

ISTANBUL TECHNICAL UNIVERSITY ★ GRADUATE SCHOOL

**URBAN ACUPUNCTURE AS A STRATEGIC METHOD TO IMPROVE CITIES
IN TERMS OF BLUE-GREEN INFRASTRUCTURE**



M.Sc. THESIS

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Department of Landscape Architecture

Landscape Architecture Programme

DECEMBER 2022

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İSTANBUL TEKNİK ÜNİVERSİTESİ ★ LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ

**MAVİ-YEŞİL ALTYAPI AÇISINDAN ŞEHİRLERİ İYİLEŞTİRMEK İÇİN
STRATEJİK BİR YÖNTEM OLARAK KENTSEL AKUPUNKTUR**

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To my family,



FOREWORD

I am grateful for the support and the patience of my thesis advisor Assoc. Prof. Dr. Melih BOZKURT, who guided me throughout this process. I am thankful to my mother, brother and sister who have always supported me in my life. I am grateful to Serhat AL, who has always motivated, encouraged and supported me. I am thankful Melike Tuğçe ŞİMŞEK, who supported me and encouraged me despite the difficulties I faced during my move to Oxford. Thanks to my friends who are always by my side.

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ABBREVIATIONS

BGI	: Blue Green Infrastructure
LPAC	: The London Planning Advisory Committee
LUB	: Barcelona Urbanism Laboratory - Laboratori d'Urbanisme de Barcelona
SGT	: Sustainable Global Technologies Center
BRT	: Bus Rapid Transit
AUPRM	: The American urban parks and recreation movement
SI	: Social Integration
PBUI	: Potential Bottom-up Impact
DCLG	: Department for Communities and Local Government



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URBAN ACUPUNCTURE AS A STRATEGIC METHOD TO IMPROVE CITIES IN TERMS OF BLUE-GREEN INFRASTRUCTURE

SUMMARY

In developing cities, the growth of building areas leads to changes in the urban fabric and a decrease or threat to the availability of open spaces, a basic necessity for living. Urban form greatly influences individuals' way of life and is therefore related to ecological, economic, and social issues. In contemporary cities, urban expansion occurs through the development of public spaces, both on the periphery and within the interior. To address the overdevelopment and degradation of public spaces by building stock, research into sustainable and circular space production and development of models is necessary.

The complexity of cities' growth impacts the design of open spaces, affecting the quality of life. With an increase in complex parameters, open space design becomes increasingly important in maintaining or improving the quality of open spaces in the face of infrastructure changes and complex relationships.

The concept of urban acupuncture was first put forward in the 1960s and has since been applied in various physical forms. The potential for its use in improving cities is widely recognized, especially in light of the numerous actors and problems that exist in urban environments and make it difficult to implement large-scale improvement projects. The approach of urban acupuncture offers a solution-oriented, immediate intervention method to address these challenges.

This research aims to explore the full potential of urban acupuncture as an innovative and strategic method for enhancing cities. The focus is on investigating the benefits of combining urban acupuncture with landscape design to improve both the blue-green infrastructure and social context of cities. The study aims to analyze the improvement potential of blue-green infrastructure in urban areas through the use of the acupuncture method. Urban acupuncture offers a unique opportunity to tackle the complex challenges of modern cities. It provides a means of implementing small-scale, targeted interventions that can have a positive impact on the larger urban environment. By examining the relationship between urban acupuncture and landscape design, this research seeks to demonstrate the positive impact that this approach can have on cities and their residents. The goal is to advance our understanding of the role that urban acupuncture can play in creating more livable, sustainable, and resilient urban environments.

The research was conducted in two phases. In the first phase, relevant topics such as urban acupuncture, blue-green infrastructure, and social context were analyzed conceptually. In the second phase, case studies were conducted and evaluated. The literature review conducted in the first phase helped to determine the criteria used to select and evaluate the case studies within the context of the subject. These criteria were: scale(1), intervention(2), duration(3), user group(4), blue-green infrastructure impact(5), potential bottom-up impact (6).

The second phase of the project involved comparative case studies and evaluations. The projects were first analyzed using a matrix based on the criteria established in the literature review from the first phase. A rating scale was developed based on the concept diagram derived from the literature research. As the evaluation criteria were both qualitative and quantitative, the qualitative elements were made quantifiable. The rating scale was designed to take into account the scale of the projects, the

impact on the blue-green infrastructure (BGI), duration, and potential bottom-up impact(PBUI). A cumulative evaluation trace was created, allowing for the evaluation of multiple project parameters with a single graphic representation.

The projects were evaluated according to the criteria defined by the rating scale, revealing relationships between the different project parameters. Bilateral or triple relationships were identified and interpreted between the project criteria and the scores it received. This allowed for the assessment of the impact of urban acupuncture on blue-green infrastructure and social context using various relevant parameters.

The concept of "urban acupuncture" in landscape design envisions a comprehensive and adaptable system that addresses issues within a city's infrastructure through design. It combines both aesthetic and functional elements to enhance public spaces and address problems such as storm water management and comfort. It is a multi-faceted approach that effectively tackles multiple challenges in a tactical and strategic manner.

In today's constantly growing cities, solution-oriented, practical and applicable projects using the approach of urban acupuncture have the potential to create more livable public spaces compared to long-term projects that may take years to complete. Urban acupuncture interventions offer practical and cost-effective solutions that enable and expedite the project implementation process.

