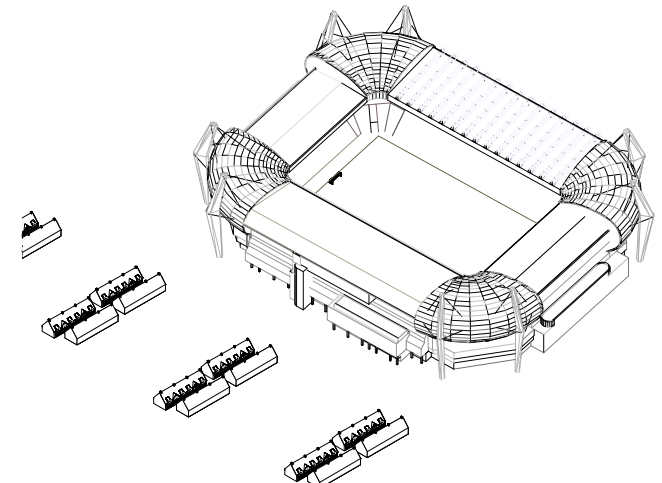


streets to green sports field



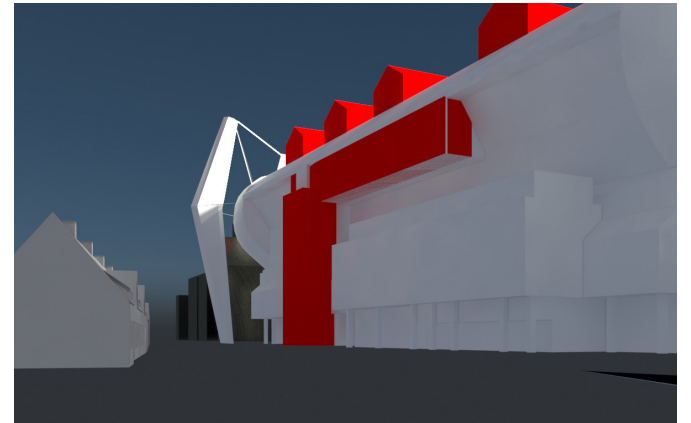
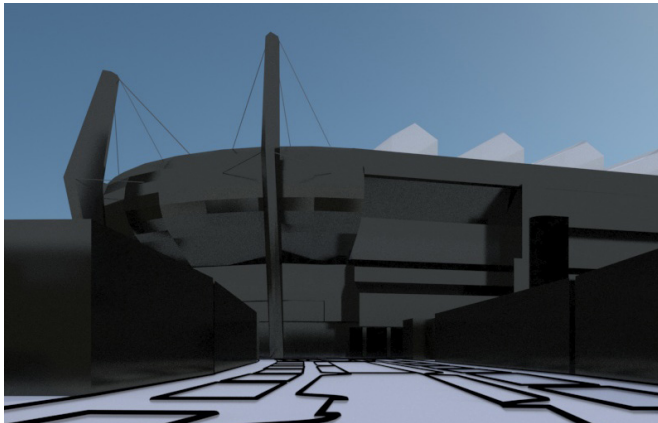
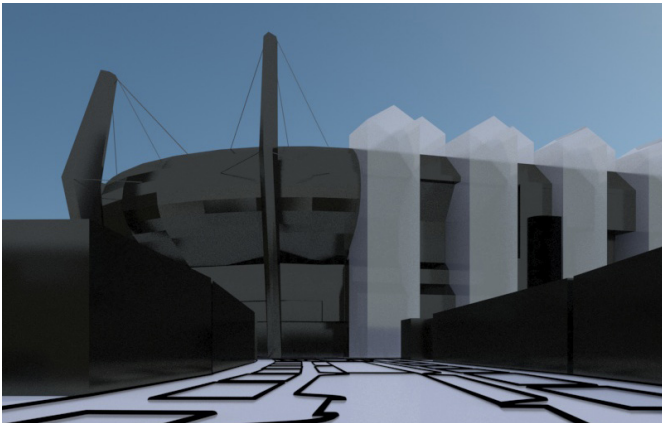
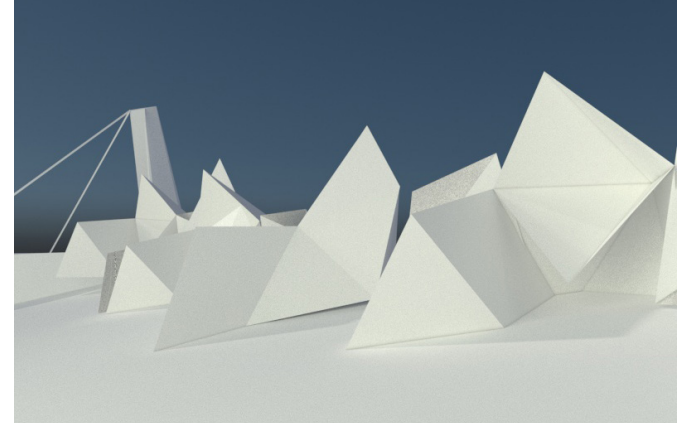
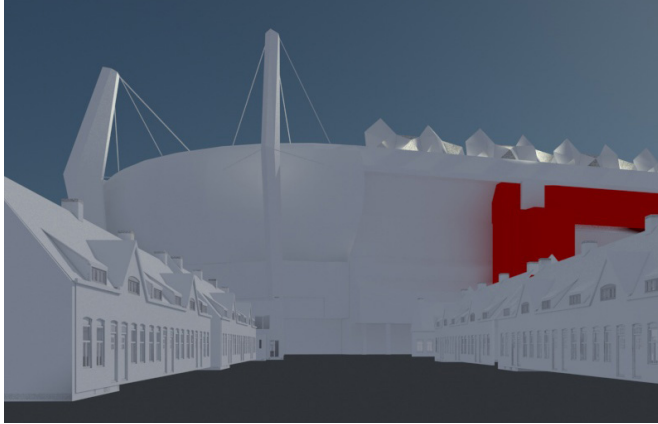
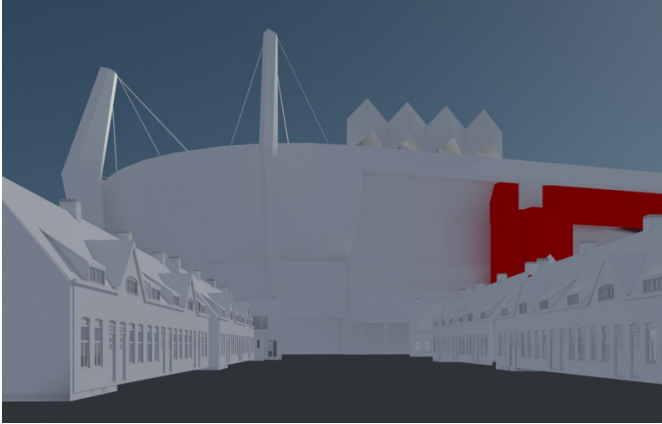
1958

