

**THE REPUBLIC OF TURKEY
BAHÇEŞEHİR UNIVERSITY**

**THE OLFACTORY DIMENSION IN ARCHITECTURE:
ITS EFFECTS AND FRAMES OF REMEMBERING OVER
EXPERIENCING THE ENVIRONMENT**

M.S. Thesis

LAMIAE ELMOURABIT

ISTANBUL, 2016

**THE REPUBLIC OF TURKEY
BAHÇEŞEHİR UNIVERSITY**

**THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
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Istanbul, 2016

Lamiae Elmourabit

ABSTRACT

THE OLFATORY DIMENSION IN ARCHITECTURE: ITS EFFECTS AND FRAMES OF REMEMBERING OVER EXPERIENCING THE ENVIRONMENT

Lamiae ELMOURABIT

MASTER OF ARCHITECTURE

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Smell is one of the determinants of the designed environment and it has a huge influence over how we perceive places. This thesis looks at how we can put a sensation into paper by exploring the way odours and olfactory memory are related to architecture. Using questionnaires together with smellscape and sensewalking methods of an urban environment will culminate in a series of olfactory-visual experiences, and also, will display the various hidden and visible elements like the forgotten memories of the past. This is because odours are associated with specific spatio-temporal factors that refer to events that someone might have experienced them before. The overall patterns will create an invisible topography framed by the smell and memory, thus, will give another perspective to Istanbul, and may become a prevailing factor to reintroduce this sense in architecture and urban design.

Keywords: Smell, Perception, Memory, Smellscape, Urban Environment.

ÖZET

ETKİLERİ VE ÇEVRE YAŞANIRKEN ÜZERİNDE HATIRLAYRAK ÇERÇEVELER: MİMARİDE KOKU BOYUTU

Lamiae Elmourabit

MİMARLIK

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Koku, tasarlanan bir çevrenin önemli bir unsuru olarak, mekanları algılamamızda büyük rol oynar. Bu tez, koku ve koku duyusuna bağlı mekansal hafızanın mimarlık ile ilişkisini incelemektedir. Kentsel çevrede, koku peyzajı (smellscape) ve duyularla kenti algılama yürüyüşleri (sensewalking) yöntemlerini kullanarak yapılan anket çalışmaları, bir dizi kokusal-görsel deneyimlerle sonuçlanırken, unutulmuş bazı anıların da yeniden hatırlanmasına neden olacaktır. Bunun nedeni, kokuların belirli zaman-mekansal etkenlere bağlı olarak geçmişte yaşanan olaylarla ilişkilendirilmesi ve bireyin bazı olayları daha önce algılamış olabilmesi ihtimalidir. Bu çalışma sırasında elde edilen veri ile, mimarlık ve kentsel tasarım bağlamında mekansal olarak önemli bir faktör olan koku algısı ve hafıza'ya dayalı bir topoğrafya oluşmasını sağlayacak ve İstanbul'un farklı bir perspektifini bize sunacaktır.

Anahtar kelimeler: Koku, Algı, Hafıza, Koku peysajı, Kentsel Çevre,

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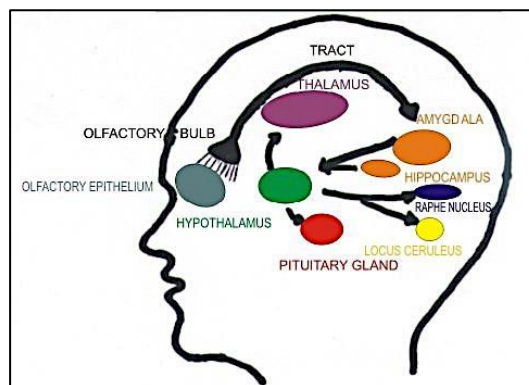
1. INTRODUCTION

“He stopped dead in his tracks, his nose searching the hither and thither in its efforts to recapture the fine filament, the telegraphic current that has so moved him. A moment, and he had caught it again: and with it this time came recollection in fullest flood. Home!” (Grahame 1908, p.98)

The environment is usually considered as a sequence of spaces that we experience daily and through which we navigate by way of cognitive spatial recognition. We experience it by using our own senses and our constructed inner world.

As humans, we breathe 86,400 times a day, and each time we smell, we absorb important information about our environment that affects both: the emotional and memory experience of space. Architecture then, is dynamically involved with the olfactory ambiances; they are shaped by the geographical environment, climatic conditions and human activities. All the odours influence our experience of space, thus, they take a place in a certain space-time motion, which traces a mobile brain mapping and makes it stored in the memory. Like a machine to travel back in time, smell bring us back to the past moments, even though the intangible compositions don't happen again (Proust, 1913; Laird, 1935).

Figure 1.1: Olfactory system

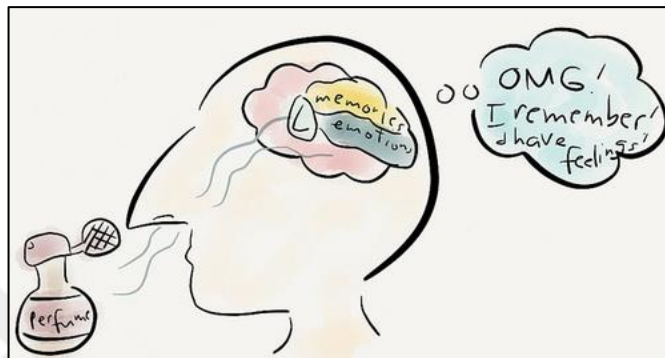


Source: www.diy-stress-relief.com

‘Olfactory’ is a term that applies the sense of smell physiologically. It is related to the gustatory system, and it is also linked to the brain’s cognition and their role in empowering memory: ‘Smell may be to emotion what sight or hearing is to cognition’ (Engen, 1991, p. 3). ‘In Smell: the Secret Seducer’ (1997), Vroom describes that there

are intentions to assume that a child's first sensation is in the bubble of smell: 'We begin our life, as it were, not by seeing the light of day, but by smelling a kind of 'Life smell' diffused in the fluid of the womb'. Then he continues to describe the sense of smell, which can function as a kind of 'first machine' that combines all kinds of forgotten memories from the past, besides the fact that sometimes we cannot describe the smell concerned precisely (Vroon, 1997)

Figure 1.2: 'Olfactory as the time machine'



Source: www.tumblr.com

In the domain of the virtual world and technology, smell is a unique phenomenon in the live presence and audience dynamic. 'The perception of smell thus consists not only of the sensation of the odors themselves but of the experiences and emotions associated with them' (Classen et al, 1995, p. 2). However, olfactory cued memories that have been localized to the first decade of life and indicating that odor representations are older and more important than verbal and visual ones (Chu & Downes, 2000; Willander & Larsson, 2006). I refer here to Pallasmaa, where he describes the experience of the smell as: 'A particular smell makes us unknowingly re-enter a space completely forgotten by the retinal memory of any space is often its smell. The nostrils awaken a forgotten image, and we are enticed to enter a vivid daydream. The nose makes the eyes remember' (Pallasmaa, 1996, p.54).

One of the principal aims of architectural design is to create and produce a sense of place that comprises the emotional and verbal aspects in relation to the olfactory memory: Toposmia (detailed explications in chapter 3). This concept describes the particular location of odours and their relation to certain notions of place. Thus, this spatial design defines how olfactory alerts or concurs with the visual studies of the landscape. Porteous argues that '[] In contrast of being able to stand outside of a

landscape and frame a view, smells are environmental and immersive; they are inhaled and thus become immediately bound with the body; they permute the atmosphere and thus are inescapable; they are directly linked to the brain's limbic system and thus, they tend to evoke associations more emotional than rational'. Moreover, combination of the term 'materiality' in the architectural and urban design, and 'emotions' in the olfactory experience is a creative tension, which is created by the analytical and the amorphous world of everyday thoughts and reactions, concretization of the intangible. In fact, the whole design should be examined through its perspective, and scrutiny of the role of odours on human perceptions, which can lead to design, create and shape a new ability of cognitive and mental mapping process.

Back in time, and more precisely in the enlightenment period, between the seventeenth and eighteenth centuries, society was marked by a new societal move towards a civilized society. It somehow gave the priority to vision and less importance to the smell, taste and touch. The aim of this move in the first place was to differentiate humankind from animals through the ignorance of the inner senses, and making biggest efforts for the vision and hearing, which allowed a kind of distance between what is perceived and the person perceiving it. For one thing, odours were considered as intrinsic that reflect the inner truth. They interact with interiors rather than surfaces, as one did through sight. The viewer has always the choice to pick what they want to view and look away if they are not interested in an object or a person. While on the other hand, our sense of smell cannot be switched off. When the one dislikes a smell, instead it draws in odours whether we perceive them good or bad. In the overall, our bodies are separated from the visual landscape and we have some control over our engagement with it. Comparing it with smell, we are totally immersed in the smellscape as we breathe in and out. It is instant, and it is a part of the act of detection. This sensory model is in complete opposition to our worldview, to the discrete detachments, privacies and artificial relations. This does not signify that olfactory-minded societies will represent utopian cultural model merged with the representation of odours, but the suggestion is rather 'smell has been marginalized because it is felt to threaten the abstract and impersonal regime of modernity by virtue of its radical interiority, its boundary-transgressing propensities and its emotional potency' (Classen et al, 1994, p.5).

Indeed, environment does not comprise sight over other senses, because unconsciously, smell defines the place and gives an identity to it ‘...a land of olfactory blandness and sameness that would be difficult to duplicate anywhere else in the world. This blandness makes for undifferentiated spaces and deprives us of richness and variety in our life.’ Pallasmaa (2005, p.12) further explains this as follows: ‘An architectural work is not experienced as a series of isolated retinal pictures, but in its fully integrated material, embodied and spiritual essence.’

Thus, the combination of such ocular-centric patterns in architecture have important effects on differentiating between places, and consequently for place identity and meaning. However, it is not a universal phenomenon and it certainly has not always been the case in the architecture of the cities.

Therefore, the sense of smell creates difference between space and place, and it gives new perceptions to these two concepts. Smells may be essential in understanding a place, offering a kind of olfactory anchor. They confirm the materiality of space that represents the platform of the place.

1.1 SCOPE OF THE STUDY

The sense of smell presents a number of specific opportunities to be considered in this study, by focusing on the olfactory as an invisible dimension in architecture and which is also defined by the physical and sensorial characteristics that shape the city, and consequently shapes our memory.

Thus, scent of Istanbul, demonstrate the point and leave the questions of what exactly these sensory experiences mean and how they adjust cultural and emotional lives unasked and unanswered. By taking it as the case study, three main sites will be studied and experienced through the olfactory perception, by considering the factors of time and space. Starting with an introduction to the research topic through a brief display of the olfactory and its ambiances, how they are related to the architectural design as well as to the human memory, and how they shape the city and give a unique identity to it. Therefore, the motivation of this thesis is reintroducing scent as principal factor in architecture and urban design

‘An interest in smellscapes may be due to the increase in ‘Blandscapes’, those aseptic places, created by the modernist drive towards deodorization, that are so empty of stimuli that they leak to an Alienating sense of placelessness’ (Porteous, 1985).

Eminönü and Karakoy are the oldest districts of Istanbul, and also, they have a unique meaning and importance for the city throughout its history (Case study selections criteria will be explained in chapter 5). Narrow and lined streets, the diversity of activities, spatial perceptions, and variety of user habits, were the main reasons that pushed us to choose them as our study area. On the other hand, Besiktas is also considered as one of the city centers, both residential and commercial, especially for small businesses. Known for its bazaar that makes the area exceptional and dynamic with its variant scents. In this work, the three sites will be analyzed through smellscape strategy, by re-defining perceptions of the districts in terms of smell framed by time and space. Afterwards, the sensewalking path will be drawn from Besiktas passing by Karakoy and ending in Eminonu, at the Egyptian Bazaar (Mısır Çarşısı); where is famous by its variant odours of the ingredients, the aroma of coffee and sweets.

1.2 METHODOLOGY

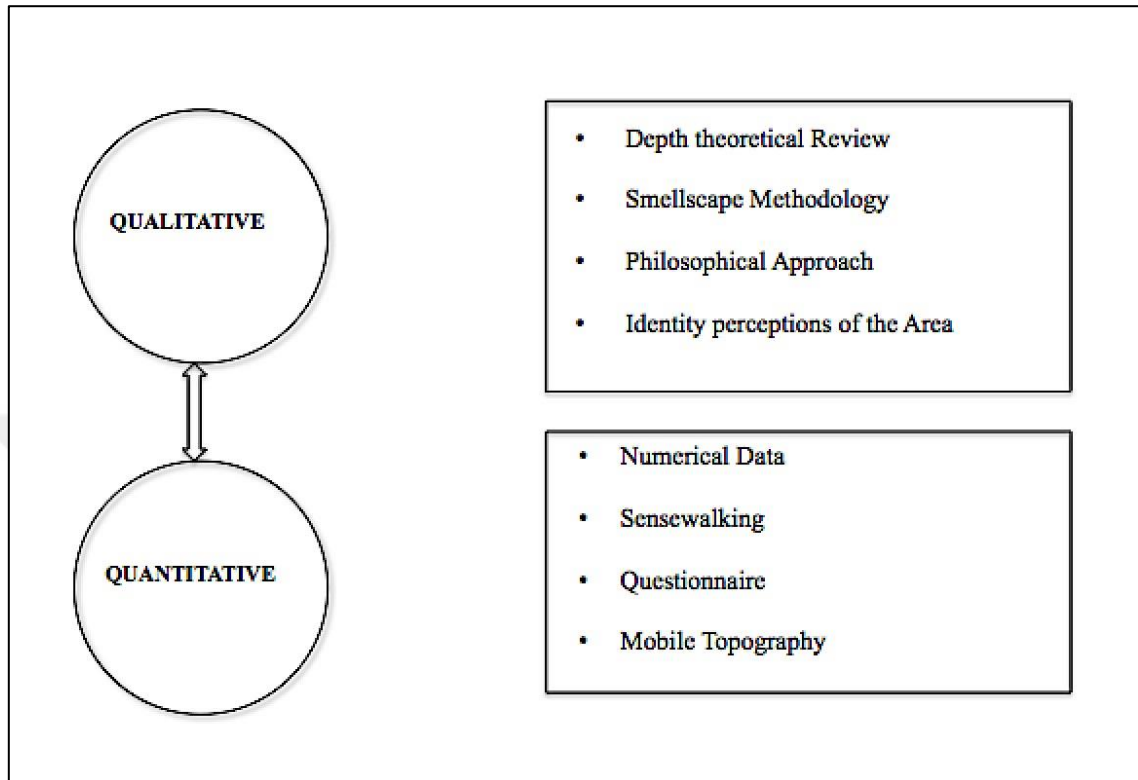
The study proposes mixed-method strategies as its methodological framework. This is based on primarily qualitative and complementary quantitative research techniques. In order to create efficient and valid strategies for examining olfactory dimension in architecture, this study will now go on to discuss the emergence of sensewalking. By exploring its importance and obtain a more in-depth understanding of urban olfactory environmental experiences, in relation with smellscapes and the communication with our olfactory landscapes. It requires an active participation and actions by creating smell maps, in order to better identify the place and make it a humanize space.

The main problem in this research is visualization of odours and classification of the urban 'smellscapes, since there is no specific method to follow or record components of the olfactory environment. Many efforts have been made to classify smells in the previous studies (explained in the literature review) (Classen et al. 1994). Therefore, identification of olfactory in the urban environment is related specifically to the human experiences.

The first phase of the study (In the chapter 5), is going to be a kind of questionnaire, in which a number of people will be interviewed about their perceptions of smell in the three areas, and how it affects them in terms of the identification of the city in general. The other phase of the study is to ask five participants to experience the sites (the city) and follow the sensewalking path that we will also be walking in. It is aimed to arrive to

represent and draw the mobile topography of the sites and to better define it with the invisible dimension.

Table 1.1: Description of mixed method research strategies



This thesis is composed of two main parts. The first part (chapters: 1,2,3,4) is the theoretical background. This part is prepared through reviewing and filtering the studies about olfactory in architecture, including the philosophical background of smell and perception. The knowledge body that has been accumulated about the olfactory dimension in architecture reviews the history of the odour in the societies, its evaluation through the time, and how it became an important element in the cultures as well as in the identity of cities.

The first chapter presents an introduction to the study area, the sense of smell and its relation to architecture and urban environment. It goes on with an explication of the olfactory system and its role to empower the human memory, and a brief historical reference to the evaluation of this sense through the time.

The second chapter will focus on the philosophical background of perception, its patterns and information linked to other senses along with memories, collected and meditated by cultural and social factors.

The third chapter will deal the urban sphere, by defining the concept of ‘smellscape’ that illustrate the overall smell environment, and by looking into the diverse aspect of the olfactory composites that have important effects on the identity of the city, besides other intangible patterns that creates the mobile topography of the environment.

The fourth chapter represents a quantitative study; it includes analysis of the sites, the sensewalking path, the questionnaire and the discussion of the results. Then, the data collected through interviews with different stakeholders are subjected to content analysis. The findings of the research are displayed and commented on. By doing so, the final outcome of this thesis is to represent the scents experienced in this study through the sensorial experience in the mobile topography.

The fifth chapter, which makes the conclusion, indicates general observations about this research, how the people relate the olfactory to the area, their perceptions and the link that make each of them connected to time (the past, present and future)

1.3 LITERATURE REVIEW

Although the debates of the senses were mentioned before, the book ‘The eyes of the skin’ by Juhani Pallasmaa (1995) gave another definition to sensory field. As expressed in the title, this piece of literature highlights the importance of the sensory experience in architecture. It is an answer to the modern style, where all the cities became bland and lack the sense of place. It first begun in Europe in the 18th Century, when the spread of illness was related with foul odour. El khoury describes the streets of France represented the deodorizing example to avoid the bad smells from escaping the earth. Covering walls with plasters and whitewashing them was believed to nullify the unpleasant smells that were originated from the walls. Therefore, these architectural deodorization efforts drove people to fragrance themselves, as well as their spaces, since it was thought that good smells protected against bad ones. Likewise, the sleeves, lace detailing in the clothing represented personal purity and cleanliness. Consequently, white walls symbolized sterility and sanitation: "by virtue of its capacity to translate the olfactory condition of odorlessness into an image." These elements became the representation of the modern movement. As such, LeCorbusier’s Villa Savoye or Mies van der Rohe's Barcelona Pavilion, that truly represent clean taste and hygiene, and which also do not suggest odor of any kind. (El Khoury, 2006)

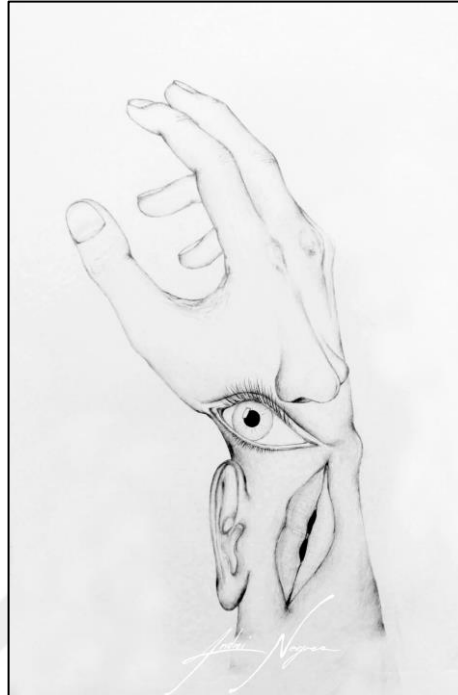
The eye for Pallasmaa then, is a distancing organ that allows the person to experience the place with a specific distance without a bodily closeness. While the other senses, as such: smell, hear, touch and taste make the experience closer and embedded in us. That is exactly what Pallasmaa was trying to express in his book, by mentioning that the experience is deeper and profound when the skin is touched, the smell come up to the nose and the tongue taste something different; in contrast with the eye, because what is felt is memorable: 'In heightened emotional states and deep in thought, vision is usually repressed'.

