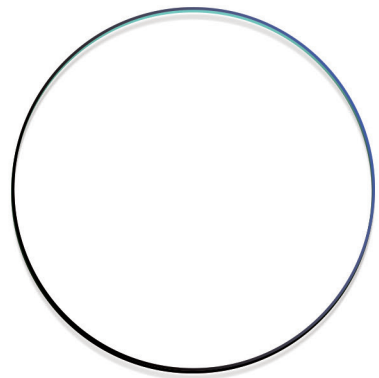
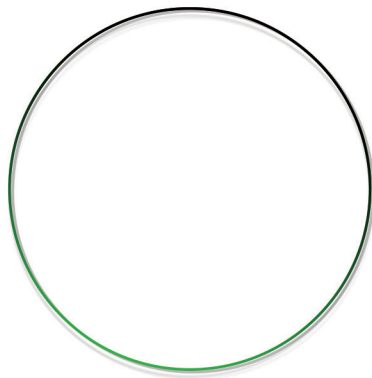
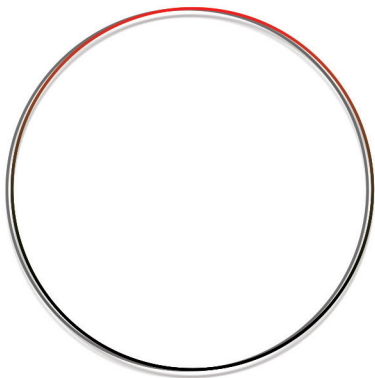


CHROMOPHOBIA



Pawel Szubert

Chromophobia

graduation thesis project

Master Interior Architecture and Retail Design
Piet Zwart Institute
Willem de Kooning Academy
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To my family for the endless love and support.

Chromophobia

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Imprint

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While opening this book, you have probably noticed how the light passing through the cover projected colours on the first page and the top of your desk. For a split of a second, this book activated its surroundings leaving colourful marks on the white surface of the paper. That page for a while was no longer white. Maybe you have even realised that these colours shifted depending on the light around you, and the angle of the cover that turned.

Or maybe,
looking for a written word you have not noticed that at all.

“Light is not so much something that reveals, as it is itself the revelation.”

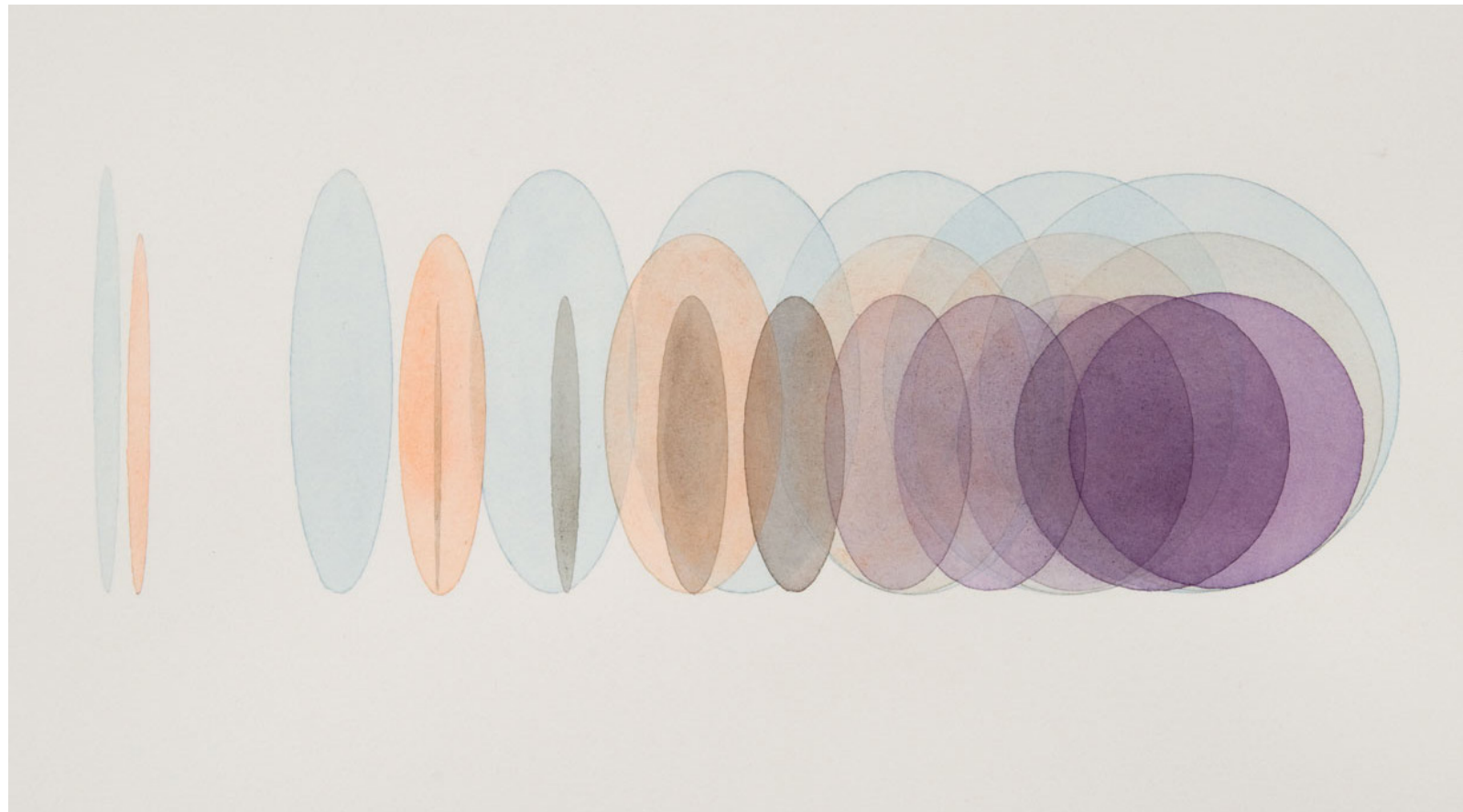
(Turrell, 2015)



I am genuinely fascinated by the trivial and ephemeral effects of light and colour in our space. Continuous, subtle changes occur unnoticeably around us altering the perception. We see objects as we assume they are, with a baggage of assumptions we do not notice the fleeting phenomena around them, taking natural and artificial light for granted, as intrinsic elements of the environment. We got used to artificial light patterns and various kinds incorporated for different needs of architecture. “We become numb to the sensation of light, to its polyphonic nature.” (Eliasson, 2003) However, the interior is a stage where the lighting is a mean of manipulation and creation. It is the strongest emotional narrative influencing the human condition and staging our being in the space.

The contemporary western culture is ocular-centric. (Boyle, 2012) Among all the senses it is the vision that dominates our perception of architecture and interior. If we understand the meaning of vision as an ability to perceive spatial information in the spectrum of light, we could argue that light and colour themselves are the most fundamental elements creating our relation with space.

fig. 1 James Turrell, *Ganzfeld Piece*, 2008



Colours as such have been underestimated and marginalised in the western interior design. Progress is seen as achromatic and free from a pattern that conceals real forms. Accordingly, colours became considered oriental and primitive (Batchelor, 2000) Moreover, for the Western culture, removing the colour was in a way a mean to separate itself from the other cultures and archaic traditions. This rejection and categorisation may lead to insensitivity towards our surroundings.

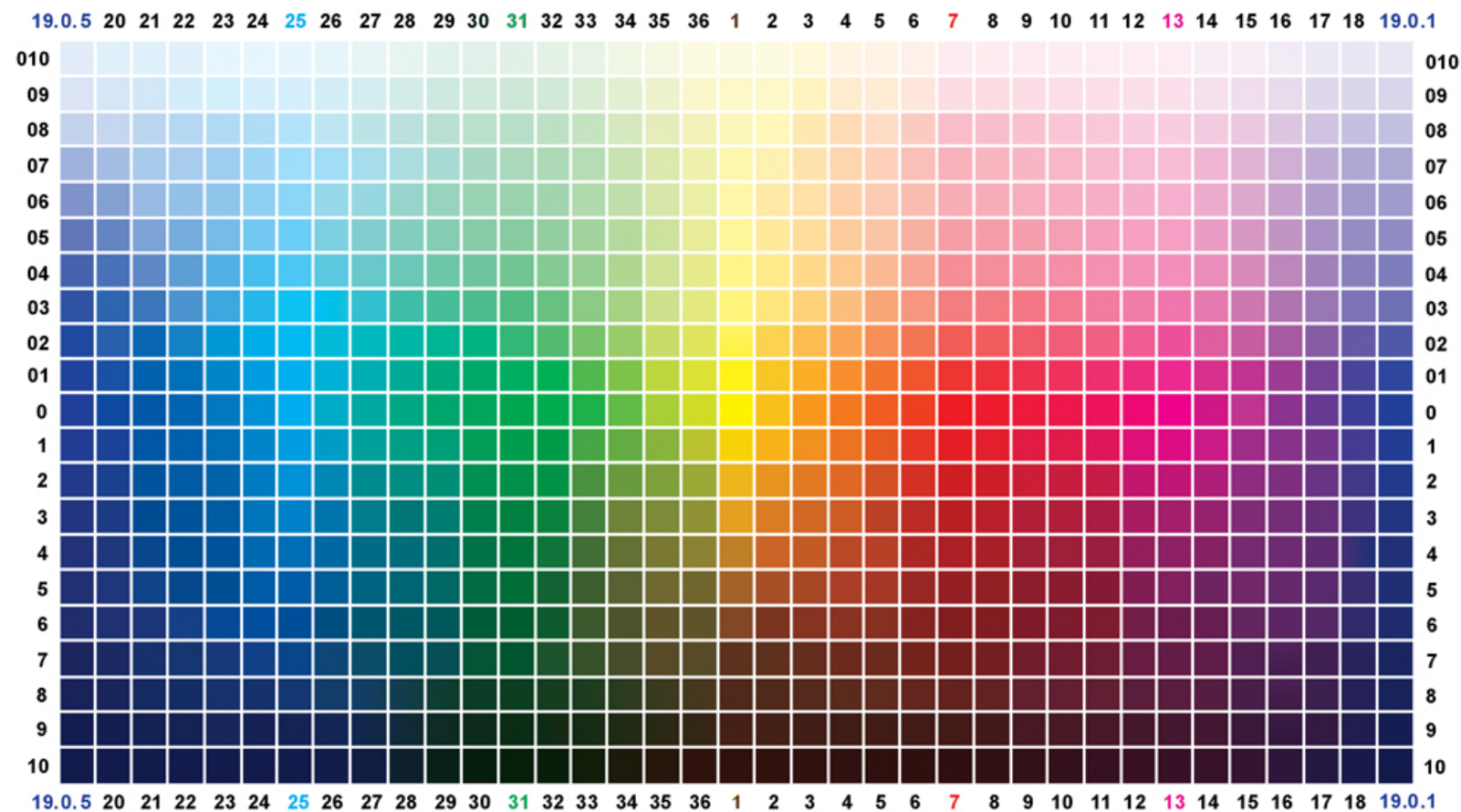
However, even if the colours are excluded from the contemporary interior, they are still present in the spectrum of light, reflections, and relations between the coloured objects that interfere whiteness. Therefore, an actually white space does not exist as it will always contain colour. Either apparent or unseen within the spectrum of white light which amalgamates all the hues, colours do not belong to objects but are a part of their surroundings. Furthermore, human perception of colour is a cognitive process dependent on numerous factors. It brings, even more, complexity to this seemingly banal topic.

This thesis investigates relations between light, colour and human perception, as well as our cultural precognition of these phenomena. By taking a critical look at various approaches to colour, it seeks for underlying issues that are bound to colours recognition. Eventually, the focal point and the result of this project are directed towards the analysis of whiteness as the most culturally and historically charged (non) colour.

fig. 2 Olafur Eliasson, *Exercise panoramica wareness. Blue and orange and grey to purple.* 2010

“Color is light made visible, and the atmosphere of the air we breathe and the quality of the light passing through it affect how we see color.”

(Kaufman, 1999)



Light and colour are one of the essential phenomena in our surroundings. Therefore, it was a topic of numerous research works conducted by scientists, artists, writers or psychologists. The extensive number of resulting theories proves the complexity of colour perception. Each colour wheel is designed differently. Connections, shapes or main points of diagrams vary and evolve. Our culture craves for classification of the surroundings. Most of the physical aspects of the world are described with hard numbers, algorithms and graphs. In regards to colour, the issue is not so obvious. Before the formulation of current theories of colorimetry and spectrometry, definitions of colour had been based on various scenarios and points of view. For instance, physicist classifies spectrum of electromagnetic radiation, psychologist looks into human response to colour, while artists or writers debate on its cultural meaning and semiotics. In such a complex discourse, one undisputable truth barely exists. It is a multidisciplinary matter.

This chapter does not aim to classify and define colour theories, but points out the complexity of this problem and clarifies a base for my further design and theoretical research. Light and colour show more than meets the eye.

fig. 3 CMYK colour chart

Bending the spectrum

For centuries, artists and scientists looked for colour on the surface of objects. Sir Isaac Newton went a step further. He questioned not the surface but the surrounding light that touches the object. Examining optical devices, Newton was the first one to discover that white light is not achromatic. He broke with the previous assumptions about the prism stating that it is not the glass prism that creates colours, but the colours exist already within the light, and the prism just reveals this 'hidden' property. (Newton, 1704) To prove his theory he used two prisms to firstly, refract the light into a colour spectrum, and combine it back together into the white ray. Newton stated that the white light is composed out of seven colours that appear in the following array: red, orange, yellow, green, cyan, ultramarine and violet. After obtaining a line of spectral colours, it was apparent that red can be connected with violet to form a closed circle that contains all the colours of the spectrum in a continuous sequence. (Silvestrini, 1994) In this way, the first colour wheel was created. It formed a new methodology of analysing and working with colours.

