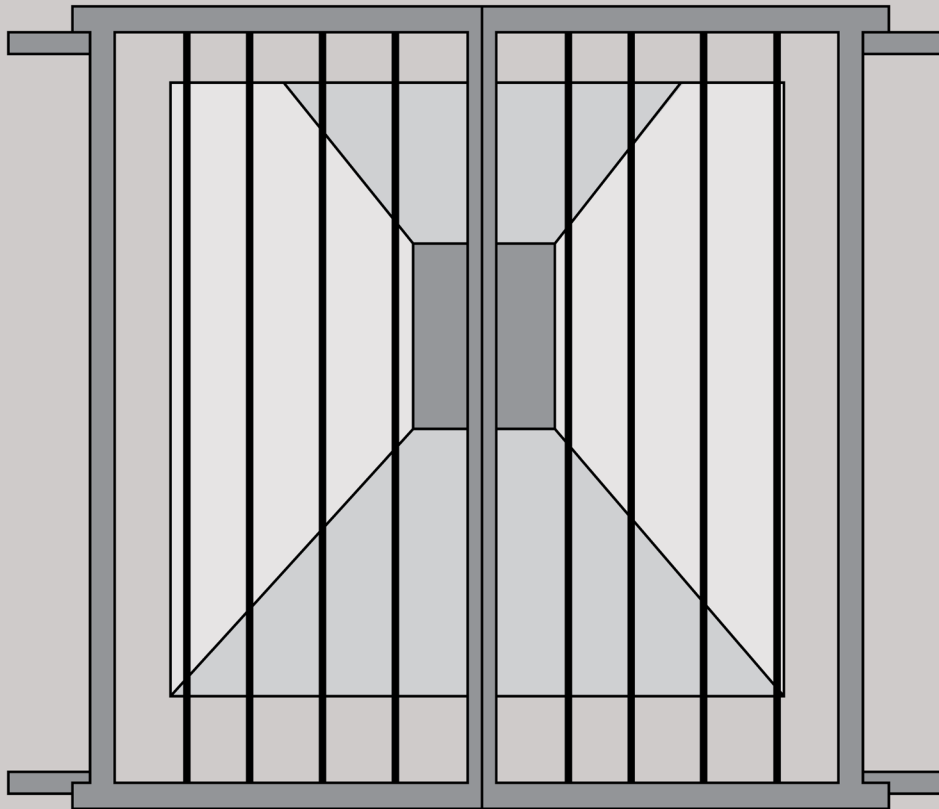


# How is light used to influence the experience of memorial architecture?

Case study of Mémorial des Martyrs de la Déportation, Paris by  
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# I

## Introduction

This thesis paper will be an examination of the use of light in the Memorial des martyrs de la deportation, Paris and the its effect on the experience of that site.

The inspiration for this topic came from a visit to the Jewish museum in Berlin by Daniel Liebenskind. There natural light and contrast between dark en light areas is used masterfully to give the visitor a feeling approximating something that the victims of the holocaust might have felt. Loneliness, confusion, helplessness, etc. This visit left a fascination for the elegance of the architecture's use of light to convey emotion.

This paper will research the case study of the Memorial des martyrs de la deportation on the Île de la Cité, Paris. This site was chosen because it shares the heavy emotions of the Jewish museum in Berlin, also being a holocaust memorial. And its architecture is quite simplistic in form, with the contrasts of natural and artificial lightings being a prominent aspect of the design of the site.

Two main methods will be used to come to a conclusion as to the way light is used to influence experience at the site of the case study. The first is relevant scientific literature describing the use of light in architecture, memorial architecture specifically, psychological effects of light and sources specific to the case study site. Secondly, an expedition to the case study site to experience it first hand.

# II

## Literature review

There exist many studies on the relationship between architecture and human perception. On psychological effects of form and space, light and dark on the human mind.

However, fewer studies have been performed on the human sensual experience in relation to memorial architecture such as the study by Attwa et al, published in the Ain Shams Engineering Journal in 2022, this study is focused on several case studies while connecting the memorial architecture to the wider social and architectural context of cities (Attwa, et al., 2022). While this study is comprehensive, The study by Wagoner and Brescó, published in the International Journal of Environmental Research and Public Health in 2022, provides a more in depth analysis of different sensory aspects of the relationship between the human perception and memorial architecture in general (Wagoner & Brescó, 2022).

These first two sources establish a foundation for the understanding of the human perception of memorial architecture as a whole. The studies of Babakhani and Fontanelle, published by the Journal of Architectural Engineering Technology in 2017 and the Stockholm KTH Royal Institute of Technology in 2008 respectively, focus on the role that light plays in this perceptual relationship between

(Babakhani, 2017), (Fontanelle, 2008). Babakhani focuses more on the psychological aspects of that relationship in regards to colour and light while the study performed by Fontanelle substantiates the importance of light in the general experience of architecture. Lastly, a study by M. A. Steane in 2012 serves to support the different qualities and types of light by giving an examination of the role of natural light in modernist architecture (Steane, 2012).

