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Effect of Smell in Historical Environments

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Abstract

Smell is an obscure composition in the space planning and design processes, while visual and audial aspects are more dominant. Smell has an important place in the preference of the place, is an important factor affecting people in terms of sociological, psychological and bioclimatic comforts, although it differs from person to person. In this study, the existence of natural and artificial smell sources in historical environments and the effect of the smell of the preference of these environments were investigated. The study was carried out in historical sites located in the urban site in the centre of Kastamonu province. The study emphasises that in the process of space planning and design, smell should be evaluated together with other senses. Also, attempts have been made to determine the contribution of the sources of smell to historical places, which has an important position for urban identity.

Keywords: Smell, perception, historical environment.

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1. Introduction

Ensuring the establishment of social, political and moral relationships among the individuals of a given society and thus the creation of social values, and by virtue of being a place of habitation, open space forms a relationship with the individual. The relationship between the individual and open space is based on the knowledge and experiences regarding that space (Marcus & Francis, 1997). The open space may include a good number of various different dimensions such as physical size, material features, symbolic meanings and experimental data (Pretty, Chipuer & Bramston, 2003). An open space is designed as a result of a process that involves the establishment of natural, cultural and perceptual data all together, but separately at different layers (McHarg & Mumford, 1969) and identification of the most functional areas as a result of the superposition of such layers.

Today, every city containing various different open spaces has its unique identity. According to Birol (2007), a city is a physical, spatial and social environment that is formed as a result of overlapping of physical, social and cultural layers of different historical periods on top of one another in historical continuity. The identity thus attained throughout its history can be named based on various aspects associated with that city such as its geographical location, language, religion, commercial and economic elements. Today, the horizontal and vertical growth of cities in line with population growth endangers the historical environments bearing witness to the urban past and constituting significant elements of a city's identity. Requiring a special degree of care and attention in terms of urban identity, a number of planning and design decisions are put into effect, with a view to preserving and managing such historical environments. In designing such environments, priority is always given to the visual aspects. However, in addition to the visual perception, audial and olfactory aspects too have a significant place in the perceptibility of an environment. In everyday life, smells are more often than perceived in the company of visual signs, as such the sense of vision has a strong bearing on the sense of smell. That being said, however, the interaction between the two senses has never been fully identified, and there is a very limited number of studies conducted on this particular subject matter (Faydali, 2010). Simply put, smells are the molecules that waft through the air. These molecules are captured by the receptors located in the sense organs of humans and animals and converted into electrical signals to be communicated to the relevant parts of the brain. The brain interprets these signals and reacts to them. We can remember a smell 65% accurately even it has been a full one year since we have smelled it; however, this ratio drops to around 50% after a period of three months in the case of our visual memory (Pace, 2008). Throughout the history of mankind, smells have been used for religious purposes such as in religious ceremonies, for medical purposes and for personal care, for the sake of smelling pleasant. People can match smells with their past experiences and classify them involuntarily as pleasant, non-pleasant or extraordinary based on such matching. The subject of smell was first addressed by Porteous (1985), who coined the term *smellscape*. The study conducted by Henshaw (2013) in Doncaster, where the smell classifications and design criteria created as a result of the study participants' experiences of the city, has been significant in terms of drawing attention to the importance of smell in open spaces. The study established that the perception of smell in a given environment comprises all the natural and artificial characteristics associated with that environment. In his book 'The Eyes of Skin', Pallasmaa (2012) argues that smell is a factor that should not be ignored within an architectural environment. Drobnick (2002) describes smell as a combination of all spatial factors such as urban space, rural areas, wildlife, flora, fauna, climate, topography, seasons, industrialisation level and lifestyle. He also argues that smells are present at varying degrees from one continent to a country, region, city, town, district, household, room and drawer. For mankind, however, smell creates a strong psychological bond with the environment.

In line with the strategy of preserving and using historical environments, the historical environments included within the urban protected areas of the Province of Kastamonu have been studied within the scope of this study with a view to identifying the impact of the natural and artificial presence of smell in such environments, along with other senses as a design criterion and determining whether they are compatible with the character of the historical environments in question.