A Letter of Mr. Isaac Newton, Professor of the Mathematicks in the University of Cambridge; containing his New Theory about Light and Colours: sent by the Author to the Publisher from Cambridge, Febr. 6. 1672; in order to be communicated to the R. Society.

S I R,
TO perform my late promise to you, I shall without further ceremony acquaint you, that in the beginning of the Year 1666 (at which time I applied my self to the grinding of Optick glasses of other figures than *Spherical*.) I procured me a Triangular glass-Prisme, to try therewith the celebrated *Phænomena* of Colours.

G g g g

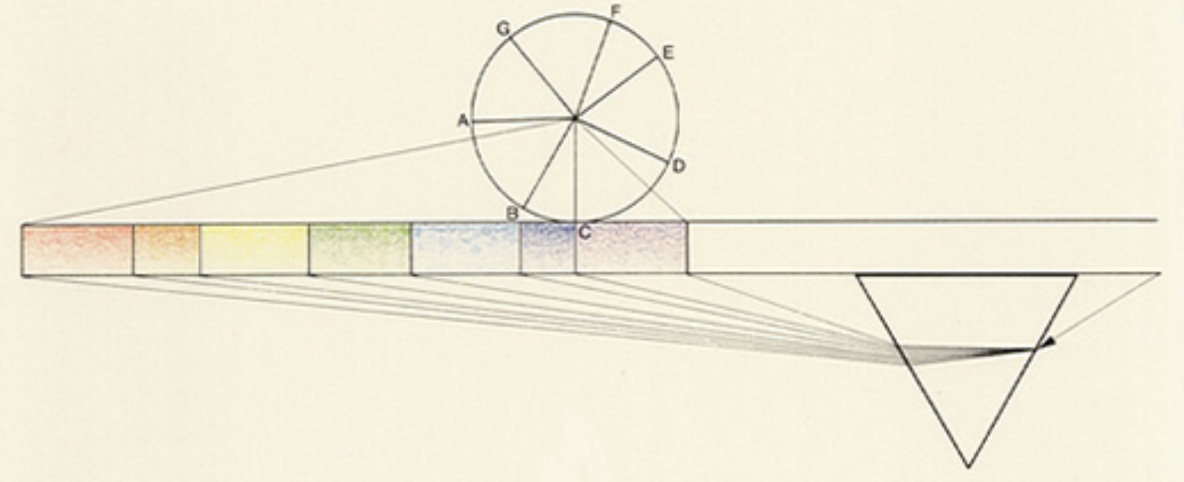
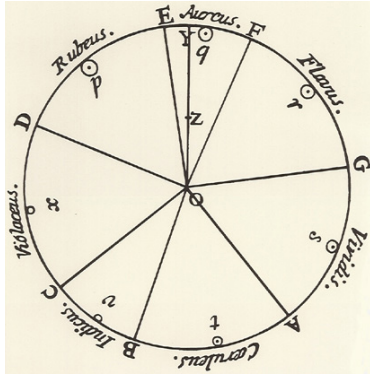
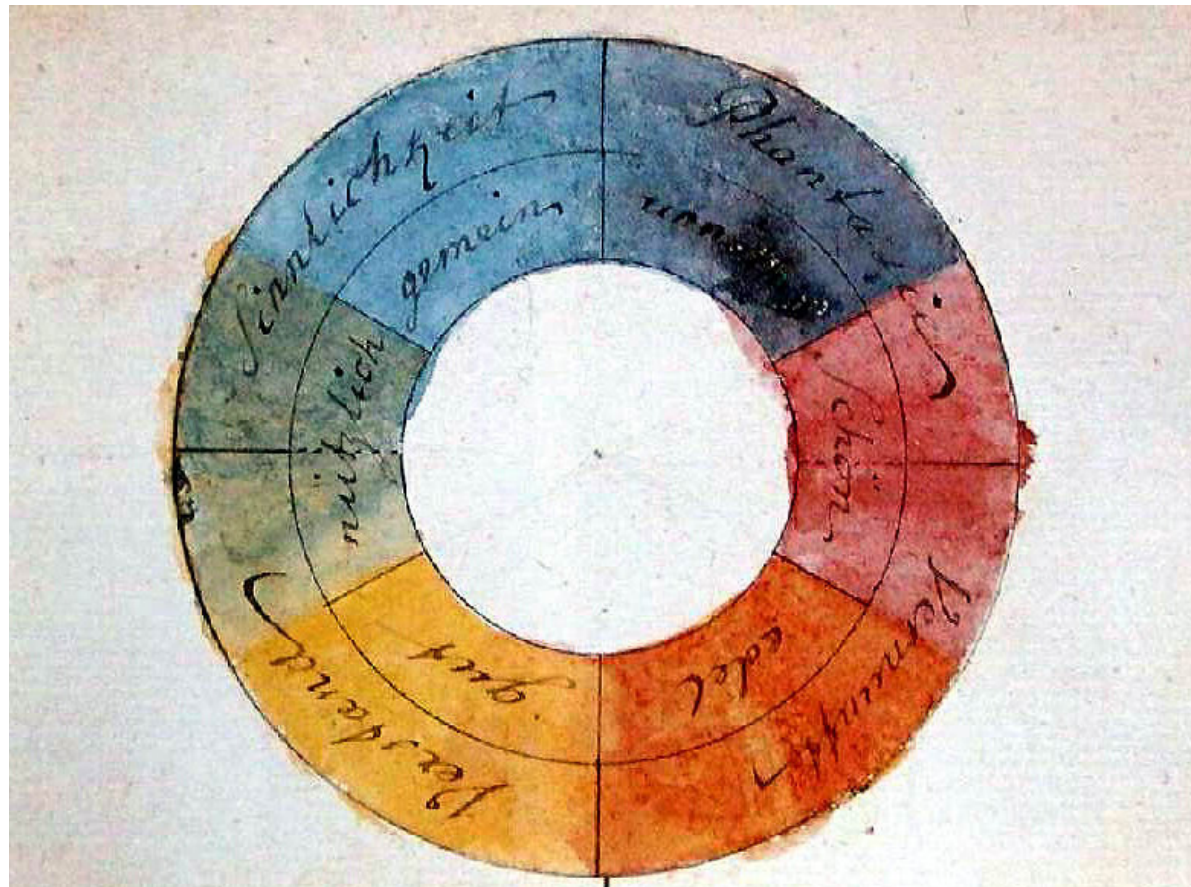


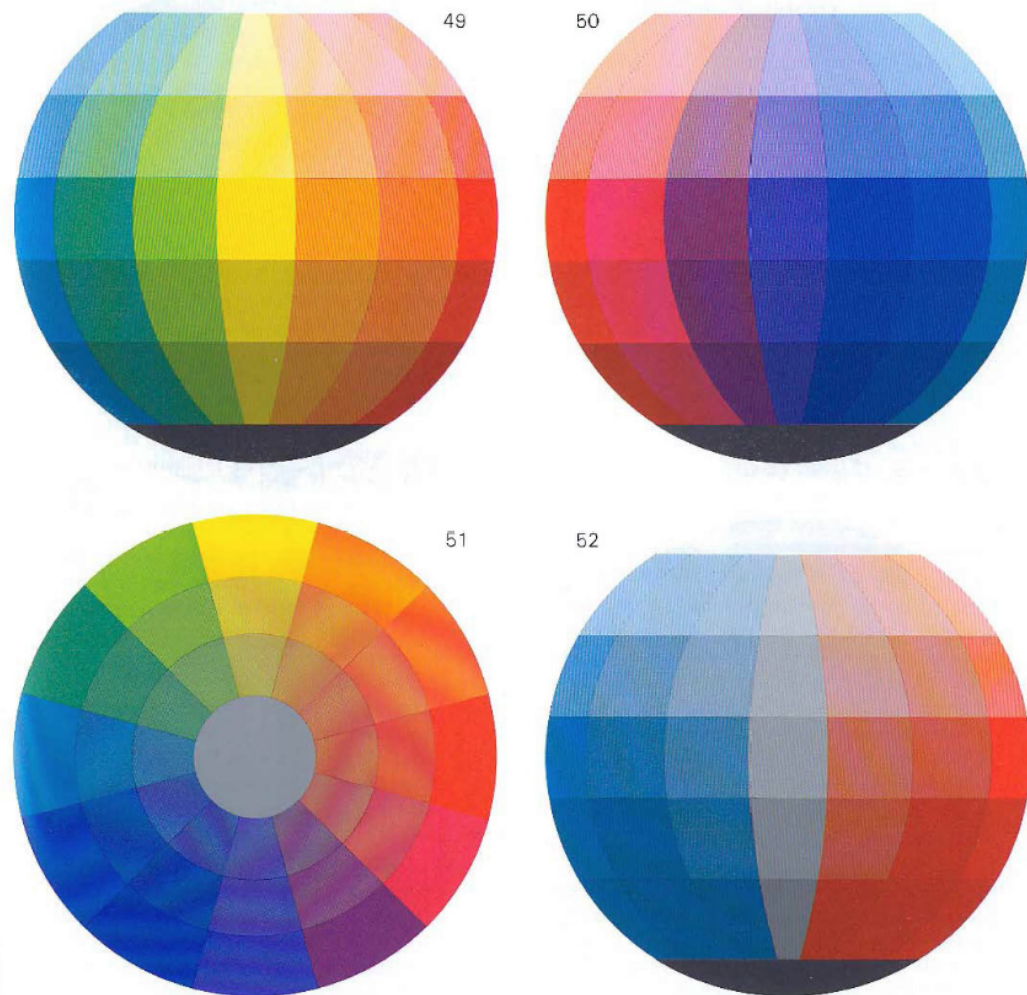
fig. 4 (upper left) letter of Isaac Newton containing his new theory about light and colors. 1672
 fig. 5 (upper right) Isaac Newton, colour wheel, 1672
 fig. 6 (down) diagram of the Newton's prism experiment, 1666



Humanistic approach

Newton's theory prevailed in the colour science until the German writer and thinker opposed it with his research and writings on colour. Goethe stated that colour is not only a property of the white light, but it is a result of a fight between the light and darkness. In his theory, in a romantic manner symptomatic for his period, he underlined shadows and environmental relations as creators of the appearance. He composed a symmetric colour wheel based on the primary colours- red blue and green, and their compensating oppositions. Accordingly, the result was supposed to organise colours with more equilibrium. Furthermore, the colour wheel assigns emotions and sensual effects to colours, showing their aesthetic qualities. (Silvestrini, 1994) While Newton, examined the light only from a scientific perspective, Goethe put the human perception and the psychological reactions in the centre. Not only the prism but also the eye and mind were analysed. Goethe's treatise was highly poetic and intuitive. Thus, it was not considered as a scientific theory. However, his way of seeing the topic influenced thinkers and artists for the next centuries.

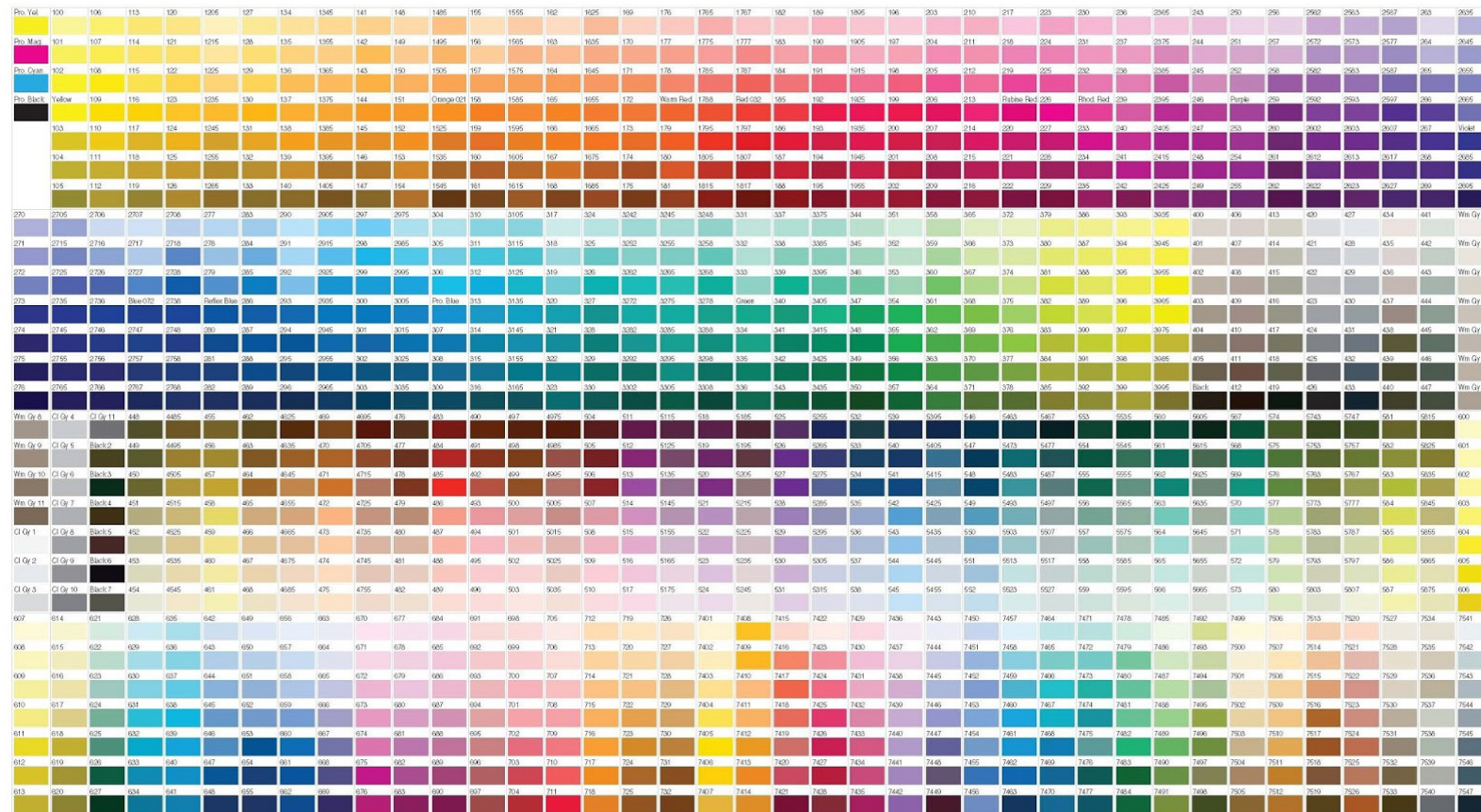
fig. 7 Johann Wolfgang von Goethe, colour wheel