According to Pallasmaa, architecture should be conducive of mobility, in other words, there should be an exchange and interconnection between the individual and the environment, and vice versa: 'The environment entering you, and you entering the environment'. We share special moments with our places (home) and for instance, if we move somewhere else, we leave a part of ourselves there, thus, we are completely connected to the places we live in: they are an extension of the self. The body then is in touch with the space in a fluid movement, and for Pallasmaa, every single organ should be part of the building design; these are translated in how the shadows are reflected, the sound and the echo of the building, the unique smells of its walls, they are completely the opposite feeling of when you see the same building from far.

The author, on the other hand, compares the interior modern city or as he calls it 'haptic city' as the one that can be experienced and felt in every perspective, contrary to the exterior that you only can experience it from a distance. Moreover, he highlights the satisfaction of being a part of the nature, by giving an example of a trek through the forest, by expressing the feeling of being a part of the space and within it, having a clear and outlined vision of the whole painting, framed by the crunching leaves and the feet and sap smell that surrounds us.

'All the senses, including vision, are extensions of the tactile sense; the senses are specializations of skin tissue, and all sensory experiences are modes of touching and thus related to tactility' (Pallasmaa, 1995).

Figure 1.3: The eyes of the skin



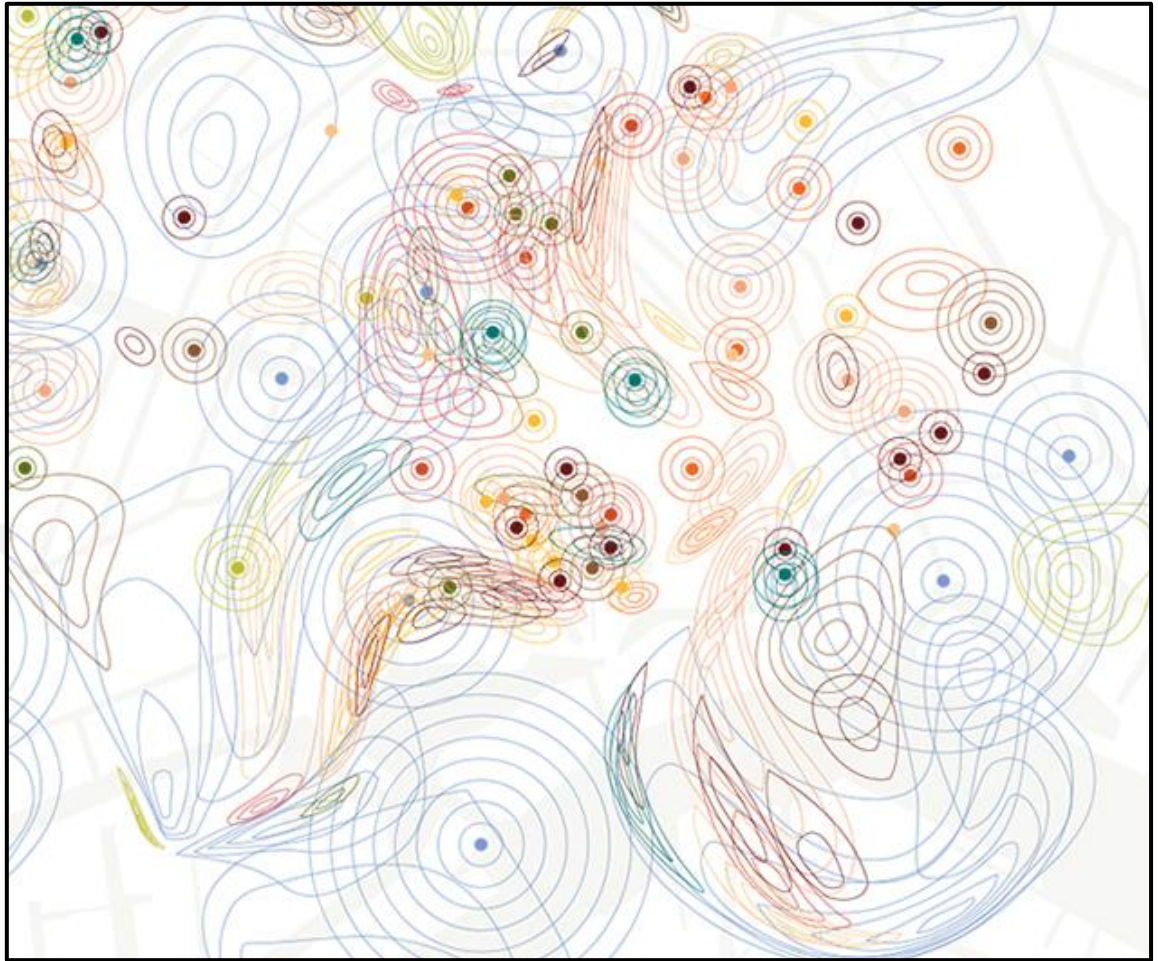
Source: (Pallasmaa, 1995)

'That's when we lost our smell-ability. Since classical times, smell has been thought of as one of the lesser senses, compared to the 'noble senses' of sight and hearing, and it's compounded by the fact that smell is something we haven't been able to record or analyze until very recently' (Henshaw, 2013).

Victoria Henshaw's book *Urban Smellscape* (2013) makes a significant contribution to the smell debates in literature of architecture and the sense of smell by giving real examples and sensory experiences done in the urban environments. This book is considered the first to give detailed studies on the smell perceptions and experiences in the English cities, by providing some rules of the smellscape methodology (it was first created by Porteous in 1990) and how it is related to the perception of the place, and the placemaking. Sharing some sensory experiences from different scales (factories, parks, breweries), *Urban smellscape* is a manifesto that offers tools for the architects and urban designers to follow in the design of the cities in relation to the sense of smell.

Henshaw, on the other hand, argues that throughout the history, the scent was usually the sense that was mostly ignored by the society, in the way we plan the places, thus, it leads us to have similar cities with no specific identity and empty streets. She concluded by giving some golden rules to follow in the future to give another dimension to the cities.

Figure 1.4: Smell map of Amsterdam



Source: www.sensorymaps.com

2. OLFACTORY PERCEPTION

2.1 HISTORICAL BACKGROUND OF PERCEPTION

The philosophical tradition always focused on the sense of vision, as the symbolic process of all the theories related to perception. However, in recent times, philosophers turned back their attention to the other senses to re-examine their relation to the nature of perception. This revolution in the field of perception focuses on the fact that the senses are perceived differently in every society and culture. In 1949, architect Richard Neutra stated the importance of the senses that architects generally place secondary to visual perception. "We must guard against the notion that the only sense perceptions which really count are those which are easily and consciously perceived. [...] We should therefore pay full attention [...] to all the non-visual aspects of architectural environmental design" (Neutra, 1949).

When we study the concepts related to different senses in different cultures, we find that each sense is associated with a specific symbol. For instance, taste may be linked to the aesthetic discrimination, the sense of vision from one hand is mostly related to reason and realism, while on the other hand, smell may symbolize pureness, gender differentiation, and social elimination. Altogether, these sensory significances from the sensuous model adopted by the society, from which all its members, translate these meanings into a particular 'worldview'. Perception then is the direct connection of sensory stimulus. It's a spontaneous and automatic act that doesn't include any thinking process. The sensory perception therefore, can be narrowed down to two different meanings: perception as the detection of information through the senses and the other one is the mental perception as perceptual understanding made up of sensory information related to memories and expectations. Rodway in his book 'The Sense Geographies' (1994) identified that every sense is involved in the structure of the environment, they are the receptors from which we get into contact with the world and through them we get to experience the space as a whole. In other words, senses and reality are related. He also indicates that an urban understanding of perception, must include both concepts, first defining perception as 'sensation' that includes the environmental stimuli detected by the senses, and perception as 'cognition', a mental

procedure related to memory recollection, and thinking processes, all of which he defines as ‘culturally mediated’.

Therefore, sensory history seeks to revive the dry cells of history and make us understand better through the process study and the analysis of the sensory ideologies and concepts through different times of the history. For example, one leading study explores the changes of haptic experience in Renaissance period, while the other one, under the name of ‘The Foul and the Fragrant’ gives a highlighting on the French revolution and culture. (Smith, 1999)

In architecture and urban planning, one of the main paradoxes of modernity is that the big plans and projects hardly achieved their aims, due to the reasons that all focus was turned into ‘vision’ as the main dimension by fixing the projection on the human being scale ‘eyes on the street’, as Jane Jacobs exposed in her masterpiece ‘The Death and Life of Great American Cities’ (1961). This methodology of single use of space created many problems on every level: social, culture, city planning, etc....Thus, Jacobs achieved her understandings by considering the city as a complex sensory model, in which the individual can experience it through all its dimensions in relation to the senses, rather than seeing it from the airplanes.

Figure 2.1: Life on the street from ‘The death and life of great American cities’



Source: www.hafizamirrol.blogspot.com.tr

" A history of the city told through people's bodily experience ... from ancient Athens to modern New York (...) the sensory deprivation which seems to curse most modern buildings; the dullness, the monotony, and the tactile sterility which afflicts the urban environment" (Sennett, 1994).

Pallasmaa (1996) indicates in *The Eyes of the Skin* that: "Architecture is the art of reconciliation between ourselves and the world, and this mediation takes place through the senses". He refers back to the work of Alvar Aalto as an example of what he calls "sensory realism," on account of the richness of all the senses in relation to design and as he calls it "haptic architecture." This is why, the relationship between sensory urban design and the concept of perception have the main role to take the sensorial dimension in architecture further; by taking into consideration the role of the senses as mediators of experience, and examining the differences that people bring regarding their cultures into the design of the urban environment as whole, yet as David Howes suggest (11, 2005): "sensory ethnography provides a vibrant means for architects and planners to enhance their sense of the polysensoriality of the city and imagine how to design or redesign it in sensuously fitting and stimulating new ways."

2.2 CHARACTERISTICS OF OLFACTORY PERCEPTION

'What if the place that we are in the midst of is different from the physical space that we currently inhabit? What if the things we yearn for are located elsewhere... We may be certain objects, smells, a smile or expression, particular acts or occasions, a word, all of which come out in a manner that we cannot control or understand. Yet any of these elements or impressions makes us feel 'at home' in a way that we cannot find the physical space where we are now stuck' (King, 2008).

'Fallen Angel', is how Helen Keller described the sense of smell, as an influential element for the perception that is embedded deep down in each one of us, but we rarely take into considerations its capabilities by giving all the priority to the other senses: sight, sound, touch, and taste. Since the first day we are born, and before we even open up our eyes, our first experience in the world is through the nose, tongue and skin. Helen Keller, as she was mute, blind and deaf, she counted on the three senses to lead her through the world, by identifying each space through its smell, or even recognizing who occupied her space or came across it. She wrote that without these senses: smell, touch, and taste, her world would be empty and meaningless.

Figure 2.2: Helen Keller



Source: www.americaslibrary.gov

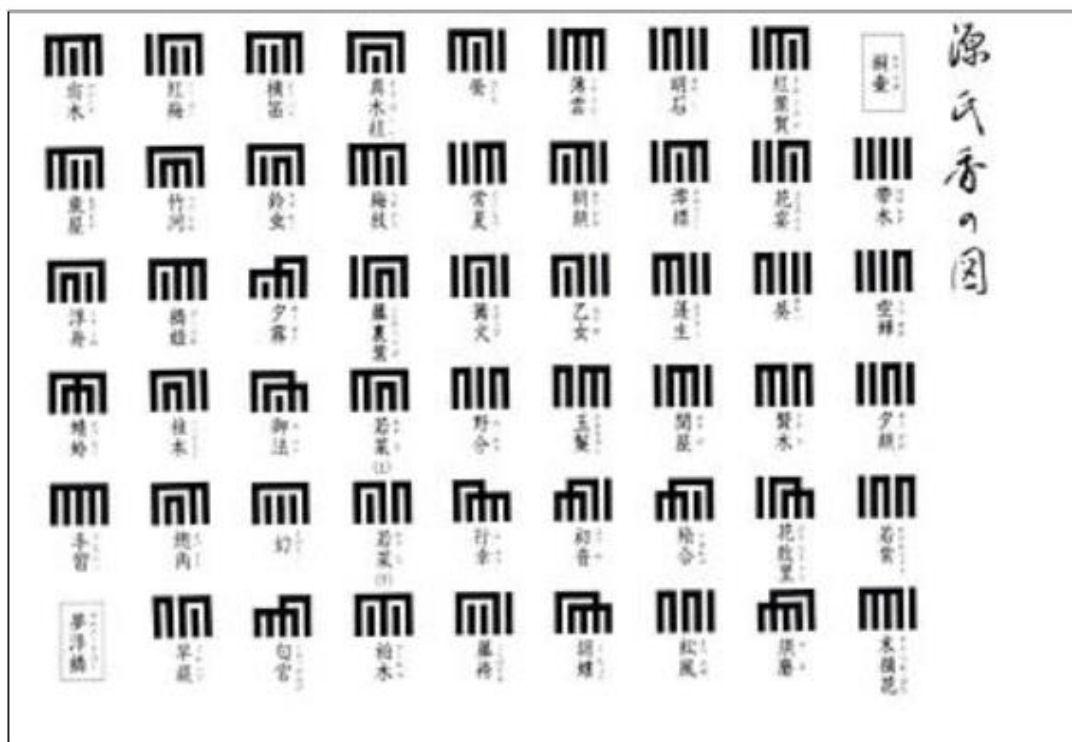
‘Which organic sense is the most ungrateful and also seems the most dispensable? The sense of smell. It does not pay to cultivate it or to refine it at all in order to enjoy; for there are more disgusting objects than pleasant ones (especially in crowded places), and even when we come across something fragrant, the pleasure coming from the sense of smell is fleeting and transient’ Kant (2006, 50–51).

Throughout the history, most of the philosophers had blurry and mixed feelings towards the olfactory sense. Starting from Aristotle, he had struggled to analyze the inner and outer sensation; since the sense of smell can be seen as exterior perception or a feeling had it is embedded deep inside. Thus, since the antiquity period, the smell was always categorized behind the other senses, it was viewed as a lack of pureness, (animal side) and unproductive as Darwin explained in his theory; even Kant described it as ‘nuisance’. This sense more precisely is the kind of senses that need freedom and knowledge, as well as sociability from the different ranges of cultures. On the other hand, the only act accepted and which is related to smell is breathing (as a concept), since it keeps the human being alive.

Back in time, the history of mankind did not always view the sense of smell in the same way. For instance, the Egyptian civilization was way more progressed in comparison with the others in that time. They mastered the art of making the mummies and the process of preserving bodies. It is indeed a complicated technique that follows many procedures; first by cleaning the body and drying it, they embalm it and then they apply

specific perfumes and oils in order to keep the body ‘eternal’. They empty the body and fill it with unguents, resins and finally cover it with linens mixed with spices. Smell thus, had a spiritual meaning in their cultures, it was related to the afterlife. In other part of the world, Japan has different rituals that date back to the 6th century; they have the ‘incense ceremony’ that represents one the classical arts where they have a set of different kind of flowers and serve a special tea. During the celebrations, they burn kind of scented woods in order to create an exceptional atmosphere. Up until today, they still use this methodology for mental training. On the other hand, China had a similar ritual but for different purposes, it was rather for measuring the time of the day by the different incense stick; or the ‘incense clock’, which dated back to the 10th century AD. They also used specific scents to notify the seasons and the zodiac signs. (McLuahn, 1964)

Figure 2.3: Scented woods in Japanese ceremonies



Source: (McLuhan, 1964)

Figure 2.4: Chinese incense clock



Source: (McLuhan, 1964)

In the other parts of the world, Arabic countries had different purposes for the use of smell. It was kind of identity of each person, and it represented his importance and wellbeing by the sort of perfumes he puts. It was highly considered especially in the big ceremonies and religious events.

The famous book Patrick Süskind 'Perfume' is a case in point and a good read; he actually exposed the western society in the personage of Grenouille. He was a part of the lower class and practicing his unusual passion by murdering maidens to sniff their beautiful fragrances. In the end, Grenouille would be able to create his own gorgeous odour and end up eaten by a frenzied crowd. Furthermore, in the postmodern west (in the late 20th century), odours were the representation of the inner accuracy; smell allows indirectly deeper connections with the interiors, rather than stopping at the barriers of the exteriors and facades. Olfactory is the sensory model that cannot be enclosed, it blend differently.

Meanwhile, this does not indicate that 'an olfactory-minded' culture would be a utopian society, where its citizens would live in harmony under the perfume philosophy. The olfactory has created some codes that consequently made division within societies rather than uniting them, because of emotions that smell provokes. (Howes, 1994)

'...As we shall see, olfactory codes can and often do serve to divide and oppress human beings, rather than unite them. The suggestion is rather that smell has been marginalized because it is felt to threaten the abstract and impersonal regime of modernity by virtue of its radical interiority, its boundary-transgressing propensities and its emotional potency. Contemporary society demands that we distance ourselves from the emotions that social structures and divisions are seen to be objective or rational and not emotional, and that personal boundaries are respected. Thus, while olfactory codes continue to be allowed to reinforce social hierarchies at a semi- or subconscious level, sight, as the most detached sense (by Western standards), provides the model for modern bureaucratic society'.

Nonetheless, the role of smell remains as the multisensory context in every culture, and many academic articles were written on that matter in every domain: history, sociology and psychology. However, this should turn the other way around, and instead of considering smell as the main factor of social discrimination, we should bring the cultural unconsciousness into the light as well as the intellectual discourse. In this way, we can actually understand that there are no differences between the senses, and the equilibrium of this phenomenon that creates a model of perception and interaction with cultures.

