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STAIRWAY TO ACCESSIBILITY: TRANSFORMING STEEP STAIRS FOR THE ELDERLY, DISABLED AND CHILDREN

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ABSTRACT

This study presents an integrated application proposal with the concept of "urban acupuncture", which emphasises a contemporary and sustainable design approach, and emphasises social equality and accessibility. The study addresses the difficulties created by steep stairs for vulnerable groups such as the elderly, disabled, and children, and produces solutions by catalysing interventions compatible with the urban fabric. The urban acupuncture initiative in the Cihangir neighbourhood of the Beyoğlu district of Istanbul includes socio-economic and artificial environment analyses, global examples, and literature research and aims to provide equal opportunities for all and integrate citizen participation and social interaction, with a particular focus on the challenges caused by steep stairs. The basic methodology of the study includes an urban acupuncture practice that addresses the difficulties caused by steep stairs in the Cihangir neighbourhood. Within the scope of this study, field observations and analyses are included. The proposed project consists of three main elements such as seating elements, landscaping, and billboards promoting art, aiming to create egalitarian, sustainable, educational, and social environments that include all segments of society. On the other hand, these three main elements aim to provide a more livable environment for the residents of the neighbourhood by providing solutions to security problems, lack of green areas, and insufficient public facilities. On the other hand, this study may be important for creating a more accessible and high quality of life in urban areas not only in the study area but also in Cihangir and its surrounding areas. In addition, the study can be applied and extended to different urban areas to guide similar urban development projects and further improvements.

Keyword:
Urban Acupuncture, Urban Solutions, Accessibility, Steep Stairs, Sustainable Solutions
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INTRODUCTION

This article describes an important project that integrates the issues of urban accessibility and environmental sustainability by examining the overall urban structure and past and present fabric of the Cihangir neighbourhood, where Istanbul's rich cultural fabric is most intensely felt. This project presents a detailed evaluation of the urban acupuncture initiative carried out under the title "Stairway to Accessibility".

Cihangir is a vibrant and lively neighbourhood in the Beyoğlu district of Istanbul, stretching from Sıraselviler Street between Taksim Square and Kazancı Slope to the steep slopes and stairs leading south to Salıpazarı and Fındıklı. Composed of the Kılıç Ali Paşa and Pürtelaş Hasan Efendi neighbourhoods, the center of Cihangir is divided into two ends. The main arteries of Cihangir are Akarsu and Cihangir Streets.

It has been home to many cultures and social groups from the past to the present, and to many architectures from a large part of the Ottoman period to the Republican period. However, Cihangir stands out not only for its cultural diversity and rich historical texture but also for the challenges that have changed over time.

Figure 1: Cihangir neighbourhood/ Beyoğlu
Source: https://beyoglu.bel.tr/beyoglu/fotograflarla-beyoglu/

Figure 2: View from Cihangir/ Beyoğlu, İstanbul
Source: https://tr.wikipedia.org/wiki/Cihangir,_Beyo%C4%9Flu

Figure 3 : Street view from Cihangir/ Beyoğlu, İstanbul
Source: Photographs taken by the authors.