2. Materials and Methods

Kastamonu is situated in the Western Black Sea region of Turkey and located between 41° and 21' north latitude and 33° and 46' east longitude, at an altitude of 775 m above the sea level, comprising a surface area of 13.108,1 km²; it is a city under the influence of continental climate (Url1, 2017). Although it has been home to many different civilisations throughout history, no fixed settlement, written record or document has been found about it, dating from prehistorical periods. However, archaeological studies conducted in Kastamonu and its vicinity have revealed historical artefacts found in Germec and Golkoy, dating back to the Palaeolithic period, and thus studies suggest that the settlement around Kastamonu dates as far back as to 50,000 B.C. (Acar, 1995; Koc & Asar, 2017). The location of the study site is presented in Figure 1.



Figure 1. Geographical location of the study site

Karacomak River, passing through the city centre, divides the city into two halves in the north and south directions. Known to have been originally established on the west bank of Kastamonu Creek, the traditional settlement of the city is located from the flatlands on either side of the creek towards steeply inclined hillsides. The historical artefacts and structures available in the city of Kastamonu date all the way back from the Roman Period to the Byzantine Period, Seljuk Period, Ottoman Period and more recently to the Republican Era, all of which contribute significantly to the formation of the city's identity. From the 11th century onwards, Kastamonu served as the capital of the principalities of Cobanogulları and Candarogulları, as an administrative district (Sanjak) during the Ottoman Era and as a provincial centre from the 19th century onwards; having been attributed such important administrative roles, the city has been subject to large-scale urban development activities throughout the history. Despite being a provincial centre during the Republican Era, the city saw relatively little economic growth and urban structuring because of its largely agricultural economy and lack of industrialisation in the area (Erkan & Yenen, 2010).

Having a 14 century-old cultural history, the historical environments have a significant place in terms of identity and development of the city. Today, the city centre contains one archaeological protected area and a number of urban protected areas. The protected areas are presented in Figure 2. Within the scope of this study, the urban smellscape of various important landmarks – including

Nasrullah Square, Munire Madrasah, Clock Tower, Cumhuriyet Square, Ismail Bey Kulliye, Kastamonu Castle, Yakup Aga Kulliye, Seyh Saban-1 Veli Mausoleum – located in the city centre and dating back to various different historical periods, which are important in terms of urban identity and tourism, have been studied.

