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İletişim • Contact
Telefon: 444 5 438 (1221)
E-Posta: modular@gedik.edu.tr

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EDİTÖR NOTU • EDITOR NOTE

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Dergimizin 3. Sayısında özel bir dosya ile yayındayız. Bu sayımızda, İstanbul Gedik Üniversitesi'nin Mimarlık, Şehircilik ve Tasarım Uygulama ve Araştırma Merkezi ile Enerji Teknolojileri Uygulama ve Araştırma Merkezi'nin **"Design Today, Save Future"** teması ile birlikte hazırladığı ve 19-20 Haziran 2019'da başarı ile gerçekleştirilen **Uluslararası Enerji ve Sürdürülebilir Çevre Tasarımı Konferansı**'na katılan değerli akademisyenler arasından seçtiğimiz kısıtlı sayıdaki bildirilere yer verdik.

Konferans Sürdürülebilir Kentler bağlamında, yenilikçi teknolojiler, yeşil binalar, sosyal ve kültürel sürdürülebilirlik, koruma ve iyileştirme, vb. konularında çalışan akademisyenlerle, mimarlık, mühendislik ve sosyal bilimler alanında hazırlanmış çok sayıda bildiri ile multidisipliner bir anlayışla gerçekleştirilmiştir.

Her sayımızda, değerli öğretim üyeleri ve yüksek lisans veya doktora öğrencilerinin yazı göndererek artan ilgileri, bizleri hem heyecanlandırmakta, hem de onurlandırmaktadır. Bu sayımızdan itibaren Editör ve Yayın Kurulu kadromuzda değişiklikler olmuştur. Aralık 2018 tarihinde yayın hayatına başlayan dergimizin hazırlık sürecinde, ortaya çıkmasında ve şimdiye kadarki sayılarında emeği olan kıymetli akademisyenlerimize teşekkür ediyoruz. Yenilenen yayın kurulumuz ve çok değerli hakemlerimiz, bilim ve danışma kurullarımız ile akademik ortamda bilimsel anlamda katkı sağlamaya devam edeceğiz.

We are online with an exclusively thematic file in the 3rd issue of our journal. ***The International Conference on Energy and Sustainable Built Environment*** *was organized by Istanbul Gedik University through the Architecture, Urbanism and Design Application and Research Center and the Energy Technologies Application and Research Center of the university. The congress with the theme of* ***"Design Today, Save Future"*** *successfully took place on the 19th and 20th of June in 2019. In this issue of the journal a selected collection of papers which were presented by the valuable academics who attended the conference are included.*

The conference was focused on innovative technologies, green buildings, social and cultural sustainability, conservation and improvement in the context of Sustainable Cities. It was carried out with a multidisciplinary approach, with the papers prepared in the field of architecture, engineering and social sciences with academics working in their fields.

We feel both excited and honoured by the increasing interest of valuable faculty members and graduate and/or doctorate students for their multiplicative articles in each issue . As of this issue, there are changes in our Editorial and Editorial Board staff. We would like to thank to the precious faculty members who have been contributing since the preparation process of the first issue of the journal in December 2018. We will continue to contribute scientifically in the academic environment with our renewed editorial board and our esteemed referees, science and advisory boards.

Dr. Özlem BELİR (Ph.D.)
Editor

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Exploring Multisensory Qualities of Loggia Spaces for Urban Resilience to Climate Change

Carlos Mourão Pereira[1], Teresa Valsassina Heitor[2], Ann Heylighen[3]

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Abstract

This paper presents an exploratory study about multisensory perception in the use of the urban loggia, i.e., outdoor covered space open to one or more sides integrated in the ground level of buildings, providing public shaded walkways and living areas.

Due to current temporary occurrences of extreme intensity of ultra-violet radiation and the increasing periods of heat waves, public health risks are increasing, specifically situations of skin cancer and heart attacks as a consequence of excessive sun exposure.

Loggia spaces have the potential to generate microclimates, allowing for a shadow shelter with the advantages of passive cooling on paths of pedestrian mobility in building entrances. By reducing energy consumption for indoor temperature regulation and climatization, they contribute to mitigating and adapting buildings to climate change.

In literature, the perception of the urban loggia shadow spaces has been studied mainly in two different fields, thermal comfort and visual aesthetics. Exploring spaces that are inviting for all users requires a multisensory research approach, integrating the non-visual sensory modalities beyond the mentioned perception of thermal comfort.

The urban loggia has been mainly developed for horizontal circulation on squares, in order to allow the visual perception of geometrical compositions of building facades.

Furthermore, other sensory modalities beyond vision, such as auditory and olfactory spatial qualities, are forgotten, resulting in non-stimulating spaces to use. To make the building performance of the urban loggia shadow spaces more inclusive, our research is centered on integrating the diversity of people's conditions and needs, as far as possible. To this extent, we explored empirical knowledge related with the absence of sight of blind people, keeping in mind that fully sighted and partially sighted people are temporary subjected to lacks of visual attention in the use of the space. The methods used are based on qualitative research and aim to identify a diversity of spatial perceptions, in order to achieve the understanding of the complex reality in study.

We interviewed blind people of 18 nationalities, including five continents to achieve a multicultural perception about risks in their use of cities and buildings. Furthermore we conducted participant observation in the absence of sight, in cases of urban loggias. These case studies took place in the city centre of Lisbon, characterized by a Mediterranean climate.

[1] Instituto Superior Técnico, University of Lisbon, carlosmouraopereira@tecnico.ulisboa.pt
[2] Instituto Superior Técnico, University of Lisbon, teresa.heitor@tecnico.ulisboa.pt
[3] KU Leuven, Leuven, Belgium, ann.heylighen@kuleuven.be

The obtained results allowed to identify affordances and consequent atmospheres approaching sensory modalities beyond vision. Moreover, they allowed to identify positive and negative spatial components inherent to the urban loggia.

These spatial attributes, following inclusive and multisensory qualities, may contribute to empirical knowledge about how the urban loggia can facilitate the mitigation and adaptation of urban buildings to climate change in Portugal and other countries with similar weather conditions and vulnerabilities.

Keywords: *Climate change, health promotion, integrated invisibility, loggia, public space.*

1. Introduction

This study explores the United Nations 2030 Agenda Goal 11th "Make cities and human settlements inclusive, safe, resilient and sustainable". In this scope, three strategic objectives are pursued. The first objective is to explore how architectural morphological innovation of the loggia may help to achieve resilient and sustainable urban buildings in a context of climate change. The loggia, study object of this research, offers a microclimate, giving human comfort in hot and cold weather conditions, giving shadow, rain and wind protection in outdoor spaces to move through and reside. The transitional space of the loggia is considered as a sustainable strategy for building entrances, allowing passive temperature moderation with benefits energy consumption for both indoor cooling and heating. Moreover, the mentioned passive cooling of outdoor spaces allows resilience to climate change conditions of heat-waves, promoting health, reducing the occurrences of risks such as heart attacks. Furthermore, the loggia can be a shelter against excessive ultraviolet radiation, mainly in terraces used during midday hours. It is important to consider that shading devices, such as awnings, umbrellas, or the use of sunscreen lotions, are not considered efficient to prevent injuries as skin cancer due to sun burning.

The second objective is to explore how the architectural morphological innovation of the loggia may contribute to inclusive premises and spaces. The urban loggia has been developed throughout architectural history as a public space that invites citizens to shelter, provided by both private and public buildings. In order to increase its spatial inclusivity, this research explores the spatial perception of blind people with different nationalities, to achieve multisensory information, not limited to a single cultural context, aiming to balance the visual dominance in current architecture production which often forgets sensory needs beyond sight. To our knowledge, disability conditions have not been explored in the literature about the urban loggia design, and their inclusion through this investigation has a multisensory potential. We argue that the integration of the embodied knowledge of blind people may contribute to the spatial quality.

The third objective is to explore how architectural morphological innovation of the loggia may contribute to safe spaces of mobility in buildings and cities. The loggia is a shelter space against climate conditions, such as rain, which may reduce the occurrences of falls due to slippery floors. Moreover, this research focuses on the quality of invisibility, integrating other sensory modalities beyond vision to achieve multisensory built spaces. In this scope, this specific research, involving blind users, in order to identify spatial risks inherent to the absence of sight, aims to find safe solutions for people with and without visual impairments.

Moreover, the loggia allows a transitional space for ocular adaptation when users move between indoor and outdoor spaces, being beneficial mainly for the increasing ageing population with less visual acuity due to macular degeneration.

The most common cause of accidents involving fall occurrences are related to the built space, specifically 30-50% of them. Moreover, older people are more subjected to the risk of fall mainly in vertical circulations (World Health Organization, 2007).

In short, this research explores the following question: what are the main risks involving architecture in the absence of sight and how may the urban loggia be improved to mitigate these risks, increasing spatial resilience of buildings and cities to a context of climate change.

2. Context

Our research explores the innovation of the urban loggia, studying the spatial experience and perception of blind people. Moreover, it explores an in-depth approach of the non-visual sensory modalities, aiming to achieve multisensory spatial rules in an urban context of climate change. In several works, Pallasmaa, (Pallasmaa, 1996) and (Pallasmaa, 2017), highlights the importance of integrating people's body experience in built space design to achieve a multisensory architecture, balancing the ocular-centric production of our time, which often neglects non-visual sensory modalities, such as the tactile experience. Moreover, he advocates a unifying multisensory integration of all senses to allow a fully existential interaction with the world (Pallasmaa, 2007). In the context of non-visual sensory modalities, specifically considering the perception of visually impaired people, Peter Barker, a partially sighted mechanical engineer, proposed best practice guidelines related to the design of built spaces, aiming at the inclusion of the mentioned group of users (Barker et al., 1995). Beyond the general approach of this work to the built space, it is possible to find spatial rules that may increase multisensory stimuli and safety, also for fully sighted users. It is important to consider that people without visual impairments are also subjected to lacks of visual perception, due to inattentional blindness phenomena of a selective attention in the visual field, with consequences on partial visual absence (Mack and Rock, 1998).

Exploring an in-depth approach of specific conditions of visual impairments, this investigation follows a line of research established at the University of Leuven (KU Leuven) based on the cultural model of disability introduced by McDermott and

Varenne (McDermott and Varenne, 1995), where the absence of knowledge about disability is understood as cultural disability. It is stated that perceptions of ability structure the perceptions of disability and vice versa.

In this scope, Heylighen (Heylighen, 2010), Heylighen et al (Heylighen et al., 2013), and Baumers and Heylighen (Baumers and Heylighen, 2015) explore a symbiotic relationship between architecture and ethnographical research centred on disabled people, stating the importance of the body experience in the built environment, where the perception of physically and sensory impaired people may contribute to spatial innovation.

This investigation explores the quality of invisibility, i.e. the multisensory integration of non-visual modalities in architecture aiming to balance the visual dominance in current built space production (Pereira et al., 2017). In this scope, Pereira and Heitor (Pereira and Heitor, 2011), (Pereira and Heitor, 2013), (Pereira and Heitor, 2015), argue that people with and without visual impairment are temporarily or permanently subjected to absences of visual perception. They state the need of the conscience of this fact as a design premise, aiming to achieve safe and multisensory stimulating built environments. Moreover, Pereira et al (Pereira et al., 2018) state that the experience and perception of people with impairments may contribute to question design standards, allowing the achievement of innovative spatial rules promoting safety and comfort of users with and without disabilities.

The sensory experience and perception of disabled people is important to achieve spatial innovation in the built space (Pereira et al., 2018). Regarding urban built spaces, Devlieger et al (Devlieger et al., 2005) explore the inclusion of the perception of visually impaired people in the context of the city. Enlarging this scope, including people with and without visual impairments, Pereira and Heitor (Pereira and Heitor, 2013) analyse the pedestrian mobility of users in the seaside promenade, including the spatial transitions with transport stops and bathing facilities.

In a more enlarged scope, not specifically related to disability experience, Roesler (Roesler, 2017) presents ethnographical research as a potential to achieve the innovation of shadow spaces in a context of climate change, where the passive cooling produced by buildings may generate resilient microclimates for urban users. The space of the loggia, object of this research, is poorly developed in literature. In many languages, such as in English, it is difficult to find a direct translation of the Italian word loggia. However, it is possible to find several studies evidencing the potential of the thermal performance of transitional spaces, in order to generate microclimates of regulation of indoor and outdoor environments, reducing energy consumption related with climatization of buildings, mainly regarding extreme hot and humid urban climate contexts (Sharmin et al., 2015),(Masoumi et al., 2017).

Concerning the specific transitional spaces of the loggia, Sinou and Steemers [Sinou and Steemers, 2004] identify four types of loggia, considering morphological variations

related with the openings in their sides, specifically the types of porch – a transitional space opened only in one of its sides; arcade-passage – with openings on two opposite sides; portico – with openings on three sides; and hypostyle hall – with openings on all four sides.

Moreover, they presented evidence regarding the performance of cooler conditions during summer and warmer conditions during winter. Often, the loggia has been historically designed in building facades of the main city squares. The French model of the royal square, as the case of the 17th Century Place des Vosges in Paris, is an example in the western urban heritage, where the unifying geometrical composition of several buildings facades with loggia increases visual monumentality. Another example is the 18th Century's Praça do Comércio (Figure.1 and 2), in Lisbon. However, it is important to consider that the space of the loggia, beyond the mentioned visual aesthetics and thermal performance of buildings and outdoor environments, needs to be explored through in-depth qualitative studies. We propose to study the loggia as a multisensory stimulating space that motivates urban pedestrians to use in their main mobility and outdoor stay, during midday hours, reducing risks related with heat waves and ultraviolet radiation exposure.

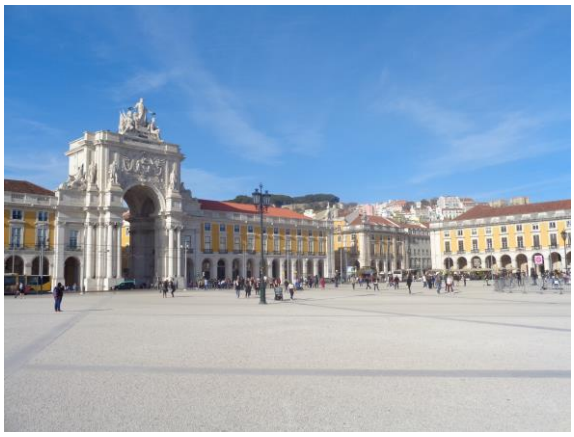
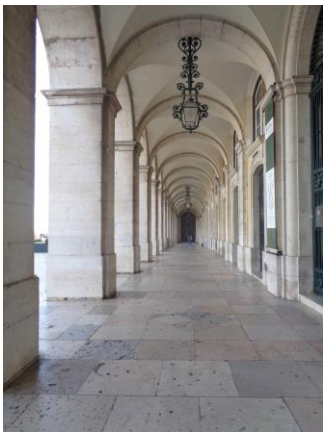

Figure 1 and 2. Urban loggias of Praça do Comércio in Lisbon (Left). Inside of a portico loggia, Praça do Comércio, Lisbon (Right).

To our knowledge, presently no investigations exist that approach the integration of non-visual sensory modalities of the urban loggia. In this scope, it is important to consider the spatial perceptions of blind people. Moreover, it is important to keep in mind that the hearing and olfactory experience of the space of the loggia is rather different than the one of a street in an open sky. Therefore, the specific group of blind users, due to their visual deprivation, and deep sensory attention to non-visual sensory modalities, may be important to find multisensory space rules which contribute to reduce risks in mobility and stay of urban users in a climate change context, with current periods of extreme ultraviolet radiation intensities and the increasing heat waves, due to global warming.

3. Methodology

This study is exploratory and follows a methodology based on qualitative research. This methodological approach explores the complexity of the reality, aiming for a holistic understanding of the phenomena in study (Flick, 2009).

In this study it was pertinent to achieve qualitative data as detailed as possible in order to understand the mechanisms of injury and the relationship between use and spatial component of risk, not limited to a specific local background of people, considering that public spaces need to be culturally inclusive.

Therefore, we interviewed 55 persons from five continents and 18 countries, namely Argentina, Australia, Brazil, Canada, Cape Verde, China, Croatia, Germany, Guinea-Bissau, India, Ireland, New Zealand, Portugal, Sao Tome and Principe, Switzerland, USA and Venezuela. In this context, we used face-to-face interviews as far as possible and phone- or audio-conference when was not possible for geographical reasons, or specific convenience of some participants.

We used an unstructured format based on the identification of the most relevant risks involving architecture used by blind people. Sommer and Sommer (Sommer and Sommer, 1997) recommend this technique to achieve unexplored qualitative information and Rheingantz et al (Rheingantz et al., 2009) point at the potential of this format in deep studies involving spatial perception. All the testimonies have been audio-recorded and selected parts have been transcribed and translated. Data were analysed using coding to identify similarities and differences of opinion expressed by the interviewees, aiming at an understanding of risks and spatial perceptions of blind people.

Direct observation is a method with the potential of increasing the evaluation of the space in study. Therefore, we used participant observation exploring cases of urban loggia located in Lisbon. This technique allows the observer to become part of the space under study, whereby the researcher's emotional apprehension can be as important as other ways of documentation (Sommer and Sommer, 1997). Furthermore, we explored the absence of sight, considering that navigation without vision involves a deeper processing and manipulation of information in other modalities than vision, over-developing attentional mechanisms and working memory (Pigeon, 2015). Moreover, in order to balance the ocular-centrism in architecture, visual impaired people, with their inherent expertise regarding bodily experience, have the potential of inspiring designing innovation (Vermeersch, 2013). Therefore, we used participant observation through the condition of blindness of the first author, using the aid of a long cane and fully sighted facilitators to avoid risks on the mobility, e.g. run over, fall or collision, in the spaces where the blind researcher was unfamiliar with. These assistants also provided visual description of the space in observation and facilitated photographs of spatial components of interest selected by the blind researcher.

4. Results

Preliminary results about risks and architecture, in a general approach, not specific to the urban loggia, achieved through the interviews to blind people, are presented in section A.

These results allowed the identification of risks, which are explored in a sequential approach of participant observation in loggia spaces including inherent urban surroundings, presented in section B.

4.1. Interviews with blind people

The qualitative data resultant from the interviews with blind people allowed the identification of three main risks involving architecture, specifically fall, collision and being run over by a vehicle.

Regarding falls, a few interviewees (I12, I40) did not consider stairs a space of risk - one of them (I12) mentioned "I don't consider stairs dangerous because the cane detects them".

In contrast, one of the interviewees (I2) explained that "although in theoretical terms it would be possible for the visually impaired person to do the detection of the obstacle with the cane, we know that many times we detect a certain depression on the floor and just afterwards the foot is almost inside of it."

Another interviewee (I11) mentioned: "I think stairs are dangerous (…) I have known about some people that have fallen on stairs", referring to a fall occurrence of a blind colleague in an unpredictable stair in the sidewalk. Several interviewees (I41, I42, I52, I55) stated the importance of floor indicators that may warn of the presence of stairs. One of them (I52) alerted to the risk of "stairs that aren't marked, so no track or warning strips on top of the stairs, if they are in an area where you wouldn't expect to find them". From the statement of some interviewees (I50, I55) the risk regarding the unpredictability of the presence of steps was identified.

Some interviewees mentioned the action of descent as more dangerous than the action of ascent (I49, I53).

Another interviewee (I9) identified his own daily risk inherent to ascent in his building stairs, combining narrow step with protruding step nose Also he pointed at the fact that this risk is not just for blind people, mentioning a deadly occurrence in similar stairs with a fully sighted user.

Furthermore, it was possible to identify risks related to specific components of the stairs. Some interviewees (I2, I41, I47, I53, I55) referred to the risk of stairs without handrail, as interviewee (I41) explained "(...) in lots of townhouses they'll have steps but they won't have a railing on the side, and that is very inconvenient and probably dangerous (...)".

Some interviewees (I47, I48, I51) mentioned the risk of spiral stairs. One of them (I47) highlighted the inconvenience of these stairs with only one handrail in the central side, because in this side the tread dimension is shorter, being dangerous mainly in descendant circulation.

A few interviewees (I41, I43) mentioned the risk inherent to stairs without step riser, whereas others (I44, I47) mentioned the risk inherent to the small dimension of the step treads. An interviewee (I48) identified the risk of consecutive steps with different dimensions, mentioning the danger in a situation where "If you have irregular steps for example, sometimes you have smaller steps and bigger steps, and it just changes for design reasons".

However, interviewee (I8) mentioned an occurrence of fall that happened to him in a stair without any particular design mistake: "the stair (...) had two straight flights, and had no curves. It had a flight of stairs, then a landing and another flight of stairs (…) it was very simple."

One interviewee (I6) presents feelings about stairs: "I usually say as a joke, if I were to order there would be no stairs", while another (I46) stated that "It is better not to have them if possible".

Some interviewees (I3, I4) mentioned that they would prefer to have ramps instead of stairs. A multi-impaired interviewee, blind and wheelchair user, identified the risk of curved ramps, mentioning a fall that he suffered in spite of being with an assistant, because it required much strength to balance the wheelchair at a building entrance (I1).

However, ramps without fencing were also identified as a risk upon interviewee's (I50) testimony.

Moreover, risks related with transitional spaces involving stairs, in building entrances, were identified through interviewees' statements. A problem identified from one interviewee's (I50) testimony was the existence of stairs without fencing on both sides. The risk of slippery outdoor surfaces was also identified through some interviewees' statements (I41, I43.) Interviewee (I41) mentioned that "For example in my home here, I have steps at the front, which is fine but when they are wet, they are quite slippery and quite dangerous", while interviewee (I13) also mentioned an occurrence of fall that happened to him in a slippery outdoor stair exposed to the rain.

Other aspects were identified as risk factors in access to buildings. One interviewee (I3) pointed the risk of building entrances with stairs in an inclined sidewalk, mentioning: "When the sidewalks are very steep ramps, they build little steps which are very difficult for us." While interviewee (I32) mentions the problems regarding unlevelled transitional spaces: "(...) Uneven height when we are talking about steps, that each step is not on the same height, that could be a problem (...). When the buildings are adjusted according to the terrain sometimes they are not even, they are not quite horizontal, so the steps at one end are higher than the other end because of the sloped terrain (...)."

Another interviewee (I5) mentioned the risk of spatial unpredictability in building entrances." There are places in which we enter and there is a step, or even two, to descend. And it is a bit annoying because we were not thinking about it, we were thinking: "there is an entrance so most likely we won't have steps (...)", but there are many places which do. (...) I think the floor, when you go in, should be flat."

Furthermore, one interviewee (I29) identified the risk of a building entrance with access being part in stairs and part in ramp, "There weren't any safety signs at the hotel entrance. (...) As I found the stair I tripped over the steps, I was going very fast, I imagined I was heading for the ramp, tripped over the steps and I fell."

A few interviewees (I51, I54) identified the risk of ramps adjacent to stairs without fencing between them, and one of them (I51) stated that it would be better to have all the access in ramp instead of the stairs. An interviewee (I54) mentioned that if it weren't absolutely necessary, it would be better that there weren't any stairs or ramps at building entrances.

Several interviewees' testimonies referred to the risk of **collision** with the head in protruding spatial components not detected by the cane, through (I2, I4, I34).

One interviewee (I34) mentioned the risk of protruding spatial components, not perceptible in the mobility of the blind, "(...) usually when we walk with the cane, it serves as a guide as well as a protection (...) protects bellow the chest (...) from the chest up we have to walk with the hand up and that it is not usual (...)" (I34). Related to the same issue, an interviewee (I41) stated that "(...) it is quite important, that there is no head-high protrusions on the walls, in doorways or (...) anything shoulder height."

Furthermore, an interviewee (I3) pointed at the risk of specific spatial components, saying: "The vertices, you must be careful with them."

Regarding mobility using the sidewalk, some interviewees presented mobility difficulties related to obstacles positioned in the sidewalk (I3, I4, I5). One interviewee (I3) said: "Buildings placed in corners and those zigzag streets, buildings coming more inwards or more outwards(...)". Moreover, the risk of non-straight pathways was reinforced through the statement of another interviewee, who has mentioned several occurrences of collision with the head (I7): "(...) if everything was aligned, everything straight, there wouldn't be any edges."