The following sources combine the topics of light in relation to perception of architecture and the perception of memorial architecture. In their studies, Y. E. Revsina and D. O. Shivkovsky explore how and why light is used to illuminate classical architectural memorials (Revsina & Shvidkovsky, 2016). While N. I. Shchepetkov and T. N. Zavgorodskava examine the role of light in memorial sites as a point of memory itself (Shchepetkov & Zavgorodskava, 2020).

Lastly, several sources to connect with the case study of the Memorial de les martyrs de la deportation, The website of the Paris Promeneurs gives a very detailed description of the design and build process of the site (Paris Promeneurs, 2023). While the journal by P. Di Meglio and the website SOSBrutalism provide descriptions of the architecture and the architect's intentions, (Di Meglio, 2016), (SOSBrutalism, 2024).

# III

## Light and Architecture

The psychological effects of light on human beings are extensive, a lot of natural systems in our bodies rely on light to guide them and we use light as our primary source of perception. It is no wonder then that all aspects of light, both visible and not, have different effects on the human body and mind.

Apart from the biological influence of light on people, it has a behavioural one as well. This relationship with light goes back to the earliest living creatures on this planet. The warmth they needed, all their energy they got from the sun. Still to this day that is largely the case. This importance of the sun and its light as a source of energy has caused us to develop a longing for sunlight. We like sunny days and we want to have 'natural' light in our rooms. This specific intensity and colour of light gives us energy and at the same time makes us feel at ease (Babakhani, 2017). However, we discovered long ago that during the night no sunlight reaches us. We have evolved to use this time of the day to rest for when the light returns and we can once again use it to warm ourselves and perceive the world around us. Because of this, our bodies naturally developed the correlation between the lack of light and sleep. This is why, in the modern world there are many people who have trouble sleeping as a result of artificial daylight all around them.

The behavioural aspect of light trickles down into our culture, bright light is thought of as good and being connected with deity or heaven. Probably because of the correlation with daylight and our dependence on it. As the story of Christianity goes, when God made the universe, he started by making light in the darkness. The fact that it was the first thing he did, signifies the importance of light in people's minds. Darkness is often correlated with evil or scariness.

Scientists suspect that around one million years ago, our ancestors first started making their own light; fire. This was probably at first only to keep warm, but the light also allowed our ancestors to use their eyesight in the night, giving them more safety. Fire therefore was seen as very precious, but also dangerous because if not controlled,

it could burn everything in its path. The warmth of fire, combined with its unpredictable nature and way of moving in the wind has always made people connect it to a living being (Babakhani, 2017). Fire gives life through warmth but also seems to be alive itself. As a result, there are many sayings equating fire to certain emotions or personalities. When someone dies for instance, you might say their fire has gone out (Fessler, 2006). This very strong cultural connection between fire and life is something that persists to this day. In many memorials, a small flame can be seen to signify a person or a group of people. While that small fire remains alit in their name, we tend to feel like some part of that person or group of people lives on through it (Shchepetkov & Zavgorodskava, 2020).

Fire has been at the centre of our combined culture for so many thousands of years that it has almost overshadowed natural light in its significance to human psychology (Watson, 2013). Natural light can be distinguished clearly from fire by its blueness. We still value natural light for this, the blue tint signals to our body that it is daytime and it gives us energy. While the warm tones of more orange or yellow light relaxes us and prepares us for sleep. As shown in figure 1, blue light or daylight tones are considered more cold and orange tones of light are considered warm, even though in reality blue light is much more intense and thus much warmer in a physical sense, it is cold in a psychological and cultural sense (Fontanelle, 2008).

The coldness we feel from blue or white light is the reason that it is rarely used to light memorial spaces artificially. Daylight or natural light, is very often used, but almost always as to accentuate a contrasting darkness (Shchepetkov & Zavgorodskava, 2020). As discussed before, daylight is often correlated to heaven and deity, so its presence at a memorial site is culturally logical. But the most intimate memorial sites are not in the open air, even though one may assume that the maximum amount of natural light would create the best environment. But something in our culture almost as old if not older than fire has always correlated death to the ground, we bury our dead and we make crypts underground. We want our dead to be safe and for thousands of years, the only safe place for our ancestors was beneath the ground. The presence of warm light tones, that remind us of the warmth and life of fire, combined with the safety of a cave but with a 'window' to the energy giving daylight and God, creates as a result of a million years of culture and psychological evolution, apparently for humans the best environment for an important place of mourning. Ofcourse, like with all aspects of both culture and psychology, there are a great many subtleties to that statement and all its aspects but on the whole it seems to be true.