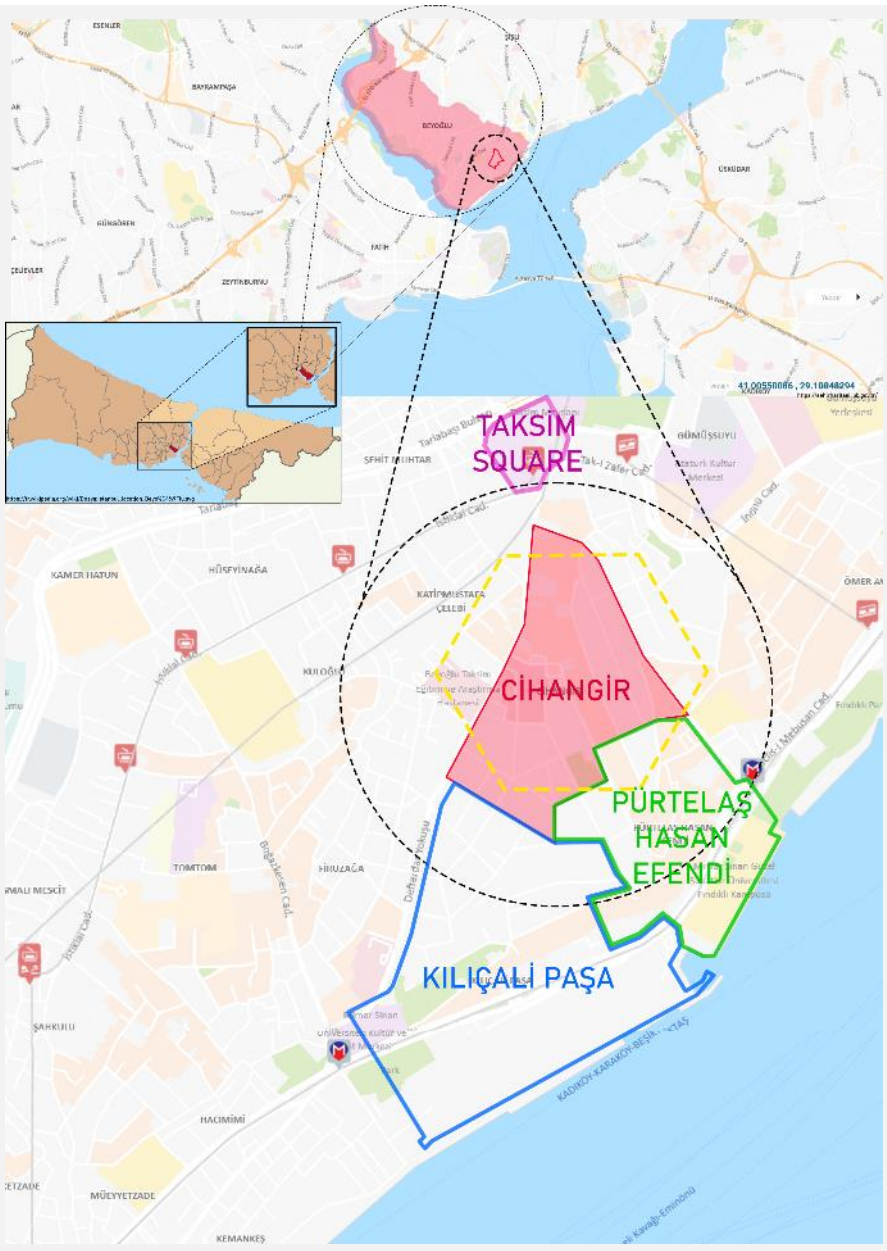


Figure 4: Location of Cihangir neighbourhood in İstanbul/ Turkey
(Source: Satellite image taken from https://kentrehberi.beyoglu.bel.tr/)

Throughout history, as in many other neighbourhoods of Istanbul, Cihangir has experienced frequent fires. Although these fires did not cause major damage, after 1925, with the destruction of the wooden buildings, changes were made in the city plans and a new building texture was created. With the construction of new complex buildings, it became an area where non-Muslim minorities and White Russian immigrants preferred to settle (Yılmaz, 2001). As the development of the fabric continued, it became both a residential area for those working in entertainment venues and a place where luxury apartment buildings developed. This area, which was home to a wealthy class, well-known medical doctors and clinics, has now become a residential area known as the "intellectual neighbourhood" with the revival of İstiklal Street and its surroundings, the developed housing stock, as well as the preference of artists and well-known people as a residential area (Kınacı, 2014).

Change in the urban fabric of Beyoğlu/Cihangir from the 70s to the present

Figure 5: (Satellite images taken from https://sehirharitasi.ibb.gov.tr/)

Today, with the changing of urban structure and population growth, the problem of accessibility has emerged. The daily life axis of the neighbourhood, which is located on steep slopes, makes accessibility even more difficult. During field observations, the lack of stairs and resting areas was evident. The difficulties experienced in Cihangir are not limited to accessibility. The lack of green areas reveals a deficiency in terms of gathering areas in case of emergencies (Güner, 2015). In addition, the abandoned buildings in the area with their narrow streets organic texture, and inadequate street lighting jeopardize citizen and property safety.