One of the interviewees (I12) identified the requirement of a clear indicator of the presence of an accessible pathway to avoid the risk of collision. "(...) if there would be a strip, a strip large enough for to people to pass on, and if it was forbidden to place anything there (...) the blind person would be always walking straight and never hit anything."

Moreover, one interviewee (I41) said: "The most important for me it is clear pathways (...)", and another interviewee (I6) stated the need of "Having more free sidewalks, without so many obstacles. From trash cans, to terraces, to traffic sign posts. All of

them are very wrongly studied." Several interviewees statements' (I13, I36, I54) referred to the risk of collision with phone booths, as one (I13) mentioned " (...) the cane goes underneath and we hit the top, on the booth (...)" whereas another (I36) said that this risk was avoided with the old phone boxes which are perceptible with cane. An interviewee (I52) referred to the risk of collision with signage in the sidewalk, specifically "Signs that protruded into the path to travel, so you have metal sign with sharp edges on it (...)".

Another interviewee's statement (I32) allowed to identify the risk of collision with bicycles and motorcycles parked on the sidewalk, close to the building facades.

Furthermore, several interviewees (I10, I14, I29, I43) identified the risk of collision with the stairs' structure, specifically on its back side. One of them (I10) mentioned that "(…) If we don't find the stairs ending right away, we may get underneath the stairs and hit our head there."

Another interviewee (I42) identified another risk of collision with the head with spatial components, mentioning "(...) it could be an arch, if you walk under an arch and arch is curved, in the middle it is high enough but towards the sides it lowers because of the curve (...)", while another interviewee (I53) identified the risk of collision with the head on the structure inside of a loggia of a building entrance mentioning "(...) there is a new building for Engineering school, and it has these weird columns that go down in an angle (...)".

The statements of one interviewee (I3) also allowed to identify the risk of collision with protruding shading devices in the sidewalk. The interviewee (I3) mentioned that: "(...) those things that are very low, awnings, sunshade umbrellas and terraces which aren't precisely divided. The loose tables alongside the sidewalk... when there is a little fence,(...) we detect it, but loose tables are painful, distressing." Still regarding the mobility in the sidewalk, some interviewees' statements (I4, I12, I13) helped to identify the risk of collision with terraces. One of them pointed that "it is terraces which sometimes make our mobility difficult. In addition, interviewee (I13) said that "(…) sometimes even to get into the coffee shop, we have to constantly dodge from terrace's tables."

In contrast, one of the interviewees (I11) expressed his perception about a pedestrian street with terraces in island (Fig.3), allowing a straight pedestrian pathway adjacent to the blocks facade, saying "I love that street (...) I am delighted (...) Gives me great pleasure. Gives me a feeling of freedom."

Regarding the risk of being run over, the statements of several interviewees referred to mobility problems in a sidewalk with obstacles(I44, I46). One of them (I46) said "(...) a person sometimes has to leave the sidewalk, go down a little to the traffic lane, face the risk of a car coming and being run over (...)".

One interviewee (I52) also stated the importance of a clear pathway around terraces to avoid the risk of being run over: "(...) with no detectable path to travel around the patio it makes it very difficult, (...) unless there is a clear path to travel with appropriate space to navigate around that, I may be walking onto the street or stepping into a parking area (...)".

Figure 3. Terrace in island allowing pedestrian circulation near the buildings.

Some interviewees (I48, I49) identified the risk of being run over in shared spaces of car parking, mentioning "(...) you never know what the cars are doing, if they are parking, if they are trying to exit, you never know what they are doing exactly. That's why you never know how you should react. That's the most dangerous."

Furthermore, an interviewee (I50) stated the importance of the presence of a wall to provide orientation and avoid the risk of run over, mentioning "as long as there is a wall to guide us, and we go close to it, because a place without a wall is horrible for us to orient ourselves."

4.2. Participant observations in the absence of sight

The participant observations allowed the identification of negative and positive spatial components regarding the mobility in a portico loggia. It was possible to perceive an increase of olfactory stimuli, mainly during the temporary transitions of the mobility between the loggia and the indoor, or the loggia and the outdoor. A fruit shop with a display inside the loggia was perceived as providing a pleasant olfactory experience. By contrast, in some loggia spaces, specifically in corners, unpleasant smells have been perceived, possibly due to cleaning difficulties of these spaces.

In a city with hills such as Lisbon, it was easy find steps with different forms and riser dimensions inherent to the articulation of the building entrances with the inclined sidewalks.

In several observations, it was possible to experience the increasing risk of the combination of wind and rain in the act of entering or exiting a building. In the act of

exiting, it was often possible to perceive the mentioned risks related to unpredictable steps.

Also, the sensory complexity between outdoor and indoor, with sun suddenly touching the skin, car traffic noise, olfactory presence of perfumed passerby users crossing the entrance and our kinaesthetic memory of descending steps may contribute to lacks of attention, using spatial risk components.

Unfortunately, we haven't found loggia spaces facilitating building entrances in inclined sidewalks. However, we found a building entrance with the presence of ramp and steps, the 16th century building of Jeronimo's Monastery, where the building entrance with five steps with an intermediate landing, has the presence of two recent built assistive ramps (Figs.4 and 5), one from the outdoor floor level, with the unpredictable absence of fencing on its sides, increasing the risk of fall, accessing the first two steps. However during the observation in a rainy day it was possible to perceive the shelter of loggia, keeping dry the surfaces of the mentioned vertical circulations, and enabling wind protection, giving time and space in the act of exiting to adjust clothing to face the outdoor weather.

It is difficult to perceive obstacles when descending a stair in the blind condition using a long cane, because in contrast with the horizontal mobility, the cane doesn't employ the usual scanning movement from side-to-side, maintaining a fixed central position to detect obstacles, which it is not enough to provide a full prevention.

Figure 4 and 5. Porch *loggia* at Jeronimo's Monastery in Lisbon.
Left: Outside view. Right: Vertical circulations inside the porch.

The participant observations allowed the identification of risk of collision and being run over inherent to the sidewalk mobility. In order to avoid risks of falling in a bollard, collisions with the head in a traffic sign or being run over due to a lack of attention inherent to the spatial orientation, the blind researcher always followed with the long cane the fixed reference of the building facades. However, several times the presence of protruding spatial components not detectable with the long cane, such as awnings, resulted in occurrences of collision with his head.

Furthermore often the presence of terraces occupying part of the sidewalk is an obstacle that requires to turn around. A few times it has occurred that the scanning movement of the long cane exploring the space and the unpredictable presence of the terrace's furniture resulted in collision with tables, which made the glasses on its top to shake, resulting in an embarrassing situation (Fig.6). Several times, passersby guided the blind researcher to another direction free of terrace furniture to avoid collision. Often, it resulted in spatial disorientation, and a few times the blind researcher faced the risk of walking in the wrong direction to the car traffic lane, being exposed to the risk of being run over. Often, cafeterias and their terraces are placed in blocks' corners which may increase the mentioned risk of disorientation. He doesn't usually refuse this well intentioned help from passersby, because sometimes there are unpredictable risks in the sidewalk, like a temporary hole from maintenance works without fencing, a situation that has already occurred with him, resulting in a fall. Beyond the risk of being run over due to the circulation in the sidewalk border, the navigation near the building facade was identified as multisensory advantage of providing stimuli and orientation: it is possible to explore with a long cane and find easily the building entrance, the sound of voids in the building facade, such as the sound of a loggia or an open door is recognisable, as well as olfactory references such as a cafeteria or a flower shop.

Also, the situation of navigating in the middle of a large sidewalk was experienced, through a tactile reference of a floor grid (Fig.7), easily perceived with a long cane. By contrast, orientation difficulties to find a building entrance were experienced, resulting in less autonomy, which implied to ask passersby for guidance. However, the floor grid was perceived as a useful indicator of the limit of the main sidewalk circulation area, which also allows mobility using the reference of the building facade.

Regarding the stay in a terrace, specifically taking a meal, two different spatial situations were observed, the stay in a terrace in the sidewalk shaded by an awning (Fig.8), and another terrace inside of a loggia, adjacent to the sidewalk, shaded by the building's structure (Fig.9). These participant observations revealed the tactile advantage of the terrace inside the loggia, allowing a more efficient shelter to sun, wind or rain exposure. By contrast, regarding aural perception, the disadvantages are similar. The urban noise of car traffic was perceived unpleasant in both cases. The reverberation evidences the claustrophobic presence of a textile ceiling, too low, provided by the awning, and in the case of the loggia an increasing of noise was also perceived, however without the mentioned claustrophobic discomfort.

5. Discussion

The results achieved suggest the potential of the use of loggia, in the context of mitigating and adapting buildings and cities to climate change. We argue that it is important to consider that an efficient building performance, including as widely as possible the satisfaction of the users, may result in less spatial obsolescence and higher life span of buildings, contributing for less energy consumption inherent to demolishing and rebuilding efforts. Aiming to balance the ocular-centrism present in current loggia design, we strategically explore the perception of a key users group, of blind people, for whom the space needs to have sensory qualities beyond vision. Moreover, we state that this sensory integration may contribute for the health and wellbeing of people with and without visual impairments.


Figure 6 and 7. Left: Terrace at a block corner, on the sidewalk.
Right: Sidewalk with terrace and free pathway adjacent to building facade, with tactile reference through a floor grid.

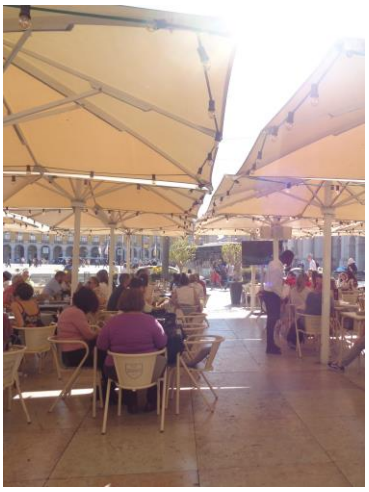


Figure 8 and 9. Left: Terrace with awnings in a city square.
Right: Terrace inside an urban loggia.

This research is exploratory and is in line with Roesler (Roesler, 2017), which states the need of ethnographical research applied to urban microclimates, in order to achieve information pertinent to the innovation of buildings and cities facing climate change. Foruzanmehr (Foruzanmehr, 2015), explored qualitative research to achieve information in order to improve the innovation of loggia spaces in domestic environments, aiming to achieve pleasant spaces to use and thermal regulation, reducing dependence on electromechanical climatization. Following this premise, however in a public urban context, we explored spatial perceptions centred in non-visual modalities. Therefore, our findings with a multi-cultured perception, of risks involving architecture and participant observations in the absence of sight, involving the space of the urban loggia, may contribute to achieve in-depth insights to inform the improvement of resilient buildings and cities.

Current architecture production evidences the need of design innovation regarding loggia. As an example, in an iconic building of contemporary architecture (Figs.10 and 11), it is possible to find a building entrance with protruding inclined structures, not possible to be perceived with a long cane, where there is a high risk of collision with the head, a situation mentioned by the blind interviewees. Specifically, an inclined sharp edge presents the risk of collision with the head regardless of the height of the users.

In literature, specifically in the field of health promotion, it is stated the use of stairs instead of elevators, as an efficient strategy to do physical exercise and to reduce obesity and its inherent diseases (Pate et al., 1995), In this scope, several studies explore spatial solutions which encourage users for the mentioned moderate physical activity (Nicoll, 2006), (Nicoll and Zimring, 2009).

Our findings regarding interviews and participant observations revealed the risk of fall related with the presence of steps in building accesses, where the presence of an inclined sidewalk results in step risers of different heights. Furthermore, rain or ice exposure may increase the risk of fall. Moreover, it is important to consider that beyond lacks of visual attention, children and older people are particular groups of risk when using stairs (Boele van Hensbroek et al., 2009). Several interviewees stated the use of ramps instead of steps in the building entrances. Therefore, we recommend, as far as possible, the use of slope entrances or ramps, instead of stairs; and a porch loggia, that may allow space to build these transitional floor articulations between the indoor and the sidewalk. In this context, our findings suggest a new requirement regarding the mentioned health promotion strategy, by recommending the avoidance of stairs in building accesses changing it to indoor staircases, where able-bodied users may use them instead of elevators.

Furthermore, the space of portico loggias provides a microclimate and consequent thermal regulation, providing winter and summer comfort, which may contribute to reducing energy consumption for indoor acclimatisation.

Moreover, we argue that the loggia, has the visual advantage in light regulation, providing time and space for ocular adaptation to partially sighted users when exiting a building, where usually temporary occurrences of visual absence may occur caused by glare. It is important to consider the context of an ageing population due to the increase of life expectancy resulting in the increasing of physical and visual impairments, where a building entrance without steps, and a more sensory regulated space of the loggia may contribute for less risks and more comfort.

The participant observations revealed the power of loggia in increasing olfactory stimulus. Therefore, it is important to consider stimulating materials and avoid corners, in urban public spaces where it is difficult to maintain an efficient cleaning. In this context, we recommend the use of portico loggias with openings in three sides, and minimal porch loggias in entrances of public buildings, with the possibility of being closed during night time, to reduce cleaning efforts.

Regarding the mobility in sidewalk, we recommend the location of an accessible pathway adjacent to the building, instead of sidewalk areas near to car traffic, which increase the risk of being run over. Moreover, we argue that for the orientation of blind people in urban space, it is important to place the pathway near the buildings, providing a multisensory reference to follow, such as a wall to touch with the long cane, sounds and smells from openings on the building facade which increases the orientation for the blind, and sensory stimuli for people with and without visual impairments.

Our findings revealed the need of these accessible pathways to be free of spatial obstacles, specifically, terraces. In this context, there are two possibilities to place terraces, between the car traffic and the accessible pathway or inside the loggia. We state that the second possibility allows more prevention regarding risk of sun exposure, specifically in the stay during midday hours, where the current temporary ultraviolet radiation and increasing periods of heat waves, are relevant in a context of climate change. Furthermore, this situation avoids the presence of awnings or umbrellas, spatial protruding components, not detectable with the long cane of the visually impaired users. Also, the mentioned shading devices are risk components for passersby with or without impairments, in cases of strong winds that may move these structures.

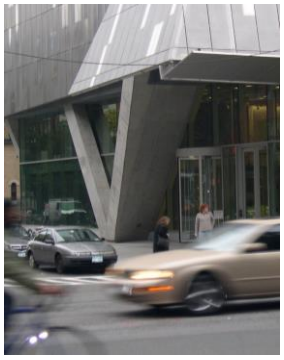

Figure 10 and 11. Risk of collision with the head in an iconic loggia.

6. Conclusion

The findings achieved with qualitative data resultant of a multicultural sample of interviewees, combined with the empirical reality of urban case studies introducing loggia, suggest the use of the portico loggia for two different uses, walkways and living areas.

We advance, for urban adaptation and mitigation of climate change, the use of transitional loggia spaces in building entrances, combining their environmental performance of thermal regulation with usability requirements of people with and without visual impairment, specifically adapting building entrances through a threshold of floor connection without steps, excluding risks of falls by allowing the use of an inclusive slope entrance or ramp in cases of inclined sidewalks.

We recommend the use of portico loggias with openings in three sides, and minimal porch loggias in entrances of public buildings, with the possibility of being closed during night time, to reduce cleaning efforts.

Furthermore, we recommend the use of terraces inside loggias, avoiding furniture obstacles in sidewalks in the mobility of visually impaired people and providing a more healthy shadow during midday hours in a context of intensive current periods of ultraviolet radiation and increasing heat waves.

We centred our study on the spatial perception of blind people, aiming to achieve deep qualitative information inherent to sensory modalities beyond vision. In this way we search to balance the ocular-centrism present in current loggia design, often used as visual facade composition, forgetting the potential of social inclusion.

It is planned for future research to develop an analytical study of urban cases of loggia with walkthrough interviews to visually impaired people and integrating other conditions of disability, such as hearing, physical and cognitive impairments.

Moreover, we have planned to do in-situ interviews to passerby users in order to include as far as possible people’s diversity.

Understanding the spatial behaviour of different conditions and needs of the people, may contribute to avoid obsolete spaces with consequent demolitions and rebuilding efforts and energy consumptions. The morphological innovation of the urban loggia, needs to achieve multisensory, health-promoting qualities in a context of climate change, to increase the life span of buildings and cities.

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The Cultural Sustainability: Merzifon Anatolia College, Turkey

Gizem Özerol[1], Aysu Akalın[2]

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Abstract

The article proposes an analysis of the role of American Board of Commissioners for Foreign Missions (ABCFM) during the late Ottoman and the early nationalist (Republican) Turkey and focusses especially on the ABCFM organization and the role of Protestant missionaries, which they succeeded in establishing autonomous schools, hospitals, clinics, orphanages, lodgings and ateliers not only in the capitals, but also in provinces.

The American Board began evangelism among Armenians, and the education and the social services became part of the Protestant movement in the Near East. Following efforts to Christianize the nations through evangelism, in the mid of 19th century, Merzifon (Marsovan) province was chosen due to its location in the middle of Anatolia and Merzifon Anatolia College was designed as an important 'station' in order to support the American missionary movements. Then, between the years 1886 and 1938, ABCFM built strong connections with Anatolia College in Merzifon to gain a very important strategic position.

In the context of the First World War, the function of the Anatolia College buildings has changed for different aims; the military used these buildings as the Artillery Regiment. After the war the ABCFM's network broke down but its strong contribution to present education in Turkey is inevitable. The site as a heritage is still an active part of the city's cultural life with some existing buildings of ABCFM supporting culture and education. For instance Merzifon Anatolia College Hospital is used by Merzifon High School for Science, Merzifon Anatolia College Library and Museum Building are used by Amasya University as Vocational School Administration Building. The other College buildings have been used by the Ministry of National Defense for many years. The North College, for instance, served as Non-commissioned Officer School during the First World War.

In this study, cultural sustainability of the Merzifon Anatolia College buildings each constructed with different aims and various stories has been investigated. As a method, the historical background of the site and the buildings has been revealed through archive documents and interviews have been held with historians. A detailed field search has been carried out to document the current status and usages of the buildings.

Protecting aura with the function of the building thus its authenticity is an opinion that is supported by many theorists but when the function is no longer valid, sustainability of aura is in danger. In this sense, the present usage of the Anatolia College buildings for educational purposes might be the indication that the aura of the past is still culturally sustained.

Keywords: *Collective Memory, Cultural Sustainability, American Missionary Movement, Merzifon, Anatolia College.*

[1] Gazi University, Department of Architecture, ozerol.gizem@gmail.com
[2] Gazi University, Department of Architecture, aysuakalin@gazi.edu.tr

1. Introduction

The American Board and other Protestant organizations in the United States agreed in establishing of some form of Christianity in every region of the world. Since Jerusalem was off limits to permanent residents and Smyrna unsafe because of the Greek war for independence, Beirut became the center for the American mission (Grabill, 1971). As Hans-Lukas Kieser mentions (Kieser, 2002) the missionaries, notably those belonging to the American Board of Commissioners for Foreign Missions (ABCFM) seem for the first time to have become seriously concerned with the functioning of society as a whole, including the Sunni Muslim majority. The first educational activities of the Americans within the borders of the Ottoman Empire targeted to the Armenian community called as the "*Anglo Saxons of the East*" by Cyrus Hamlin (Bayram, 2006). The goals became oriented toward non-Muslim and non-Jewish minorities and missionaries turned to extending American culture to the interior. At first the missionaries were mainly occupied in the study of the languages of the country, making the acquaintance of the people and establishing schools as opportunity offered and teachers could be secured (Asiatic Turkey, 1910). The missionaries of the American Board did not hesitate to spend money to convert the Armenian people into the Protestant sect. They carried out their work in a programmatic way. However, the Gregorian and Catholic Armenian Churches opposed this and tried to keep their communities away from Protestants' propaganda. Dr. George Edward White (White, 1861) interpreted the act as a conflict with the Armenian hierarchy but found the establishment of the Protestant Churches logical.

Permanent efforts made by Protestants when a chaplain of the British East India Company, Henry Martyn, appeared in the Near East in 1810. He soon died, and Protestants in England and America made him a symbol for missionary opportunity. In 1820, the initial two American missionaries, Levi Parsons and Pliny Fisk, landed at Smyrna (İzmir) representing the American Board of Commissioners for Foreign Missions (ABCFM, 1910) (Grabill, 1971). At that time the population of Turkish Empire was nearly twenty-four millions and of these about sixteen millions was Mohammedan in their religion (mostly in the northern part of the Empire); a large proportion of the remaining millions were Christian in various forms. The Christian population is made up largely of Armenians and of Greeks (ABCFM, 1910).

A large blow for missionaries came as Russo-Turkish warfare forced evacuation from Beirut to Malta, where they stayed from 1828 to 1830. Eli Smith and Harrison Gary Otis Dwight were send to made survey in Anatolia and Persia in 1830 [9]. The creation of separate Protestant millet [3] in 1847 was an inevitable development, but not a long-

3 In the first decades very often we see leaders of the millets and, less frequently, the state of the Tanzimat opposing the missionaries. This changed considerably after Sultan Abdulhamid's ascent to the throne in 1876 (Kieser, 2002).

term project devised by the ABCFM (Kieser, 2002).[4] In the first period between 1831 to 1846 five *stations* were formed: Constantinople (İstanbul), 1831[5]; Smyrna (İzmir) 1833; Brousa (Bursa), 1834; Trebizond (Trabzon), 1836 and Erzuroom (Erzurum), 1839 (ABCFM, 1910). Concentration for several years was on language study, Bible translation, the printing of scriptural and other religious materials (Grabill, 1971). A second period in the history of the missionary work covering twenty years, from 1846 to 1866 was a period of growth and organization. The *stations* occupied by missionaries increased number from five to twenty-four. Some of these are; Aintab (Gaziantep), 1849; Tocat (Tokat), 1854; Marash (Maraş), Sivas and Harpoot (Harput), 1855; Oorfa (Urfa), 1856; Diarbekir (Diyarbakır) and Merzifon (Merzifon), 1857; Mardin and Bitlis 1858, and Adana 1863 (ABCFM, 1910) (Fig. 1). [6]

All the *stations* held annually a meeting of delegates from each station, for the consideration of all plans and estimates for the coming year. But at length the expense of time and money involved in attendance upon these annual meetings became so difficult for delegates coming from remote places. The missionaries were divided into three zones that is in 1856 Mission to Central Turkey was constituted, in 1860 Mission to Eastern Turkey and finally Mission to Western Turkey (includes Merzifon) (ABCFM, 1910). During the prosecution of the spiritual life in the Turkish Empire wise attention has been given all along to the education of the young. Early in the history of the station at Constantinople, a seminary was established there for the education of young men preparing for the ministry, such as gave promise for that work (ABCFM, 1910). The general publication work of the three missions was done principally at Constantinople on account of facilities found there, and is about equally divided between publication of Christian literature and textbooks for schools (ABCFM, 1910).

Each of these missions has its centers of work and each center or *stations* its outstations. As Grabill mentions (Grabill, 1971) during the period from 1878 to 1903, seven colleges were opened by ABCFM: Euphrates College at Harput and American College at Van in eastern Anatolia; Central Turkey College with campuses for men and women

4 The constitution of this new community was important as a modern model of redefining collective social relations. Unlike the Catholic millet (created 1831) and the traditional millets, all headed by patriarchs, it separated millet membership and church affiliation. The representative of the millet was not an ecclesiastic. He was elected by an assembly of deputies representing the local Protestant communities (Kieser, 2002).

5 The first missionary to Constantinople, William Goodell, illustrated Protestant purposefulness (Grabill, 1971).

6 By 1904 the American Board had developed in Turkey a field larger than anywhere else in the world, having divided this field into four administrative areas: European, Western, Central, and Eastern Turkey (Fig. 1). These areas included over twenty stations, one hundred fifty personnel (clergymen, physicians, wives, and unmarried women), a thousand national workers, and fifteen thousand members in one hundred thirty evangelical Armenian churches. As Grabill (Grabill, 1971) about 75 per cent of all the Western Protestant enterprises in Asia Minor and European Turkey were under American Board control.

at Aintab and Marash, respectively; St. Paul College at Tarsus in the south and Anatolia College at Merzifon in the north; and International College at Smyrna (White, 1861). In this article, permanent efforts made by the ABCFM organization at Anatolia College at Merzifon are discussed specifically.

