Staging Atmosphere – a spatial installation

The Study on Colour, Odour and Their Cross-Modal Correspondences, as Factors in the Making of Architectural Atmosphere
Abstract

The digital revolution has made the human work and live in an increasingly visually stimulated world. However, its counteract seems to suggest a growing demand for experiences with implications of all the senses. This study indicates for the future direction in architecture and spatial design to be sensorially aware spaces. The sense modality of olfaction seems particularly to have an upswing in the way it is being noticed in the process of creating space. Movements such as Crossmodalism further confirm the desire for sensory input and alternative experiences. Understanding sensoriality, particularly cross-modal relations, can thus be seen as essential tools for the interior architect to work with in today’s society.

This thesis presents a study on colour, odour and their cross-modal relation as architectural atmospheric factors in the context of new aesthetics. The thesis will provide alternative ways on how to use colour and odour in a spatial context with a deeper connection to our emotions, sensorial bodies and most profound memories. This exploration will be linked to the discourse of staging atmosphere as the spatial attributes of odour and colour, and their cross-modal relation may be considered as essential factors of architectural atmosphere.

The thesis is divided into two parts: Part A, a literature overview and design research and Part B, a cross-modal study, design process and artistic production. Part A will illustrate the foresight of architectural atmosphere, the role of colour and odour in a spatial context and lastly the cross-modal correspondences as atmospheric factors. Part B continues to examine the topic in the format of a spatial art installation named “Staging Atmosphere”, in which the thesis is explored on a conceptual level. Insights from the literature study are implemented and in a constant dialogue with the artistic project. Part B will also contain an additional cross-modal study to give further insights into the subject and guide the thesis’ artistic process.

Keywords: Architectural Atmosphere, Staging Atmosphere, Colour and Space, Odour and Space, Cross-modal Relations, Crossmodalism, Haptic Design, Sensorial Design.

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1. Introduction
1.1. Background of research

During recent years, there have been fierce conversations regarding ocular-centrism, embodied architecture and sensorial design. In 2017 I was introduced to some of these discourses while studying architecture theory at ENSAPLV in Paris. During that time, I realised my creative process had mainly laid its foundation on images rather than the aim of creating spaces for a full sensorial experience. I had created space by the image and more importantly, for the sake of a new image. What would look “nice” in my portfolio had become more crucial than how the space would be perceived, and what kind of atmosphere it would emit in the physical world. I was neglecting the very calling of my profession.

However, my tendencies were not aberrant. The technological and hyper capitalistic culture has forced the gap between the senses to grow in their hierarchical system - keeping vision as the more privileged sense. Architecture is no longer made solely to be felt but experienced and consumed through pictures and imagery flow. As the internet has created a global community, allowing for the sharing of architectural projects around the world, it is changing the way we represent and consume architecture and space. Simultaneously the massive flux of information means that we process and interpret information in a completely different way. The internet has caused an increase in available image information but a decrease in attention. Most importantly, it is changing the way we design, represent and consume architecture and space.

As I researched the topic, it started to seem like the phenomenon had also affected the ways colours are being used in space. Image forums such as Instagram, Pinterest and Tumblr do not only change what we think feels current and what feels obsolete. It would seem like we do not only consume pictures in a new way – we consume colour.

Simultaneously, sensorial awareness is rising as a counteract to the more ocular-centric ways of designing. As sensorial design focuses on the sensory perceptions of the design target, the theories of architectural atmosphere refers to the sensorial qualities and character that the space emenates. The discourse of atmosphere and sensory awareness can be examined in the texts of Peter Zumthor, Juhan Pallasmaa and Gernot Böhme. Zumthor examines the mood of a place, Pallasmaa focuses on the sensorial experiences, while Gernot Böhme lays his centre of attention on the atmospheric factors of space. However, even if Böhme speaks of the different factors of a sensorial space, very little attention is drawn to the olfactory experiences. Olfaction seems to be the most neglected sense, even in the more substantial academic discourses regarding space, design and sensorial experiences.

Still, a rising use of olfactory experiences in spatial contexts can be noted. The art world has been a realm particularly rich in incorporating smell. For instance, Dutch olfactory artist and designer Peter de Cupere has used odours as part of his retirement home designs, where each room and hallway has a specific odour in connection to its usage. The odours help the residents, especially the ones suffering from dementia to navigate in the building, as olfactory experiences have the most active link to memory.

Furthermore, as most everyone has had a Proustian moment when it comes to olfaction and memory, the retail world has also understood the power of an experience that attests olfactory aptitude. In 2017 Maison Cartier developed a temporary art installation called “OSNI” that combined scent and climate engineering. Interior architect Ilse Crawford’s luxury Hotel, “Ett hem” has a custom-made scent, by which the hotel attempts to reconstruct the sensorial experience of home. Olfactory brand agencies such as 12.29 Scent, Scent air and Scent factory – olfactory branding are designing olfactory landscapes and identities to clients big as Valentino, Dior, Hilton and The Four Seasons.

The olfactory experience has also in an academic context been recognised. Publications such as “Designing with smell-practices, techniques and challenges” are highlighting the importance of olfactory research and further giving design tools and introductions to design work regarding the olfactive. However, even if the design world is slowly starting to acclaim the olfactory perception, the understanding of its complexity in relation to the other senses is almost non-existing. The perception...
of our surroundings happens through the combinations and correspondences between all senses. When examining the sensorial potential of using colours and odours in spaces, a more in-depth understanding of cross-modal sensory correspondence becomes inevitable.

The cross-modal perception infers the perception that involves interactions between two or more different sensory modalities. Examples include the more physical sensation of synesthesia and sensory substitution. The cross-modal sensory research is also highly related to the more familiar research themes of multisensory perception and multisensory integration. However, as cross-modal sensory correspondence between audio and olfactory, or audio and touch have been described, those between vision and olfactory have not. The olfactory sense seems yet again neglected, maybe as its more fugitive attributes are hard to measure.

New studies have vitalised the topic, by which they are making a statement for its relevance. In these studies, it is shown how the presentation of visual stimuli can influence olfactory information processing. Gottfried and Dolan15 reported that people detected the presence of an odour more rapidly and accurately when semantically congruent pictures or cognitively internalised colour symbols were presented at the same time. Also, Robin Martin16 found how the olfactory impression was among the sensory experiences reported by subjects when shown reproductions of paintings. The colours of the paintings where evoking olfactory memories and in some synesthetic individuals physical sensations. As Martin puts it in his research for American Psychology: “There are no reasons to regard colour-odour linkages as unlikely.” 17 Undoubtedly, the cross-modal relation between colour and olfaction seems to be particularly rich in its associations.

This thesis will showcase the cross-modal sensory correspondence between olfactory and vision, as it can provide alternative views on how to use colour and odour with a deeper connection to our emotions, sensorial bodies and most profound memories. This exploration will be linked to the discourse of staging atmosphere as the spatial attributes of odour and colour, and their cross-modal relation can be seen as essential factors of architectural atmosphere.

By researching the topic, I will gain an experience in which I can try to grasp how architecture and interior spaces can be designed and function in the future. The tools and theories for understanding the complexity of atmosphere, colours and olfaction will also form a basis for my future work as an interior architect, artist and sensorial designer.

1.2. Aim of research

My thesis aims to draw attention to the importance of seeing colour, odour and the cross-modal relations as important atmospheric factors that can further be used in the staging of atmosphere. Additionally, it seeks to vitalise interest in Gernot Böhme’s theories of “The new aesthetic” and thus showcase the central problematics of seeing architecture as part of the traditional aesthetic definition. By showing the keen effect olfaction has on the way we perceive both colours in space, space and its atmosphere, my thesis argues for the importance of both intelligent colour usage as for curated olfactory experiences in an interior architecture context.

Simultaneously, I aim to give examples of how to implement the knowledge of designing with cross-modal awareness, sensorial colour use and olfactive experiences. This exploration will be done both in a literature-as in a creative study.

Lastly, the thesis functions as a commentary on the ocular-centric ways colours and architecture manifest themselves in today’s society and draws attention to the possibility to create meaningful and sensorially designed space by staging its atmosphere.

1.3. Research questions

My four research questions are; 1) Can atmosphere be “made”, 2) how does the usage of olfactory and colour design affect the atmosphere and experience of space, 3) what are the cross-modal correspondences between colour and olfaction in the context of space, and 4) how can this knowledge be used to create more sensorial spatial experiences. By expounding the specific cross-modal sensory relations between colour and olfaction in a spatial context, the thesis looks for possible ways the cross-modal can be linked to architectural atmosphere.

1.4. Structure, methods and research material

The thesis is divided into two parts; Part A, a literature overview and design research and Part B, a cross-modal study, design process and artistic production.

Part A presents a literature review and serves as the theoretical section of this study. It illustrates the foresight of architectural atmosphere, the role of colour and odour in a spatial context and lastly the cross-modal correspondences. Regarding the discourse of architectural atmosphere the literature is foremost applied from the writings of Pallasmaa, Zumthor, and Böhme. Böhme’s writings serve as the primary source as he is targeting the olfactory and cross-modal aptitude in the context of architectural atmosphere. His architectural theories of “new aesthetics” contribute additionally to the thesis’ discourse.

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Furthermore, I will debate the experience of spatial colour by the writings of Arnkil, Fridell Anter and Kappel. The olfactive experience in connection to space and design is primarily examined through the writings of Henshaw, Verbeek, Van Campen and Sokel Thompson. Lastly, the cross-modal correspondences between odours and colour are foremost expounded in Spence’s and Ngo’s research. In the context of architectural atmosphere, the notion of cross-modal correspondence is looked at in Böhme’s writings. Additionally, examples and comparisons from the worlds of design, creative fields and architecture are taken.

Part B continues to examine the topic in the format of a spatial art installation, in which the thesis is explored on a conceptual level. Insights from the literature study are implemented and in a constant dialogue with the artistic project. Part B will also contain an additional cross-modal study to give further insights into the subject and guide the thesis’ artistic process. Lastly, conclusions and reflections are made.
2.1. The phenomenon of atmosphere

The word atmosphere has a place in almost every language. It is widely used and yet poorly defined. Commonly the notion of atmosphere is seen as a synonym for mood, feeling and ambience. It appears in everything from academic discourses to the most mundane contexts. One can talk about a tense atmosphere at a work meeting, a gloomy atmosphere on a rainy Monday or the atmosphere experienced while visiting a foreign city during a summer holiday. In other words, there are the cultural, social, workplace, family and interpersonal atmospheres. The atmosphere of a social situation can be uplifting or stifling, inspiring or dull, energising or exhausting. It can vary in scale from cultural, to regional, to national entities. Still, however, the term varies in its use, it always has the common factor of the attempt to describe a character. Therefore, the term atmosphere has a lot in common with the notion of the identity of a place. As Juhani Pallasmaa explains it in his essay Space place and atmosphere emotion and peripheral perception in architectural experience:

“Genius loci, the Spirit of Place, is a similarly ephemeral, unfocused and non-material experiential character that is closely related to atmosphere.”

To talk about atmosphere plays a significant role in spatial contexts such as interior design, stage design and town planning. When generalised, the notion of atmosphere is being researched, curated and used where-ever there are a design factor and place involved. Practically speaking, this means more or less - everywhere. Still, as atmosphere is something intangible, vague, even fleeting it can be hard to concretise into forms of words. The subjectivity of the experience makes this even harder. These examples might be some of the reasons why the term atmosphere has taken such a long time to find its way into a scholar context. In the 1960s Hubert Tellenbach was recognised as one of the first systematic researchers to speak about atmosphere concerning the perceiver and the perceived in an academic context. In Geschmack und Atmosphäre (Taste and atmosphere) atmosphere is seen as something strongly connected to the olfactory, this for instance in connection to the smell of home, the familiarity of a homeland’s climate or the olfactory landscape that is experienced.

Currently the notion of atmosphere has evolved into a more in-depth phenomenological and architectural platform. According to Pallasmaa as there seems to be a shift in the ways space is been designed from an ocular-centric standpoint to an experience-based one, the notion of architectural atmosphere is marking its place in the realms of architectural theory. Undisputedly there is fast-growing awareness of the role atmospheres play in architecture. This discourse of architectural atmosphere will be presented in the following chapter.

2.2. Architectural atmosphere

When entering space, its aura can be felt in the fraction of a second. One could even argue that it is as if the room had its personality, or a character which exists before its components are perceived. Light, colours, materials, forms and even the scent of the room all contribute to the place-specific fusion - to an entity that can be called architectural atmosphere.

According to Seamon architectural atmosphere is the ethereal presence, the lived quality of a space where an airy ambience is evoked that makes it unique as a place. As every spatial form has an atmosphere of their own, it is essential to understand how architectural atmosphere behaves, the way it affects the perceiver and which factors determine its character. In the profession of an interior architect, one should design with a holistic understanding of the nature of atmosphere and thereby have the tools to create spaces that serve the perceiver in an intuitive sensorial, bodily and meaningful way.

This master thesis will expound the ongoing discourse on architectural atmosphere foremost in the texts of Hermann Schmitz, Peter Zumthor, Juhani Pallasmaa and Gernot Böhme. While philosopher Schmitz focuses on the phenomenological aspects, architect Zumthor examines the mood of a place, and professor Pallasmaa targets the sensorial experiences and place, architecture theorist Gernot Böhme dives into the factors and aesthetical aspects of atmosphere in various ways. For this master thesis, Böhme’s theories will have the most relevance, as he puts his centre of attraction on the multisensorial, the cross-modal and the aesthetical aspects of architectural atmosphere.

Firstly, the research will dive into the matter of subject and object. Then, the nature of architectural atmosphere will be looked at as a form of “new aesthetics” in the way it uses sensoriality and different atmospheric generators to reconnect to the term’s origin. Lastly, the possibilities of seeing atmosphere as something staged will be discussed, giving examples from the field of stage and landscape design, subsequently connecting to the usage of colours and odours as atmospheric contributors in the experience of space.

It would seem like the human perceives his/hers surroundings at the intersection of human subjectivity and the external objective reality. “The body and mind cannot be separated as subject and object.”
are the famous words of Merleau-Ponty in *Phenomenology of Perception*. The philosophy of phenomenology emphasises the description and interpretation of human experience, awareness, and meaning. It does not separate the body from its environment but sees it as a part of it. According to Sepp H.R. the human is embodied in its surroundings, co-creating reality with the experienced information received from the senses. Several phenomenological philosophers such as Schmitz have linked atmosphere with feelings and the tacit emotional tone, mood or ambience of environments, spaces, or places. Hence, the theories of architectural atmosphere can be seen as highly related to the theories of phenomenology intertwining to a theory of perception, subjective experience and objective reality.