Inversely, the interest in the sense of smell in the philosophical field is still sparse. Yet the concept of perception is supported by the arguments of the sense and the experiences of vision, and it has a direct access and connection to the external world. Ann Sophie Barwich in her research (2014), mentioned that many philosophers, especially the ones concerned with the sensory perception, came up to emphasize its process as a 'black box', it explains briefly the relationship between the senses and the process we do while we perceive. Batty (2007) on the other hand, introduces smells into the debate about the reality of secondary qualities by replicating arguments grounded in color perception (if Paul and Mary perceive the color of a chip differently, what color does the chip have and whose perception is right?) with apparent analogues of smell perception (if Paul and Mary perceive the smell of a molecule differently, what smell does the molecule have and whose perception is right?). Advocating a representational account of olfactory experiences (as representing objects), Batty then claims that smell experiences are caused by volatile molecules: the ones that are related to the smell perception. She also makes arguments to justify the extension of vision to olfactory: 'Sensory qualities are better explained in physical or mental terms?' She came up with asking these questions: 'If Mary and Paul perceive the color of the chip differently, what color does the chip have? And whose perception is right?' the second one is ' If

Mary and Paul perceive the smell of a molecule differently, what smell does the molecule have? And whose perception is right?' Batty argues that the proper objects of smell perception are the volatile molecules causing smell experiences. Thus, the analysis of smell perception might lead us to a very rich and rendered experience in relation to the physical and social aspects more than the perception that focuses only on the vision, yet it draws a direct pathway to the memories and perceptions way better than the sense of sight. Engen (1991) suggests that odour perception functions as two main methods: first as a sensor protector against any dangerous substances, and second as a 'hedonic' element related to amusement. He explains that '...anything toxic makes one sick and naturally becomes unpleasant. Anything good or neutral could go either way, depending on individual- often idiosyncratic- experiences with it, which remain in the memory for future use'. This application allows the body to experience and emphasize the familiar odours and non-familiar ones and therefore be judged as pleasant or unpleasant. Porteous (1990)

Baruch asks in her research: 'is it an illusion when I smell 'green apple' without a green apple is being present?' In the philosophical field, these types of questions are called the semantic fallacy. Thus, this question leads us to open another angle of odour perception; it is related to the lack of the verbal expressions of olfactory. To better understand the content of smell, and to allow a deeper sensory perception, we must refrain from the 'black box' and take into consideration that the sensory qualities have their measurements conditions; and which makes the sense of smell on the other hand (comparing it to the other senses) intangible and too vague to provide objective perceptions; I am referring here to Bell (1914, p.652):

'Did you ever try to measure smell? Can you tell, whether one smell is just twice as strong as another? Can you measure the difference between one kind of smell and another? It is very obvious that we have very many different kinds of smell all the way from the odour of violets and roses, up to Asafoetida. But until you can measure their likeness and differences you can have no science of odour'

Therefore, the characteristics of the odour are grounded with the smell perceptions: Its patterns, contexts, emotions, and memories. When the person smells a familiar odour, it brings him back to his memories of his previous experiences that are associated with that kind of smell. They are related to the social and cultural features, as well as to the temporal and spatial aspects. King (2008) described the perception of place is related at the same time to the physical geographic area- a point in space- and also to the time

captured within our memories.

In his article 'cities that smell', Knopper (2003) suggests that the sense of smell relates the history of the city to its present through the memories, creating an album of images that links the past with the present. To better understand this link, olfactory perception of place is related to all the information linked to the other senses along with the memories, collected and mediated by the sense of smell. Victoria Henshaw (36, 2014) describes it as '... Olfactory perceptions of place are similarly informed by social and cultural factors, including prior understandings of that place gained from representations made by others'.

On the other hand, the architects Barbara and Perliss (198/200, 2006) suggested that the relationship between olfactory and place can be defined from two main points: The first one is the experience of the sense of smell in relation to its place then to the emotional aspect of the place with its association to the touristic industry. Dann and Jacobsen (2002) conclude that odour is an important part of a tourist's perception of the place (I will talk more and explore the tourists point of views about the sense of smell in the city in further details in chapter 5)

Larger olfactory perceptions of place are therefore a combination of memories, associations and experiences, mixed with odours of the urban smellscape and informed by representations and expectations of the same place. It's a multidimensional phenomenon that is related to autonomous qualitative units and resonates with diverse levels of the perception process.

2.3 OLFACOTRY MEMORY

'A whiff of the universe makes us dream of worlds we have never seen, recalls in a flash entire epochs of our dearest experience. I never smell daisies without living over again the ecstatic mornings that my teacher and I spent wandering in the fields, while I learned new words and the names of things. Smell is a potent wizard that transports us across a thousand miles and all the years we have lived. The odour of fruits wafts me to my Southern home, to my childish frolics in the peach orchard... The faintest whiff from a meadow where the new-mown hay lies in the hot sun displaces the here and the now. I am back again in the old red barn. My little friends and I Are playing in the haymow...' (Keller, 67).

The sense of smell has a strong bond with memory and its ability to bring people through space and time to precedent moments with that scents. When we compare memories gained from the other senses, we come up to the point that smell is the only sense that evokes the past experiences. Marcel Proust was one of the greatest writers who was affected by this sense, and in his book about memory ‘Remembrance of Things Past’, he described smell and the taste of the tea soaked with a piece of madeleine cake that took him back to his long forgotten childhood experiences:

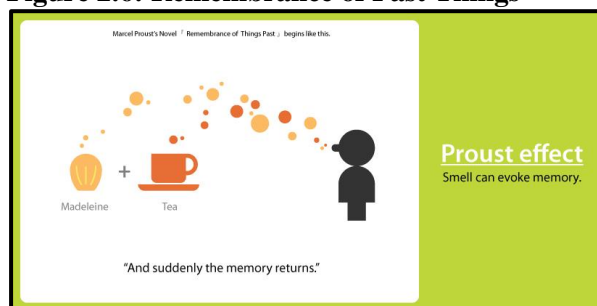
‘No sooner had the warm liquid mixed with the crumbs touched my palate than a shudder ran through my whole body, and I stopped, intent upon the extraordinary thing that was happening to me. [...] Suddenly the memory revealed itself. The taste was of a little piece of Madeleine which on Sunday mornings [...] Aunt Leonie used to give me, dipping it first in her own cup of tea, [...] Immediately the old gray house on the street, where her room was, rose up like a stage set [...] and the entire town, with its people and houses, gardens, church, and surroundings, taking shape and solidity, sprang into being from my cup of tea’

Figure 2.5: In Search of Lost Time



Source: www.scentairmena.com

Figure 2.6: Remembrance of Past Things



Source: www.scentairmena.com

Back in time, this kind of personal experiences exposed many things about this sensation: although the smell lasted for few seconds, it was highly affected and recognized by the memory. This connection is thus related to the smell, and then the brain recalled the experiences that were associated with it. It is like these impressions are being in two different places, in two different times simultaneously: the link between the real and the imaginary. King also argued this phenomenon by having that immense power and meaning to bring back the nostalgic feelings from the past time, and which they cannot happen only by relating them to a specific geographical location and time.

Hirsch (2006) has done a study, based on interviewing random people, and end up by concluding that most of them experienced odours accompanied with the nostalgic memories. This study varied according to the period that those people were born in. For instance, the ones between the 1920s and 1940s were affected by more natural odours, as such: sea, grass, and flowers. While the other ones that were born in the later decade, between the 1950s and 1970s, were more into the artificial smells and perfumes associated with famous brands: Louis Vuitton, Chanel, Dior, etc.... (Henshaw, 2014)

This recall of memory as it can be characteristic of the age; it can also sometimes trigger some negative and positive memories. It all depends on the context that helps the brain to recollect those emotional attachments. Some interesting studies discovered that some students who had a close relationship with the materials exposed by different odours, were more brilliant than the regular ones, and this is because the smell recognition associated with the touch and vision last longer. Another study was done by Engen, who asked many people to identify an image shown only for a couple of minutes, the majority was accuracy while very few could recognize it through the sense of smell. But the difference here is the odour recognition lasts longer than the visual one.

Until today, some scientific studies explored the mechanics the olfactory system that follow the path in our body, starting from the nose and ending in the brain. The following table explains the three different steps designed by Georg (1997):

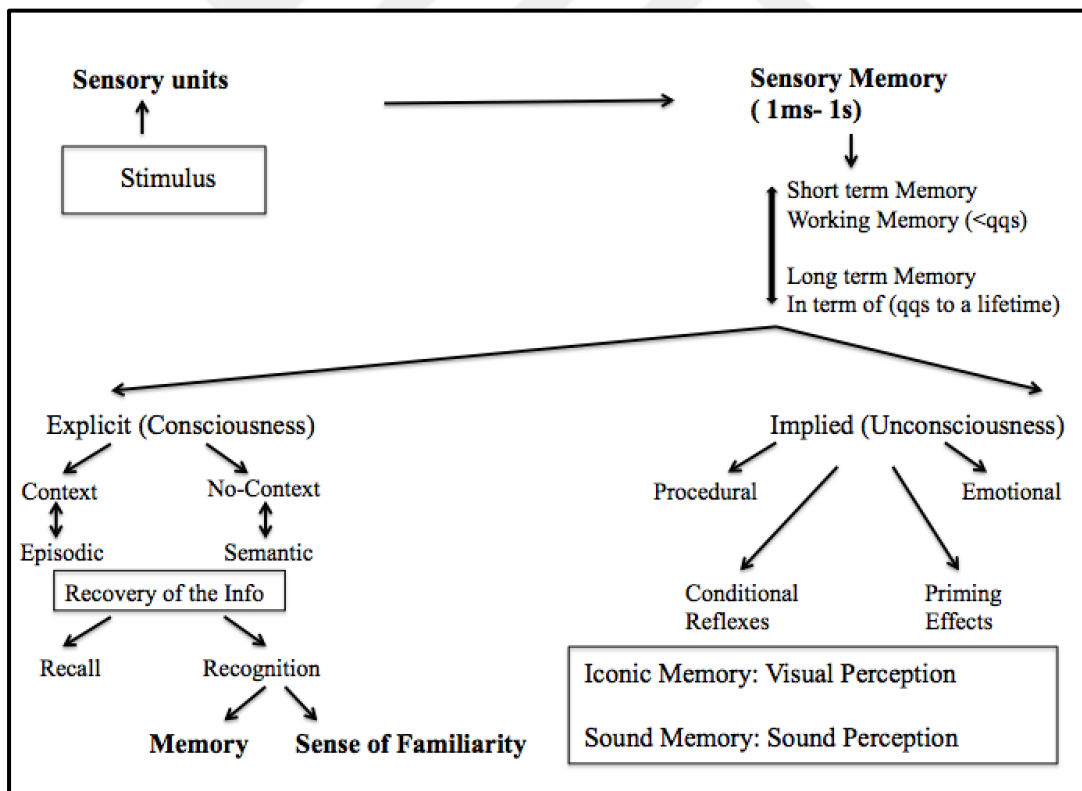
Table 2.1: The Steps of Olfactory System in the Body

First Step	Processing the information carried a response of smell by a sensory neuron of The nasal mucosa.
Second Step	The creation of an "image" by the molecule in the olfactory bulb.
Third Step	The passage of the olfactory bulb in the brain by the olfactory cortex. The odorous information acquires the form of a molecular image that is Equivalent to the visual image in the brain's visual association areas.

Source: (Georg, 1997)

The environment is thus shaped by our memories, our past experiences and other complex emotions that are associated with in different times. Therefore, the memory is divided into the interactions of various sub-systems, and each has different compositions:

Table 2.2: the memory system



Source: (Bouchard, 2013) designed originally by (Plailly, 2005)

The memory then can be conscious (explicit) or unconscious (Implied). The last one indicates that the previous events can affect the behavior of the person unconsciously and without knowing it. It consists of these subsystems:

1. **Procedural:** The process of doing and acting.
2. **Perceptive:** The remembrance of the previous scenarios through different senses: touch, hear, taste and smell.
3. **Conditioning reflex:** The connection to the emotional and behavioral response.
4. **Priming effects:** The time needed and the rapidity to make a decision.

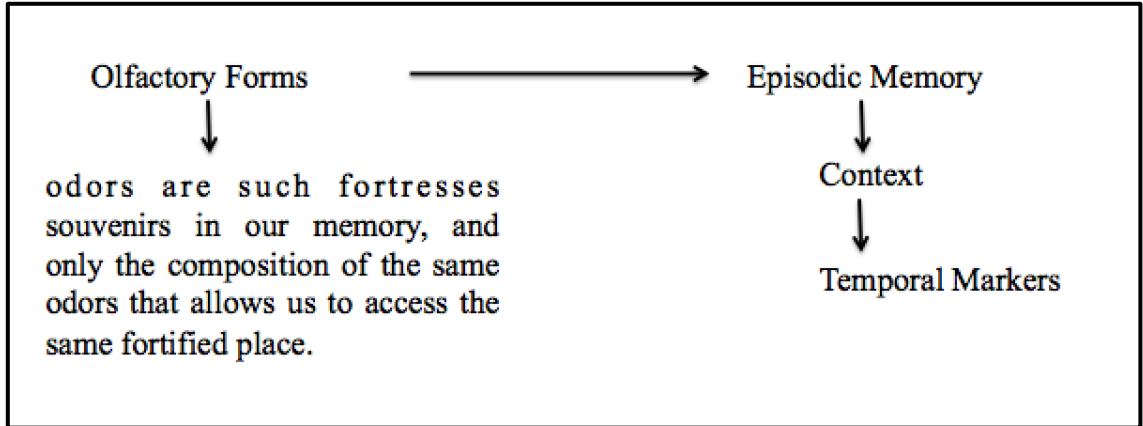
On the other hand, explicit memory differs from the previous one that is more about consciousness; this one can verbalize the contents. It exists in two different types of memory: episodic allow us to refer to previous experiences that we have lived, and can be lived again if we relate them to the specific space and time. While semantic, has the content more abstract and not related to the references of space and time (decontextualized aspect). (Bouchard, 2013)

Both the explicit and implicit types of memories influence each other in a continuous way, and so they interact in a different time motion: long / short. It differs in storing memories from a few seconds to a lifetime. However, sensory memory comes before short-term memory, or as Schiffrin (1968) named it 'sensory register', it lasts for lesser time (less than one second) and it also subdivides into two main categories: Iconic memory, visual perception, echoic memory and sound perception. (Darwin et al., 1972)

We can assume that the perceptions of olfactory indicators are actually in the form of images that stays somewhere close to the episodic memory.

Since the olfactory memory is related to the time and space references, it should be categorized under the episodic memory, thus, this understanding permits us to define the recognized odours according to personal experiences. Smells take the shape of the intangible memories, which can be recalled only by meeting the same composition of space and time. "While the visual memories, which share many similar traits interfere much, olfactory memories, more independent of each other, and have little interaction, maintaining their individuality, are better preserved "(Holley, 1999).

Table 2.3: Olfactory forms



Olfactory forms let the chance to recover unprecedented memories more than the visual signs (Bouchard, 2013). Holley conducted a study, where the majority recognized some photographs through the odours that they experienced in the very first time; memories then, are the key to help us locate the scents on their exact places.

The reality is usually shaped by our memory and so they guide us to the right angles and perceptions (Aristotle, 1981)

‘The memory is confused neither with nor with the sensation intellectual conception; but it is or possession or modification of one of the two, with the proviso of an elapsed time. There is no memory of the moment in this very moment, as we just said; there are only feeling for the present, hope for the future, and memory for the past. Thus memory is always accompanied by the sense of time’.

On the other hand, culture is an important factor that influences our memories and where we belong: ‘collective memory’. It is about groups of people adapting and resisting to make it established and active over time. In this concept, the perception of time is deeply connected to the society as well, because it can be perceived differently from a varied range of groups and also because it has two natures in the social space: the individual and the universal ‘a true story time, which is a permanent and social time, and a time of consciousness, which is specific to groups, the collective time’ (Marie, 1999).

Table 2.4: The understanding of the Olfactory

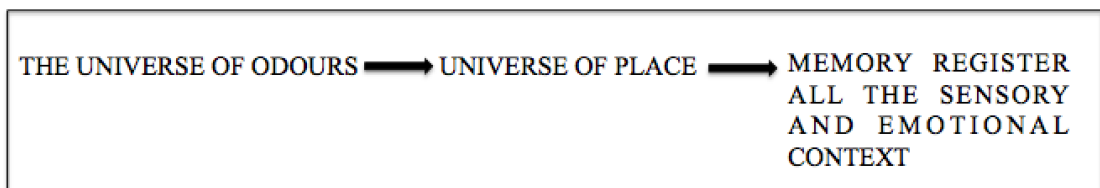
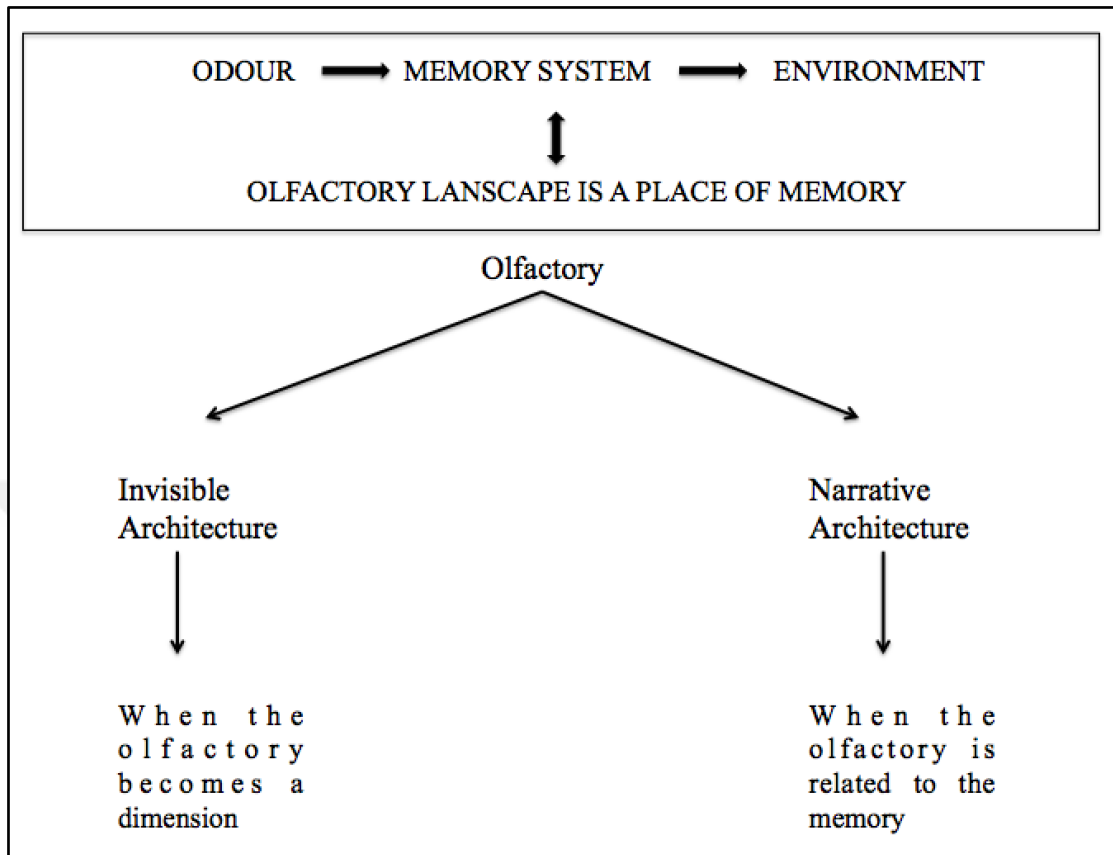


Table 2.5: The olfactory landscape



We create an album of images of memories, which are related to the place and time, and without any communication language that can express the olfactory experience. However, when we name an odour, we create a context for it, and thus it becomes more concrete; in other words, we relate the odours to space, especially when we name it for instance as the name of some streets or places. Then when we recall the memories related to that specific place, we remember the whole olfactory landscape: Odour, space and time. The language then would be related to the images we choose to pick and the odour we breathe from the nose. Then we create a language between the image and the scent: ‘the painting’

3. THE URBAN DIMENSION OF OLFACTORY PERCEPTION

3.1 URBAN SMELLSCAPE

Amongst the five senses, the sense of smell makes a significant link and a parallel connection and interaction with space. It translates it into a personalized landscape and presents things that appear out there in the world beyond our noses. In this chapter, we will try to analyze the role of the smellscape and the effects of odours in architectural design and place making especially, by exploring the characteristics that shape the identity of the city, the method of the sensewalking, as well as the various environments we inhabit, and individual factors that are related to.