XX century

The contemporary knowledge on colours is highly influenced by the works of the Bauhaus movement. Bauhaus school with its interdisciplinary approach had a broad look on colour from various perspectives. Teachers like Kandinsky, Klee or Johannes Itten with their research paid scrupulous attention towards relations between colours and their interactions. (Smith, [no date]) As the Bauhaus teachers were artists themselves, their professional art experience contributed to their research. Johannes Itten work "Art of colour" from 1961 until today, serves as thrust for the understanding of colours and their relations. In his treatise, Itten examined the topic of colour from a very broad angle, touching upon various problems and approaches. His work consists of physiological, physical, artistic views that altogether present a synesthetic methodology. (Briggs, 2007) As an artist, Johannes Itten emphasised the role of light and colour as essential phenomena of the perceived world. "The end and aim of all artistic endeavour is liberation of the spiritual essence of form and colour and its release from imprisonment in the world of objects." (Itten, 1970) He developed seven categories for distinguishing contrasts between colours to propose new strategies for their conscious application and "provide a complete map of the world of colour" (Itten, 1970) According to Itten a two-dimensional colour wheel is not complete. He proposed to organise them into a sphere consisting of twelve primary colours that change the hue in three-dimensional rows. (fig.8) Adding a third dimension to the colour wheel, resulted in a scheme that is close to those used today in digital systems.

fig. 8 Johannes Itten, Colour spherical diagrams, 1961



In the era of digitalisation, colours have been put into rigid numbers. They can be efficiently measured with precise equipment, even on the microscopic level in the laboratory environment. The accurate reproduction and credibility became the most vital issues. Depending on the purpose and user's needs various models are applied. Colour is industrialised and sold as a product.

fig. 9 Pantone colour chart

scientific approach

electromagnetic radiation spectrum

measurable, precise

reproduced, evoked

disrupting the space

chemistry

artistic, humanistic,
phenomenological approach

atmosphere, ambient, subjective mood

elusive, realtive

naturally set, everyday

intrinsic for the space

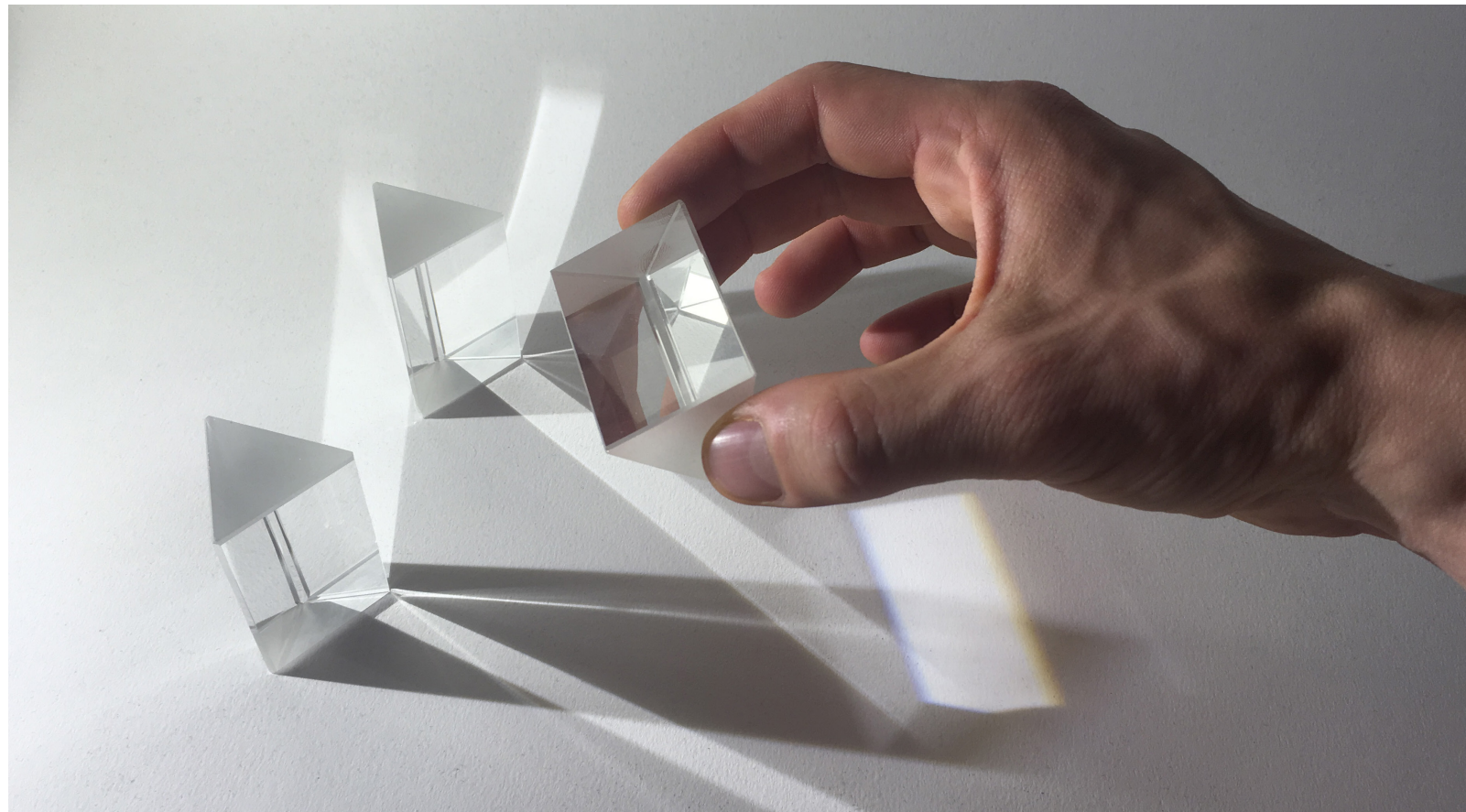
semiotics

Contrasting light

At the very beginning of my research on light and colour, I encountered a noteworthy contradiction. Works on light are either extremely scientific and precise, or poetically intuitive. These two points of view show two different poles of the topic. Subjective experience that evokes emotions and creates indescribable atmospheres can be translated into numbers. I started comparing these approaches, and while looking at light and colour, I always had these two paths in mind. It provided me with a better and deeper view on the subject and supplied me with more tools to design.

The investigation of vision as the illusory play between human retina, brain and the surrounding elements was the first part of this research. Afterwards, I took a step back to analyse my findings from a critical point of view to formulate my design idea and theory where very technical means are design solutions to present my subjective and critical concept.

I approached the topic without a precise and concrete research question. The goal was to dive into the research and see where it takes me. To discover something within the frame of my interest in light and colour relation, that I did not realise before, without any prearranged assumptions. After the methodological research, I decided to use my results and focus on whiteness and the potential absence of colours. To look into its multidisciplinary meaning and role; both in the human perception and in the society. My thesis evolved into a speculation on light as a mean to clean space and remove the colours in order to change the perception of the interior and reflect on the issues of XX century architecture in which whiteness has a powerful role.



How to see yourself seeing

The primary approach of this project is to conduct the design experiments in parallel with the artistic and theoretical research. The theory follows the practice, and it is a reaction to the material research. Results of each test lead to new ideas and critical thoughts. Therefore, my thesis shows the main parts and influential theories of my research from the vast starting point towards its conclusions and final design.

Aesthetics and sensibility towards colour belong to the domain of the tacit knowledge. Light and colour are purely empirical what makes them nearly impossible to describe, record or reproduce. We do understand the difference between dark blue and indigo, but in reality, this difference is hard to define with language. It is not explicit. After searching for pictures of indigo colour on the Internet, about fifteen entirely distinct colours appear on the first page that could be named with at least fifteen different words. Moreover, there are four different names for major tones of this single colour. (Wikipedia) Therefore, to fully understand and analyse the topic of light and colour I find the “hands-on” approach the most accurate for this subject. I have been conducting material experimentation using a ‘research through making’ methodology. Imagining a ‘laboratory’ of light and perception I started with the most basic tools and observations to investigate the phenomena that intrigue me. Trying to comprehend subjectively the results I was testing the theoretical knowledge, by putting it into practice. To understand the reality is to be able to act with it.

fig. 10 Pawel Szubert, prisms experiments, 2016



The elements of whiteness

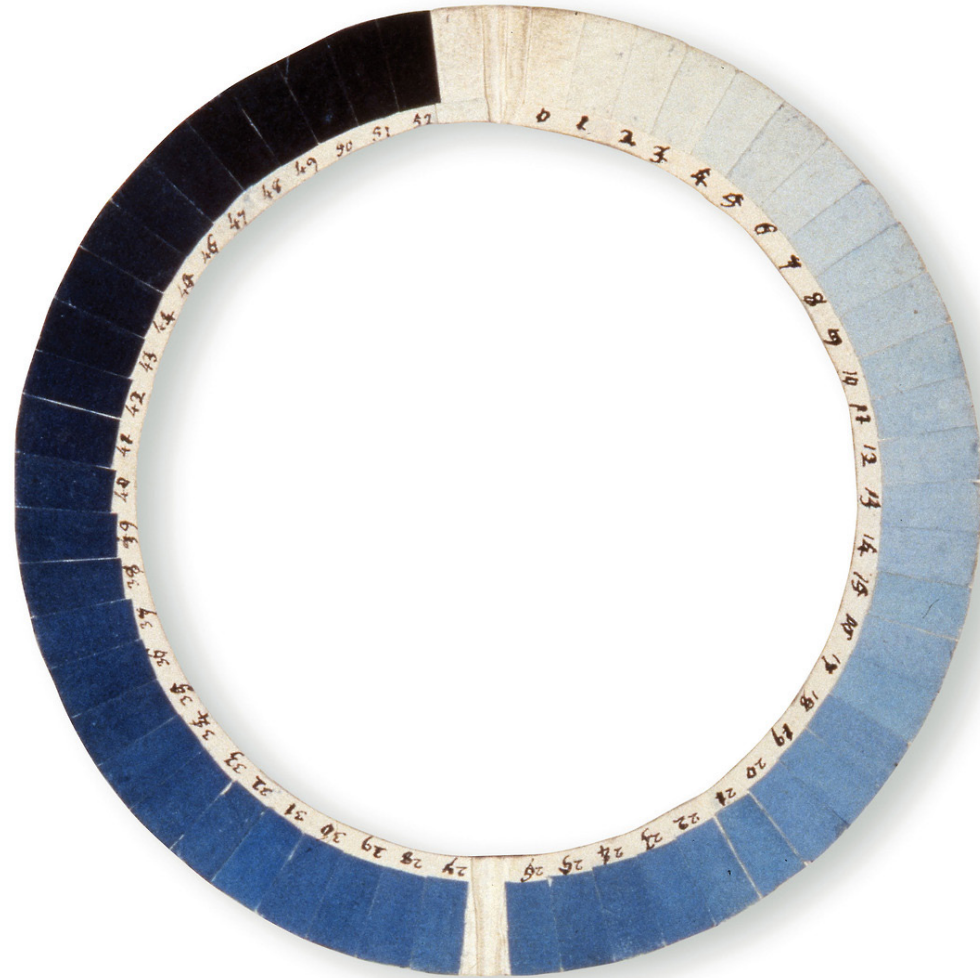
Following the idea of my “laboratory of light and perception,” I created a light set-up to experiment with the way human retina analyses colour spectrum and wavelengths.

Three different colours of red, green and blue stimulate three types of light receptors (cones) in the retina. While all the lights are on, the cones are stimulated equally, and the light setup is perceived as white. Shading and blocking some of the colours creates various new colours and effects. The lit object stays white, but its shadows change colours and merge with each other. The object itself is perceived similarly in every setup, but it stimulates the atmosphere and effects that change radically. The play between the light and shadows becomes essential and feels tangible. Although, without the lit element space is white and inanimate again.

fig. 11 Pawel Szubert, experiments, 2016



fig. 12-15 Pawel Szubert, experiments, 2016



“From the earliest stage of evolution, vision has been a process of exploration in time, not a photographic process of image registration. We have been misled about vision by the analogy between eye and camera.”

(Gibson, 2002)

In contrast to a camera, an eye recognises the environment by relating it to an ample image of the surroundings. Besides, we mostly perceive the world in motion. Therefore seeing is based on the temporality and ephemeral conditions. It is a process in time, and it is a way of perceiving time. (Gibson, 2002) The spatial aspect of vision is crucial to understand the perception of colours.