2. Merzifon Anatolia College

During the period when American Board missionaries were in Anatolia, Merzifon locating in the central Black Sea region was a district of the Amasya Province, 32 km far from Sivas, which was under the administrative organization of the Ottoman Empire. The city located on the slopes of Mount Taşan was a large settlement in the 19th century. It has an important geographical location, with the capacity to connect the Black Sea coast to the inner regions of Anatolia. The American Board Missionaries started their studies by evaluating the geographical position of Merzifon from other angles. For them, Merzifon was an important center located between the Armenian capital of Erzurum and the capital of the Ottoman Empire.

Merzifon city had been frequently visited and temporarily occupied by pioneer missionaries and in 1860, Rev. and Mrs. J.Y. Leonard got the permission from the Western Turkey Mission to settle. In Merzifon and its surroundings, the Armenian houses were determined and Protestant preaching was given to housewives, elderly and children (Tuzcu, 1993). During that time the whole number of persons under Protestant instructions in Merzifon (Merzifon) was about 150, including the pupils in the Missionary schools (ABCFM, 1882).[7] Different methods have been applied to convince people for Christianity. A visiting committee was selected, who labored from house to house, and in the markets. In another mode of activity was the teaching of individuals in private houses by volunteer laborers. Another method of work was to visit the khans on Sunday morning to ascertain who there may be willing to attend the Evangelical service. In this way strangers have been found and made welcome at the Protestant church (ABCFM, 1882).

In 1840 Cyrus Hamlin, the pioneer American educator in Turkey, founded a seminary in Bebek, a suburb of Constantinople. In time the institution bifurcated; Dr. Hamlin remained at the capital and established Robert College. It was decided to locate the Theological Seminary and the Girls' Boarding School of the Mission at some point in the interior, and in 1862, Merzifon was selected as the correct place (White, 1861). Accordingly, Mr. and Mrs. Dodd were transferred from Symrna (İzmir), and Rev. and Mrs. J.F. Smith and Miss Eliza Fritcher, new recruits from America, were designated to Merzifon in 1863. Mr. Leonard, Mr. Dodd and Mr. Smith organized Merzifon Station, and elected their chairman, secretary, and treasurer (White, 1861).

7 Student enrollment by 1895 had gone over one hundred fifty and by 1903 to nearly five hundred (Grabill, 1971).

Mr. Charles Chapin Tracy and Mrs. Tracy reached Merzifon in 1867 [8] and that time Merzifon was hardly more than an overgrown Turkish and Armenian village, with some 15,000 inhabitants (White, 1861). Tracy worked at the Station until he retired in 1913. In 1879 the Station decided to scatter forces somewhat, as an experiment, and the Tracy family spent two winters in Amasia (Amasya). Important out-stations were developing in cities such as Samsoun (Samsun) and Amasia (Amasya) (White, 1861). When the Tracy family reached Merzifon in 1867, the mission site had not been bought. The Station, however, was wise in making choice of its permanent location. As White describes; the 40-acre settlement is on the northern edge of the town, located on the Hıdırlık Hill where two feet higher than any other in the city (White, 1861). Because of their concern to protect themselves against any attack, it was assumed that the missionaries settled on this highest hill of the region. Even though the town has a flat topography, St. Barbara Church was also in a hilly area of Merzifon. According to Bayram, this Greek Church, which was located in the acropolis of the city, was an important point of contact for missionaries from which the school had connection with the city via St. Barbara Church (Bayram, 2006) (Fig. 2).

Figure 2. St. Barbara Church (1) ve Site Plan for Anatolia College (2), Merzifon 1950-1960 (the archive of Sadi Bayram, archaeologist-historian)

3. Merzifon Anatolia College Building

The first building material of Anatolia College was sun-dried mud brick, white plastered on the surface, the adobe of the Hittites. The next step was the use of kiln-burned brick to fill interstices between the timbers of a wooden framework, and most of the American houses and several school buildings were constructed in this way. In the last years, however Dr. Charles Chapin Tracy pushed on to a third type of building which was truly modern, and made use of stone, brick, cement, lime, and iron girders. An

8 According to Rev. Y. K. Rushdouny, Anatolia College, 1905: Dr. Tracy was known from Constantinople and Smyrna to Van and Ararat. I know personally that many wanted to send their children to Anatolia College because of Dr. Tracy. I know ministers of the gospel wanted to go to Marsovan and see personally Dr. Tracy about whom they had heard so many good things from those who knew him (White, 1861).

English architect was of great assistance in this latter work and in planning for the future buildings (White, 1861).[9]

A visitor once expressed amusement at the Merzifon way of getting buildings. "*First you build a woodshed, then you enlarge it, next you put on a second story, you add an ell, then you repair the whole and behold, you have a useful school building*," This method was Mr. Tracy's way of meeting two difficulties at once, the financial and the political. In this way "the old College building" developed, growing out of what was first put up for theological instruction alone, and a happy throng of students and a good and growing educational work were housed there for years.

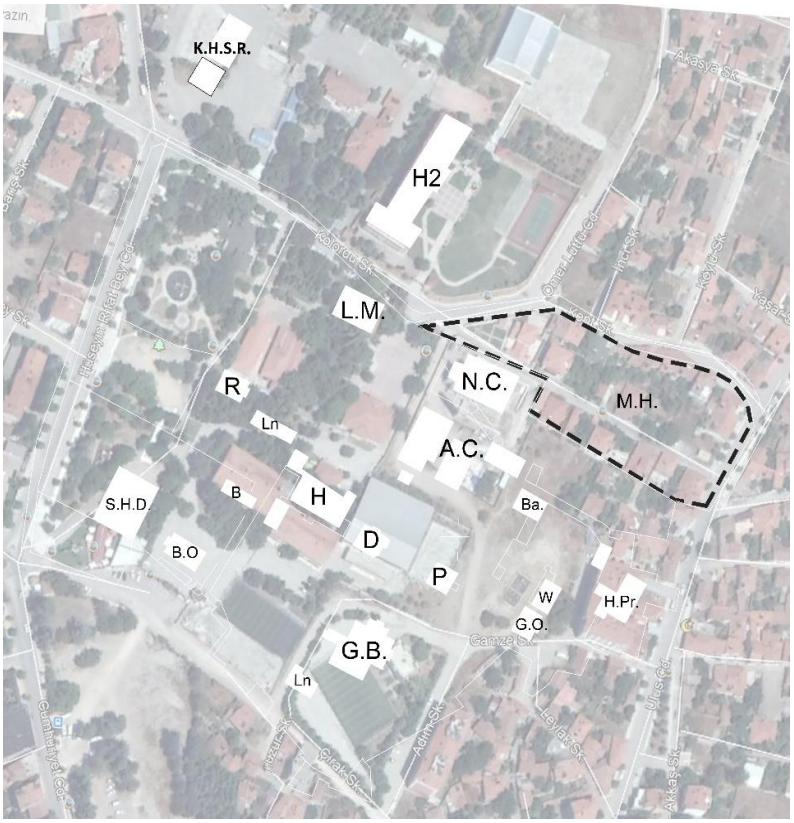
Some of the buildings of Merzifon Anatolia College that were built until 1915 are: Boys' College Boarding School (previous Theological Seminary), Girls' Boarding School, North College, Library- Museum, Kennedy Home and the Superintendent's house, Union Hall, Self Help Shops, White Hall, Boys' Orphanage, Hospital, 11 Armenian Houses, Bath, etc. (Fig. 3.)

According to the Report of Merzifon Station, in September 1882, the school opened with four pupils and increased to 40 in a very short time (White, 1861). Anatolia College [10] had its humble beginning in the early days of the College in the 1880s (SALT Research, 2019) (Fig. 4). Built in 1883, in order to attract the attention of Christians, the Merzifon Theological Seminary (for the girls only) was the first qualified building (Fig. 5).[11] In 1886, the high school at Merzifon became Anatolia College, and served primarily youth of Armenian Protestant adults in the vicinity of Merzifon. Five languages were in use at the institution, though English was the main language (Tracy, 1904).

9 One of the most interesting achievements of the builder was the location by a workman under his direction of a stone quarry about a mile away in the foothills, which was leased from the government, and from which quantities of stone were drawn to the premises for the newest buildings, said to be of essentially the same composition as the stone used in the Cologne Cathedral (White, 1861).

10 Anatolia College was incorporated under the laws of the State of Massachusetts March 14, 1894, with the Prudential Committee of the American Board as its Trustees (White, 1861).

11 Though the station was very small at the beginning, it grew and reached to a region of eighty thousand square miles (Tracy, 1904).



Buildings not existing:

A.C. Buildings, Anatolia College

Ba. Bakery, Anatolia College

H.Pr. Home for Younger Preparatories

G.B. Girls' Boarding School

H. First College Hospital, 1890s

D. Dr. Carrington's House

P. President's House

S.H.D. Self Help Shops

R. Dr. Riggs' House

Ln. Laundries

B. Bath

B.O. Boys' Orphanage

G.O. Girls' Orphanage

W. Mr. White's House

K.H.S.R. Kennedy Home for boys and Superintendent's Residence

Existing buildings:

H2. Anatolia College Hospital

L.M. Library and Museum

N.C. The North College

M.H. Missionary Houses

Figure 3. Anatolia College Merzifon Campus Plan, 1907 [12] applied on to the Google maps, 2019 with later additions.

12 https://archives.saltresearch.org/handle/123456789/45871

Mr. Tracy as its principal graduated its first and only class in 1886 and was merged into Anatolia College. One third of its pupils were Greeks and one sixth of its graduates have become preachers of the gospel (ABCFM, 1910). George E. White graduated from Grinnel College in the United States in 1882 and the Chicago Theological School in 1887 came to Merzifon with his wife on November 15, 1890, and started to work in Merzifon College Campus, staying there for 30 years. White started learning Turkish as soon as he settled in the town. He visited mosques often saying that as warm as his own home and learned Quran with meaning, which could gave him chance to pray.

Figure 4. Hıdırlık Hill: Sofular Mosque and Merzifon Theological Seminary as the first building of Anatolia College, 1880s from the south east (Muammer Ay archive).

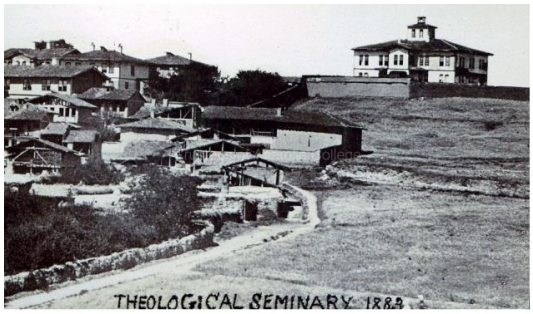


Figure 5. Merzifon Theological Seminary (for the girls only) 1883, the first building of Anatolia College, from the south (Muammer Ay archive).

Figure 6. Theological Seminary converted into Boys' College Boarding School.[13]

13 https://archives.saltresearch.org/handle/123456789/44806

In 1901, Theological Seminary was functioned as the Boys' College Boarding School after the upper floor and roof typology was changed and the bell tower was enlarged (Fig. 6). According to the Annual Report for Merzifon Station (ABCFM, 1910), the increased number of students coming from southern Russia was a big surprise for the missionary. They were bright and manly and polite, and were also tractable and serious-minded, and reverent toward religion.

Boys' College Boarding School does not exist today but The North College Building next to it, is still stands, even in ruins (Fig. 7 and Fig. 8, Fig. 9). The clock tower of the building constructed in 1902 and the four clocks attached to the tower at Christmas time are donations from the Swiss State.[14]

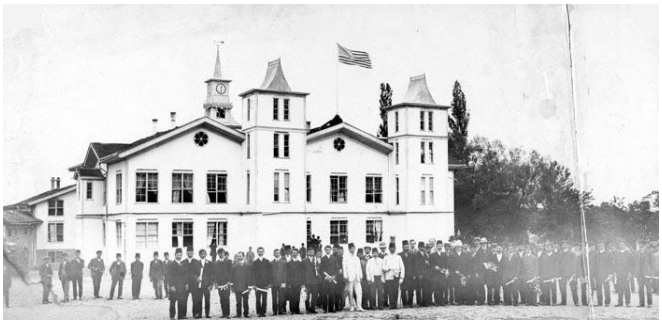


Figure 7. Boys' College Boarding School, 1901, from the west.[15]

Figure 8. The North College, 1890s, from the south-east.[16]

14https://danyalasik.wordpress.com/2017/05/21/merzifon-anadolu-koleji-anatolia-college/

15 https://archives.saltresearch.org/handle/123456789/43889
16 https://archives.saltresearch.org/handle/123456789/42909

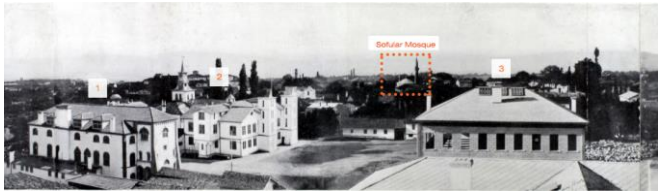


Figure 9. 1. The North College, 2. Boys' College Boarding School (used to be Merzifon Theological Seminary) 3. Library- Museum , taken from the north, early 1900s. [17]

The Merzifon Anatolia College buildings were used by the Ministry of National Defense for many years. The North College, for instance, served as Non-commissioned Officer School during First World War. (Fig. 10). During the Republican period, The North College, which was used as non-commissioned Officer School, continued its educational activities as Merzifon Girls' School due to the necessity of teaching minority schools in Turkish native language (Fig. 12). An arched built in 1955 on to the Corps (Kolordu) Street connects Non-commissioned Officer School to the other part of the campus (Fig. 11). When it was in the hands of the military, the clock tower is adapted to be used as a small mosque. Today the building, known as Girls' School is under restoration (Fig. 13).

The Merzifon Anatolia College buildings used as the headquarters of the War of Independence were removed after a short period of active usage in the Republican period and many of the buildings were collapsed later on. Built in 1894, Anatolia College Girls' Boarding School next to Boys' College Boarding School (used to be Merzifon Theological Seminary) was one of them (Fig. 14). [18] The school was opened under the direction of Eliza Fritcher (Grene, 1916). She stayed at the Station for 30 years, until her dead. The Girls' Boarding School was made of two buildings; the first building was Frithcher Hall and the next was the main building (Fig. 15 and Fig. 16). In the 1900s Kennedy Home was planned and has since been built, as the house of the superintendent, and this has been connected with the main campus by a tunnel under the street (White, 1861). Both Kennedy Home for boys and Superintendent's Residence in Anatolia College were used as Artillery Regiment in the 1920s (Fig. 17 and Fig. 18). From the pictures it is understood that they is almost no alterations after the conversion. Today, they are still in the boundary of the military (Fig. 19) but neither of them could reach to the present.

17 https://archives.saltresearch.org/handle/123456789/45833

18 According to Report of Marsovan Girls' Boarding School, May 1910 (p. 9); the year 1908-09 closed with the graduation of a class of nine of whom seven are now teaching and one is taking the nurses' training course in Anatolia Hospital. Of those teaching one is in the Primary Greek Department of this school, two are in the American school at Erzurum, two in Protestant church schools, and two in community schools of the old churches.

Figure 10. The North College: Non-commissioned Officer School, 1950's, from the south-west (Aydınlı et al., 2011).

Figure 11. An arch connecting the two parts of the college, (Aydınlı et al., 2011).

Figure 12. North College, taken from the south-west, before restoration.[19]

19 http://informadik.blogspot.com/2014/06/

Figure 13. The North College, taken from the north in 2019, (Gizem Özerol archive).

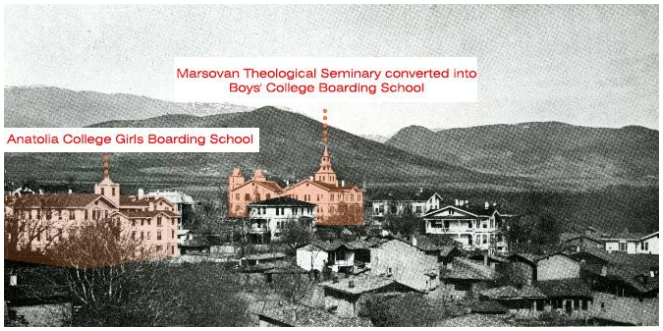


Figure 14. Merzifon , Anatolia College Girls Boarding School, 1894 and Boys' College Boarding School, 1880s, taken from the South (Tracy, 1904).

Figure 15. The new Anatolia College Girls Boarding School oppening[20]

20 http://ozhanozturk.com/2018/01/07/merzifon-amerikan-koleji-pontusculuk/

Figure 16. Anatolia College Girls Boarding School, 1894, taken from the east. [21]

Figure 17. Anatolia College, Kennedy Home for boys and Superintendent's Residence, 1900s.[22]

Figure 18. Merzifon Artillery Regiment, 1920s (Archive of Ahmet Yüksel) (Maksudyan, 2013).

21 https://archives.saltresearch.org/handle/123456789/45809
22 https://archives.saltresearch.org/handle/123456789/46761

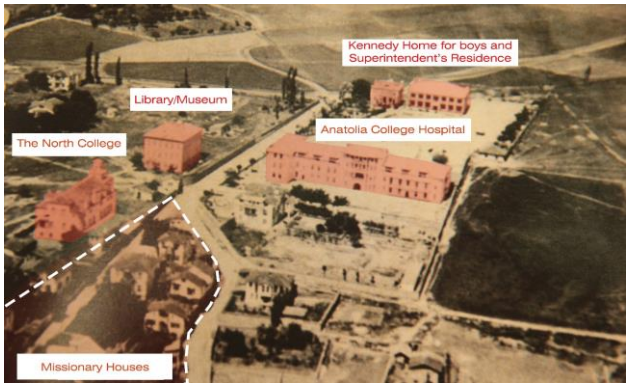


Figure 19. Anatolia College Merzifon Campus from the east, 1920-1940 (Aydınlı, 2011).

The foundation of Anatolia College's three-storey library/museum building was started in 1910, and completed in 1912 with students and volunteer employees (Fig. 20). During the war, the military used this building as the Artillery Regiment, by removing the third floor (Fig. 21). Today, it is the Vocational High School of Amasya University (Fig. 22).

Figure 20. Anatolia College, Library and Museum, 1912, taken from the west. [23]

Figure 21. Anatolia College, Library and Museum: Administrative building of the Vocational High School, taken from the north in 1955 (Aydınlı, 2011).

23 https://danyalasik.wordpress.com/2017/05/21/merzifon-anadolu-koleji-anatolia-college/

Figure 22. Anatolia College, Library and Museum: Amasya University Vocational High School, taken from the North in 2019 (Gizem Özerol archive).

The hospital began its career in a rebuilt shed, and actually did its work there for fifteen years (White, 1861). (Fig. 23 and Fig. 24). In 1894 the country was visited by the scourge of cholera (as again in 1911), and many people in the city and region died. Mrs. Tracy led all the members of the Station in preparing and distributing the Hamlin remedies and using other measures by which numbers of lives were saved, probably not less than 500, and the dread disease never invaded the college compound (Millard, 2011) (White, 1861). Grabill describes this tragedy as "*The missionaries attempted to feed about eight thousands of the villagers in the hospital; they treated both Armenians and Turks as a typhus epidemic got out of control.*" (Grabill, 1971). According to the Annual Report for Merzifon Station, (ABCFMa, 1910) even the afternoons have been devoted to the examination of new patients, work in the city. A great deal of free work has been done. A great deal of medicine has been dispensed free, and milk, food, and clothing provided for many destitute cases.

Figure 23. First College Hospital, 1890s, from the south [24]

24 https://danyalasik.wordpress.com/2017/05/21/merzifon-anadolu-koleji-anatolia-college/

Figure 24. First College Hospital, 1890s, from the south [25]

As mentioned in the Annual Report for Merzifon Station, (ABCFMa, 1910), a beautiful tract of land has been purchased for a new Hospital site, the present quarters of the Hospital (The First College Hospital) is in immediate proximity to the College, and utterly unsuited to the increasing work of the Hospital. The Anatolia College Hospital buildings (today Merzifon High School for Science) were completed in 1914 (Fig. 25). Additions were made from time to time to the grounds, buildings and equipments, and then resources were slowly accumulated for the new grounds and buildings across the street, occupied by a regiment of Turkish soldiers in 1914. The Hospital in a sense grew out of the College and Mrs. Tracy's work for the sick poor (White, 1861). It was the first building having heating system and elevator in the city.[26]

The building requisitioned twice by Turks and the missionary were forced out in February, 1921 (ABCFM, 1922). The Turkish army marched to the front, the building was evacuated, and over 500 soldiers were treated there by Dr. Marden under Red Cross auspices before all the American grounds and premises were commandeered by the Turks, May 10, 1916 (White, 1861). The hospital served as a 1600-bed military hospital during First World War.

According to the archaeologist-historian Sadi Bayram (Bayram, 2006)[27] the hospital building was used chronologically by the 9th Corps Command, then the MSB Artillery Regiment (1954) and the former Non-commissioned Officer School (1956) (Fig. 26). It was restored and reopened in 2010 (Fig. 27 and Fig. 28). Since then it serves as Merzifon High School for Science.

25 https://archives.saltresearch.org/handle/123456789/46747
26 https://danyalasik.wordpress.com/2017/05/21/merzifon-anadolu-koleji-anatolia-college/
27 Interview with Sadi Bayram by the authors of this article, 20.01.2019.

Figure 25. Anatolia College Hospital, 1900s, taken from the east. [28]

Figure 26. Anatolia College Hospital used as Artillery Regiment, in 1954, taken from the east. [29]

Figure 27. Anatolia College Hospital before the repair, taken from the east in 2005 (Sadi Bayram archive)

28 https://danyalasik.wordpress.com/2017/05/21/merzifon-anadolu-koleji-anatolia-college/
29 https://www.bitmezat.com/urun/1010300/merzifon-muhabere-kis

Figure 28. Anatolia College Hospital used as Merzifon High School for Science, taken from the east in 2019 (Gizem Özerol archive).

The self-help industrial department was a right arm of the college in the prosecution of its mission. The idea was as simple as it sounds; help people to help themselves, especially the young, in course of education. The youth was offered the opportunity to work his way through a course of education. Departments such as joiner's house, bindery, shoemaker, tailor atelier, trial farm were established in order to provide requirements of poor students and earn money. These departments also provided the students a professional job. The president of college ever stressed the principle of self-help, and welcomed students who were compelled largely to work their own way (White, 1861) (Fig. 29 and Fig. 30). The system had advantages; each student acquired complete or considerable knowledge of a trade, and the products of labor were sold, so that most of the money spent in students' wages was recovered and used again in the same way.

A pioneer college not only had to educate its students, but it is an institution rendering various public services. In 1919, the first two newspapers ever published in the city of Merzifon were enterprises of student clubs with the assistance of the teachers whom they invited as colaborers.

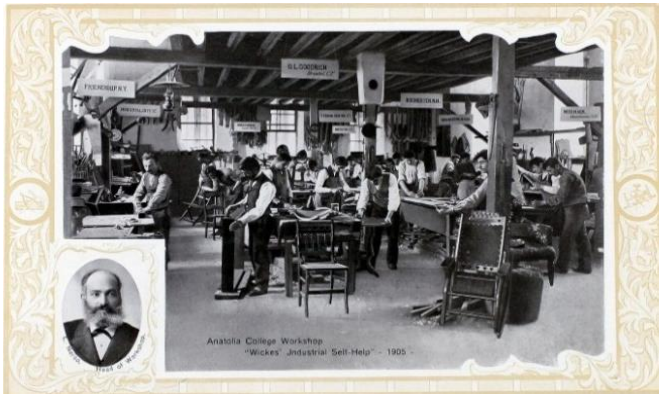


Figure 29. Self Help Shops,1905 [30]

30 https://archives.saltresearch.org/handle/123456789/46714

Figure 30. Wickes Industrial with Mill, 1911 – 1912, Anatolia College, Merzifon, Self Help Shops. [31]

The first political club founded in Merzifon about the same time was directed by a committee of twelve men (White, 1861). Apart from for the college and hospital buildings, 11 comfortable houses were built for the missionary members. One of them was restored by the Municipality of Merzifon and used for culture activities (Kolektif, 2015) (Fig. 31 and Fig. 32). The rest of the houses are still in use by relatives of Armenian owners (Fig. 33 and Fig. 34).