new room for stadium
Elisabeth street demolished

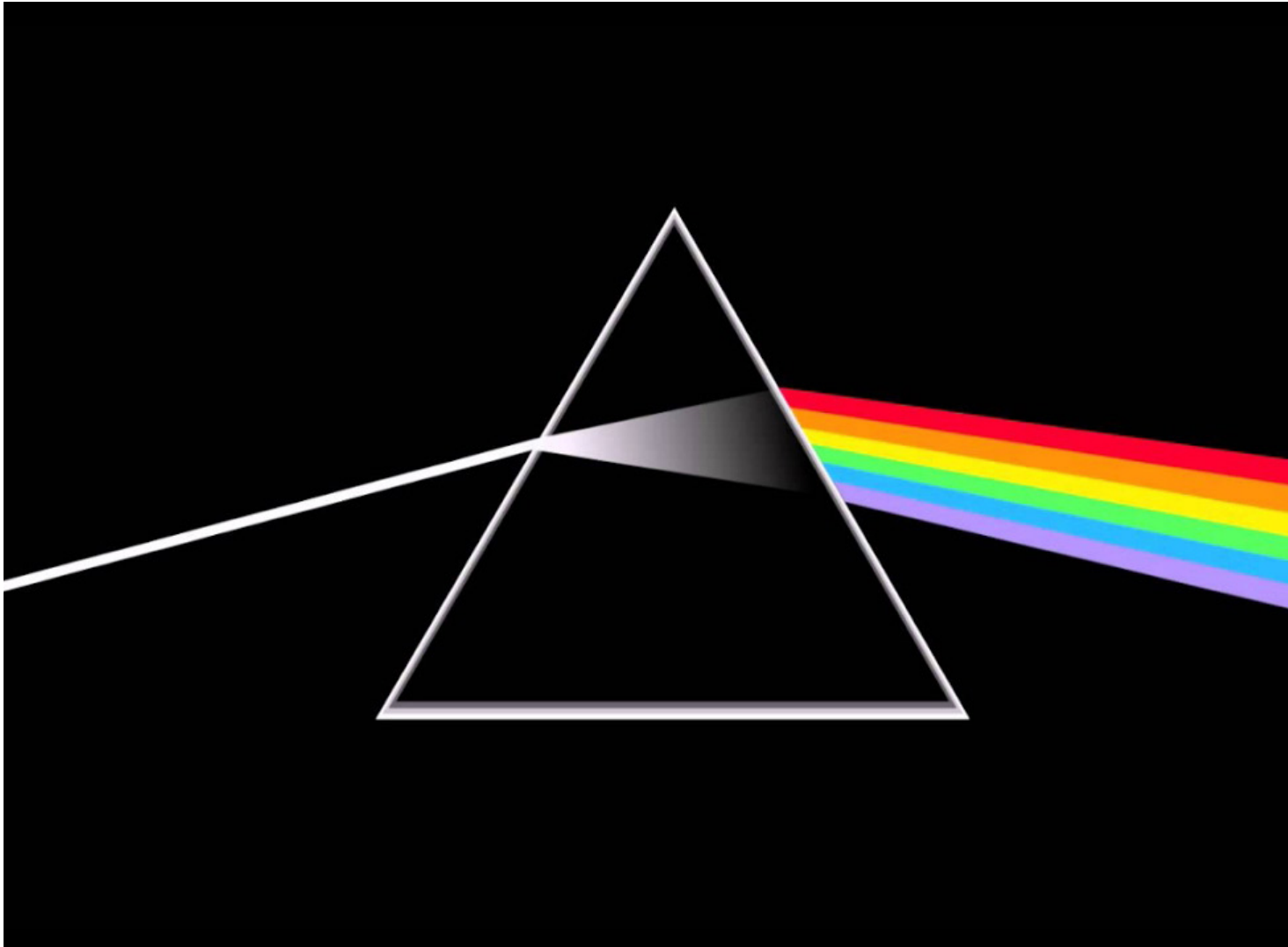


current situation

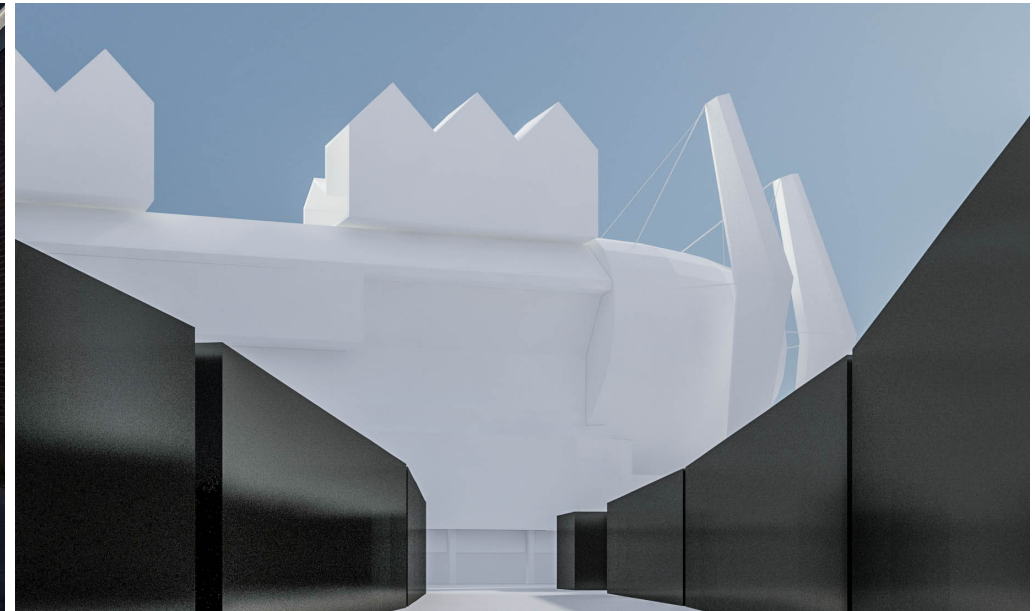
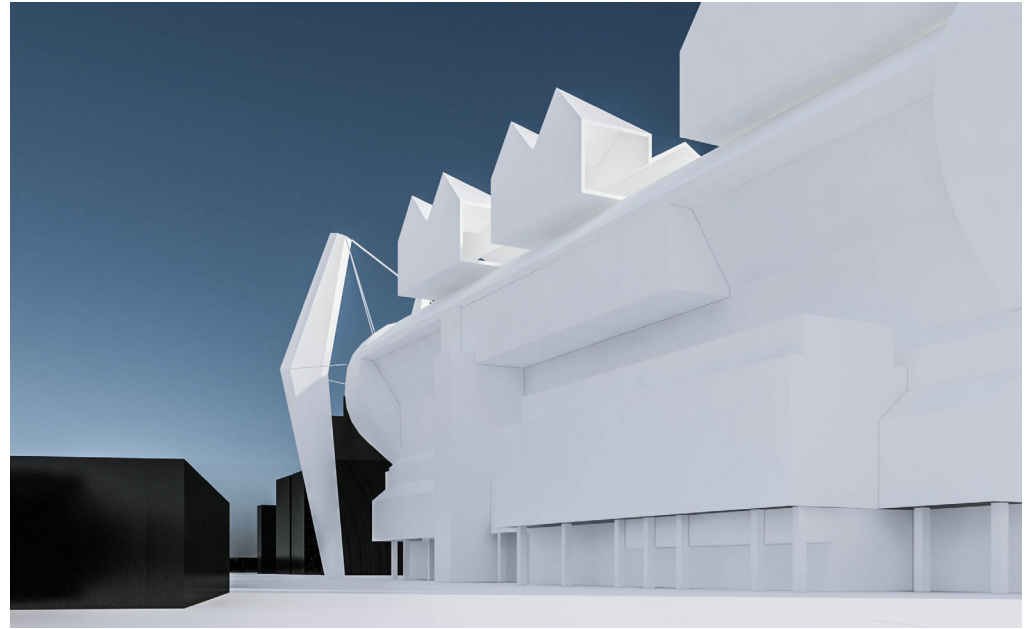
BACK TO MASS STUDY



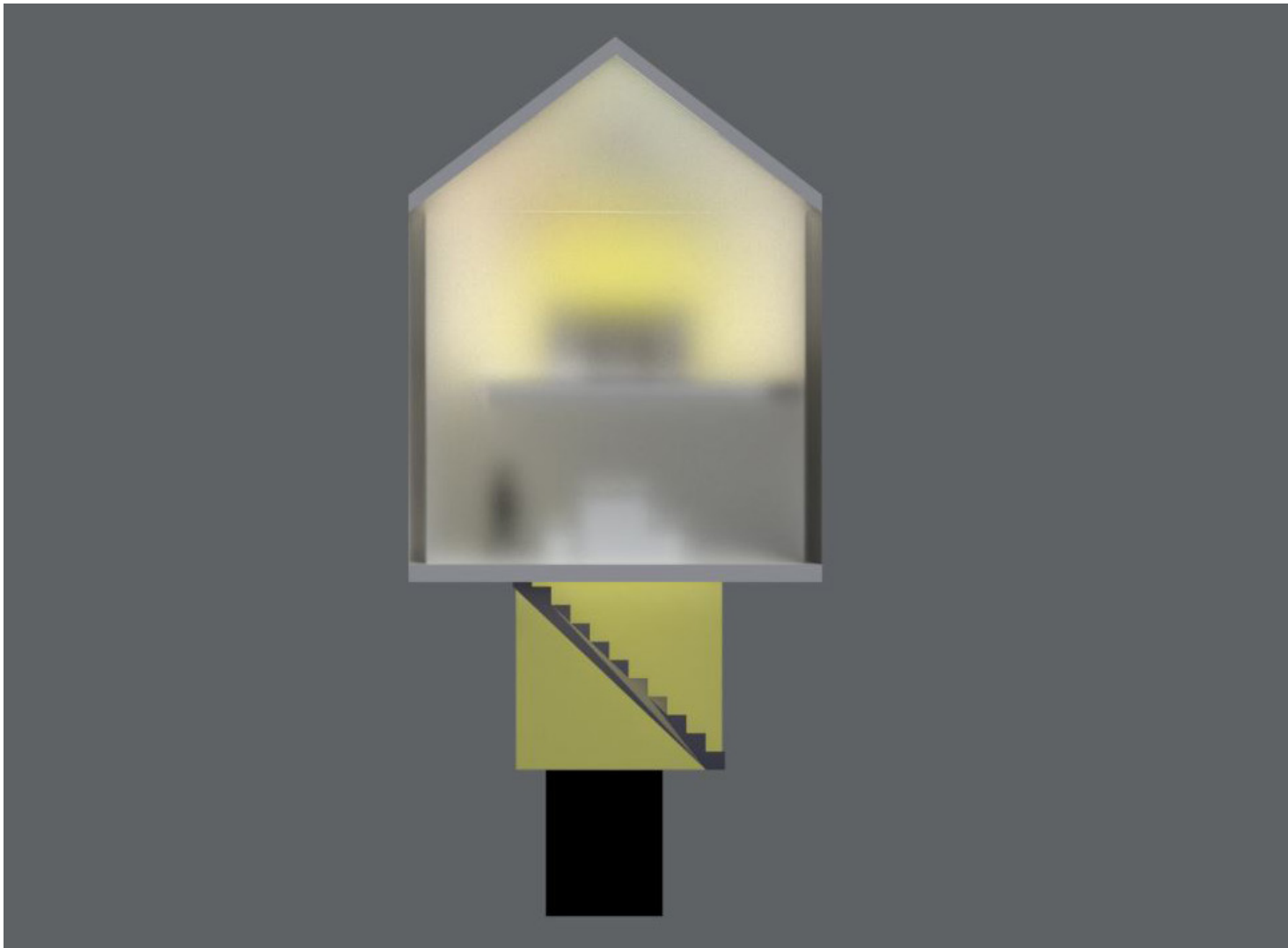
THE HOUSES AS A PRISMA TOWARDS PHILIPSDORP?



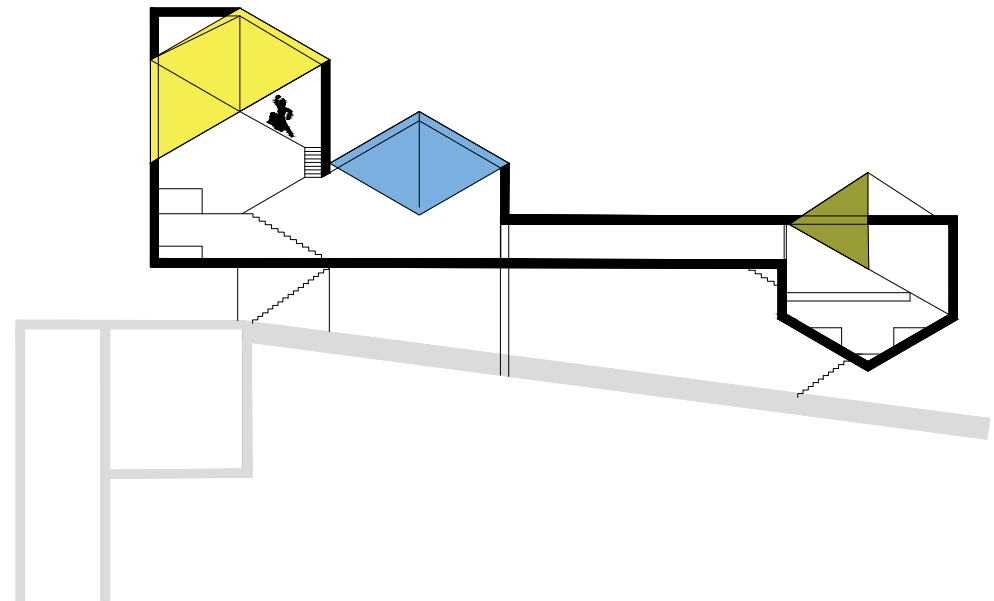
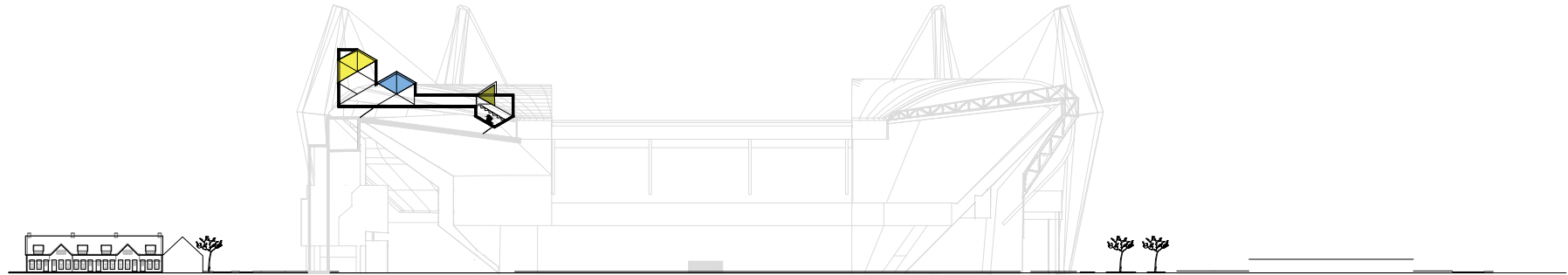
PERSPECTIVE