“Interior design histories have ignored temporality in the design of interiors through a focus on objects and built space as static form.” (Attiwill, 2004) Nevertheless, the temporal sensation is a part of the interior architecture that should be taken into consideration already in the design process. Interior is not just a container of the objects but space where the objects interact with each other and also even more importantly, with their surroundings. Our closest environment is a system manipulated by various lights and atmospheres. The changing conditions have a meaningful influence on it. Interior is not limited to its walls. The conditions of the surroundings always interfere either in a form of light, dust, humidity or heat. This atmospheric osmosis opens up and activates, the ostensibly static interior space. It accentuates the temporal dimension of the interior architecture.

fig. 16 Cyanometer- a tool to measure the blueness of the sky, invented by Horace-Bénédict de Saussure. It helped to discover that changing colours of the sky depend on the changes in humidity of the air. 1789 (Sella, 2010)



Afterimage

Władysław Strzemiński (1893-1952), Polish avant-garde painter and art theorist in his series of oil paintings titled “afterimages” had been investigating physiological perception of afterimages on various levels of interpretation. Analysing the afterimage as an ephemeral residue of an image that continues to appear after taking the sight away from it. In his theories, the variations and altering processes of perception are analysed in the context of changes of self-consciousness of the society that are grounded in the changing Eastern European economics and politics. The afterimage series is a way to present the elusive process, impossible to capture. In a sense, preserving the movement on the surface of the canvas was Strzemiński’s fatal strategy doomed to fail. A painting in Strzemiński’s practice becomes a purely visual phenomenon on two levels; as a surface meant to be looked at, and as a display of a process of looking at.

fig. 17 Władysław Strzemiński, Powidoki słońca, oil on canvas 1948-1949

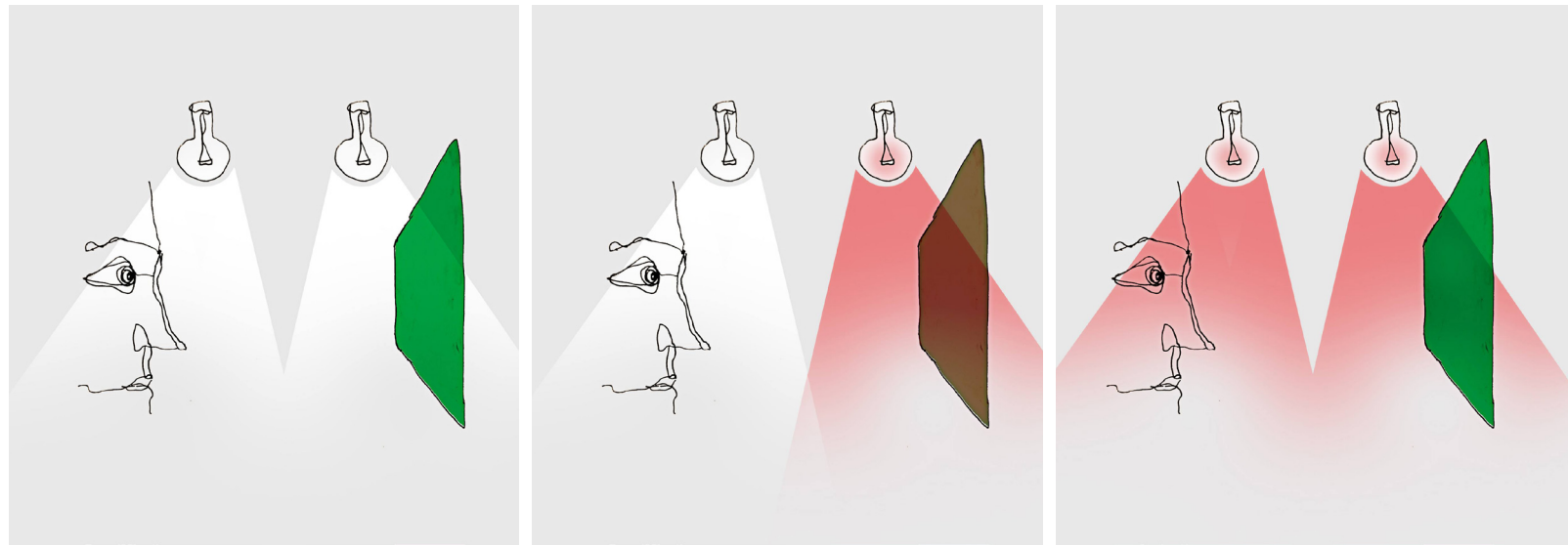


Impression vs. data

Impressionists paid an incredible attention to the ephemerality of perception and changing conditions of light and colour. 'Rouen Cathedral' series is one of the most interesting attempts to subjectively capture the unstable light/colour relation. The facade of Rouen Cathedral is a subject but in the painting, the light conditions are more important than the depicted building. Atmospheres of changing times of a day, weather and seasons throughout the year are the matter. Therefore, the paintings are a kind of a personal archive of light conditions in selected days in years 1892-93.

In a short experiment, I was trying to translate the depicted light conditions into numbers, using the data of the sun positions in Rouen in various months of 1892-93.

fig. 18 (upper row) Claude Monet, Rouen Cathedral series, oil on canvas, 1892-94
fig. 19 Pawel Szubert, Rouen Cathedral series as data



Chromatic adaptation

In the environment exposed to the dynamism of light, colours gradually change. However, we rarely recognise these alterations. This unconsciousness is not caused only by the contemporary insensitivity to nature and the surroundings that we have developed nowadays. It is a biological adaptation of the visual system that helps humans to keep a stable representation of the objects.

Our eyes adapt the colour in the similar way they adapt to dark or bright spaces. The state of adaptation changes the perceived colour to keep it stable and identifiable. In this way, a green plant is recognised as green despite the differences of light around it. It proves that colour is a non-static process dependent on the surrounding space. Even though, the human brain tries to correct it and provide the visual constancy. "Experience of colour and light in space is both perceptive and cognitive. What we call adaptation is not limited to basic perception" (Noë, 2004); it is interplay between the individual and the world on many levels." (Klaren&Anter, 2011)

Keiji Uchikawa from the Tokyo Institute of Technology proved the chromatic adaptation theory in a simple experiment (1989). The participants were looking at a green surface in three conditions. In the first setup in white light (fig.1) they perceived it as green; in the second state, the participant standing in the white light saw the surface illuminated with red light (fig. 2). It was no longer green but brownish. Lastly, when the red light covered the whole surrounding (fig. 3) the surface seemed green again, and it was just a bit shifted towards red. The eyes adapted to the Red environment by omitting the red spectrum. (Goldstein, 2009) The colour was no longer green; it was 'made' green.

fig. 20 (left) the chromatic adaptation experiment 1st setup- basic state

fig. 21 (centre) the chromatic adaptation experiment 2nd setup- not adapted

fig. 22 (right) the chromatic adaptation experiment 3rd setup- adapted

Colour as a linguistic problem

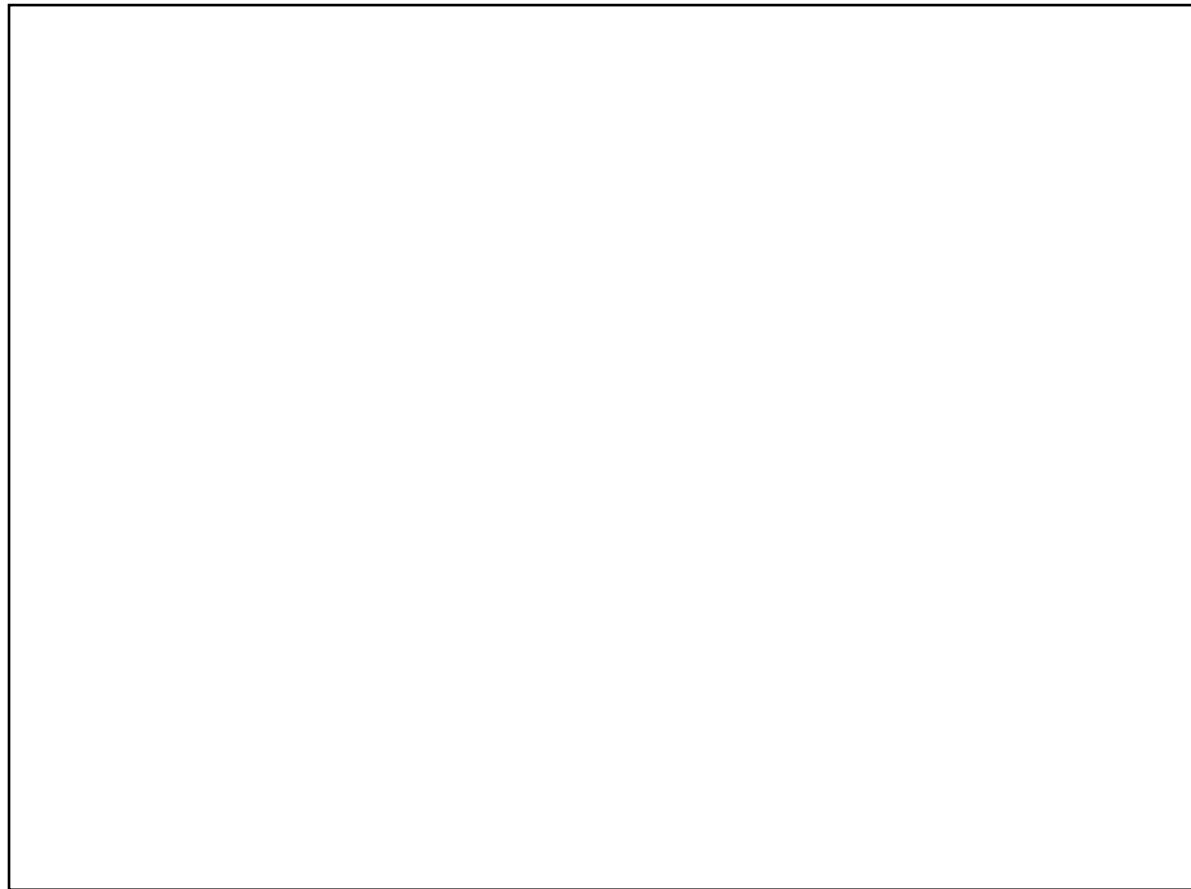
Eyes record the visible light spectrum, but it is the brain that translates this data into colour by interpreting it. Therefore, the perception of colour belongs to tasks of our brain that denominates colours that it processes. This 'naming' of a colour is a linguistic mechanism in which the adjusted code impacts the overall understanding and perceiving of this colour. (Eco, 1985)

According to Brent Berlin and Paul Kay (1969) most of the languages, (including all the European ones) contain either eleven or twelve basic terms for colours. For English speakers, there are eleven names which can be used to describe all the colours linguistically, by incorporating additional adjectives: white, black, red, blue, yellow, green, pink, orange, brown, purple and grey. This division created a specific knowledge about the eleven colours that influenced the neurological perception of them. As an English speaker learned to name blue and green, it is evident to distinguish them. However, there exists a handful of dialects with a much more limited number of colour terms. A particular example is a language of a Namibian ethnic group- OvaHimba. The anthropological research on the OvaHimba people conducted in 2000 by Debi Roberson proves the difference in perception that is based on the language. In the dialect used by the OvaHimba, there are just five basic colour names that include a different range of hues and entirely distinct divisions than most of other languages. For example colour buru describes both blue and green, while dambu includes shades that European would name as red, green and brown. Insofar, the green hue of buru for the OvaHimba is different than green labelled as dambu.

As a result of the experiment the OvaHimba had troubles to distinguish a blue square amongst the green squares, (fig. 24) but finding a slightly different shade of green among other squares was automatic and much quicker than in a case of the English participants. (fig. 25)(Roberson, 2006) The language appeared to be the subsequent layer that filters not only naming but also the very perception of colours. The linguistic system is determined by the cultural values arranged by society. In the same manner, visual experience (which is to a large degree a function of the brain) is defined by the language. (Eco, 1985) "The different ways in which cultures make the continuum of colours pertinent, thereby categorising and identifying hues or chromatic units, correspond to different content systems. This semiotic phenomenon is not independent of perception and discrimination ability; it interacts with them and frequently overwhelms them." (Eco, 1985). The actual colour processing becomes an issue that falls under the category of semiotics.

fig. 23 The semiotic understanding of colours, experiment part one
fig. 24 The semiotic understanding of colours, experiment part two





Virtual colours

Colours do not exist on their own. It is an ephemeral effect of the various light conditions occurring in the environment. In a space where the lights, dynamic atmospheric conditions palpitate, a summary of this light reaches a surface. Surrounding objects interfere, reflecting part of this light. Depending on the lit plane, a particular part of the spectrum reaches the eye. Then, due to the chromatic adaptation, it is corrected, modified and processed by brain accordingly to the linguistic system. Finally, this colour is semantically coded and communicated.