The theory of phenomenological architecture states that the human body is the measure of architecture; it is also what emanates the structural and atmospheric qualities of a space. Therefore, it can be demonstrated that in atmospheric experiences, the body embeds the human together with his/her multifarious ways of perception, sense of experience and surroundings. Atmosphere is a reality both constructed by the perceiving subject and the perceived object. Böhme points out in his writings in "The Aesthetics of Atmosphere" that atmosphere in neither a purely subjective state nor an objective "thing", but the intersections between these two. It is a quintessential "between" phenomenon.

On the other hand, one cannot look at the forming of atmosphere as separate from the influence of the object-pole. Atmosphere always contains particular features of the external "thing" that can be objectively identified. According to Pallasmaa there is always the possibility to experience atmosphere in a place in contrast to one’s moods and feelings. For instance, when going to a children’s party, fun and excitement can be picked up even if those were not the experiencer’s initial emotions when entering the place.

Simultaneously, atmosphere is not in itself objective but appears in the moment of the perceiver and its subjectivity. Böhme states that "we must be physically present to experience space in its complete entirety." To explain this better, we could say that a room is red. Still, this does not mean that the red is a "property" of the room, but instead co-created with the perceiver’s subjective perception and merely one reality out of many possible ones. In other words, it is a reality that could only be confirmed through the perceiver’s sensibility. Similarly, the German philosopher Martin Heidegger links the object, space

indivisibly with the human perception in *Building, dwelling, thinking*:

“When we speak of man and space, it sounds as though man stood on one side, space on the other. Yet space is not something that faces man. It is neither an external object nor an inner experience. It is not that there are men, and over and above them space“.

Confirming that as we enter space, space enters us, and the experience becomes the exchange and fusion of the object and the subject.

Contrasting to this is the theory of Hermann Schmitz. In the 1960s Schmitz began developing New Phenomenology in which he did consider the subjective experience and the perceiver’s emotions but laid his theories on objective qualities instead. According to him, human emotions are atmospheres in themselves that can be objectively perceived – this even without necessarily being internalised. Schmitz saw emotions as something that lies in the outside world. Thus, they could be "externally" experienced. His theories of objectively existing emotions did not survive time. Still, he managed to lay a foundation to the discourse of the subject, object and architectural atmosphere. The theories also served Böhme as an essential reference for his first essays on the concept of atmospheres, which eventually developed to the core notion of seeing atmosphere as the in-between phenomena that it is.

Furthermore, as both Peter Zumthor and Juhani Pallasmaa agrees with Böhme on the co-creational aspects of atmosphere, they draw additional attention to the primitiveness of the subject’s role in the process of perceiving atmosphere. Atmosphere is taken in long before its details are examined, or it is understood intellectually. It is as if the human biological code would be programmed so that we register the overall experienced quality rather than the factors that it is made of. This is most likely to be connected to our survival instinct as the human has learned to scan for either safe or threatening environments. Pallasmaa suggests that the perceiver of a space is much likely to have a firm memory of the overall atmospheric experience, even if he/she is unable to say anything meaningful about the characteristics of it. For instance, as travelling to a new city, it is common to grasp its overall character, this without consciously analysing all the single units that it is made of. It is this biologically-derived intuitive, and emotive capacity that seems to be the foundation of how surroundings are perceived as Zumthor puts it in *Atmospheres – Architectural environments – Surrounding objects:*

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“We perceive atmospheres through our emotional sensibility – a form of perception that works incredibly quickly, and which we humans evidently need to help us survive.”  

In other words, the human body is genetically and culturally conditioned to seek or avoid certain types of places, situations, and hence also the same when it comes to architectural atmospheres.  

2.3. Factors of atmosphere

Architectural atmosphere is the between phenomena of subject and object. Thus, when discussed in the context of its factors, the emphasis can lay on one or the other. Palllassmaa has chosen to expound the experience of architecture and its atmosphere with the emphasis on the perceiver’s senses. Peter Zumthor as well approaches atmosphere from a bodily view. He writes about the more conspicuous factors in relation to the perceiver - such as light, acoustics, materiality and colour, but in contrast to Palllassmaa he goes further into the subject as he also expounds the levels of intimacy, the tension between interior and exterior, composure and seduction, and temperature that can be found in space. Böhme lays his emphasis on lights and acoustics and calls these factors “generators of atmosphere.”

As a matter of fact, in “The Aesthetics of Atmosphere” Böhme opens the chapter of the city’s atmosphere with the topic of odours. To Böhme, odour is the essential element of the atmosphere of a city, as odours are like almost no other phenomenon “...they are to their core the most atmospheric.” They capture the perceiver’s attention; they penetrate, they envelop and can therefore not be avoided. They are the foundation and the quality of their surroundings. Places are identified through them, but even more so we identify ourselves with places because of them. As Böhme points out, the first book about atmosphere, Geschmack und Atmosphäre was quintessentially a book about odours and place. Still, even if Böhme is the only theorist to touch the subject, he does not expound it more in-depth than on the surface. The question of the difficulty of talking about the olfactive rises, as even after pointing out the importance of odours, Böhme does not answer the core questions of how odours behave in space or how they are connected to the other senses.  

In contrast, Böhme is very generous when writing about materiality, light, sound and acoustics. Böhme sees materiality as something emancipating. The materials functional value enables them to exist as pure appearance. They are the ground from where everything is created, metaphorically speaking the dust before God breathed into Adam. However, as building techniques have evolved and the visual concept of what is aesthetical have changed, materials no longer must perform what they promise. The call for the integrity of materials is no longer there but have become the opposite in latter day’s society. Still, materiality has the mission to come forward to help shape the atmospheres in which we live in.

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Böhme speaks of three fundamental light phenomena regarding atmosphere – clear space, light space and lights in space. When talking about light, it is usually associated with brightening up and hence opening up a room. Even if it is intellectually understood that the room does not expand in a physical matter, it is how we experience it. Brightness brought into a dark room, makes the room feel decluttered. Böhme calls this phenomenon “clear space” as it clears the space and allows the eye for similar movement as cleared wood allows for growth. For instance, the atmosphere of a theatre stage completely switches to a more open one, as the light is increased. This metamorphosis happens even if no objects have been removed.

In contrast to clear space where the perceiver is needed in the space, light space can be experienced from a distance or as “a space in a space”. Light space is the glassed skyscrapers seen from a dark street, illuminated stage in a theatre or a lit room at the end of a dark hallway. Artists such as Keith Sonnier and James Turrell are well known for taking advantage of the concept of light spaces to create dream-like atmospheres. In 2002 Sonnier made a permanent indoor neon installation, called...
“Verbindung Rotblaugelb”. The installation was situated in a 143-meter-long passageway linking the two main buildings of Munich Re Headquarters. 55 The passage plays with the relation of colours, light and distances, creating an engaging atmosphere where colour is turned into volume. In Sonnier’s work, light space is not only the relation between dark and light, but between different colour hues as each colour, hue creates a space of their own. Similarly, James Turrell has used light spaces in various forms, from creating concrete floating-like coloured squares to creating coloured light rooms, where the horizons and distances are manipulated to a space “out of this world”. 56 In Turrell’s series “Wedgeworks”, the use of projected light creates an illusion of walls or barriers. The works are simultaneously light spaces, but also lights in spaces. Lights in spaces, or in this case projections, have not the purpose of lighting up the room, but the work as entities formed by the light like the stars in the sky. The series Wedgeworks are inherently spatial manipulations - metaphors for the illusory nature of all optical experience.

In summary, light, materials and colour are essential factors, or as Böhme calls them “generators of atmosphere”. 57 As shown, Böhme has explored all the above with the addition of the importance of acoustics. The generators of atmosphere that this thesis will focus on are odours, colour, and hence light, and their cross-modal relationship. On that account, Böhme’s theories of acoustics will not have high relevance to this study. Nevertheless, it is worth noting the impact that acoustics and sound have on architectural atmosphere and on how the aesthetics of the space is perceived.

2.4. The discourse of new aesthetics and atmosphere

The notion of atmosphere as a phenomenon has its origin in reception aesthetics. 58 However, today’s conventional approach to aesthetics contrasts with the one in the discourse of atmosphere. As the hegemony of sight has led the world to understand aesthetics through its imagery experiences and virtual communication, the word aesthetics has purely become a representation of visual judgement. Additionally, the word aesthetics is commonly seen as originating from the philosophy branch of Aesthetics, which deals with art, or more generally, the philosophy of taste, perception and beauty and has thus furthermore positioned it as the ocular-centric judgement of taste. 59 However, the word aesthetics originally descend from the Greek word “aisthanomai”, meaning, “I perceive, feel, sense” 60. As indicating sensoriality in its meaning, the theory of aesthetics was originally conceived as a theory of sensory perception. In the mid-eighteenth-century, Alexandre Gottlieb Baumgarten defined this theory of sensory perception and furthered the definition of taste, as the ability to judge according to

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the senses, instead of according to the intellect. In other words, Baumgarten saw aesthetics as a holistic sensorial experience, created intuitively not only by the vision but by all senses. During his time, Baumgarten stood alone on the sensorial spectrum of aesthetic theorists as Hegel developed the art of judgement in complete contrast and Kant took it to a place of seeing it purely as a product of Nature. The theory of aesthetics has been limited to the object of judgement study. However, as Böhme in the discourse of architectural atmosphere has reconnected the notion of aesthetics through the experience of space to sensorial meaning, the notion has started a journey of redemption during the last decades. Böhme calls this aesthetics of atmosphere the “new aesthetics”, wiping the old aesthetics of being inherently judgmental to being sensorial. Böhme encapsulate this in “The Aesthetics of Atmospheres” in the following way:

“The aesthetics of atmosphere shifts attention away from the what some things represent to the “how” something is presented. In this way, sensory perception, as opposed to judgement, is rehabilitated in aesthetics and the term “aesthetic”.

Aesthetics is also power – it shapes the way we feel, relate to and experience the outside world and hence how and what is built in the society. In “The Work of Art in the Age of Mechanical Reproduction” Walter Benjamin speaks of the power of aesthetics; the way it can guide the masses to accept and distract from exclusively political content. Benjamin speaks of “aestheticization of politics”, the aesthetic ideal used by Fascism and the Nazis, that distracted from the exclusively political content, alienated the masses who were guided by a cultural value of such aesthetics to participate in a ritual of appearances. Aesthetics has the power to shape our beliefs and hence our behaviour. One could then argue that bringing back the focus on sensoriality in connection to aesthetics could have the power to shift the structure in today’s society. This happens, especially in the conflict caused by late capitalism between built space and the ocular-centric image-fetishised world. As earlier pointed out, our postmodern technological communication development has made it possible for increased circulation of images, images have become information and then again replaced the production line to effectively produce imagery. The phenomenon produces a reality that is no longer possible to directly live, but even more so, the visual feast becomes an image strategy detached from meaning and ending up with no context. This phenomenon has also made architecture to distance itself from intellectuality, meaning, multisensory experience, and thus from self-awareness. The architectural world has become aesthetically aestheticised. However, when the focus shift from the way something only looks to how its sensorially experienced, we can yet again start to create spaces with substance. Felt architecture and its atmosphere become more important than its representation in image. The theory of new aesthetics

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does not only change the society, but also the way people see themselves. “We” can become creatures that are not only valued through the ability to judge according to obtained knowledge but as sensorial bodily entities in a world where sensing or essentially being is enough.

2.5. The notion of staging atmosphere

Atmosphere has become quintessential a reception of aesthetic theory. According to Böhme as then aesthetic work consists of making or giving places, spaces, things and even people properties from which, something can evolve, the question of “making” atmosphere becomes relevant. 63 Many professions instinctively engineer, curate or make wanted atmospheres through sensorial aesthetics. There are the more obvious ones such as interior architects, town planners and set designer, but also the production of musical atmospheres, advertisers, cosmetics and the vast body of art that use the principle of creating ambience. Still, making or staging atmosphere may sound contradictory, provocative, even slightly perverse. When using the verb “make” it automatically refers to the creation of something tangible and as atmosphere has repeatedly been stated to be the immaterial character between the perceiver and the perceived it might seem like a paradoxical statement to make. However, as Böhme points out, when looking into the field of stage design one could still argue this to be true. 66 Atmosphere is where the human situation and external condition are brought together and diffused by specific emotional qualities - and is that not what the core of theatre does? 67

The theatre’s relation to the engineering of atmospheres is matter-of-fact commonplace. Stage design is freed from the burden of architecture to underline its believability and functionality. Also, it does not consider how picturesque it is, but instead, the success of set design is measured by the realisation of communicating emotion, story and ambience. Stage design does not only use the concrete actors of space such as walls, objects and solids, but also the ones that are harder to control, such as light, colours and odours. 68 The atmospheric generators are not chosen because of their objective properties, but because of what they communicate and emanate. 69

Despite the word “engineer” or “curate” set design can let the experiencer believe in its “naturality” and “uncontrollability”. For instance, in Katrin Brack’s recent productions, the minimalistic usage of single fleeting materials such as fog, foam, snow, and confetti, communicate an unengowned and independent feel.70 As Brack uses the fog as a performer, she requires the actors to improvise as the character’s inner emotions and memories. 74 D’Errico points out that Carné does not only use odours as an illustrative tool but as the driven force for the full creation. The odours create together with the rest of the set, the actors and the audience, exploration of co-created sensorial reality.