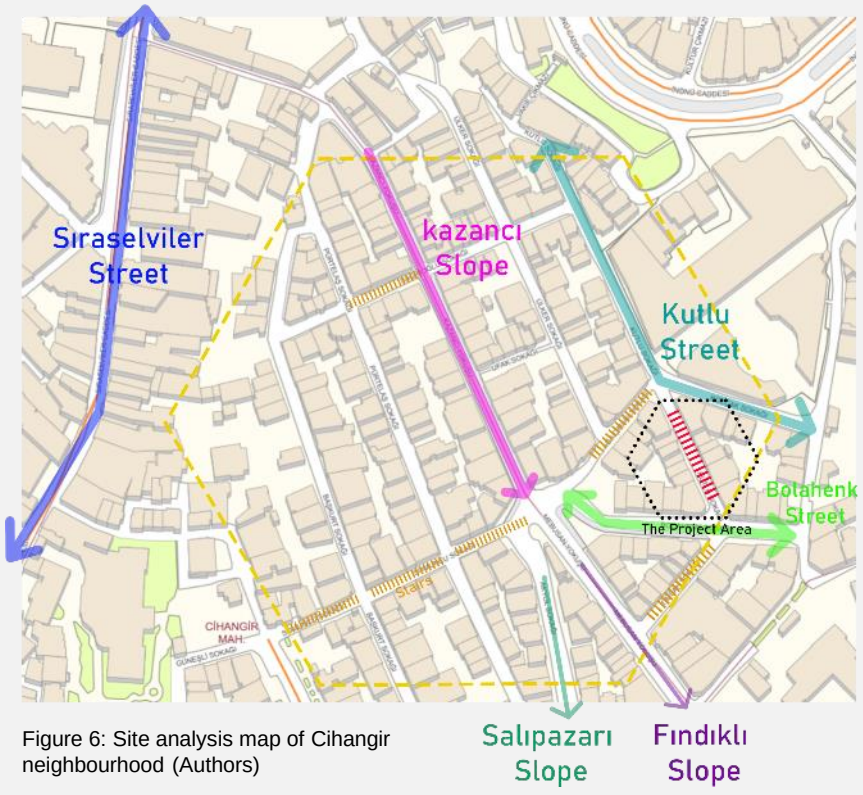


Figure 6: Site analysis map of Cihangir neighbourhood (Authors)

At this point, the "Stairway to Accessibility" project sheds light on this area. Addressing the challenges of Cihangir's steep staircases, the project includes elements such as seating, landscaping, and billboards promoting art, aiming not only for physical access but also for social interaction and safety. The paper discusses how Cihangir can be made more livable in the context of urban connectivity by examining its historical fabric and challenges from the past to the present. It explores and evaluates how the project can contribute to making Cihangir and its surroundings a more accessible, vibrant, and high-quality of life urban space.

CONCEPTUAL PROCESS, PROCEDURE AND SCHEMATIC

This study uses urban acupuncture techniques to revitalise cities through strategic planning and design. Urban acupuncture is a strategy that focuses on activating and enhancing the functionality and significance of a city or area through the implementation of small, subtle, and lightweight design interventions. It leverages the collective energy of communities to address urban voids, resulting in benefits for both society and the environment (Lerner, 2014). These interventions, often on a small scale, have the potential to trigger significant urban transformations on a larger scale, with the primary goal of improving the quality of life for citizens through specific, targeted improvements. These "acupuncture points" within urban areas act as connectors to local knowledge, fostering a closer relationship between modern society and nature (Casagrande, 2020).

In line with the urban acupuncture approach, site visits were conducted in the Cihangir neighbourhood of the Beyoğlu district. These visits aimed to identify deficiencies and issues in the pedestrian pathways most commonly used by residents and daily visitors. These problems have arisen due to the ongoing developmental processes in the region.

The most prominent of these issues is the shortage of green spaces (see Figure 2). In Cihangir, there is only one park, Cihangir Park, which serves as a disaster and emergency gathering area for the public. Given the neighbourhood's size and population, it is evident that Cihangir Park would be insufficient in an emergency and would not meet urgent needs.