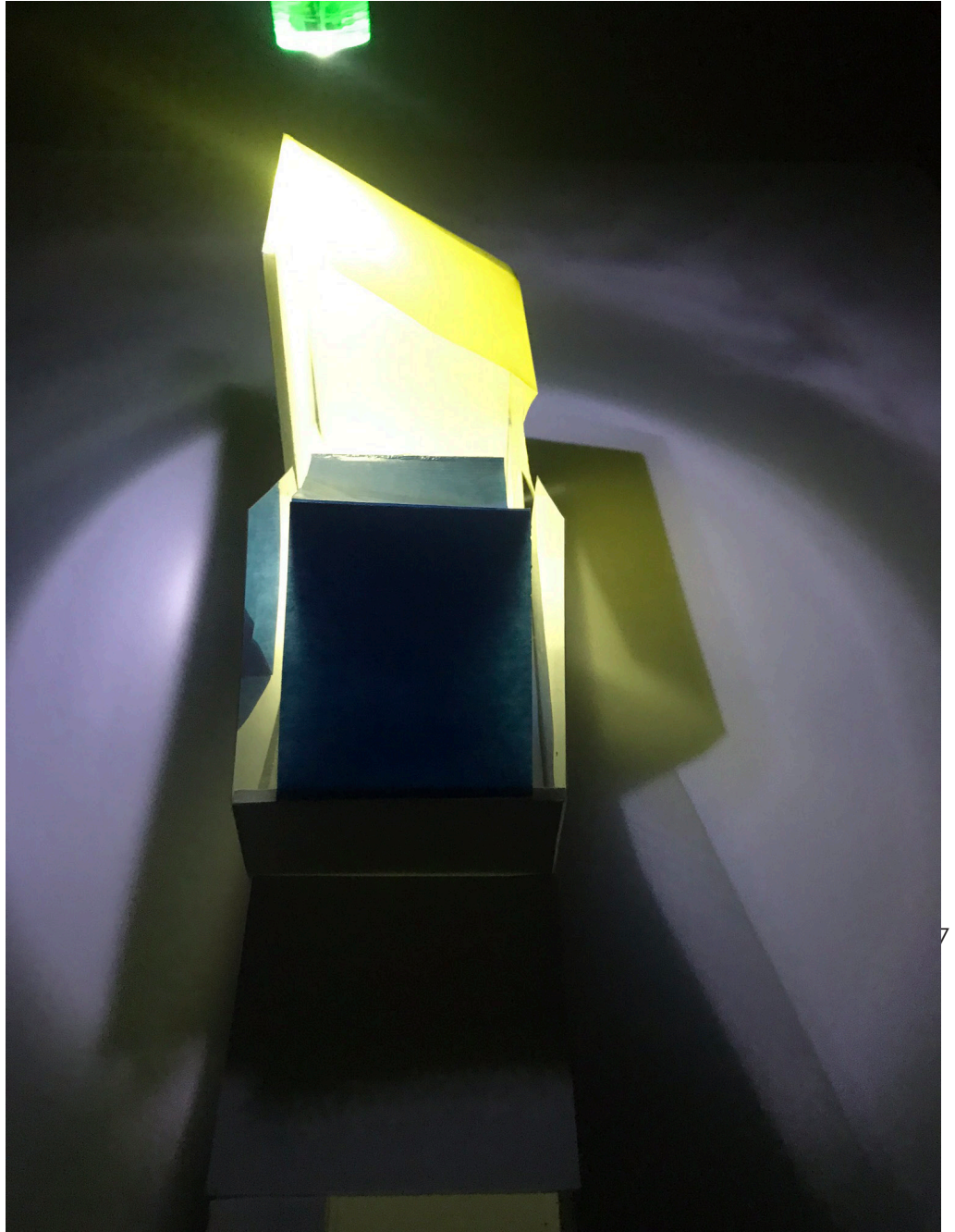
THE HOUSES AS PHANTASMAGORIAS



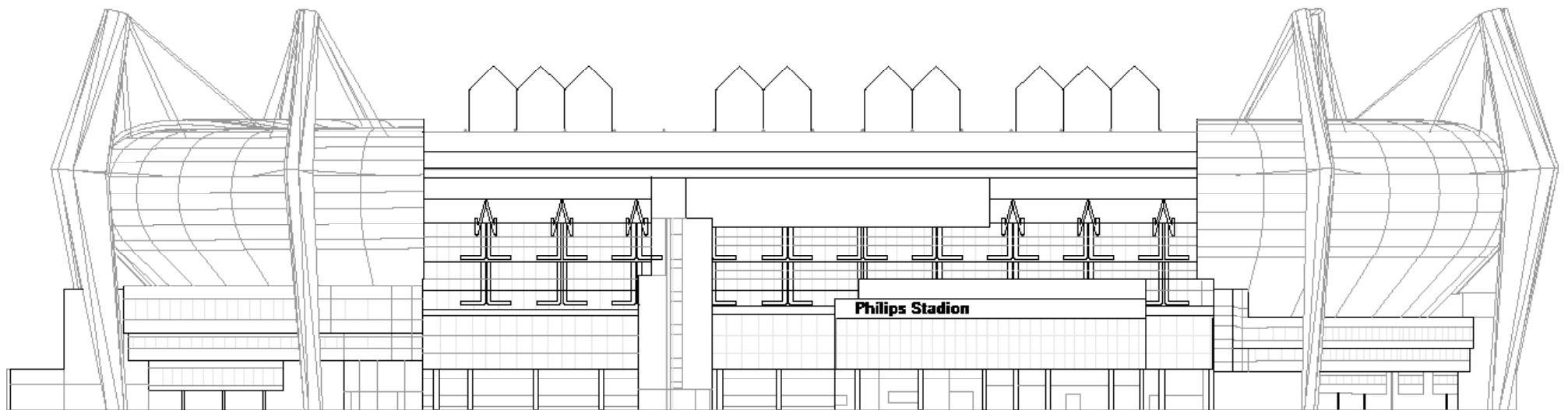
FIRST APPROACH SECTION



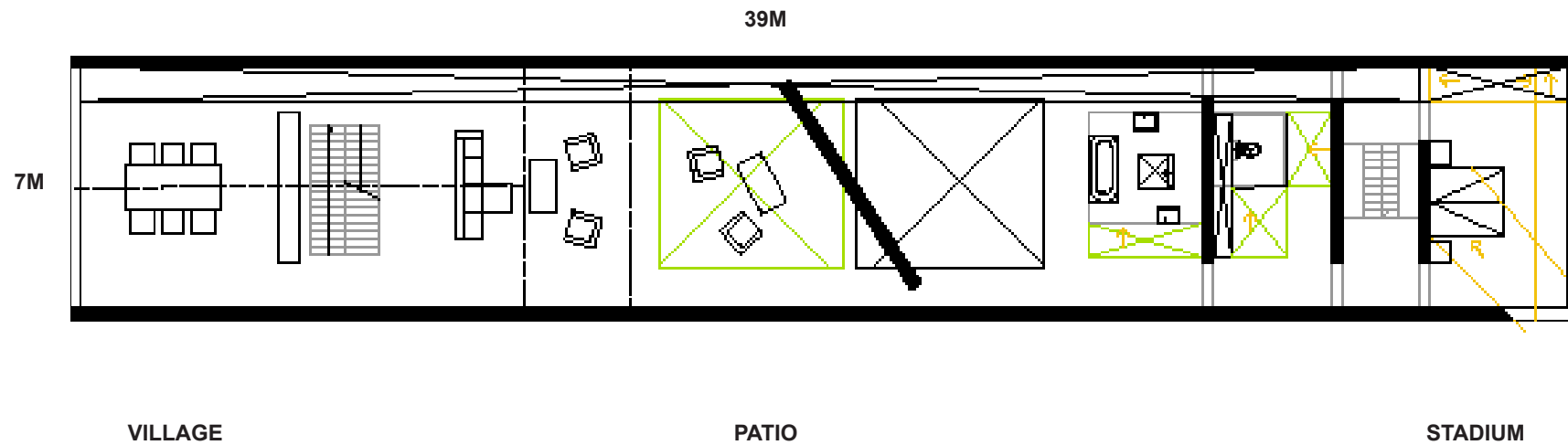
FIRST APPROACH MODEL



FIRST APPROACH ELEVATION

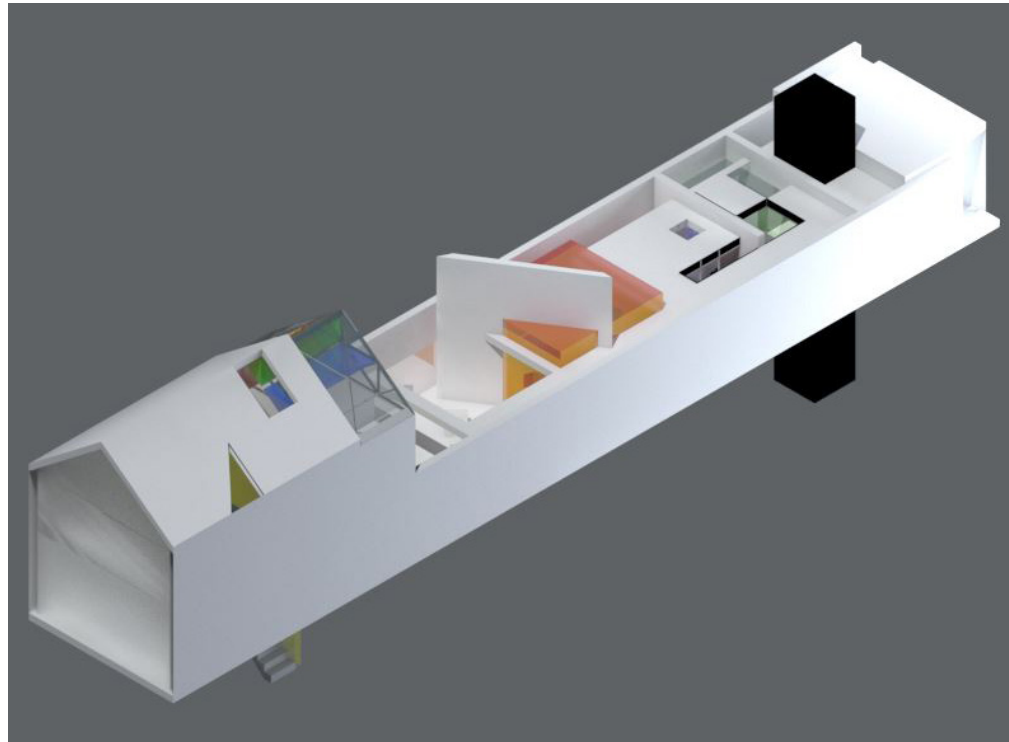


FIRST APPROACH PLAN



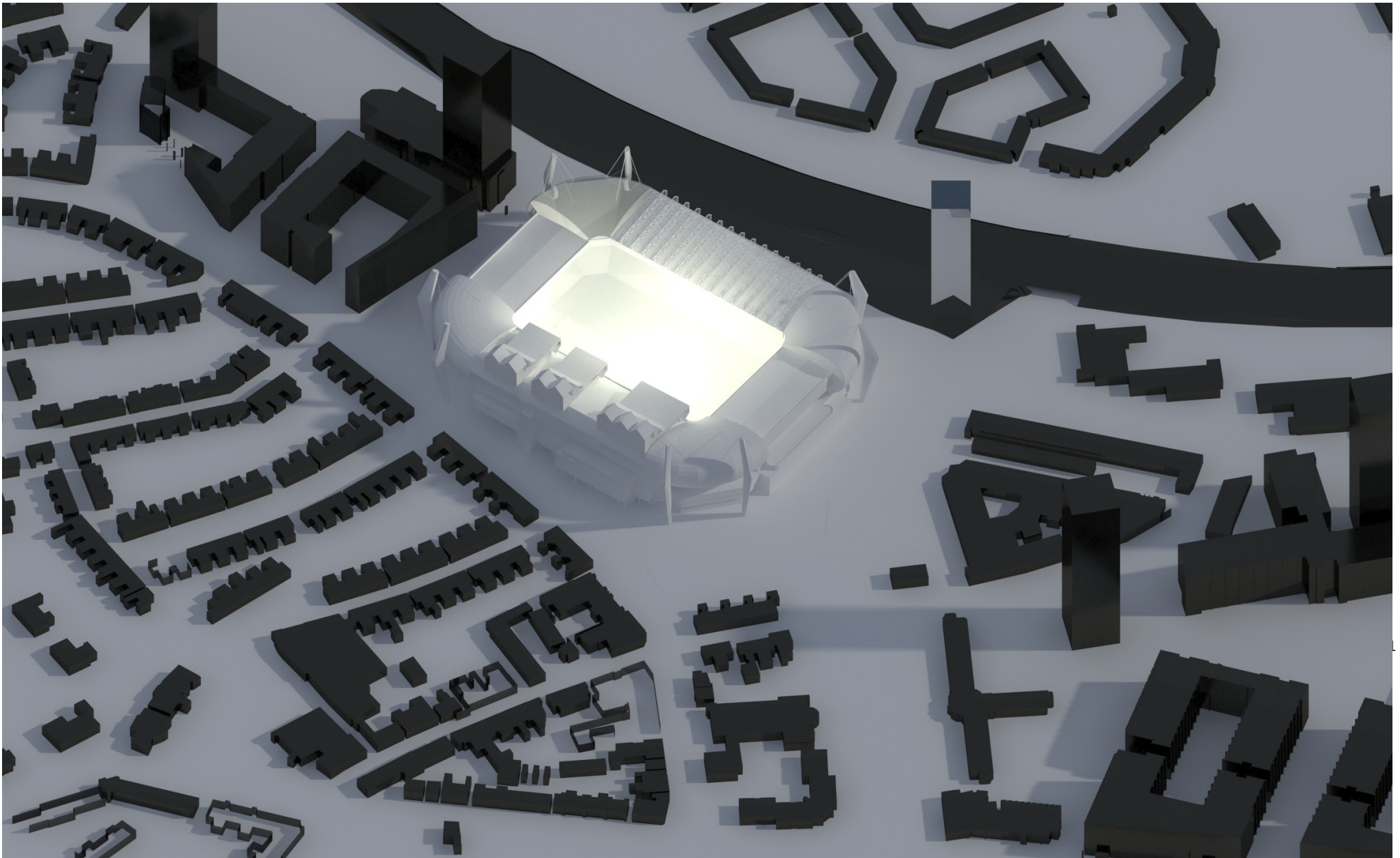
SECOND APPROACH ELISABETH HOUSES

HOUSING WITHOUT ARTIFICIAL LIGHT