However, even if odours have been used for a long time as communication tools in a theatrical context, very little research has been done regarding it. According to D’Errico using odours on the stage comes from intuitive experiments without proper analysis of the usage and meaning in such context.75 As odours can assume strong symbolic characters, cultural connotation exaggerating or denouncing social stereotypes, they are powerful tools for authors and performers. In this fashion, odours have psychological and psychological implications in terms of the experience of the audience and the actors and hence calls for the attention of the research field.76

Set design is not the only field to have a culture of engineering atmosphere. Especially in connection to odours, landscape architecture and gardening produce spaces with different moods, ambience and purposes. In “Tuoksujen puutarha” (The garden of scents)77 Finnish philosopher, architect and artist Eeva Ruoff beautifully narrates the history of gardening and its factors such as plants, trees and flowers with a high emphasis on odours. Through her writings, the long history of gardening in creating atmospheres becomes clear. Even if Ruoff does not implicitly imply the engineering of atmosphere in gardening, many of her examples refer to it. One of Ruoff’s first examples is Madame de Montespan’s pavilion. King Louis XIV’s lover, Madame de Montespan enjoyed strong scents which gave the King the idea to create a strongly scented garden around the Petit Trianon- pavilion. The garden contained jasmine, lilies and tuberose to the extent that the fragrance was so strong that no one else

Odour can have a similar performative and ontological presence. In western theatre from the time of the Greeks, the Romans and to the 19th-century, odours have played a significant role. 71 Scent was part of the “mise-en-scène” to various degrees: Playwrights used odours as strategies to wake up, surprise, even scandalise their audiences, but foremost to merge the audience as a part of the world created on stage. In Anna D’Errico’s essay “The nose onstage – Olfactory perception and theatrical dimension” 72 the matter of olfactive theatre is explored. D’Errico takes as an example the play writes of Violaine de Carné who uses odours as the premises of her plays. She creates characters, moods and ambiences or precise places illustrated by odours. 75 In her play “Les Parfums de l’Ame” an intense atmosphere reflecting the ephemeral attribute of smell and desire is created. During the performance, 12 odours are realised through a compressor. Each odour is released to represent an immediate character or the character’s inner emotions and memories. 74 D’Errico argues that Carné does not only use odours as an illustrative tool but as the driven force for the full creation. The odours create together with the rest of the set, the actors and the audience, exploration of co-created sensorial reality.

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Fig 04.

Katrin Brack's set design for "Ivanov".

Fig 05.

Katrin Brack's set design for "Ivanov".

Fig 06.

Katrin Brack's set design for "Das grosse Freuen".

Fig 07.

A scene from Violaine de Carné's "Les Parfums de l'âme".
than Madame de Montespan wanted to stay in it.\textsuperscript{78} In a way, it created a “free” place for Madame de Montespan. Similarly, like the one Virginia Wolf writes about in “A Room of one’s own”\textsuperscript{79}, where a woman can feel safe and free from the patriarchal society. In contrast to Madame de Montespan place of freedom, it was a place of invasion and hostility to most, as the story has it that the fragrance was so strong that it made the Duke of Saint-Simon nauseous. \textsuperscript{80}

Additionally, other atmospheric designs could be found in King Louis XIV’s court through vegetation. King Louis XIV had 300 orange trees planted in another of his gardens. The trees showcased wealth and good taste but were practical in the sense that they overpowered other unwanted odours. Some of the orange trees were brought inside Versailles. By doing this, the ambience of the garden got extended to the interior, but also to allay the courtier’s filthy odours. The trees gave an atmosphere of excitement and extravagance, as they also became strongly associated with the court’s feasts and banquettes.

Moreover, Ruoff speaks of the diversity of moods found in the variety of gardens. Some gardens can have an atmosphere of calmness created by water elements and subtle fragrances from flowers as something from a Monet painting. Others can give a sense of protection and comfort as significant volumes of trees and bushes give shelter - and some radiate excitement with bright coloured seas of flowers and fresh herbal fragrances. In contrast to set design, in gardens, time has a significant role in what kind of atmosphere is emitted. This does not only occur regarding seasonal changes but foremost in relation to what time of the day it is. For instance, most roses radiate the most potent fragrance in a warm summer morning, before the sun has had time to dry their petals. In contrast, other plants do not wake up until dusk. Ruoff dedicates a whole chapter to the orchestra of the evening garden. She continues with the odours of the night that are much stronger, denser, sweeter and usually also more widespread than the ones during the day. When the fragrances are stronger, they also invite more insects to play in their orchestra. \textsuperscript{81}

The atmosphere in an evening garden is created in chain reactions and in relation to time, which can make it undisputedly seen as poetic in its volatile nature. One could imagine the tranquillise atmosphere, where the flocculent grass muffles the footsteps, the soft evening light strikes the eyes and the poetic knowledge of the fleeting moment that the fragrance of the \textit{Loncera caprifoliun} gives.

As the generators of atmosphere in a garden are wild by nature, it could seem like they are harder to control than the ones found in an urban environment. The difference might be, that because of the long history of seeing gardening as a sensorial entirety, there is a more prolonged culture of trying to understand its components, not only about colour, materiality, sound and light but also concerning time, unpredictability and the multisensorial.

\textsuperscript{80} Ruoff, E. (2003), p. 16.
The culture of making atmosphere has a long history in set design and landscape design. Set design does not only play with volumes and walls but has its emphasis on lights, colours and even in some cases on more fleeting factors such as fog and odours. In addition to these factors, garden design focuses by its nature on the more ambiguous factors such as time, chance and the serendipitous. Both worlds commonly enjoy the freedom of basing their structure on other values than only those of functional attributes. This brings us to the question if architecture perhaps is taking itself too seriously. Architecture could learn a great deal from the field of set- and garden design and possibly even develop a new awareness of these art forms. However, is it a question of architecture’s believability or why are these design forms so threatening to architecture?

Maybe the separation of art and architecture does not need to be based on their practical value. Instead, they could be openly seen through the atmospheric character that they emit and the subjective experience that they give. Like Böhme sees it; when the “space of physical presence” starts to be looked at as a subjective matter for architecture, it resembles more stage design than its classical definition of being the intersection of form and function.  

By approaching the creation of space with an end goal of a character instead of a definition, the design process automatically gives room for in-depth research and exploration of the space’s makers, resembling stage design to its very core.


3. Colour in space
3.1. The experience of colour in space

Colour is one of the many strands that make up our perception and experience of space and atmosphere. It plays an integral part in the aesthetics of everyday life, both in the physically lived one as in the two-dimensionally experienced one. As this thesis explores aesthetics in relation to spatial atmosphere, colour is not only defined here by beauty-aesthetics of fine art or Kantian philosophy but is also looked upon through the lens of Baumgarten, meaning seeing it as a part of the science of sensory cognition. From this view, aesthetics is not only connected to artistic expression and the question of taste but more so to its connection to other sensorial qualities and how human beings experience and respond to them. It may even donate a set of attitudes towards how to experience life and our surroundings, as Foucault has phrased it as an “aesthetics of existence.” 83

Nevertheless, even if it is known that colour has a profound psychological effect on our moods and experiences in space, the connection between the scholarly colour discourse and the practical architectural field is vague. According to Peter Smith research studies about colour have been spasmodic, and findings that could be potentially important to designers and architects are usually communicated in a language that is challenging to understand, allowing architecture to be stuck with the experience of a subjective reality effected by the factors that contribute to this experience. 84

This research will look at the experience of colour in spatial contexts, foremost through the writings of Swedish architect and researcher Karin Fridell Anter, Finnish Professor Harald Arnkil and Danish researcher Anna Kappel. According to Fridell Anter, when we talk about colour, we can refer to at least three different things; the pigment itself, the perceived colour and the experience of seeing the colour. 85

The experience of colour is scientific, physical and condition-based, as the experience of colour is the experience of a subjective reality effected by the factors that contribute to this experience. 86 Hanson writes about the three distinguished colour perception components brightness, hue and saturation. 87

1) Brightness is the sensation of the amount of “light” that can be found in colour, which can, for instance, give a strong, dimming or dark effect. 2) Hue is the gradation or variety of colour, usually shown as a hue circle, where four different distinguishable areas are red, yellow, green and blue. 3) Saturation indicates the “colourfulness” of the colour. In short, the communication of colour perception could thus be made in the following form: The space in front of me is highly bright, moderately vivid and reddish-yellow. 88

In a spatial context, the most significant factors in the perception of colour are lighting, colour vision and the way that light is reflected. As earlier mentioned, since materials are the ones reflecting the light, they can be seen as additional factors. Whether it is a cold whitewall or uneven gold structural wallpaper, it affects how the space will be experienced, internalised and registered – hence affecting the spatial atmosphere. The sensorial experience, which is one of the most valuable assets when entering an architectural space leaves a trace through visual memory and hence a subjective emotion of the experience. 89 This emotion can be so strong that it leaves a physical sensation behind. According to Arnkil some colour harmonies can give such great pleasure that the perceiver experiences chills or goosebumps. Interestingly there is no actual theory that could explain this phenomenon, but as colour can create a reaction this strong, we at least know that it can be exceedingly meaningful in the connection to the experiencer’s emotions and mind. 90

In addition to light, light reflection on material and eyesight, there are problematic factors to how colours are experienced in space. According to Arnkil, three major complicators impact the experience of colour in space. 1) The influence of space on colour. In other words, attributes such as the shape of the space, the distances and the scale. 2) The influence of colour on the perception of space. In this case, it is referred to how colour can affect the experience of the volume, distance, form, structure, textures and materials in the space. 3) The notion of the psychological effects of spatial colour needs to be taken to account. 91 This is regarding how and to what degree colours can e.g. influence our experiences of comfort in spaces. However, Arnkil leaves the list short in the more problematic makers of the experience of colour. As earlier explained in Böhme’s theories of atmospheric generators, colours can obtain cross-modal characters, which can unexpectedly and concretely change the subject’s colour experience in space.

Furthermore, Arnkil points out that colour is always perceived in its relation to another colour. 92 The eyes do not only take in the scale, material, form and colour but the contrast of these. The notion of spatial colour contrast is essential to a modern understanding of colour perception. 93 Arnkil continues...
in explaining that spatial colour contrast effects can cause otherwise physically identical colour stimuli not to have the same colour appearance. Similarly, under certain circumstances, physically different colours can have the same appearance. Colours are perceived in relation to the surroundings of the background or a previous space, in either consecutive or parallel contrast.94 This means that the colour effect is always different, depending on the change in the perceived surroundings. The concept of spatial sequence, which is fundamental in architecture, is affected by colour contrast. As Arnkil summarises, this concept creates “a multisensory time-related experience”, 95leading the discourse to staged atmosphere as it reminds of the character found, in both stage design, as in garden design.

3.2. Colour and emotions

In addition to scientific methods one can approach the experience of colour through its emotion triggering side. As experiences are always multisensory and individual, one needs to look beyond the visual cues and see colours as part of an emotional, intuitive and memory connected segment. For example, according to Lars Sivik a specific shade of colour can be linked to a specific memory, and after that this particular memory affects the experience of the colour.96 The emotions and moods that are provoked are also highly related to the experiencer’s learned attitudes. These attitudes originate to a high degree from early learning processes.97 Artist Josef Albers famously said that we learn to like what we are provoked are also highly related to the experiencer’s learned attitudes. These attitudes originate to a high degree from early learning processes.97 Artist Josef Albers famously said that we learn to like what we have little experience of.98 Sivik verifies this in his research article “The Language of Colour: Colour Connotations” in the following way:

“Strong blue or pale violet building is most unusual in Sweden, and Swedes, therefore, react negatively when they first experience them” 99

Just as pale violet is received negatively by the Swedes, all cultures have their likes and dislikes. According to Smith it is researched that colour preferences in Western cultures are dominated by blue, green and red, while in Japan, red and pink are the most preferred colours, after white. In the Indo-Chinese peninsula, the most preferred colours are pink and orange.100 The division of preference does not only occur geographically but is in principle connected to the experiencer’s society or community, whether its borders come from a country, a city, a household or even an internet community.101


“What constitutes colour, is in the end the society we live in. That is, what gives it meaning and value, and determines its effect” 102

As Pastoureau writes in “Colours of our Memories”, the relation to colours is quintessential cultural.

In the field of psychology and medicine, colours have been used for their health benefits. For instance, colour has been applied therapeutically in dealing with emotionally and mentally ill patients – blue and green for calming purposes and red and yellow for uplifting.103 Still, the world of colour is full of contradictions, and it would seem like most of these colour-emotion-connections do not hold up from a severe scholar point of view.

In point of fact, according to Patricia Valdez it is the colour’s saturation and brightness, which causes the experiencers emotion, not the colour itself. Hue has, in other words, very little to do with the emotional reactions.104 Maybe then, there has been too much focus on the usage of the actual colour, rather than concentrating on the light and saturation in spatial contexts. In other words, the question is not about if the room is red or green, but what shades it has and the amount of light that can be found. Additionally, it is important enough to point out as colours are experienced in relation to one and another, it may imply that this relation has also a substantial role in emitting emotions. Like Faber Birren speaks of it in the following way:

“In the realm of emotion, colour can introduce sensory stimulation, break up monotony, establish an interesting change of pace. It is not just that one colour is better than another, or that red is exciting, green tranquil and blue subduing. What has been learned from research is that variety is of itself psychologically beneficial.” 105

It would seem like the emotional triggering side of the experience of colour is complex to its nature. Not only does the hue in itself affect our relation to it, but even more so the amount of light and saturation it has. Additionally, culture has a big impact on the reception of colour, and by so it indicates that in the process of creating space there is a need for a deep understanding of the language of colour.

3.3. The language of colour and its functional and political abilities

The experience of colour can be consistent in its cross-cultural meanings, and it can simultaneously be culturally specific. Colour meanings can vary from individual to individual and from group to group. It can evoke political, religious, and as shown emotional messages. It can inform, warn or tell a cultural story. Its symbolic values can change over time and sometimes even be contradictory. As for instance,
the colour red is both associated with the red banner of socialism as it is with luxury, the bourgeois and the royal. The deciphering of colour, its meanings and emotional evocations is an arduous mission. Nevertheless, it is vital that in an architectural context, both the emotional and symbolic language of colour is mastered.

Hence, when creating space with colour, the designer needs to ask him/herself what the primal role of the space is, and with what kind of colour language this role is strengthened by. Is the space to be a political statement, is it to provoke a certain emotion, is it to inform a function or maybe it should emit all the above? In some architectural processes, the architects have favoured their visual aesthetics instead of understanding this importance – resulting in problematic misuse of the building.