MAVİ-YEŞİL ALTYAPI AÇISINDAN ŞEHİRLERİ İYİLEŞTİRMEK İÇİN STRATEJİK BİR YÖNTEM OLARAK KENTSEL AKUPUNKTUR

ÖZET

Çeşitli konulara sahne olan kentlerdeki nüfus ve yapılaşmanın artması, kamusal alanların niteliğinin azalmasına veya bu alanların yok olma tehlikesiyle karşı karşıya gelmesine sebep olabilir. Bu durum, gelişmekte olan kentlerde yapı stoklarının artmasıyla kent dokusunun değişmesi ve temel yaşama ihtiyaçlarının karşılanmasına yönelik açık alanların sayısının azalmasına sebep olur. Kentsel büyüme, doğru politikaların izlenmemesi veya plansız büyümenin sonucu olarak, ekolojik, sosyal ve ekonomik sorunları tetikleyebilir ve açık alan konforunu azaltır. Günümüz şehirlerinde, kentsel büyüme kamusal mekânların işgaline neden olur. Bu nedenle, sürdürülebilir ve döngüsel mekân üretimi modellerinin araştırılması ve uygulanması gerekir.

Kentsel büyüme ve yapılaşma süreci, kentteki açık alanların niteliklerini olumsuz yönde etkiler. Kentlerde bulunan bireylerin yaşamı kent formu ile çok yakından ilişkilidir. Dolayısıyla, kent formu ile ilgili ekolojik, ekonomik ve sosyal konular da etkilenir. Günümüz şehirlerinde kentsel büyüme, kamusal alanların yapı stokları tarafından işgaline dayanır ve bu işgal niteliksizleşmeye yol açabilir. Açık alan tasarımı, kentsel büyümenin etkisi altında kalmış ve kompleks hale gelmiştir. Bu nedenle, açık alan tasarımı alanındaki tüm aktörler, gelecekteki değişimlere açık olarak kentsel tasarım yöntemleri geliştirmelidir. Altyapı ve kentsel büyümenin etkisi, açık alan tasarımı da etkiler ve bu etki yaşam kalitesini de etkiler. Bu nedenle, açık alan kalitesini korumak ya da artırmak için farklı tasarım yöntemlerinin geliştirilmesi çok önemlidir.

Tez araştırmasının amacı, şehirlerin mavi-yeşil altyapı açısından iyileştirilmesini hedeflemektedir. Bunun için, kentsel akupunktur gibi yenilikçi ve stratejik bir yöntem incelenmektedir. Çalışma kapsamında, kentsel akupunkturun peyzaj tasarımı ile ilişkisi ve bu ilişki sonucu kente ve kentliye sağlanabilecek faydalar araştırılmıştır. Akupunktur yöntemi sayesinde, kentlerdeki mavi-yeşil altyapı sistemlerinin iyileştirilmesi potansiyelleri üzerine yoğunlaşmıştır. Çalışmanın sonuçları, şehirlerin sürdürülebilir ve yaşanabilir hale getirilmesine katkıda bulunabilecektir.

Tez çalışması, araştırma sorularını yanıtlamak amacıyla iki aşamalı olarak planlanmıştır. İlk aşamada, kentsel akupunktur, mavi-yeşil altyapı ve sosyal bağlam gibi ilgili konular kavramsal olarak incelenmiştir. İkinci aşamada vaka çalışmaları incelenip, karşılaştırmalı vaka çalışması değerlendirmesi yapılmıştır. İlk aşamadaki literatür çalışması sonuçları, ikinci aşamaya girdi olarak kullanılarak, vaka çalışmalarının hangi kriterlere göre seçileceği ve nasıl değerlendirileceği belirlenmiştir. Bu belirleyici kriterler şunlardır: Ölçek (1), Müdahale (2), Süre (3), Kullanıcı Grubu (4), Mavi-Yeşil Altyapı Etkisi (5), Potansiyel Aşağıdan Yukarıya Etki (6). Bu grupta, vaka çalışmalarını teori ve güncel konular bağlamında değerlendirmek amacıyla kentsel akupunktur kavramından bağımsız olarak değil, doğrudan teori ve geçmişten günümüze değerlendirmek üzere yapılmıştır.

Projenin 2. aşaması, karşılaştırmalı vaka çalışmaları ve değerlendirmelerine odaklanmaktadır. Bu aşamada, uygulanmış olan mevcut projeler üzerinden vaka çalışmaları yapılmıştır. Vaka çalışmaları için öncelikle belirlenmiş olan kriterler doğrultusunda bir matriks oluşturulmuş ve bu matriks üzerinde incelenmiştir. Sonrasında, oluşturulmuş bu matriksler doğrultusunda bir değerlendirme ölçeği geliştirilmiş ve bu ölçek her projeye uygulanmıştır. Değerlendirme ölçeğinin oluşturulması sırasında, literatür araştırması sonucu elde edilen kavram diyagramından yararlanılmıştır. Böylece, mevcut projeler kentsel akupunktur bağlamında objektif bir şekilde değerlendirilebilmiştir.

Genel değerlendirme kriterleri hem nitel hem de nicel olduğundan, nitel olanlar belirli ilkelere göre nicel değerlendirmeye uygun hale getirilmiştir. Ardından 'düşük-orta-yüksek' şeklinde basit bir analitik değerlendirme yapılmıştır. Böylece üç aşamalı bir ortak değerlendirme ölçeği oluşturulmuştur. Bu yöntem karşılaştırmalı durum çalışması için uygun bulunmuş, grafikten okumayı ve karşılaştırmayı kolaylaştırmıştır. Projelerin değerlendirme ölçeği, mavi-yeşil altyapı üzerindeki etkisi (BGI), süresi ve olası aşağıdan yukarıya etkisi dikkate alınarak hazırlanmıştır. Her bir değer için tek seferde okunabileceği genel bir değerlendirme izi oluşturulur. Böylece projenin birden fazla parametresinin değerlendirmesi tek bir grafik ifade ile yapılabilmektedir.