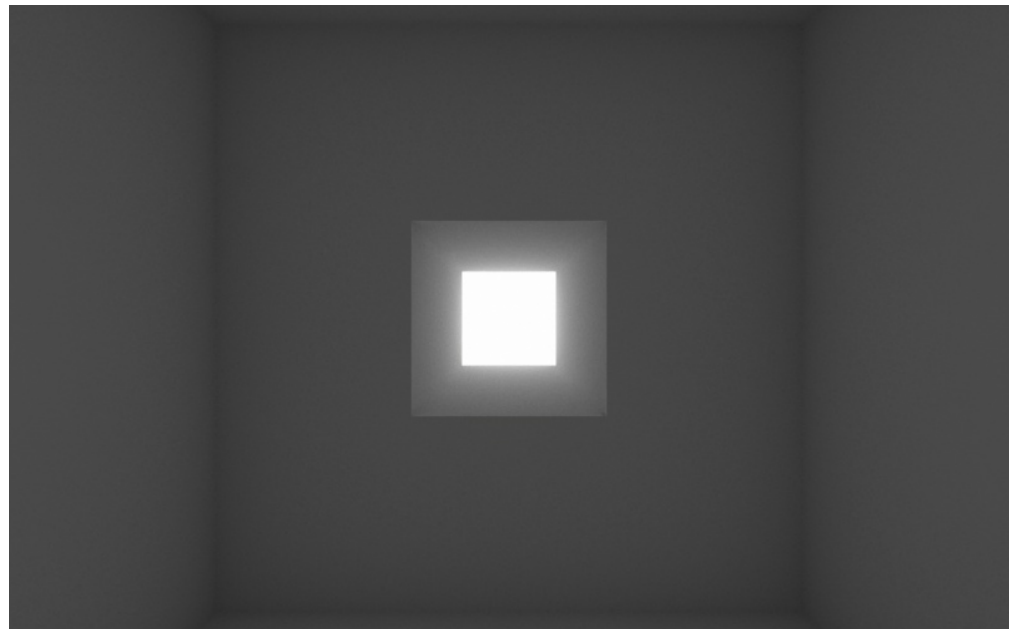
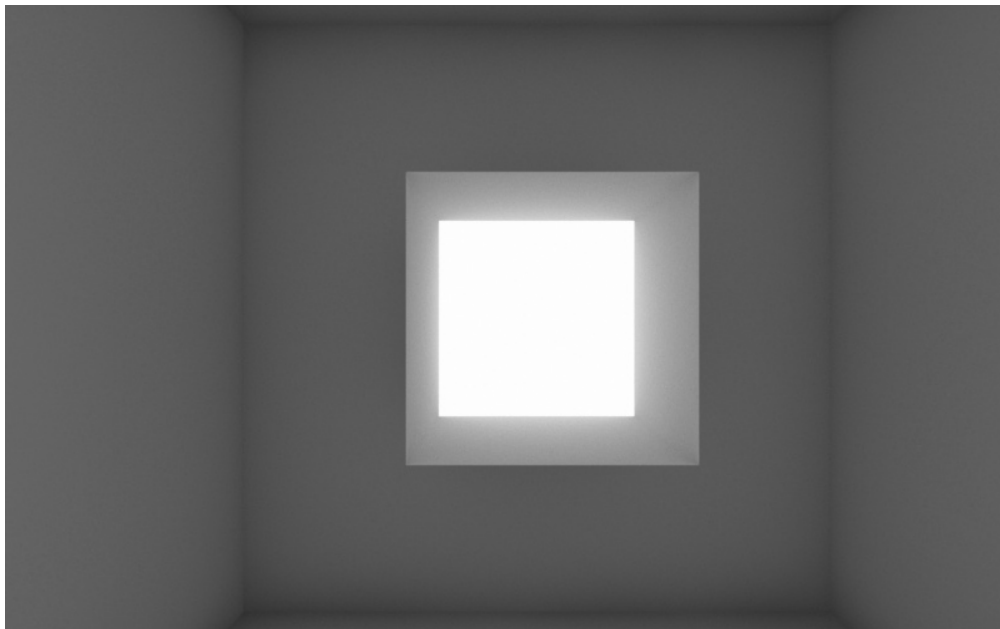
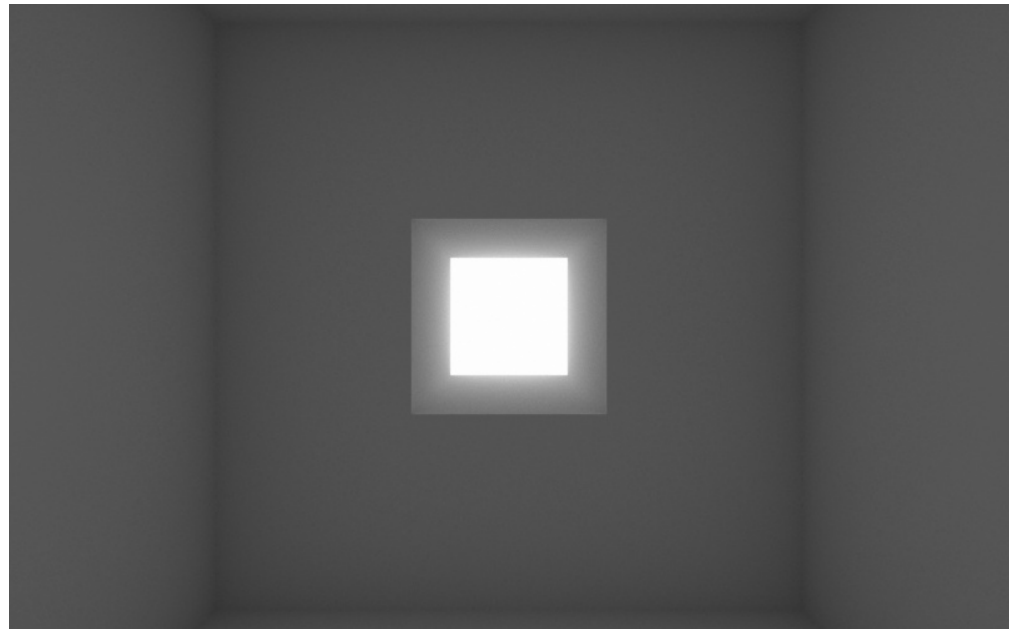
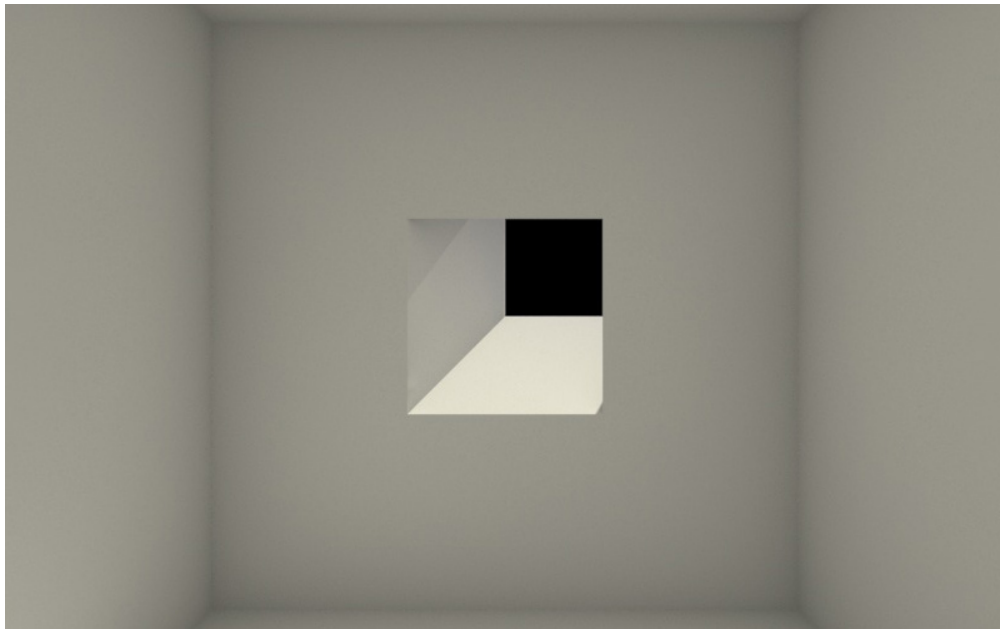


SECOND APPROACH BIRD VIEW LOCATION EAST

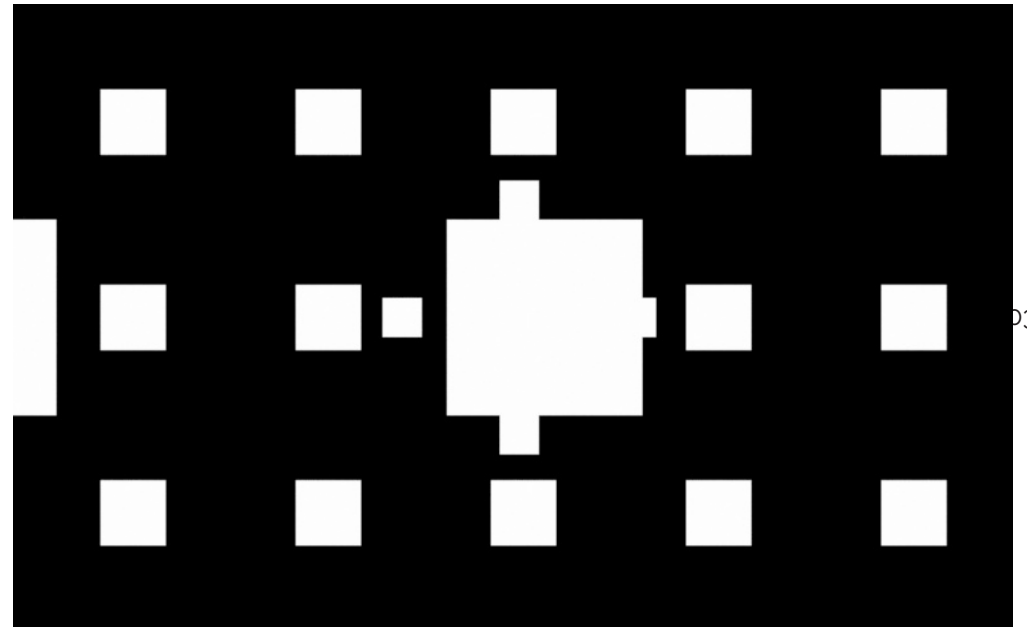
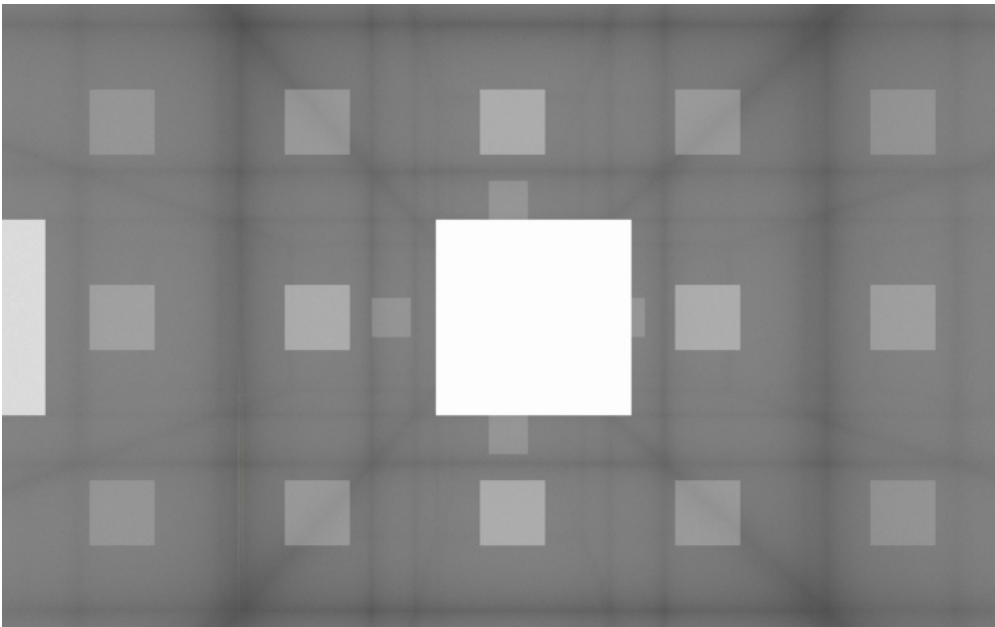
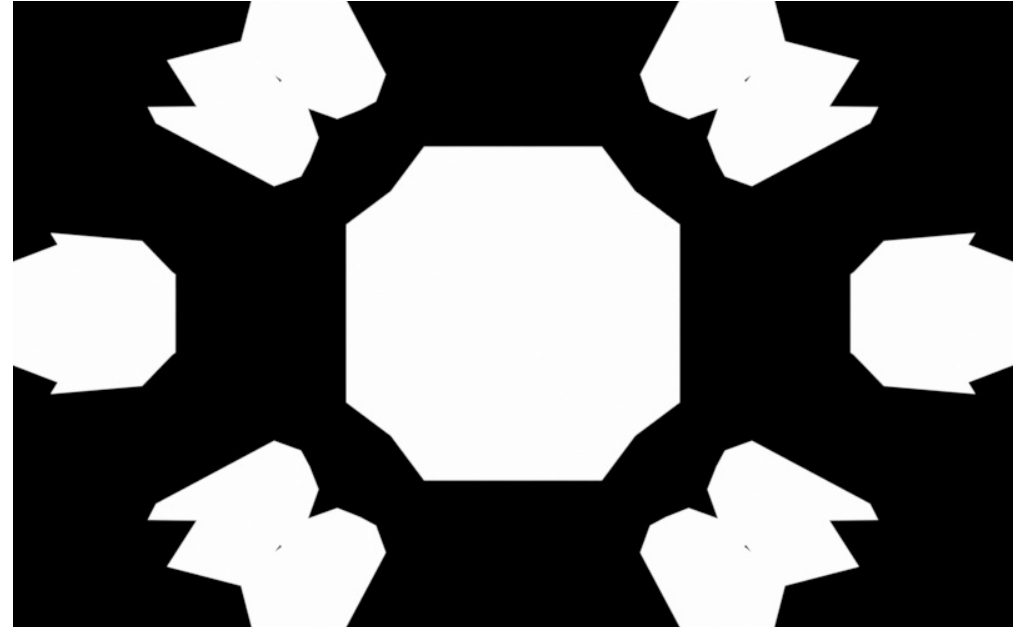
THE STADIUM IS GOING TO BE SURROUNDED BY TOWERS