The use of colour in space is not only important in its way of informing mood and function, but it can also take an important political turn. One of the biggest issues concerning space, colour and politics is the discourse of gender equality. It is common for areas that are serving a female audience with symbolic marking of stereotypical feminine colours such as pink or red (e.g. the gym, hair salon). These unsaid guides and rules direct what people think of the space, how they behave in the space and even more so where they feel welcomed. 106

Yvonne T Larsson’s installation located outside the city library in Gothenburg is a successful example of political colour usage in space. The Spatial installation “Går du ofta hit, eller?” (Do you come often here or?) (2014) consist of three 330 cm high columns that mark the library entrance. The longest pillar to the left is strongly raspberry, the mid-pillar light yellow and the far right one turquoise. Their shapes are organic and soft as if they were clothed in a thick fabric. The sculptures reek a sense of smoothness and glossiness, which gives the connotation to plastic or similar polychrome and subsequent formable material.107 This aesthetic is a clear rebellious move against the masculine aesthetic norms that have their roots in modernism, both in the use of colour and the symbolism the pillars express in their form. Also, the installation’s three strong pillars contrast in colour shades, quite obviously giving the message of being “colourful”. As the artist herself explains, this should be interpreted as a connection to playfulness, femininity, joy and celebration. Through this, one could state that the artist has given an example of a strategy to use the feminine as a political form of counterforce to patriarchal structures. Larsson’s political colour usage has a great resemblance to the gender movement of “Millennial Pink” by taking a traditionally perceived feminine colour and turning it into a powerful political statement. The colour pink has also had an upsurge in spatial contexts. For instance, Fanny Suvila did her master thesis for Aalto University’s interior architecture department on pink space 108 and has since then organised several cultural events around the concept of pink spaces as for instance an inclusive stage

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Still, most attitudes towards pink are those of prejudice and contempt. Fanny Ambjörnsson explains this in “Pink, the dangerous colour”:

"From the 20th century onwards, the scaled dark colour scale is more clearly associated with respectability, gravity and self-control. This contrasts with the bright, colourful and fragile, associated with irrationality, emotionality and - in the long run - the life of women."

Ambjörnsson’s statement confirms how set attitudes and evoked emotions come from the culturally learned colour combinations and their amount of light and saturation. It is not that turquoise, purple, yellow and pink are feminine themselves, but it is the combinations of them that create the association. Based on this, one could then wonder if, in a more equal world the range of colours seen in the street view would change and what emotions they would then trigger.

3.4. Creating space with sensorial colour

There are numerous factors other than visual that affect how colour is perceived. The olfactive experience, tactility and even sound can all contribute to the experience of colour. In “Farvens format” (1998), “The format of colour ” Anne Kappel encourages to look at colour as a bodily experience where all the senses are involved, instead of its classical approach as a two-dimension visual décor. The experience of colour is always subjective, which means its sensual experience is that of nature too.

Colour in its sensuality can make us relate to personal experiences and memories, but it can also be culturally conditioned. As Kappel points out, colour and colour combinations can give us associations to a certain colour, taste, or sound and give rise to different feelings such as pleasure or uneasiness. For instance, green may be evocative of the smell of grass, lemon yellow may evoke a sour taste, and the colour grey may evoke olfactory sensations of smokiness. As pointed out earlier, Böhme writes about colours ability to contain cross-modal characters in relation to their materiality - a glossy light blue table can seem to be cold, a red velvet sofa to be warm or a white linen tablecloth can seem to smell fresh. These types of associations are researched in the field of cross-modal correspondences and synaesthesia, which will be expounded in this research in connection to the olfactive experience.

When creating space, or furthermore staging architectural atmosphere, it becomes important to take into consideration the sensuous sides of colour. Even if colour experiences are always subjective, some general principles of emotional connection and experience have been proven to exist. These connections advocate in the generating of atmosphere, for the researching of experience group. The more the architect understands the user of the space, the more he/she can create an atmosphere with the help of colour, that resonates with its experiencer.

4. Olfactive experiences in space
4.1. The perception of smell

Olfaction is considered to be the most primal and ancient of all the senses.\(^{116}\) It is strongly linked to our inner worlds and emotions and hence an essential character in the perception of architectural atmosphere.\(^{117}\) When talking about the olfactive experience it can be referred to in several ways: smell, fragrance, aroma, stink and odour are just to mention a few. In this thesis the olfactive sensation will mostly be referred to as an odour, as it neither has positive or negative connotations. However, it is worth mentioning that in some parts of the United States, and for many non-native English speakers the word “odour” generally has a negative connotation as a synonym for “stink” or “bad smell”.\(^{118}\) Furthermore, depending on culture the olfactive vocabulary doesn’t only vary in its connotations, but also in vocabular size. For instance, in an article by the Guardian linguist Asifa Majid compares speakers of the Aslian languages (found on the Malay peninsula) and to native English speakers in both olfactive vocabulary as in the ways they could describe different odours.\(^{119}\) As no surprise the speakers of Aslian languages were far more superior in both the ways they could describe odours as in how many synonyms they had for the word smell compared to the Anglophones.\(^{120}\)

It would seem like Western culture has kept a remote relation to the olfactive both in the ways it is represented in language as in how much is known of its perceptual qualities compared to the other senses.\(^{121}\) As Trygg Engen points out the perception of the olfactory is hard to articulate.\(^{122}\) An odour is made from many chemical compounds. Each compound is individually an odorant. An odour can then be made of one specific odour character or out of multiple combinations.\(^{123}\) On account of this molecular complexity and numbers of odour mixtures, odours cannot be measured on the kind of systematic scale that scientists use to measure the wavelength of light or colour, such as in the NCIS system.\(^{124}\) Shorty said, the number of odours is too high to be documented thoroughly. This might be one reason why the study of odour perception has no true great problem solver - the closest anyone has gotten is Henning in the 1920s with his classifications of odours in the geometrical form of a prism. The prism divides odours into six primal categories. 1) Fragrant like lavender or rose petals. 2) Ethereal like ether or cleaning fluid. 3) Resinous like resin or turpentine. 4) Spicy like cinnamon or nutmeg. 5) Putrid like faeces or rotten eggs. 6) Bunt like far oil.\(^{125}\)

Henning’s prism has been used as a base for a lot of olfactive related studies and can thus be seen as a useful research tool. However, it is important to note that the olfactive experience is too complex only to be left in a six-category-boundary as the Western language families have restricted the versatility of odor perception.\(^{126}\)

Cross-modal connections and optical input, such as colour, as well as the hedonics of the odour effect how the odour is perceived.\(^{127}\) How pleasant, unpleasant or familiar an odour is can directly change the atmosphere.\(^{128}\) How pleasant, unpleasant or familiar an odour can be is one reason why the study of olfactory perception has no true great problem solver - the closest anyone has gotten is Henning in the 1920s with his classifications of odours in the geometrical form of a prism. The prism divides odours into six primal categories. 1) Fragrant like lavender or rose petals. 2) Ethereal like ether or cleaning fluid. 3) Resinous like resin or turpentine. 4) Spicy like cinnamon or nutmeg. 5) Putrid like faeces or rotten eggs. 6) Bunt like far oil.\(^{125}\) Henning’s prism has been used as a base for a lot of olfactive related studies and can thus be seen as a useful research tool. However, it is important to note that the olfactive experience is too complex only to be left in a six-category-boundary as the Western language families have restricted the versatility of odor perception.\(^{126}\)

Some attitudes towards odours come from an evolutional place, but most of the different preferences

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attribute to psychological predispositions such as gender, age, cultural backgrounds and even sicknesses. 129 Not only do past experiences and the experiencer’s background affect the perception of the odour, but the odour itself may become a powerful cue back to the experience, as the olfactive experience is strongly linked to the segment of memory and emotion.

4.2. The olfactive experience and memory

The anecdote of French Novelist’s, Marcel Proust’s Madeleine cake moment is commonly used when displaying the strong connections between taste, smell and the autobiographical memory.130 According to the story, Proust is taken back to his childhood, with all its smells, colours and feelings by the taste of a Madeleine cake dipped in tea. At that moment, Proust becomes aware of how the simple stimulus of taste can evoke an aesthetic experience that is not limited to the experiencer’s present:

“... As soon as I had recognized the taste of madeleine soaked in her decoction of lime-blossom which my aunt used to give me, ... immediately the old grey house upon the street, where her room was, rose up like a stage set ... and with the house the town, from morning to night and in all weathers, the Square where I used to be sent before lunch, the streets along which I used to run errands, the country roads we took when it was fine.”131

Like Proust’s observation sense memories are emotional, creative constructions of the past, not governed by the will of the individual like remembering a spouse’s birthday, but spontaneously brought to life like an involuntary memory. 132 This famous instance of Proustian memory formed the basis of the Proust phenomenon, where sense memories are defined as the intense reliving of event from the past through sensory stimuli. However, human memory is more complicated than just those of sensory involuntary memories, as for the recalled voluntary ones. Human beings have several memories – there is for instance, the long-term memory, the short term, the one for knowledge, the emotional and the involuntary memories, as for the recalled voluntary ones. Human beings have several memories – there is for instance, the long-term memory, the short term, the one for knowledge, the emotional and the motor memories that are all activated and connected to sensory stimuli, hence olfactive experiences. 133

Even if olfactive memories are strongly linked to subjective emotional experience, sensorial memories can be collective. Moost wood, birch and tar, will probably make most Finns think collectively of a sauna, but when asked to describe the scent of my childhood home’s sauna only my family members have had enough repeated exposure to it to do so. According to Verbeek and Campen every area, nation and (sub)culture has that is its own collective olfactive memory. 134 This knowledge has lately been used in the field of interdisciplinary art. Verbeek and Campen takes Dutch-Japanese artist Maki Ueda as an example as she presents national collective smells in her piece “Scents of Holland”. The piece contains essential oils from goods that are stereotypically considered Dutch – like brussels sprouts, Dutch cheese, tulips and “speculaas”, a spicy festive pastry. Even though the target is a collective national memory, some of the connections might get lost in translation, as for example brussels sprouts might not have been a part of the experiencer’s culinary preferences.

In Krishnaraj Chonat’s “My Hands Smell of you” the art’s message relays on olfactory associations and collective memory. In the installation, the artist uses the scent of sandalwood to point out the risk of nature loss as a consequence of the modern world’s consumer behaviour. Sandalwood is a common holy tree in India which automatically amplifies the piece’s message for an Indian experiencer. However, as the piece also was shown in Centre Pompidou, Paris, it is most likely the message might have gone lost for some of the Western experiencers.

When speaking of odours and memory, it is not only in the field of art that their connection is being used. During the last decade, interdisciplinary projects working with the olfactive can both be spotted in the health care section as for educational. In collaboration with an aromatherapist artist Peter de Cupre created three sculptural “Smell Flowers” (2007) to an elderly home in order for the demented patients to find their way. The three sculptures had their own linked colour, scent and stational department, by which the residents could verify their location. 135

Furthermore, London based designer Peter Demidow used scents in the process of learning maps to elementary-aged kids. The project confirmed that children learn better when the senses are involved in the process of learning. 136 Odoors can also be seen in higher education contexts. Victoria Henshaw writes in “Experiential learning and olfactory architectures” of her experiences of using pots and other odour containers as educational help during her architectural lectures to give context or to evoke conversations from the pupils’ personal engagements and experiences. As Henshaw intertwines bodily sensations with the knowing, where teaching becomes a powerful, intuitive tool and where learning does not need to follow its classical definition of learning to remember things by heart.

4.3. Designing with odours in space

Odoors are ambiguous, ephemeral and intangible aspects of a space, and yet they compellingly connect to the individual. According to Toshiko Mori, the impact of odors is strongly felt even in the absence of a material artefact, making them some of the most efficient “immaterials” to use for the designers. 137 When designing with odours, the designer ought to understand the palette of odours to choose from, just like the palettes of patterns, textures, colours, sounds, and images that are used and

known in marketing, products and spatial contexts. This approach would also mean the need for the
designer to work in a physical world, as opposed to the virtual where most designing and inspirational
searching happens via design programs and image forums. 138

“Even before one begins to research on this subject, a designer is confronted with a material that
does not allow a visual representation conventionally.” 138

As Jity Capur puts it in the research article “Smells: Olfactive Dimension in Designing textile
architecture.” 140

When creating space with an olfactive experience, there are several challenges for designers to work
with. It is not only about bringing scent to space but as much about the control, removal and change
of it. This odour manipulation is somewhat tricky as every space have their own continually changing
ambient smell. In accordance with the writings of Gagarina and Pikturnienė the ambient smell is the
sum of all odour components found in the space such as odours from the static materials as also
from the more changing factors such as the experiencers bodies. 141 Practically speaking, this means
that the smell of space can only be controlled or changed to a certain point. Corbett writes about the
problematics of managing of odour and airflow. According to his research it has been a problem since
the time of the Enlightenment, where deodorisation was essential, and the amount of stink found in
the building was the measure for how successful the architecture was. 142 Until recent years, this has
dramatically affected the changeover to a smell sterilised consensus where the attempt is to create a
“clean canvas” through air conditioning and smart ventilation systems. However, as the attitude towards
fragrant spaces is starting to change, it becomes important to understand that controlling odours in
space is not only to remove unwanted by-products or “naturally” appearing odours but to manage the
scents that are brought into space. According to Diaconu, the management of odour consists of both
thoughtful smell introduction as manipulation of smell.143 This would rather mean that odours in spaces
cannot purely be designed cosmetically, as an undetached artificial element alienated from the already
existing odour in the space.

The introduction or manipulation of smell in a space can be done in several ways. As King Louis XIV
did by bringing some of his orange trees inside Versailles, adding vegetation to spaces is an ancient

way of both controlling and adding fragrance. Controlling, removing or overpowering unwanted odours by vegetation is also commonly used in more large-scale contexts such as urban planning. The Bitter orange trees in Athens, the Millhouse sensory garden in Sheffield, UK and the street plant on Chuncheon Road in Kumming, China are to mention a few. Commonly all of them are driven by the “design factors” of humidity, temperature (heat) and airflow. Moisture and heat enhance the odours and airflow carry them in different durations, through different distances and in various intensities. The three components can also be seen as design drivers in an architectural context. For instance, in the context where an added odour is needed only for a certain amount of time, it could be periodically released or decreased by adding or removing heat or moisture in the space. In relation to staging atmosphere using this principle could in addition to its practicality, add a level of a poetic notion like found in the work of Karin Brack.

Moreover, odours can be catalysed through an interactive cross point where scale and body, and texture gets a different meaning. As odours can, for instance, be woven into the fabric, applied on plastic or glass or diffused to water elements, the level of the experiencers interactions becomes essential for the nature of the experience. Seemingly the art world has had an easier time in approaching the ephemeral of these experience components. In Kapur’s exploratory installation “Speculate, Collaborate, Define” (2007) smells were released through interaction. In one of the pieces, visitors were to walk among strings attached to fragrant filled balloons. When catching a balloon by holding the strings, it caused smells to be released in the space. The exhibition held other several interactive installations where the idea of scale, odour captured textiles, and interactions were played with. Kapur writes about her exploration in the following way:

“How using these methods, different textile expressions of smell for spatial interactions were proposed; these textiles were designed for interactions such as folding and unfolding, opening and closing, rubbing and pressing in order to activate and release smells.”