These aspects combined Altogether, create a colour. If there are that many conditions that define the eventually perceived hue, how can we be sure about the authenticity of colours? There is no such thing as pure colours. In short: colour is virtual. (Bruinsma, 2011) It is definitely not a property of the subject itself. Colour is a complex mechanism. Moreover, this mechanism is a very subjective one that works differently for each of us.

fig. 25 Pawel Szubert, a rectangle framing the whiteness of the paper

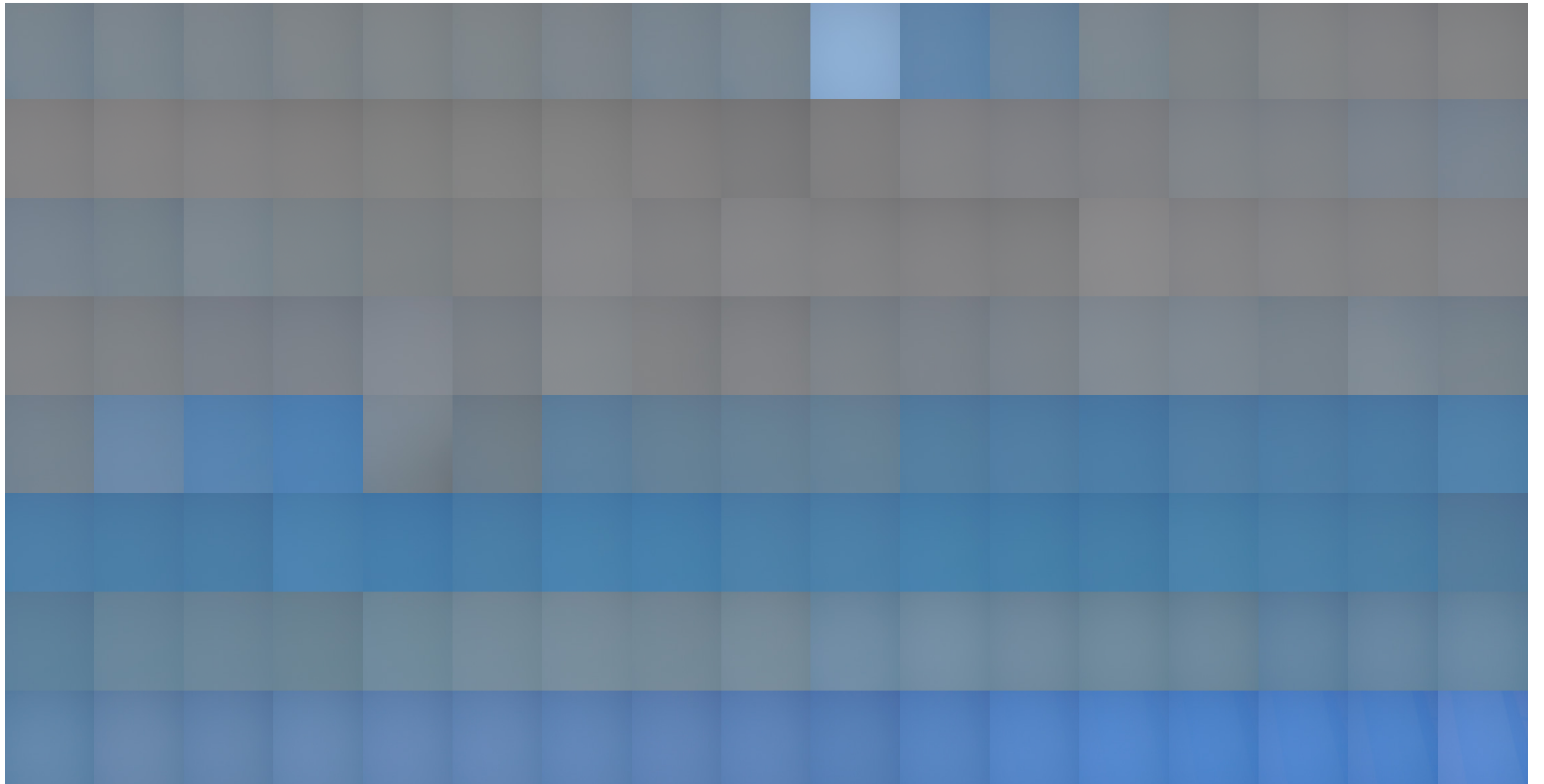
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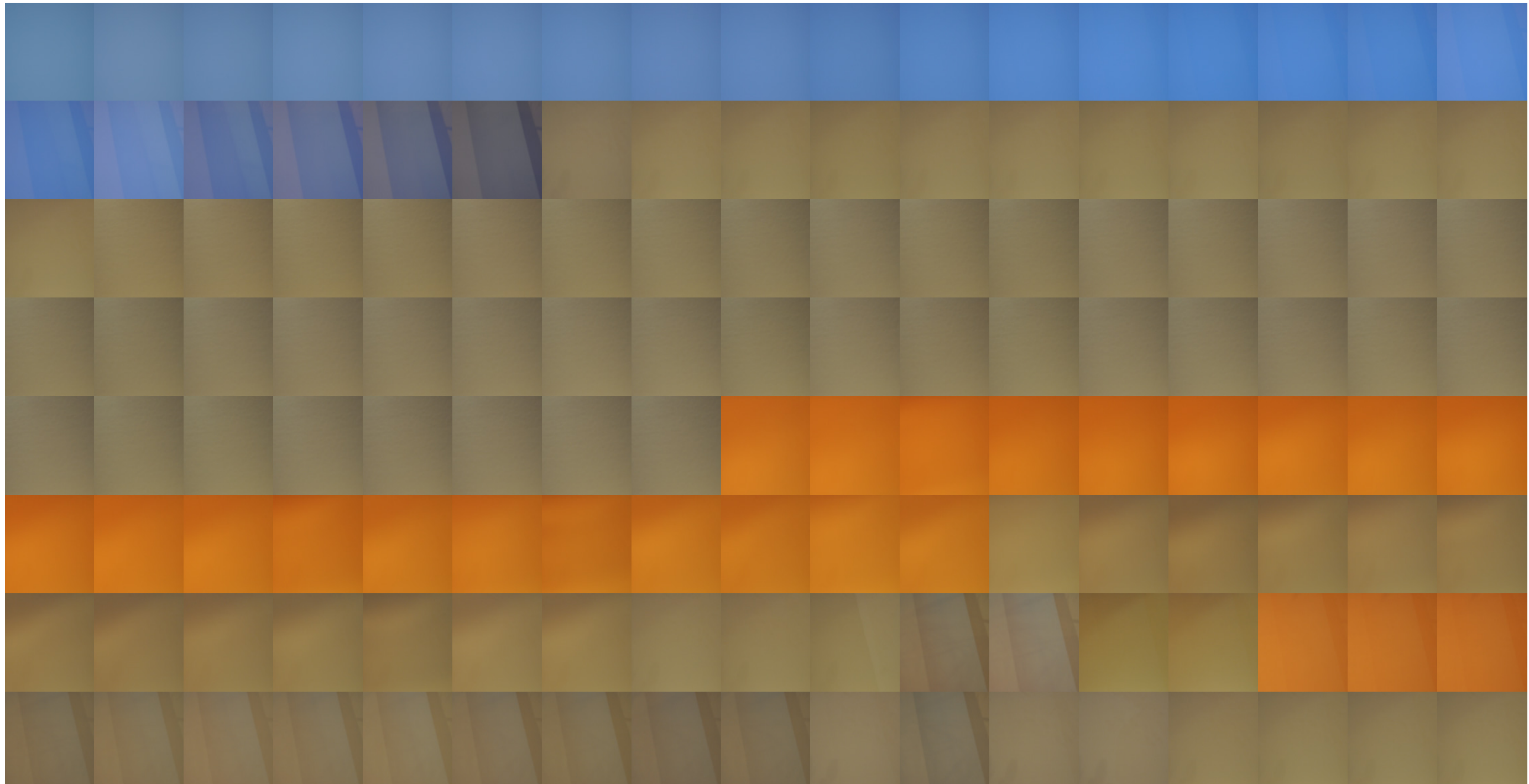
Having acknowledged the relativity of the topic I proceeded to test it. If we adapt our vision to changing lights, definitely our perception omits some of the occurring colour changes. Recording the light could be a way to discover the invisible. I had been capturing various light effects with a standard camera. The most interesting subject was a white wall. White has the highest reflectivity so the surrounding light is reflected on it in the cleanest way. Obviously, the resulting colour depends on the camera white balance and other settings. However, in this case, not the accuracy was the aim. I wanted to record the activity of light.



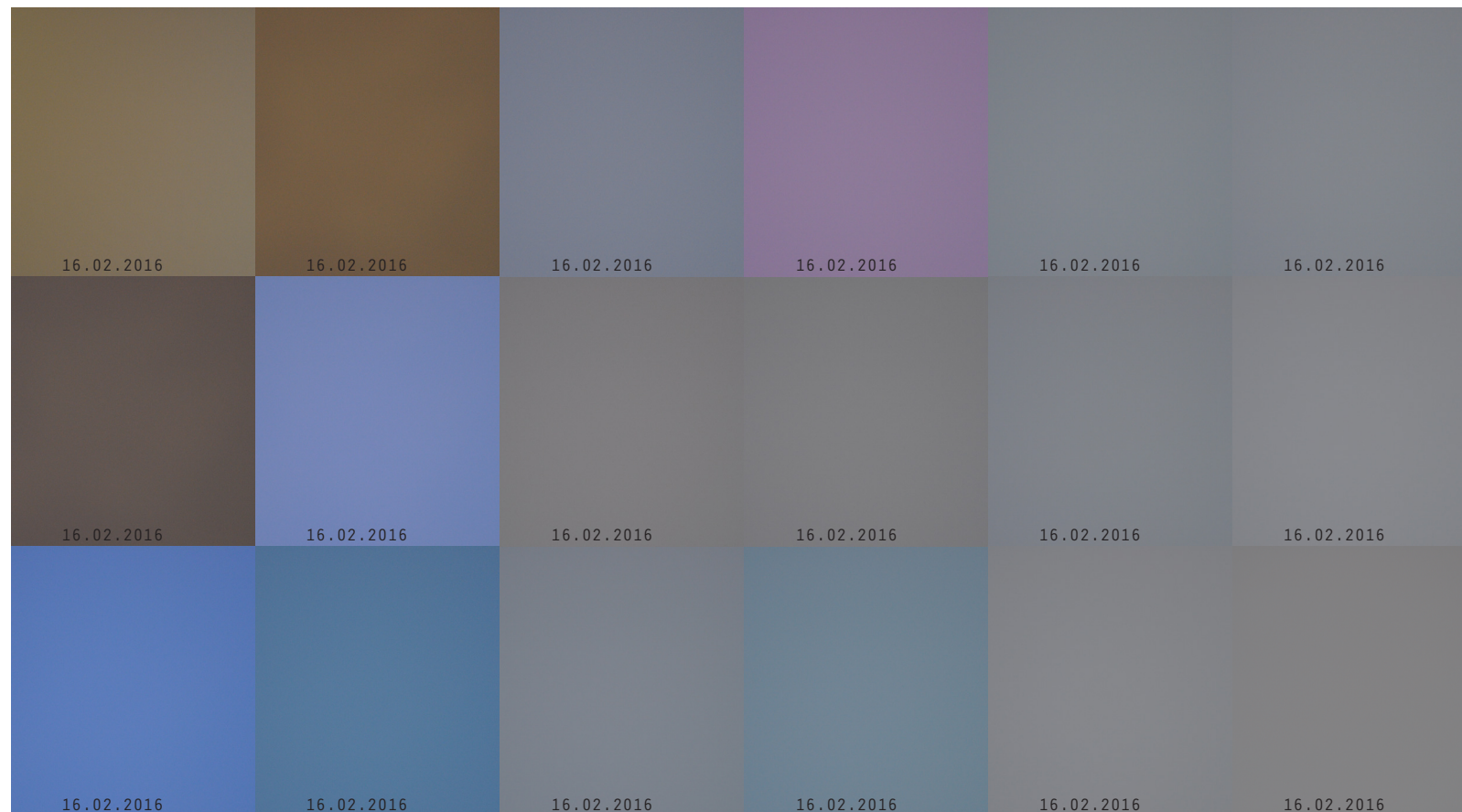
fig. 26 Pawel Szubert, photographic documentation of the white wall- A gloomy day, rainy day; The sunrise is distinguishable as a violet tone appearing on the four pictures in the second row.







“White” does not exist



My experiments prove the assumptions about the instability of colour and show the previously elaborated phenomena of the interior which are a volatile space constantly exposed to light interferences. However, this collection of images unveils one more underlying aspect of the interior which I had analysed. Although the static, white wall was the subject of my experimentation, the resulting pictures present all the varying colours, except the assumed white colour of the photographed wall. There is no doubt that the photographic documentation of colour is never fully reproducible. It adds own colour-bias making the image subjective, and moreover is 'interpreted' by the settings of the used equipment. Nevertheless, despite the problem of actual reproducibility, obtained colours were varying, and each frame was different. The whiteness of the wall was never pure and reflected all other colours appearing in the space like a cinema screen. As proved by Newton, the whiteness exists only when all colours of the spectrum are combined equally. In the reality, there will always occur some interference that disrupts this balance. Having in mind the complexity of colour and the fact that colours belong to the surroundings, not to the objects I would argue that the white wall does not exist and question the very existence of the colour white as a fixed hue that we name as such. Whiteness appears only when juxtaposed with a context. Interestingly it can be a context understood at many levels. Not only the physical and evident as described before within the phenomenological and scientific approach but also cultural or historical.

fig. 27 Pawel Szubert, photographic documentation of the white wall, selected hues

“The white wall is far from neutral and silent.”

(Wigley, 2001)



In our everyday aesthetic decisions, we decide to leave something white. We consider white as a non-colour and the most basic state of things. However, choosing white instead of any other colour is a statement and a design decision that carries a meaning. Although a white surface is always associated with simplicity or neutrality, it is a force that we do not recognise in our Western culture. The related neutrality is only seemingly mute and calm. It is just recognised as such. As a matter of fact, white surfaces reflect the strongest light, have the highest luminance, are the physically charged ones. While a red or orange surface (considered an active colour), measured with a photometer would show a lower intensity than a clean whiteness. The concept of white as neutral should be revised.