But before getting under the skin of this issue, many questions come to our mind, and should be answered through our research and analysis: what scents shape the city? How might we re-experience our environment by focusing on our olfactory sense? Does this create new frames to determinate the space? What might we learn about ourselves in relation to our environment through the sense of smell? What are the characteristics that affect this sense in relation to the time and space?

‘Smellscape’ is a flexible concept that was created first by Porteous (1990), which is also related to the visual landscape of an area that can be framed in a photograph or painting. Porteous invented it to better identify and emphasize the whole olfactory landscape more precisely, and which it includes the episodic (time limitation) and unconscious (background objects) odours (Henshaw, 2014). However, the urban smell environment is not as clear and continuous as visual and acoustic landscapes, and it is, therefore, a complicated task for the human being to identify the whole smellscape of an area at any point in time. Referring back to Porteous, the term ‘smellscape’ illustrate the overall smell environment, and as humans, we may carry a memory from the past or an album of photos of many cities, but we are only able to detect them partially at any one point in time. (Knopper, 2003)

‘The fact that some cities stink, and odour affects the image of a place. Some communities have worked hard to get rid of the smells and turn their images around. Tacoma, Washington, for example, is a great success story. Others, like Gary, are still struggling. Still others, like Denver (which has an inversion problem that traps air pollution near the ground), are victims of geography. But even when cities make great strides, it’s hard to shake image problems associated with odour’

Nowadays, the term ‘smellscapes’ or the olfactory landscapes are limited, thus, the theorists have created a new concept called ‘toposmia’, which it is mainly the relationship between space and odour and their specific connection to the place.

Therefore, for a better understanding of the term ‘toposmia’, we should first define how the olfactory concurs the landscape in relation to the vision. Porteous claims that the information we get through the olfactory experience is not continuous as the visual one, but it’s more episodic (as I mentioned above). He argues that smells are inescapable, they are directly linked to the brain and so to the nose, which evokes more emotions and associations towards the place itself; while for the vision, you can stand out of the framed zone, but you still can get a connection and an understanding of the place from a specific distance ‘exteroceptive’ (Porteous, 1985). The position of smellscape on the other hand varies from different perspectives and scales: urban/ rural, regions, cities, neighborhood, houses, climatic conditions, level of industrialization, forms of habitation, and seasons, etc.... thus, the exact conditions of space and climate allow the odour to easily affect the place and move through it to get over the physical borders and the visual barriers that consequently permit the user to use his imagination and draw the exact place that he want to belong to. Vision then, is not the only sense that can detect the place from a specific distance; I refer here to Richardson, where he gives a good comparison between the experience of sight and smell in the environment, he claims that we perceive objects, for instance, the stars, that might be no longer in the sky and their seeming locations. This explains that the time perception of the place, especially for the sense of sight takes time: ‘what we see most directly are not ordinary objects, but something else (something mind- dependent)’. He continues by arguing that the same example can be applied for olfaction like we sometimes smell the odours even when they are no longer there in the experience of the place; for instance, the smell of food in the kitchen may remain longer after the food is eaten. (Richardson, 2011)

Consequently, smellscapes are a collection of different scents connected with the pictures, and which Porteous described it as ‘odoresque’. It could be defined as the sense of place in relation to specific smells, locations and engaged with emotions and memories. (Bachelard, 1969)

‘The foamy and somnolent odor of old lodgings is the same in all countries, and very often, in the course of my solitary pilgrimages to the holy places of memory and nostalgia, it was enough for me to close my eyes in some old dwelling to carry me back immediately to the somber house of my Danish ancestors and

thus relive, in the space of an instant, all the joys and all the sadnesses of a childhood accustomed to the tender odor which was so full of rain and of the sunset in antique houses’.

The following projects represent the concept of ‘Scent in practice’. The group of West 8 enhances the sense of smell and the experience of the place. They simply created the ‘Pine Cone Garden’ of 2003 filled with pinecones that have strong smell and which evokes the pine forest that was located in the same neighborhood.

Figure 3.1: Pine Cone Garden



Source: www.west8.nl

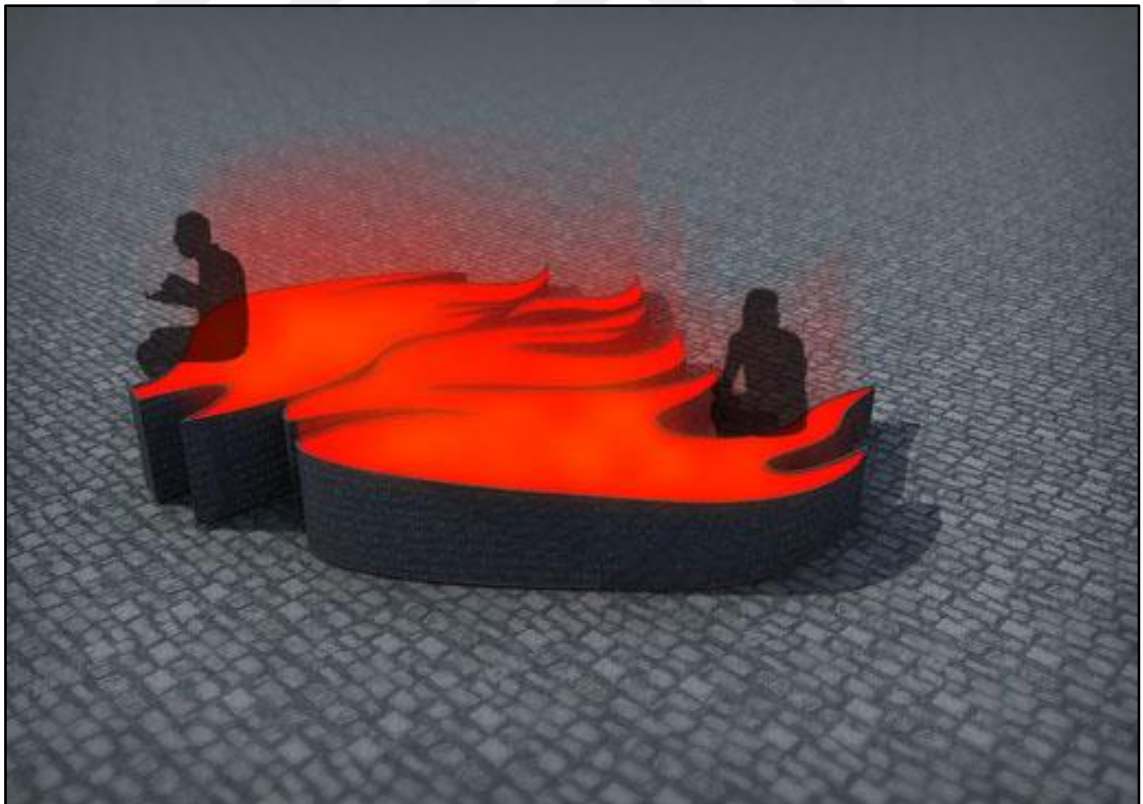
The other one was under the concept of ‘City on Fire/City in Bloom’, it was done in the main square of the city of Rotterdam in 2007, the aim behind this installation was to transform the city bombing into the scent of flowers by creating a sculpture of purple and red flowers, to symbolize the fire and remind the inhabitants that life in the city is always beautiful even after wars, it just takes to look in the bright side and make it blossoming.

Figure 3.2: City on Fire / City in Bloom



Source: www.designundersky.com

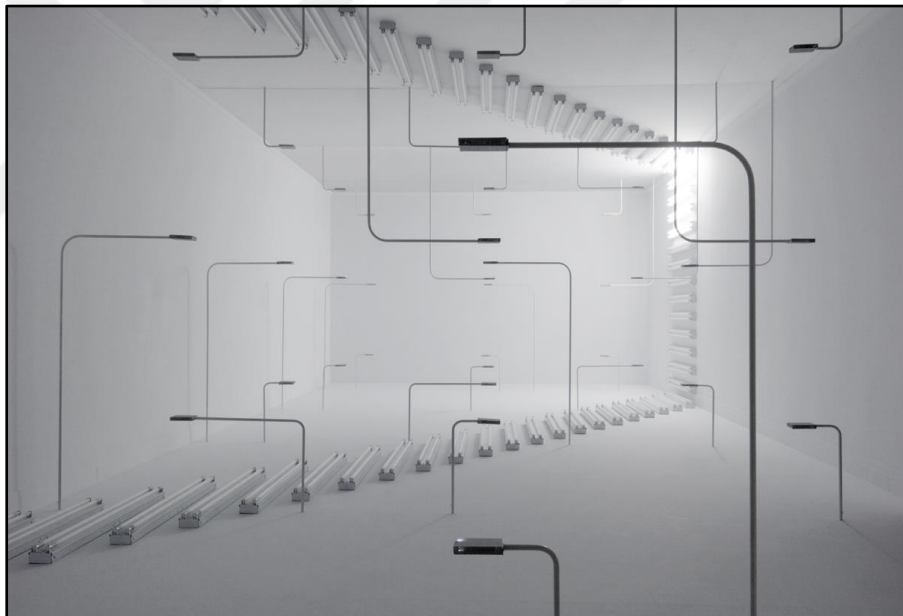
Figure 3.3: Fire Border



Source: www.eikongraphia.com

The last example in this chapter is by the Architect Philippe Rahm. He made use of the sense of smell in his exhibition, to observe the psychological and physiological changes in the humans affected by certain odours. The interior two rooms were painted white and he added some scents on the top of the painting such as: ginger (which stimulates) and the other one was with orange-blossom (that calms). The project Peinture Placebo acted as an experimental technique to perceive all the changes happening in the interior human body. The architect Rahm's works deal mostly with the air movements in the interior spaces, and one his projects called 'Deterritorialized Milieus' (2009) is a double-flow air exchanger made out of wood plates from forests near Paris. Thus, the air that goes back to the room contains a light trace of the wood. So, the aim was to remain some exterior climates in the interior space through the chosen material, to experience the perception of the interior weather through the sense of smell.

Figure 3.4: Interior Weather



Source: www.metropolismag.com

3.2 SMELL AND URBAN IDENTITY

The odorous environment is in danger of becoming 'blandscape' by losing its fragrances by time, due to the industrializations and technologies of nowadays. The original smells of the places now can be found only in the rural, organic and natural parts of the cities, which still treasure the value of their identities in comparison to the other modern and contemporary parts. The point is that the ephemerality of smellscapes

demands efforts of the inhabitants to preserve the true value of the place and its 'real' character. Places from one hand, have layers of civilizations, cultures, and political background that should continue in the process of time; on the other hand, the same thing should be applied to the sense of smell and its role in building 'the sense of place'. Globalization, economic and markets are also important factors in making the difference in the sensory design of the cities at the expense of local identities and cultures. The original flavors and fragrances get synthesized and lose their freshness and uniqueness by the economic productions (deodorization). Therefore in the urban city centers, one can experience mostly the odours of metal, exhaust fumes, etc.... This cause is due to the degradation of natural habits, in which the ecological field is no longer supporting the greenery in the urban environments like before, as well as the desertification.

Smellscapes then, are a part of the social and economical developments of the cities; these activities produce them and they are becoming part of the changes and transformations in the environment. Cities, in other words, are a complex sensory milieu. Thus, smells are essential for the experience of the cities, they offer a kind of an olfactory anchor, and by this I mean the senses in general give another dimension to architecture, it allows the human being to make a deeper connection with the space, by combining the materiality with the immateriality. These connections in regard to functionalism, discipline and enjoyment are thus the main factors of the social convention for a better smellscape design. Referring to Oliver Sacks, in his book in 'The Dog Beneath the Skin', he analyzed the experience of man, who could navigate through the city of New York by his nose, and define each street and corner by its smell: 'hyperosmia'. Each smell was unique and thus, it allowed him to make a relation between scent and space. (Sacks, 1987)

To sum up this part, the environment does not include only the sense of sight (above other senses), because consciously and unconsciously, smell defines the place and gives an identity to '...a land of olfactory blandness and sameness that would be difficult to duplicate anywhere else in the world. This blandness makes for undifferentiated spaces and deprives us of richness and variety of our life' (Pallasmaa, 2005). He continues to explain that: 'An architectural work is not experienced as a series of isolated retinal pictures, but in its fully integrated material, embodied and spiritual essence.'

The combination of such intangible patterns in architecture, with the approach that sense of smell has important effects on the differentiation between places, and consequently for the identity of the city, but also the other fluidities of smells create a mobile topography that can change our perception of the spatio-temporal structure of the environment. As such, our memory draws the past and future spaces in the present moment. These timescapes, which constitute the olfactory memory repertoire, offer great opportunities and challenges to the architects and urban planners to redesign the reality and the truth of the individual.

Barbara and Perliss (2006) on the other hand, discuss the arguments of the smell and place, and they tried to categorize them in two different levels. The first one consists of searching for 'the authentic' smell of place, and the second one is to connect it and frame it in terms of memories and experiences. Thus, to characterize a smell, and describe it as 'authentic' is not properly related to olfactory because this adjective is mainly used when it is about to confront 'the reality'. Therefore, the description of urban smellscape varies from different personal perspectives, in regards to the true meaning of sense of place and its authenticity. Massey (1991) on the other hand examines the flows of the social interactions all over the world and describes: 'how many theorists interpret this as unsettling for individuals' (Henshaw, 2014). She claims that a true meaning of sense of place consists '... a kind of refuge from the hubbub'. But then, we can say that the concept behind the place is related to two major links: the first one is each and every place has a background and an identity, the second one is about the connection of 'in and out' directed towards the history. 'To be inside a place is to belong to it and identify it' (Relph, 1976).

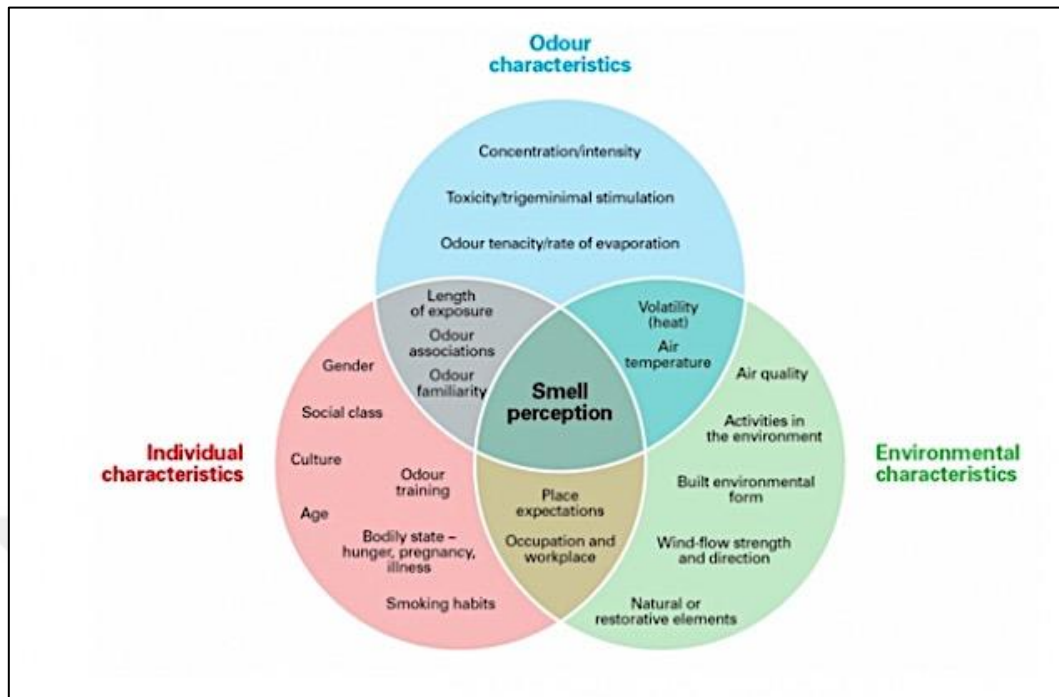
However, Sense of place is then, a flexible concept that takes into considerations the social and environment factors, as well as the personal perception, either in negative or positive terms. It all depends on everyone's view of any certain place. Such conflicts between the ideologies and perceptions (In the chapter: 2), using the sense of smell to define the place carries many problems. The other issue is the differentiation between the place and space, it is a wide topic that cannot be discussed in few sentences, but briefly, the sense of place produces a various associations in a narrow point of view, while the space can be defined in larger scale and always in relation to the history and the time process. Smell is the main factor, which plays in such debates, especially the

familiar odours that can easily be perceived rather than the unfamiliar ones, as well as its connection to the memory (as I mentioned previously), and the other connotations recalled from longer periods of time more than the visual images (Engen, 1982). To better clarify my point of view here, I refer to Victoria Henshaw (2014) who quoted from Barbara and Perliss (2006), they indicate: ‘... cities have odours, and not in the sense of metropolitan- type smells or pollution, but in the proper sense of olfactory essence, of an identity that at times, only a few are able to recognize’, and this confirms that the sense of place is identified by its smell: ‘olfactory essence’. But then, the flexibility of the place should not stop here; they should merge with the surroundings elements to create a harmonious environment in its total, and thus create a sense of familiarity and belongings.

The sense of place is a sense of being collaborated with the social, geographical and environmental factors; in other words and as Drobnick (2002) describes it: ‘places are the structures of feelings’. Such combination between two tensional terms is an artistic expression related to smellscape too, to make a significant link between the daily experiences, feelings and something beyond the physical borders of an environment ...

The experience of smellscape needs a deeper understanding, and this can only be achieved by getting into the human being’s mind to better understand the social, cultural and environmental interactions, navigating through the streets by our noses and using the method of ‘smellwalking’ as a human scale measurement to better identify the cities, described in details in the next chapter.

Figure 3.5: Smell Perception through Different Characteristics



Source: Urban Smellscape (Henshaw, 2013)

3.3 SMELLWALKING

Smellwalking is a sensory method that allows us to have a deeper connection with our environment. It is a human scale process that investigates and analyzes the experiences of space in relation to our senses. This concept was firstly introduced in 1969 as a technique of sonic sensewalking of the cities to explore the interactions of the senses (generally hearing and vision) in design making and urban development. Southworth made groups of people experience the streets of Boston by using their senses while others were deprived of using them; so they were obliged to use wheelchairs or covering their ears with headphones. At the end, the participants who were deprived (for instance from the sense of vision) were more likely to use the olfactory sense. The same experiences happened in many European cities; where the participants were asked to neglect one of the main senses (vision), and experience the city with non-visual senses. Such examples allow the individual to have a deeper contact and ‘a mindful dialogue’ with his/her surrounding, and provide a useful insight about non-visual aspects of the environment, in which, most of us are not aware of.