WINDOWS STUDY



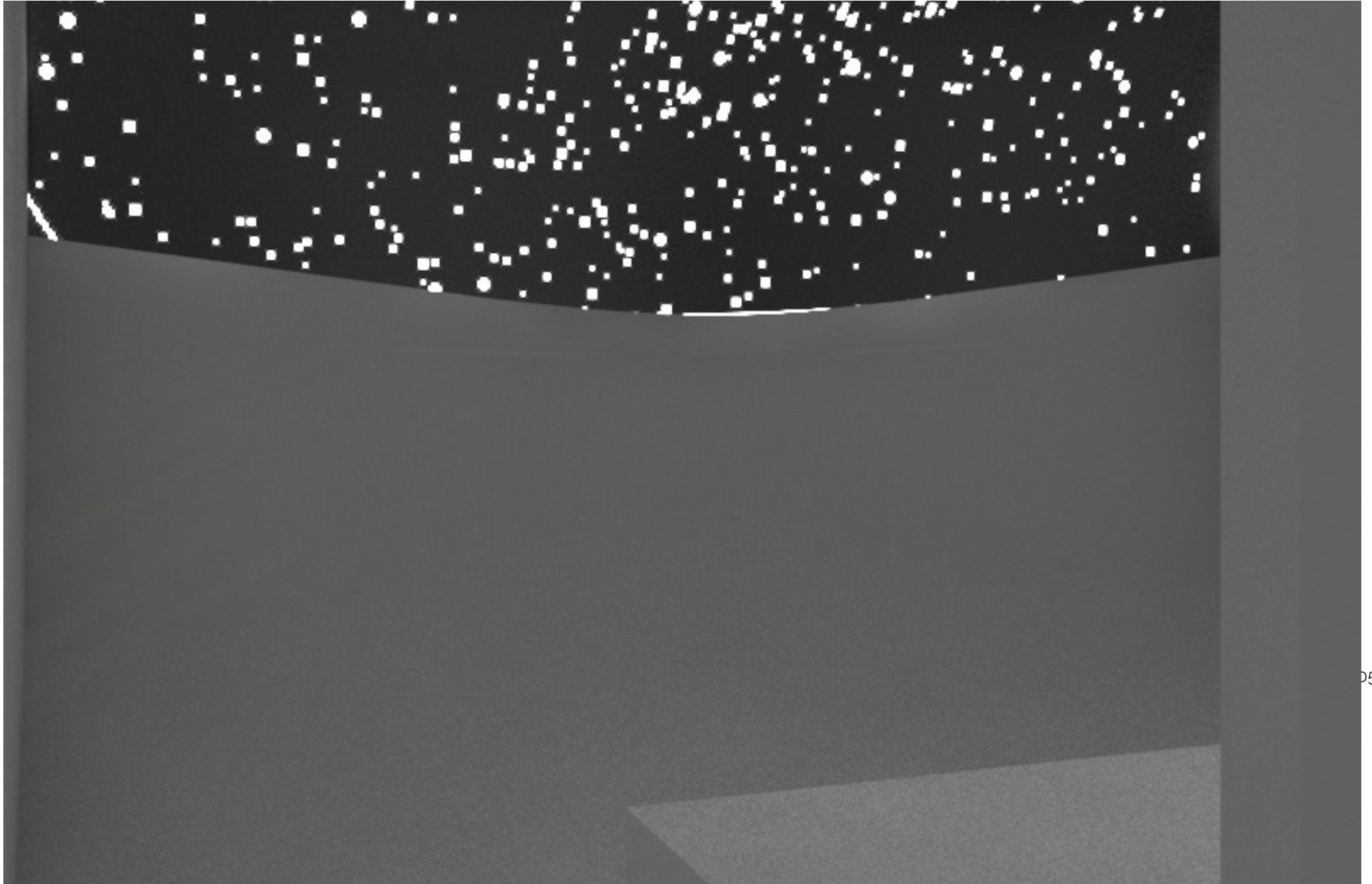
WINDOW MATERIALS



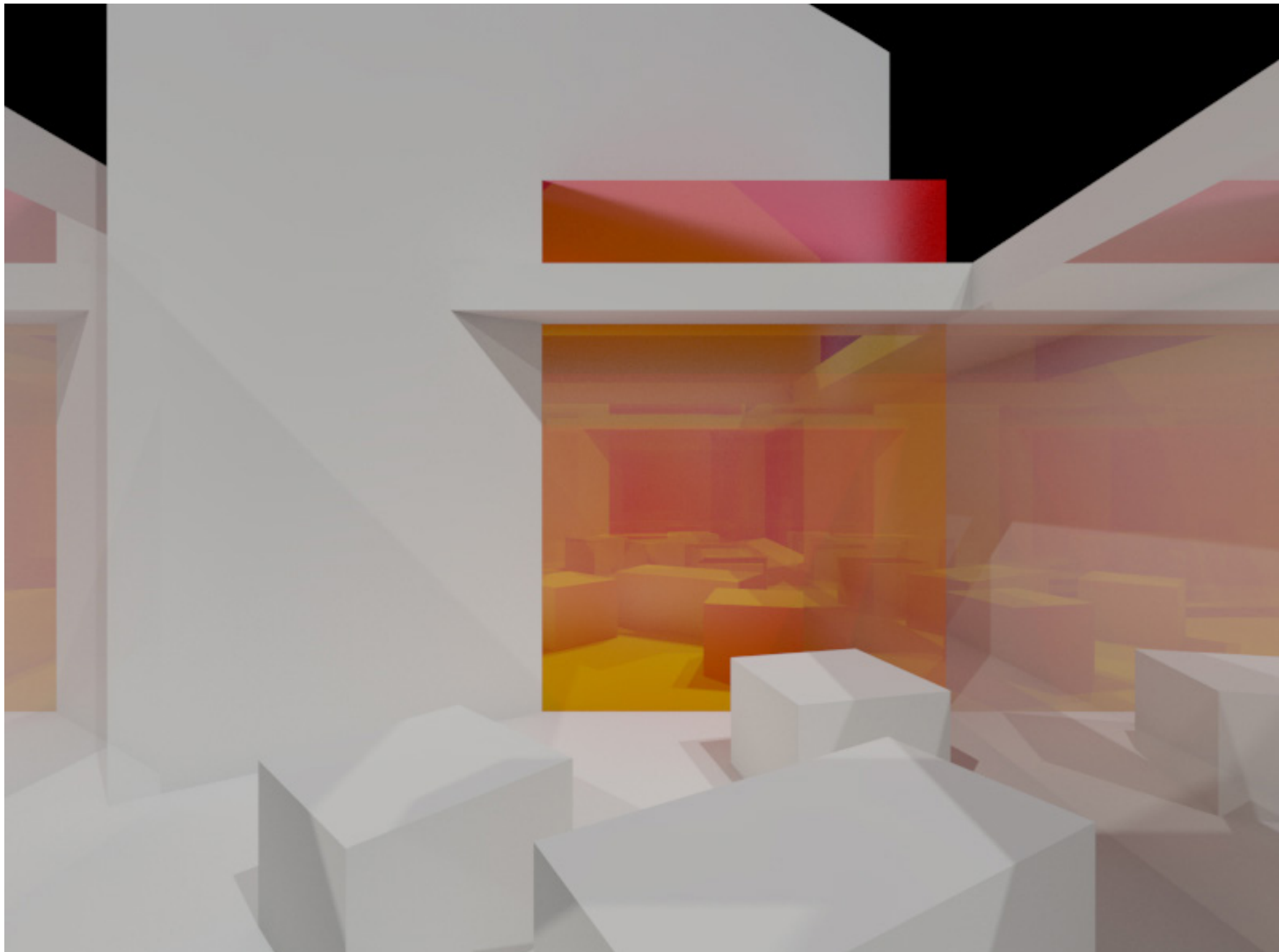
WINDOW



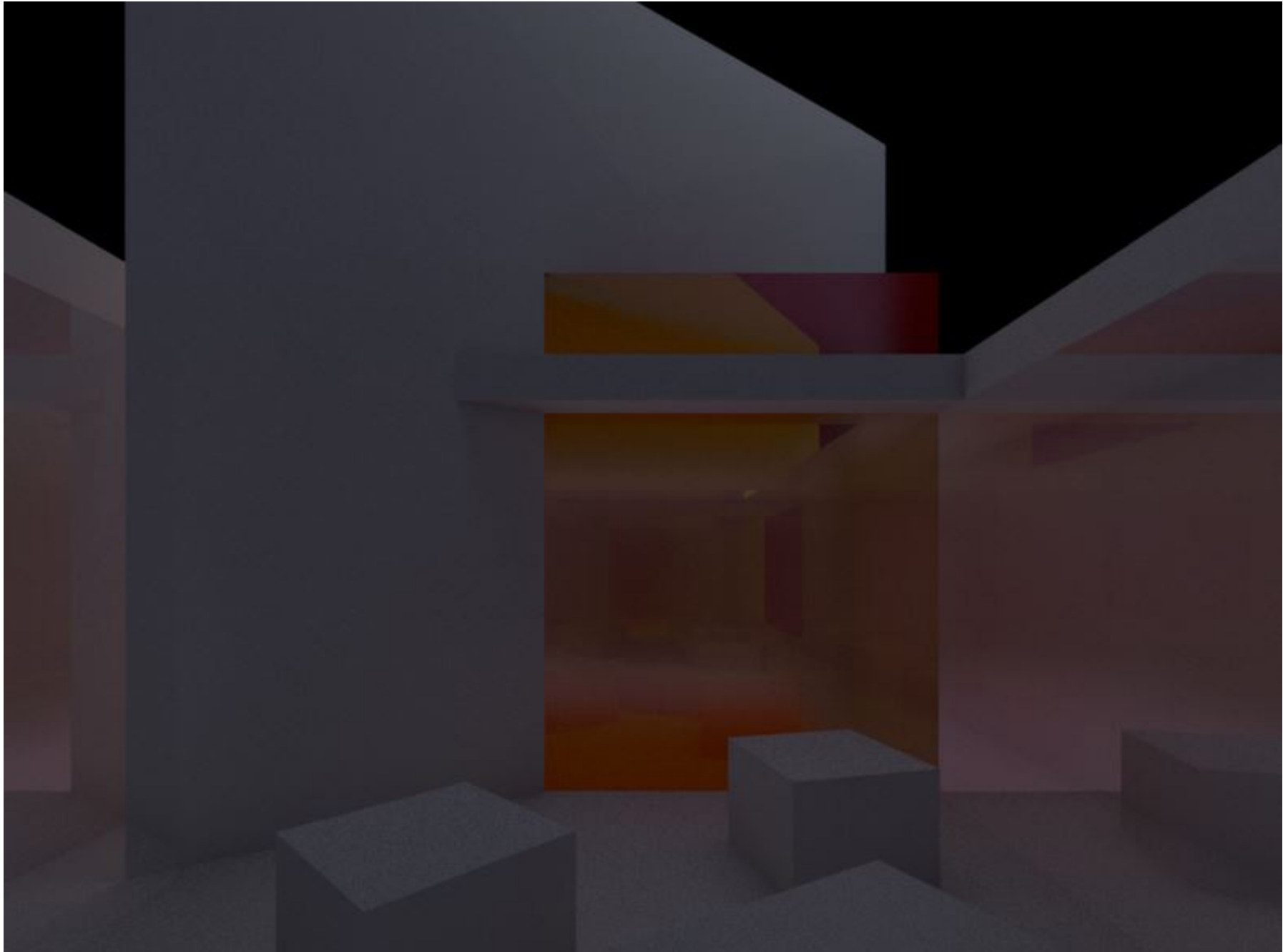
BEDROOM VIEW?