We are surrounded by white walls. Therefore, they became invisible to us and are treated as an inarticulate and intrinsic element of our interiors. The excess of whiteness led to a denial of its power and made us numb to the meanings and sensations that white evokes. To go beyond the seeming banality of white one has to take a critical look and rethink its layers. To review the white wall is to step out from its traditional meaning as an element of the interior and investigate the broader context in which it is set. (Wigley, 2001)

Whiteness goes beyond the traditional definitions of real colours. It is not just a hue. White is a socio-cultural construct. Although white can be interpreted and analysed through many lenses and points of view, its strongest and most critical meaning was formed within the western culture during the XX century while the modernist movement emerged. In architecture, it was the time when white paint gained a much deeper role than a thin covering layer that it constitutes.

fig. 28 Le Corbusier, Villa Savoye, Poissy, France, 1929

Chromophobia

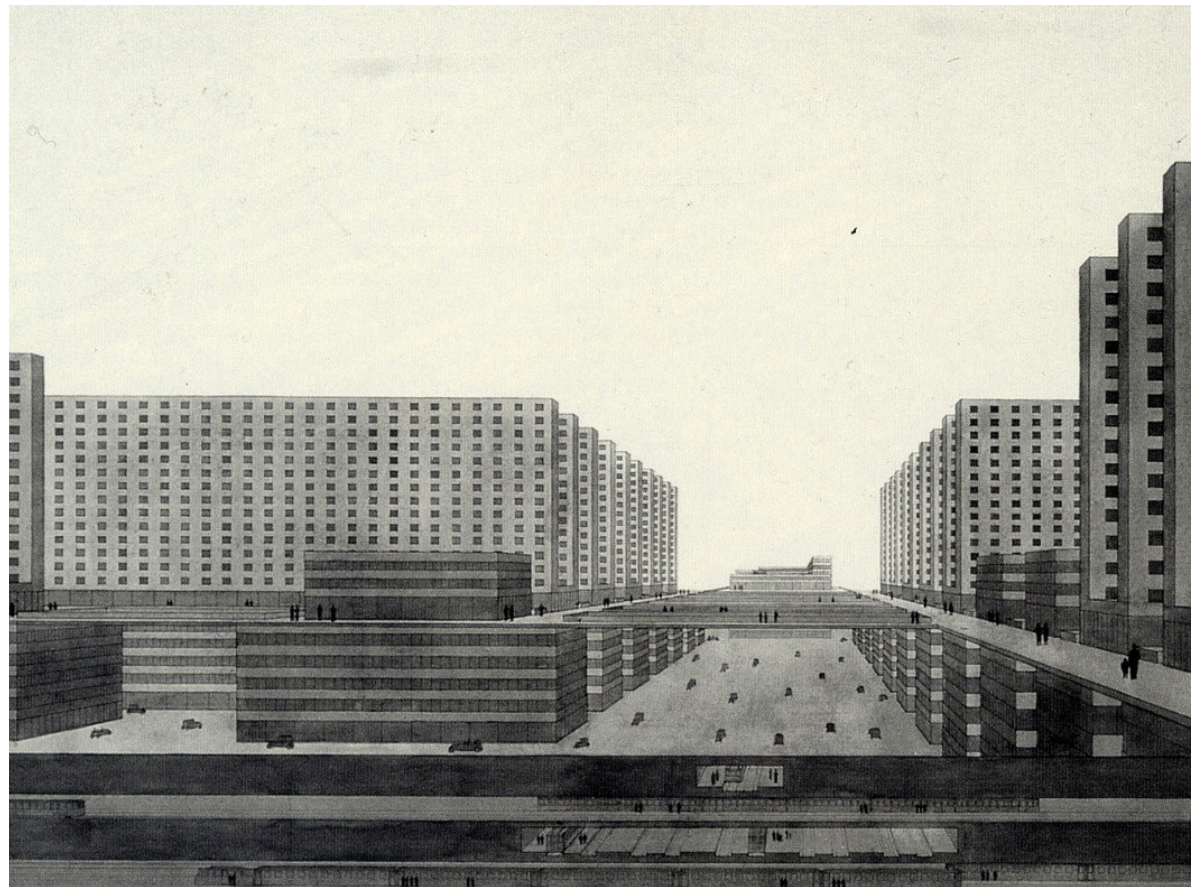


Progress and hygiene were leading the ideas of modernism. The white wall was the embodiment of both. It breaks with all the previous historical styles and provides a clean surface. A layer of white paint is a litmus paper indicating all the unwanted traces that have to be washed out. Idealistic visions from the beginning of XX century had been proclaiming the possibility of a widespread improvement. This revolution was aiming not only to enhance the comfort and practicality of the modern dwelling, but also the morality of its inhabitants. Ornament and decoration were considered a crime. Therefore, a whitewash was suggested as a cure for the degeneration of the society. (Wigley, 2001) Le Corbusier proposed to whitewash the whole city of Paris to purify its spaces and get rid of visual confusions caused by historical ornament. In his writings 'A Coat of Whitewash: The Law of Ripolin' like a national leader he calls for revolution and considers whitewash as a duty of police officers.

“we would perform a moral act: to love purity!
we would improve our condition: to have the power of judgement!
An act which leads to the joy of life: the pursuit of perfection.
Imagine the results of the Law of Ripolin. Every citizen is required
to replace his hangings, his damasks, his wallpapers, his stencils,
with a plain coat of white ripolin. His home is made clean. There
are no more dirty, dark corners. Everything is shown as it is.”

(Le Corbusier in Wigley, 2001)

fig. 29 Ripolin paint poster, around 1915



'Progressive' whiteness

Removing the historical traces and styles was a moral act, a new constitution. Le Corbusier did not want his concept to become a fashion or a temporary style like art nouveau. He proclaimed a whole transformation leading to a new way of living to which everyone has to submit. Cities were spreading and fast, economic growth was changing the human way of living. The environment had been evolving towards a fully industrialised and new solutions were researched.

Adolf Loos in his writings went even a step further saying that "The evolution of culture is synonymous with the removal of ornament from objects of daily use." (Loos, 1908) This statement placed whiteness in a position of the exclusive mean to develop Western culture and distinguish it from the others. "Beethoven's symphonies would never have been written by a man who walked around in silk, velvet and lace. The person who runs around in a velvet suit is no artist but a buffoon or merely a decorator. We have become more refined, more subtle." (Loos, 1908) A male, white, middle-class heterosexual was postulated as a desired inhabitant of modernist architecture which had to guard itself against the flamboyant excess of details to stay pure, authentic and progressive. (Denison, [no date])

fig. 30 Ludwig Hilberseimer. Vertical City, 1927



The radiant life

“Une vie radieuse” (2013), a short movie by Meryl Hardt, is an effortlessly surrealistic impression on the first inhabitants of Le Corbusier’s Unite d’Habitation. The protagonist examines the new surroundings that are unfamiliar and confusing. She seems to be detached in the white non-place. Whitewashed and plain surfaces and simple monochromatic planes appear perplexing. Overwhelmed, she adjusts herself to the new radical environment. With choreographic movements and she recreates her bodily connection with the voids of the modernist statements.

Whitewashing and the law of Ripolin were strong political statements spreading the utopian vision of a new better man in a functional surrounding. White would be a designer Esperanto unifying spaces and people towards a better world. (Wigley, 2001) However, the supremacy of whiteness was underpinned with moral issues going beyond the architectural discourse.

fig. 31 stills from the movie “Une vie radieuse”, 2013

White supremacy

Supremacy of white concerned more areas of everyday living. A leading photographic film producer - Kodak assumed the whiteness dominance. Therefore during a few decades, layers of colour film were calibrated to reproduce hues of beige, white and bright colours. The preconception that all the models and photographed persons are white led to difficulties in rendering non-white bodies. Exposure in a picture of a non-white person would fail to show a clear image, making just white teeth neatly visible in a good contrast. The sensitivity of Kodak film was not developed for a long time until a producer of chocolate, being a Kodak's client complained about the movie's impossibility to render differences between various kinds of chocolate. (Cima,2015)



fig. 32 Kodak standardisation scheme, Shirley Cards, circa 1975



The real colours

If we look into the etymology of the word 'colour' itself, we can notice that it derived from the old Proto-Indo-European word 'kel' (to hide) which is akin to Latin 'cēlō' - to conceal. (Wikitionary) Taking that fact into consideration a coloured space can be regarded as misleading and untrue. Colours are hiding its real image. However, even, after the film had been modernised and colour sensitive layers adjusted, the black and white photography remained equally popular. It is considered pure and free from distractions that may be caused by colours. A monochromatic picture seems to have more cohesion; it is perceived as cleaner and more professional. Besides, the monochromacy makes images appear timeless as it proves to be much harder to point out a particular period without the data about colours. Walker Evans (1969) in his essay stated that: "Colour tends to corrupt photography, and absolute colour corrupts it absolutely. Consider the way colour film usually renders blue sky, green foliage, lipstick red, and the kiddies' playsuit. These are four simple words which must be whispered: colour photography is vulgar."

fig. 33 Prokudin-Gorsky , colour composites of the photography, 1911



Sanitisation

In the modernist thinking, a layer of whitewash (a non-colour) can recover its true face, making it 'normal' and real. It is a bleacher, a tool of hygiene which is not only literal but also provides hygiene of our visual system. (Wigley, 2001) If vision is human most important and vital sense, an optically sanitised space would make us also feel pure and calm. It is not a coincidence that the hospitals are mostly painted white or light green. Except for the practical reasons like the visibility of blood on the surfaces, the white aprons and corridors simply provide an aura of induced sanitization. Patients are reassured about the sterility and hygiene. The White wall of the hospital visually manipulates them to stay calm. It is a mechanism saying that everything is under control, and there is nothing to fear. A nurse wearing yellow or black would lose the image of professionalism and cleanness. Dying the apron in a different colour would make it contaminated already, even if the sterility of its fabric would remain unaffected. Early twentieth century was highly concerned about hygiene. Fear of tuberculosis and other illnesses had been spreading. Modernist architects proposed their new way of living as a cure. (Colomina, 2015) Replacing historic details and patterned curtains with a 'sterile' white surface would lead not only to the visual improvement but also to the change in the health conditions of the modern society. "Health is to modern architecture what religion was to Gothic architecture." (Colomina, 2015)

fig. 34 Cheryl Schainfeld, Exam Room, hospital gowns, wood, paper, 2008



The white cube

The white wall like a particular tabula rasa exposes colours by making them explicit. It is a tool for surveillance of spatial qualities of light and our activity in the interior. Whiteness, by censoring and removing all the other potential traces creates a surface that has the power to record new influences and colours. It is frozen and static while the other colours are revealed.

The disciplining power of the white surface is rendered most particularly in contemporary exhibition spaces. White cube of a museum is an unusual space, that similarly to a modernist white wall, despite its static surface is definitely not neutral and has an underlying function and constructed meaning. White is a mechanism of discipline. According to Brian O'Doherty (1999), a white cube cancels the time and spatial volumes of its interior. The scalelessness of white walls supports the ubiquity of space. Whitewash flattens the three-dimensionality of interiors. Exhibited objects are suspended in a homogeneous and shapeable atmosphere. The visitor becomes immersed in the surrounding whiteness. Therefore, her or his gaze is mobilised and guided by the curator or architect of a white cube. "This specially segregated space is a kind of non-space, ultraspace, or ideal space where the surrounding matrix of space-time is symbolically annulled." (O'Doherty, 1999)

fig. 35 'white cube' of a generic gallery space



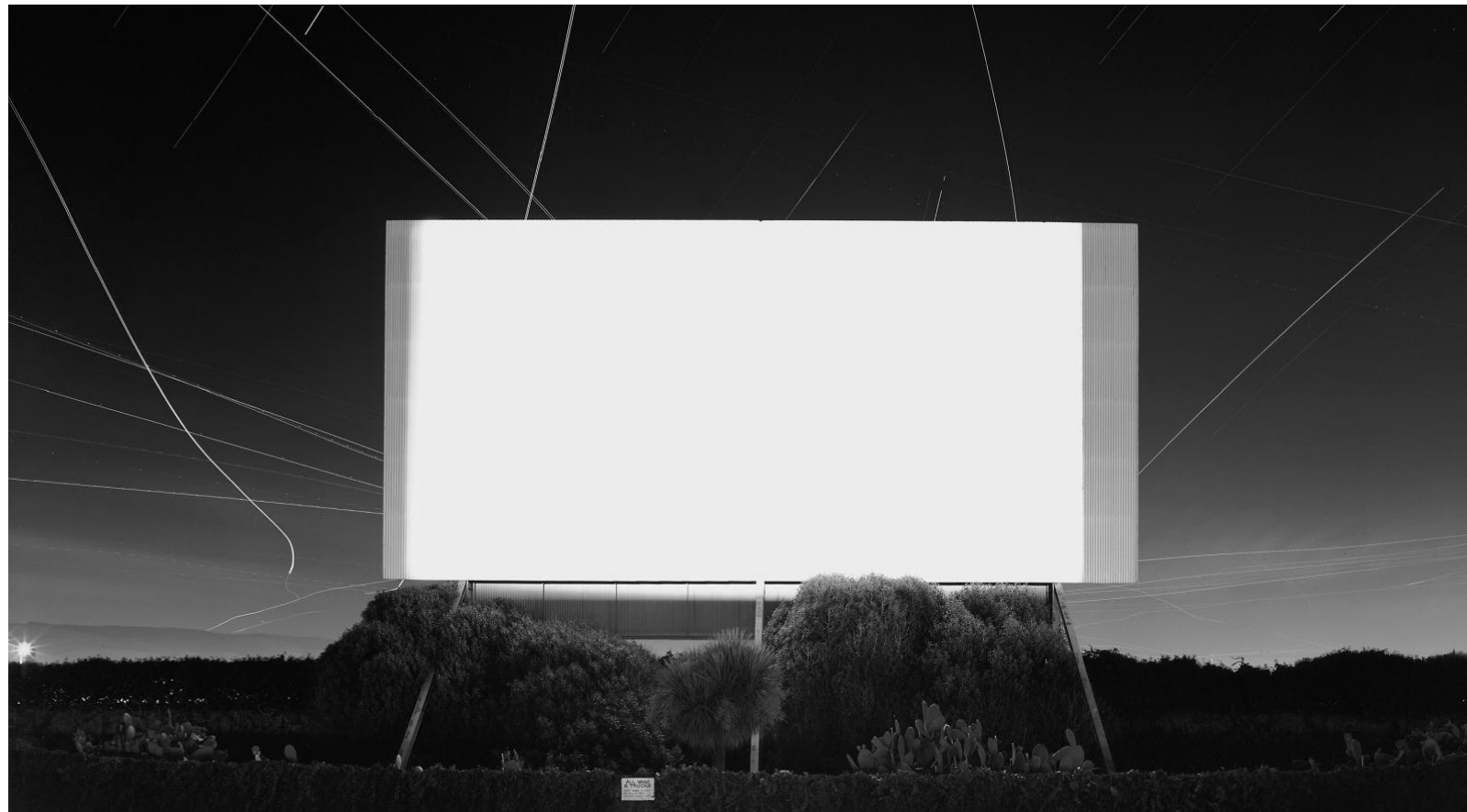
In a white cube, there are no visual anchor points that would let the observer position her/himself in a particular context. Its decontextualization and sanitization work soporific for the perception, temporary distorting our sense of place and suspending the presentness. This mechanism can function because we are numb to the role of whiteness and its meaning. A layer of whiteness for the Western visitor is out of sight. It is a spatial cloak of invisibility. In this non-space specific objects that proclaim their context are exhibited and put on a pedestal. Their intrinsic colours are brought to the gallery space from the outer ambience. Although the individuality of the placed artworks seems to be highlighted, the spatial frame of the white cube surveils them. They are regulated and controlled. (Wigley, 2001) In this situation, whiteness underlines and exposes the other colours. Taking into consideration the ideas of whitewashing as a mean to defeat colours and patterns, it shows a sort of a paradox. In the example of a white cube, the whiteness accentuates colours but removes the context of a building and history around them to suspend them in a non-place.