Her projenin oluşan proje lekeleri birbirinden farklıdır. Böylece aynı anda 20 proje birden farklı parametrelere göre değerlendirilip karşılaştırmaya elverişli hale getirilmiştir. Değerlendirme skalasının belirlediği kriterler doğrultusunda incelenen projelerde, projelerin farklı parametreleri arasındaki ilişkiler ortaya çıkmıştır. Proje kriterleri ve aldığı değerler arasında ikili veya üçlü ilişkiler kurulup yorumlanmıştır. Böylece kentsel akupunkturun mavi-yeşil altyapıya etkisi çeşitli ilgili parametrelerle değerlendirilmiştir.

Peyzaj altyapısı ve akupunktur ilişkisinde sürenin ve müdahalenin önemli ve etkili olduğu görülmüştür. Şehirlerin altyapısını iyileştirecek potansiyeli olan akupunktur projelerinin, iyileşme süresi için zamana ihtiyacı vardır ve müdahalenin şekli önemlidir. Örneğin bir dere kenarı cep parkı yenileme projesinin mavi-yeşil altyapıya olan katkısı, yağmur suyu yönetimiyle ve değişen iklimlerle çevreye sağladığı konforla ölçülebilir. Bu sebeple müdahale yapıldıktan sonra farklı iklimlere ve çeşitli koşullara maruz kalan projeler ancak uygun şekilde değerlendirilebilir. Aynı zamanda akupunktur müdahalede süre ile doğrusal ilişkisi olan bir diğer parametre de sosyal etkidir. Kentsel akupunktur müdahaleleri sayesinde kentlerde suç oranlarının azalması, refah düzeyinin artması ve sosyal entegrasyonun artması gibi çeşitli olumlu sosyal etkiler gözlemlenmiştir. Örneğin yenileme projesi dahilinde atıl alanların kamuya kazandırılması sonucu oluşan güvenli ortamla suç oranları azalabilir. Bunun için kamunun yenilenen alanı kullanması gibi yeni bir alışkanlığı benimsemesi gerekir ki önceden atıl olan bu alan daha dinamik ve sürekli kullanım sayesinde daha güvenli bir hale gelebilir. Bu durumun oluşması için de belirli bir sürenin geçmesi gereklidir. Aşağıdan yukarıya etki de benzer şekilde süre ile doğru orantılıdır. Akupunktur müdahaleleri ile kentin belirli yerlerinde minimal iyileştirmeler yaptıkça, süreç içerisinde kent genelinde artan bir iyileşme görülmesi mümkündür.

Peyzaj tasarımında "kentsel akupunktur" kavramı, bir şehrin altyapısındaki sorunları tasarım yoluyla ele alan kapsamlı ve uyarlanabilir bir sistem öngörür. Kamusal alanları geliştirmek ve yağmur suyu yönetimi ve konfor gibi sorunları ele almak için hem estetik hem de işlevsel unsurları birleştirir. Taktiksel ve stratejik bir şekilde birden fazla zorluğu etkili bir şekilde ele alan çok yönlü bir yaklaşımdır.

Bu tez ile literatürde kentsel akupunktur ve mavi-yeşil altyapı ilişkisi farklı kaynaklarla zenginleştirilmiş ve kronolojik kavram tanımları incelenmiştir. Kentsel akupunktur yöntemi ile mavi-yeşil altyapının kentleri iyileştirme potansiyelleri araştırılmıştır. Sonraki aşamada ise geliştirilen özgün yöntemle mevcut projeler üzerinden farklı durumların akupunktur etkisi ölçülmüş ve ortak bir paydada karşılaştırılıp tartışılmıştır.

Günümüzde gittikçe genişleyen metropollerde, akupunktur yaklaşımıyla, çözüm odaklı, pratik ve uygulanabilir projeler, tamamlanması yıllar alabilen uzun vadeli projelere göre, daha yaşanabilir kamusal alanlar yaratma potansiyeline sahiptir. Kentsel akupunktur müdahaleleri, proje uygulama süreçlerini kolaylaştırıp hızlandıran, pratik ve ekonomik çözümler sunar.





1. INTRODUCTION

The population growth and increased construction in cities are leading to a decline in the quality of public spaces and even the risk of losing them. With the proliferation of building structures in developing cities, the urban landscape changes, resulting in a reduction of open spaces, which are a fundamental requirement for daily living. According to Hillier (2002), the urban fabric plays a significant role in shaping the elements of urban life and the long-term changes in the city. Moreover, the movement of people within a city is directly linked to the urban form, which is the foundation of the urban system. Unplanned growth and a lack of proper policies often result in ecological, social, and economic problems, reducing the open-space comfort of citizens.

Urban expansion occurs through the utilization of public spaces in both the outskirts and center of cities. As defined by Webster (2007), public spaces are considered as "collectively consumable goods." Over time, it becomes necessary to allocate resources to maintain these spaces and prevent them from deteriorating. As a response to the issue of public spaces being consumed by building structures, it is essential to explore sustainable and circular space production methods and develop new models. Lefebvre (1996) critiques that the concepts of "function," "form," "structure," and others used by architects have not been fully developed and are merely trying to create a sense of meaning through various labels. He states that designers analyze cities only based on their location and not how the inhabitants live and perceive them, which he calls "graphism" and "visualization". Therefore, all stakeholders in the field of urban design need to adopt new techniques in designing public spaces that are adaptable to changes and not just aesthetically pleasing. These designs should not only benefit the present but also the future and the city's inhabitants.