We can state that the first structures were similar to the traditional Armenian Houses and traditional Turkish House architecture. The buildings that were completed in the 1900s were built in the style of British architecture. The most important examples of these are the Library / Museum, Anatolian College Hospital and Clock Tower and the Bell, which have survived to this day. Since the preserved missionary houses protect the Armenian housing culture, these three structures provide the cultural continuity of the period.

4. Conclusion

In July, 1908, the New Regime was proclaimed with a revolution which introduced constitutional and parliamentary government and soon removed the Sultan, Abdul Hamid, from the throne. In the year 1908 the Annual Meeting of the Western Turkey Mission was held in Merzifon (White, 1861) (Fig. 35). The motto of the Party of Union and Progress was, "Liberty, Equality, Justice and Fraternity." As White mentions (White, 1861) the Turks attributed a large share in the movement for reform to the Armenians and for a time the atmosphere was like the calm of a summer dawn. In 1909, Nurettin Pehlivanzade entered the college as the first Turkish student and graduated in 1914 (Bayram, 2006).

31 https://archives.saltresearch.org/handle/123456789/46752

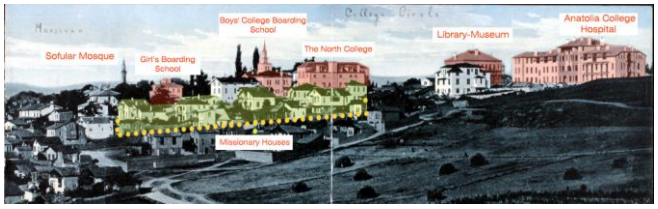


Figure 31. Anatolia College Merzifon Campus from the north-east. [32]

Figure 32. Some of the houses built for the missionary members, picture taken from the east in 1906.[33]

Figure 33. Some of the missionary houses, taken from the north in 2019 (Gizem Özerol archive).

32 https://archives.saltresearch.org/handle/123456789/44843
33 https://archives.saltresearch.org/handle/123456789/42849

Figure 34. Missionary houses, taken from Kolordu street in 2019 (Gizem Özerol archive).

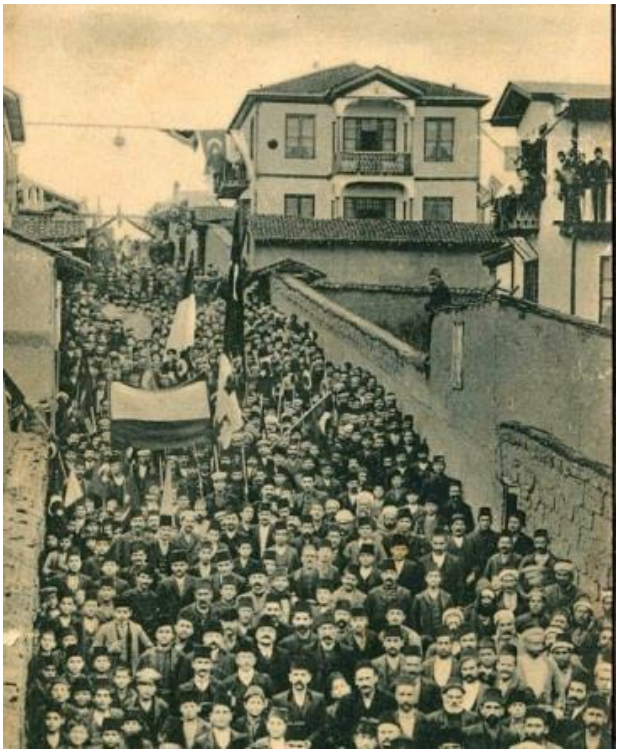


Figure 35. Procession in Celebration of the Opening of the Parlament, 1908. [34]

34 https://danyalasik.wordpress.com/2017/05/21/merzifon-anadolu-koleji-anatolia-college/

During the wars, from the Balkan wars to First World War and the 'National War' (1912–22), the honeymoon between American Protestants and Young Turks turned into deep distrust, mutual accusations and bitter hatred (Kieser, 2002).[35] Early in the year 1915, Turkish officials, aided and assisted by the Germans, determined to eliminate the Armenian question from the area they controlled. At that time Merzifon had a population of at least 12.000 Armenians. The College continued in session until May, 1916, with Greek, Russian and Turkish students in attendance. As mentioned above on the 10th of May, 1916, all the grounds and buildings were occupied by the Turkish officials for the purposes of a military hospital, and the Americans on the ground, ten adults and four children, under the compulsion of armed and mounted police, were put on the road for Constantinople (White, 1861). Many were exiled but the protracted negotiations (Miss Willard and Miss Gage volunteered to do so) resulted in permission for 48 exiles could be brought back to Merzifon. For thirty-four years Miss Charlotte R. Willard has been connected with Merzifon Station as missionary teacher, principal, or general worker. As principal of Anatolia Girls' School, she endeared herself to pupils and teachers and won their deepest respect and admiration. During the war years, she kept the school open till 1919 (ARIT, 2019).[36]

Merzifon was occupied by the British in March 1919. As Bayram mentions (Bayram, 2006) the influence of the American College has increased automatically. In June 1919, George White who was opposed the decision to withdraw 80 British troops from Merzifon went to Istanbul and managed to cancel the withdrawal decision. At Merzifon the Kemalists ordered all but two Americans to leave. Anatolia College had an orphanage in mid-1919; the college functioned under George White's [37] leadership both as a school and relief center since autumn 1919 (Grabill, 1971). [38]

35 Grabill said (Grabill, 1971) intervention in the First World War by the United States led many of its citizens to believe that their nation needed a new road away from non-involvement in disorders of the Old World. Of some strength in the attempted move were Presbyterian and Congregational leaders of mission churches and schools in the Ottoman Empire and Persia. These administrators sought mandates by the United States over part or all of Turkey.

36 Those were critical years, but she bore up remarkably courageously under the difficulties and limitations, till the Near East Relief came in, and she went home for a needed furlough. However in 1922 she was back and helped in sending the orphans out of the country. When school opened, she was accepted as the Director of the Station. She had to leave the Station on the February 1930 (ABCFM, 1930)

37 George White's missionary career had begun at Marsovan in 1890, after graduating from both Congregational Grinnell College in Iowa and Chicago Theological Seminary and pastoring a Congregational church for three years (Grabill, 1971).

38 Wilson to relief official John B. Lamer, March 1, 1921, Wilson MSS; James L. Barton, Survey of the Fields: 1920-1921 (Boston: Congregational House, 1921); minutes of the Near East Relief committee in Armenia, enclosed in a letter of Moser to the State Department, December 29, 1920, Decimal File 860J.48/77, State Department Archives; White, Adventuring with Anatolia College, 95-109; Riggs Diary, March 24,1921.

In 1927, nearly a century had passed since the American Board began evangelism among Armenians. During these decades education and social service became part of the Protestant movement in the Near East. The situation of 1927 brought from Board leaders their traditional hope that the future would provide new opportunities. Board officials were not ready to surrender to adversity after massive setbacks during the First World War and its aftermath (Grabill, 1971).

During and after the First World War, the missionaries' human networks and social visions tragically broke down; the religionists lost much after Kemalism had swept over Anatolia. In a statement issued by the Great Leader Ataturk on 29 October 1923 to the French journalist Maurice Perrot, he said: *Sometimes we have seen that foreign schools pass the task limits, they quit their roles, they follow the aims of informal propaganda and they rely on non-Turkish elements. ... As we do not have any hostile feelings against foreigners, we are willing to engage with them intimately. .. Foreigners can come to our country, they will be accepted here on condition that they do not interfere in our freedom. .. We have always walked from the east to the west ... if our bodies are in the east, our ideas are directed towards the west.* [39]

As Kieser (Kieser, 2002) mentions mission in Turkey is a delicate topic for several reasons, not only because of its real or supposed link with Western hegemony, but especially because mission was concerned with minorities and had a vision of integrating them into a new form of society which was in some ways diametrically opposed to the ideas of the ruling groups. Instead of homogenizing society and strengthening its Turco-Muslim unity, missions were differentiating society in religious, ethnic and social terms. According to Kieser (Kieser, 2002), Protestant missions supported religious minorities such as the Armenians and they were not only a modernizing factor outside the big centers through their schools and hospitals, but also clear promoters of federalist solutions regarding the future of the crisis-ridden Kurdo-Armenian eastern provinces of the Empire.

Despite everything, American Board's strong contribution to modern education in Turkey is inevitable. The existing few buildings of the missionary still in the service of the culture and education of the country are the '*collective material realities*' which hosts the collective memories of American Protestants, Armenians and Turks in late 1890s and early 1900s. Halbwachs (Halbwachs, 1992) has argued that a historical site as a heritage can be considered as a '*material reality*' in order to resonate a social or collective memory in the architectural representation of a city.[40] Relating with the

39 Last June, in Ankara, Ragıp Nurettin Bey said: "We need practical schools in Anatolia. Let us see what you can do in Talas and Merzifon. If you develop these schools in a way that is a real help to Turkey, you may open other schools in the Interior." (ABCFM, 1930).

40 Architectural theorist, Aldo Rossi (Rossi, 1982) has anthropomorphized the city, in a sense that the city has a memory that remembers through its buildings. Therefore, for Rossi the preservation of heritage sites and buildings is parallel with the preservation of memories in the human mind and can serve as a preservation of a nation's urban identity.

memories of the nation, Nora (Pierre, 1992) has discussed how certain sites, by provoking emotional effects, may embody some memories of the nation and argued that the self-reflexively of memorial sites may be necessary to embody certain memories because the real memory had withered away in modern society. As sometimes the place of a certain memory changes through time and the nation no longer live in the environments of memory. For that reason to save and sustain the collective memory of any society, the *collective material realities* in hand need to be preserved with care. To conclude, as collective material realities, the few mission buildings in Merzifon are not only the witnesses of a period, but they are the collective memories of the city that help not losing the city's consciousness.

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Determination of Thermal Comfort Conditions of An Educational Building in Temperate - Humid Climate

Fatma Zoroğlu Çağlar[1], Ferhan Hasmaden[2], Ahmet Bircan Atmaca[3], Gülay Zorer Gedik[4]

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Abstract

The acceptable thermal comfort of the educational buildings will increase the efficiency of the occupants. In the scope of the study, three classrooms in different facades, sizes and heights were determined in a faculty building, in order to check the suitability of thermal comfort conditions of educational buildings. Measurements and surveys were carried out in the determined classrooms during a day in heating period.

The human is one of the important parameters that affects thermal comfort conditions. The temperature of the indoor environment varies according to the number of people in the environment because they generate heat depending on metabolic rate. Therefore, the field measurements were conducted occupied and unoccupied classrooms.

Classrooms when unoccupied were more comfortable than occupied according to measurement results. It is determined that the occupants are not satisfied with the thermal situation, but in general the environment allows the lesson to be understood and focused. In order to ensure thermal comfort, design parameters such as; the building layout, orientation, building form, internal planning and optical - thermophysical properties of building envelope should be determined properly. In addition, indoor air conditioning should be done according to occupant density and these design parameters.

Keywords: *Thermal comfort; pmv – ppd; educational building; classroom; temperate - humid climate.*

1. Introduction

One of the main functions of buildings is to protect us from negative environmental impacts. In developed countries, people spend on average 90% of their life indoors (Working Group For Sustainable Construction, 2004). Therefore, thermal comfort conditions should be appropriate to provide and maintain a healthy and comfortable living and to be more productive working. Ensuring that these buildings, which are the main purpose of education and training, are suitable for thermal comfort conditions will affect the attention, focus, perception and learning levels of students.

[1] Yıldız Technic University, Department of Architecture, fatma.zoroglu@hotmail.com
[2] İstanbul Gedik University, Department of Architecture, ferhanhasmaden@gmail.com
[3] Yıldız Technic University, Department of Architecture, abatmaca@yahoo.com
[4] Yıldız Technic University, Department of Architecture, gzorer@hotmail.com

Thermal comfort is the state of being satisfied with the thermal environment (ANSI/ASHRAE Standard 55, 2013). Thermal comfort depends on objective and subjective parameters. Subjective parameters consist of age, gender, subcutaneous fat (weight) and health. Objective parameters are analyzed under two main titles as personal (activity level and clothing insulation value) and environmental (air temperature, mean radiant temperature, relative humidity and air velocity) factors.

Since thermal comfort perception is different for each individual, specific indexes are developed to understand the general indoor thermal satisfaction of individuals. Fanger's 7-point thermal sensation scale is used to determine the thermal comfort level of the environment (Fanger, 2001). Based on studies and calculations from this scale, PMV (Predicted Mean Vote) and PPD (Predicted Percentage Dissatisfied) indexes have been developed. Based on these indexes, there are value ranges for determining thermal comfort in international standards such as ASHRAE-55 and ISO 7730 (ANSI/ASHRAE Standard 55, 2013; BS EN ISO 7730, 2015). There is a limited number of studies in the field of thermal comfort in educational buildings in the literature (Zomorodian et al., 2016, Barbhuiya and Barbhuiya, 2013, Yamtraipat et al, 2005, Mors et al., 2011.). However, the study in which the thermal comfort of classrooms is examined both according to the standards and the perception of the user is very few (Corgnati et al. 2007, Almedia et al. 2016).

The human body produces metabolic heat and increases the temperature of the indoor environment by respiration, radiation and convection. Other studies showed that an increasing number of occupants increase PMV on the hot side (Zoroğlu ve Gedik, 2017). Therefore, in the interior, there is a difference in terms of thermal comfort conditions between occupied and unoccupied. Classrooms are the places where students are collectively and within certain periods of time. In this study, thermal comfort condition compliance of classrooms in a faculty building at temperate-humid climate conditions was determined with objective (measurement) and subjective (survey) studies according to occupied and unoccupied classroom conditions.

2. Method

Educational buildings consist of units that have different thermal comfort due to variable occupant density and common space use. In addition, thermal comfort conditions in educational buildings play an important role in efficiency and health. In this study, in order to determine the suitability of the classrooms in terms of thermal comfort conditions, the study conditions were determined firstly. As a method, measurements and surveys were used. Results of measurements and surveys were analyzed and were evaluated according to ASHRAE 55 and ISO 7730 standards with a table and graphic methods.

2.1. Determination of Field Study Conditions

A field study was conducted on Yıldız Technical University, Faculty of Architecture, D-211, D-303 and D-409 classrooms in İstanbul that has temperate-humid climate. Measurement studies were conducted on both unoccupied (no occupant) and occupied (with occupant) classroom conditions. Parameters that affect thermal comfort were considered and measurements were conducted in 3 different classrooms on 13/12/2017 based on building orientation and classroom grades. In addition, D-211 was measured on 15/11/2018 as well (as this classroom has the highest discomfort class at full state on 13/12/2017).

Thermal comfort is determined by different methods. Most common practices are objective (measurement) and subjective (survey) methods. The use of both methods in the study is important in terms of comparing the results and determining the thermal comfort in the most accurate way.

During the measurements, the TESTO 480 measurement device shown in Figure 1 was used. The specified clothing insulation value and activity level are entered as input to the device. Device measures instantly changing air temperature, mean radiant temperature, relative humidity and air velocity. Based on these data, the device computes PMV and PPD results that are used for thermal comfort standards. According to these results, it is determined whether the environment is comfortable by comparing with the values given in standards.

Table 1. Physical Features of the Classroom

Classrooms	**Direction of classroom**	**Dimensions**	**Heating system and number of Radiator**	**Capacity (person)**
D-211	North and East Front (H: +3,14 m)	((14,70 m × 5,40 m) + (5,67 m × 2,36 m)) × 3,67 m two rectangular prism	Gas central heating systems, Cast iron radiator- 9 radiators	55-60
D-303	West Front (H: +7,85 m)	((14,90 m × 5,67 m) + (5,93 m × 0,7 m)) × 3,81 m two rectangular prism	Gas central heating systems, Cast iron radiator- 4 radiators	50-55
D-409	East Front (H: +12,80 m)	11,5 m x 5,50 m x (min 2,23m-max 4,07 m)	Gas central heating systems, Panel radiator- 3 radiators	35-40

In this subjective study, a survey study was conducted to determine occupant satisfaction. In the surveys, questions were asked to determine the occupants' thermal comfort. Surveys were conducted to students between lectures within class. Survey results were analyzed with SPSS program.

2.1. Determination of Measurement and Survey Conditions

Measurement points were determined by creating grids according to classroom size, furnishing and usage area. Measurement points were created 1 meter away from walls (The remaining space was divided into equal distances and dots were determined). To increase the accuracy of this study, 9 points in D-211 classroom, 8 points in D-303 class and 6 measurement points in class D-409 have been determined. Measurement points of D-211 classroom on the plan are shown in Figure 2. Classroom plan and measurement points for D-303 are presented in Appendix 1 and D-409 are presented in Appendix 2.

Before measurements, personal factors among objective parameters are inputted to the device. Activity level and clothing insulation values were determined based on ASHRAE 55 and ISO 7730 standards (ANSI/ASHRAE Standard 55, 2013; BS EN ISO 7730, 2015). Measurement conditions of the classrooms are shown in Table 3.

Figure 1. TESTO 480 thermal comfort measurement device

Table 2. Study Conditions and Measurement Days Weather Data

Method	**Measurement fields-Classroom**	**Measurement days and hours**	**Outdoor Weather Conditions**
Objective (Measurements) and Subjective (Survey)	YTÜ, Faculty of Architecture, İstanbul/Turkey - D-211, D-303, D-409	13.12.2017, 12.00 – 18.00	Air temperature 12 °C, Relative Humidity %79, Air Velocity 22 km/s, Cloudy Sky Conditions
	YTÜ, Faculty of Architecture, İstanbul/Turkey - D-211	15.11.2018, Unoccupied 10.10 - 11.20, Occupied 13.35 - 15.00	Air temperature 10 °C, Relative Humidity %87, Air Velocity 18 km/s, Cloudy Sky Conditions

Table 3. Measurement Conditions of the Classrooms

Point Number	Measurement Device Height	Measurement Type-Duration-Period	Activity Level	Clothing Insulation Value
D-211➔ 9 Point D-303➔ 8 Point D-409➔ 6 Point	1 meter	According to time 5 min 30 sec	1,2 met	0,7 clo

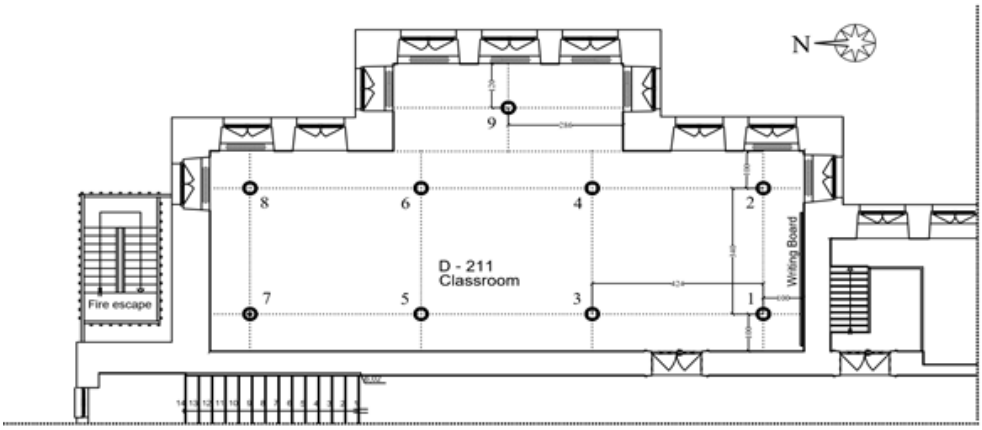

Figure 2. Measure points in plan

During survey study, clear and brief questions were asked to understand occupants' thermal comfort. Students were asked to assess the thermal comfort of the classroom in which they were involved. Subjective parameters for thermal comfort were asked as gender demographic questions. The subjective parameters that the thermal comfort depends on were asked as gender and demographic question. Question 1 was asked to understand thermal comfort levels based on 7-point thermal sensation scale. The second question is to determine whether the class's thermal comfort status allows students to focus on and understand the lesson. Accordingly, it will be inferred about the satisfaction of the users at the time of the lesson and whether thermal comfort affects the efficiency of the lesson. Finally, valid points in measurement study were marked on plan and students were asked to mark which point they were close to during lesson. The above mentioned study was to determine whether users who were at the same point with measurement study answered similarly to measurement results and to understand thermal comfort sensation differences between users at different locations.

PMV and PPD results were obtained from the measurement device. The survey questions were analyzed with the SPSS program. Obtained results were analyzed and evaluated with table and graphic methods.

3. Measurement Results

In the measurements made on 13.12.2017, the number of occupants was 35 in the D-303 classroom, 27 in the D-409 classroom and 42 in the D-211 classroom. There were 20 people in the D-211 classroom on 15/11/2018 measurements. Radiator heating systems were active during measurements. Windows in the classrooms were closed during measurements.

Electronic devices (lighting devices, projection device and laptop) were active in classrooms. In Figure 3, an example from the measurements is presented. Table 4 shows the PMV results of measurements made while occupied and unoccupied in classrooms.

In Figure 4, PMV measurement results of occupied and unoccupied classrooms were compared. When occupied and unoccupied classrooms were analyzed, occupied classrooms generally showed thermally discomfort. When the comfort level of classrooms was analyzed for measurement points, it was seen that points at the beginning of the measurement were within acceptable levels; however, these points were outside acceptable comfort level after the 4th point. Occupied and unoccupied situations of D-409 classroom and occupied situations of D211 classroom on two years were outside acceptable thermal comfort level.

Figure 3. D-211,Measurement when the classroom is occupied (15/11/2018)

Table 4. PMV measurement results for occupied and unoccupied classrooms

Measurement points	D-211				D-303		D-409	
	15.11.2018		13.12.2017		13.12.2017		13.12.2017	
	Occupied	Unoccupied	Occupied	Unoccupied	Occupied	Unoccupied	Occupied	Unoccupied
1	0,31	-0,23	0,39	0,37	0,15	0,01	**0,54**	0,42
2	0,34	-0,35	**0,58**	0,4	0,27	-0,03	**0,66**	**0,54**
3	0,47	0,05	**0,78**	0,41	0,33	0,03	**0,84**	**0,56**
4	**0,55**	0,22	**0,95**	0,41	0,44	-	**0,95**	**0,58**
5	**0,57**	0,26	**1,03**	0,44	0,37	-	-	**0,59**
6	**0,54**	0,35	**1,07**	0,31	0,45	0,44	**0,91**	**0,59**
7	0,49	0,37	**1,03**	0,45	0,43	0,39	-	-
8	**0,56**	0,36	**1,01**	0,6	-	0,41	-	-
9	**0,66**	0,48	**1,1**	0,65	-	-	-	-
Mean	0,49	0,17	**0,88**	0,45	0,35	0,21	**0,8**	**0,54**

*Limit value; -0,5<PMV<+0,5, --------- Limit Value Achieved, --------- Limit Value Not Achieved

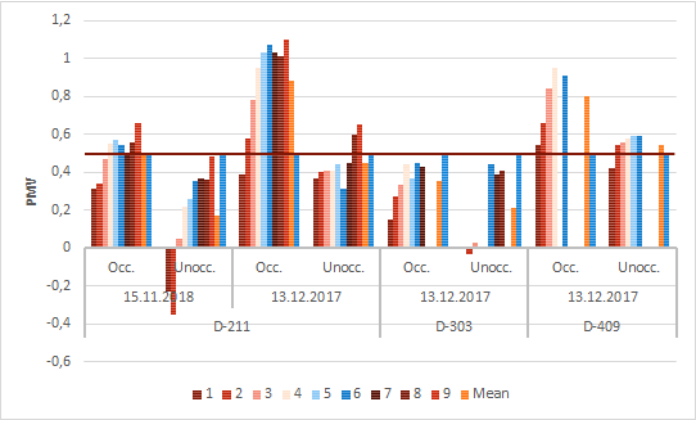

Figure 4. PMV - measurement points

In Figure 4, PMV measurement results of occupied and unoccupied classrooms were compared. When occupied and unoccupied classrooms were analyzed, occupied classrooms generally showed thermally discomfort. When the comfort level of

classrooms was analysed for measurement points, it was seen that points at the beginning of the measurement were within acceptable levels; however, these points were outside acceptable comfort level after the 4th point. Occupied and unoccupied situations of D-409 classroom and occupied situations of D211 classroom on two years were outside acceptable thermal comfort level.