The seeming ubiquity of the white wall makes it vulnerable to the influences of light phenomena around it. A wall is a frame and a calibrated screen catching the light.

fig. 36 Anish Kapoor, Shooting Into the Corners, 2009–2013

“The white wall is at once a camera and a monitor, a sensitive surface, a sensor”

(Wigley, 2001)



A photographic film consists of various overlapping layers of chemical emulsion that are sensitive to particular colours. When exposed to light, each layer reacts to it with a small chemical change. As a result, colours included in the white light are revealed. It can be said that the film reveals hidden colours of the white light like a prism. Moreover, it is capable of capturing them.

The white wall, previously discussed as a controlling device, has a similar but reversed property. Its (non)colour is the most reflective one. When exposed to light it reflects and ‘captures’ its properties for an observer. All the colours of lights hitting the whitewashed surface become revealed. What is more, objects placed next to the white wall reflect their own colours onto it. Data of space carried by light can be visible and monitored. Spatial changes appear on the wall like on a photographic film. Whiteness silently controls its own surroundings.

“White includes everything” (Doesburg) Both in the Newtonian, scientific approach and historical context of art and modernism, white is an anti-colour that incorporates all the other colours within. In the case of the film projection, it is also a white light that goes through a movie beamer or coloured filters to project an image.

fig. 37 Hiroshi Sugimoto, Union City Drive-in, Union City, 1993



Hiroshi Sugimoto in his project (since 1970) takes pictures of cinema theatre during the screening. The camera shutter of his camera is open during the full screening of a movie to take just one photography that summarises a whole process of screening. As a result, an entirely white rectangle of a screen appears. Was the movie or a screen white? There is no such thing as pure whiteness but white occurs when everything is amalgamated into one screen. In the examples of Sugimoto, white is not the canvas but the result of a long exposure of a light lid screening of a film, time, and light distinguish and result into a white screen. A white screen is the retrospective of the activities that happened on it during a period.

fig. 38. Hiroshi Sugimoto, Movie Theatre-Akron Civic, Ohio, 1980

“If one has loved the surface of things for a long time, one will finally look for something more. This “more”, however, is already present in the surface one wants to go beyond.”

(Mondrian in Seuphor, 1952)

Modernist whitewash was supposed to remove the colours and patterns from the space to sterilise and provide hygiene. It is a constructed bleach with a political and historical background. However, in the context of this thesis the white wall works contradictory. Visually, whiteness does not sanitise the space. It provides a surface to expose colours. Modernism created a screen in which the surroundings reflect. The white wall can be seen as the most colourful surface. It is a frame for the whole spectrum. In an interior which as, non-static space the white paint is not enough to remove the activity of the surrounding colours.

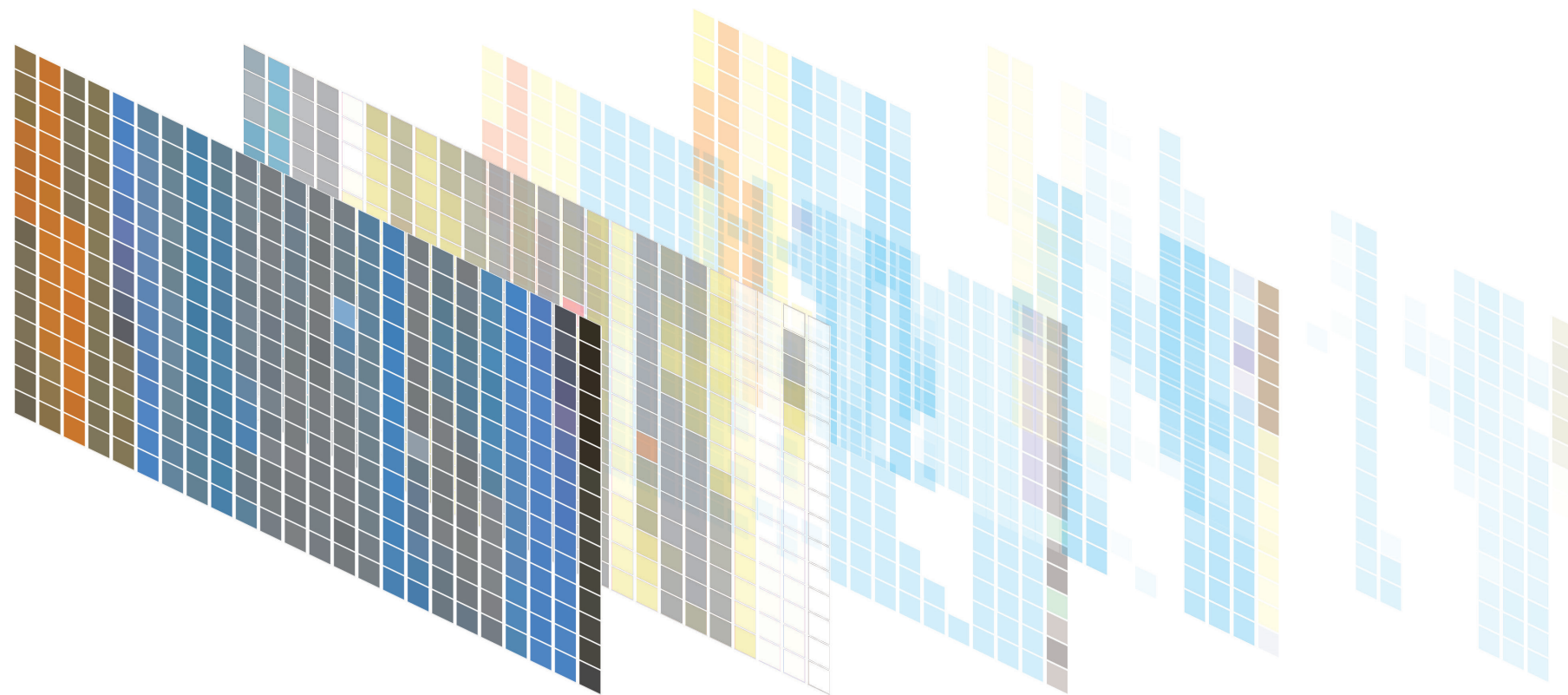
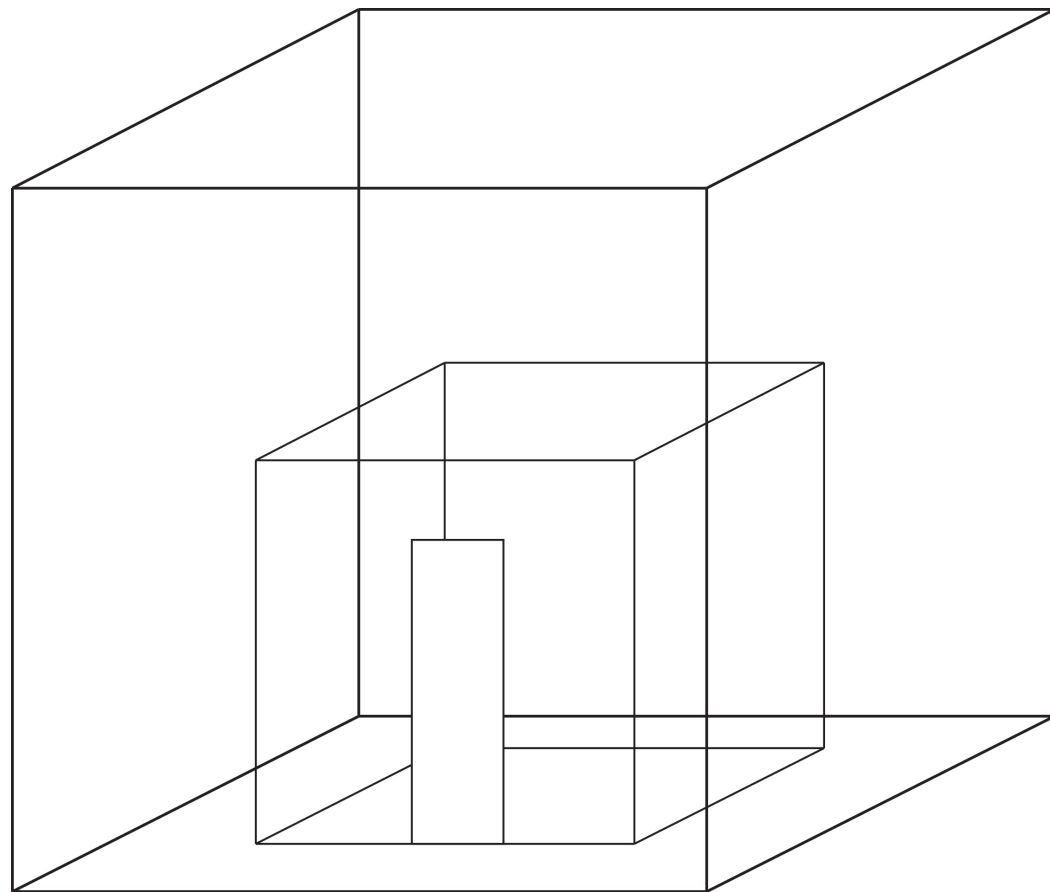


fig. 39. Pawel Szubert, deconstructing the colour and the visual surface

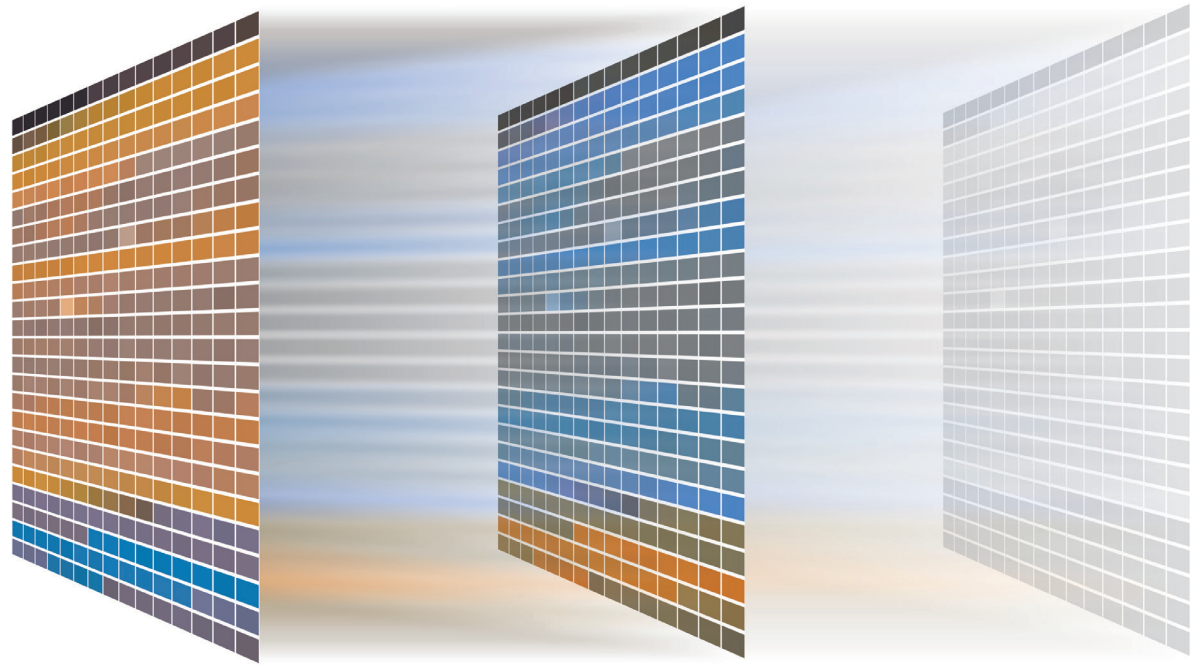


In the white cube of a gallery, I propose to place another white space. A second, generic white cube with a simple entrance provides a detachment from the outer exhibition space. With this gesture, a new, second layer of a non-place is created. The interior of the newly created void is free from objects. Its walls painted white, light, and the atmosphere are the exhibited subjects themselves. The emptiness of the installation and the possibility to close its doors after entering provide an environment of intimacy that highlights the chromatic experience inside. A discourse between the visitor and the environment is induced. Mark Wigley (2001) wrote that modernism “was a point at which white was exhibited as such; when architects exhibited the exhibition value of white.” In my installation, the modernist white wall is put to the test.