The idea of "urban acupuncture," first proposed in the 1960s and implemented through physical interventions, holds great potential for improving cities at various levels. According to Jaime Lerner (2007), the approach emphasizes the transfer of land ownership to the public and prioritizes community development in urban design through targeted, small-scale interventions. Given the numerous actors and issues present in cities, it can take a long time for improvement projects to be executed. In this context, the acupuncture method provides an efficient solution for emergency interventions aimed at enhancing cities. As cities are considered living organisms, the implementation of acupuncture interventions acts as a catalyst for their ecological and economic development (Casagrande, 2020). Small and medium-sized projects that provide quick and urgent solutions for public spaces can be more effective than traditional urban planning, which is often time-consuming and costly. This approach to crisis management allows for faster and more immediate solutions, rather than disruptions caused by long-term planning. According to the Intergovernmental Panel on Climate Change (IPCC) studies, human activities accelerated climate change. The IPCC's 2021 report, which responds to decades and centuries of data, states that all major components of the climate system are impacted by human activities (IPCC, 2021). In rapidly expanding cities, the loss of public spaces and urban green spaces poses a threat to sociocultural and ecological life, and studies have demonstrated that it also negatively affects the physical comfort of living beings by altering the microclimate in the city. To minimize these damaging effects in urban areas, it is crucial to decrease carbon dioxide emissions and enhance wetlands and green spaces, which function as CO₂ sinks. The implementation of urban acupuncture interventions to improve blue-green infrastructure can serve as a strategic model for city recovery.

1.1 Scope of Research

The research scope is based on the framework of urban acupuncture and encompasses urban design and blue-green infrastructure. The concept of acupuncture, which forms the core of the research, is approached in a manner distinct from its medical usage and studies that apply it in medical context have been excluded from the scope of the study. The use of acupuncture is considered in a metaphorical sense and the research focuses solely on its application in the field of urban design. A research on urban acupuncture has been carried out at the crossroads of urban design and open spaces with blue-green infrastructure. As the infrastructure is a complex subject that involves various professional disciplines, the research focuses specifically on the blue-green infrastructure aspect within the context of landscape and urban design.

1.2 Aim and Objectives

As cities experience growth and become increasingly complex, the factors influencing open space design are growing in number and complexity. With the expanding built environment, it becomes challenging for individuals to access healthy open spaces. This results in a decline in the quality of open spaces or their complete destruction and replacement with new developments. Simultaneously, urban expansion also affects the city's infrastructure, leading to imbalances in the blue-green infrastructure system. These changes have a direct impact on the livability of cities. In this complex landscape, designing open spaces takes on greater significance in preserving or enhancing the quality of these spaces. The purpose of this research is to explore the potential of urban acupuncture as a cutting-edge and strategic approach to enhance cities in terms of their blue-green infrastructure and social environment..

The following research questions have been formulated to achieve the study's objective:

- How does the concept of urban acupuncture relate to landscape design?
- What are the potential benefits of using the urban acupuncture method for cities and citizens in the design of public spaces?
- In what ways can acupuncture interventions contribute to the development of blue-green infrastructure?
- How does the urban acupuncture method function, and what are the parameters that influence its application?

The research has established several objectives in relation to the connection between urban acupuncture and blue-green infrastructure. These objectives are:

- To examine the concept of urban acupuncture and determine its relationship with landscape design.
- To demonstrate the advantages and disadvantages of using the urban acupuncture method in public space design, including its economic, ecological, and social feasibility.
- To study the impact of urban acupuncture interventions on blue-green infrastructure.
- To analyze and evaluate urban acupuncture case studies, and assess the effect of different design elements on acupuncture interventions.

1.3 Study Design

This study employs a mixed research approach incorporating both qualitative and quantitative research methods (Creswell, 2009). The research design (Figure 1) is based on the framework proposed by Bruns et al. (2017). The research design is constructed accordingly, and a roadmap has been created by taking into consideration the research questions, objectives, and methods (Figure 1.1). The framework is established using a study design and data collection methodology, with literature study being utilized for these phases. As sampling, the study of comparative case studies have been used. Consequently, a matrix formulated within the scope of the research was used as data analysis.

The first stage of the research is structured as qualitative and the second stage as quantitative. In the first stage, qualitative research was formed by literature study. Literature research provides an opportunity to examine the relevant keywords and concepts of the research topic in their own context (Flick, 2009). Literature search was conducted within the scope of the concepts of 'urban acupuncture', 'urban open space', 'urban design' and 'blue-green infrastructure'.

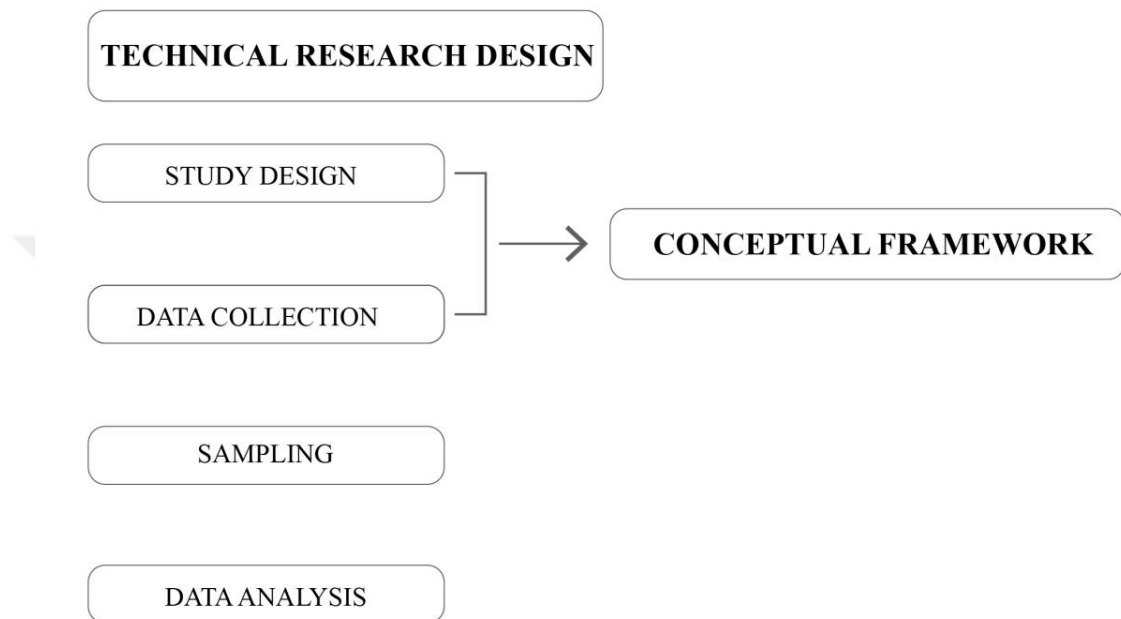


Figure 1.1 : Technical research design method (Bruns et al. 2017).