Odours are haptic, bodily and can thus be catalysed in various ways such as interactive and external heat. As the marketing world, companies and designers are growingly starting to understand the power of creating an experience that attests olfactory aptitude, the ways of bringing odours to space via technology is increasingly becoming sophisticated. Companies such as Samsung and Sony distribute signature scents in their stores by diffusers. Luxury hotels such as Fairmont are teaming up with perfume houses and making their signature scent that is not only experienced through the hotel’s

diffusers but have the possibility to be experienced later on in the residential homes through purchased candles and scent sticks. In this way, the emotional connections grow stronger and last outside the hotel building’s boundaries. However, as odours are becoming a more everyday extension both in commercial, public places as for our homes, the expercer is becoming increasingly sensitive to what a successful spatial olfactive design is. According to Victoria Henshaw, the last thing we want to feel when exposed to artificially added scent is the possibility of being “unwittingly manipulated”. When then creating successful scented spaces, especially for a broad commercial audience, there are five design principles to follow - authenticity, suitability, quality, intensity, and the multisensory.

Firstly, it is crucial to the expercer that the scent feels appropriate for its given context. For instance, one of the most popular products of aroma companies is the scent of freshly baked bread. This scent feels authentic when experienced in the supermarket’s bake station, but in contrast, if put in a doctor’s office, it would rather raise question marks than pleasantness. The odour must, in addition to its environment, be suitable for the targeted experience group. The younger targeting clothing company Abercombie and Fitch are well known for their bold move of a topless greeting male staff. Additionally, they raise the eye brows of the clientele’s parents with a provocative spatial scent used in the store, matching the straightforward sexual marketing. The heaviness of scent stays on the bought clothes elongating the brand experience. As the scent on the clothes is now associated with sexiness, it gives the message for the parents to “keep out”. The strong scent becomes a mark of territory and generational experience.

Secondly, even if in the case of Abercombie and Fitch, the success of their olfactive experience is relayed on “cheap” and “young” associations, according to Sokell Thompson even bigger audiences are learning to understand scent quality and importance of ingredients and constructions. The substantial increase in the selling of high-end scented candles and scent sticks are clear proof of the consumption change. This phenomenon does not only exist because of a risen olfactory awareness but as candles from famous olfactory brands such as Diptique and Frédéric Malle are spotted in the houses of influencer’s they become essential pieces in the attempt to be a part of an otherwise unreachable world. For instance, after fashion designer Rick Owen exposed his taste for perfume house Diptique’s 60euro Myhre candles, they got sold out almost in every distributed country for several months.

Additionally, intensity has a big role when creating space with olfactive experience. Even if the perception and taste for smell are ambiguous and different for each person, they commonly all become unpleasant when overpowering. The threshold and the point when smell becomes overpowering are subjective, as our noses grow to neutralise familiar smells and, in that way, decrease the intensity. In creating public spaces, it is vital to consider the most sensitive noses. Thompson points out how some hotels might choose to put their signature scent through the ventilation or air-condition system, but in matter-of-fact it would be a better solution to deliver it in layers, such as spotted candles, diffusers, and cleaning appliances. In contrast, art contexts are not as sensitive to intense odours, as it is assumed that the spaces are not for long term practical use but short-term experiential ones.

Sokell Thompson impresses the many factors to take in consideration when designing with odour. As earlier explained, when it comes to the olfactive experience, one of the most significant factors is its relation to the multisensory. Space is never experienced in one single moment, but as it is a journey, all sensory input is needed for a cohesive experience, mood and architectural atmosphere. This will be explored in the next chapter as the thesis dives into the subject of odour and staged atmosphere.

4.4. Odour and staged atmosphere

Odour has a powerful ability to create or change moods and atmospheres. It is like the light in a room that makes the experience of its surroundings go through its filter. However, there is little written text about odours concerning staged atmosphere. Instead, they are commonplace in the world of theatre and contemporary art. As the boundaries between art and architecture are becoming more volatile, a closer look on how odours can change a place or be used as a generator of atmosphere can be drawn from the field of the arts. Sally Banes speaks of six different ways in which odours can be used in performing arts, theatre and dance.

1) to illustrate words, characters, places and actions
2) to evoke a mood or ambience
3) to complement or contrast with other sensory channels
4) to summon specific memories
5) to frame a performance as ritual
6) to serve as a distancing device.

In the following section, different cases and ways to implement such olfactive experiences to create or change architectural atmosphere will be presented.
Odours can be approach as intuitive information. They can have both semantic as hedonic value, which makes them unique in the way they can illustrate stories and messages and thus change the way their surroundings are looked at. Some of these messages are learned from an early age, which makes the experiencer’s response highly intuitive. Anna D’Errico speaks of the Japanese Koh-do Ceremony, translated literally as “listening to incense” in which aromatic wood is burnt.\textsuperscript{157} What is unique about the Koh-do is its aesthetical expression within the Japanese culture. As in many other cultures fragrances where first meant to cover body odours and became later a tool for seduction, but the Japanese did not appreciate strong odours on the body and instead burnt incense in their spaces. By this, the Japanese detached themselves from the sexual connotations of perfume and left the experience of scents to a performative level.\textsuperscript{158} This detachment has made the signal for burnt incense very different for a Japanese audience than for a Western which, when experienced, would also have a different effect on how the ambience of its surrounding would be perceived. In addition to this kind of cultural semantic value, odours can change the mood of a place short termly. This, for instance, by conveying messages such as how the smell of gas warns of danger or the smell of freshly baked bread informs its availability. The function of these types of short-term odours is usually to convey information rather than giving an aesthetical contribution or engineering atmosphere.

In line with D’Errico’s examples odours have the power to change atmosphere, or amplify an already existing one. As some odours can be felt as either soothing, exiting or relaxing, the place they are experienced in are most likely to feel that of too. Usually, with the hedonics of the odour, it can change the feel of the space to its opposite. It is not uncommon for the streets of Paris to be described as having a pleasant atmosphere with the fresh breeze from the Seine and fragrant odours of freshly baked bread and blooming trees. However, during the hottest time of the years, this can change as the stank of urine and sewer water takes place. Even if every other atmospheric generator is the same, the stank makes the experience entirely different. Like Pierre Chauvet famously detested this in “Essai sur la propreté de Paris” in the following way: \textsuperscript{159}

“One does not know, in summer, where to rest without inhaling the odour of putrid urine.”

Odours can also do that of the opposite. It is not unusual to use fragrant room sprays to give the feel of a new and cleansed space, even if reality the vacuumer would not have even been touched. Artist and designer Zsofia Kollar plays within this theme on an even deeper level as she makes spatial textiles a new and cleansed space, even if reality the vacuumer would not have even been touched. Artist and designer Zsofia Kollar showcases how set attitudes can change through olfactive experiences. This is one way to use the relation between memory and odours like a powerful tool in design processes.

Odours are complex when used in space - this both in their structure, as in their behaviour, but also in the way they are perceived differently according to subjective memory and cross-modal associations. When staging atmosphere, it is essential to understand its audience and the space its emitted in. This can be done to a certain level through cultural analyses, user profiling and research. Good design becomes then “the result of careful thinking and a good brief” as Claire Sokell Thompson says it.

When engineering atmosphere and creating smellscapes, it is not only useful to be thinking of its audience but also in what ways it is created. In artist Julia Feuer-Cotter’s olfactive installation “Smell of Change” the significance of collectively created smellscapes is showcased. The installation uses evidence from the Kaktovik community in Noth Alaskan oilfields to create the sense of their place through smells. The data for the spatial olfactive installation was retrieved from the community’s women. The different odour accords were decided collectively so that they would represent the women’s story in the best way possible. In this way, the installation “capsules” the atmosphere of the Kaktovik community and recreates it in a new spatial context through the reliable olfactive implementation to an audience that would otherwise not get to experience it. In this way, the installation stresses the importance of collectively done narrations through olfactive methods, but also the importance of embodied cultural experiences. The success of the installation can thus be seen in that it is not one creator’s interpretation or objectification of an ambience or story, as well as its power in sensorial narration.\textsuperscript{160} This kind of co-creational engineering can be implemented more practically when engineering atmosphere for a more specific architectural context.

Odours have the ability to bring a performative character to space. Many holy buildings such as temples and churches use incense or other fragrant burning material to emphasise the separation from the “outer world”. In this sense, odours can create space within spaces. Theatre and garden design also use odours to mark specific places from the overall area. For instance, in my childhood garden, my mum had planted roses in front of backyards terrace. Some mornings the roses would smell so strong that they started to function as a marker between the terrace and the rest of the garden. In a way, the traditionally feminine seen rose fragrance amplified the already existing ambiency of the terrace with its precious textiles and light pink walls.

When creating space with olfactive characters, the design process should take in mind all the various dimensions of the atmospheric experience – time, emotions, function, location and above all, the other senses. According to Sokell Thompson, one of the biggest mistakes when using olfactory attributes


\textsuperscript{159} Chauvet, P. (1797) “Essai sur la propreté de Paris”

is, in fact, not designing with the other senses in mind. ¹⁶² When creating architectural atmosphere, it is vital to conduct a sensory audit and by that ensure that the odour is constructed in context. Even if the term architectural atmosphere indicates some stability by being “the unique character of a place”, space is never experienced only in one moment, but as a journey through time which would indicate for the sensorial qualities to be that of nature too. If all the senses are equally stimulated at once, the result cannot be anything else than sensory overload. The senses need to be adjusted in “volume” relatively to each other. Claire Sokell Thompson sees Hotel Costes as an excellent example of just doing that. When entering the hotel, one goes through a “sound gallery” and lightly scented wooden passage. When arriving in the main hall, one is greeted of lush deep coloured furniture and soft light, giving a sensual feel to the space. The soundscape has a soft textural feel to it but is not overpowering at any given stage. As the soundscape fades out, a seductive scent of roses and spice is introduced to the space. The Hotel’s brand has become famous for this intelligent use of sound, feel theatre, taste and odours where all the components create a holistic aesthetical experience. ¹⁶³

However, when talking about the olfactive experience in relation to the other senses, one cannot only speak of relations and volumes. As for how we as humans experience odours is not only through our noses but, also through touch, light and above all colour. In a matter of fact, recent studies have shown that olfactory experiences represent a domain that is particularly rich in cross-modal associations. Bringing a scent to a room can then change how the colours in the room are perceived, but also the colours in the room can change the perception of the scent. For instance, according to Spence and Ngo the colour green is highly associated with both the scent of apple as for the scent of pine. ¹⁶⁴ Based on this one could argue that making space with the primary colour of green could be felt differently depending on if the “green room” would either be scent-free or have a scent of apple or pine. Even if this example simplifies the phenomenon, it simultaneously showcases the importance of bringing the subject of cross-modal correspondence to the discourse of staging atmosphere and “new aesthetics”. Next chapter will dive into the cross-modal phenomenon and its relation to space, colour and the olfactive experience.

5. The cross-modal experience
5.1. Crossmodalism, the Futurism of the 21st century

Sensorial design, Böhme’s theories of “new aesthetics” and crossmodalism are examples of counter forces to design limited to visuals. Sensorial design aims to consciously extend the sensory richness of products, environments, services. New aesthetics argues for creating space with sensorial holistic attention. Crossmodalism serves as a cross-disciplinary movement which brings attention to sensory input and cohesive experiences.

The cross-modal movement started in London in 2013 and has since then extended cross-borders with projects in cities such as Berlin and Stockholm. The cross-modal community focuses on bringing together talents from different disciplines to make cohesive works. The movement is an essential commentary on the phenomenon where the pool of knowledge is growing more prominent, but where the canals between them are almost non-existing. Take, for example, academia, where a perception-experimental-psychologist will rarely interact with a designer to enrich each other’s work. Still, it is known that it is in the catholic where new senses are born.

Crossmodalists have brought together a diversity of different fields. The movement has seen a line of cutlery designed by applying neuroscience research to eating behaviours. It has showcased a piano performance on a lake, while swimmers explored scented origami lilies and it has even taken a team to the Amazon to record smells and sounds for a multisensory VR production. According to lead crossmodalist Nadżib Achaibou one of the most emotional and incredible crossmodal experience was arranged in July 2018 - The First International Crossmodalist Symposium, held in a 13th-century monastery in Tuscany. Over two days, the participants brought an element of their work or passion for the joint group. This resulted in neuroscience lectures, a morning multisensory yoga lesson, an investment banking workshop, a sensory wine experience and a classical piano concert at dawn.

The fundamentals on which the movement stands on is not a new idea. Across history, many have done exploration across fields, from DaVinci and the court of the Medici to the Italian Futurists. Crossmodalism has been compared to both Dadaism and Futurism that flourished in the immediate aftermath of World War I. They challenged through art, literature and political engagement, the violence, nationalism and inequality that had begun to take hold in the early 20th. They were a loud commentary on the ongoing changes in postwar society. In “Inhaling Futurism” Caro Verbeek presents how olfactory performances and their cross-modal character were used as a part of the Futurist manifesto. Verbeek sees artist Fedele Azari as one of the leading characters in the creation of the sensory approach to futurism with his elaborate entitled publication “La Flora Futurista ed Equivalenti Plastici di Odori Artificiali” (“The Futurist Flora and the Plastic Equivalents of Artificial Odors”). The manifesto discusses smell as a direct medium (see Azari, 1924a) and contains as Veerbek puts it “all the Futurist traits: the typical bold and expressive use of language, the role of education, an emphasis on synesthesia, the claim of originality, the shock element, and the interest in bodily or lower senses.” The analogy between crossmodalism and Futurism is inevitable. Azari laid a foundation on which other avant-gardists started to explore. “La Cucina Futurista” (The Futurist Cookbook) a text addressing taste was one to follow Azaris publication, resulting in the infamous sensorial dinner. The “Tactile Dinner Party” that left none of the senses out was imagined and described by Marinetti and Fillia. According to their instructions, guests were supposed to wear tactile pyjamas covered with different materials such as sandpaper, sponge and silk. The dinner partner was chosen in complete darkness, waiters danced the food in with grand geometrical movements, and each course was addressing a certain sense modal or cross-modality. It was not unusual for aeroplane propellers to diffuse a variation of smell from aluminium and the smell of battle to lavender, carnations and vanilla. Today, Martin Butler organises Neo-Futurist Dinner - The Chromatic Dinner, that is based on a similar concept. Butler speaks of the event as “eating experiences that aim to re-think the way in which the world of food, art, and science come together, resulting in a multi-sensory dinner scene.” The dinner was last time held during Vienna Design Week in september of 2019 aligning crossmodalism’s position in the contemporary world.