Although the whiteness of paint covers all of the surfaces in the room, its space is not white nor static. It is exposed to the dynamic, coloured light that fills its void. The interior, despite its emptiness, palpates. Only one wall stays white. Contrary to its surroundings it does not change, trying to overcome the active environment. The wall is cancelling its own surroundings, actively reacting and trying to bleach itself as much as possible. This works as a visual hygienisation of the interior.

As the colour is not a property of the objects; instead of Le Corbusier’s Ripolin paint, light is the mean used to bleach the space. It is an ultimate antidote for the patterns of activity. However, the resulting whiteness is not achieved by the use of white light. Projected light is not merely white, but becomes white only when hitting the wall that is altered by the surrounding colours. White is the amalgamate of all the existing colours. Therefore, the appearing colours are not removed but supplemented with the rest of the spectrum. This whiteness is a charged mixture.

fig. 40.Pawel Szubert, the white cube in a white cube, a chromatic experience



A chromatic experience

The second part of the installation speculates on the idea of removing not only the light activity from the space but also the existing, static pattern and its colours. The hues extracted from my photographic documentations of the wall create a pattern that is a subjective but also a pseudo-scientific archive of light activity on the white wall in my house during two selected days. Colours from the pictures taken every two minutes during twelve hours are put into a grid. Each horizontal row present a summary of thirty minutes. It becomes a pixelated film stock presenting the altering activities. Printed on a thin, transparent textile, the panels are just a feeble layer of colours 'removed' from the white wall. Furthermore, a projection is trying to bleach the patterns, with a use of different colours. It is disturbing the perception and whitewashing the data from my documentation. The wall can be inanimate again.

fig. 41. Pawel Szubert, diagram of the projection

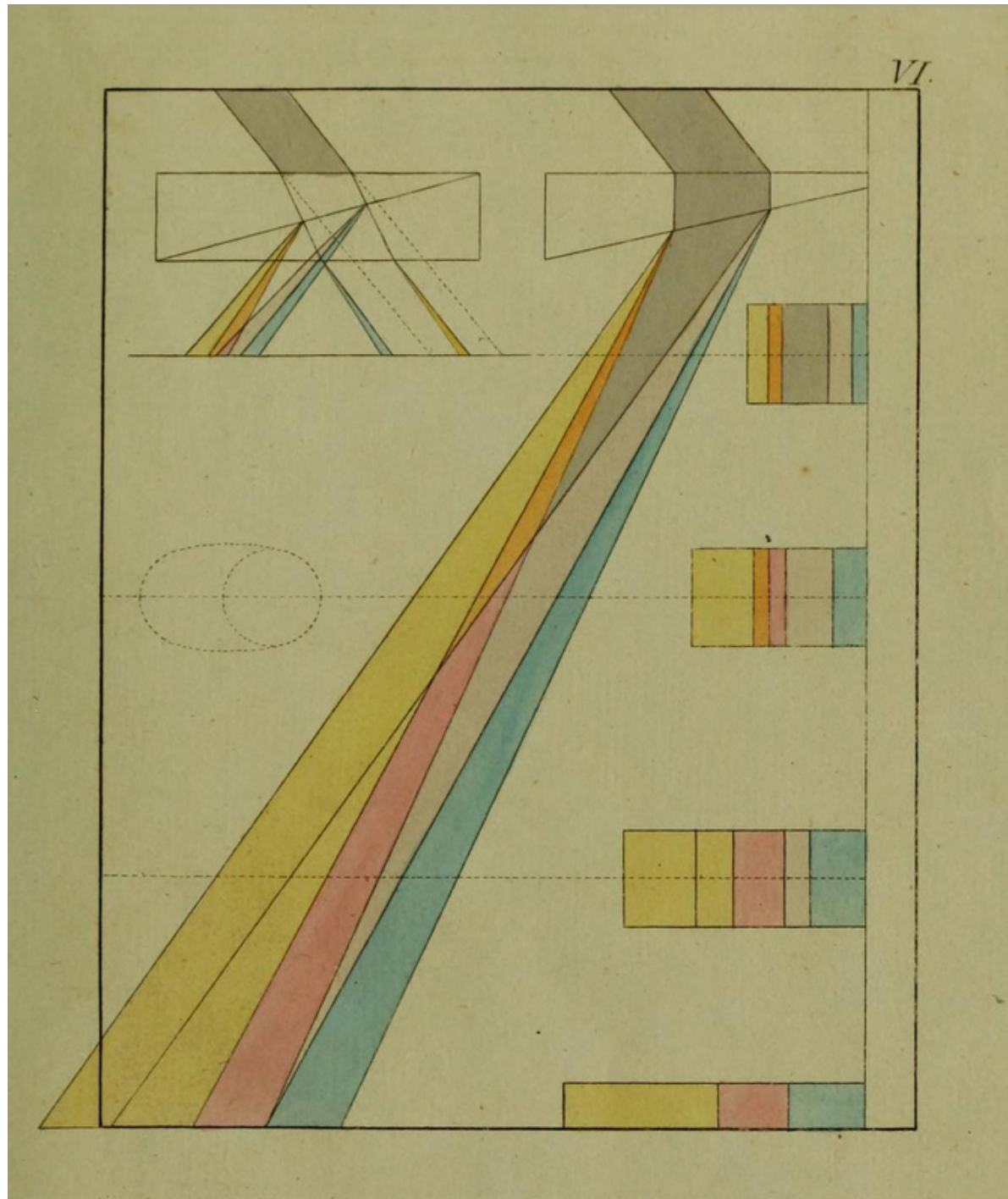


fig. 42 page from Johann Wolfgang von Goethe's. Zur Farbenlehre (Theory of Colours). 1810.

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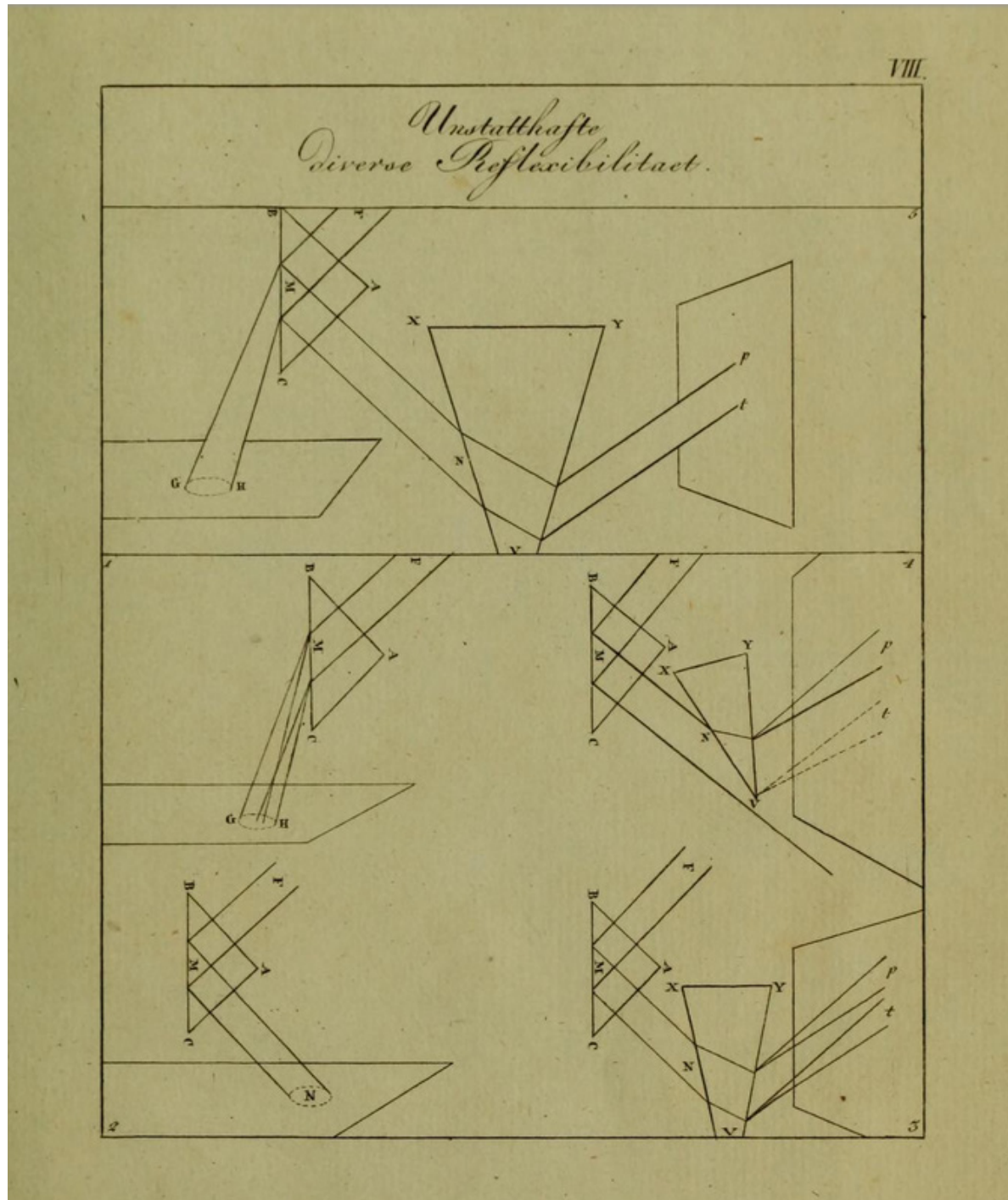


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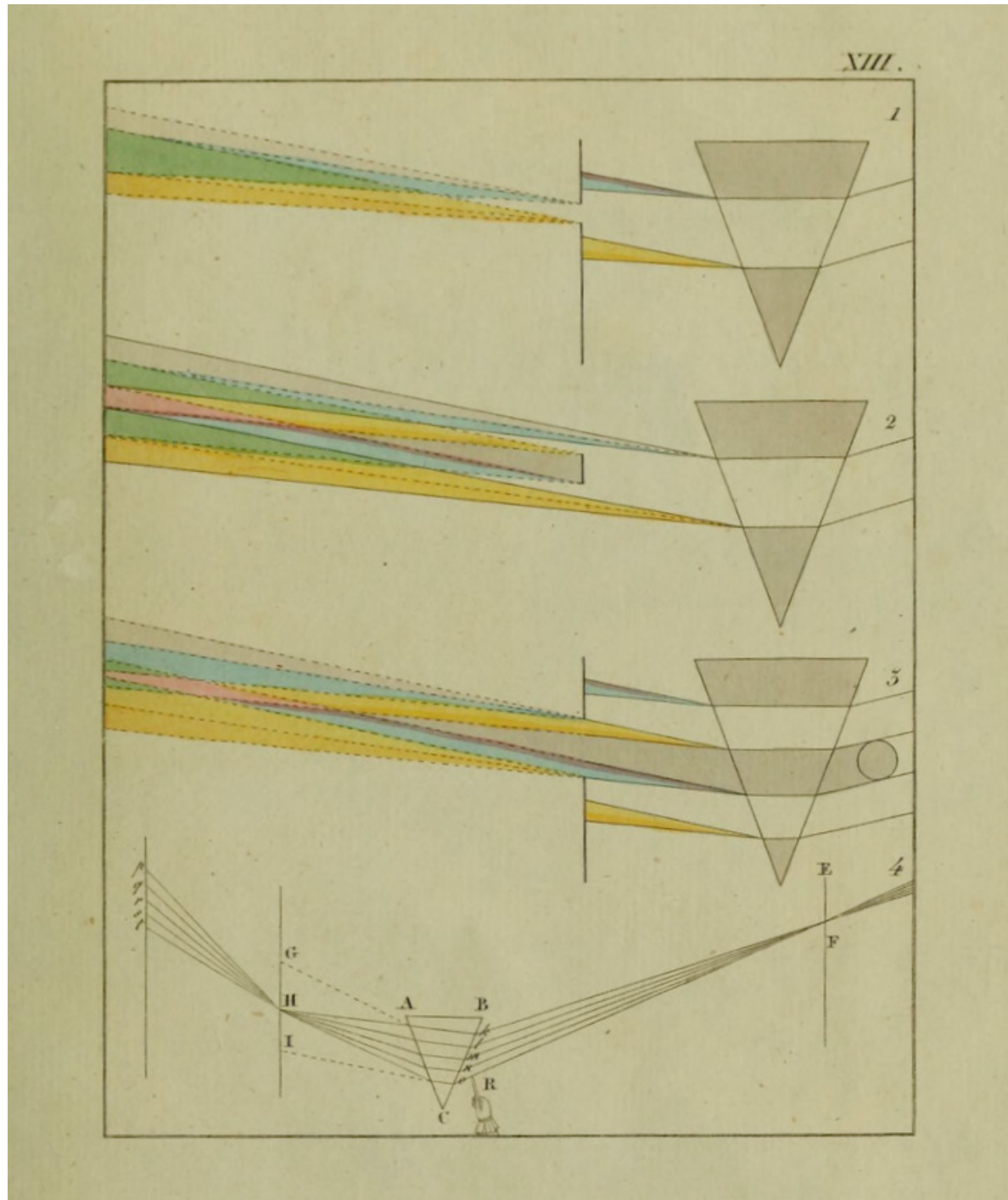


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Figure 23. The semiotic understanding of colours, experiment part one

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Figure 38. Hiroshi Sugimoto, Movie Theatre-Akron Civic, Ohio, 1980

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Chromophobia

Pawel Szubert

Rotterdam 2016