SECOND APPROACH PATIO NIGHT



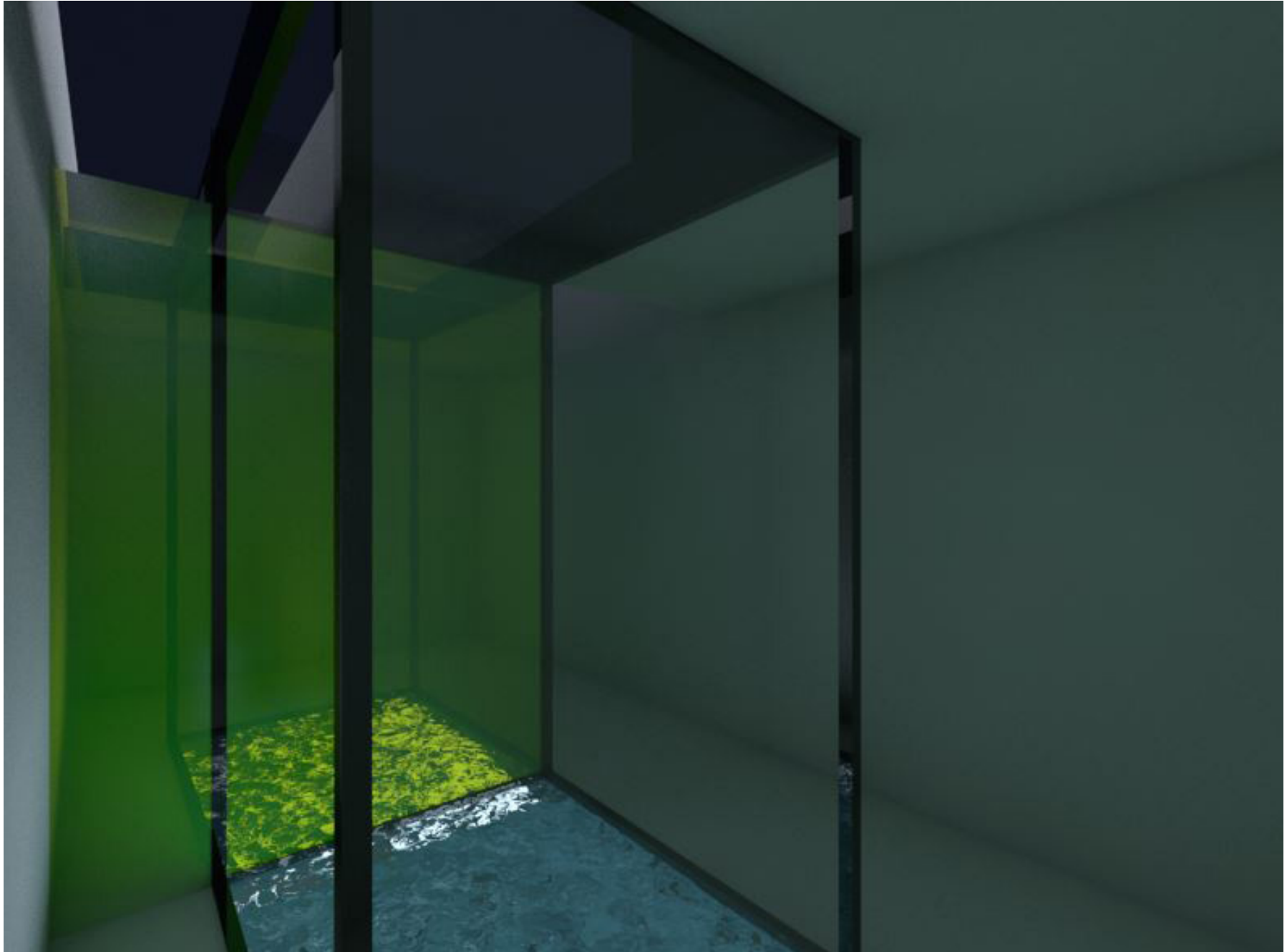
SEACOND APPROACH PATIO NIGHT



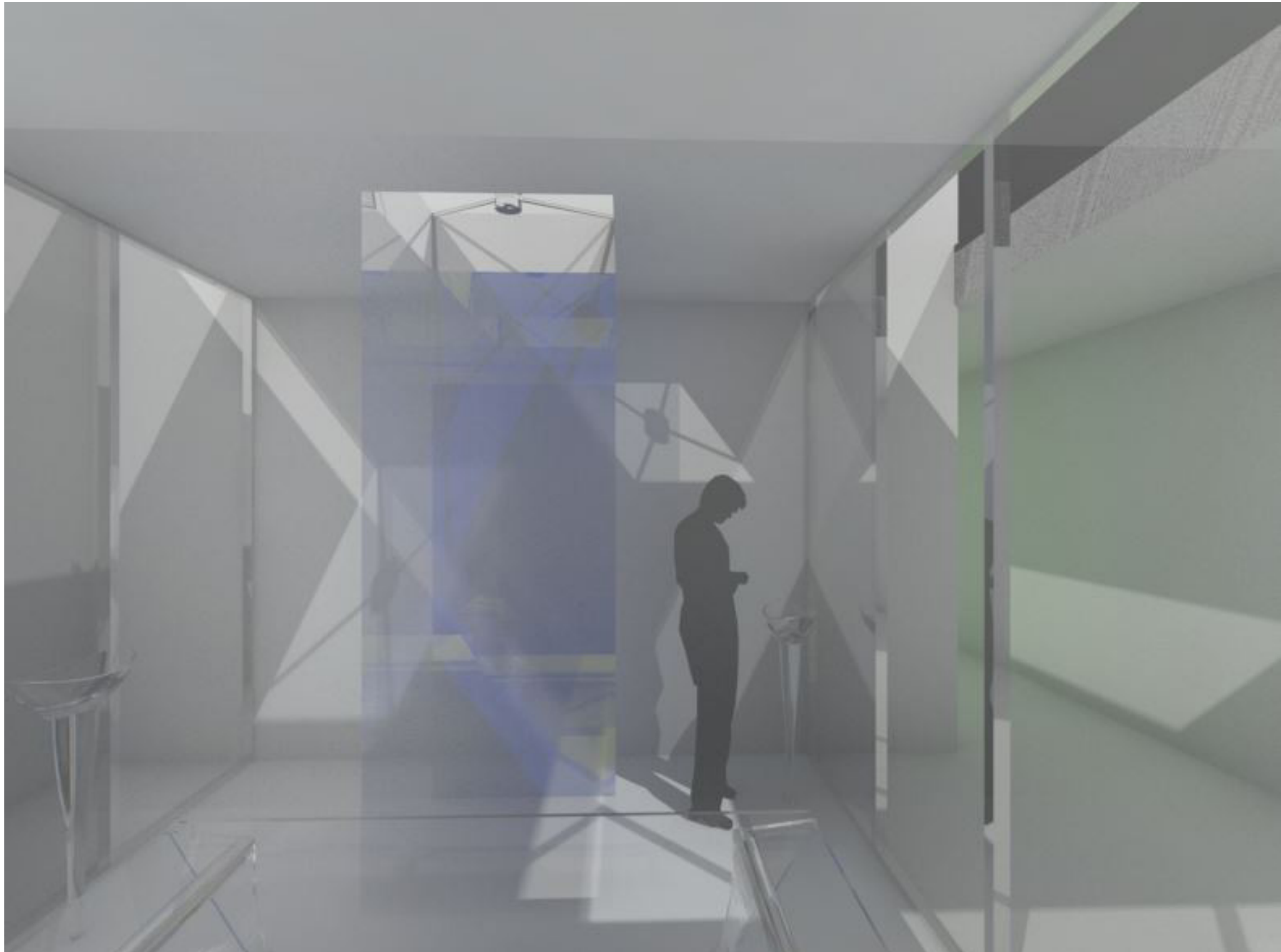
SECOND APPROACH TOILET DAY



SECOND APPROACH TOILET NIGHT



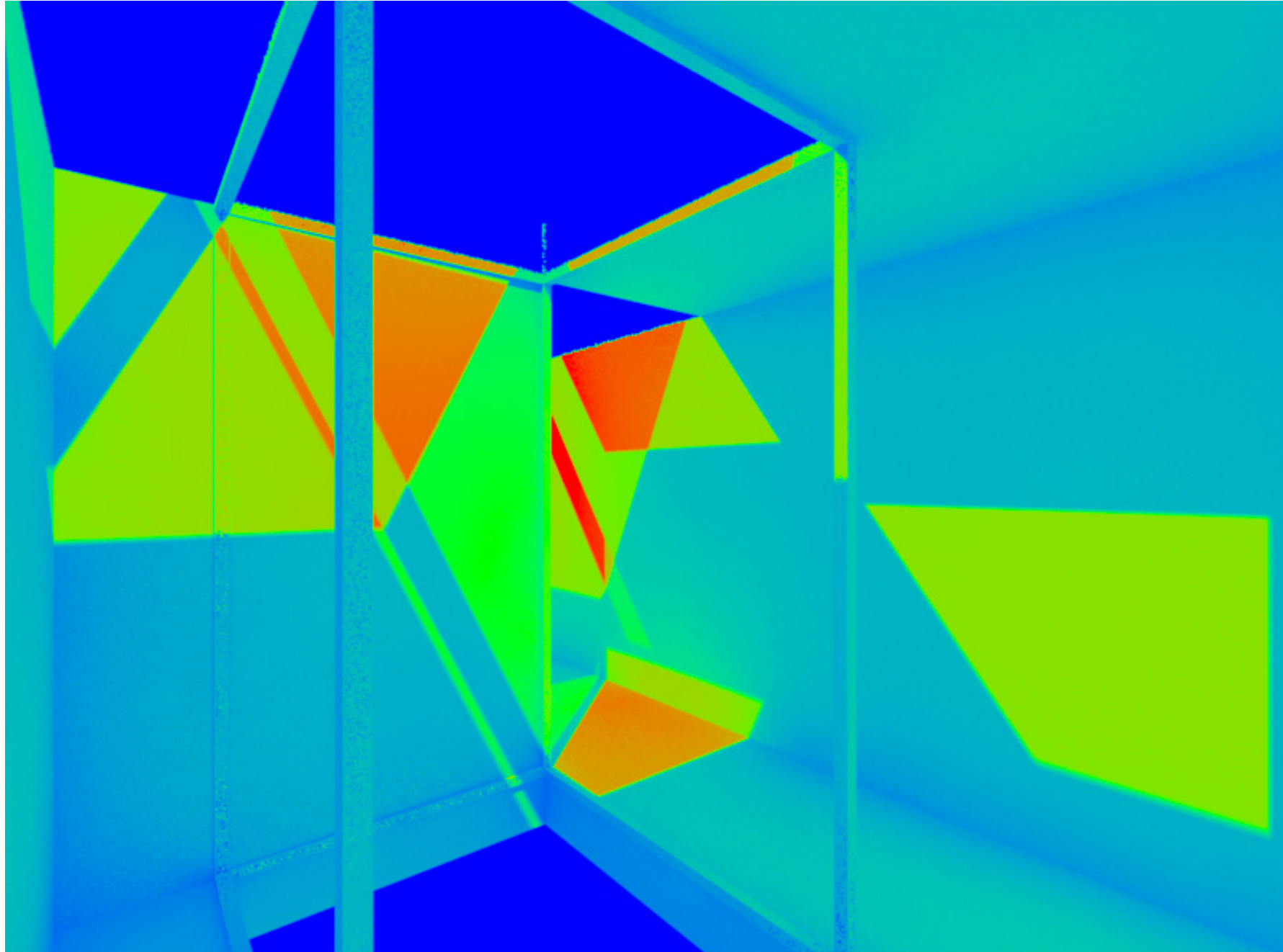
SECOND APPROACH BATHROOM NIGHT



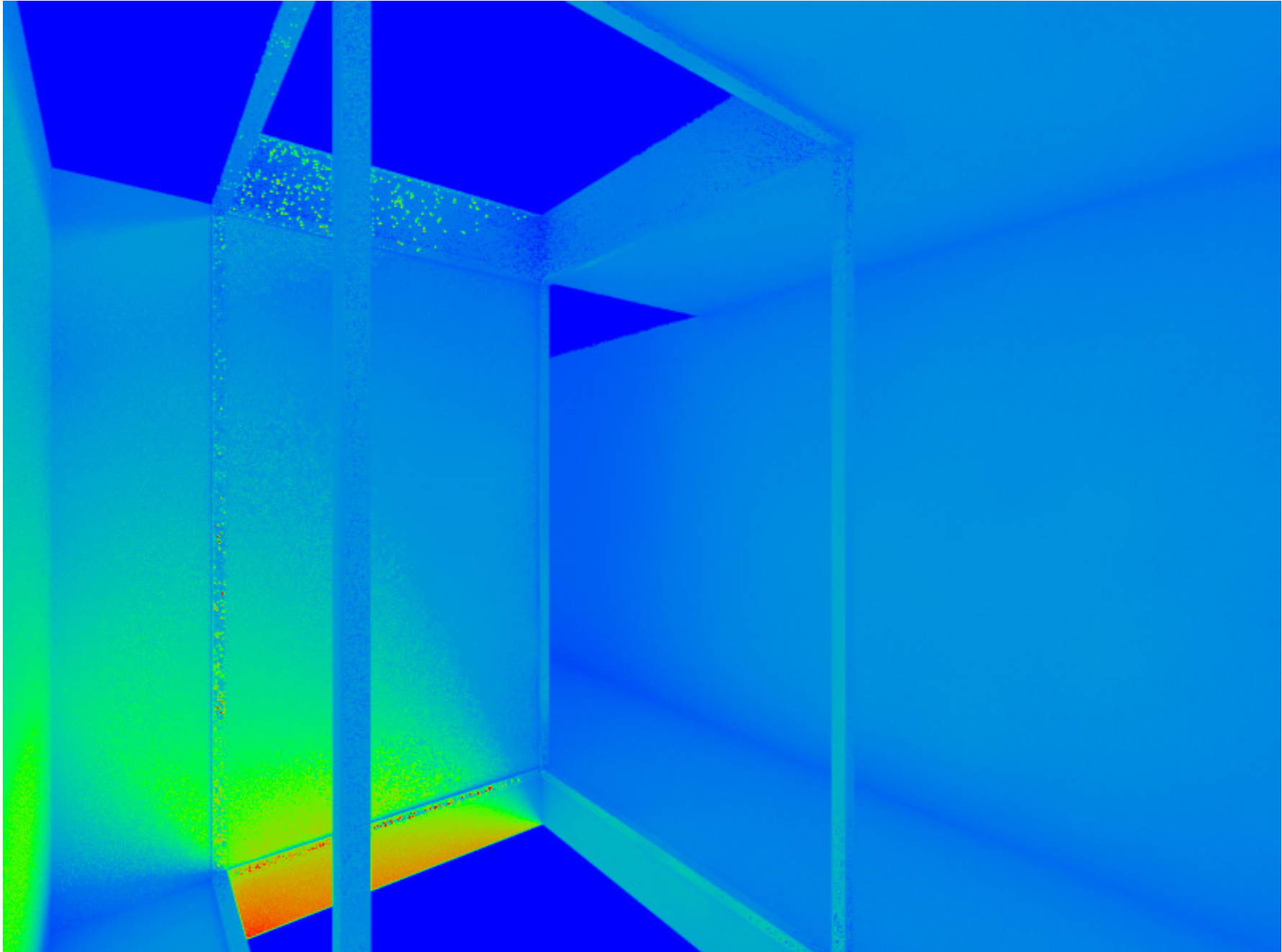
SECOND APPROACH BATHROOM NIGHT



CALCULATING LUMEN TOILET ILLU DAY



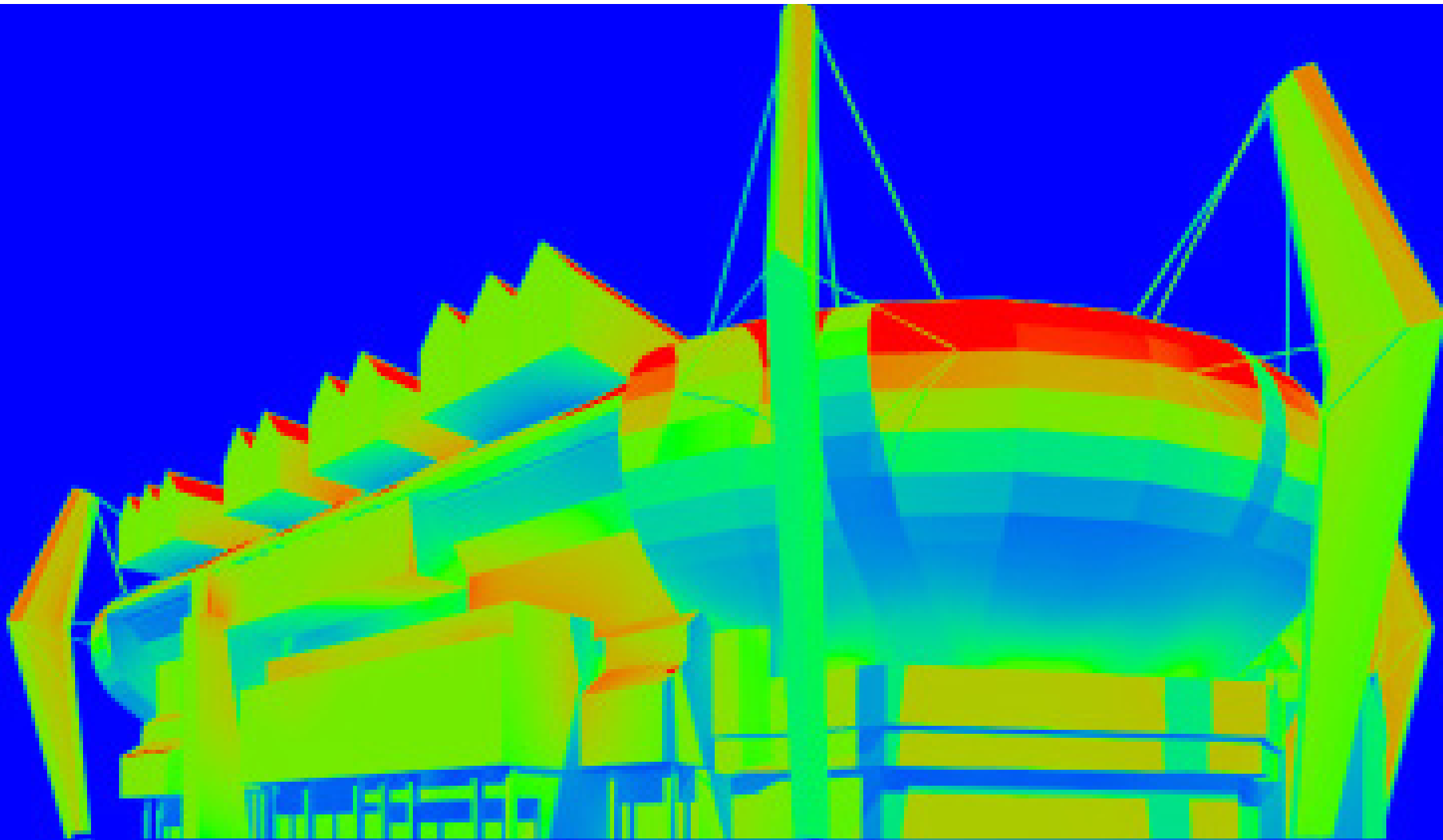
CALCULATING LUMEN TOILET ILLU NIGHT



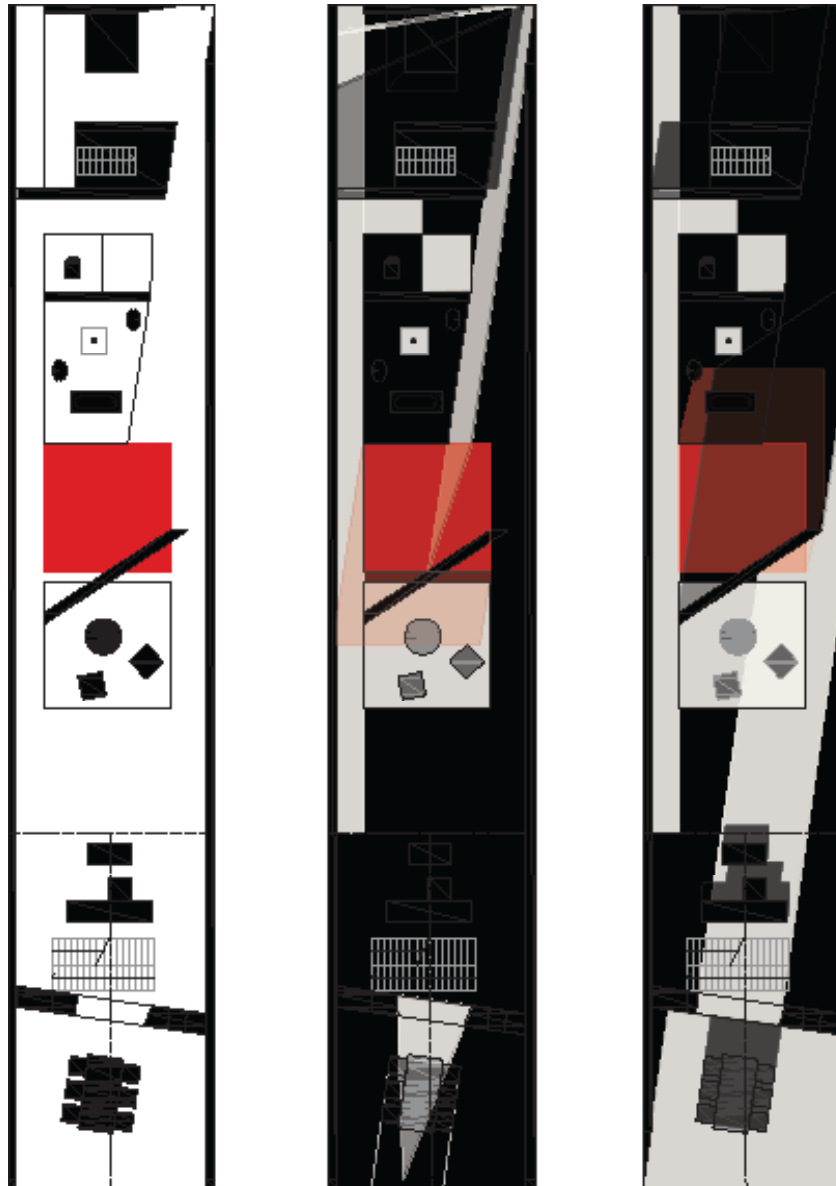
CALCULATING BATHROOM ILLU NIGHT



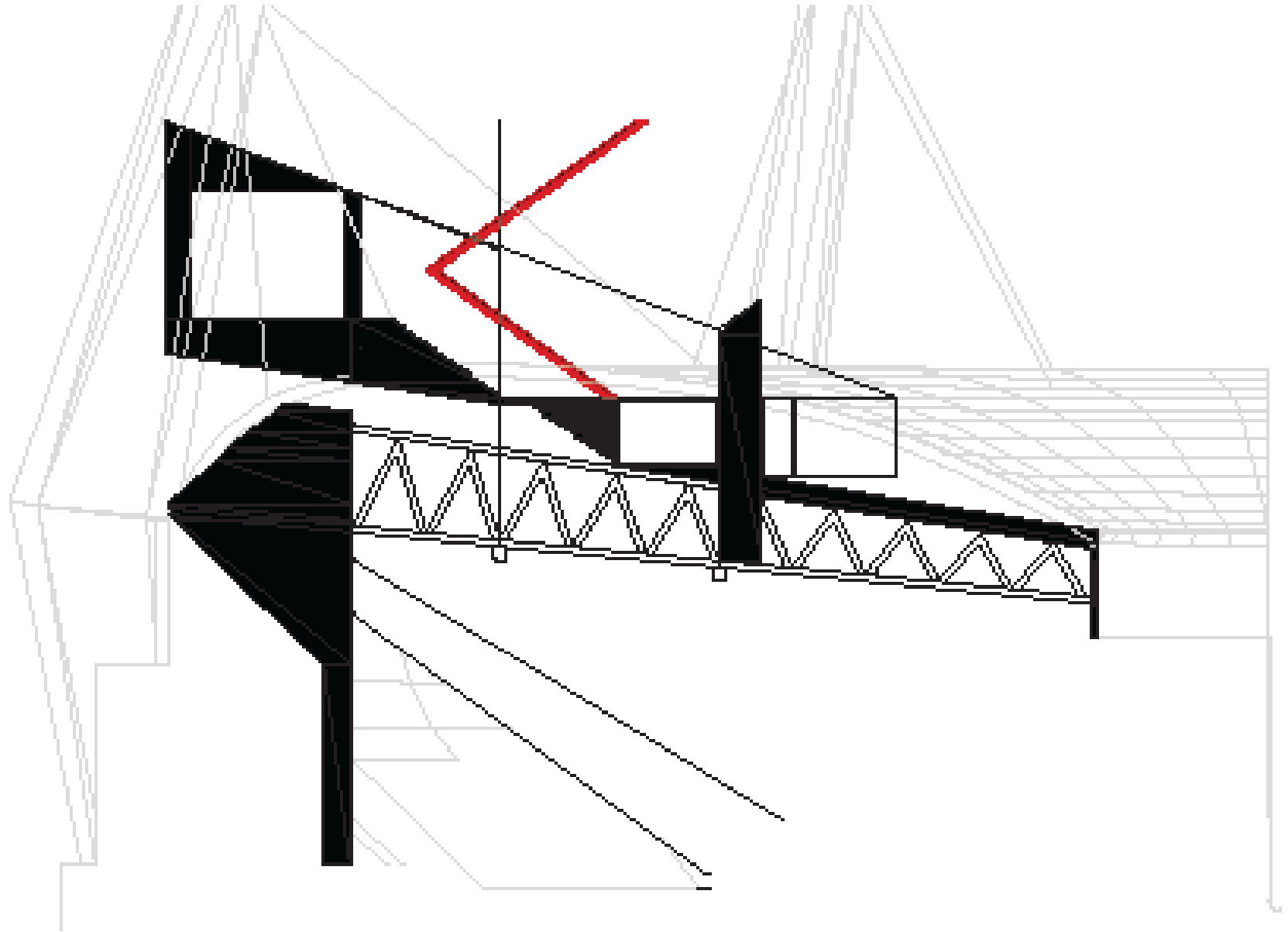
CALCULATING LUMEN



THIRD APPROACH PLAN AND SHADOWS



THIRD APPROACH SECTION



L I S ▲ V ◀ R H O ◀ V ◀ N

G R A D U A T I O N - 2 0 1 9

FINAL APPROACH

Als in de gebruiksfase van het bouwwerk correctieve maatregelen noodzakelijk zijn, dan is de voorspelbaarheid ten aanzien van de levensduur van de werking van deze maatregelen veel geringer dan bij maatregelen in de nieuwbouwfase. Vaak is er al sprake van aanzienlijke aantasting, waarbij meestal meerdere factoren van interne en externe aard een rol spelen. Ter illustratie toont foto 4 een opname van de Al-Shindagah tunnel in Dubai, die momenteel onder directie van Nedeco (Rijkswaterstaat, Intron, Tebodin) wordt gerepareerd. Corrosie van wapening als gevolg van binnendringend zeewater, maar ook door het bij de bouw zo nu en dan gebruiken van door chlooride verontreinigd toeslagmateriaal, toepassing van een poreus grof toeslagmateriaal en een permeabele cementsteen, zijn de (hoofd)oorzaken van de opgetreden schade aan deze tunnel.

De mate waarin van corrosie sprake is, verschilt van lokatie tot lokatie sterk. Op sommige plaatsen is volledig herstel uit constructieve overwegingen niet goed mogelijk. Zekerheid dat na reparatie

van de ruim tien jaar oude tunnel, zich binnen nog eens zo'n periode geen incidentele problemen meer zullen voordoen, valt niet te bieden.