During the area's designation as an urban housing development site and its subsequent development, the availability of places where children and elderly residents can spend their leisure time is also limited due to the lack of green space. Additionally, the lack of adequate parking spaces in the region has led to vehicles being parked along roadsides and in dead-end streets.

Furthermore, Cihangir's steep terrain necessitates the use of numerous steep and unsafe staircases by pedestrians traveling between Taksim Square or Sıraselviler Street and Fındıklı and Tophane (see Figure 3). The primary issue with these staircases is the absence of sufficient handrails and resting areas during the descent, which is especially challenging due to the steep slope.

One of the most significant challenges encountered when visiting the region is that the neighbourhood's organic layout, characterised by narrow streets and alleys, often confuses both local and foreign tourists who are unfamiliar with the area. These individuals frequently find themselves on dead-end streets and become disoriented. For those who do not use online maps on their smartphones, there are no information boards to guide their location or direction.

Moreover, security is a pressing concern in the region due to the presence of many abandoned residential buildings, inadequate street lighting, and the absence of security cameras. These factors pose a risk to the safety of both life and property for local citizens.

In summary, the urban acupuncture approach highlights the need to address issues such as the lack of green spaces, parking limitations, unsafe staircases, navigational challenges for tourists, and security concerns stemming from abandoned buildings and insufficient lighting. Addressing these issues is crucial to enhancing the overall quality of life and safety within the Cihangir neighbourhood.

SITE ANALYSIS

Beyoğlu Cihangir Population

3.759

Population Density

339,91 person/km2

The population of Beyoğlu, Cihangir is 3,739 people with a population density of 339.91 people per square kilometer.

Number of Dwellings

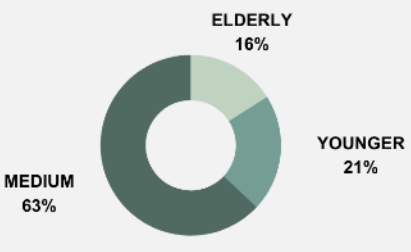
2.601

Household Density

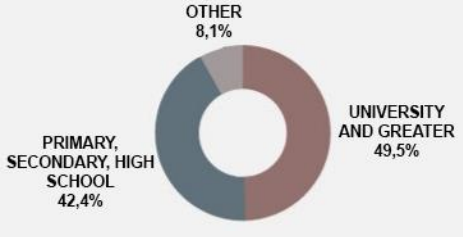
569

The number of dwellings in the area is 2,601, indicating a relatively high residential capacity. With a household density of 569, it is evident that the area accommodates a substantial number of households, reflecting a densely populated residential environment.