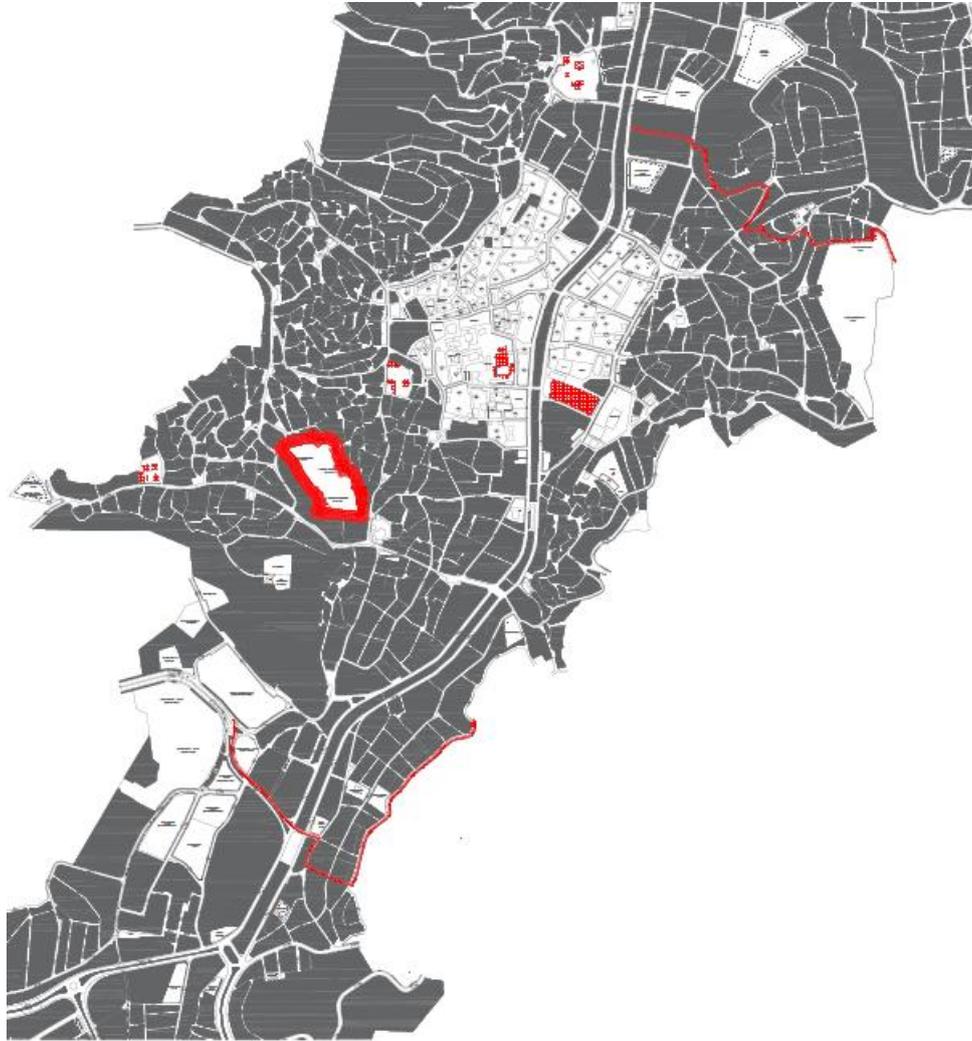


Figure 2. Boundaries of urban protected areas (Kastamonu Belediyesi, 2016)

2.1. Kastamonu castle

Serving as a symbolic city landmark, the castle was built during the Byzantine period in the 12th century on a natural rocky terrain. Today, only a single tower remains from the outer ramparts. The current state of the castle's interior, which is still in good condition, dates back from the Periods of Candarogulları Principality and the Ottomans. Situated on a natural hilltop at an altitude of 112 m, the castle is 155 m tall and 30 to 50 m wide. Featuring depressed arched gates and lancet arched gateway vaults, the castle demonstrates the characteristics of the Turkish architecture dating from the Middle Ages. The towers, bastions and ramparts located in the east, north and south directions still stand today (Url2, 2017). Although the castle serves as a city landmark, it is entirely used for visual purposes.

2.2. Ismail Bey Kulliyе

It was commissioned to be built on the Sehinsah rock by the Candaroglu Chief Ismail Beg (1443–1460). On the east side of this rock lies the rock cemetery dating from the Roman times. The Kulliyе consists of a mosque, madrasah, fountain, caravanserai, bath, public soup kitchen and mausoleum (Ibret, Ugurlu & Aydinozu, 2015; Kankal, 2004). Having undergone a series of restoration works, the Kulliyе also contains sepulchres dating from older periods. The kiosks selling various souvenirs in the Kulliyе attract a good number of tourists. The renovated area contains sitting and resting areas and vantage points.

2.3. Nasrullah Square

It was commissioned to be built by Nasrullah Kadı in 1506, originally designed to contain a six-domed face stone mosque, a fountain and a bridge. The mosque was later expanded to include nine domes. Nasrullah Mosque has a very significant place in the history of the National Struggle Movement. The national poet Mehmet Akif Ersoy preached from the pulpit of this mosque to ask for support for the war of independence, and his poem, before becoming the national anthem, was read for the first time in this mosque (Cifci, 2006). Today, the square is a fairly busy area. In addition to the sitting and resting areas, the square also has commercial establishments offering catering services.

2.4. Munire Madrasah

Starting from the south-west corner of Nasrullah Mosque and going all the way towards the qibla, this building is also known as Bayraklı Madrasah according to a number of records. The building is still registered to the General Directorate of Foundations (Cifci, 2006; Guzey, 2010). Having been constructed to contain 23 rooms, each accommodating 10–12 students, the madrasah is currently being used as a handicrafts bazaar, which also contains a restaurant serving traditional food, and serves as a busy tourist facility, where hot and cold beverages and water pipes are served in the hot summer months. Locally known as the turtle island, its garden is home to a number of turtles.