4. Survey Results

Thermal comfort surveys were applied between lessons after measurements. The occupants answered questions on gender, in-class location and thermal sensation. On surveys study dates, the number of occupants (students) and sex ratio is given in Table 5.

Table 5. Number Of Participants And Sex Ratio

		15.11.2018	**13.12.2017**		
		D211	**D211**	**D303**	**D409**
Number of participants		**18**	**39**	**32**	**24**
Sex	**Woman**	%44,4	%55,6	%62,5	%45,8
	Man	%55,6	%44,4	%37,5	%54,2

To understand the thermal comfort status of students, 7-point thermal sensation scale was applied and class distribution of answers is given in Figure 5.

To determine thermal sensations based on student location and to compare these results with measurement results, students were asked to mark the closest point given on the plan. Based on survey results, graphics that show the relationship between thermal sensation and location are given in Figure 6.

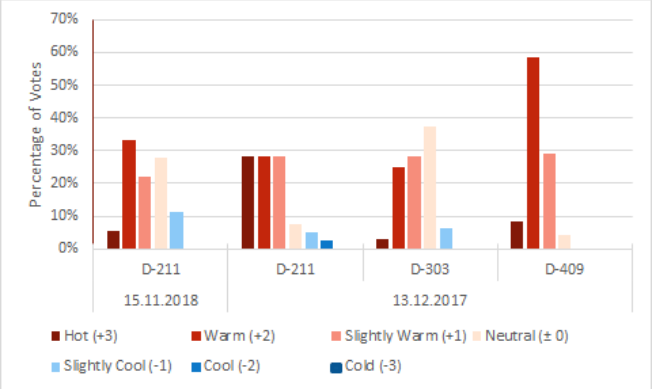

Figure 5. Thermal sensation votes- classroom

Table 6. Effect of Classroom Thermal Comfort on Education

Question 2	15.11.2018	13.12.2017		
	D211	D211	D303	D409
Yes	%88,9	%38,5	%93,8	%50
No	%11,1	%61,5	%6,3	%50
z				

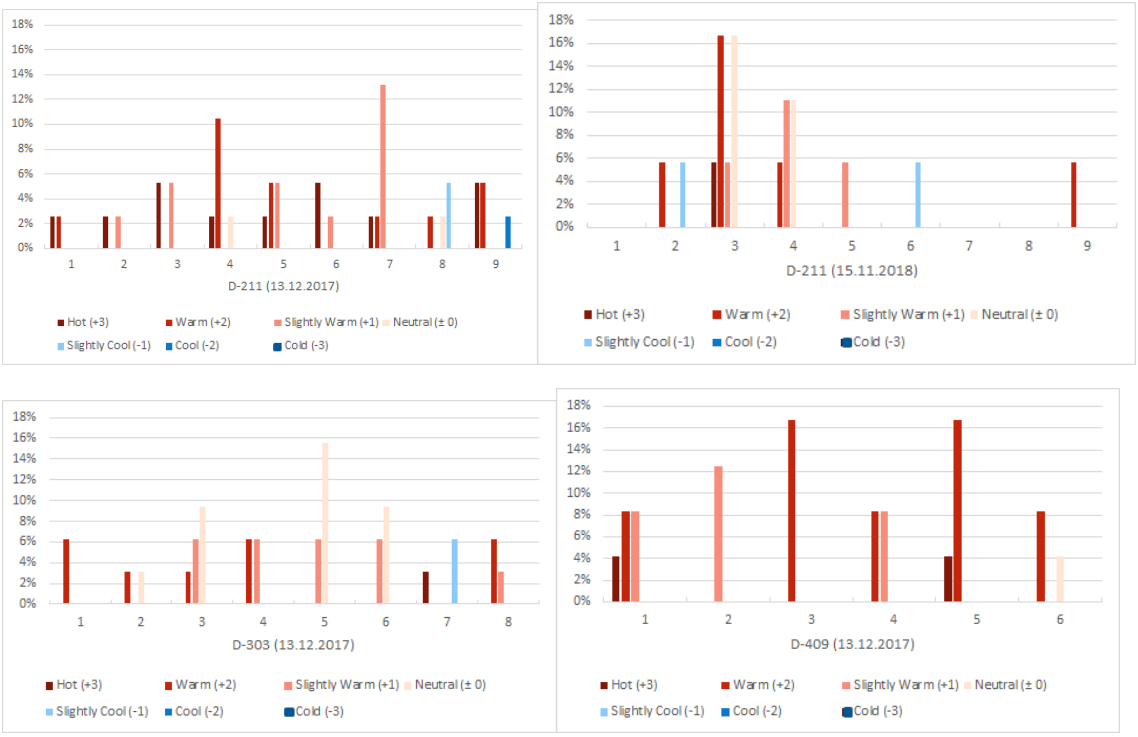

Figure 6. Thermal sensation votes - measurement points

5. Discussion and Results

Measurement results were evaluated according to ASHRAE 55 and ISO 7730 standards. Acceptable thermal comfort levels range is +0,5> PMV > -0,5 according to standards (ANSI/ASHRAE Standard 55, 2013; BS EN ISO 7730, 2015). Measurement results were analyzed within this range.

When the measurement results were evaluated, PMV is on the hot side in all measurements as given in figure 4. Although the numbers of occupants were different, the occupied classrooms' PMV is higher than the unoccupied classrooms. Most of the occupants feel warmer than normal according to survey results as given in Figure 5.

D-409 was less comfortable than other classrooms at the unoccupied measurements. The highest percentage of occupants that felt warmer than neutral was in the D-409

classroom according to survey results. This could be explained by the fact that this classroom is on an attic and is equally heated via the same heating system with other classrooms. Additionally, another reason could be that volume of D-409 is 57% smaller than D-211 and 52% smaller than D-303.

PMV is on the cold side at some points in the D211 (15.11.2018) when classroom is unoccupied, according to measurement results. However, when these classrooms are occupied, the PMV is on the hot side at all points and most of the points are uncomfortable on the hot side. The classroom capacity is 58 people. In the case of 20 occupants in the classroom (approximately 35% of the classroom capacity was full), the PMV value was quite high on the hot side compared to unoccupied. While the D-211 class was occupied (42 people), the PMV was higher on 13.12.2017 than the 15.11.2018 in the measurements. According to survey results, the percentage of occupants that felt hotter than normal in D-211 classroom was higher on 13/12/2017 than 15/11/2018. It can be seen that when classrooms are at full capacity, the discomfort will increase on the hot side.

When measurement results were evaluated for locations, it was seen that PMV generally increased on the hot side towards the back part of the classroom. Measurement results showed that PMV was higher around areas closer to the radiator. However, survey results showed that occupants on the wall side felt hotter than occupants on the window side (closer to the radiator). In classrooms D-303 and D-211, some of the occupants sitting near the windows felt cool and slightly cool. This could be explained the heat transfer between the human body and cold window glass by radiation.

6. Conclusions

Human body temperature should be within certain levels for a healthy and comfortable life. Humans try to achieve heat balance with different methods in different environments. It is important that the interiors where most people spend most of their life are suitable for thermal comfort conditions. In educational buildings in which students are the main users, occupants' satisfaction in terms of thermal comfort is important to increase efficiency.

In this study, indoor conditions (indoor air temperature, relative humidity, air velocity, PMV and PPD) were measured in three different classrooms located in the North and East, East and West facades of a faculty building in Istanbul with a temperate-humid climate.

Measurements were conducted twice during the same day while the classrooms were occupied and unoccupied. The measured values and PMV / PPD indices were compared with the ranges recommended in ASHRAE Standard 55-2013 and ISO 7730. Students' thermal sensitivities, thermal preferences and lesson focus levels were evaluated with the simultaneous surveys. The main results can be listed as follows;

• The indoor air temperature is higher than the limit values when the classrooms are both empty and full. Unnecessary heating of the classroom when empty, and the high level of heating again when the class population increases indicate that unnecessary consumption of heating energy. According to the location of the classrooms and the number of the occupants, the designing of heating systems and/or the control of the automation system will provide thermal comfort while reducing energy consumption.

• As the occupant density increased in classrooms, it was determined that the discomfort increased on the hot side.

• Stagnant air effect is observed since the air flow velocity is lower than the limit value when full and empty,

• Although the numbers of occupants were different, the occupied classrooms' PMV is higher than the unoccupied classrooms.

• Depending on the length of the measurement time and the length of the stay in the class; indoor air temperature, air humidity, PMV and PPD values were significantly increased at 3, 4, 5 and 6 measurement points.

• When the measurement results in the occupied and unoccupied classrooms were compared, the maximum moisture increase was observed in class D-303. D-409 showed 8%, D-211 5% and 4% moisture increase, while D-303 increased 39% humidity increase. The reason for this situation is the class D-303 was on the Western front and the measurement was carried out in the afternoon.

• When the survey results of the students using the classrooms were examined, the ‘warm’ option reached the highest value with 58% D-409, and in parallel, the students' focus on the lesson reached the lowest value with 50%.

As a result, acceptable thermal comfort conditions vary depending on the function of the volumes, the number of occupants and the duration time in the volume. One of the main sources of the problem is the continuous air conditioning of buildings with central systems all day long. Heating energy, which becomes unnecessary when classes are empty, causes uncomfortable when full. Therefore, especially in educational buildings where the number of people per unit area is high, air conditioning should be user-controlled or sensor. This situation may affect students' perceptions and affect the quality of education positively.

Thermal comfort conditions vary depending on locations, functions and number of the occupants. Therefore, these parameters should be considered during design. Architects and users should be aware of this issue and should be informed.

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A Different Approach to Representation: Trabzon 'Tekel' Cigarette Factory

Yusuf Bera Bilici[1], Aysu Akalın[2]

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Abstract

Although industrial buildings are important indicators of a country's socio-economic history, they often lose their functions due to rapid technological developments. The main subject of this article discussed is Trabzon Tekel Tobacco Factory which is built in two stages between the years 1951 to 1965 that is an industrial heritage and an important element of collective memory. According to the documents its function has been terminated in the 1990s but wanted to be revived in 2006 with a competition project in order to sustain the collective memory. However, during the competition and implementation phase, the building was completely demolished and rebuilt. In a world which we tend to create by destroying, it is expressed that we cannot ensure the sustainability of collective memory by demolishing the original and later building the exact copy of it at the same place or in another place.

Keywords: *Trabzon Tekel Tobacco Factory, Urban Memory, Collective Memory, Adaptive Reuse, Antiquity Value.*

1. Introduction

The functions of industrial structures, which have witnessed the socio-economic history of a country, often lose their importance due to rapid technological developments and are left to their fate. In the words of Loures these buildings are part of the human and place identity because they represent more than one time layer and cultural activity. These industrial buildings are more than just the building block that was built to produce, and they are the indicators that tell us about the technology of the time they were constructed and the ways in which people lived, their traditions and habits, in the most perceptible way (Loures, 2008). As Cengizkan mentions, since they often lose their functions due to rapid technological developments, as time passes they gain representation value and importance as a reference of the place and time they witness (Cengizkhan, 2002). Rossi expresses 'representation' with 'continuity', and for him permanence's in the city are not only 'pathological'. At times they may be 'propelling'. They serve to bring the past into the present, providing a past that can still be experienced (Rossi, 1984). According to Moore and Whelan, the basic idea behind the need to protect industrial heritage is that not only these city symbols are related to history, but they are also something more than history (Loures, 2008). For Rossi, the city is a theater of human events. This theater is no longer just a representation; it is a reality. It absorbs events and feelings, and every new event contains within it a memory of the past and a potential memory of the future (Rossi, 1984).

[1] Gazi University, yusufberabilici@gmail.com
[2] Gazi University, aysuakalin@hotmail.com

The industry building that is the main element of discussion in this article is Trabzon Tekel Cigarette Factory which is originally designed as a tobacco care and process atelier. It is located at a place which can be considered central in Trabzon. To the south of the land is the Gülbahar Hatun Mosque and Tomb in Atapark, and to the east there is the historical fortification walls extending parallel to the building. Some parts of the walls were built during the Byzantine period and were repaired during the Ottoman period. Later a bastion called Zağnos Bastion and a door were added. Today, these premises are very near to the important areas of the city such as Trabzon Governorship building and Zagnos Valley Park (Fig. 1 and Fig. 2).

The total area of the parcel, in which the historical building was built in two stages between the years 1951 to 1965 is 13.299 m2 and the occupation of the building is 11.303 m2. The building on the south (administration) (Building 1) has two story, the building right next to it has four story (factory production) (Building 2), and the building at the northern end of the site has five story (factory storages) (Building 4). There are refectory and some maintenance ateliers between the production and the storages (Building 3). The whole structure has an inward-oriented plan diagram with courtyards (Fig. 3).

With the decrease of tobacco cultivation in the region, Trabzon Tekel Cigarette Factory has lost its function and become idle. The Cigarette Factory was registered with the decision of the Trabzon Regional Committee of The Conservation of Cultural and Natural Assets on March 1998. In the message sent to the Municipality by the second decision of the Board dated October 2005; it was stated that the conservation plan of the parcel and projects that would be prepared in this direction, which includes the surrounding of the parcel and the old fabric in its immediate vicinity, will be evaluated after the submission of the proposals. In a way, the Conservation Board leaves the issue of the cigarette factory flexible and leaves the decision on the initiative of the municipality. The municipality as the owner of the property decided to solve the problem by revitalizing the structure and its surroundings through an architectural competition and in this direction Trabzon Tekel Cigarette Factory Revitalization Architectural Project Competition was conducted on May 2006.

Figure 1. Important areas in Trabzon

In the competition statement prepared by Trabzon Municipality APK Directorate, it is stated that the city developed having a single center due to the limited land facilities, and the aim is to create different centers for the revival of the city. The building subject to the competition is believed to become another center by installing a Municipality Service Building and a shopping mall which would contribute to the revitalization of its immediate vicinity. In summary, the subject of the competition takes into account the characteristics of the historical building and its surroundings, re-evaluating and planning the building in a way that it accommodates the Municipality Service Building and the shopping mall. As specified in Competition Statement, suggestions to be developed by the competitors are expected to relate the meaningful task of the building in the memories of the city that could be sustained in the future, and at the same time should give a new vision to the city of Trabzon.

As stated in the competition brief; while the main aim is to revitalize the historical cigarette factory and its surroundings in general, the diversity of architectural program suggestions and intervention solutions in the proposed projects are expected from the competitors. As it can be understood from the file of Questions and Answers for the Competition, the degree of antiquity value of the historical building has not been specified by the Conservation Board. On the other hand, which parts of the historical building should be preserved and which ones could be demolished has not been clearly defined in the statement. In the context of this flexible approach of the jury members led by the members of the Conservation Board, some valuable data contributions are expected to come from the competition proposals for the revitalization of the building and the site. A total of 16 projects participated in the competition were announced in August 2006.

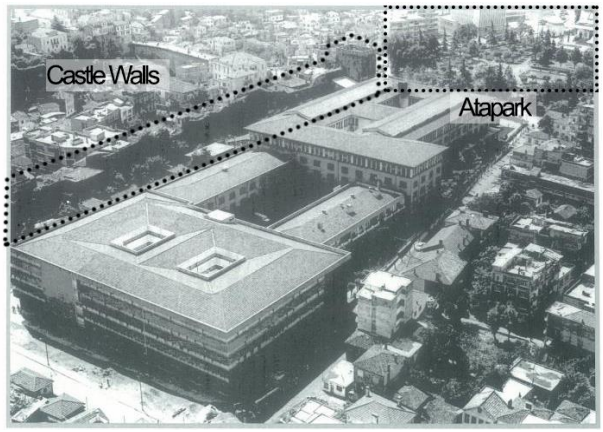

Figure 2. Trabzon Tekel Cigarette Factory (C. Pirselim, archive 1980) [3]

Figure 3. Trabzon Tekel Cigarette Factory, 2002

1: administration, 2: production, 3: refectory, 4: storage

Below, the main design decisions of the project selected (MTF Project: Ozan Öztepe and Derya Ekim Öztepe) are explained first, and how the project applied in a different way from its main discourse at the beginning is discussed.

2. The Details of the First Prize

As stated in the winning design decisions of the project, Trabzon Tekel Cigarette Factory is in the urban memory with its 50 years of existence. Today, this decision is adopted as the main design principle to make the building not only visually and semantically related but also usable in the future. Project team; assuming that the average useful life of the reinforced concrete structures is 40 years, remarked the current structural status and the use of the cigarette factory in the near future as an important issue; and the building's place in the memory of the city with impracticability of current situation is considered as the dualism which the design is sprouted from. At the beginning the main aim of the designers was to keep the building as long as possible and to make it liveable in the long term. In this context, by making use of the flexibility advantage given by the jury members, the designers demolish the storage building on the north (Building 4) explaining as if it does not have any valuable architectural features, and they replace it with Municipal Service Building as requested in the

[3] http://www.trabzonkultur.org.tr/s/eski-trabzon

Statement. In the competition proposal of MTF Project for the Municipal Service Building, the new design has no similarity with the historical and neither a dialogue with the historical five-story Production Building in the south (Building 2). Besides, the Production Building (Building 2) is proposed in the design as a shopping mall by demolishing most of its parts except the load bearing walls. In the competition proposal, the middle block in the east (Building 3) is preserved together with the flooring systems and be functioned to be an exhibition hall as part of the mall (Fig. 4 and Fig. 5).

Figure 4. Building 3, flooring system (Competition Statement, 2006).

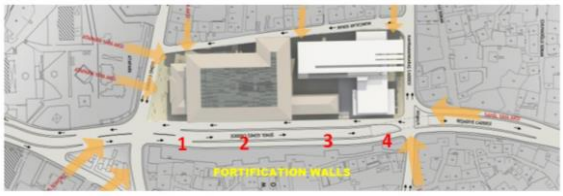

Figure 5. The Competition Proposal

1: Administration = Administration for Shopping Mall (the building is protected), 2: Production Department = Shopping Mall (only the outer shell of the building is protected), 3: Refectory = Exhibition Hall (the building is protected), 4: Storage = Municipality Service Building (completely demolished, a new design is built: different from the original) (Derya Ekim Öztepe archive, 2006).

The Administration Block in the south (Building 1) built between 1948 and 1951 and contains the characteristics of II. The National Architecture Period is extremely important for the designers and should to be preserved completely for its value of historical characteristics. The new function of this building, parallel to the original use, is considered as the administration of the shopping mall (Building 2), which is adjacent to it (Fig. 5).

As stated in the jury report; the first prize preserving the shell of Building 2 and using it for shopping, redesigning Municipality Service Building with a modern design approach, the attention paid to the existing heights and the heights of the fortification walls are all welcomed. On the other hand, it was requested that Building 3, which is proposed to be an exhibition hall protected by its project, was found negative by the jury and that this section was solved under the ground level. In the implementation phase of the project, not only these recommendations of the jury but also with the requests of the administration, the project have been applied in a different way than the first discourse of the designer. Below are the details of this application.

3. The Differences Between Competition Project And The Project Implemented

Upon the request of the Municipality after the competition, the Chamber of Civil Engineers was requested a report about the strength of the building and it was stated in the technical reports both in October 2007 and November 2007 that "the immovable had completed its economic life". Based on this decision, the Trabzon Regional Board for the Conservation of Cultural and Natural Property decided that the entire registered building could be demolished and rebuilt in accordance with the original version of Building 1 and Building 2. As a result of all this, the whole of Tekel Cigarette Factory was demolished and the project was constructed in a different way than the rhetoric of the designer and even the jury (Fig. 6 and Fig. 7).

As proposed at the beginning, Building 4 is removed and Municipal Service Building is designed exactly as projected. Respecting the comments of the jury, during the application of the winning project, Building 3 is removed but applied different from the design and an assembly hall with a floor high is constructed to the place. In the designers' report the load bearing walls of Building 2 is preserved, but in the practice the whole building is completely swept away (Fig.8, Fig. 9 and Fig. 10).

In the designed project, Municipality Service Building and the Shopping Mall (Building 2) are disconnected with a narrow passage in between. With this application, unlike the original, the structure is two different buildings standing in two different urban parcels. In parallel with the jury recommendations, the pedestrian passage between the two buildings is extended in the application (Fig. 11).

In the competition project, the proposed public / semi-public space between the shopping mall block (Building 2) and the Municipality Service Building have some quotations from the historical urban structure. However, in the project implemented, this outdoor usage is not as planned. The one-story structure proposes a different character and the outdoor space encircled by the Assembly Hall are used by cars rather than pedestrians (Fig. 12….and Fig. 15).

Although in the competition design the two-story building in the south (Building 1) is suggested to be saved and used in a manner similar to the original, it was completely demolished and rebuilt by resembling what was in place (Fig. 16 and Fig. 17).

As stated above, while in the competition project Building 2 is expected to be maintained by protecting its' load bearing walls, in practice they are completely demolished and reconstructed to host its new function which is the shopping mall. The new walls of the building have white frosted glass boxes at the exact place that the previous historical building had openings before. It is as if the building as a whole seems to be protected with a different understanding. The main reason of having these solid boxes is to control the light inside the shopping mall (Fig. 18, Fig. 19 and Fig. 20).

Figure 6. Trabzon Tekel Cigarette Factory land, construction phase 2009 (wowturkey.com photograph :Volkan Soner)

Figure 7. Trabzon Tekel Cigarette Factory land, shopping mall construction phase 2009 (wowturkey.com photograph:Volkan Soner)

Şekil 8. The project applied

1: Administration = Administration for Shopping Mall (completely demolished, rebuilt similar to the original), 2: Production Department = Shopping Mall (completely demolished, rebuilt similar to the original), 3: Refectory = Assembly Hall (completely demolished, built a new design: different from the original and the project designed), 4: Storage = Municipality Service Building (completely demolished, a new design is built: different from the original).