Old/young ratio of Cihangir neighbourhood



Educational status rate of Cihangir neighbourhood



Source: https://www.endeksa.com/tr/analiz/istanbul/beyoglu/cihangir/demografi

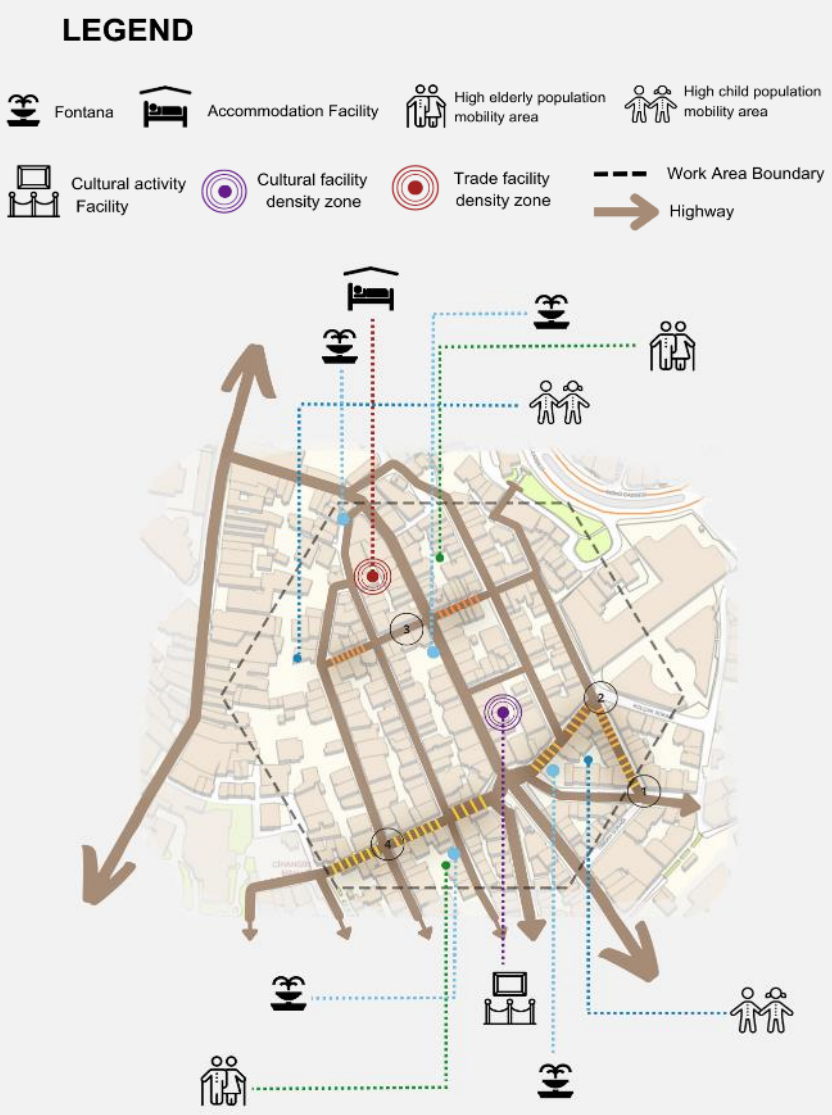


Figure 7: Site analysis of Cihangir neighbourhood

Figure 8: Photos of Cihangir neighbourhood

METHOD / PROCEDURE

The workspace in Cihangir holds significant potential for urban acupuncture applications that create sustainable communities and environments through small-scale interventions, fostering positive changes in the area. This study aims to propose an approach addressing various issues and challenges within the locality by prioritising concepts such as sustainability, participatory planning, equal opportunities, and accessibility, which align with the urban acupuncture principles outlined in the table below.

The region's primary issues and potentials were identified through various socio-economic analyses, built environment studies, and literature reviews. In terms of the study's methodology, it predominantly comprised built environment and socio-economic analyses, a local perspective survey, observations, and a literature review. Initial analyses were conducted using GIS software and technical procedures, with input from residents in the area, amalgamating and refining issues identified through interviews. Supported by a comprehensive literature review, these investigations and findings were meticulously detailed. All visual assets in the paper were created using Photoshop. In the final stage, the workspace and project modeling were prepared using CAD softwares.

Issues identified include lack of green spaces, unsuitable staircases for children and the elderly, inadequate parking facilities, and security concerns. In this context, the prominence lies in strategically addressing these issues through the principles of urban connectivity and providing proposed solutions.

PROCESS	Methods and Techniques	Data Sources
1. Data Collection	• Built Environment Analysis • Socioeconomic Analysis • Surveys and Observations	• Map and GIS Data • Social and Economic Data • Survey Participants
2. Problem Identification	• Data Analysis • Field Investigations • Literature Review	• Analysis Results • Observations & Interviews • Academic Resources
3. Solution Suggestions	• Urban Connectivity Principles • Strategic Approach	• Project Models • SketchUp and AutoCAD • Visual and Written Documentation

EXAMPLES OF APPLIED PROJECTS

1- Music Staircase

Figure 9: (Music staircase project images taken from https://bigsee.eu/music-staircase-in-pruscakova-street-sarajevo/)

BIG SEE Architecture Award 2018- Winner "Music Staircase" in Pruščakova Street, Sarajevo is an example of the urban acupuncture we are trying to do in our design project. In this project, the staircases used in the sloping terrain are intended to act as a supportive set against landslides, while also incorporating design elements. If the example is analyzed, firstly, benches made of recyclable materials are positioned for people to rest on the stair landings. At the same time, information boards have been placed where people can read the life stories of the well-known artists of the region and listen to the music, they have made to enter the time while resting on these benches.