In de artikelen die in deze serie zullen volgen, zullen de lacunes in onze kennis als het gaat om correctieve maatregelen (reparaties) blijken. Lacunes die voor een aantal schadegevallen in CUR-rapport 86-1 [12] zijn geïnventariseerd. De komende jaren zullen door onderzoeken in binnen- en buitenland deze lacunes voor een belangrijk deel gevuld moeten worden. Onderzoek, in opdracht van CUR uit te voeren, naar de duurzaamheid van correctieve maatregelen zal daar zeker ook een bijdrage toeven.

Literatuur

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2. Inventarisatie schade-omvang van in de periode 1950-1980 aan de buitenlucht blootgesteld betonoppervlak in de woningbouw, CUR-VB-rapport 118, 1984
3. Malotiaux, P.Ch.A., In 't Veld, K., In-

dustriële organisatie A en B, college dictaten, TU Delft, 1987

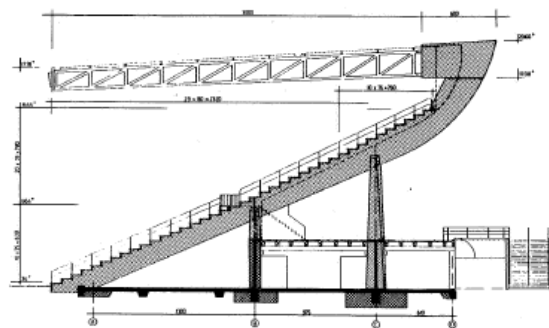
4. Inspectie van bestaande betonconstructies: Leidraad ter preventie en beperking van schade tengevolge van wapeningscorrosie, CUR-VB, Cement 1985, nr. 4
5. Beton in warme landen, artikelserie in Cement, 1984/1985
6. Laurentius, G., Onderhoudsbewust ontwerpen, Stichting Toekomst Beeld der Techniek, 1986
7. Duurzaamheid van gebouwen, TNO-IBBC rapport B-83-521/62.3.1986
8. Betonreparatie en preventief onderhoud aan de Zeelandbrug, Cement 1986, nr. 11
9. Bijen, J., Het beschadigd imago van het verband tussen staal en beton, ingetreden TU Delft, 1986
10. Multi-sponsor-onderzoek betonreparatiemiddelen, Bouwcentrum, 1985
11. Loenen, J. van, ingetreden KMA 1986
12. Reparatie en bescherming van beton: Literatuurstudie, vraagpunten en kennis lacunes, CUR-rapport 86-1, 1986

Schade aan hoofdtribune van PSV-stadion

In juni jl. verschenen in de dagbladen verontrustende berichten over ernstige schade aan de draagconstructie van de bijna 10 jaar oude hoofdtribune. De schade houdt de direct betrokkenen reeds enkele jaren bezig. Het betreft de constructie waarvan in de hierbijgaande figuur een doorsnede is gegeven. De tribune is opgebouwd uit 14 voorgespannen betonspanen, elk gedragen door 2 kolommen. De elementen zijn in de fabriek vervaardigd. De vrij-uitkragende overkapping van 30 m bestaat uit een ruimtelijk stalen vakwerk dat aan de spantkoppelen is opgehangen.