175 Veerbek puts it all the Futurist traits: the typical bold and expressive use of language, the role of education, an emphasis on synesthesia, the claim of originality, the shock element, and the interest in bodily or lower senses. The analogy between crossmodalism and Futurism is inevitable.
The crossmodal movement, the times of dadaism and futurism share many similarities. Each generation has changes and challenges of their own; however, commonly there is always going to be those who raise their voice as a counteract. The world of art has always been a realm particularly rich in a societal commentary. As futurism can be seen as a counteract to the political times in its bold mixture of sensory application, crossmodalism is a reminder of a more meaningful way of being in creating sensorially and cross-disciplinary experiences in an increasingly digitalized world. Additionally, it is a well-known fact that the Futurists did not shy away from shock elements. Similarly, crossmodalism boldly compounds craft with the bodily, which when viewed from a spatial context results in settlement of art and architecture.

5.2. The cross-modal perception and synesthesia

During recent years contemporary psychological and neuroscientific research has been starting to focus on perception, synesthesia and cross-modal correspondences. This trend has also been appearing in design research context, as for instance Arnkil’s research paper *Mitä silmä kuulee ja korva näkee - maalaustaiteen ja musiikin yhteyksistä (What the eye hears, and the ear sees - the connection between painting and music)* discuss the topic of synaesthesia in the connections of colour and music. Also, in Haverkamp’s book “*Synesthetic Design: Handbook for a Multi-sensory Approach*” the matter of cross-modalism in a design context is highlighted. Still, it would seem like that these perceptual definitions have remained ambiguous in the general understanding of their meanings.

According to Haverkamp the definition of the cross-modal perception is the perception that involves interactions between two or more different sensory modalities. A cross-modal experience can be an association between a colour and a scent, or it can be the connection between a flavour and shape, or it can even be a perceptual experience between sound and surface. These interactions occur naturally in a small group of people with the uncommon neurological condition called synesthesia. The term synesthesia derives from the Greek word “*syn*” (together) and “*aesthesis*” (sensation) explaining the essence of its meaning. Synesthetic associations can be made between sounds and forms, taste and shapes or odours and colours and are usually permanent associations for the synesthete individual. Common associations for the synesthetic individuals are colours with numbers and letters, or taste with shapes. However, the term is used with a distinctly different meaning, in different contexts by different studying authors.
authors. Even if only six to eight per cent of the world’s population can say they have this condition, it has been studied that also non-synesthetes can experience cross-sensory associations. This phenomenon has caused confusion and mixture in the usage of the terms. Haverkamp posits a strict separation between genuine synesthesia and the common phenomenon of cross-sensory perception, unlike the French phenomenologist Maurice Merleau-Ponty who concludes his theory of perception with the claim that “synesthetic perception is (...) the rule” 184 and by this indicating to not distinguish a difference between all possible forms of cross-sensory connections. In an architectural context theorist, Gernot Böhme also writes about synesthesia in connection to architectural atmosphere, but when carefully examined, it would seem like the same mistake of using the term synesthesia when referring to cross-modal associations.

In contrast to genuine synesthesia where the associations and sensations are always intuitive, cross-modal correspondences are dependent on the context they are experienced, further confirming their separation. The cross-modal correspondences occur either spontaneously or intentionally and can rise for multiple reasons. 185Some cross-modal correspondences can be structural, indicating a certain level of universal association, but they can also be cultural or subjective, as our perception is influenced by learned associations. 186

The cross-modal sensory research is not only relevant in the research of psychological origin, but as multisensory perception and multisensory integration are becoming more frequent themes in design, cross-modal perception theories have made their way to the field of spatial design. In architecture, the better cross-modal correspondences are understood and learned, holistically experienced spaces can be made. Furthermore, as this thesis argues for the importance of creating space with the aim of meaningful colour- and odour use, in line with Böhme’s theories of “new aesthetics” looking into the particular cross-modal correspondences between colour and odour becomes inevitable.

5.3. The cross-modal correspondences between colour and odour

According to Spence recent studies have shown how olfactory experiences represent a domain that is, in fact, particularly rich in cross-modal associations. 187 Whereas the correspondence between odours and touch, or properties that are even more typically linked such as odour and taste can be straightforwardly explained by associative learning, other matching such as odour-colour are is also worth mentioning that different pairings of modalities may have different types of cross-modal correspondences: A tutorial review” 189 cross-modal correspondence can take form in the three previous mentioned ways. With structural correspondences, it is applied that due to the interplay of neural correlations, correspondences arise. They are usually universal and not culturally binding. Statistical correspondences are on the contrary learned and occur when two stimulus dimensions are routinely correlated in the environment - this for instance when eating strawberries, the fruity odour will be most likely linked to the colour red. Semantically mediated correspondences arise, on the other hand, due to language, hence strongly linked to the correlation of culture.

The “Cross-Cultural Color-Odor Associations” research inquired the question of how and to what extent which cross-modal correspondences between olfaction and colour mediated from, in regard to culture. This by testing the cross-modal colour-odour correspondences in 6 different cultural groups, using a standard set of 14 odours and asking the participants to make corresponding and noncorresponding colour choices for each odour. The results showed that while surely consistent within a culture, the colour-odour cross-modal correspondence differed across cultures. This pattern can hence be seen as the argument against the idea of colour-odour associations being structural, as earlier explained, structural correspondences are mainly universal and not culturally specific. Instead, statistical and semantically-mediated learning is much more likely to mediate the cross-modal correspondence. 190 It is also worth mentioning that different pairings of modalities may have different types of cross-modal correspondences. Some colour-odour correlations are much stronger learned from experience such as yellow-lemon as others can emerge from language. This is something that the research did not take into account and can have influenced their results. 191

Moreover, as Spencer points out, it would seem like in addition to learned colour-odour associations, both perceptual and semantic factors play a significant role in the way associations are made. As colour brightness correlates with perceptual attributes of odours, odours that are more irritating, intense, or unpleasant are associated with brighter colours and more familiar and identifiable odours are associated with more saturated colours. When staging atmosphere, this information becomes essential as one can amplify the brightness or saturation of the spatial colours to create a certain mood or emotion. There are many possibilities in using the phenomenon of cross-modal correspondence in staging atmosphere. As colour-odours are particularly rich in their associations, and mostly culturally learned, understanding the context and audience for space becomes essential to an even greater extent.

5.4. Cross-modalism, synesthesia and staging atmosphere

Lessons learned from synesthesia, and cross-modal research may be extended to the "lived world" and help in the development of an integrative approach to design and architecture. Still, it is not yet common to practice design or architecture for the whole range of human sensory capabilities. According to Haverkamp designers focus on designing for the senses of sight and hearing or sight and touch, while architecture has merely left sensory research and haptic knowledge dusting on a shelf of theory. 194

Böhme is one of the very few architectural theorists to consider the connection between atmosphere, synesthesia and cross-modal correspondences. However, Böhme uses the term synesthesia loosely. It remains unclear if he is referring to the term as a linguistic metaphor (e.g. blue is cold, red is warm), the synesthetic sensation experienced by a synesthetic individual or in fact the cross-modal associations. Although Böhme’s writings are not entirely in line with those found in the psychological field, they can be seen as a valuable resource to strengthen the discourse on cross-modal associations and staging atmosphere.

In “Synaestesiae within the Scope of a Phenomenology of Perception” Böhme expounds cross-modal characters as part of the “new aesthetics.” 195 The new aesthetics has become a general theory of perception where atmospheres are the first facts to take in consideration. 196 It would seem like the theory of perception, and the theory of cross-modal associations are treated in precisely opposite ways, like Böhme puts it “...namely in view of their individual sensory components, thereby presupposing their number and diversity.” 197 However, as atmospheres are experienced in their entirety, it becomes crucial that cross-modal associations must be taken into consideration as a whole in the process of staging atmosphere.

As earlier pointed out, it would seem like in the discourse of architectural atmosphere the relationship between object and subject is an opinion divider amongst its theorists. The attitudes also affect the way cross-modality is looked upon. Atmosphere can be seen as something “out there” or as bodily sensation created within, or as the intersection of these two. According to Schmitz, specific experiences, thus also atmospheres are characters of bodily sensation, whereas Wilhelm Wundt sees the perceivers feelings like the ground from where also sense-perception find their unit. 198 Wundt’s theories indicate that the unity of the senses, in other words, the cross-modal associations do not exist in a relationship between them, but within the way they are affecting our feelings and in that sense, in the way they produce the same or related emotions and effects. Böhme’s theories lay somewhere in between. As earlier explained, he sees atmosphere as a quintessential “between”-phenomenon. For Böhme, the atmospheric experience is where the body embeds the human together with his/her multifarious ways of perception, sense of experience and surroundings. The experience of atmospheres can and usually is modified by our mental state, but as Böhme lays it: “...for the sake of synesthesia, hold on the idea that they are experienced representationally.” 199 Cross-modal correspondences are characters of the perceived objects, and therefore also of atmospheres. They are not only projections of our bodily sensations nor are they simple linguistic metaphors that transport specific characteristics from one sensory area to another, but cross-modal correspondences are also quintessential generators of atmosphere. 200

“Synesthesia are characters of atmospheres. Their relation to sensory-specific data is that these are mutually substitutable generators of atmospheres.” 201

As Böhme ends his article.

However, even if it can be clearly stated that cross-modal relations are in-matter-of-fact characters of atmosphere, the knowledge in how to use them in the staging atmosphere is vague. As colour is particularly rich in its cross-modal relations, it serves as an excellent example of a generator of atmosphere. Böhme speaks of how Goethe sees colours as sensual beings that give specific energies to space. He uses the colour blue to attribute colours’ tendencies of mobility as an aesthetic character, but also what their cross-modal relations can mean in the experience of space. 202 Entire rooms can be papered in blue, which could then be experienced, for instance as dark, cold or empty. However, as blue does not have a monopoly on these emotions or energies, one could then argue that in generating a character of coldness, blue could be replaced by something of the same character like a smooth metallic surface, or by a certain “cold” lighting. Also, the blue in the room could then be

amplified by bringing these types of elements, but it could also be reduced by bringing sensory input of opposite character. In other words, blue can feel colder with a bright light, but how does the blue feel when a “warm and spicy” scent is released in the same room? Cross-modal correspondences seem to be particularly hard to decipher. Like Böhme points out their complexity in relation to felt space might be one reason for the meagre amount of theory found on the topic.

Cross-modal relations can vary from culture to culture, but can also be cross-culturally experienced. However, for those who work in aesthetic professions, it is essential to be able to recognise these connections, the mutual substitutability of generators and consequently employing them in the design work.

Conclusions of Part A

To conclude the notion of staging of atmosphere has primarily been researched as part of a phenomenological and an architectural theory discourse. In Part A architectural atmosphere has been looked at in its relation to object and subject, the staging of it and its factors. In Gernot Böhme’s writings it is additionally linked to the notion of “new aesthetics” where the understanding of cross-modal correspondences becomes an additional atmospheric factor. As this thesis has laid its focus on the particular cross-modal relation between color and odour, their behavior and design principles when utilized in space have been further explored.

The thesis part B will showcase my proposal on using the knowledge of cross-modal relations as a part of staging atmosphere. This will be done in the form of an installation called “Staging Atmosphere”. Background, process and the exhibition will also be presented in Part B.
Part B
6. Creative project
6.1. Installation “Staging Atmosphere” at the Senseware exhibition

This master thesis’ Part B continued in exploring the correspondences between colour and odour by a cross-modal association test. Based on its results, a creative study was done, resulting in a spatial installation. The final artwork called “Staging Atmosphere” was presented during Helsinki Design Week in September of 2019. The installation was a part of Senseware exhibition which Heli Juutil and I organised and curated. It took place in Ivana Helsinki’s House in Marjaniemi, Helsinki and aimed to showcase Nordic talent and know-how within multisensory, colour and material-based design. In addition to my work, pieces from designer Heli Juutili, Hanna Whitehead and Shane Schenck were exhibited. The exhibition lasted for three days and included a design talk event, sponsored by Aalto Experience Platform in which all the designers discussed their work. The installation was additionally sponsored by Abi-laatat, Ivana Helsinki House and Finnish Design Shop, and done in collaboration with Frantsila Herb Farm, Bulba and Suomen Lasitehdas.

6.2. Colour and odour cross-modal correspondence study

I started the thesis’ Part B with the execution of a cross-modal study. I was hoping for the study to result in giving a direction in which odour-colour combinations could be used in the actual part of this thesis. There were a few things to take in consideration for its conduction. According to Charles Spencer’s research, it would seem like in addition to learned colour-odour associations, both perceptual and semantic factors play a significant role in the way associations are made. Cross-modal correspondences therefore include both subjective and culturally learned elements, which makes them that much harder to decipher. However, Charles Spencer’s and Kim Ngo’s research showcased that people are in-matter-of-fact capable of intuitively matching sensory modal input in rather simple settings. Also, the research indicated that a small amount of participants could already provide insight for a hypothesis and by that the research gave an approachable framework for the association tests of my own.

In my small-scaled study I was particularly interested in focusing on the ways odours are associated with a given set of colours and which emotions were emitted by those associations. The study was meant to explore the participants’ scent associations and expressions rather than test their abilities to recognise or identify the scent. Also, the study was intended to acquire a comprehensive understanding of how people perceive scents, imagine scents, generate scent association, and how they express these emotions. It was not conducted to give robust statistics.

6.3. Testing and data collection

My cross-modal study was small-scaled and done in two phases. Phase one aimed to give general directions in understanding the cross-modal associations between colour and odour. In phase two, I created a scent of my own with components selected from the aroma oil company’s, Frantsila’s scent library. The created scent was then tested in its cross-modal relations to colours and emotions. The created scent was based on findings from phase one, with the production taking place three weeks after. The final installation was based on the findings from phase two.