Figure 1, Warm and cold light tones.  
From 'Reolink', 2023. (<https://reolink.com/blog/warm-light-vs-cool-light/>)

# IV

## The memorial des Martyrs de la Deportation

The Memorial to the Martyrs of the Deportation is located on the Place de l'Île de France behind the Notre-Dame Cathedral on the Ile-de-la-Cité in the centre of Paris. It was designed by the architect Georges Henri Pingusson and inaugurated on April 12, 1962 by General Charles de Gaulle. The monument pays tribute to those deported from France by Nazi-germany to concentration camps during the second world war. (Paris Promeneurs, 2023).

The memorial to the Martyrs of the Deportation was built at the initiative of the 'Réseau du Souvenir' or 'Network of remembrance' association. The association was founded in 1952 by the former resistance member Paul Arrighi who was a survivor of the Mauthausen concentration camp, and Annette Lazard, widow of one of the deportees who died at Auschwitz-Birkenau. The association is meant to bring together former deportees and resistance members as well as their families. Since 1953 the Network has called for the creation of a monument to the memory of the men, women and children deported as a part of what the Nazis called the 'Final solution'. (Paris Promeneurs, 2023).

In 1961, after the association submitted a request for the building of a monument to the Ministry of Veteran Affairs, the network appointed the architect Georges-Henri Pingusson for its design. The choice of location, at the tip of the Île de la Cité behind Notre-Dame was not without significance, it is placed on the site of a former morgue and hidden away from major tourist locations as to give visitors more privacy and silence. (Paris Promeneurs, 2023).

The monument has the aesthetics of a world war two bunker, completely built out of grey concrete and steel bars. It sits at the easternmost point of the Ile de la Cite, in the park behind Notre Dame. The top of the structure sits almost flush with the ground. To enter it you have to descend down one of the two mirrored narrow staircases cut out of the concrete. You descend two levels down to the courtyard, here you are completely surrounded by concrete walls 5 metres high with the exception of a small window to the Seine. This small window however is sealed off by thick spiked metal bars. The entire memorial is very symmetrically designed following a line centred onto the grave of an unknown deportee. When standing in the courtyard you can enter into the crypt through a tight crack between two large concrete blocks, see figure 2. From this crypt there are three directions, left and right are small rooms that depict artefacts and names of victims. But if you continue straight through you will find a small barred opening. When you look through that opening you are met with a 30 metre long gallery flanked on both sides by 200.000 crystals all lit up, with in the middle of the hallway the grave of an unknown deportee who died at the Natzweiler-Struthof concentration camp. On the floor above the main memorial hall there is space for exhibitions (Di Meglio, 2016), (SOSBrutalism, 2024).

The intention of the architect, Georges-Henri Pingusson, was to 'Evoke the long ordeal of attrition, genocide and degradation'. Through its physical architecture it mimics the concentration camps with tight passages, narrow stairs, solid cold walls and spiked metal fences. The sight to the horizon is purposefully obstructed to give the feeling of oppression to visitors of the memorial (Di Meglio, 2016).

There are several different types of light sources used in the memorial; artificial light is diffracted by crystals throughout the site, see figure 3. The crystals are meant to signify the lives of those that were lost, besides the 200.000 crystals in the main crypt for all of the deported people there is one central crystal in the main hall of the crypt, see figure 4.

Figure 1, View out of the main crypt hall. (Own image)



Figure 3, Main crypt with 200.000 crystals. (Own image)





This is more akin to an eternal flame like can be seen in many other memorials. The crystals refracting artificial light in the long hall each signify the memory of a human being while the crystal emitting light in the main hall stands for the memory of the event itself. Daylight also plays a large role in the design of the memorial. The narrow crack that serves as the main entrance to the crypt is filled with hard sunlight but that light never enters the crypt itself, rather you are left looking out at it through iron bars into a concrete courtyard which has the same small hole to the outside world, see the background of figure 4. Being able to see the light of the sun gives one a feeling of freedom, while not being able to enter into the light gives a feeling of being trapped, mirroring the feelings of the victims of the concentration camps.

Figure 4, Eternal flame crystal in the centre of the main hall. (Own image)

# V

## The subjective experience of natural light at the Memorial des Martyrs de la Deportation

Upon entering the memorial site you are met with an overwhelming darkness, see figure 5, the walls are made of light concrete which does reflect some of the daylight into the underground structure but only for the first couple of metres. You are then met with a long dark hallway that wraps around the entirety of the upper level of the monument, with several exhibition rooms adjoining to it that show details of the story of the deportation of the French Jews and Gypsies. From the centre of this long dark hallway the daylight at the exit/entrance seems extremely bright even though it does not light up the hallway very much, see figure 6. This apparent contradiction, a consequence of the darkening of the walls using paint as the hallway progresses into the crypt, causes the feeling of uneasiness when you are in the hall. The daylight feels like a tiny glimpse of the freedom of the outside world but it doesn't touch you when you are inside. The feeling of freedom that that light normally gives you suddenly doesn't apply to you when you are in that place, all it does is remind you of the fact that in this place, you do not have that freedom.