The literature review provides insight into prior work on the subject and guides future research (Ibid.) and it supports the examination of the research questions, helping to develop the conceptual framework (Brink et al., 2017). Hence, through the study of relevant concepts and keywords, a concept map was created for further investigation in the research.

The quantitative aspect of the research is the second phase, relying on a systematic analytical approach. It was built upon the established concept map and involved a comparative case study. The case study method enables a deeper examination of a specific topic (Brink et al., 2017). Within the scope of the research, this approach was used to investigate the concept of urban acupuncture within the context of relevant subjects. Furthermore by the case study method, the sample is created and also the interpretations of the existing cases are reached (Flick, 2009). Within the scope of the study, a new evaluation method was produced not only for transferring

information, but also for evaluation and comparisons to be made. Therefore, as Flick(2009) mentions, case studies interpretations have been an important stage for research.

As Gerring states, case study is the way of defining instead of only analyzing cases (Gerring, 2004). That's why in the study, case studies enhances the definition of urban acupuncture and also the literature review with its variations and different scopes within urban acupuncture context. Multiple selected case studies increase the depth of the study. Case studies are purposive case studies which are directly contributing research for the aim and research questions, they are more to the point cases (Brink et al., 2017). While the number of case studies are increasing, this method has been deemed appropriate in order not to go beyond the scope of the subject. A workflow constructed by considering the research questions, objectives and methods, as a roadmap (Figure 1.2). For data collection and research design, keywords and general context created accordingly comprehensive literature search and the conceptual framework of urban acupuncture. In the first stage, a chart was created based on the definitions of the concept of "urban acupuncture" only over the years. The research of the concept of blue-green infrastructure in landscape architecture is also the part of the literature review. In the literature study, after the concepts of urban acupuncture and blue-green infrastructure have been handled separately, the definitions and keywords obtained grouped and gathered under various headings. A concept chart created by matching the definitions of different people with these titles. The parameters according to the definitions obtained at this stage play an important role in evaluation criteria created for the comparative case studies in the second part of the research.