The methodology of smellwalking offers a valuable understanding of people’s everyday experiences and memories that are related to the concepts of space and place. Henshaw

(2013) led many sensewalkings for educational purposes in Europe with different participants, aiming to detect the odours that define the city and influence the urban experience. One smellwalking was done in the city of Doncaster in England. She organized this experience according to odour types (food, smoking, nature, economy), which allowed variant smellwalking experiences and different results. This study's goals were to document different odours in the urban environment, to explore the relationship between smellwalking and placemaking and perception, and the last one is to consider this methodology in the future as one of the important factors in design and urban practices. Thus, the results highlighted the importance of the smellwalking and the role it plays in the identity of the place and the significance of urban smellscape. In terms of detection, perceptions were perceived in different levels such as the documentation of odours that were detected in specific places, and some on the other hand, were influenced by the temporal pattern and weather conditions: The mental map. This study continued during three seasons: winter, spring, and summer of 2012, as well as at different times of the day. She aimed to get the complete package of smellscape. The environment, the actions and events happening in the certain places and the memories from the past determine the whole experience: 'we are what we remember' (Pallasmaa, 2009). Thus, the main difficulties in such cases, 'olfactory experience' are the verbalization of odours and the smell communication. This field lacks the recording components since the human nose is itself a complex sensor, and hard to document and differentiate each smell according to its specific location and time.

3.4 VISUALIZATION OF ODOURS

Figure 3.6: Sensory maps



Source: www.sensorymaps.com

Odours are hard to be measured, recorded or even described. 'Words alone don't do the sense of smell justice' (Kate McLean, 2011). Thus, when it comes to express and describe them, we lack the specific vocabulary to identify each. Diane Ackerman considers the description of odours in her book 'A Natural History of the Senses': "Smells coat us, swirl around us, enter our bodies, emanate from us. We live in a constant wash of them. Still, when we try to describe a smell, words fail us like the fabrications they are." However, there are other ways that the human being uses to describe the specific odours with words by using 'comparison'. For instance, the room smells like bread, or the car smells like coffee, but the question is how the bread or coffee really smells? It is a major method to use other senses and familiar characters to express and describe the smells. On the other hand, some smells are described as being 'sweet', 'sharp' or 'spicy', which explain that the sense of taste is also part of the olfactory expression, but then it does not quite express well the nature of the smell, because when we describe a smell as 'sweet'; nobody knows exactly how sugar smells like since it has no specific odour, we just illustrate its taste with the 'sugary smells'. In this matter, Aristotle classified odours in seven categories: Aromatic, fragrant, alliaceous, garlic, ambrosial (musky), hircinous (goaty), and repulsive. Besides that, we refer always to the technical sphere and try to categorize odours according to scientific terms framed by time, temperature, humidity and spatial distribution. But then, nobody agreed on the categorization system to follow, they themselves developed their particular language to verbalize them according to different sensations. We can explain this by the same fact for the other senses, as such auditory. The harmony and the sound of notes in music are kind of feelings translated into sounds. Thus, it is hard for the human being to express them in words, and the same case then is applied to the sense of smell. One could scent different odours but never express the smell itself. That's why, we often go with the easy way to describe them as either being good or bad, but it doesn't come neatly to the description or the composition of the odour. Remarkably, the good odours such as aroma, fragrances, and perfumes, are compensated by bad smells. We usually describe the smell in a negative term: this place stinks, or putrid, or the like. Even the word 'smell' itself in our societies refers directly to a negative connotation; as if there is a desire to eliminate this sense completely from our daily environments. This invisible sense must remain; by the role it plays in space, we have to exercise and

verbalize it with the help of the other senses so that we can apply it in the architectural context.

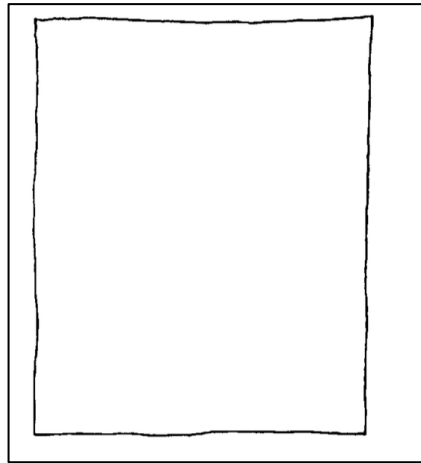
Technically, architects can communicate through their drawings, by representing their ideas, feelings, concepts and structures. But when it comes to smell, how can the architect represent the invisible dimension the space? Therefore, drawing alone cannot really represent this sense and its qualities related to architecture, it requires another way of expression and illustration. (Turin, 2006)

'I remember once walking across a parking lot between industrial buildings at the headquarters of a perfumery firm and suddenly catching an intense whiff of some molecule they had just finished making and were probably dispensing into drums. It smelted of fruit, but not of any particular fruit, perhaps some compromise between peach and apricot, though more vivid and less subtle than either. It only lasted a few seconds, but left an impression of indefinable oddness. It was only much later that I managed to put a finger on why it was odd, and it came to me suddenly as a picture, not words [emphasis added]. What was strange about the fruity whiff was what was missing: colour. The grey of the concrete, the pleasant wind in the blue sky, the green of the English countryside - all were accounted for, pictures and smells present and correct. Suddenly this huge orange-coloured smell comes out of nowhere. To justify its presence, there should have been a pile of ripe fruit one hundred metres high, but there was nothing, only a light breeze coming from a nondescript building...'

Turin gave another method to express the olfactory experience, to better verbalize the feelings into something tangible. He expressed this by images, by visualizing the object from the origins of the smell. Engen in this issue wrote: "Most people believe that they can indeed recall odors, but they will usually agree after further introspection that what comes to mind is some object associated with an odor, such as the visual image of a lemon rather than a lemony odor." Therefore, the combination of both smells leads to a better expression, as Turin did. The sense of vision added an artistic illustration to smell, by giving it another depth, pattern or even colors (as mentioned above).

In the poem of Shel Silverstein, he questions: "Will you draw an invisible picture for me?" In this issue, the invisible frame of the picture added another layer of imagination and gave a deep understanding to the context.

Figure 3.7: The Invisible Boy



Source: www.nytimes.com

Similarly, in architecture and urban design, when it comes to illustrating odours in specific places, they created a technique called: smell mapping.

Smell maps bring the information of space, the different smells that are detected there, all together with the topography and climate conditions, in a very artistic representation by adding colors and patterns to make it a sensuous representation.

Designer McLean in her work explained why she uses this kind of smell mapping: ‘I was doing a master of fine arts in graphic design at Edinburgh College of Art in 2009, and was looking at the city from the perspective of an outsider, with people describing different parts of the city. I was translating those words into textures, and then creating tactile maps. I was overlaying texture onto the physical plan of the city’ (McLean, 2014).

Therefore, smell maps are the actual investment of the smellwalking, in terms of human perceptions of the environment, in both communicating and recording levels. They have the capacity to do more than measuring and documenting; they capture the words and translate them to emotional, invisible and sensual elements that shape the city, and by doing so, it also provides a new approach to refreshing the non-visual senses.

‘The sky is the drama of your painting, you must see this drama and hear the music of the land, feel the wind on your face and smell the scent of the moor. If you can smell it, you can paint it’ (Jackson, 1972).

Senses contribute in the making of the built environment and society; they are a part of the understanding of space and its qualities. They mediate between the physical body

and the mind in a deeper connection, between the material and the concept and the life experiences in general. Therefore, the sense of place can reach realism just and only through the human senses, and this can be achieved by the total experience that goes with a reflective mind (Tuan, 1977). Each sense has its own role in framing architecture and landscapes through the sensorial perceptions. The sight for the architect and the artist is for observation with feelings, not just a look. This sense allows the person to spot the light and so the shadows that it creates and adds an aesthetic touch to the buildings, it also helps to paint your own landscape that might be captured in the past and exists in the memories. The proper use of the eye is more like a mental projection or making a movie; it is up to the person to pick the frames, the background, the colors, that will help him to come up with the perfect scene.

Hearing on the other hand is the sense of inspiration that has its own unique touch that adds beauty to architecture. The sound of the wind when it touches the leaves of the tree or the drop of the rain on a calm day, ‘ the music of the moor’ they all provide another dimension to the space and reflects beauty on the painting. And when it comes to touch, it is a different kind of communication, and though the patterns and the textures, the person can experience the space in a profound way, makes it easier to feel, and adds reality to the artwork. Finally, smell is the most evocative sense because it has a direct connection with emotions, especially those smells related to the landscape that awakes some feelings whenever to smell them, such as the smell of coffee, the wet soil after the rain, the saltiness of the sea, etc.... the painting should include all these senses, as when you frame the landscape, you feel the patterns of the wall, you hear the sound of the furious waves, you see the complete scene, and definitely you smell the fragrance of it. It will help to realize the picture in mind and freeze the moment it in the painting. ‘It you cannot smell it, you cannot paint it’ (Jackson, 1972)

For Helen Keller, she described the use of senses as ‘ seeing hand’ or ‘ blind seeing’:

“My fingers cannot, of course, get the impression of a large whole at a glance; but I feel the parts and my mind puts them together. I move around my house, touching object after object in order, before I can form an idea of the entire house... It is not a complete conception, but a collection of object-impressions, which, as they come to me, are disconnected and isolated. But my mind is full of associations, sensations, theories, and with them it constructs the house. The process reminds me of the building of Solomon’s temple, where was neither saw, nor hammer, nor any tool heard while the stones were being laid one upon the other.”

Keller clearly expressed the ability and the powerful facts of the senses in making the landscape of mind. Although she did not have extraordinary senses in comparison to us, she build her entire life based on them, and sensed every detail, that made her a ‘legend woman’, she completely formed her own space in her mind and she saw the whole through it. I again refer to her saying:

“...From philosophy I learn that we see only shadows and know only in part, and that all things change; but the mind, the unconquerable mind, compasses all truth, embraces the universe as it is, converts the shadows to realities...though with my hand I grasp only a small part of the universe, with my spirit I see the whole, and in my thought I can compass the beneficent laws by which it is governed.”

The landscape has all the features of the spoken language; it contains patterns of shape, structure, materials, formation and function. But like impressions, smells might be spatially ordered or place-related, and thus, it allows the individual to draw his own design of landscape according to his invisible dimensions that he created through his experiences.

4. CASE STUDY

Various and different researches have been done about the perception of the olfactory landscape, but actually none was taking as the main rule to follow next in the future studies, and to achieve the quality of the environment. The key connection that seems to link the researchers is the multi-sensory perception, especially when touch meets smell and sound, to create a sensory architecture and urban space. And so is my case study, it doesn't include smell as the specific sense, but it goes beyond to make the other concepts, as such: memory, mental projection, temporal factors; part of the sensory experience of the urban environment, and also to prove that all these are shaped in a way or in another, by the olfactory dimension. Therefore, the application of the theory should merge with the case study (survey results, sensewalking data) to demonstrate that our hypothesis is right.

To be able to apply this on our case study, we came up with two main concepts: the concept of culture/identity of the city and the other one is the space-time perception. The first one consists for quantitative research by applying a survey on the three different areas of Istanbul (Eminönü, Karaköy, and Beşiktaş); since the three of them, have a unique value and perspective that identify the city differently. The survey will be done personally by interviewing random people that we come across, and ask them few questions that can somehow give us general ideas about the olfactory dimension in those areas. On the other hand, the second one is based on the detection of the two pillars that makes or breaks the environment: olfactory ambiances, and the mental projection of the time and space factors. To do so, we selected five participants to follow the sensewalking path, and through the experiences of each, the results of how olfactory influenced their perception of the environment through different times of the day will be expressed through analysis and diagrams; as well as the way they could remember previous moments of their lives in different places through this sensory experience. The olfactory investigation and experience was done previously by: Henshaw (2007) in the English cities, also by Gresillon (2004), Diaconu (2007), and Bouchard (2013). But our case study differs from the previous ones, since we applied two different quantitative methods. The first one is about framing the city and analyzing the layers of history and culture, and the second one is to relate and merge the sense of

smell with the concepts of time and space; and how these three factors add another layer to the experience of the space.

In this work, the three sites will be analyzed through the smellscape strategy, by re-defining the perceptions of the districts in term of smell framed by time and space. In the continuation of this study, the sensewalking path will be drawn from Beşiktaş passing by Karakoy and ending it in Eminönü, where the last point is in the Egyptian Bazaar (Mısır Çarşısı). But before that, many other areas in Istanbul were proposed to be analyzed in terms of olfactory perception, but the reason why these three sites were chosen is because they represent the historical, variant aspects of Istanbul in every dimension: Social, cultural, history, activities... and most of all, they include all kind of smells that the one can experience in the city. This table shows a comparison between Karaköy, Eminönü and Beşiktaş with other different places in the city:

Table 4.1: Comparison of different places in Istanbul

Area	Eminönü	Karaköy	Beşiktaş
Characteristics	<ul style="list-style-type: none"> The narrow and lined streets. Variety of smells Crowded area Historical background Sea side 	<ul style="list-style-type: none"> Different space perceptions Narrow historical streets Variety of smells Sea side 	<ul style="list-style-type: none"> Crowded Area Variety of activities and space perceptions Different smell experiences Sea side
Activities	<ul style="list-style-type: none"> Egyptian Bazaar Galata Bridge Historical Buildings 	<ul style="list-style-type: none"> Cafes Historical Background Galata Bridge Fish Restaurants 	<ul style="list-style-type: none"> Beşiktaş Bazaar Side Side Universities and Educational buildings Restaurants
Cultures	Multicultural Tourists	Multicultural Tourists	Locals/ Multicultural/ Students

4.1 HISTORICAL BACKGROUND

4.1.1 Site 1: Eminönü

Eminönü, located in the historical peninsula of Istanbul, is one of the oldest districts in town. Surrounded by the Marmara Sea from the south, Haliç from the north and Istanbul Bosphorus from the east. The area was the central point through the history of the city, because of its strategic location in both fields: land and business (transportation). The name ‘Eminönü’ was taken from the Ottoman ‘customhouse’, referring to its position (the axis of the principal roads of the city).

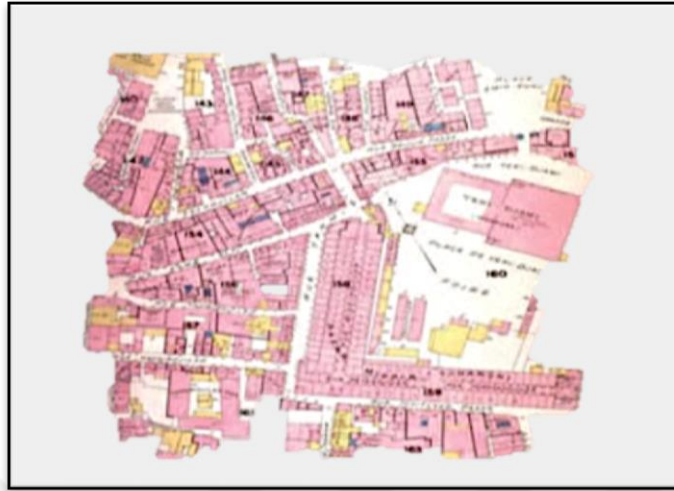
Figure 4.1: The Location of Eminönü District



Source: Google Maps

Eminonu square has always been active since it is located beside Galata Bridge; it gave another identity to the area in terms of social and economic factors. It is the meeting point of different nationalities and the gathering center of variant activities. On the other hand, in the Ottoman period the population of the Eminönü has increased and the Jewish people mainly dominated it. Thus, it created a kind of change in the social culture and the trade structures. Afterwards, many big changes followed, especially in the 19th century, when the modernization took place in the area. Consequently, the urban design was affected and aimed to reform the city and take another path to reach the modern world (European model).

Figure 4.2: Pervititch Map of Eminönü in 1887



Source: <http://www.mimarlikmuzesi.org> Jacques Pervititch, "Sigorta Haritalarında İstanbul"

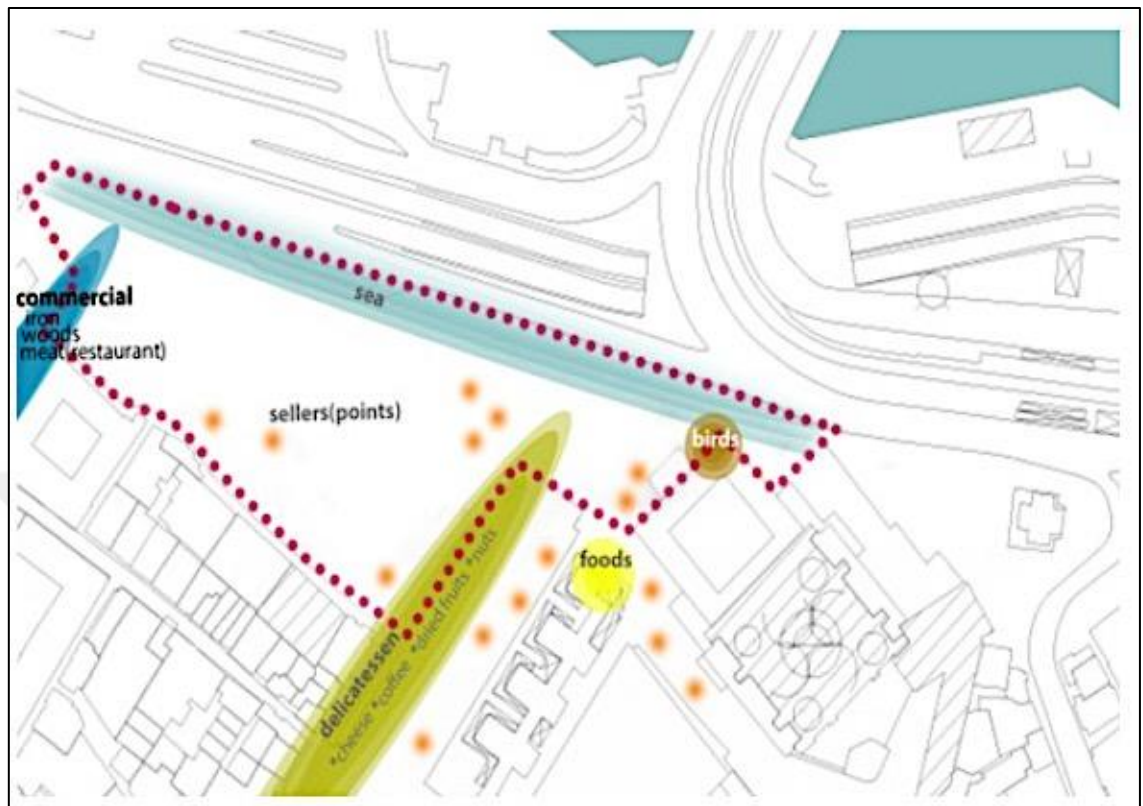
Although Eminönü preserved the ‘oriental side’ in the area, especially the historical buildings, as such: the mosques and the bazaar; this mixture of cultures, the narrow and lined streets, the diversity of activities, spatial perceptions, and variety of user habits, made Eminönü one of the main areas that represent Istanbul in smaller scale.

Figure 4.3: Eminönü Square



Another dimension that truly shaped the area, and in which we will get into further details in the up coming chapters is the sense of smell. According to some studies done by many researches, the unique scents of coffee, sea, chestnut, corn, and spices, especially around the Bazar and the mosque, created a unique character of Eminönü, and to Istanbul in bigger scale.