2- Learning Stairs

Sevastopol School District

Roosevelt High School

Hildreth Elementary School, Harvard, Mass

Figure 10: Examples of learning stairs applied to different areas in different schools from different countries

"Learning stairs" is another project with a similar concept that we have planned in our Urban acupuncture project. This project aims to create meeting places where students can socialize by re-functioning the stairs in various places that can be found in a school. As can be seen from the pictures, seating areas have been created with different surfaces depending on the length of use, including the use of wood, which is an organic material, and separated from normal stairs in terms of shape, size, and texture. The main purpose of creating these areas is to instill a sense of community in students, to encourage them to co-operate, and to create an environment where they can develop their creativity.

PROJECT FINDINGS

DESCRIPTION

In Istanbul's intellectual district of Cihangir, the presence of steep stairs and slopes, as indicated in the preceding section's area analysis, is a prominent feature. These stairs serve as both necessary and often the shortest routes for residents to navigate between locations. The steep stairs and slopes present challenges to many citizens and urban planners (see Figure 6). However, urban acupuncture initiatives provide an opportunity to transform these areas from issues into unique spaces that offer possibilities. Furthermore, these areas hold the potential to address problems such as the lack of green spaces, security issues, and inadequate lighting, all of which were identified through the analyses conducted in Cihangir.

This project introduces a comprehensive urban acupuncture proposal that aims to create equitable opportunities for all individuals, with a particular focus on the elderly and children. The proposal leverages the existing cultural and artistic infrastructure in Cihangir. The project is structured around three core elements: seating installations, landscaping features, and art promotion billboards. By combining these elements, the objective is to establish inclusive, sustainable, educational, and communal spaces for society.

Figure 11: Photos taken by authors

1- SEATING ELEMENTS- IMPROVING EQUALITY OF OPPORTUNITY AND SOCIAL INTERACTION

An essential component of the proposed project involves the integration of seating elements within the steep staircase areas. This approach aims to ensure equal access and utilisation for all members of society. It provides resting points where citizens can pause during their journeys, enabling them to engage with their urban surroundings while promoting social interaction The presence of comfortable seating in the stair areas facilitates moments of respite and relaxation for elderly citizens, allowing them to catch their breath.

Moreover, the introduction of seating elements transforms the stairwells from being constraining and nonfunctional spaces into vibrant hubs that serve as social centers for the community. This inclusive and egalitarian intervention encourages the reduction of disparities in urban experiences among different groups and fosters social cohesion that aligns with the unique character of Cihangir.

2- LANDSCAPE WORKS - CREATING SUSTAINABLE AND GREEN ENVIRONMENTS

The project proposal also includes comprehensive landscape designs that will create a solution to the insufficient green space problem in Cihangir. It provides sustainable environments for citizens as well as regulating the aesthetics of the region by offering landscaped and innovative green spaces. With sustainable and green landscape design, benefits such as improving air quality and temperature regulation are also provided. In addition, by integrating nature into urban designs, it helps citizens develop a sense of community by creating spaces where citizens can be actively present and interact with other people. With this element, healthy and well-being experiences are provided for citizens.

3- ART PROMOTION BILLBOARDS - PROVIDING INFORMATIVE AND ENTERTAINING URBAN EXPERIENCES

The first proposal is to include billboards as a significant element in the project, aiming to enhance and personalize citizens' experiences while exploring the city. These billboards seamlessly integrate with the overall structure of Cihangir, a location known for hosting important artistic and cultural events in Istanbul. They serve as a central point within the area.

These billboards operate as informative displays, presenting upcoming art events to the public, offering insights into Cihangir's cultural and artistic heritage, and providing a wealth of educational and up-to-date information. By doing so, they not only inform citizens about current exhibitions, concerts, and activities but also shed light on the artists who once resided in the region and the contributions they made to the arts.

In addition to these, with this promotional work, citizens are encouraged to create their own urban experiences and to take more ownership of the urban environment by interacting with these information boards.