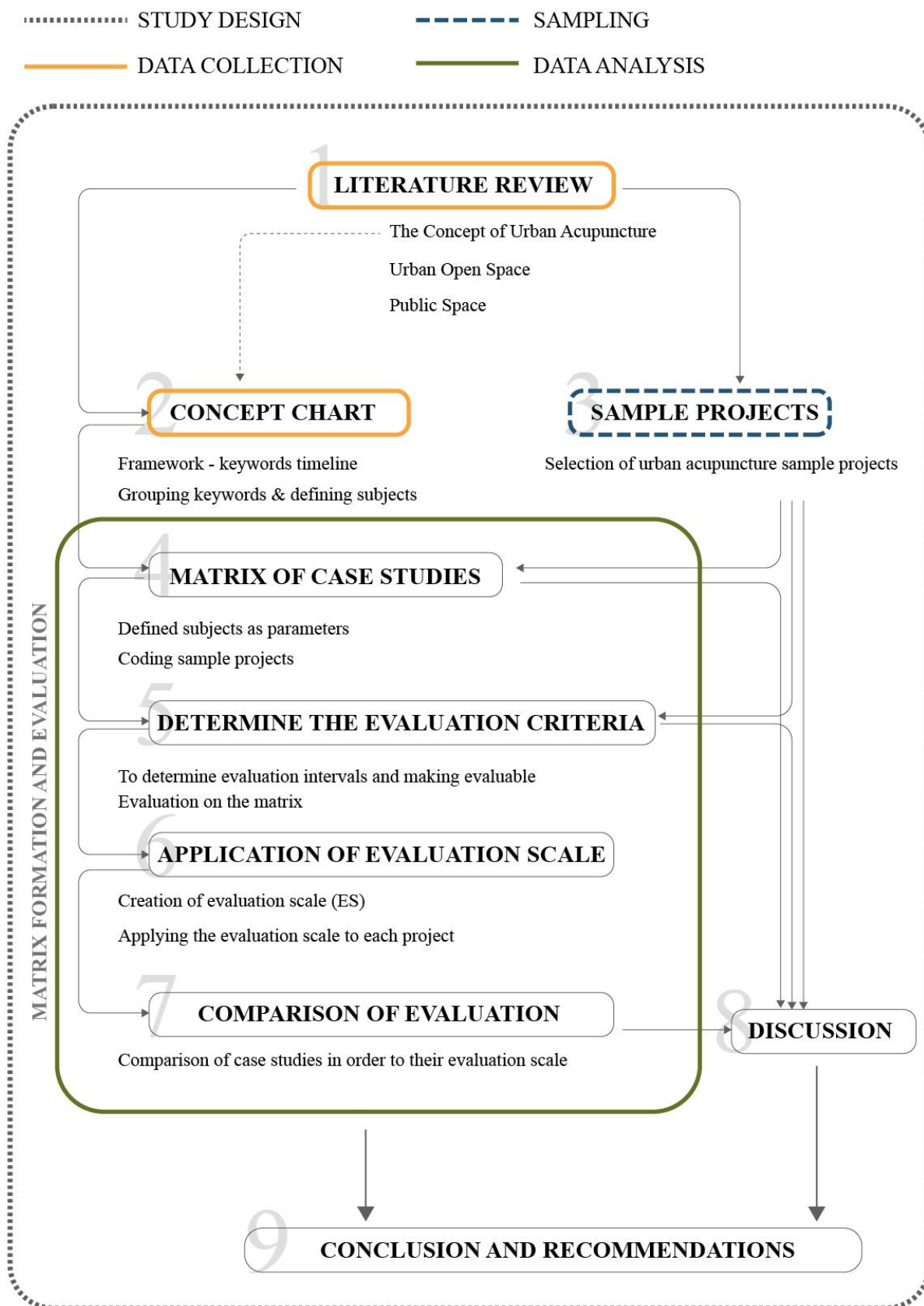


Figure 1.2 : Work of flow.

1.3.1 Comparative case studies

The second part of the research consists of case studies. The case represents an enhanced subjectivity as a result of the development of certain forms of knowledge, behaviour, and perception (Bell, 2005). Case studies can be used to describe or reconstruct a case (Ibid.). Therefore, in this research case study method acts as the main playmaker to draw framework of urban acupuncture and blue-green infrastructure relation. Moreover, while reaching the findings between different cases with the case study, its impact on the wider perspective of the discipline can also be evaluated (Brink, Bruns, Tobi, & Bell, 2017). Accordingly, it is a suitable method to evaluate the potential of urban acupuncture to improve cities in blue green infrastructure and social context from a broad perspective. A total of 20 urban acupuncture projects from different geographies and with different scopes were examined.

1.3.1.1 Matrix formulation

The subjects in the concept diagram obtained after the literature review form the ‘evaluation parameters’ for each of the projects at this stage. The selected projects are evaluated with these defined parameters. In order to evaluate different projects on the same plane, a matrix system was created with the order of the projects and parameters. On the matrix system the list of projects listed on y-axis and the parameters located on x-axis (Figure 1.3).

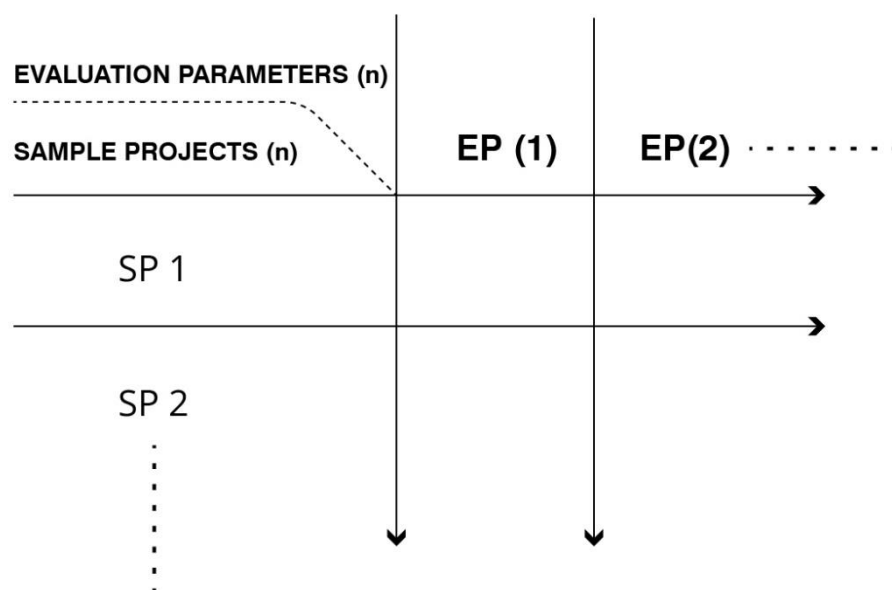


Figure 1.3 : Matrix of evaluation principle scheme – case studies.

1.3.1.2 Evaluation scale and comparing

An evaluation scale has been created to evaluate and compare case studies. The information from matrix used as input for the scale. Evaluation parameters were converted into numerical data to facilitate the evaluation process and bring it to an analytical level. The evaluation scale takes the form of a star with the evaluation parameters in and around the project itself in the center (Figure 1.4). A visual data map was created with the graphical expression technique. Consequently, each sample projects had evaluation star and all can be compared at the same time as final stage (Figure 1.5).

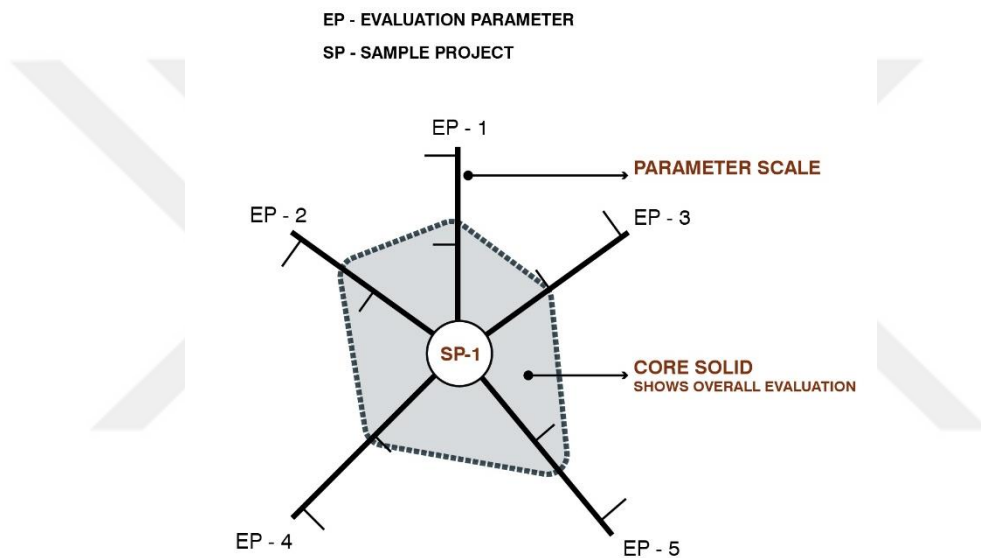


Figure 1.4 : Star of Evaluation Scale (SES).