Figure 4.4: Smell Map of Eminönü

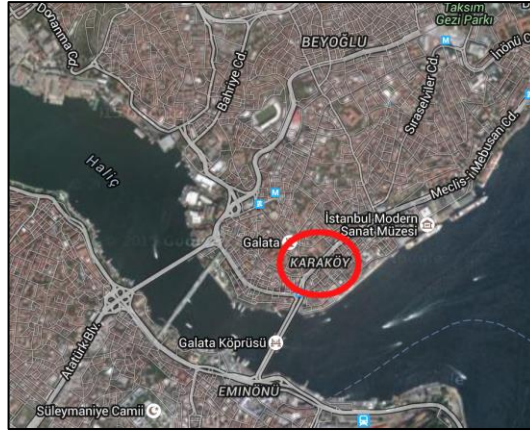


Source: It was created by many researches from Istanbul Technical University (Ozdemir, 2013)

4.1.2 Site 2: Karaköy

Karaköy is one of the oldest spots in Istanbul, known for its strategic location and the heart of the city's economy. Until nowadays, the area still remains its importance in terms of both what it was once and what it is now becoming. Yet, Karaköy was considered of one of the best Galata's neighborhood, and the port there gave a different atmosphere to the area, because it was one of the busiest harbors in all over Europe. The architectural style in Karaköy is very different from the other districts in the city. It has a unique touch of oriental and western styles, in fact, the area looked so much like Italian cities in the 15th century, yet the traces of this past is still visible today. (Davies, 2012)

Figure 4.5: The Location of Karaköy



Source: Google Maps

Back in time, more precisely in the Ottoman period, the area was considered the center of all the businesses' and commerce activities, yet all the major banks were and still located over there. On the other hand, Karaköy was always known to be home for all kind of nationalities over the years, especially: Greeks, Armenians, Jews and Italians; and later on the area expanded to reach all Beyoğlu district. This multicultural union created a beautiful harmony in the area and it was translated into buildings: churches, museums, mosques, etc....

Figure 4.6: Karaköy District in Istanbul



Many historical buildings in Karaköy were destroyed or transformed into something else with different functions, and this affected the area in term of culture, social factors and the urban planning. This table shows the historical transformations of the main buildings in Karaköy through the years:

Table 4.2: Transformations of Karaköy’s historical buildings through the past years

Exterior View	Interior View	Space Name	Construction Date	Conversion Date	Original Use	New Use
		Istanbul Modern	1950	2004	Naval Warehouse	Contemporary Art Museum
		Salt Galata	1892	2011	Ottoman Bank	Contemporary Art Foundation
		Art Sümer	End of 19 th century	2005	Storehouse	Art Gallery
		Galeri Mana	19 th century	2011	Wheat Mill	Art Gallery
		Istanbul 74	19 th century	2009	Commercial Purposes	Art and Culture Platform
		Unter	1960	2012	Workshop	Café
		Nano	1960	2011	Workshop	Café
		Atölye 11	1840	2011	Orthodox Church	Design Store
		Karabatak	1950	2011	Metal Workshop	Café
		Bahçeşehir University	1950	2013	Commercial Purpose	Faculty of Communication
		Karaköy Külâh	1950	2011	Ice Cream Cone Factory	Temporary Project Space/Night Club

Source: A Case for Istanbul-Karakoy District. Karsılı, 2015

Today Karaköy is still strongly linked to the cultural background that it preserved over the past years. It is still reflecting the historical streets of the area, as such: Bankallar Caddesi. Yet, it still remains the beautiful old buildings with different cultural and business functions: SALT Galata. It is one of the most important libraries of the city that connected the past to the present through the continuity of knowledge and culture. Moreover, another strong link between Karaköy itself and the sea that took the olfactory dimension of the area into another level. The scents of the area define every street and

activities over there. However, the multi-sensory experience of it varies and truly gives an original identity that makes not only Karaköy but Istanbul is general: A sensuous city.

Figure 4.7: Historical buildings of Karaköy- Bankallar Caddesi



Source: www.theguideistnabul.com

Figure 4.8: The Orthodox Church in Karaköy



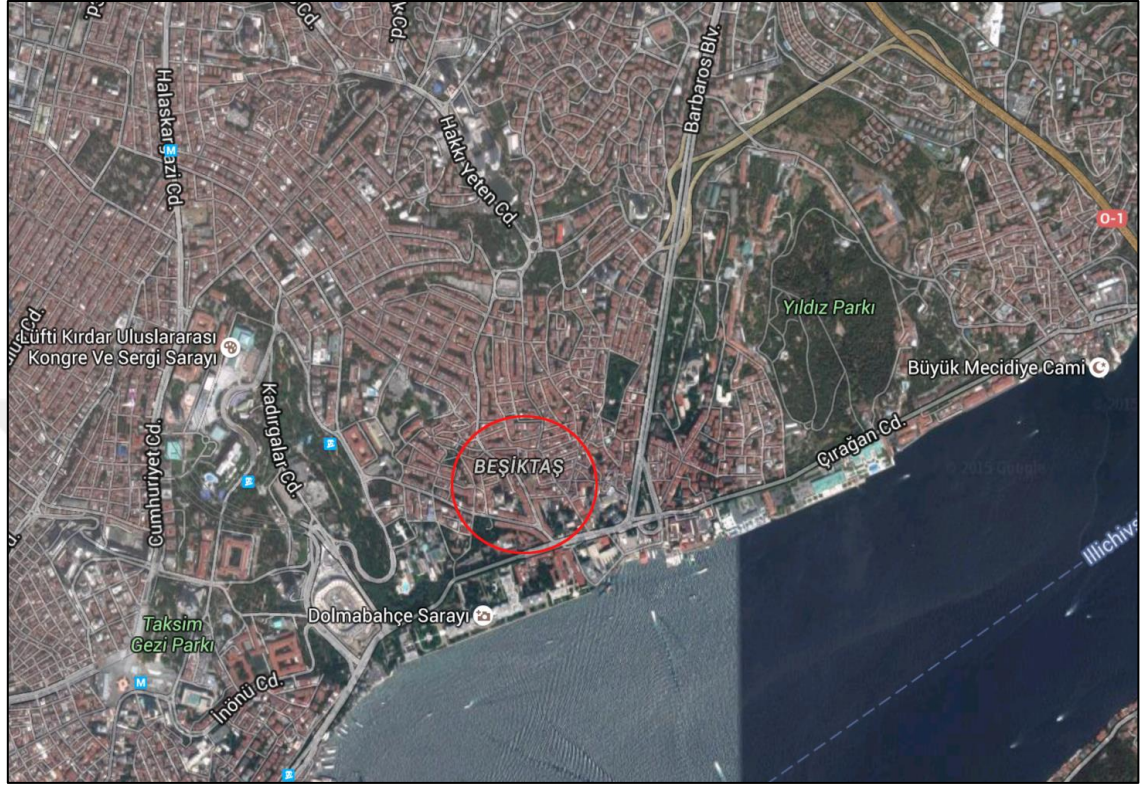
Source: (Caymaz, 2011)

4.1.3 Site 3: Beşiktaş

With its strategic location, between the Asian and the European, Beşiktaş is also one of the oldest districts city centers of Istanbul. By being also the major transportation spot,

it made the area easily accessed from different lines of the city, yet a business and residential region.

Figure 4.9: The Location of Beşiktaş District



Source: Google Maps

Beşiktaş shares the same aspects of the two previous sites: Eminönü and Karaköy in terms of historical background, since they were all considered as the city centers of various activities: business, culture, and society; as well as its relationship to the sea and the kind of atmosphere it creates. However, Beşiktaş differs from the others in educational aspect since most of the universities are located over there, so most of the students (national/ international) frequent the area daily, and during different times of the day. Beşiktaş is known also of its Bazaar that represents all kind of odours that the person may smell all along the city (the smaller scale of Istanbul), especially the fish market that was redesigned recently by GAD architecture. All these activities and various scents in the area made out it a unique place in every perspective.

Figure 4.10: The Seaside of Beşiktaş



4.2 SITES ANALYSIS

The sensuous environment requires many new methodological tools to follow and study. In Grenoble School of Architecture in France for instance, they developed the three points to consider (Bouchard, 2013 taken from Augoyard, 1995):

- **Context:** The consideration of the relationship between the individual and environment (physical and social)
- **Understanding:** The closer the experience to the individual, the more beneficial is the study's analysis.
- **Dynamic:** Characterization of all the physical and temporal conditions of the sensory space.

However, this research focuses mainly on three main points, it is considered to be a cognitive approach, by taking into consideration the mental representation of the odours experienced, thus related to the olfactory memory. To achieve this, the method should examine in depth the experience of the city and the sensuous environment of the individual, by taking into considerations each of the followings:

1. Smell has a strong evocative power. The methodological tools must integrate the concepts of memory functioning.
2. The smell is linked to the emotional-perceptual context; thus, the experience should blend with every cultural and environmental factors of the specific environment.
3. Since the verbalizations of scents are hard, the expression of olfactory should be metaphoric, yet artistic presented in poetic illustrations and maps.

4. As the odour varies, all the physical elements of the environment as such: temperature, humidity, time, wind change consequently the character of the olfactory landscape as well.

Figure 4.11: The Sensewalking Path



To apply the strategy of smellscape and olfactory experience of the city in a qualitative and quantitative approach, it can be summarized in the following points:

1. The sensewalking Path
2. Preliminary observations of the sites
3. General information about the physical conditions/ scents perceptions/ social behavior of the perceived and experienced odours.
4. Questionnaire and survey / analysis of the participants and analysis of the data
5. The same application on smaller group of people (the experience of the whole path)
6. The verbalization of odours and their link to memories of each participant
7. Sense of smell map

The first phase of the olfactory investigation: Questionnaire and survey in the three sites:

Questionnaire Form:

Research Question:

How can the urban smellscape in Istanbul, more precisely in the regions of Eminönü, Karaköy and Beşiktaş be explored in order to facilitate individual and shared interpretation of the olfactory in our understanding of place?

Sub questions:

What is it that makes Istanbul smell like Istanbul?

What are the odours that you smell most in this region?

Can you define these regions by their main smells?

What kind of odours you like/ dislike in Eminönü/ Karaköy/ Beşiktaş?

Can you imagine Eminönü / Karaköy/ Beşiktaş without odours?

4.3 THE PARTICIPANTS

Table 4.3: The information of the participants in Beşiktaş

Participants	Age	Gender	Origins	Language	Notes
No: 1	19	Male	Istanbul	English-Turkish	-He doesn't smoke -He lives in Kaghtane - Familiar with the site -Chilling by the sea side -He barely speaks English
No: 2	22	Male	Izmir	Turkish	-His first visit -He doesn't smoke -He speaks Turkish -He is not familiar with the site
No: 3	25	Female	Istanbul	English-Turkish	-Smoker -Speaks barely English -She lives in Levent -Familiar with site; she passes through it daily
No: 4	27	Female	Istanbul	English	- She doesn't smoke - She speaks English - She does advertising in the streets -She lives in Maslak
No: 5	22	Male	Istanbul	Turkish	- He is a smoker - He speaks Turkish - He lives in Esender - Familiar with the site

No: 6	17	Female	Istanbul	Turkish	<ul style="list-style-type: none"> - Smoker - She lives in Sarıyer - She speaks Turkish - Familiar with the site
No: 7	18	Female	Istanbul	Turkish	<ul style="list-style-type: none"> - She doesn't smoke - She lives in Şişli - She speaks Turkish - Familiar with the site

Table 4.4: The information of the participants in Karaköy

Participants	Age	Gender	Origins	Language	Notes
No: 1	37	Female	Australia	English	<ul style="list-style-type: none"> - Tourist - She doesn't smoke - She eats fish - She speaks English - She was chilling by the sea side
No: 2	42	Male	London	English	<ul style="list-style-type: none"> - Tourist - He doesn't smoke - He eats fish - He speaks English fluently - He was chilling by the sea side
No: 3	18	Male	Istanbul	Turkish	<ul style="list-style-type: none"> - Smoker - Familiar with the site - He speaks Turkish - He was walking in the streets

No: 4	22	Female	London	English	<ul style="list-style-type: none"> - She doesn't smoke - Tourist - Film maker - She speaks English - She was exploring the site
No: 5	56	Male	Germany	English	<ul style="list-style-type: none"> - Tourist - He doesn't smoke - He speaks English - He was sitting with the fishers
No: 6	47	Female	England	English	<ul style="list-style-type: none"> - Tourist - He doesn't smoke - He speaks English - He was exploring the area with his family

Table 4.5: The information of the participants in Eminönü

Participants	Age	Gender	Origins	Language	Notes
No: 1	64	Female	Australia	English	<ul style="list-style-type: none"> - She doesn't smoke - Tourist - She speaks English - She was exploring the area
No: 2	69	Male	Australia	English	<ul style="list-style-type: none"> - He doesn't smoke - Tourist - He speaks English - He was exploring the area

No: 3	57	Female	Holland	English	<ul style="list-style-type: none"> - She doesn't smoke - Tourist - She speaks English - She was exploring the area
No: 4	63	Male	Holland	English	<ul style="list-style-type: none"> - He doesn't smoke - Tourist - He speaks English - He was exploring the area
No: 5	44	Female	Sweden	English	<ul style="list-style-type: none"> - Smoker - Tourist - She was eating corns - She speaks English - She was exploring the Bazar -She has flu
No: 6	21	Male	Germany	English	<ul style="list-style-type: none"> - He doesn't smoke - Tourist - He speaks English - He was exploring the Bazar

No: 7	19	Female	England	English	<ul style="list-style-type: none"> - She doesn't smoke - Tourist - She speaks English - She was exploring the Bazar
No: 8	60	Female	England	English	<ul style="list-style-type: none"> - She doesn't smoke - Tourist - She speaks English - She was exploring the Bazar

No: 9	57	Female	England	English	- She doesn't smoke - Tourist - She speaks English - She was exploring the Bazar
No: 10	67	Male	England	English	- He doesn't smoke - Tourist - He speaks English - He was exploring the Bazar

In our work, we thought it is important to include all these information about the participants to be able to make an accurate experience. Therefore, age, gender, smoking habits, and physical condition (flu, for example) could influence the sensory perception that varies from a person to another. Moreover, the cultural background and the nationality of the participants influence the olfactory perception (as we have mentioned in the previous chapters). It varies from one culture to another. We also noted ethnicity and nationality as olfactory perceptions can, as we have risen in previous chapters, vary from one culture to another. In addition, Turkish participants could express more freely their odour perceptions, while those who were foreigners and English was not their mother tongue, found difficulties to find the right words to express what they have experienced.

4.4 RESULTS AND FINDINGS

The olfactory experience has raised different findings expressed by the participants. Different types of data were analyzed through the process, to find out the real characteristics of the smellscape in Istanbul. Time, weather conditions, and other physical factors (Humidity, winter season) took part of the experience, thus they influenced the olfactory experience as well.

Main smells:

Table 4.6: The main smells experienced

	Main Smells	Frequencies
	Simit/ Coffee/ Fish/ Corns/ Spices/ Sweets/	

Food	Sandwiches/ Meats/ Fruits/ Beers/ Vegetables/ Chewing-gum/ Oil/ Bread/ Burgers	70
Nature	Sea/ Flowers/ Trees/ Park Wood/ Fresh- salty water/ Birds/ Plants	55
Pollution	Cars/ Petrol/ Cigarettes/ Cigars/ Nargile/ Sanitary/ Motorcycles	84
Climate Effects	Sun/ Wind/ Fall/ Less fresh/ Humidity/ Cold/ Morning/ Afternoon/ Polluted air/ Loud	24
Urban	City/ Streets/ Boulevards/ Bazar/ Shops/ Cafes/ Parks/ Parking	54
Perfumes	Flowers/ Clothes/ Soap/ Cleanness	24
Materials	Oil/ Concrete/ Bricks/ Carton/ Wood/ Burning wood/ Plastic/ Leather/ Mosaic/ Plaster	43

The second phase of the olfactory investigation: For different and wide reactions of the olfactory perception, the second phase of the experience was to meet a small group of people (five participants, somehow related to art) and to have a close up view on the urban smellscape of Istanbul. The journey began on 20th February at 11:00 am, from the same starting point of the sensewalking path (the figure 5.13): Beşiktaş. The participants had different cultural background, different age, and gender. The goal was to have a multisensory experience with different point of views and variant calls of memories.

The path starts on the seaside of Beşiktaş, where they are many cafes located in a liner row. It passes by other restaurant, bus stations, and flower shops. The road continues with variant smells produced by historical buildings (Dolmabahçe Sarayı) and the trees all along the road. It passes, then on much traffic roads located on the seaside as well (which made the experience more beautiful). Five hundred meters later it turns on an avenue for small cafes, restaurants and other small businesses (Tophane). After a couple

of narrow streets, we enter the Galata Bridge, the main location of many fish restaurants. The journey continues on the same path until we arrived to the Egyptian Bazaar, where the odours truly gave the oriental aspect and identity to the area (Eminönü).

To be more specific, the sensewalking path was divided into different zones according to the main smells that define the area. The following maps show the zoning of each experienced part of the path. The whole experience was on foot and it took on average 2 hours to complete it, depending on the walking speed and stops (lunch and coffee breaks).

Figure 4.12: Path Zoning for Beşiktaş District

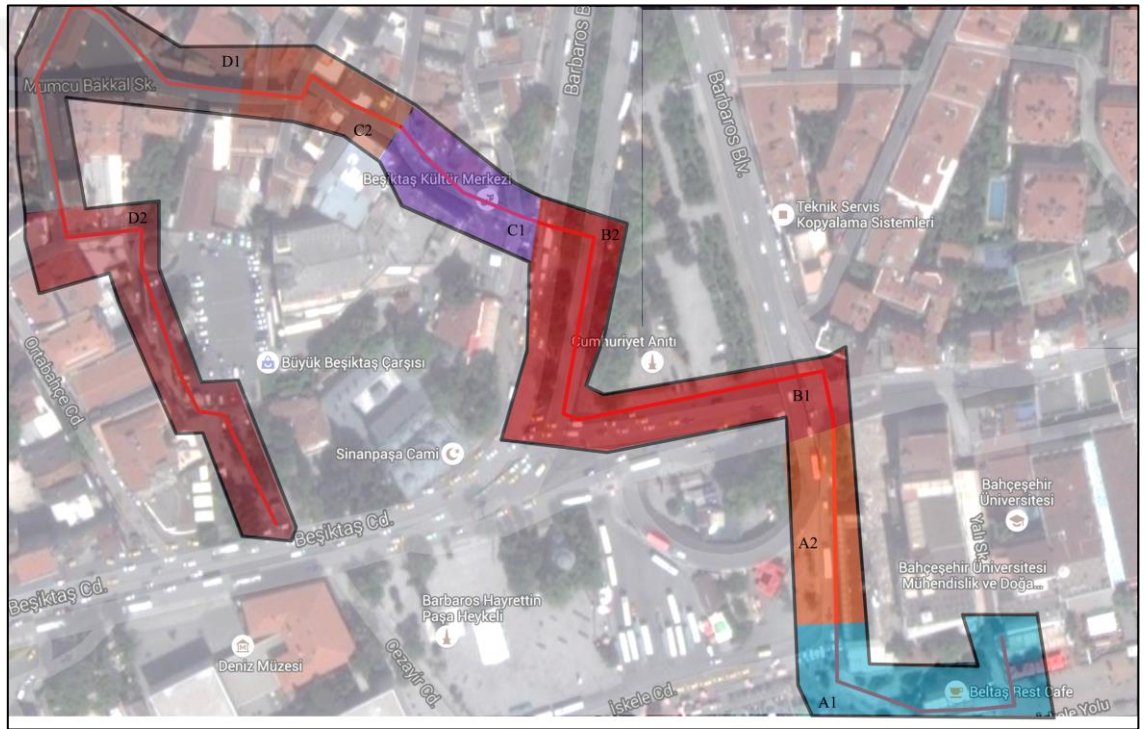


Figure 4.13: Beşiktaş Seaside (Zone A1)



The zone A1 is a sector located all along the sea and facing the Asian side of Istanbul. Many cafes are located in a linear row, where the university of Bahçeşehir is also part of it. The traffic in the area is regular from the morning until the evening. The main port of the city is also located over there, where all the ferries stop there to transport the passengers from the European side to the Asian.