Om op het gewicht te besparen werd het lichte toeslagmateriaal Korlin gebruikt, een materiaal op basis van geëxpandeerde klei.

In de beschreven spanen is vooral aan de bovenzijde ernstige scheurvorming geconstateerd, alsmede afgedrukte schollen beton ter plaatse van de verankeringen van de overkapping aan de spantkoppelen. Naar aanleiding van een eerste onderzoek naar de aard en de oorzaak van de schade is geconstateerd dat zich in de spanen ettringiërvorming heeft voorgedaan, een chemisch proces dat



met uitzetting gepaard gaat. In hoeverre dit proces van invloed is geweest op de waargenomen schade wordt nog nader onderzocht.

In het onderzoek is tevens een afname van de betondruksterkte geconstateerd.

In afwachting van een definitief oordeel is besloten de omgeving van de tribune aan de stadzijde af te zetten en de overkapping met hulpkolommen extra ondersteuning te geven. De redactie van Cement meent dat het in het belang is van de betontoepassing in geavanceerde constructies wanneer

over de oorzaak en de gevolgen juiste informatie wordt verstrekt. Zij hoopt daarom nader op dit schadegeval terug te komen.

Redactie



After visiting the stadium and get a tour from technical maintenance Eric de Bie Heijmans. I could draw the conclusion the existing roof is not suited to carry any extra weight, even one extra led lamp is already too heavy.

After reconsimdering, a new construction is added. Which brings back the harmony of the exciting facade. and ads value to the houses by casting it shadows.



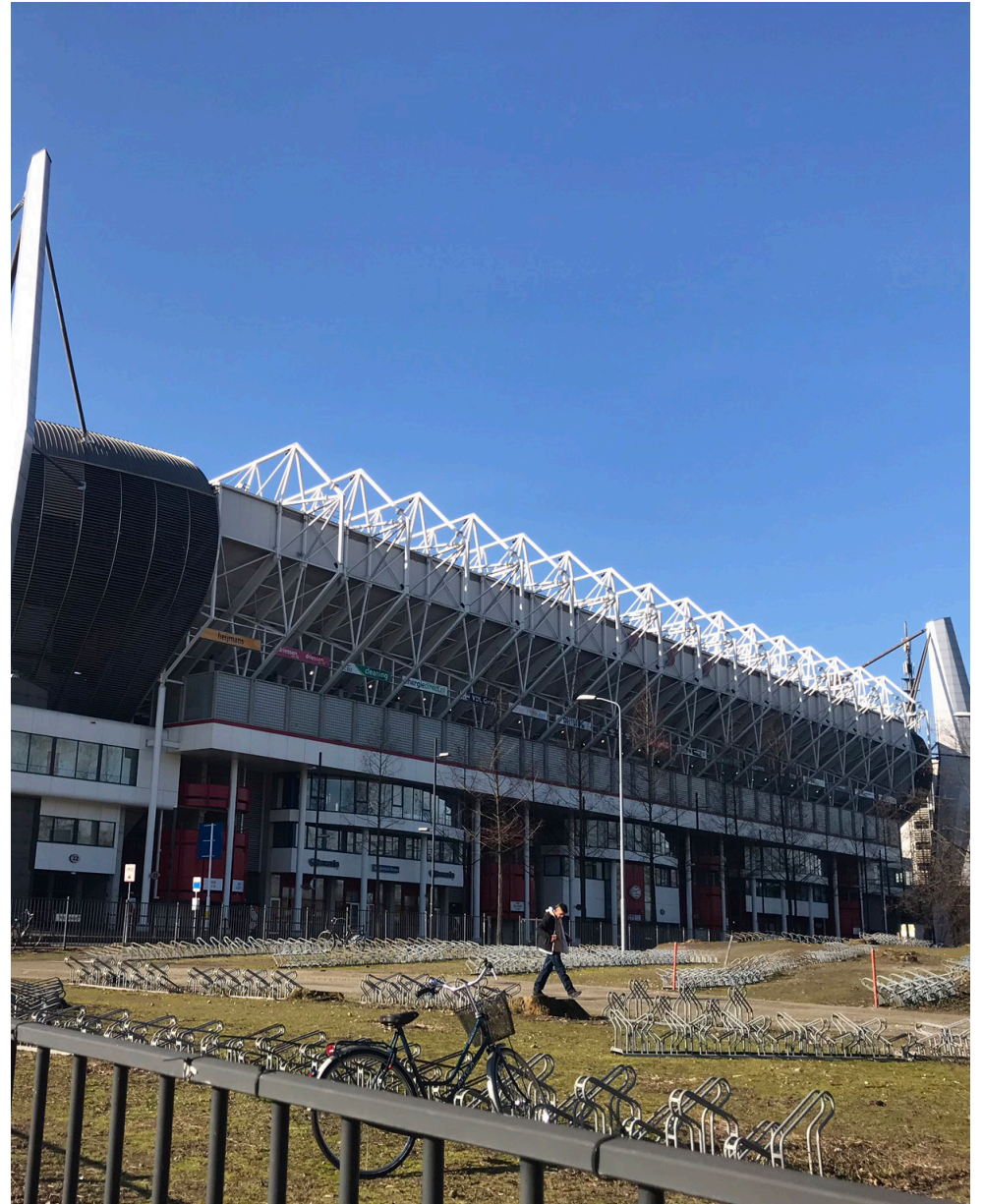
MATERIAL INSPIRATION



MATERIAL INSPIRATION



NORTH FACADE



The construction of the existing roof is a space frame based on a grid of almost 9 meter width. 45 meters high and has a cantilever of 35 meters.

This type of construction is used in several stadiums and also cranes have this principle. Knowing this the new added construction knows the same principles and is based on the original grid.

Two big columns are connected to two main beams. the columns are supported by tie rods on the facade. The structure of the roof creates the reference to the space-frame and generates its stability.