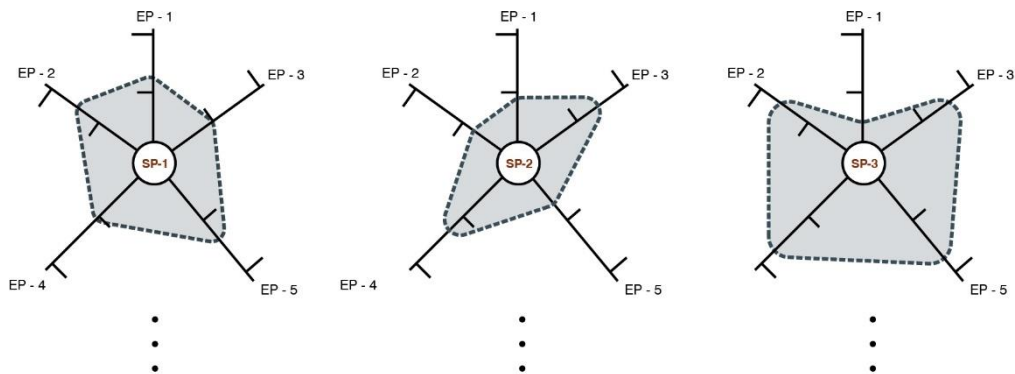


Figure 1.5 : Star of Evaluation Scale (SES)- comparative plane.



2. OPEN SPACE AND PUBLICITY

2.1 Historical Background

For historians of urban open space, the symbol of public space in modern literature is the Greek agora. Initially, the urban open space was used for social gatherings of the community, religious ceremonies, commercial activities or governmental purposes, the same space was used for different activities (Smith, Stark, Johnston, & Smith, 2012). From a long-term historical perspective, urban space has always served three different functions; meeting place, market place and connection area. As a meeting place for social information exchange, service exchange and a marketplace, city spaces, functions and connections of the city are provided by the streets of the city. This goes on from the earliest urban settlements to Greek and Roman cities, medieval cities, renaissance and baroque cities, as well as cities of the Enlightenment and industrial age. City spaces have been teeming with people and functions throughout history. Life in the city was an integral and fundamental part of society (Gehl, 2011). Lynch, argues that the human-city relationship is fragmented, partial and mixed with concerns. It is a composite subject where all emotions are in operation. The city is not an object perceived by millions of people, but the product of many builders who constantly change the structure for various reasons. Inference from the definitions; the city and human-society relationship is connected with a very organic bond and therefore, there is a situation of being affected by each other. They are also two elements that shape each other. Thus, they are more likely to be directly affected by each other.

Epidemics and pandemics have played an important role in the history of the city. The American urban parks and recreation movement AUPRM emerged in the 19th century after urban industrialization as reformers tried to address social problems. Play, park and entertainment appear as one of the ways to transform urban industry and cities (Stormann, 2009). Moreover parks are “popular gathering place for all classes” (Rosenzweig, 1984). It is intended for the common use of people of all different classes. It is a common ground where everyone can be equal in society that destroys class distinctions.

The design of parks, walkways and town squares plays an important role in making cities safer and healthier. The Public Health Movement in the 19th and 20th centuries is one of the biggest factors (Martinez & Short, 2021). Thus, accessibility to a healthy environment has gained even more importance.

The change of urban open spaces throughout history has developed much more rapidly and abruptly with the 21st century pandemic. Thus, the pandemic and post-pandemic process experiences included in the historical process have the potential to shed light on cities in the future.

2.1.1 Public open spaces

“Open space is an area which is open to the freely-chosen and spontaneous activity, movement or visual exploration of a significant number of city people” (Lynch 1963, p.3)

“Certain features—open space, vegetation, sense of motion on the paths, visual contrasts—seemed to be of particular importance in the cityscape.”(Lynch 1960, p.16)

Urban open spaces have met different needs in cities with various functions from past to present. It has been critical areas of cultural, political and economic life since early civilizations. The Council of Europe argues that cities are not just consist of buildings, but open spaces are an essential part of the urban environment and a city's historical heritage. It also defines open spaces as “local and public living room” (Council of Europe, 1986). Therefore the sense of public space can be connected to locality and sense of ownership. It has been defined as the fundamental part of the urban life within the local culture. Open space can be defined as any urban floor (Stanley et al., 2012). Defining it as an open ground that does not have an architectural cover directly in terms of physical elements may also mean that any urban ground can be an open space and does not have certain boundaries. This may indicate that open public spaces are open to different uses. So much so that Carmona(2010)'s concept of "fragmented society" summarizes this situation; It mentions that various socio-economic groups, people of different ages, cultures and genders use public open spaces in different and more diverse ways. Moreover Carmona (2010) categorized what the public space has to offer according to different views which are generally are the ideas based on social interaction, cultural change and political action based on the concept of an idealized public sphere (Carmona, 2010).

Although open spaces are mostly at the forefront of publicity, they have also been defined in relation to ownership by different researchers in the literature (Krier&Rowe, Rapoport, Newman, Woolley, Carr&Lynch, Erdönmez&Akı, Habermas, Walzer). According to Woolley, light and space above ground can expand the definition of open space, just as it is defined as an undeveloped land in a landscape, water, or urban area that is not covered by cars and buildings (Woolley, 2003). As the common output of various definitions, open spaces are a defined or undefined ground within the city without any shell on it.