The study’s phase one was done with 10 participants. However, as Spence points out, general conclusions can be made from even small groups of people regarding cross-modal associations. The participants were chosen based on nationality, age and gender to form a diverse test group as possible. The study was conducted with people from five different cultural backgrounds: 4 Finns, 3 Swedes, 1 Frenchman, 1 Italian and 1 American. Despite some participant changes between phase one and two, the cultural representations were identical in both phases. The change of some individuals was solely because of time and availability factors.

In phase one, participants had to a) combine scent with a colour b) combine scent with colour combinations c) combine scent-colour combinations with description. Both phases of the colour-odour association test were conducted in a “neutral” space where ambient odours and additional colours could be found as little as possible. All the scent samples were presented anonymously, and the colour samples were arranged according to hue. The whole process was recorded by a voice recorder, camera and notes, and all the data was interpreted afterwards.

In both phases, colour categories were selected based on the thesis colour perception research. They were taken from the colour circle - adding or reducing the amount of hue, saturation and light to get a colour spectrum as broad as possible. This decision was done as the theoretical part of the research showed that saturation and brightness have the most to do with which emotions are experienced

From the cross-modal study
Phase one of the test was done in six steps. 1) In step one practical information and a small warmup was given by asking the participant what colour they would combine with a presented sample. 2) In step two all colour and scent samples were presented. 3) In step three the participant was asked to combine each scent with one colour. The same colour could be used multiple times with a different scent. 4) In step four the participant was asked to combine each scent with a colour combination. Each colour combination could vary in number of colours from two to five. 5) In the fifth step the participant was asked to add adjectives and descriptions to the already created combinations. 6) In step six the colour-scent combinations were analysed together so that the participant could give further insight into what they had been feeling, thinking and intending. Participants’ descriptions on scent and association are presented in tables on pages 77 to 80.

Phase two was done in exact same steps, only there was just one scent for the participants to combine.

6.4. Result and findings

My cross-modal study’s results show common cross-modal correspondences amongst the participants. Generally, the three most usual colour and scent combinations are different shades of yellow with the scent of lemon juice, stronger shades of yellow with lemon oil and different shades of cold greens with the scent of eucalyptus. It would seem like as lemon juice is mild in its scent; the participants chose colours and colour combinations with a high amount of light. In contrast, the lemon oil, which is stronger in its scent is combined with colours with stronger hues but also associated with the colour yellow as the lemon juice is too. Other scents found in nature such as sage and eucalyptus are almost unanimously associated on a spectrum of blues and greens, usually with a high amount of saturation.

Also, all participants combined colours with a hue from a red-yellow spectrum with the spicy scent. Other unfamiliar scents, such as ylang-ylang, (which is a flower in Asia and hence not typical for a European audience), are associated with bright colours. These results are in line with Spencer’s findings as according to his research odours that are more irritating, intense, or unpleasant are associated with brighter colours, and more familiar and identifiable odours are associated with more saturated colours.

The difference in the results of colour-scent combinations and colour combinations with scent is very vague. The participants have mostly combined the solid colour, with either other colour of the same amount of light and saturation or within the same hue. When looking into the combination of colour, scent and word associations, there are more insights into why some colour combinations are being made. For instance, one participant describes the scent of nutmeg as hard and unsettling and has picked a colour combination that according to traditional colour theory is “clashing”. Similarly, one participant describes the scent of eucalyptus as soothing and has picked a colour combination that is in harmony. The results can indicate that colour-odour associations are also based on colour combinations rather than only one colour.

Moreover, it would seem like the participants had an uneasy time in describing the scent and colour combinations. Mostly, adjectives were ungenerously used and instead described based on already existing things. The difficulty of talking about odours is established in this research. Well executed research suggests that language and olfaction are poorly interconnected. Likewise, the participants in this test frequently reported the difficulties in expressing the scent and colour perception through verbal description. These difficulties can have affected the outcome of this study, especially in the case where the participant did not communicate in their mother tongue.

However, this colour-odour study supports that cross-modal associations do exist when people are...
being asked to express scent experiences. In the study, the scent of eucalyptus is perceived as one of the most pleasant scents and described with words such as “soothing”, “calming”, “fresh”, “pleasant” and even “religious”. The participants that could not come up with adjectives confirm this anyhow, as descriptions such as “forest-like” and “sea-like” are commonly associated with the previous adjectives. The lemon-based scents are described as “fresh” and “exciting”. Ylang-ylang and nutmeg are the least liked scents with descriptions such as “overwhelming”, “intense” and “hard”, confirming the theories of Victoria Henshaw that state too strong scents of being inherently unpleasant. Lastly, some general grouping can be found – Scents that are described as “earthy”, “hard”, “old” or “dark” are combined within the colour group of red (to brown), with little light. Scents that are described as “soothing”, “fresh” and “natural” are combined within the spectrum of yellow-blue and with a lot of light and saturation, and scents that are portrayed as “fake” and “artificial” are combined with colours of high saturation.

Phase two’s findings are mostly in line with phase one’s. The constructed scent was done with the combination of eucalyptus, sage and introduced with a small amount of a new odour component, petit grain. The scent combination was based on the adjectives and colours that had been associated with the two first mentioned scents. This selection was done solely on my subjective preferences with the aim to stage a wanted atmosphere. Amongst the adjectives that resonated with me were, “religious”, “calm” and “earthy” and preferred colours tones of greens, blues and lilacs, which had been associated with eucalyptus and sage.

Eucalyptus was the most dominant component in my constructed scent. However, the peppery tone of sage and petit grain cut down the sweetness of it. Interestingly, most of the colour associations staid the same for eucalyptus and sage as such, as in the new combined scent. The only prominent change was the increased association of lilac and orange. The scent was described similarly as eucalyptus and sage was done in phase one, additionally some of the participants found the new scent less familiar and harder to articulate. Descriptions such as “out of this world”, “spa-like” and “dreamy” became the new emotion triggers and set the tone for the thesis next phase of making the final installation. The final installation is presented in the following chapter.

<table>
<thead>
<tr>
<th>Test 01</th>
<th>Combinations</th>
<th>Description</th>
<th>Test 02</th>
<th>Combinations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemon juice</td>
<td>Summery Vanilla young</td>
<td></td>
<td>Lemon oil</td>
<td>Fresh Citrusy</td>
<td></td>
</tr>
<tr>
<td>Eucalyptus</td>
<td>Fresh Sea-like</td>
<td></td>
<td>Ylang-Ylang</td>
<td>Capturing violet</td>
<td></td>
</tr>
<tr>
<td>Pine-oil</td>
<td>Cleansing</td>
<td></td>
<td>Tar</td>
<td>Powdery Old</td>
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</tr>
</tbody>
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TEST 09, 10

Phase two
7. Installation
7.1. Background

In the process of creating, it has become imperative for me to leave room for both physical explorations as well as for in-depth research. I am interested in the philosophical as well as the ephemeral aspects of the space's character that is not divided into the binary contrast of art and architecture. This has resulted in creating conceptual spaces, balancing between art and architecture, which also became a prominent feature in my thesis' artistic project.

Furthermore, it has become essential for me to work from premises other than only trying to create visually pleasing end products. In the context of this research, inspiration was not only searched on image forums such as Pinterest but taken from "real" sensory experiences. However, to find inspiration without the comfort of the internet is a scary process.

I decided to explore my personal relation to scent, scents and memory by writing essays. As my mother tongue is Swedish, the texts were written in Swedish too. I did this in order to express myself to the fullest, without needing to put energy on grammar. Inspired by Proust, I dug in my most profound memories of early experiences of home, my family's summer place and my grandmother - finding secure emotional connections and aesthetic memories.

Developing my relation towards emotions, odour and scent has both helped and inspired me to create. In addition to digging in past scent-memories, this has happened in everyday life. To conclude all of my inspiration sources have had intelligent colour use, texture and a strong "holy-like" ambience. I found it a very peculiar ambience when I visited Bastundrama, an exhibition held by design duo Färg and Blanch. The old bakery dated from 1889 which had also served as a childhood home for one of the designers. The spaces mixed almost insolently 1880's interiors with bold conceptual design, resulting in a very peculiar ambience of the 1890's interiors with bold conceptual design, resulting in a very peculiar ambience of the space's character that is not divided into the binary contrast of art and architecture. This has resulted in creating conceptual spaces, balancing between art and architecture, which also became a prominent feature in my thesis' artistic project.


Doft och plats – Grönviksvillan

From the essay series “Doft och plats”

From the essay series “Doft och plats”
Design Week, hence attracting the design and art interested 2) The theme of both the exhibition as for my installation tangent aesthetics and themes that resonate with my generation, the millennials.

3) The design talk that was held in collaboration with Aalto Experience Platform which meant one could anticipate students from Aalto University and group members from Aalto Experience Platform community.

4) The last group contained sporadic visitors such as neighbours to the site, my own family and friends who have no connection to the field. These general groups did not give enough information for creating a clear framework based on aesthetical preferences or associations. However, the groups could give glints of possible attitudes towards the installation.

Lastly, it is worth pointing out that the design process was a combination of both the work of an interior architect and an artist. Like in the profession of an interior architect, the site got measured, floorplans and technical drawing were made, and design thinking was implemented. As an artist, the conceptual and the ephemeral was created in relation to the researched. My personal relation to creating is that in this process I identified myself as an artist rather than an interior architect. My installations emphasis was not on the technicalities of the space and its two-dimensional representation, but on conveying a sensorial message and challenging the thoughts of the visitor. This type of spatial creation starts to resemble that of set design and further underlines Böhme’s thoughts on creating space and generating atmosphere.
7.3. The factors of installation “Staging Atmosphere”

To stage atmosphere one needs to look at components of the space it is created in. The concrete process of making the installation started with the analyses of the sites already existing atmosphere. After this all curated factors of atmosphere were explored, researched and created in line with Part A’s insights. Installation site and the different factors of the installation’s atmosphere will be presented in the following sections.

7.3.1. Site

The installation was held in Ivana Helsinki’s House meeting room. The house was designed by architect Bertel Saarinen in 1969 with an expression to accompany that. The building represented its time with its Alvar Aalto -esque materials of bricks and tiles and Viljo Rewell -like plan solutions with glassed hallways and open spaces. The meeting room was entered through the drawing-room, and one was straight away greeted by a glassed wall with a view to the garden. The room’s atmosphere was something from a 1960’s architecture coffee table book, but simultaneously the bookshelf found in the back of the room and the typical Finnish garden seen through the window gave a sense of comfort and familiarity. The dualism of the space inspired me to work with the notion of combining the familiar with the unexpected.

When analysing the space, I found that the light was one of its most atmospheric features. The entrance to the room was as big as a wall, and it reminded me of those stereotypically found in an art museum or a church. The large entrance brought the light from the drawing-room and met with the light from the room’s window. Only one “dead corner” was to be seen, which in contrast to the light gave a place for the eye to rest. The prominent feature of light was something I knew I wanted to play with. Combined with the reflection of the floor, it reminded me of Juhani Leiviskä’s modern church “Hyvän Paimenen” kirkko in Pakila, Helsinki built in 2002 - which for a relatively new building emitted an ambience of something from the past. The site’s atmosphere was the mixture of something familiar, old, but surprisingly, the closest one can get to “holy” in a domestic environment.
7.3.2. Colour and material

I aimed for a conceptual installation. This would also mean for conceptual use of colour in the forms of different blocks and abstract shapes. The idea came from bringing the composition from a two-dimensional world of abstract art to a three-dimensional sensorially experienced on. I wanted to keep the expression of the colour blocks to a minimum, and instead highlight the materiality of the colours. The colour blocks were designed so that they played with texture, reflection and dualities like soft-hard, natural-artificial and organic-ridge.

Based on this thesis’ theoretical research, there were a few things to take in consideration in the explorations of colour and material. 1) The effect materiality and light have on colour perception. 2) The perception of colour in relation to another colour 3) The scale of the colour surface. As shown in chapter 3.1. Arnkil speaks of the importance of surface and the light that hits that surface when it comes to colour perception. This was also proven in my material explorations as some of the colours “changed” when applied on different surfaces. The installation’s sphere, for instance, got painted three times before finding the right hue, as the applied colour never matched the colour on its bottle. Moreover, when the item was moved to the site some additional colour differences could be spotted compared when looked at in the space it was created in. The biggest colour differences could be seen with the blue platform. As its surface was covered in blue velvet the light had a big impact on its perceptual colour. At the work studio the blue seemed to have more blackness in it compared when looked at the site. There it almost shifted from a dark royal blue to a lighter sky blue as it was placed close to the window with harsh daylight.

As also pointed out in chapter 3.1. Arnkil explains that colour is always perceived in its relation to another colour. The eyes do not only take in the scale, material, form and colour but the contrast of these. After painting some the blocks, I learned that the “feeling” and perception of them could change as I placed them in relation to one and other. For instance, the yellow platform had to be re-painted as many times as four to get the wanted colour in relation to the blue it was positioned against and the lilac scent machine it was showcasing.

In the making of the room divider the importance of scale and shape became inevitable for getting the wanted colour experience. Interestingly my personal experience of the colour changed the bigger the painted surface was. My original room divider was constructed out of four boards, but as I explored with the green colour one of the boards was left unused as the room divider would have otherwise become too dark and dominant in the installation.

1.) Plaster covered and painted room divider out of Styrofoam. 2.) Dark lilac cotton fabric. 3.) Plaster covered and painted Styrofoam sphere. 4.) Table covered in blue 3-dimensional tiles. 5.) Three gradiently painted mdf-boards. 6.) Light pink satin fabric. 7.) Lilac diffuser case. 8.) Royal blue velvet covered mdf-board. 9.) Plaster covered and painted platform out of Styrofoam.
7.3.3. Scent

Like with colour, there are many things to take in consideration when staging atmospheres with scents. Firstly, a proper analysis of the space regarding the olfactive experience had to be made. According to Corbett there are four important things to look into when deciding if a space is suitable for scent distribution. 1) The space’s already existing ambient smell 2) The space’s airflow, distribution and possibilities to control scent 3) The space size 4) The materials of the space. When looking into these factors, the installation room could as-matter-of-fact be seen as suitable for curating an olfactive experience. The space had an optimal size as it didn’t need a significant amount of scent to be perceived. It had air-conditioning and a sound ventilation system, allowing the air to be “cleansed” from any ambient scents and further helping in creating a threshold between the bringing of odours. However, the space didn’t have a door, which meant a contemporary solution for keeping the scent had to be made. In this case I decided to go with a PVC curtain that let the light in, but not the scent out. Lastly, the room was mostly constructed out of tiles and painted brick, which meant there were no additional odour distributors or absorbers.