Figure 5, Entrance of the memorial.  
(Own image)



This is a recurring theme in the memorial, where the emotions that are usually felt with certain forms of light are subverted and instead used to evoke the opposite reaction. As alluded to earlier, in the main crypt hall downstairs, there is an opening which would be just wide enough for a person to walk through but it is closed by rough iron bars, see figure 1. This gives a strong feeling on its own, but there is an overhang over this opening that extends in such a fashion that the daylight that reaches the courtyard that you can see from inside the crypt, cannot reach into the opening. Once again reminding you that you are separate from freedom, and separate from nature. To add to this effect, the courtyard the opening leads to is also surrounded with massive concrete walls with only an even smaller opening in line with the opening in the crypt itself that finally leads to the outside world. This opening again is covered with heavy iron bars. It might seem at first that the existence of this 'window' into the 'free world' or to nature would provide one with a positive feeling. However because of its distance to the observer inside the crypt and the multiple layers of cold and impersonal barriers it gives you a feeling of hopelessness of ever reaching that place of freedom again.

Figure 6, Light at the end of a dark hallway.  
(Own image)

# VI

## The subjective experience of artificial light at the Memorial des Martyrs de la Deportation

The natural light lights up the main crypt hall sufficiently for sight, but some adjoining staircases and hallways require artificial lighting for safe passage, this lighting is not devoid of meaning however, it is a very warm orange coloured light, this artificial light colour can be found in all artificial lighting throughout the memorial. It has the colour of fire and also gives off the feeling of the warmth that a fire might give you. This is in stark contrast to the way natural light is used in the memorial and in contrast to the impersonal harsh concrete architecture throughout the site. A pattern then becomes apparent, natural light is used throughout the memorial to give a feeling of loneliness and a feeling of captivity. It is used to convey to a visitor the feelings that the victims of the memorial honours felt during those awful events. In other words, the natural light is used to carry the experience of the horror the memorial remembers.

DEUX CENT MILLE FRANÇAIS SOMBRES  
EXTERMINÉS DANS LES CAMPS NAZIS



The natural lighting gives off a warm glow and is placed very sparingly, only when necessary. For instance, in the long dark hallway mentioned earlier, see figure 6, a soft glow of warm light comes creeping through one of its walls. It gives you not so much the feeling that you are unalone but more the feeling that others have been here before. I had to use very sensitive camera settings to even capture it which is why in the photograph it seems quite bright.

In the main crypt hall downstairs however artificial light is used only in two places. In the centre of the room a glass bulb stands as a dim and lonely light, see figure 4 and 7. This apparently, according to the guard at the site, used to be a real flame that was continually lit. I could not find any other sources for this however. But it seems coherent with the pattern of lighting throughout the memorial. The warm artificial light is used to signify human life. Nowhere else is this more obvious than in the long hallway extending from the main crypt hall which is flanked on both sides by a total of 200.000 crystals behind which that same warm light emanates, see figure 3. Here it quite literally represents human life, the lives of the 200.000 french victims of the holocaust. But the central light in the main crypt hall is surrounded with the text: we can forgive but will never forget. This light clearly signifies the memory of the events themselves. It seems fitting that an open flame was used that had to be lit manually. Because if it was lit by someone, that would imply that the memory was not lost.

Figure 7, Hallway with 200.00 crystals as viewed from the main crypt hall. (Own image)

# VII

## Conclucion

Natural and artificial light is used very differently throughout this memorial, but very consistently so. All natural light is used very sparingly and appears only to convey to the visitor the absence of the feelings it normally announces. Its significance to the memorial itself is that the natural light is used to carry the feelings felt by the victims honoured by the memorial. The natural light is used as a memory bank of the experience of those events it remembers. The artificial light is used to signify the lives of the victims themselves. Coloured to resemble the light of a fire, our minds interpret them as giving off warmth and being alive. The lights give the visitors the feeling that although you are in a space where you feel lost, you can see that in this cold and inhuman place, there is life. The contrast between that warm living light and the cold architecture and absence of natural light gives one an incredible feeling of incompatibility. The incompatibility of this place and human life. In other words, the combination of these two lightforms, the natural and artificial, let the visitor experience the inhumanity of these awful events that it remembers. The memorial does not tell you how terrible these events were, it makes your mind come to that conclusion on its own. Even if someone who is unfamiliar with the holocaust enters this memorial, they would still have this experience. The combination of two forms of light with the physical architecture have combined in this memorial to form a universally comprehensive memory of the events of the holocaust.

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