2.5. Seyh Saban-1 Veli Mausoleum

This is the most important landmark in the city of Kastamonu in terms of religious tourism. Having been commissioned to be built by Seyyid SUNneti Efendi, the Kulliyе is currently situated in a neighborhood called Hisarardı and consists of a mosque, mausoleum, fountain, ‘asa’ water, library and dervish lodges. It was built of ashlar stone, rubble stone and wood on the ceiling and on the floor. Although, the original construction was commenced 7 years after the death of Seyh Saban-1 Veli, due to various reasons, it was completed in 1615. The mausoleum was built of ashlar stone and designed to feature a square plan and a single dome, it contains 16 wooden sarcophagi, the grand one in the middle belongs to Seyh Saban-1 Veli (Cifci, 2006). As the taste and odor of the ‘asa’ water running next to the mausoleum is reminiscent of the holy ‘zam-zam’ water, the locals consider it to be medicinal water.

2.6. Yakup Ağa Kulliyе

It was commissioned to be built in 1547 by Yakup Ağa, who served as the treasury chief of Suleiman the Magnificent. Regarded as one of the finest examples of Ottoman architecture, the Kulliyе consists of a mosque, madrasah, elementary school, public soup kitchen and guest house, and it features an ornamental pool in the Kulliyе’s garden (Kankal, 2004). Situated on a vantage point overlooking the city, the Kulliyе was in a dilapidated state, save for its mosque until 2007, it was restored to its former state through a series of restoration works. Today, its garden serves as a tourist

attraction. It also contains the outlets that manufacture and sell Kastamonu's renowned extracted halva and lithography meshes. The garden also contains sepulchers dating from older periods.

2.7.The Clock Tower

This structure dating from the Ottoman times was constructed during the administration of Governor Abdurrahman Pasha in 1885; built of architectural ashlar, known as balcony-free, it was situated in a strategic location of the city based on its terrain conditions and designed to serve as an information and observation point as well as a fire announcement point (Halac & Ilhan, 2014). Today, the clock tower and its vicinity are considered as a city landmark. Being an important tourist attraction for both domestic and foreign tourists, it is surrounded by restaurants, cafes, vantage points and playgrounds.

2.8.Cumhuriyet Square

It was constructed in 1942 on the instructions of the then governor Avni Dogan. The Square features a monument dedicated to Serife Bacı, who was killed along with her child while carrying munitions to the battlefield during the National Struggle years. Surrounded by the historical government office in the south, which was built by Vedat Tek, the historical revenue office in the south-west, which is still under restoration, and Rifat Ilgaz Cultural Center in the west, the square is listed among the most beautiful 10 squares in Turkey. Serving as a resting area due to being covered by trees right in the middle of the city centre, the square also functions as a venue for significant ceremonies.

The site of the study, containing the important historical landmarks of the city, is frequently visited by the theology students who come to visit the mosques and madrasahs included among those landmarks. Similarly, the study site is also frequently visited by the landscape architecture students, who study architectural designs of the historical sites as part of their curriculum. For this reason, a questionnaire study was conducted with 117 people consisting of students from the departments of theology and landscape architecture at Kastamonu University. The participants familiar with the said areas were asked questions regarding the identification of natural smells caused by soil, plants, water, stones, animals, wooden materials as well as the artificial smells caused by exhaust gases, asphalt, toilet/sewer system etc., and asked to describe the changes in their mood by using the following adjective pairs enjoyable/irritating, healthy/unhealthy, collective/individual, peaceful/unsettling, lively/tranquilising and through the use of these binaries the statistical significance levels were established. The second part of the questionnaire study involved determining whether the smell present in the environment was compatible with the character of that environment and whether the participants could identify the environment without its smell. Lastly the participants were asked which smells they preferred most in those environments.