Figure 4.14: Beşiktaş Zone A2



Figure 4.15: Beşiktaş (Zone B1)



The zone B1 is the Barbaros Boulevard, one of the major long streets of the city. It goes an in the south-north direction from Beşiktaş Square passing through Yıldız and Zincirlikuyu, as well as the Büyükdere Avenue. It is a mixed sector. Cafes, offices, schools, parks, shops and houses constitute a variant urban environment. The traffic in the area is very dominant since it is one of the main accesses to the other parts of the city. The variety and diversity of the Boulevard creates a dynamic lifestyle and adds big value to Beşiktaş.

Figure 4.16: Beşiktaş (Zone B2)



The zone B2 is the Beşiktaş Bazaar. It is a sector mainly commercial, and a center place of the area. It contains different shops located all over, restaurants and hotels. It is also known for its eagle statue that represents the football team of Beşiktaş. Moreover, the fish market (Zone C1) is located on a triangular site. It is an iconic venue where many locals and visitors buy fresh fish daily. It was restored recently by GAD architecture to maintain its position in the Bazaar.

Figure 4.17: Beşiktaş (Zone C1)



Source: www.archdaily.com

Figure 4.18: Path Zoning References (Karaköy)

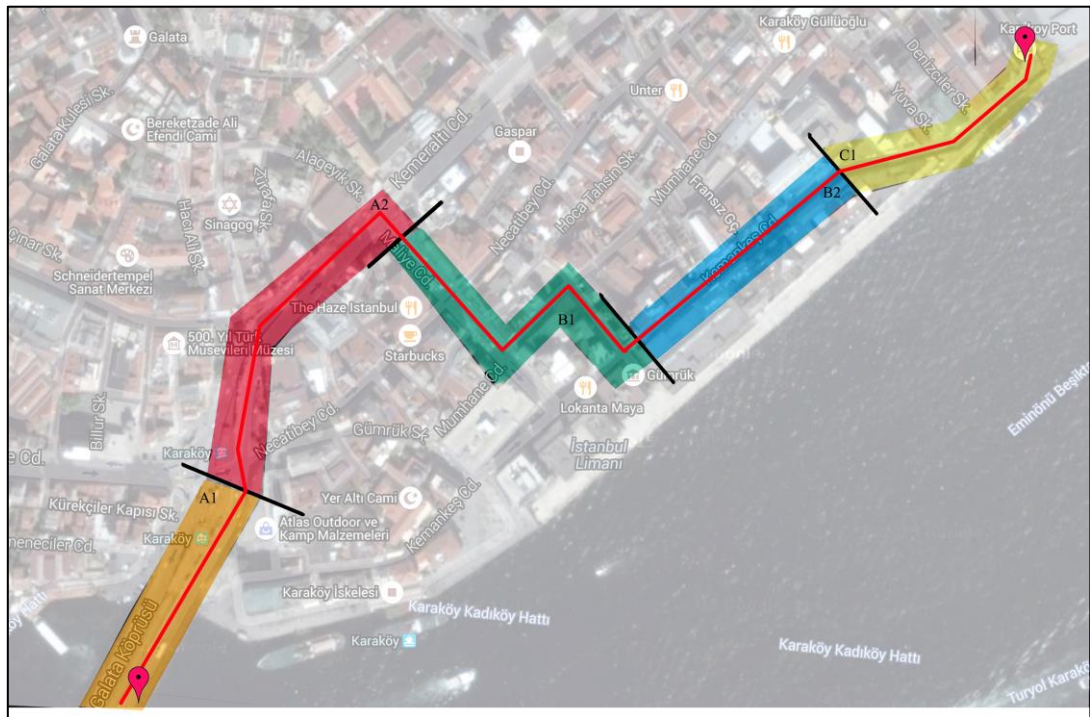


Figure 4.19: Karaköy, Galata Bridge (Zones A1, A2)



The zone A1 and A2 represent the Galata Bridge, one of the oldest and historical districts of Istanbul. Today it is an important transportation point, similar to Eminönü area, at the other side of the Galata Bridge. Known for its fish restaurants located all over the bridge, it creates a different energy and dynamism to the area. The traffic in the area is a major transport center for intercity and international passenger traffic. Moreover, the district and the surroundings make the area a lively business center, where all kind of mechanical and electrical items and located.

Figure 4.20: Karaköy (Zone B1)



Zone B1 is an active and dynamic neighborhood of Karaköy, where tradesmen's workshops share narrow streets with different cafes and galleries, and where stylish shops cohabit alongside with other traditional boutiques. This area represents somehow the miniature of Istanbul. The same characteristics apply on the zone B2 and C1.

Figure 4.21: Karaköy (Zone B2)



Figure 4.22: Karaköy (Zone C1)



Figure 4.23: Path Zoning References (Eminönü)

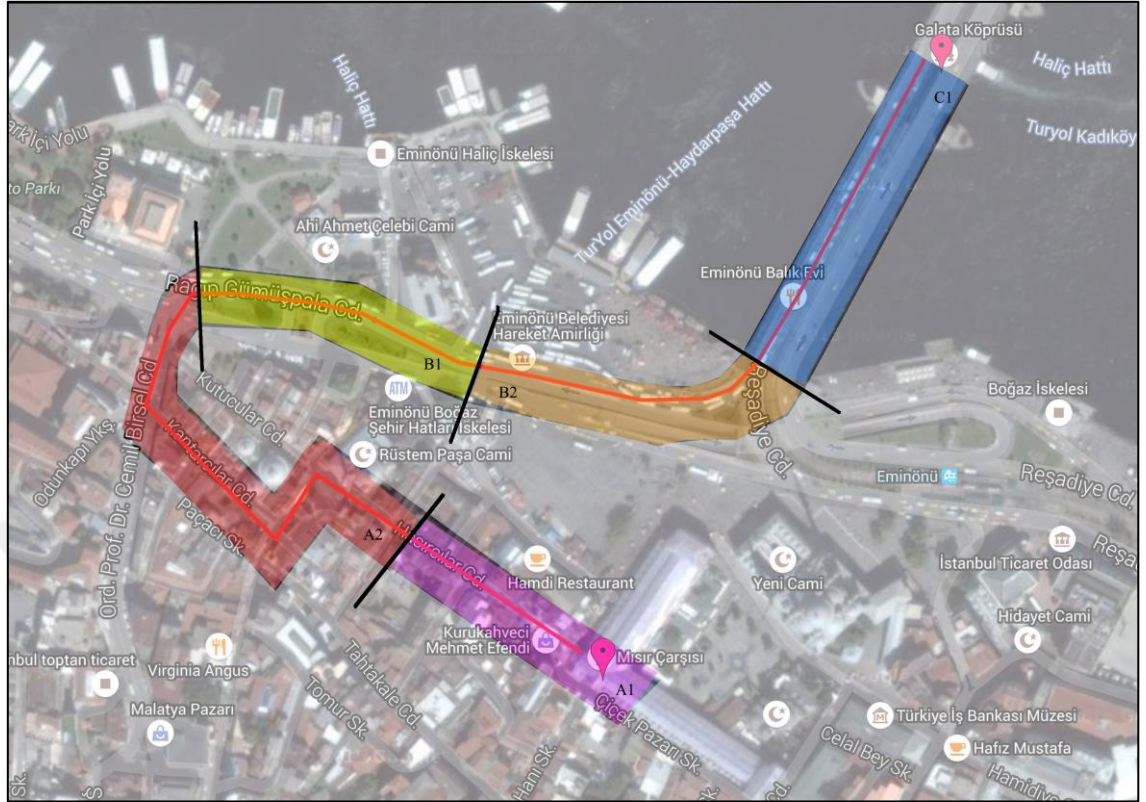


Figure 4.24: The Bazaar (Zone A1)



Figure 4.25: Eminönü (Zone A2)



The zone A1 is one of the largest bazaars in the city. The Egyptian Bazaar is located in the Eminönü district and it is the most famous with its spices and ingredients are displayed alongside the covered building. It a center touristic place from different and variant people from all over the world, and which creates a different energy in the area and makes it vibrant through the day and night time.

Figure 4.26: Eminönü (Zone B1)

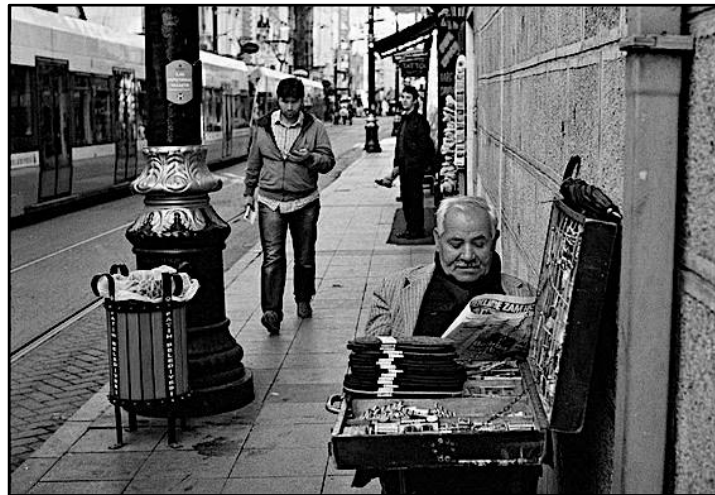


Figure 4.27: Eminönü (Zones B2, C1)



The zones A2 are located all over the Ragıp Gümüşpaşa Avenue. This area is a maze of narrow streets that specialized in the commerce buildings, ports and markets that had been the major commercial area of the city since its history.

The zones B2 and C1 are the other opposite side of the Galata Bridge (as mentioned above in the zones A1 and A2 in Karaköy

Figure 4.28: Comments of the participants in Beşiktaş

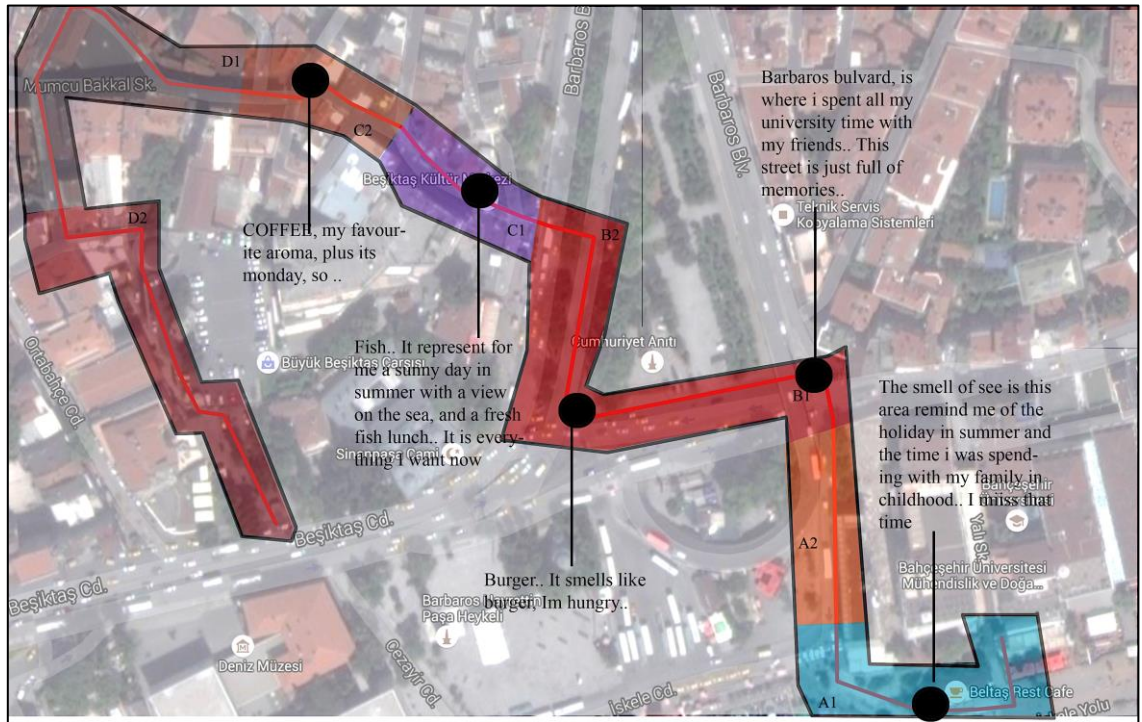


Figure 4.29: Comments of the participants in Karaköy

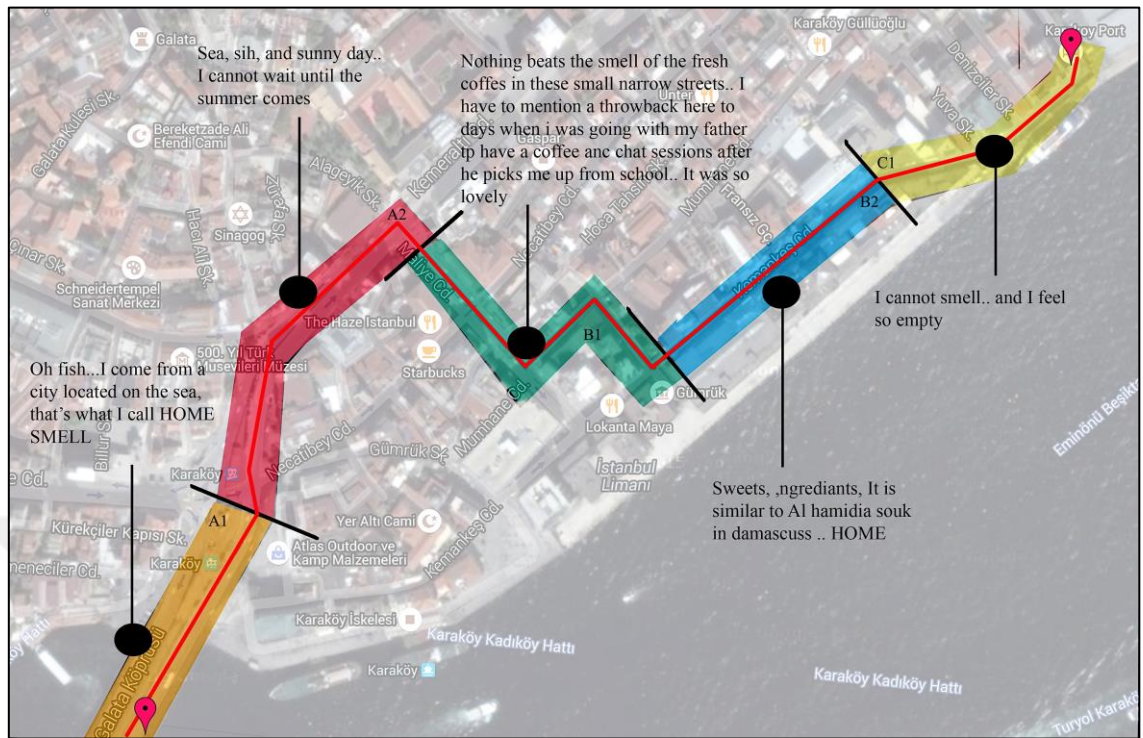
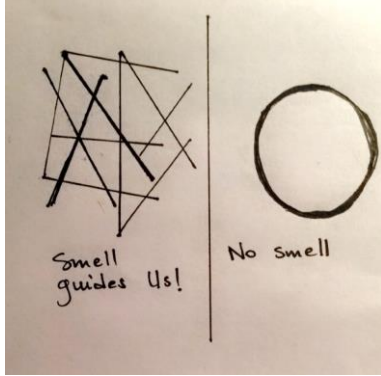
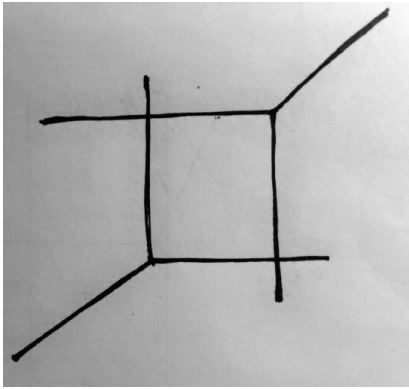
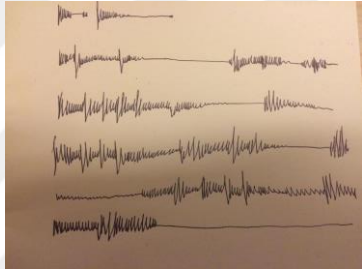
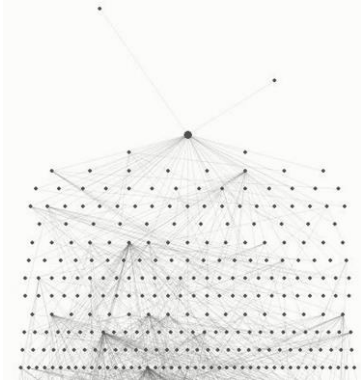


Table 4.7: Expressions and Illustrations of the participants

	Participants	Expressions
1	<ul style="list-style-type: none"> - 30 years old - Architect - Syrian - Tourist - Smoker 	<div style="text-align: center;">  </div> <p>Circle: no smell / No edges: No emotions provoked Intersected lines: Smell guides us, and it opens up new roads</p>

<p>2</p>	<ul style="list-style-type: none"> - 20 years old - Architecture student - German - Istanbul (current location) - Non- smoker 	 <p>Smell frames the space, and freezes the time</p>
<p>3</p>	<ul style="list-style-type: none"> - 27 years old - Photographer - Moroccan - Istanbul (current location) Smoker 	 <p>Smell frequencies through the sensewalking path</p>
<p>4</p>	<ul style="list-style-type: none"> - 25 years old - Architect - Yamani- Ukrainian - Istanbul (current location) - Smoker 	 <p>(It takes one smell, to make you travel through times and remember the past stories; while others, you can never relate them, neither to time, nor the space and they stay lost dots forever...)</p>

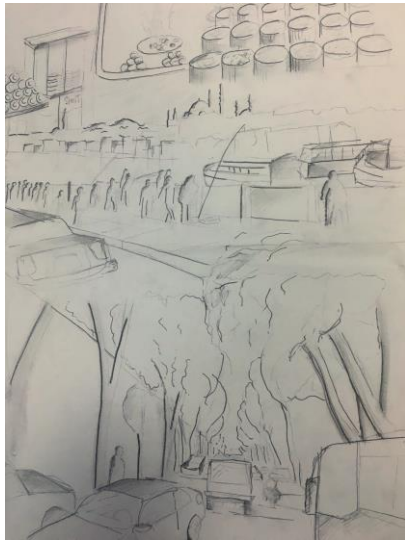
5	<ul style="list-style-type: none"> - 19 years old - Art student - Moroccan -Istanbul (current location) - Non- smoker 	 <p>(The sensewalking path scene, drawn in black and white to express the pollution that was masking the beautiful smells of the city)</p>
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Figure 4.30: Sensory Experience Collage



As we can analyze from the both experiences, we can simply note that the visual environment influences the provocation of smells. Even if they were not present in the specific moment, the surroundings (tangible and intangible) bring back the whole scenario of the past time and link them to places and emotions. For instance, (in the figure 5.30), more precisely in Beşiktaş, the participant in the zone A1 ‘the smell of this area remind me of the holiday in summer and the time I was spending with my family in childhood. I miss that time!’ thus, the same scenario happened with the participant in B1, it took only once smell to bring him back to the university days, when he used to spend most of his times with his friends in Barbaros street: ‘Barbaros boulevard, it is

where I spent all my university time with my friends... this street is just full of memories'

On the other hand, when the one cannot relate the odour experienced with the visual connection and the time (memories from the past), the person is able to create a new scenario immediately and go further with his/her imagination to make a new context to the smell. For example, (in the figure 5.31) in Karaköy (Zone A2), when the participant commented: 'Sea, fish and sunny days, I cannot wait for the summer to come...'. In this comment, the participant created a time (summer) and space (sea) to the odor he smelled, which explains that we can render the smell when we relate it to the image (vision).