4- MATERIAL SELECTION- GENERAL FEATURES OF DESIGN ELEMENTS

SELECTION OF SEATING ELEMENT

It is important to take a closer look at the urban furniture to be used in the project, as can be seen in the Figure 12, the seating benches to be used in the planning area vary in different types and sizes. Considering the main purpose of this diversity, the targeted user group, the change in the materials to be used is important in terms of ease of use and safety. In particular, the project aims to prioritise the use of children and elderly individuals and highlight the type of materials to be used in terms of seating benches planned to be selected as urban furniture. In order to choose the material to be used in benches, it is necessary to examine the user groups that are expected to be the most intensive users of the benches one by one. In this regard, if the use of benches for elderly individuals is examined, when choosing furniture for the ergonomics of use by the elderly, the benches should have soft and curved surfaces. In addition, it should be resistant to all kinds of climatic conditions and have non-slip floor coverings, which will prevent physical accidents that may arise from sitting benches during the use of elderly individuals. For this purpose, it should contain non-slip and durable arms and supports that the elderly can hold comfortably. Likewise, material quality is of great importance when choosing urban furniture for the safety of child users. One of the basic requirements is that the furniture has the durability to carry the weight of children and not be damaged by all kinds of children's play activities. In the selection of urban furniture, the requirements of both user groups should be met, while at the same time, in terms of environmental sustainability, it should be produced from materials that will not disturb the environment and the user. Considering all these requirements, it is necessary to choose a material that reflects the unique identity of the city and prioritises user comfort. In this context, the material to be chosen should be selected from recyclable materials with wooden components. In this way, the right material selection will be made both in terms of user safety and in terms of sustainability by choosing long-lasting and recyclable materials by avoiding the use of plastic-based materials.

Figure 12: 3D Modeling Created by Authors with Sketchup

SELECTION OF INFORMATION BOARDS

Information boards planned in the design are another important component of acupuncture practice in the urban work area. Information panels added to the design for stair users to better understand the historical texture and artistic values of the place they are in while experiencing the urban environment are basic structural features that must be to improve user experience and ensure integrity with the urban texture. In order to meet these features, it must be made of long-lasting material that will not be affected by climatic conditions. Therefore, in terms of using environmentally friendly materials that are compatible with the urban texture and sustainable, it should be preferred to use wood-based recyclable materials as it is preferred in seating benches. In this way, harmony will be achieved in the material texture of the urban furniture in the planned area.

SELECTION OF INFORMATION BOARD ELEMENT

Another problem in the study area is lighting. Cihangir urban development features narrow and steep streets. Another difficulty brought by these narrow and steep streets is that homeowners feel uncomfortable with the excessive and disturbing illumination of their houses coming from the street at night due to the positioning of street lighting. Considering the lengths of the lighting poles currently in use in the study area and the proximity of the existing residences to these lighting poles, it was examined that the rays emitted from the street lighting were positioned at angles that would directly expose and disturb the existing residences. To solve this problem and increase the quality of life of the neighbourhood residents living in the current study area, the length of the existing lighting elements should be shortened and adjusted to illuminate only the steps and street furniture. In addition, the information boards planned need to include lighting directed in a way that ensures walking safety for pedestrians who will use the street. In this way, thanks to the lighting elements used to illuminate the information panels, the decreasing illumination situation resulting from the shorter lighting elements will be brought to a sufficient level and multi-functionality will be provided to the information board.

Figure 13: 3D Modeling Created by Authors

SELECTION OF LANDSCAPE ELEMENT

Urban landscape elements, which are one of the important elements in urban planning, are among the most important elements used to improve the aesthetic appearance of a modern city, to support improving the air quality of cities and to create shadow areas. Landscaping, which is the last step of urban acupuncture application, is very important for improving urban life and creating an environment where residents can breathe in the urban environment. For this purpose, in order to make landscape planning of the stairs in the planning area, the first step is to preserve the original green texture of the neighbourhood by preserving the healthy trees in the study area. If these trees have any problems, they need to be identified and treated. A safe environment should be created by pruning trees that could put pedestrians at risk in a way that ensures pedestrian safety. Secondly, in order to set an example for sustainable urban landscape work, design studies using local plant species should be implemented in a way that supports soil health and is compatible with the urban texture. Choosing tree and bush formations that will not block the sunlight that the residential facades facing the street should receive on both sides of the staircase street will enable the residents of the neighbourhood to benefit from sunlight in the most efficient way. The last important thing to do when choosing this plant selection is that children and elderly individuals who are planned to use the street more intensively should be positioned appropriately so as not to restrict their movements in the urban space. When all these steps are implemented, the integrity of the staircase street design will be ensured and the design will be completed.