The data obtained from the study was statistically reviewed in the SPSS environment and an ANOVA test was performed to find if there was any difference in preferences between the two parts.

3. Findings

A questionnaire study was conducted with the students enrolled in different departments of Kastamonu University to identify the concept of smell associated with historical environments. A total of 60 landscape architecture students, 61.6% of them (37) female and 38.3% of them (23) male and a total of 57 theology students, 54.3% of them (31) female and 45.6% of them (26) male, participated in the questionnaire study. The socio-demographic details of the students participating in the questionnaire are presented in Table 1. According to Table 1, 85.5% of the students have been living in Kastamonu for 5 years.

Table 1. AQ: Please provide caption for Table 1.

| | | Number of persons (n) | % |
|------------------------------------|--------------|-----------------------|------|
| Age groups | 18–25 | 111 | 94.9 |
| | 26–33 | 3 | 2.6 |
| | 34 and above | 3 | 2.6 |
| Number of years lived in Kastamonu | 1–5 | 100 | 85.5 |
| | 6–20 | 4 | 3.4 |
| | 21 and above | 13 | 11.1 |

In the study, the participants were asked about the presence of natural and artificial smells in the environments. It was established that the smells present in the environments were not clearly perceived by the students. The smell of stone present in Kastamonu Castle was only identified by the landscape architecture students at a ratio of 51.6%.

Based on the findings of the questionnaire, the students of both the departments were indecisive as to the presence of natural and artificial smells in the environments. With respect to the answers given about the presence of natural smells in the environments, however, statistically significant differences were established among the students from both the departments ($p < 0,05$). The results suggest that there are statistically significant differences among the students in terms of natural smells based on their respective departments with respect to smell of flowers in Nasrullah Square (0.019), smell of water in Cumhuriyet Square (0.005), smell of flowers in Ismail Bey Kulliyeye (0.005), smell of soil in Kastamonu Castle (0.002), lack of smell in Yakup Aga Kulliyeye (0.003) and lack of smell in Seyh Saban-1 Veli Mausoleum (0.005).

In terms of artificial smells, however, the following statistically significant differences have been established between the students from two departments with respect to the smell of exhaust (0.015) and the smell of polluted air (0.005) in Nasrullah Square, the lack of smell in the Clock Tower (0.032), the smell of exhaust (0.012) and the smell of rubbish (0.041) in Cumhuriyet Square. No statistically significant difference was established in terms of other smells.

A study of various emotional states inspired by the smells in people revealed the following scores for the following adjective pairs: enjoyable/irritating 4.86, healthy/unhealthy 4.69, collective/individual 4.81, peaceful/unsettling 4.75, lively/tranquilising 4.66; as a result of the aforementioned results, the students seem to be indecisive regarding the emotional impact of smells on themselves.

When the answers to the questions concerning the compatibility of smells with the environment's character and ability to describe the environment without the presence of its smell were reviewed, it was established that, according to Figure 3, the existing smells were compatible with the environment's character, and that, according to Figure 4, Cumhuriyet Square could be described without the presence of its smell while other environments required their respective smells for their description.