In this experience, we proved that the sense of taste is always related to smell, especially in the comment of the participants in the zones (B2, C2) in Beşiktaş: 'Burger, it smells like a burger. I'm hungry!' and the other one: 'Coffee... my favourite aroma. Plus it is Monday, so...'. In the zones (A1, B1, B2) in Karaköy: 'Oh fish! I come from a city located on the sea, that's what I call home SMELL', 'Nothing beats the smell of coffee in these narrow streets, I have to mention a throwback here to the days when I was going with my father to have a coffee and chat sessions after he picks me up from school, it was so lovely' and 'sweets, ingredients, it is similar to Hamidia Souk in Damascus... Home'

Therefore, the smell gives depth to the sensory experience and makes the human being part of the city's identity. But when the one is underprivileged of this sense, talking here about sickness (flu, etc....) or born in that manner, he focuses more on his other senses, as such: vision, hear and taste to overcome the need of the smell. Although the person can sometimes get over the smell, I again believe that scent is essential and it makes the human being see beyond the frames of the image. Thus, when it comes to the sensory experience, the participant in Karaköy, zone (C1) was a foreigner, and he visited Istanbul several times before, so he experienced the city and knew what was essential to make Istanbul smells like Istanbul. Taking into consideration that he was sick and he had flu, I asked him how it is to be a tourist again but unprivileged to sense the surroundings: Sea, simit, coffee, ingredients, etc.... His comment actually in the level of my expectations: 'I cannot smell, and I feel so empty'

The emptiness in this context refers to the lack of excitement and emotions, the need to sense the city and enrich the journey. To sum up all these comments, I can say that every sense is necessary, and they complete each other. They all play an important role in the olfactory and the environment perceptions.

From the record of the odours expressed by the participants during the sensory experience and the mental representations, illustration, abstracts and stories expressed by the participants during their journey (in the table 5.7) make the transition from the feelings to drawings possible.

Our daily experiences make a collage of the mental images that we perceive and storing them in the brain as an album of memories. These images are also linked to the emotions that they provoke, and make a place in our brain to make the environment a landscape of mind. Thus, when the same composition of the previous scenario happens again, we immediately can remember that moment with mental references. We go through the process of searching the ideal image by way of comparing and combining the images to understand and recognize the present moment. Though we cannot always success to archive these mental images in our brain, sometimes it takes only one passed scenario or composition to have a new imagination or idea that can occur in relation with the experienced odours.

At a certain time during the sensory experience, the participants felt the need of expressing all the emotions provoked by the smells in the sensewalking path. Each one of them expressed his story differently. The participant 1 (in the table 5.7), was coming from a different cultural background, she was Syrian and an architect. The variety of cultures in this experience gave another perspective to the experienced odours and enriched the expressed stories. Back again to the illustration 1, the participant concluded that smells were guiding us, they can either open new roads, where sometimes many smells can be experienced at certain time, and make the roads intersect in specific points (moments, sometimes they can be memories as well). But when there was no specific smell experienced during the sensewalking path, she found that the best illustration to that is a circle. She felt that the circle has no corners, and these are produced only when there is some emotions and excitement felt during the experience. (Emotions: edges)

The case for the participant 2 was different. She was 20 years old, coming from a European culture (Germany) familiar with the city, and also an architecture student. Her illustration was on the point and proved the idea of how smell can frame the space and time. Certain odours make us stop for a little while and look at the streets, places differently with an inner joy and emotions. It is like the smell ignores the present time and transfers us to another moment with different images: (A machine to travel back in time) it freezes that specific moment and makes it memorable and stored in the brain.

As the smells come and go, the olfactory ambiances affect both positively and negatively the sensory experience. Thus, the physical factors as such: the pollution, the weather conditions, the humidity and the daytime influenced the experienced smells and sometimes they even masked the beautiful scents around. For example, the participant 3 and 5 had the same ideas but each of them expressed it differently. The participant 3 was 27 years old Moroccan girl, a photographer and currently residing in Istanbul. In her story, she expressed the olfactory experience as smell frequencies that were rising when the participant smelled the real scents of the surroundings that were consequently evoking some emotions too (sea, flowers and wet grass, coffee, etc....) and lowering when the pollution was masking them. Smell then breathes and it is just full of life that we have to care about. While for the participant 5, she was 19 years old, coming from Morocco and currently living in the city. She drew the scene of the sensory experience and sensewalking path that we followed. She used no colors, because just as the previous participant, the olfactory ambiances: pollution and the other physical factors, deprived her of scenting the beautiful surroundings and she only could express that by illustrating it in black and white.

Concerning the fourth participant, she was a 25 years old girl, half Ukrainian and half Yamani, an architect living currently in Istanbul. Her illustration expressed the point that we mentioned above (in the second paragraph of this chapter). She drew an abstract that represents the smells experienced as random dots, but all of them refer to the main dot (the main smell: eventually, everything connects).

Summary

Our olfactory perception is then definitely influenced by all physical and intangible signs at certain point of time; thus, it affects also the way we experience the environment and our daily surroundings.

Therefore, our sensewalking results indicate that the visual environment is closely linked with our interpretation of the olfactory landscape, and we were mainly based on the following points:

- a. Some participants could not relate the perceived odours with the past memories and the mental connections. Despite that, they went beyond the visual barriers and pushed them to create new scenarios.
- b. Some participants imagined odours by analyzing that they saw and translate them into feeling and emotions.
- c. Some participants who recognized some odours in the environment evoked different feelings and consequently brought them to the past times; either a favorite place, a dear person or desired meal.

These points may explain the fact that odours are related to a series of mental images associated with the experiences we live. Besides the fact that most of the participants were coming from different backgrounds, we are all based on the idea of understanding and experiencing the environment with sight, which makes the translation of the olfactory perception a natural act that refers to pictures and illustration of the perceived places.

5. CONCLUSION

Odours blend in our daily surroundings and go beyond the visual boundaries to become part of us without control. Olfactory dimension in architecture have different characteristics in architecture design and urban environment. It is a complex system of interactions that occur in a very intangible range. Thus, with its mysterious character that opens gaps in language, our research aimed to define and classify it by following the method of combining both the smellscape strategy and the sensewalking path. Moreover, recording the comments of the participants in the mental maps allowed us to better understand the variety of shades that compose reality and enriches the experience of place.

In our case study, we have examined experiences and perceptions of smell in Istanbul and we have encountered the olfactory features that changed through different scales: parks to streets, sea to roads and car pollution, bazaars and cafes, etc....

The theoretical background drawn before the applications of the data and the smellscape method was a starting point to absorb the studies related to the olfactory perception and its relationship with architecture and urban design. So we passed through the cultural context, as well as the historical and the philosophical approaches, then we made a link between the theoretical framework and the field study, to come up with a final structure that might combine both and to put the feelings of olfactory into paper. On the other hand, the selection of the three sites was based on several factors that were mainly the real aspects of Istanbul and represent its real identity in term of the variety of scents and cultures through the layers of history.

Consequently, the olfactory ambiances, as such: time and weather were changing and so they were influencing our olfactory experiences. These factors were also related to memories, either individual or collective. Therefore, each city has its own collective image that is the main shelter of many other individual images (Lynch, 1960). We confirmed this statement when we related it to the landscape of mind, and how the smells are highly related to the context, personal experiences, and the cultural representations. Thus, that is what our participants tried to confirm when they shared their comments and their drawings during their sensory journey.

During the sensewalking path, the sea was the major factor of the sensory experience. Its smell guided us through the route and through the whole journey, although it was

hidden and masked sometimes due to the increase amount of pollution or when different smells overlapped.

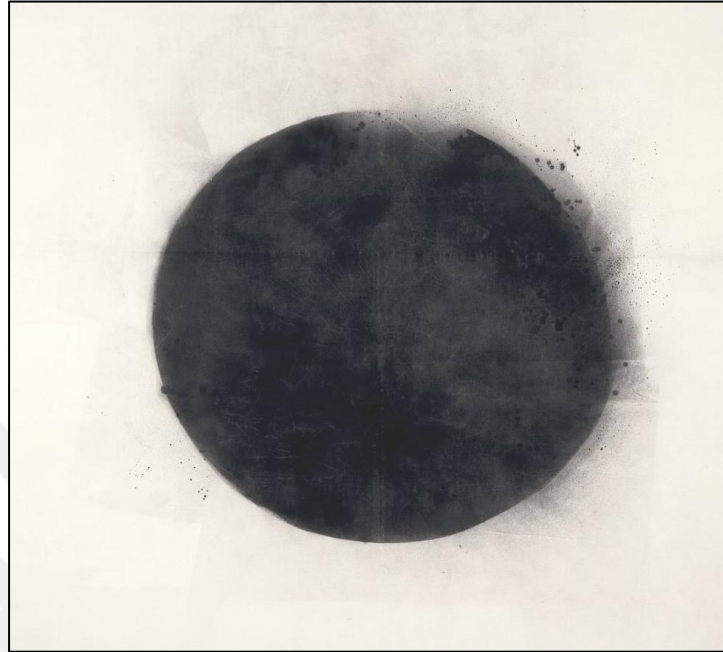
Thus, the usual smell maps and the representation of odours require the use of different colors to represent the variety of urban smells that flow in air. For instance, as we mentioned in chapter 3, the artist Kate McLean, who created different smell maps all over the world, always used colors and organic lines to express the nature of scents. 'People expect Amsterdam to smell primarily of cannabis. Cannabis has a strong smell, equal to asparagus, cleaning products, bacon and the dentists' surgery in perceived intensity. But it only featured in a couple of neighborhoods and missed inclusion here. Instead spring 2013 in Amsterdam revealed an abundance of the warm, sugary, powdery sweetness of waffles. Oriental spices emanated from Asian and Surinamese restaurants and supermarkets, pickled herring from the herring stands and markets – a link to one of the city's key historical industries. Old books were detected in basement doorways and laundry aromas drifted up into the streets from Amsterdam's many house hotels' (McLean, 2013).

Therefore, in our case study we tried to find a different ways to represent Istanbul smells, more like in an abstract way, by considering the participants' expressions, the major key 'sea' and all the features that contributed in the sensory experience. For instance, 'Full Stop' painting in Tate Sensorium (London 2015) comprises a large black spot in the center of an unprimed canvas. The edges of the spot are blurred recall the solar eclipse, or the black hole of photographs that reflects the planets in the galaxy. They connected the painting with 'Ultrahaptics' device that creates touch on the hand by using ultrasound that is sequenced with the audio.

'The artwork plays with positive and negative space, and the tactile-audio stimulus translates that as presence or absence. The sound especially emphasizes the painting's black and white duality.

The two senses work together to create a sense of scale, and of roundness, but also reference Latham's use of spray paint, and his iterative theory of mark making'. (Tate Britain, 2006)

Figure 5.1: Full Stop- Tate Sensorium



Source: <http://www.tate.org.uk>

In the invisible topography, we thought about representing the above ideas and making the layers that enriched the experience. Since the Sea was the major key, it was on the top of the layers covering the sensewalking path. It acted like the ‘Ozone layer’ and the pollution affected it and caused some holes (It was when pollution and the cars smoke masked the existing smells of the surroundings: flowers, coffee, spices, etc...). On the other hand, the smells were connecting the places, opening new paths that were not discovered before and closing some (depending on the nature of smells) Each of the past events can be recognized when a particular component of the past smell scenario is present. Additionally, the moments and the experiences we lived are bonded with space and time. Therefore, the olfactory landscape is a universe of connected dots and intangible temporal structures, and the smell eventually makes us travel through the physical barriers in various past or future areas that construct our olfactory memory accordingly. These unseen organizations, including the temporal landscape are what create the theater of the olfactory memory. In the present, different composites of scents

that circulate in environment are in continual progression to create and produce reality for individuals.

When it comes to illustrate the different smells that we came across during the sensory experience, we thought about different patterns that abstract the real composition of each of them. Sometimes they even overlapped and they created a new pattern: a new smell.

Figure 5.2: Model without the sea layer



Figure 5.3: Model with the Sea layer



Figure 5.4: The smellmap process (without layers)



Figure 5.5: Zoom in to the Smells overlap

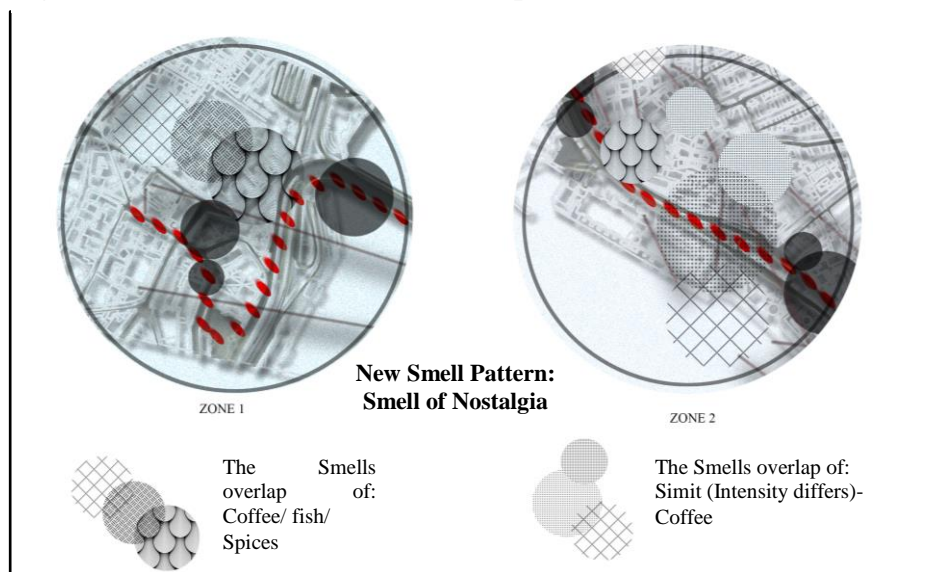
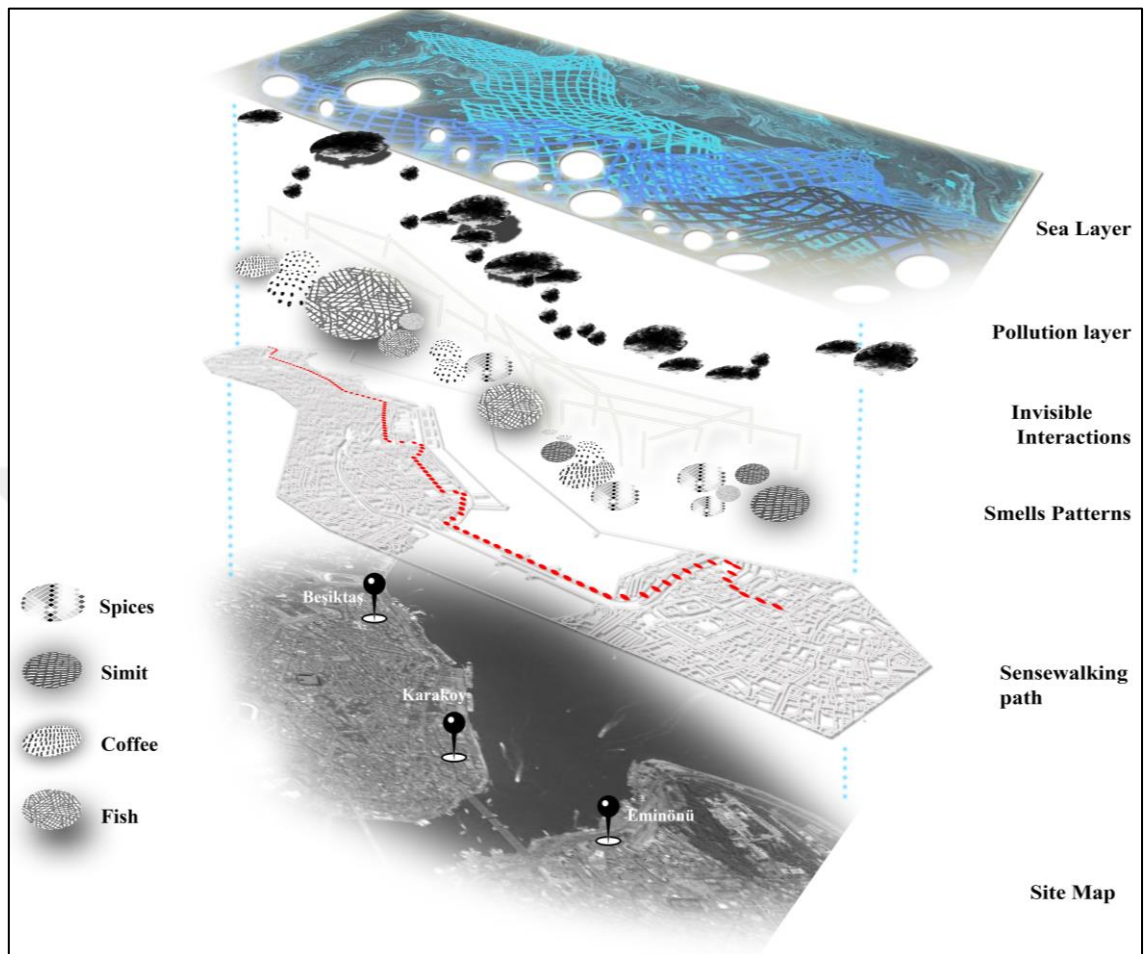


Figure 5.6: The Designed Smellmap (The Invisible Smell Topography)



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APPENDICES

Smellscape: Urban dimension of olfactory and its relation to space and time.

Sensewalking: A quantitative scientific method that aims to document sensory experiences in an urban scale. The study is based on the components of odours and perception of environment.

Sensory landscape identity: The total sensory and visual features of a landscape in a specific area.

Smellmapping: The visualization of odours and their organic nature in artsy illustrations. It occasionally bring also other factors such as topography and weather.

Placemaking: A concept that represents the importance of public spaces in societies. It refers to a progress of shaping the space by using social and cultural identities that define 'the place'.

Landscape of Mind: A mental projection of landscape that consists of tangible and intangible features of the environment. It is related more specifically to smells, since they document the place and restore it in the human memory. Thus, it allows the individual to draw and imagine his own design of landscape based on the invisible dimension that he created through his/ her sensory experiences.

Olfactory Landscape: A concept of landscape defined by specific smell and certain location. It is also engaged with emotions and sensory experiences restored and marked in the human memory: 'Landscape is a place of Memory'.