Figure 9. The eastern facade, (competition statement, 2006)

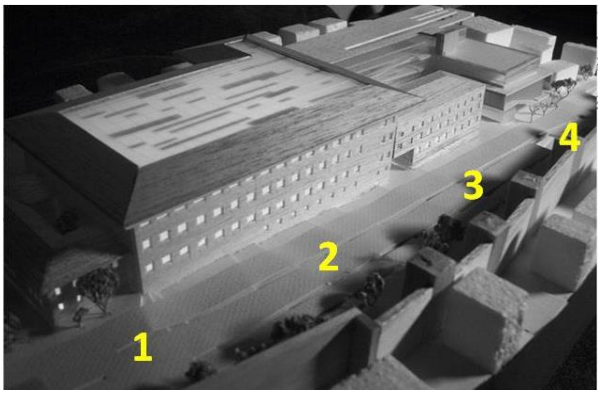

Figure 10. The competition visual, Eastern Facade (Derya Ekim Öztepe archive)

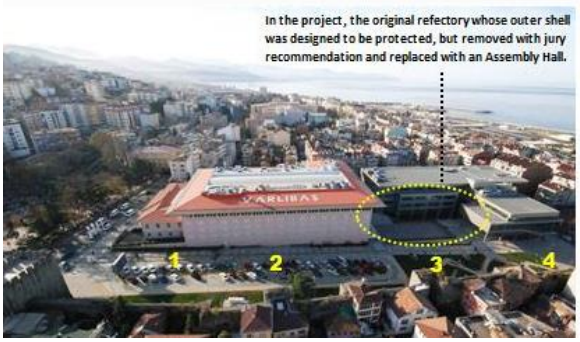

Figure 11. The eastern facade of the present shopping mall (www.varlibasavm.com)

Figure 12. The pedestrian passage between Municipal Service Building and the Shopping Mall (view from east and west) (Yusuf Bera Bilici archive, 2018)

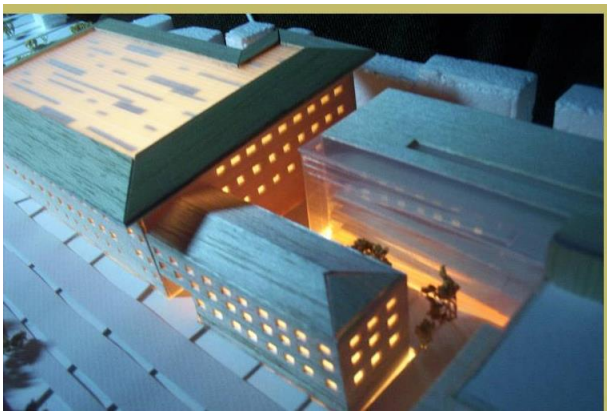

Figure 13. The competition visual (Derya Ekim Öztepe archive)

Figure 14. The competition visual (Derya Ekim Öztepe archive)

Figure 15. The pedestrian passage between Municipal Service Building and the Shopping Mall (Müberra Kabataş archive, 2019)

Figure 16. Building 1 before demolition, 2006 (Competition Statement, 2006)

Figure 17. Building 1, 2018 (Yusuf Bera Bilici archive, 2018)

Figure 18. The eastern facade (competition statement, 2006)

Figure 19. Shopping mall eastern facade (Müberra Kabataş archive, 2019)

Figure 20. The Western facade and the window detail (Yusuf Bera Bilici archive, 2018)

Although the plan scheme of this shopping mall seems to have inspired from the plan scheme of the Tekel Cigarette Factory, at present there is nothing offered different than the traditional shopping mall plan type with an atrium. In other words, it is an example of an atrium bazaar type but with its exterior, tries to repeat the history (Fig. 21 and Fig. 22).

The competition criteria of the designers and hence the priority criterion of the competition jury is that the protection of the old Cigarette Factory's Production Building (Building 2) with its load bearing walls to adapt the shopping mall function inside. In practice, perhaps in terms of ease of implementation, everything that was anticipated to be conserved have been demolished and replaced with imitations. In this way, urban memory is tried to be kept not by the existence of the original but by simulations. The traces in collective memory have to be invoked with this apparent but not the real thing.

Figure 21. Production building (building 1) (competition statement, 2006).

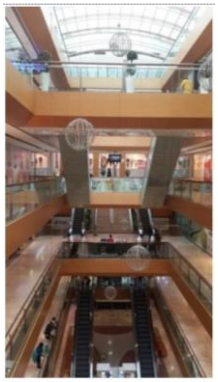

Figure 22. Shopping mall interior (Yusuf Bera Bilici archive, 2018)

4. Evaluation

The area at present is in the heart of the city of Trabzon, as it was in the 1960s. The former Cigarette Factory is a large-scale project in the name of creating a second center in town together with Zagnos Valley and Atapark. The building is located at the intersection of two important city axes of Trabzon and the relationship between the city axis and the Municipality Service Building, which is located on the north wing of the land, is extremely important. Lowering the Eastern Road and using the site between the fortification walls and the historical complex as a recreation purposes might also be considered as a positive contribution to urban transformation. Despite the urban success of the project, the continuity of urban memory has been seen as a serious case needs to be questioned. The industrial heritage, which has lost its function with the development of technology and has been abandoned, is in fact a cultural fabric that needs to be preserved.

Borsi describes industrial space as; "the texture of the natural or agricultural texture as a result of the careful and systematic activity of man in order to develop industrial activities". This definition allows the whole texture to be seen as a single element

(Loures, 2008). At the beginning, in the competition statement of Trabzon Tekel Cigarette Factory, although the building complex as a whole is wanted to be saved intact in the memory of the city, the 'flexible approaches' during the competition process caused the destruction of the whole structure, gradually eliminating the possibility of sustaining the traces in memory. In the implementation process, the approaches of the administration and the jury to the project are believed to be not based on the preservation of the whole, but the preservation of some parts which has been the attitudes gradually damage the memory of the city. Due to its historical value, Trabzon Tekel Cigarette Factory is a valuable structure and has memory in the society as it represents the lives of the laborers of a certain period, but today it is only remembered with 'materialistic connotations'. This has some parallelism to the re-production technique, or in other words the 'historical materialism' approach, mentioned by Benjamin (Benjamin, 2012).Today, it is a reality that the fake repetitions which are created by destroying the aura of a historical texture are increasing day by day. In fact, within the framework of the ideological approaches of the authority, the nostalgic materialist attitudes revealed by these interventions aiming to bring back the longing for nostalgia, create a contradiction in the credibility of the audience (Kütük and Akalın, 2018).Susan Stewart writes that nostalgia is the repetition that mourns the inauthenticity of all repetitions and denies the repetition's capacity to define identity (Boym, 2001).

As Bauman defines, time is a tense concept between non-viable past and non-existent future (Bauman, 2003). This state of tension has been suspended in a vague field that cannot be described for centuries because it cannot provide a definite break. However, in this situation where progress is inevitable, people cannot go back to the past, neither cannot avoid getting away from the point where they are (Kütük and Akalın, 2018). According to Walter Benjamin, what we call progress is actually a storm (Benjamin, 2012). As the distance to the past of the displacements in time and space with this storm increases, the longing of the people to this place and nostalgia increases. The shopping mall of Trabzon (Building 1 and Building 2) today hosts this ambiguity. After the transformation, the past traces used in the facade are now being connoted with a shopping mall concept.

Luis Loures says; "Cultural landscapes give us a sense of place and reveal our relationship with the land over. They are special places that contain aspects of our origin and development through their forms, features, and history of use" (Loures, 2008). As seen in the expression of Loures, the texture and form are not sufficient criteria for the preservation of the whole, and the use history is an inevitable necessity for continuity. In Functionalism Today, Theodore W. Adorno emphasizes the importance of the current function of a building by saying that each structure has a social function and aesthetic dimension, and according to him it is not possible to distinguish functionality from style, because the rejection of a style is another style in itself (Adorno, 2005). Although it is a view supported by many theoreticians / practitioners by maintaining its aura and its originality with its own function, this happy body-aura togetherness is unfortunately not in the case where the function, like industrial structures, is no longer active. In case

the function cannot be activated, the protection of the original name will contribute to the continuity of the structure in collective memory. Unfortunately, neither the function nor the name explains the true identity of Trabzon Tekel Cigarette Factory.

Svetlana Boym expresses nostalgia as the curtain memories of inhabitants of the city, the projections of controversial remembrances (Boym, 2001). Cities exist beyond their physical structures by accumulating the experiences of those who live in them, and by these accumulated memories they feel themselves as part of that city. This memory-based relationship with the city is in fact a relation of 'belonging'. Aristoteles emphasizes the inextricable status of this belonging relationship mentioning that "to transfer memories to objects would preserve them from mental decay" (Forty, 2001). The fact that space takes place in the personal and collective memory is the format of production of the images belonging to that space and the position in the memory. In the interviews, the former employees of Tekel Building and those who know the previous building stated that there are similarities in terms of the form in the applied project, but nothing from their memories is left out. They are able to recognize the difference but they are concerned that this won't be the case for the younger generations. In the study of Trabzon Tekel Cigarette Factory of Topaloğlu and Beşgen the meaning of the building for different group of people is investigated (Topaloğlu and Beşgen, 2017). The building is no longer a place of work for its employees who have a direct relationship with itself, but it is the 'home' of the employees with the established spatial ties. For the tobacco producers, who have a secondary level relationship with the Trabzon Tekel Cigarette Factory, the building is a way of earning money where they receive the equivalent of the products they produce all year round. For the individuals who make a relationship with the factory in a third level, it is an important physical reference point in the city with its mass size. For the public this 'production site' is a representation of labor in the memories, where tobacco trade is carried out.

Art historian Alois Riegl, who introduced the concept of industrial archeology, defined a number of criteria to determine whether an industrial structure carries a monumental value. Riegl says "…each successive step implies its predecessor and could not have happened as it did without that earlier step" (Riegl, 2015). The industrial structures, which have witnessed a certain period of history and contributed to the way in which the society lived, even if they become dysfunctional, embody the collective memory, common traditions and common sense of history of individuals. Urban memory, in this context, is the living witness of public memory, unifying in both social and temporal dimensions. One of the Riegl 's values, 'value of remembrance' as 'oldness value'; is the feeling that is left on people who experience it with aging of the material, or in other words, physical aging of the object. Riegl argues that, even though it was made for different purposes, the value of antiquity combined society with a common denominator; each period includes a certain period of time, society, experiences and emotions. From this point of view, any touch to the buildings defined as industrial heritage will damage the traces in the community memory. Selfslagh states that it is impossible to rebuild or renew the cultural heritage (Selfslagh, 2002). The reason for

that is there is no way to rebuild cultural heritages which is already destroyed. Therefore, industrial heritage which is part of cultural heritage needs specific consideration to preserve by transforming its authenticity to our future generation. Cultural heritage as part of our past history, which belongs to our ancestors should be preserved.

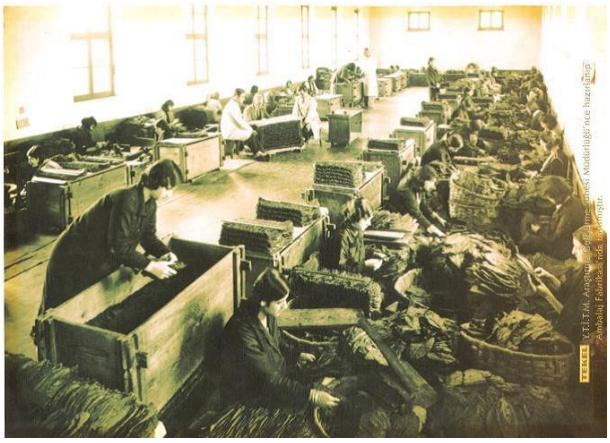

Figure 23. Tobacco processing room and working tobacco workers (representative photos) (Bulletin of the Tobacco Experts Association) (Doğruel, 2000)

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Hybrid Nano-Composite Design for Nano-Architecture

Şelale Elçin Sungur[1]

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Abstract

The aim of this research is to create a comparison and correlation between the treatments in medicine in terms of "bone regeneration", the treatments in architecture in terms of "nanolime consolidation effects on limestone" and the treatments of aerospace technology in terms of anti-icing nano-coatings techniques in order to prevent the effect of freeze-thaw cycles in CH buildings. The criteria to be discussed related to these issues will be the porosity and mass transport between the correlation of human bone and limestone, and anti-icing nano-coatings between the correlation of aerospace engineering techniques to adopt into preserving CH buildings against the freeze thaw cycles.

The issue will be held in 2 main steps: 1ST Step: As reference to Faculty of Medicine: France; University of Orleans (Almhdie et al., 2014) on bone regeneration therapy: Absorption of compatible nano-chemicals (nano-silica Si02, HAP<200nm particle size, CaO, Ca(OH)2 nano-composite design) treatment to inner porous structure : limestone, in order to have mechanical strength and consolidation. 2ND Step : As reference to AIRBUS ICEPHOBIC Anti-icing Nano-Coatings Technology European Commission Project – Polytechnique Montreal Canada – Functional Coatings and Surface Engineering Laboratory (LaRFIS): Anti-icing icephobic nano-coatings of the porous structure (limestone) against the problem of freeze-thaw cycles and building material deterioration on cultural heritage buildings. (coatings made of silica nanoparticles).

Expected result of the 1st step nano-treatment is to gain mechanical strength and consolidation effect inside the building material, regarding as the main treatment. Then, in the 2nd step, regarding as the after treatment therapy with the anti-icing nano-coatings, the expected result will be to prevent the CH buildings against their well-known problem of freeze thaw cycles, caused by the thermal effects and the temperature differences between day and night, and summer-winter, especially in the regions where the humidity and rain factor are the basic factors for deterioration, caused the ice formation and the cracks inside the building material structure.

Research questions of this thesis; firstly, by using the techniques in medicine for "bone regeneration"; how to find a solution to the well-known two problems of the nanolime treatment in architecture ; reduced penetration and accumulation, whitened deposition. How to solve the problem of reduced penetration and accumulation in porous structures in order to increase the capability of their treatment efficiency?

How to solve the problem of whitened depositiōn in nanolime? Secondly, by using the techniques in aerospace technology, used by AIRBUS, for "anti-icing nano-coatings technology*"*; how to find a solution to the well-known problem of freeze-thaw cycles and ice-formation inside the building structure, that finally cause and effects the building material deterioration.

During the study, the discussion will be focus on the solutions for sustainability of nano-treatments in nano-architecture for future. The discussion points are; hybrid nano-composite design, "a simulation of bone regeneration in medicine", in which ways and techniques? "HAP hydroxyapatite - SiO2 - Ca(OH)2" hybrid works well to solve the problem? Which hybrid nano-composite design could be the best solution? In which synthesis technique to form the hybrid nano-composites works better? Which criteria effects the

[1] Politecnico di Milano, Department of Architecture and Urban Studies, selaleelcin.sungur@polimi.it

efficiency? How to get a better penetration and consolidation in porous structures: “bone and limestone” ? How to avoid the back migration of nano-particles?

The idea of this research has application to patent for Politecnico di Milano POLIMI IRIS: 05.1. Brevetto & Patent Application: 2018. NANOTECHNOLOGY IN ARCHITECTURAL RESTORATION: SCIENCE & INNOVATION: Hybrid Nano - Composite Design for Consolidation of the Porous Structures: Limestone & Bone “Transport Phenomena”, ID: hdl:11311/1065405

Keywords: *Nano-architecture, Nano-composite, Hybrid, Design, Sustainability*

1. Introduction

Nanotech; it sounds as a magic when it is firstly pronounced, but indeed, the term “nano” indicates only a measure, a dimension that is hardly difficult to understand with its incredible littleness. Nanosize is the first thing when it comes to understand what nano is, and 1 nm is 1.0*E-9m in size. Regarding this little size, it is obvious that the issue for nanotechnology depends on highly “quantum confinement effects” (Eaglesham, 2011). To be clear to understand the link between medicine to nanotechnology, collagen fibers with the role of giving tensile strength and flexural strength inside bone structure (Fernández, 2015) is approxiamtely 500 nm size, hydroxyapatite crystals with 50 nm size, while tropocollagen inside the collagen fiber is only 1.5 nm size.(Gao et al., 2017) For a decade, the nanoscience created innovative solutions for the bone regeneration problems in medicine. Especially the osteoporosis therapy (Almhdie et al., 2014) and the dental fracture problems (Whitbeck et al., 2011) find innovative solution techniques by using different nano components. The little size of nanotech provides inner penetration and a full effect on material morhology, that make the dreams come true in medicine. So, for this research, the issue will be discussed through the aims and questions; if it is possible to simulate these medical innovation techniques to preservation of architectural monuments, especially built with limestone, and how it is possible to make this simulation, which nanohybrids and combinations could be more suitable for this sense. Primarily, the research hold in University of Orleans in France [1] shows great correlation between limestone and bone morhology with the proof of the high resolution X-ray computed tomography images that makes obvious the similarity of these two structures in terms of “morphology, texture and topology”. This proof could be a starting point to create the idea of the new nano hybrid design in order to create more compact and more durable structures for architectural concept, not only for preservation but also for consolidation the defects with suitable formulated nano hybrids design parameters. Moreover, with a plus of after treatment, with the experience of Airbus PHOBIC2ICE European Commission Project (Klemberg-Sapieha, 2016) with LARFIS Functional Coating and Surface Engineering Laboratories in Canada, ice formation that happens above the the aircraft surfaces has been discussed to resolved by using nanoparticles with a surface treatment system that invites the architectural science researchers to find ways of prevent the freeze thaw cycles problem in cultural heritage buildings which has been known one of the major factors of deterioration, especially in the regions under pressure of the humudity factor and the temperature differences. To sum up, bu using the science and innovation of

nanotechnology, with the practice of reading the results for a decade, in a good way, the interdisciplinary solutions between medicine, architecture and aerospace technology could create new ways and findings to design new nano hybrids that will provide the next generation solutions to unresolved problems of nanotech.

2. Background

2.1. Si-HAP Reinforcement

Cambridge University study (Thian et al., 2007) indicate that silicon substituted hydroxyapatite (HAP) has managed to get successful results for medicine, even if, under 5% silica substitution in combination with HAP crystals, by the technique of the coating, using magnetron sputtering. The focus in the research based on not only hard tissue replacement therapy in medicine but also it is claimed that soft tissue replacement could be possible and effective in this sense. This medical innovation opens the idea of designing new nanohybrids that can be useful for architectural applications, in a similar way with bone regeneration with the simulation to limestone regeneration, based on the proof of the Orleans University Hospital research has been discussed above. (Almhdie et al., 2014) On the other hand, Berkeley National Laboratory and Imperial College London studies (Fu et al., 2012) has the concept of designing new nanostructured combinations in different ratios to have the desired compressive strength for bone structure. Curve simulations has been perfomed succesfully during these research to find the optimal conditions that will suit best with the expected results and can able to solve the problems of "load bearing bone defects". In a similar way, load bearing effects are the major problem for the pillars of the cultural heritage (CH) buildings under pressure of the huge domes or magnificent upper structures above these standing pillars. Generally, pillars in mosque or churches are the primary deteriorated part of a CH building structure for a possible earthquake effect or anything else that can cause a huge damage. Usually replacing the pillars technique has been done after these kind deterioration problem, and replacing the pillars also accomply with the question of the authenticity of these CH structures. So, meaningfully, much more suitable solution could be not to replace, to take precaution and prevent the damage. This means, it is possible to strengthen the pillars of an architectural structure by using to enhance the mechanical durability and strengthening techniques of nanotechnology. By this way, replacing the pillars will be not necessary any more, until it could be the last solution to save the rigidity of the structure. Before this step, it is sure that nano science and reinforcement techniques of nanotechnology that has been continuing to work well both in nano medicine (Fu et al., 2012) and nano engineering during a decade, could be the first and primary saving methodology in terms of the preserving the authenticity in CH monuments. Replacement a pillar, indeed, must be the last case, the last chance to save and preserve. But, unfortunately nowadays, it is a widely used method in lots of restoration works in Zeyrek region in Istanbul-Turkey. Preserving the original and providing the authenticity must be the fist approach of each restoration work, as regarding with the Venice Charter. (Congress and H. Monuments, 2011) In Article 10 of Venice Charter, it is officially advised to enhance the limits to the new technology capabilities if the traditional techniques could be inadequate to succeed the expected results and the new technology has the necessary scientific data to use.

2.2. Understanding the Experience on Dental Application Techniques and How to Adopt this Success in Medicine to Architecture

Human dentin has also some similar problems in the sense of deterioration, in a basic way, such as a complication of bone defects has been shown. For this reason, researchers are trying to find solutions by using the methodology of nanoscience, with the studies has been done for the evaluation of the effectiveness of calcium hydroxide. (Whitbeck et al., 2011) These studies continue on not only for the fracture resistant on dentin but also the capability of elimination of the bacteries in root dentin by using the idea of calcium hydroxide and calcium oxide nanoparticles. (Louwakul et al., 2017) It is obviously clear in the results that nano-sized calcium hydroxide and calcium oxide have been shown great importance to elimimate the bacteries however the standart sized chemicals of the same components have no effect. In this concept particle size is the major factor for nanotech to make the applications effective and to gain the expected results. Also for the hydroxyapatite treatments, the desired particle size advised to be under the limits of 200nm particle size for the medical applications in literature, and for the nanostructured based treatments on architetectral conservation works, the desired limits are advised to be between 25-50 nm size. (G. Borsoi et al., 2016) part of the entire proceedings, and not as an independent document. Please do not revise any of the current designations.

2.3. Understanding the Effect of Particle Size on Success from Medicine to Architecture

With the brushing application techniques basicly, penetrating diamonium phosphate chemical to stone based structures has been tried to searched before in the literature, without nano particle size effect on efficiency. (Sassoni et al., 2013), (Sassoni, 2018) Diamonium phosphate treatments is a comman usage for cultural heritage stone conservation, and a well-known general traditional application technique that can seem relatively successful in its own limits. What makes the innovation for the nanostructured particles is the incredible littleness of their capabilities that creates the huge effect on permeability inside the inner structure of the morhology. In the research study has been completed in the University of Edinburgh (Campbell, 2013), it is obviously shown that fine particle sized hydroxyapatite (between the range of nano to fine powder size) can able to create an effect on archeological bone structure. In Edinburgh University research study, it is discussed between the correlation of the success in 3 different type of lithotypes: limestone, portland cement and archeological bone, and the discuss criteria is the transport phenomena and the particle transport effect on these different morphologic media. Hydroxyapatites has been preferred to synthesised and colloidal stability has been discussed as a research question in the second step. Results have been shown that, the success and the penetration depth of HAP are highly depends on the criteria of agglomeration that hinder the effect of good penetration. For Edinburgh University study, hydroxyapaptite – ethanol suspensions can able to succeed the penetration until 6mm because of their undesired agglomerates between the spectrum of 20-600 nm size particle size hydroxyapatite colloidal suspensions, whereas 200 nm stable particle size of HAP cystals offers much more success in biomedical applications in literature for human bone systems in terms of osteoporosis treatments. (Durgalakshmi

et al., 2014) Also, hydroxyapatite crystals with different percentage of the reinforcement (20%, 40%, 60% and 80%) (Zarifah et al., 2016) in process by [SiO_2, CaO, Na_2O and P_2O_5] composition, widely known "45S5 Bioactive Glass" with the official name in the medical literature; performed good results for bone regeneration therapy in medicine, not only with combinations in hydroxyapatites but also by itself as a role of being a scaffold in bone tissue engineering applications. (Fernández et al., 2015), (Thavornyutikarn et al., 2014), (Zarifah et al., 2016). 20-200nm particle size range spectrum also has been advised in the architecture literature with the experience on limestone applications. (PhD Dissertation, 2017) For this concept, the key point is to determine the right size range and to select the appropriate spectrum for a better penetration, by avoiding the agglomeration and to be sure with the homogeneous distribution of the substrate chemicals with the role of the stable size nanoparticles between the range to 20-200 nm particle size.

3. Methodology

3.1. Interdisciplinary Era Between Medicine to Architecture and How to Adopt the Nano-tech

For all the cases of the applications in interdisciplinary area regarding both medicine, architecture and aerospace technologies, the primary rule to understand is there are essential factors that will highly impact on the results on nanotreatment. Dealing with chemicals, even if in nano-size, is much more difficult to overcome the problems that will affect the efficiency and could be a major disturbing factor coming from the environmental conditions such as temperature and relative humidity. (Borsoi et al., 2017) Apart from this, to enhance the composition of the solvent some researches indicate that the percentage between two or more solvent component used together effects the homogenity and distribution performance of the colloidal nanoparticles in their related solvents. (Daehne and Herm, 2013) Another clue to get the effective results is to avoid back migration criteria, the cause effect harmony is making sense for this case, as the magic comes from the littleness of the nanoparticles that creates the innovation, on the other hand, this littleness can able to cause the undesirable effect that is called the back migration of nanostructured particles. For instance, nano-titanium dioxide particles are known the disadvantage of losing from the surface by the affect of rain (Sassoni, 2018), even though the economical value of titanium dioxide application is so high to worth to mention.