Figure 14: 3D Modeling Created by Authors

MASTERPLAN - MODELLING OF THE PROJECT PROPOSAL

Figure 15: 3D Modeling Created by Authors

CONCLUSION

The proposed urban acupuncture application for the steep staircases within the Cihangir district addresses several existing urban space challenges. The project encompasses three core elements: seating units, landscaping, and art promotion billboards. The primary objectives of this project are to establish inclusive, sustainable, educational, and communal environments that cater to all individuals and diverse societal groups.

Upon implementation, this project has the potential to transform the steep stairs in Cihangir from underutilized, problematic spaces into opportunities to address issues related to security, the scarcity of green areas, and the insufficiency of public amenities. Innovative, integrated designs can effectively contribute to problem-solving while aligning with the unique character of the region.

The project, developed within the framework of the urban acupuncture approach in this study, represents a crucial tool for enhancing Cihangir and its vicinity. It aims to create more accessible, vibrant, and higher-quality urban spaces for the local population, ultimately improving the overall quality of life in the area.

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REFERENCES

Ankageo, P. (n.d.). Beyoğlu Kent Rehberi. Beyoğlu Kent Rehberi. Retrieved from: https://kentrehberi.beyoglu.bel.tr/

Beyoğlu Senin | Şehir Planlama Müdürlüğü. (2022). Şehir Planlama Müdürlüğü. Retrieved from: https://sehirplanlama.ibb.istanbul/beyoglu-senin/

Beyoğlu - Vikipedi. (2021). Beyoğlu - Vikipedi. https://tr.wikipedia.org/wiki/Beyoglu

Casagrande, M. (2020). From Urban Acupuncture to the Third Generation City. Nature Driven Urbanism. Springer, Cham.

Cihangir, Beyoğlu - Vikipedi. (n.d.). Cihangir, Beyoğlu, Retrieved from: (https://tr.wikipedia.org/wiki/Cihangir,_Beyoglu)

Horne, W. & Timpano, A. (2022). Fostering 21st-century learning in a historical community. *The Journal of The American Institute of Architects*. Retrieved from: (https://www.architectmagazine.com/design/firm-profile/inside-out-fostering-21st-century-learning-in-a-historical-community)

Jooshani, B (2021). Sağlıklı Kentler için atıl Kamusal Mekanları Dönüştürmek: Kentsel Akupunktur Yaklaşımı (PhD dissertation, Uludag University, Türkiye).

İstanbul Şehir Haritası. (n.d.). İstanbul Şehir Haritası. https://sehirharitasi.ibb.gov.tr/

Lerner, J. (2014). Urban Acupuncture: Celebrating Pinpricks of Change that Enrich City Life. Island Press.

Miron Construction | Sevastopol School District Addition and Renovations. (n.d.). Miron Construction. Retrieved from: https://miron-construction.com/project/sevastopol-school-district-addition-and-renovations/

“Music staircase” in Pruščakova street, Sarajevo. (2018). BIG SEE. Retrieved from: https://bigsee.eu/music-staircase-in-pruscakova-street-sarajevo/

Roosevelt High School | Bassetti Architects | Archello. Retrieved from: (n.d.). Archello. https://archello.com/fr/project/roosevelt-high-school

Tarihçe - Beyoğlu Belediyesi. (n.d.). Beyoğlu Belediyesi. https://beyoglu.bel.tr/beyoglu/tarihce/

Turgay, T. (2018). SÜRDÜRÜLEBILIR MIMARI VE YEŞIL TASARIM ILE KENTSEL YENILEME. *İleri Teknoloji Bilimleri Dergisi,* 7(1), 29-41.