As the space was suitable for adding a scent to the room, Sokell Thompson’s five design principles were applied - authenticity, suitability, quality, intensity, and the multisensory. Measuring or arranging for the scents’ authenticity and suitability is hard in an art context. As I am an artist and an atmospheric creator my personal opinion based on Part B’s cross-modal test was the only by which the scents suitability got measured. The scent was done in collaboration with Frantsila Herb farm, which uses high-quality ingredients in their aromatic oils. The intensity of the scent was created in collaboration with a diffuser company called Bulba. Bulba instructed the amount of oil drops to use based on the installation room’s size. The scent was quintessential multisensory as it was based on the cross-modal test and distributed in a space where material, light, colour and cross-modal correspondences had been taken to consideration.

The scent served as a mood evoker and as a complement to other sensory channels. Simultaneously it set a religious tone in the space, framing the rooms performative qualities like Sally Banes speaks of in “Olfactory Performances”. The scent was and continuously distributed during the installations opening hours.

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7.3.4. The cross-modal characters

In the installation I wanted to highlight the components’ cross-modal character quite literally. All colour decisions were based on the results done in my cross-modal study. As the scent was complex with its different odour components, the hue range associated with it varied too. Most associated colours had very little “warmth” in them, instead they had high amount of either brightness or blackness. The hue scale went from a dark blue to light lilac, light yellow to a deep orange and greens with a high amount of blackness. The final colour selections were based on an intuitive personal interpretation of the study’s participants’ descriptions. I interpreted words such as “mysterious” and “out of this world” with hues with a high amount of darkness. In contrast, words such as “calm” and “spa-like” I associated with hues with a high amount of brightness. The overall colour selection was received as quite harmonious, and interestingly enough, many of the visitors described the space with similar adjectives as found in the cross-modal study.
7.3.5. The ephemeral aspects of the installation; light, time and the mist machine

I wanted to highlight the site’s poetic light, but also bring an element of something ephemeral that could be found in a church. Instead of direct light, I wanted it to pass through a material. I decided to go with the rooms already existing curtains, that filtered the light beautifully and gave structure and rhythm in a space with otherwise organic design language. The curtains were also a welcomed addition in the way they underlined the “old spirit” of the building, thus strengthening my aim to collide the two worlds in one atmosphere.

The colour objects were lit to be experienced to the fullest during evening time. When looking from the garden, this created light space, which Böhme also speaks of in chapter 2.5. Still, I made sure that the spotlights did not dominate the space and that the soft feeling of evening light was graspable.

As discussed in chapter 2.5. Despite the word “engineer” or “curate” set design can let the experiencer believe in its “naturality” and “uncontrollability”. The ephemeral aspect of the created atmosphere became the “mist machine” by which the scent was distributed in space. As the aromatic oil scent meant using a diffuser, I decided to highlight it’s mist instead of hiding it. The diffuser shell was made out of metal, a metal net, and covered in lilac velvet. The mist drifted in the space, much like earlier mentioned Katrin Brack’s performative installations and set designs. 220 With the mist machine I aimed to give the space a hovering presence, where atmosphere appears to be engineered only to a certain level and by so give the visitor recollection to the wildness of nature in an otherwise visually controlled environment.

In chapter 2.5. I also write about Ruoff’s thoughts on gardens, scent and dusk. She explains how odours of the night that are much stronger, denser, sweeter and usually also more widespread than the ones during the day.221 In the installation, I aimed to mirror this phenomenon artificially. I did not only use one diffuser, but I had hidden a smaller one to be switched on at evening time. The light in room became softer and the scent instead louder. The increase of scent was also a tactical move as on the opening night people spent hours at the exhibition. By increasing the strength of the scent, I made sure that the visitors could still pick it up after being exposed to it for a while.

The room divider was cut out of Styrofoam with a hot wire cutter. It was glued with expanding Purr-glue and coated with two types of rough plaster. The surface was finished in several layers of a dark green colour. Depending on the amount of paint and plaster the room divider had absorbed, the colour surface shifted in its blackness.
The orange sphere was made out of Styrofoam. It had a core out of stone to keep it balanced when placed on the edge of the tiled square. The sphere was covered in plaster and spray painted afterwards.
7.3.6. Positioning

The installation can be positioned as part of the crossmodalism movement. Each generation has changes and challenges of their own; today crossmodalism serves as a counteract to the digitally experienced world, the separation of senses and the narration of ways to experience and explore the world. In line with the principles of crossmodalism the installation boldly compounded craft with the bodily, which when viewed from a spatial context resulted in settlement of art and architecture.

Furthermore, even if the installation was not initially created with the attention of being a feministic piece, it seemingly checked many of the definition’s boxes when looked through the feministic colour theories of Fanny Ambjörnsson. Similarly to Yvonne T Larsson’s work, the installation used colour and the symbolism of the organic form as a commentary on the masculine aesthetic norms. The excessive use of fabric, colour and scent could, for instance, be interpreted as a connection to playfulness, femininity, and thus seen as counteracts to the hegemony of structure and logic found in the roots of contemporary architecture. Creating space from intuitive and experimental thresholds further strengthened the bias, as these attributes can be linked to the stereotypical ways of seeing the feminine as “irrational” and “unstructured”.

However, as shown the space was in-point-of-fact based on in-depth research and a thoughtful plan. According to Böhme when creating space with an end goal of an atmosphere, rather than a visual outcome, it leads the space to an end-result that speaks to its perceiver on a deep level. The installation further confirms this as its reception exceeded my expectations with the following response. The scent, the colours and the design language were according to the experiencers a welcomed delightful surprise. For some the installation evoked a childhood memory, to others it became a sanctuary in an otherwise busy exhibition location and to some the aesthetical experience was so profound that it gave goosebumps. The installations reception was interestingly in line with the cross-modal test results. Most of the visitors had similar colour-scent associations as found in the space, and many described the overall atmosphere in line with phase two’s descriptions.

Lastly, as the installation was multisensorial it could only be experienced in real life. The visitors did take pictures of the installation. However, aligned with my end goal, the scent could not be documented by a phone, and so it forced the visitors to dwell in the space, to soak in its aesthetics, and even more so it compelled people to be present.

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226 Table on page 81.
Fabrics were placed as sculptural forms in the installation space. Simultaneously they brought a sense of haphazard, something organic and incidental, thus underlining the ephemeral aspects of the installation.

Photo: Hilla Kurki
Squere:
The tiled square was placed next to the gradient lilac board. It served as a contrasting platform to the sphere, both in its materiality and form as in its colour. The materiality of the square gave a sense of depth and an additional interesting element to the composition.

Scent machine
The “Scent machine” enveloped Bulba’s diffuser. The case was done out of metal and coated in a velvet fabric. The cone had a lilac heart out of paper and a painted grid through which the scent mist hoovered.
Floor plan 1:40

Section A 1:40

Section B 1:40

Scent distribution

Scent controlling curtain
8. Discussion and summary
8.1. Discussion

The digital revolution has made the human work and live in an increasingly visually stimulated world. However, its counter act seems to suggest a growing demand for experiences with implications of all the senses. Understanding sensoriality, particularly cross-modal relations, can thus be seen as essential tools for the interior architect to work with in today’s society. Because cross-modal relations are complex to their nature, it is hard to find a lot of research regarding them in connection to the architecture field.

Still, there seem to be rich thoughts about sensoriality, haptic design and the ephemeral aspects of space in the discourse of architectural atmosphere. As this study has shown, Böhme contemplates on staging atmosphere as part of “the new aesthetics”.227 He gives examples on how to approach and create space for it to resonate and give meaningful encounters with its perceivers. Many professions instinctively engineer, curate or make wanted atmospheres through sensorial aesthetics. Böhme spotlights the possibilities of borrowing attitudes particularly from the field of set design.228 Set design is freed from the burden of architecture to underline its believability and functionality. Its validity is not considered by its reproduction of images either, but instead, the success of set design is measured by the realisation of communicating emotion, story and ambience. The atmospheric factors are chosen because of what they communicate and emanate.229

Moreover, Böhme speak of the importance of seeing cross-modality as atmospheric factors of their own, however he does not give a lot of guidance on how to implement his thinking in real life practise. This study can contribute to opening the discussion on how to concretely apply the awareness of cross-modality in the process of creating space. Cross-modal studies can give valuable information on how and which associations are made, and furthermore what emotions are then associated with each cross-modal unite. This information can then be used for setting the tone of the space, either to enhance its atmosphere, change it or align it with its function.

As this study has demonstrated, colour and odours are particularly rich in their associations.230 The usage of olfactory experiences in space has become more popular, especially in the realms of art and commercial spaces. There seems to be an increase in the interest of spaces that attest olfactive relation, but also other behavioural and perceptual factors. The perception of colour is for instance affected by light, texture and colour contrast.231 When designing with odours, ventilation systems, airflow and odour strengths need to be taken into consideration.232 Furthermore, semiotics play a difference when using colour and odours in space. Both colour and scent are senses that are highly linked to culturally learned preferences and associations. By delimiting a user group, and then conducting a cross-modal study for it, has the potential to give a threshold from where to choose and create the space’s scent, colour and all-over atmospheric character.

In the light of my findings, I conclude that by approaching space from inceptions other than only visual or functional, spatial experiences can become more immersive, holistic, and thus feel more meaningful. This study indicates for the future direction in architecture and spatial design to be sensorial awareness. The sense modality of olfaction particularly seem to have an upswing in the process of creating space. Movements such as cross-modalism seems to further confirm the desire for sensory input and alternative experiences.233 When a space is not only about its functionality or coherence with current visual aesthetic preferences, but also about how it makes us feel and relate to its sensorial qualities, it forces us to be still for a moment, and by so to grasp and inhale its atmosphere.

8.2. Limitations and possibilities

This thesis was limited for several reasons, thus influencing the outcomes of this study. Firstly, managing the content of the research within the time frame was a difficulty. As both colour and olfaction are complex sensorial entities, further research would have given more depth. Secondly, as the discourse on cross-modalism and atmosphere is almost non-existing, finding suitable literature became a more laborious endeavour than expected. The implementation of the theory in the form of the installation suffered from the restrictions of the site. One was not allowed to paint surfaces nor to fix any object, narrowing down the possibilities of how to showcase colour and odour.

The cross-modal test would ideally have had a more significant diversity among the participants, a bigger number and more time in constructing. In the future, the test could be held so that the colour is spatially experienced, and not only through colour patches.

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Lastly, the process came with its difficulties as the knowledge of cross-modal correspondences is a relatively new practice. Confirming this is the inconsistency found in the use of terminology. Many theorists mix cross-modal associations with synaesthesia, and it is not always clear if the writer is indicating linguistic correlations, the synesthetic condition or sensorial associations.

There are several exciting directions where the exploration could expand. A future study could investigate the colour-odour correspondence with ethnographical tools. Another possibility could be to continue with the direction in ways to implement the colour-odour cross-modal associations in various concrete spatial contexts such as educational spaces, hospitals and health centres. This could be done, as the thesis showed both colour and odour being highly related to memory, emotion and cognition.

8.3. Summary

This thesis presents a study on colour, odour and their cross-modal relation as architectural atmospheric factors in the context of new aesthetics. It was conducted by a theory and literature study, supported by a cross-modal test, and further explored in a creative project. The main objective for this thesis was to understand colour, odour and their cross-modal relation in the process of creating space and atmosphere. This thesis aimed to explore the sensoriality of atmosphere with an emphasis on colour and olfaction. The secondary aim of this thesis was to gain an understanding of cross-modal relations as part of new aesthetics. This research used literature which had its emphasis on architectural atmosphere, but also investigated colour, olfaction and their relationship to creating space.

The outcomes of the study will be presented in the following section.

The human experience of architectural atmosphere is a broad field to cover. My thesis shows that architectural atmosphere is quintessentially the ethereal presence and experienced character of spaces. It is the intersection of subject and object, constructed by different atmospheric generators such as colour and odour. Through the texts of Zumthor, Pallasmaa and Böhme the significance of understanding the role of atmosphere and its generators becomes clear. Böhme links the subject of atmosphere to the discourse of sensoriality and aesthetics in his theories of “new aesthetics”. He further points out the importance of seeing cross-modal correspondences as part of the new aesthetics and to their core; as generators of atmosphere.

The background literature also presents a range of theories regarding colour and olfactive experience in space. It shows both the possibilities and difficulties in mastering the two atmospheric generators. Lastly, the thesis’ first part expounds the cross-modal relation between colour and odours and links the subject to other current sensorial fields such as sensorial design and the cross-modal movement.

Through a cross-modal test, the thesis second part shows how general associations can be made. The study’s insights and findings were implemented in the thesis’ creative part. The creative study took form as a spatial installation called “Staging Atmosphere” as part of the Senseware-exhibition. The exhibition was held during Helsinki Design Week in September of 2019 and took place in Ivana Helsinki’s House in Marjaniemi, Helsinki. The installation played with dualistic notions by conducting an atmosphere of both something familiar and contemporary. Simultaneously it served as an example of how to generate atmosphere and push the boundaries between art and architecture. The installation in its conceptuality gave further insights on how to design space with colour, olfactive qualities and cross-modal awareness.
References
Bibliography


Online:


Links:

Art:

Image sources:

Fig 01 “Verbindung RotBlauGelb”, 2002, Keith Sonnier.  

Fig02  

Fig03  

Fig05  
Fig08
Marie-Clémence Gabrielle de Rochechouart de Mortemart.

Fig09
"Går du ofta hit, eller?", 2014, Yvonne T. Larsson.

Fig10
“Pink Space”, 2019, Fanni Suvila and Taika Mannila

Fig11

Fig12
“My Hands Smell of you”, Krishnaraj Chonat’s

Fig13

Fig14
“La Cucina Futurista” (The Futurist Cookbook), 1932, Marinetti

Fig15
“The Chromatic Dinner”, 2018, created by Martin Butler
Cross-modal test/ Questions

Name: 

Nationality: 

Tasks:

1) Combine each scent with one colour patch.

2) Combine each scent with a colour combination. The colour combinations can vary in a number of colours from two to five.

3) Add adjectives and descriptions to the created combinations.

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