On the other hand for medical applications, in terms of the bone regeneration therapy, and building the bone tissue engineering scaffolds, "silica calcium phosphate composites" find theirselves application area in nano-medicine and they are widely used with the crucial factors of pore size and interconnection layers between Ca-P and Ca-Si, for their success criteria that affects the adsorption, adhesion and formation efficiency. (Ghannam, 2004) "45S5 Bioglass" scaffolds have a major impact on nano medical therapies with their capability of interconnections and reaction potential between some other basic chemicals such as SiO2, MgO and CaO, that creates the different durability performance on compressive strength and tensile strength. (Gerhardt and Boccaccini, 2010) For bone regeneration therapy applications, some optimization of the

performance simulation graphics has been evaluated in the literature that could be accepted a proof for the connection between the porosity of the material structure between the compressive strength, under the affect of the application with different chemical composition nanohybrids such as Na_2O, CaO, SiO_2, P_2O_5 [8], (Ching et al., 2009). In order to evaluate the porous scaffold reliability, [CaO, Al_2O_3, P_2O_5 composition] has been used to detect the flexural strength of the load bearing capabilities [8], (Pernot et al., 2010). Meaningfully these chemical compositions has been similar for architectural researchers who has been inverstigated for the Roman Mortar composition. A study that has been performed on Berkeley Laboratories have the great importance to introduce with the science world that Roman Mortar has the potential to be a composite material, by specialising a combination of the "calcium-alumino-silicate" minerals that creates the potential of reinforcement and durability. (Prince, 2018) With all these experiences coming together in different interdisciplinary areas from medicine, bone tissue engineering to architecture, science world introduce to all researchers a truth that nano composite combinations and nanohybrids have lots of cross sectional key points that needs to be taken into account and to go deeper in consideration inside.

3.2. 5 Key Point Rule and The Optimal Efficiency List

Considering the efficiency criteria among these different disciplines, there are 5 key points that points out all the attention; penetration depth, surface adhesion, viscosity, adsorption and substrate porosity have the main impact on all disciplines performance criteria regarding the nanotech innovation. (Daehne and Herm, 2013) Apart from these, as a reference to studies that has been carried out in TU Delft, storing conditions of the nanomaterials, preparation and mixing techniques, finding the most suitable solvent to get homogeneous distribution, density of the colloidal suspension, application process, properties of the substrates or the lithotypes, pre-treatment or after treatment possibilities, environmental conditions (temperature, T and relative humidity, %RH), air velocity (that will affect the criteria of the solvent evaporation rate), techniques such as brushing, full saturation bath, spraying or nebulization in order to get the desired homogeneous distribution among the structure's deeper side and a so crucial factor of sonication that will also affect the colloidal stability are the basics of the optimal efficiency list on nanoscience. (PhD Dissertation, 2017), (Borsoi et al., 2017), (Borsoi et al., 2016), (Borsoi et al., 2012).

3.3. Hybrid Nanocomposite Design from Nano-medicine to Nano-architecture

The recent research works that has been carried out especially in Horizon projects focused on creating new design nano-composites with combination of some well known nano- particles such as nanostructured titanium and zirconium particles. (Gherardi et al., 2018) Titanium composites in nanosized has been widely used for the stone preservation cases in architectural heritage science thanks to its self cleaning potency. (Russa et al., 2016), (Bergamonti et al., 2013), (Crupi et al., 2018). Also in some studies for preservation again, antibacterial affect of titanium has been discussed. (Russa et al., 2014)

Apart from titanium, $Ca(OH)_2$ such as known as nanolimes has been evaluated in lots of research studies, and some of them with good results. (Dissertation, 2017), (Daehne and Herm, 2013). Although, effective results has been announced in medical treatments using the HAP hydroxyapatite particles, by using the advantage of the 70% composition similarity depends on the mineralogical part of bone composition (Thavornyutikarn et al., 2014), a study that has been published in Nature Journal announced that Ca based designed nano-hybrids such as CaSi ceramics (with their official literature names: diopside and akermanite) has better potential effect on bending strength than HAP based treatments, regarding the medical treatments on bone with stem cell therapy. (Gao et al., 2017)

Ca based hybrids, in combination with carbon nanotubes (CNT) has been firstly discussed in the literature, as a master thesis study that has been carried out in ITU Istanbul Technical University, between 2013 to 2016 and has managed to get 5 times mechanical strength enhancement effect on limestone structures. (Sungur, 2016) During the work, the analysis has been performed under the financial support of research funding TUBITAK, Turkish National Research Council and finally has gained the scientific innovation patent with the patent number 2017/17231, the results regarding as follows:

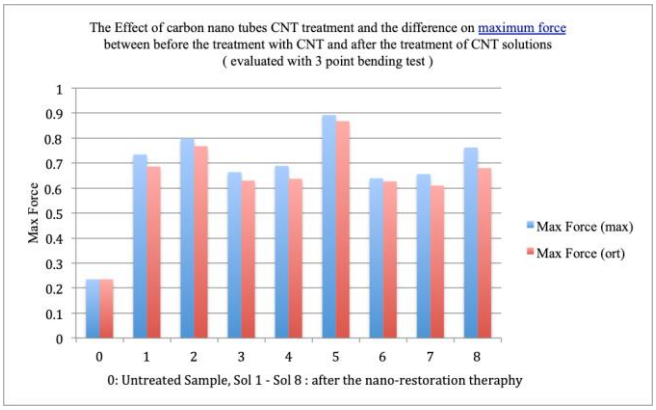


Figure 1: The difference between Max Force (average) and Max Force (max). The effect of nano-restoration treatment on tensile breaking force. (Sungur, 2016)

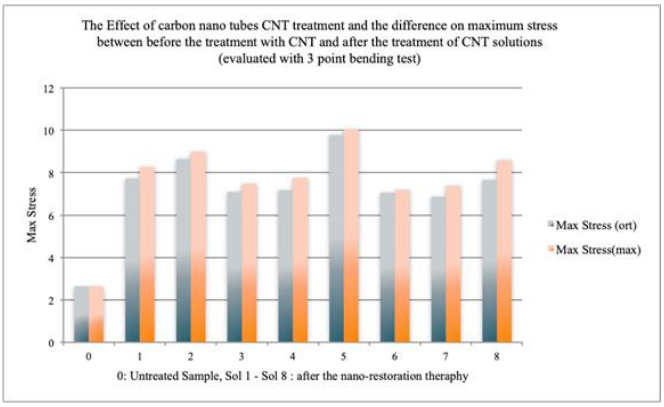


Figure 2: The difference between Max Stress (average) and Max Stress (max). The effect of nanorestoration treatment on flexural strength.

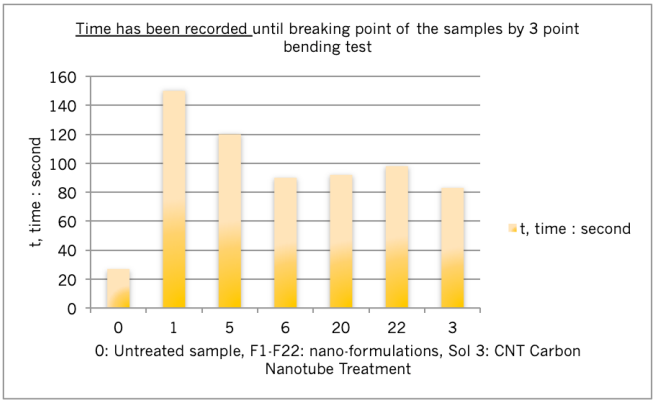


Figure 3: The effect of CNT Carbon Nanotube treatment on time, recorded until breaking point of the samples by 3 point bending test. (Sungur, 2016)

Relating to all these data, that has been experienced before, it is obvious that nanoparticles in right combinations and created formulations can evenly make big differences in terms of the durability factors such as mechnical and flexural strength for different kind of structures such as bone and limestone. (Gerhardt and Boccaccini, 2010), (Fernández et al., 2016), (Zarifah et al., 2016), (Jones et al., 2006), (Thian et al., 2007), (Sungur, 2016).

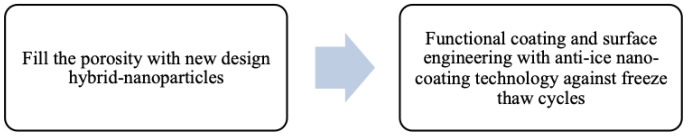
3.4. How to Offer Innovative Formulas for Next Generation Solutions

Table 1. New Formulated Hybrid Nano-composites To Go Further

Hybrid Prototype	1st Treatment	2nd Treatment	Compressive Strength (N/mm2)
Prototype 1	$Ca(OH)_2$	SiO_2	evaluation criteria for 1
Prototype 2	$Ca(OH)_2$	HAp (Hydroxyapatite)	evaluation criteria for 2

Prototype 3	SiO_2 nanosilica	HAp (Hydroxyapatite)	evaluation criteria for 3
Prototype 4	SiO_2 nanosilica	$Ca(OH)_2$ nanoparticle	evaluation criteria for 4
Prototype 5	HAp (hydroxyapatite)	SiO_2 nanosilica	evaluation criteria for 5
Prototype 6	HAp (hydroxyapatite)	$Ca(OH)_2$ nanoparticles	evaluation criteria for 6
Prototype 7	SiO_2 nanosilica	SAE	evaluation criteria for 7

Table 2. 2 Step Idea (1st step to fill the posority with nanoparticles and 2nd step to create functional surface coating for a solution against a pre-defined problem such as freeze thaw cycles in architecture)



4.Conclusion

Nanotech and innovative design technologies has been created a huge effect on science world with all the reinforcement and enhancement effect criterias in lots of studies has been told above. Now, the question is how to go further and how to adopt these innovations in interdisciplinary area in order to find new solutions for unresolved issues in practice for architecture and engineering applications. In this research topic, regarding to doctorate thesis study that has been carrying out in Politecnico di Milano Department of Architecture and Urban Studies (DASTU), cultural heritage building preservation case is one of the major aims, so, in order to create an innovative solution related to well known problem of freeze thaw cycles in CH buildings, the nw offer of next generation hybrid design is to make a technology transfer between the medicine and architecture, and to adopt the bone regeneration therapy issues to building preservation cases. Under the experience of the successful results that has been carried out on bone scaffold design technology and osteoporosis treatments, with the chemical and morphological composition similarities between bone and limestone (Almhdie et al., 2014), it is obvious to sum up that the innovation of nano-medical therapies are also useful for nano-architecture solutions, and this research has been inviting all the architectural science researchers to create new innovative design technologies for all the desired functionalities of engineering and architecture topics. All the innovation starts with to make the correct optimization between the chemical composition of substrate and structural morhology of the lithotype. Taking into account with the criteria of porosity, colloidal stability and transport mechanism; it is possible to make new sustainable interdisciplinary innovations continuously.

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Tarihi Kültürel ve Mekânsal Sürdürülebilirlik Bağlamında Kayseri Ağırnas

Urban Revival in the Context of Historical, Cultural and Spatial Sustainability: A Case Study of Kayseri Ağırnas

Özgün ÖZBUDAK[1], Feride ÖNAL[2]

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Özet

Hızlı kentleşme, plansız yapılaşma veya zamana karşı direncini kaybetme gibi nedenlerle geleneksel yerleşimler ve yerleşimlerdeki tarihi ve kültürel değerleri olan alanlar bozulma ve terk edilme tehlikesi ile karşı karşıya kalmaktadır. Geleneksel dokunun sürdürülebilir koruma anlayışına göre özgün işlevinde yaşatılabilmesi önemlidir. Planlama ve tasarım süreci, tarihi, kültürel ve ekonomik sürdürülebilir kalkınmayı sağlamak için sosyokültürel faktörleri göz önünde bulunduran yaklaşımlar olmalıdır.

Kayseri'nin Melikgazi ilçesine bağlı bir yerleşim olan Ağırnas; dehlizleri, mağaraları ve yer altı kalıntıları ile günümüzden 3000 yıl öncesine uzanan bir geçmişe sahiptir. Hitit, Roma, Bizans ve Osmanlı dönemine ait eserlerin bir arada bulunduğu yerleşimi oluşturan dokunun en önemli özelliği, yapı malzemesi olarak yerleşimin bütününde doğal taşın kullanılmasıdır. Taşla kaplanmış dar sokakların üzerinde sıralanmış taş evler, kimi zaman bu sokakların genişlemesi ile oluşan meydanlar, yerleşimin dokusunu oluşturmaktadır.

Ağırnas, geçmişte farklı dinlere mensup nüfusun bir arada yaşadığı, kiliseleri, çeşmeleri, yer altı yerleşimi ve taş malzemenin ön plana çıktığı dokusu ile günümüze kadar ulaşmış olup; yerel halkın ekonomik durumunun bu yapıları onarmaya uygun olmaması nedeni ile harabelerin de yoğun olduğu bir yerleşim olarak varlığını sürdürmektedir. Bu bağlamda yapılan çalışmada, alanın yeniden canlandırılması, mekânsal, kültürel ve tarihi bağlamda sürdürülebilir olması için yerinde inceleme ve analizler yapılarak öneriler geliştirilmiştir. Kamusal alanlara dönük öneriler ile mevcut dokunun sürdürülebilirliği için katkı sağlaması amaçlanmıştır.

Anahtar Kelimeler: *Kayseri, Ağırnas, sürdürülebilirlik, yenileme, iyileştirme*

Abstract

Due to rapid urbanization, unplanned construction or loss of resistance against time, traditional settlements and areas with historical and cultural values in settlements face the danger of deterioration and abandonment. It is important that the traditional texture can be kept alive in its original function

[1] İstanbul Gedik Üniversitesi, Mimarlık Bölümü | ozgun.ozbudak@gedik.edu.tr
[2] İstanbul Gedik Üniversitesi, Mimarlık Bölümü | feride.onal@gedik.edu.tr

**Bu çalışma Yıldız Teknik Üniversitesi 2012-2013 Eğitim Yılı Mimari Tasarım Yüksek Lisans Programında Bahar dönemi "Mimari Uygulama II" dersi kapsamında yapılan alan çalışmasından üretilmiş olup, 2019 yılı "İstanbul Gedik Üniversitesi Design Today, Save Future International Conference on Energy and Sustainable Built Environment" isimli sempozyumdaki sunumun geliştirilmesi ile elde edilmiştir.*

according to the concept of sustainable protection. The planning and design process should be approaches that consider sociocultural factors to ensure historical, cultural and economic sustainable development.

Ağırnas, a settlement in Melikgazi district of Kayseri; It has a history dating back 3000 years with its corridors, caves and underground remains. The most important feature of the texture that forms the settlement where the Hittite, Roman, Byzantine and Ottoman artifacts coexist is the use of natural stone as the building material throughout the settlement. Stone houses lined on narrow streets covered with stones, sometimes squares formed by the expansion of these streets, form the texture of the settlement.

Ağırnas has survived to the present day with its population of different religions living together, its churches, fountains, underground settlement and the texture of stone material; As the economic situation of the local people is not suitable for repairing these structures, it continues to exist as a settlement where the ruins are also intense. In the study carried out in this context, suggestions were developed by making on-site examinations and analyzes to revitalize the area and to be sustainable in a spatial, cultural and historical context. It is aimed to contribute to the sustainability of the existing tissue with suggestions for public spaces.

Keywords: *Kayseri, Ağırnas, sustainability, renewal, rehabilitation*

1. Giriş

Geleneksel tarihi çevreler ve yerleşimler, yoğun ve plansız yapılaşma sonucunda bozulma ve terk edilme tehlikesi ile karşı karşıya kalmaktadır. Tarihi çevredeki yaşam alanlarının günümüz yaşam koşullarına uyum sağlar şekilde güncellenmemesi nedeni ile bu alanlar boşalmaktadır. Sosyal, kültürel ve ekonomik yapı da bu durumdan etkilenmekte ve tüm bu değişimler çevrenin yeniden biçimlenmesine neden olmaktadır.

Çalışma kapsamında, Ağırnas'ta yapılan çalışma sonucunda yerleşimin yeniden canlandırılarak mekânsal ve kültürel sürekliliğin devamı ile gelecek kuşaklara aktarılabilmesi için geliştirilen öneriler, yerleşimin planlarının yaratıcı haritalama yöntemi ile yeniden yorumlanması sonucunda elde edilmiştir.

2. Tarihi çevrede Yeniden Canlandırma ve Yeniden Değerlendirme

Modern öncesi döneme ait yerleşimler, tasarımları ve oranları ile kullanıcıları sokaklara ve meydanlara toplamış, yaya kullanımını ve açık hava faaliyetlerini teşvik etmiş ise fonksiyonel kentsel alanlar ve yapılar bunun tam tersini sunmuştur. Bu yeni alanlar üretimdeki ve sosyal yaşantıdaki değişim sonucunda açık alan aktiviteleri azalmış ve dağılmıştır (Gehl, 2011) 19. Yüzyıl öncesi değişim daha yavaş sürerken ulaşım, alt yapı, üretim teknolojileri gibi alanlarda değişimin hız kazanması ile kentsel ve mimari yapıda değişim hızlanmış ve eski-yeni ilişkisi ortaya çıkmıştır. Yerleşimlerin tarihi süreç içinde sürekliliği sağlanırken bir yandan da gelişime ve değişime cevap verebiliyor olmaları gerekmektedir. Yeni yapılaşma bu durumda yerleşimler için kaçınılmaz olmaktadır (Altınöz, A.G.B., 2010).

Tarihi çevreler, zaman içinde kazandıkları değerleri korurken günümüz koşullarına da sağlayabildiği uyum oranında değer kazanmaktadırlar. Ancak planlı çözümler yerine tek yapı ölçeğinde sorunlara çözüm aranması sonucundaki değişimlerle ortaya çıkan hatalar geri dönülmesi zor bozulmalara neden olmaktadır. Yapılan hatalar geçmişten günümüze

süregelmiş izlerin silinmesine, yaşanan tarihi çevrenin kimliğini yitirmesine sebep olmaktadır. Çünkü tarih sadece geçmişi anlatmamakta; günümüz, gelecek kuşakların tarihini oluşturmaktadır. Tarih bu şekilde bütün olarak ele alınırsa tarihi çevre bilincinden söz edilebilir (Arabacıoğlu, vd., 2007).

Özer (2018), tarih, gelenek, bugün ve yarın arasında organik bağın kurulması gerektiğini bu sayede kültürel gelişimin özgün çizgisinde sürdürülebileceğini belirtmektedir. Tarih, zamanın insanoğluna ait faaliyetleri içeren bölümü olarak ele alınıp, bu faaliyetler, olaylar ya da somut nesneler olarak ortaya çıkmaktadır. Bu durum, ortaya çıkan yeni ihtiyaçlar ve imkanlar sonucunda diyalektik bir süreci zorunlu kılacaktır. Bu yüzden tarih, zamanın akışı içerisinde insanoğluna ait faaliyetlerin diyalektik gelişimi ile oluşan dinamik bir süreç olarak tanımlanabilmektedir. Gelenek iste tarihsel sürecin içinde geçmişten gelen, geçerli ve güncelliğini koruyan faaliyet, olay ve törensel alışkanlıklar ve bunların ürettiği nesnelerin tümü olarak tanımlanmaktadır. Bu kavramlara göre tarihsel süreklilik bir zorunluluk olarak karşımıza çıkmakta, fakat bu sürekliğin değişimi de içerdiğinin, çağdaş çözümler üretildiği takdirde tarihsel sürekliliğin sağlanabileceğinin dikkate alınması gerekmektedir (Özer, 2018).

Tarihi çevreler, somut değerler ve somut olmayan değerler olarak ikiye ayrılarak incelenebilmektedir. Somut değerler, fiziki yapıyı oluşturan doğal yapı ve yapılı çevre olarak, somut olmayan değerler de geleneksel olarak sürdürülen kültürel pratikler, anlatımlar ve yapılı çevrelerin anlamlarını kapsamaktadır. Somut değerler, somut olmayan değerleri oluşturan kültürel değerlerin anlaşılması sonucunda anlam kazanmakta, soyut değerler yapılı çevrede kodlanmış kültürel unsurlar olarak ortaya çıkmaktadır (Karakul, 2019).

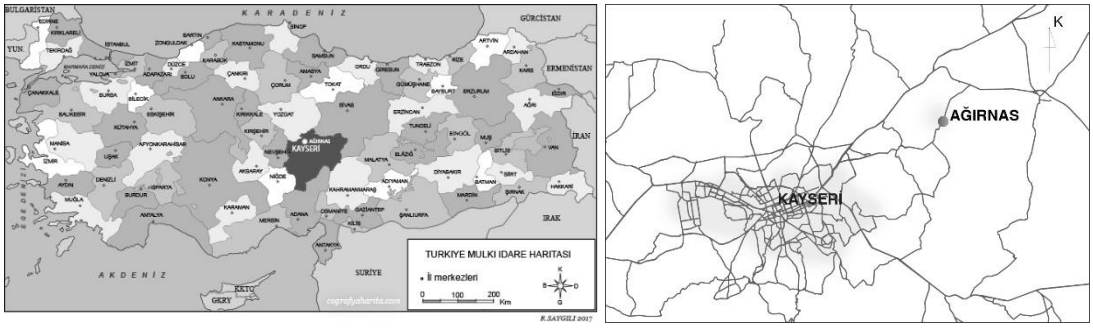
Tarihi yerleşim dokuları, geçmiş döneme ait uygarlıkların sosyal, kültürel ve ekonomik yapısını, yaşam biçimlerini, estetik kaygılarını yansıtan mekanlardır. Bu yüzden çevrenin güncel görüntüsü, geçmişe ait bütün izleri taşımakta, tarihsel süreç içinde sürekli bir yenilenme ile yeni ve eskiye ait olgular ve somut veriler iç içe geçmektedir (Arabacıoğlu, vd, 2007). Bu yenilenme ve çeşitlenme sürecinde eskinin taklidi ya da eskinin tamamen gözardı edilmesi olarak ortaya çıkabilen iki uç durum, değerlerin tahrip olmasına, sürekliliğin sağlanamamasına neden olabileceği için kaçınılması gereken tutumlardır (Altınöz, A.G.B., 2010).

Tarihi çevrelerin tahrip olmasının nedenleri; günümüz yaşam koşullarını karşılayamaması, sosyal yaşam koşullarındaki değişimler, yanlış restorasyonlar ve çağdaş konfor koşullarını sağlama amacı ile bilinçsiz müdahaleler, ekonomik yetersizlikler sebebi ile bakımsız kalması, koruma planının olmayışı, hızlı teknolojik gelişmeler sonucu geçmişle bağların kopması ve yeni yaşam alanlarının çekim oluşturarak bu alanların boşaltılması olarak düşünülebilir. Fakat insanlarda beğeni uyandıran çevresel niteliklerin sorgulandığı deneysel çalışmalarda kullanıcılar, doğal, tarihi çevre ile uyumlu, belli bir yere ve zamana ait, gelenek ve kültür izlerinin

görülebildiği bunun yanında yeniliklerin de görülebildiği mekanlar istemektedirler (Arabacıoğlu, vd, 2007).

3. Ağırnas'ın Konumu ve Özellikleri

Kayseri, Türkiye'nin İç Anadolu Bölgesi'nde yer alan, çevresinde Sivas, Yozgat, Nevşehir, Niğde, Adana, Kahramanmaraş'ın bulunduğu il olup; Ağırnas, Kayseri'nin Melikgazi ilçesine bağlı bir kasabadır. Yer altı kalıntılarının yanında, Osmanlı dönemine ait çeşmeler, sivil mimari örnekleri, eğitim yapısı, Rum kilisesi ve güvercinlikler yerleşimin tarihi çevresini oluşturmaktadır. Eski adı Taşören olan Ağırnas aynı zamanda Mimar Sinan'ın doğduğu yer olarak da kabul edilmektedir.