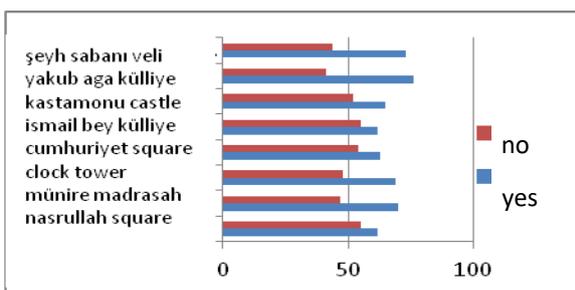


Figure 3. Compatibility of smell with the environment

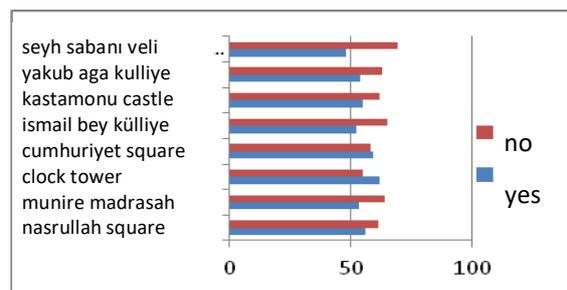


Figure 4. Description of environment based on its smell

In the last stage of the study, the answers given to the question 'what kind of smells do you prefer in these environments?' revealed the following statistically significant differences among the students of two departments with respect to the smell of flowers (0.025) and smell of water in Nasrullah Squares (0.013), smell of water (0.012) and smell of soil (0.010) in Cumhuriyet Square, smell of soil (0.00), smell of grass (0.046), smell of perfume (0.044) and smell of cleaning agents (0.039) in Kastamonu Castle, smell of water (0.049) in Yakup Aga Kulliyesi. The students from both the departments preferred the smell of flowers in Nasrullah Square with a ratio of 72.6%, in Munire Madrasah with a ratio of 52.1%, in the Clock Tower with a ratio of 58.1%, in Cumhuriyet Square with a ratio of 53.8%, in Ismail Bey Kulliyesi with a ratio of 55.5%, in Kastamonu Castle with a ratio of 51.2%. The smells of water, soil, grass, perfume, cleaning agents and food were not preferred in these environments.

4. Conclusion

Constituting a significant part of an urban identity and getting more and more valuable day by day, historical environments are only evaluated in terms of their visual quality in most preservation, use and renovation projects. Many studies also suggest that sensory stimulation is important in spatial experience (Bell, Fisher, Baum & Greene, 1990; Gibson, 1966; Ittelson, 1978; Oymen & Pulat, 2009). In sensory stimulation, auditory and olfactory landscape, too, should be taken into consideration in addition to the visual aspect. The present study aimed to establish that smells are also a significant factor that should be taken into account in perceiving historical environments, where attention is devoted merely to the visual aspect. With the concept of smellscape, Porteus emphasises the fact that smell has a significant place in spatial perception in terms of recalling an environment based on its smell. McLean (2017) conducted a study with the local population of Amsterdam to present a smell map for the city and classified the smells based on colours. The fact that smells vary based on the locations that appear to change depending on the existing urban use is presented based on such maps. One significant point that comes to the fore in this study is that there is no clear-cut finding as to the existence of smell in evaluating an environment based on its smell. Previous studies established smells in an environment as a result of direct experience (Henshaw, 2013). The present study, however, evaluated the knowledge that is already registered in the participants' memory. As a result, it has been found that the historical environments in the province of Kastamonu do not attract much attention in terms of their smells. However, the fact that smell had a significant place during the Ottoman Era has been evidenced by various arguments (Goktas, 1999; Kes & Baser, 2016). From this perspective, historical environments, by virtue of being significant places in terms of urban development, identity and tourism, should be evaluated in terms of their smellscape in addition to the visual elements. The findings of this study suggest that the perception of smell has not provided a statistically significant difference in terms of education in comparison to different branches. It was established that, as a result of the education that the landscape architecture students had previously received regarding the environment and its perception, the evaluation of an environment based on its smell varied from one place to another.

The landscape design projects to be performed in historical environments should be planned based on the historical background of those environments. The construction materials to be used in the area should be chosen in conformity with the elements of water, wildlife, plant variety that evoke the sense of smell in the environment.

The materials that are commonly used in historical environments such as wood and stone should be taken into consideration in the environmental planning and certain peculiar smells associated with the place should be rendered more dominant to evoke that sensation in visitors. The plant varieties should be selected based on their ability to visually represent the historical period and also to give the olfactory impression associated with that period. Such projects should also include catering services in terms of visitor satisfaction and functional use, and by serving traditional regional cuisine and beverages olfactory experience should be further ensured.

In most cases, areas created for the purpose of providing catering services may end up mesmerising people with the smells they produce. Or in some cases, a location can be found simply by following its scent. On the strength of the aforementioned arguments, it is recommended that aesthetic, functional and economic functions be considered altogether in performing environmental planning in historical environments based on their respective characters and the issue of smell should definitely be taken into account in their environmental design.

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