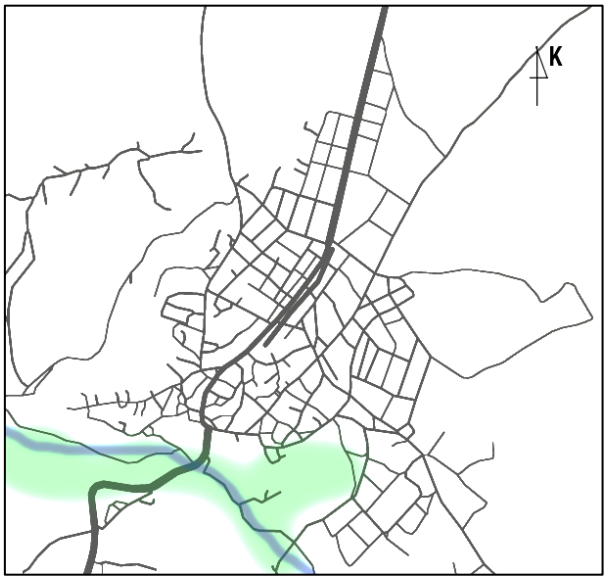


Şekil 1. Kayseri ve Ağırnas'ın konumu[3]

Yer altı ve yer üstü yerleşmelerin dokusuna sahip olan ve bu özelliğini günümüze kadar sürdürebilmiş yerleşimlerin sayısı oldukça azdır. Günümüzde yaygın olarak toplumsal değişimlerin sonucunda bu tür alanların terk edilmesi, köhneleşmesi gibi durumlarla karşı karşıya kalınmaktadır. Buna karşılık Ağırnas, yer altı, yer üstü özgün dokusunu günümüze kadar koruyabilmiştir (Bilsel, 2002). Bu dokuların birbirinden ayrımı, kent planına bakıldığında okunabilmektedir.

Yerleşimlerin oluşumu, ilk olarak yaşamın sürdürülmesi için beslenme ihtiyacını karşılamak amacıyla verimli toprağın bulunması, ikinci eylem devimin yani fiziksel çevre ile ilişkinin kurulması sayesinde olmuştur. Bu iki nedenden dolayı yerleşimler çoğunlukla su kenarında kurulmuşlardır. Su hem toprağın verimli olmasını sağlarken hem de ulaşım kolaylığını sağlamaktadır (Gürel, 1970). Ağırnas yerleşiminin tarihi çekirdeği, doğu-batı yönünde yayılma gösteren, güneyde su kıyısı boyunca yükselen bir yamaca kurulmuştur.

[3] Soldaki harita http://cografyaharita.com/turkiye_mulki_idare_haritalari.html adresinden yeniden düzenlenerek oluşturulmuş, sağdaki harita ve Şekil 2 https://snazzymaps.com/ adresinden alınan görselin bilgisayar ortamında yeniden düzenlenmesi ile oluşturulmuştur.

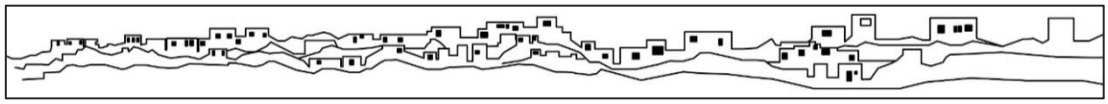


Şekil 2. Ağırnas'ın yerleşim formu[4]

Gürel (1970), kafes doku ile ışınsal dokunun genellikle aynı zaman aşamalarında uygulanması ile ortaya çıkan yerleşim dokusunu, karmaşık doku olarak tanımlamaktadır. Ağırnas yerleşiminin dokusu, bu bilgiler ışığında karmaşık doku olarak görülebilmektedir. Yerleşim, ışınsal akslar üzerinde yer yer kafes dokular oluşturmaktadır. Ana aks kuzeyden güneye doğru Osman Yücel Caddesidir. Yerleşim güney yönünden kuzey yönüne doğru gelişim göstermiştir. Güneyde, mağaralar, yeşil vadi ve bu noktalara yamaç üzerinden açılımlarla organik biçimde yerleşen geleneksel yerleşim dokusu görülmektedir. Kuzeye doğru Osman Yücel Caddesi aksı boyunca farklı yönlere doğru ışınlar ve bu ışınlar etrafında kafes dokusu oluşturan yerleşim dokusu görülmektedir. Tarihi çekirdek, güney yönünde vadi ve mağaralar ile kentsel mekânları oluştururken, kuzeye doğru yerleşimde günümüze yakın tarihli yapıların oluşturduğu kentsel mekânlar ortaya çıkmaktadır.

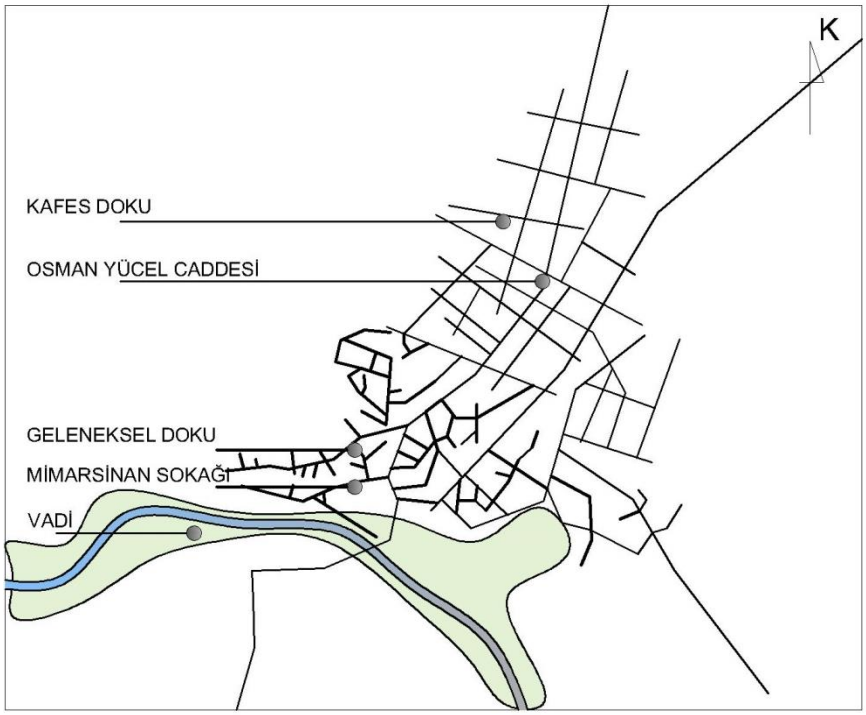
Şekil 3. Ağırnas ve akarsu çevresinde yeşil doku

[4] https://snazzymaps.com/ adresinden alınan görselin bilgisayar ortamında yeniden düzenlenmesi ile oluşturulmuştur.



Şekil 4. Ağırnas silueti (Ö. Özbudak)

Tarihi çekirdek, yamaç boyunca akarsu ve vadiye paralel bir şekilde doğu-batı yönünde ilerleyen, kendi içinde de cami, alışveriş mekânları gibi yapıları odağına alarak bu merkezlerden çevreye doğru yayılan bir yerleşim dokusu oluşturmaktadır. Şekil 4'te gösterilen siluet çizimi Kayseri'den Ağırnas'a girişte karşılaşılan, yerleşimin ilk görselini temsil etmektedir. Şekil 3'ün sadeleştirilerek bilgisayar ortamında çizimi ile elde edilen görüntüde, vadiye doğru sıralanan yapılar kademelenmektedir. Bu yapıların terk edilmesi ya da bakımsız durumda olmaları sebebi ile harabe görüntüsü de oluşmaktadır.



Şekil 5. Ağırnas tarihi çevre planı (Ö. Özbudak)

Tarihi çevrenin organik formunun oluşumunu sağlayan önemli doğal çevre verileri topoğrafya, su ve jeolojidir. Topoğrafya ve su Ağırnas'ın topoğrafya ile uyumlu, manzaralara farklı noktalardan açılım sağlayan, küçük toplanma mekânları ile bir yerleşim dokusu oluşmasını sağlamıştır. Alanın Jeolojik yapısı; yerleşime kimliğini kazandıran taş yapı malzemesinin çevreden elde edilebilmesine ve mağaraların insan eli ile işlenerek mekanların oluşturulabilmesini olanak sağlamıştır.

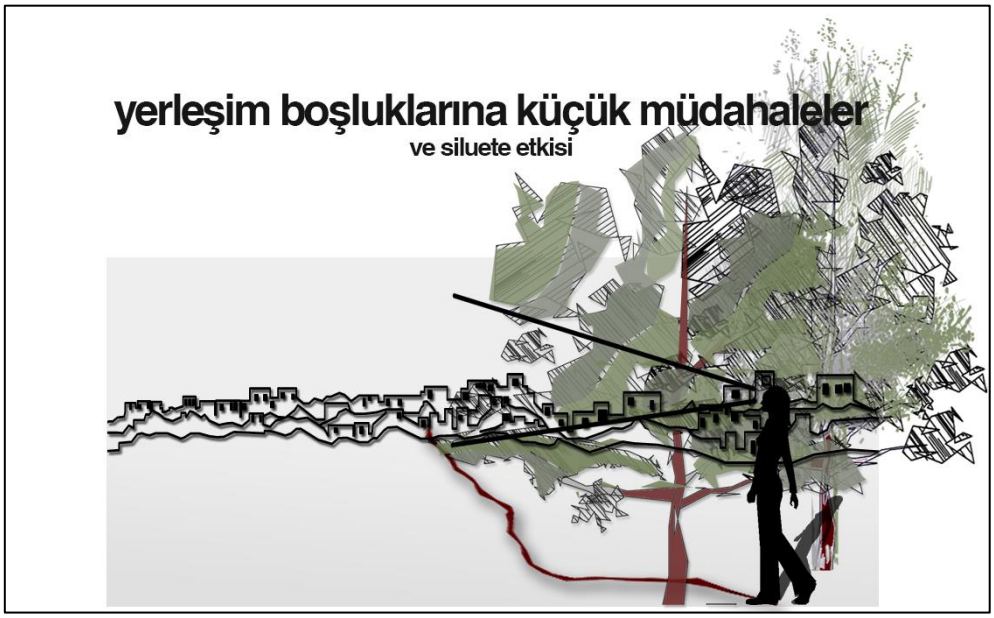
4. Ağırnas Yerleşiminde Yeniden Canladırma Önerisi

Ağırnas ve yakın çevresine yapılan teknik gezide gözlemlenen durum; alanın yer altı ve yer üstü değerlerini günümüze kadar sürdürmüş olması yanında, sosyal ve ekonomik nedenlerin de etkisiyle yerleşimin terk edilme ve köhneleşme tehlikesi ile karşı karşıya olduğudur. Geçmişe ait farklı katmanları içinde barındıran yerleşimin bu tehlikelerden korunması ve özelliklerini günümüzden gelecek kuşaklara sürdürmesi önem taşımaktadır.

Haritalama, nesnel bir eylem yerine zihinsel evrene farklı ölçeklerde anlam veren yaratıcı bir eylem olarak tanımlamaktadır. Yaratıcı haritalama, yaşanan mekânın imge, sembol ve anılarını içererek zenginliğini ortaya çıkarmakta, farklı boyutlarını görünür kılmakta ve etkileşime olanak veren bir eylem olarak tanımlanmaktadır (Alanyalı Aral, 2018). Bu bilgilere göre Ağırnas'ta alan gezisinden sonra kişisel deneyimlerden yola çıkılarak haritalar oluşturulmuştur. Çalışmada kamusal mekânların fotoğrafları ve planları bilgisayar ortamına aktarılarak yeniden çizilmiş ve yorumlanmıştır. Alan ele alınırken, yerleşim siluetinin zihinde oluşmasını sağlayan ilk imgesinden yola çıkılmıştır. Kayseri yönünden Ağırnas'a doğru ilerlenirken yerleşim, bir anda ağaçların arasından görülmekte, vadiye doğru kademelenen taş yapı dokusu ziyaretçileri karşılamaktadır. Bu yapılar terk edilmiş, ya da bakımsız durumdadırlar. Yapılan haritalama çalışmasında, Ağırnas'ın bu bölgesinde yapılacak küçük müdahaleler ile kentin siluetini etkileyecek görüntünün oluşması amaçlanmıştır. Çalışmanın başlığı bu yüzden "Yerleşim Boşluklarına Küçük Müdahaleler ve Siluete Etkisi" olarak seçilmiştir.

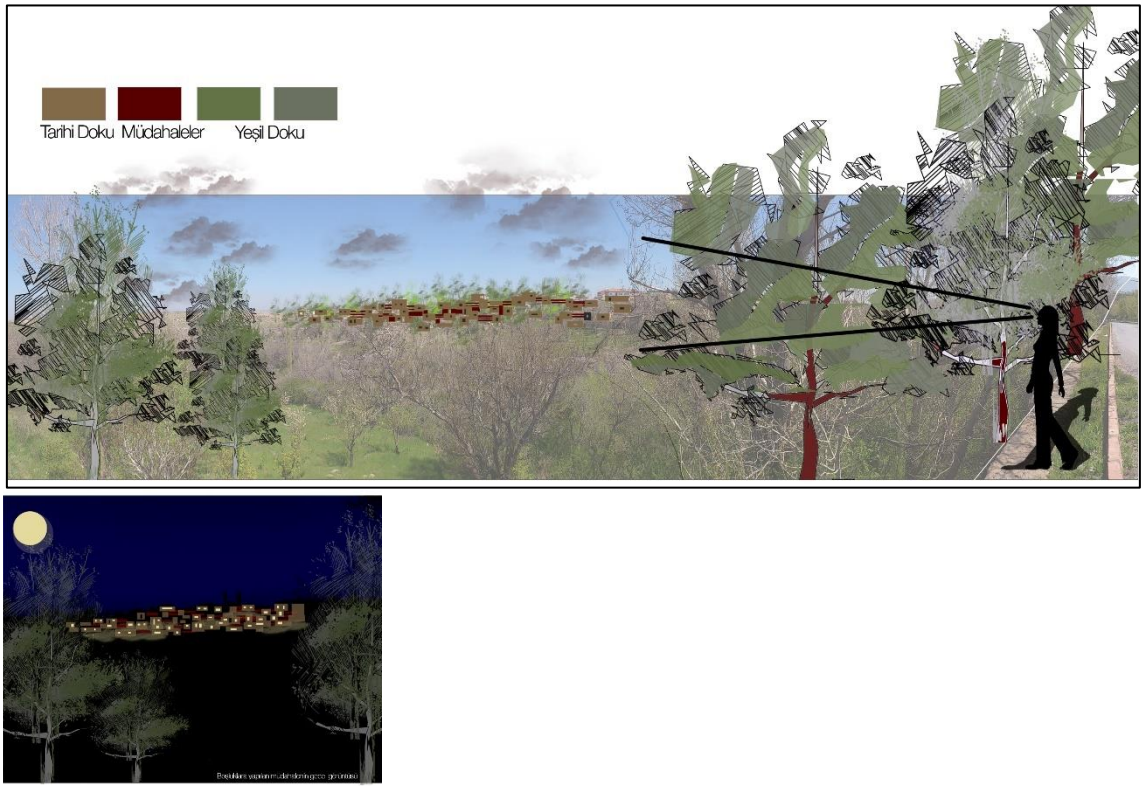
Şekil 6. Yerleşime ulaşımda karşılaşılan ilk imge (Ö. Özbudak)

Noktasal dokunuşun genele olan etkisi incelenmek istenerek, noktasal dokunuştan büyük parçaya, büyük parçadan da noktasala geçiş yapan bir döngü oluşturulması amaçlanmıştır. Büyük ölçekten küçük ölçeğe, küçük ölçekten de büyüğe geçişler yapılmıştır. Çünkü silueti değiştiren küçük dokunuşlar olurken, küçük dokunuşları şekillendiren de siluet olmuştur.



Şekil 7. Yerleşim boşluklarına küçük müdahaleler ve siluete etkisi (Ö. Özbudak)

Yerleşime yapılan noktasal müdahalelerin siluete yansıması sonucunda, ziyaretçileri karşılayan ilk imgenin şekillenmesi ve yerleşimin deneyimlenebilmesini sağlayacak mekânların oluşturulması amaçlanmıştır.

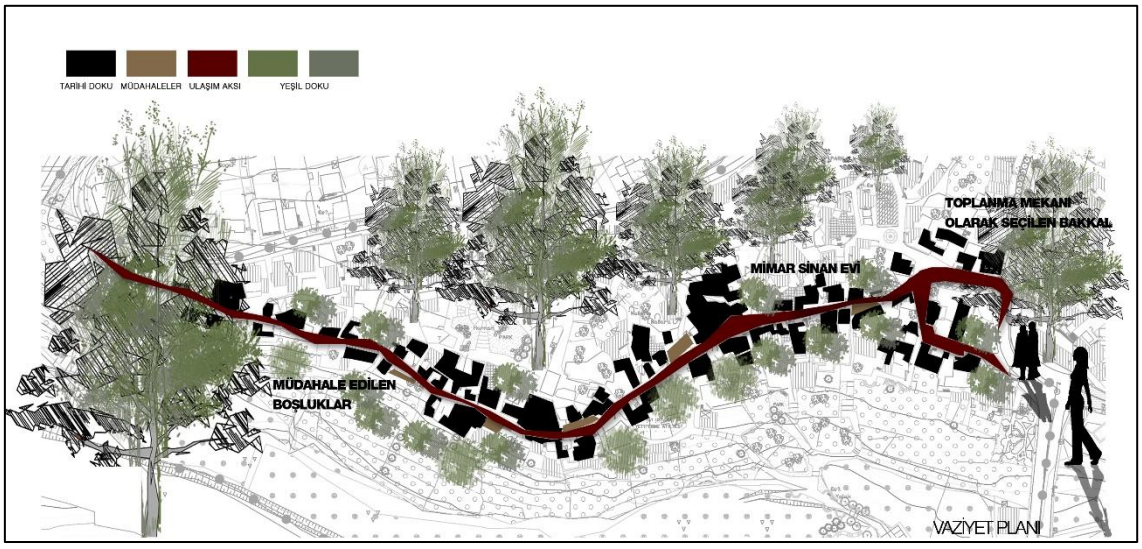


Şekil 7. Yerleşim boşluklarına küçük müdahaleler ve siluete etkisi (Ö. Özbudak)

Tarihi çevre içinde, yapıların birbirinden uzaklaşması ile oluşan boşluk ve bu alana bağlanan Mimarsinan Sokağı çalışma alanı olarak seçilmiştir. Boşluk toplanma alanı olarak düşünülmüş ve ziyaret sırasında toplanma alanından, Mimarsinan Sokağı'na bir yol izlendiği için bu iki alan üzerinde çalışma gerçekleştirilmiştir.

Şekil 8. Toplanma mekânı (solda) Mimarsinan Sokağı başlangıcı (sağda)

Bu alanın bilgisayar ortamında haritalaması yapılarak mevcut yapılar (siyah), ulaşım aksı (bordo), yeşil dokular (yeşil), doku içinde müdahalede bulunabilecek boşluklar (sarı) renkte gösterilmiştir. Bu boşluklar planda görülebildiği gibi yerleşimin üçüncü boyutunda da algılanabilmektedir.



Şekil 9. Yerleşim boşluklarına küçük müdahaleler ve siluete etkisi (Ö. Özbudak)

Tarihsel ve geleneksel olguların çağdaş çözümler üretilerek sürdürülmesi, yapılan çalışmalarda somut yapıtlara bu olguların ne kadarının dahil edilip ne kadarının dışarıda bırakılacağı ya da tamamen karşıt bir cevaplar üretileceğini belirleyecektir. Bu durum, tarihsel sürecin bilincinde olunması ile sağlanabilmektedir (Özer, 2018). Tarihi dokuda yapılacak müdahalelerde, her dönemin yapısının kendi dönemini yansıtması, doku

bütünlüğünün, mevcut değerlerin korunması, var olanla ilgili kapsamlı bilgiye sahip olunarak sürdürülmesi gerektiği çerçevesinde, yaratıcılık ve farklılaşmanın desteklendiği görülmektedir. Geleceğin kültür varlıklarını oluşturacak yeni yapılaşma, bu sayede bağlamla uyumlu bir şekilde alanın zenginleşmesine katkı sağlayabilecektir (Altınöz, A.G.B., 2010). Bu bilgilere göre Ağırnas'ın kamusal dış mekanlarının kullanımının artırılarak, yerleşimin tarihi çevresine zarar vermeden buradaki değerlerin ortaya çıkarılması amaçlanmış ve seçilen toplanma mekânı ve Mimarsinan Sokağı çalışma kapsamına alınmıştır.

-Toplanma Alanı: Toplanma alanı olarak belirlenen kamusal dış mekânın seçilmesinin nedeni, yerleşimin araç ile ulaşılan girişinde yer alması ve ziyaretçilerin bir araya gelmesine olanak sağlayan, yapıların birbirinden uzaklaşarak geniş bir boşluk oluşturduğu bir yer olması. Bu alanda yer alan alışveriş biriminin kullanım kolaylığının artırılması, ziyaretçilerin dinlenebilecekleri dış mekân mobilyalarının eklenmesi gibi küçük müdahaleler ile yerleşimin toplanma mekânı olması sağlanabilir.

Şekil 9. Toplanma mekânı için getirilen öneri (altta) (Ö. Özbudak)

-Mimarsinan Sokağı: Mimarsinan Sokağı boyunca bir konut, ona bağlanan taş duvar ve ön kısımda bir boşluk gibi nişler göze çarpmıştır. Bu nişlerin değerlendirilerek buralara küçük dokunuşların yapılması ile yerleşimde yaşayanların kullanabilecekleri alanların, ziyaretçilerin oturabilecekleri, dinlenebilecekleri, alışveriş yapabilecekleri birimlerin oluşturulması ve yerleşim mobilyalarının yerleştirilmesi amaçlanmıştır.

Şekil 10. Mimarsinan Sokağı ve boşluklar

Yapılan küçük müdahaleler ile yerleşime girişte karşılaşılan siluetin daha hareketli, yaşayan bir imge oluşturması sağlanabilecektir. Amaçlanan, boşluklardaki müdahalelerin yerleşim siluetine yansıyarak hem çevre yapılarla bütünleşerek hem de ondan ayrılarak dokuyu vurgulamasıdır.

Şekil 10. Mimarsinan Sokağı ve boşluklar (Ö. Özbudak)

Kent içinde görülen, kendiliğinden oluşmuş küçük nişlere işlevler verilerek bu birimlerin tanımlanması istenmektedir. Bir yüzü mevcut bir yapının duvarı olan, diğer yüzü yıkılmış olan boşluğu çevreleyen duvarlar arasına mekanlar tasarlanarak buralarda ziyaretçiler için bölge halkının işlettiği yeme içme dinlenme birimlerinin tasarlanması amaçlanmaktadır. Tasarlanacak olan yeni birimlerin yerleşim siluetinde diğer binalarla bütünleşen aynı zamanda onlardan farklı yeni ve çağdaş malzemelerle, güncel gereksinimleri karşılayan bir yapıda olmaları istenmektedir. Bu sayede ziyaretçiler alanı deneyimlerken aynı zamanda yerleşim halkı ile de karşılaşabilecektir.

5. Sonuç

Çalışma kapsamında alanın ve konu ile ilgili kaynakların incelenmesi, önerilerin getirilmesi ile aşağıdaki sonuçlara ulaşılmıştır:

- Ağırnas yerleşimi, Mimar Sinan'ın doğduğu yer olmasının yanı sıra dehlizleri, mağaraları, yer altı şehir kalıntıları, yer üstünde taş yapıları bir arada bulunduran zengin mimari dokuya sahiptir.
- Yer altı ve yer üstünde doğal çevre verileri yapılı çevreye dönüştürülmüş, bu durumu bölgenin taş malzemesinin işlenerek yer altında mağaralar ve yer üstünde taş konut yapıları ile yerleşimin imgesini oluşturmaktadır.
- Yer altı ve yer üstü yapılı çevre uyumlu bir doku oluştururken akarsu ve yeşil doku bu alanı çevrelemekte ve onunla uyumlu bir şekilde bir arada var olmaktadır.
- Alan ekonomik yetersizlikler sebebiyle terkedilmekte ve harabe görünümündeki yapı kalıntıları yoğun bir şekilde gözlemlenebilmektedir.
- Yapılan çalışmalarda, çevresel ve toplumsal sürdürülebilirliğin sağlanabilmesi için tarihi çevrenin özgün dokusunu korurken aynı zamanda günümüz koşullarına da uyum sağlaması için yeniden değerlendirilmesi gerektiği görülmektedir.
- Noktasal müdahalelerin önerildiği çalışmada, yerleşime girişte karşılaşılan siluetin canlandırılması ve iyileştirilmesi hedefine Mimarsinan Sokağına ve kullanıcıların toplandığı mekâna yapılacak müdahaleler aracılığı ile ulaşılması önerilmektedir.

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