In general, apart from the openness of the urban ground, it is also possible to characterize open spaces according to their surroundings. As an urban space, any space between buildings in towns and other settlements can be geometrically limited by various heights (Figure 2.1) (Krier & Rowe, 1979).

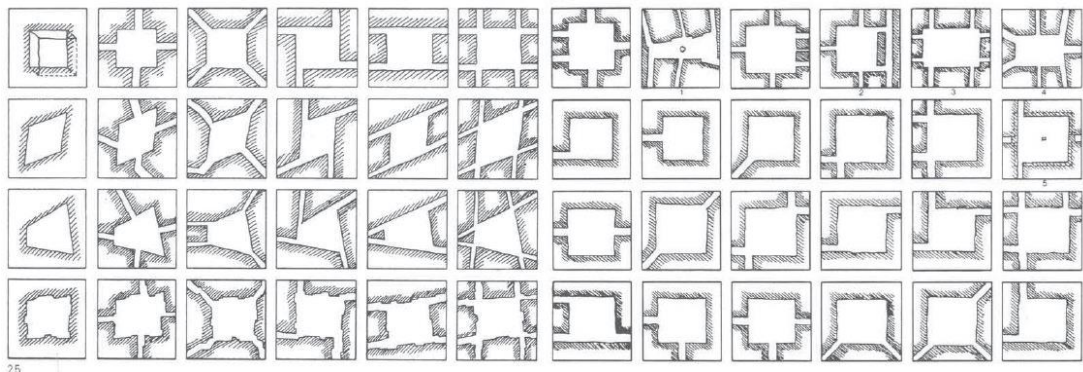


Figure 2.1 : Vienna neue London St. (Rowe, 1979).

It is important that the defined spaces can create a harmony within the city. In the design of cities, it is emphasized that buildings together with open and empty spaces should be handled with a holistic design (Erdönmez & Akı, 2005). Thus, in this way, a communication is provided between the built and non-built/semi-built environment and they have the quality of responding to each other. The holistic design principle has a more multiple state rather than a singularity. Therefore, it is evaluated in the context of it, not in terms of single things (Tress&Tres et al.). Moreover, Carr and Lynch argue that open space, which they see as common ground for movement and communication, should be free and controlled. They indicate that with every mobility and energy change, public open spaces have the potential to be redefined. (Carr & Lynch, 1981). Thus, open spaces, which are in constant change, form the most dynamic spaces of the city. They are areas in the city that can be fluid to the extent

that the city flows into the park and the park flows into the city (Cranz, 1982). These flows can be seen as energy changes that adjust the use and flow into each other according to use. Krier and Rowe (1979) classified open space as public, semi-public and private areas and suggested these areas as open and unobstructed areas for outdoor movement (Krier & Rowe, 1979). As it is understood, it is common in city life to associate open spaces with mobility. The settled areas and open spaces in the urban fabric can determine the form and boundaries of the movement in the everyday city. Hillier directly associated the movement within the city with the urban grid (gridiron) system, which is the basic element of the urban system. In addition, the urban pattern influences elements of city life and long-term changes (Hillier, 2002). Erdönmez and Çelik state that the reason why cities are seen as living organisms stems from the fact that the relationship between the city and the citizen influences and shapes each other (Erdönmez & Çelik, Kentsel Mekanda Kamusal Alan İlişkileri, 2016). Rapoport (1977) defines the human-environment relationship as a series of relations between certain elements (Figure 2.2) and argues that the environment is not a random collection of things. The structure of the environment facilitates and reflects the relationships between people and the physical environment. The mentioned physical environment is spatial, and people and objects are related within and through separation by space. The form of this separation is no more important than the permeability of the relationship between spaces and spaces. The essential element is the nature of the relationship, whether the boundary exists or is permeable (Rapoport, 1977). Therefore especially within the built or unbuilt environment, open spaces have the potential to affect both the daily life and long-term social life of the citizens.

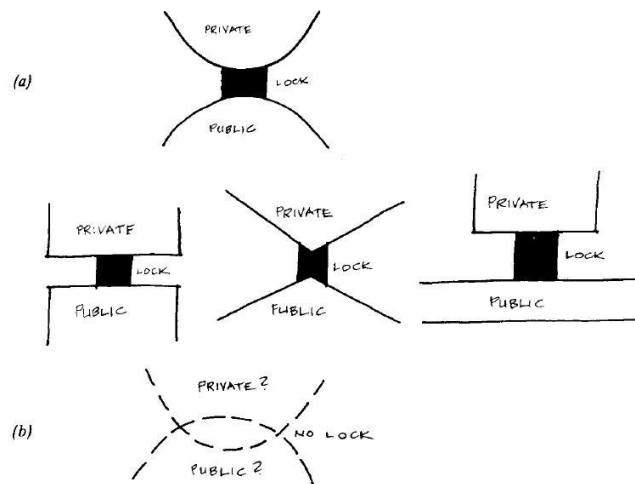


Figure 2.2 : Public space - private space Human Aspects Of Form (Rapoport 1977).

UNESCO defines public spaces as follows; places owned by the public or privately owned but designated for public use - it speaks of being freely accessible and usable by all citizens.(UNESCO)

UNESCO Deputy Director-General for Culture Francesco Bandarin defines public spaces as places that are socially diverse and form the main element of the urban landscape, reflecting cultural diversity and reflecting the history of urban societies.

In cities and other settlements, public spaces that change and transform in the historical process and are always open to question and discussion are the living spaces that affect the city and its inhabitants.

“Open Public Spaces”, which are defined as unbuilt areas within certain boundaries that provide social, economic and environmental benefits to the society, can also be seen as a common ground of the society that brings individuals together in daily routines with periodic activities (Erdönmez & Aki, 2005). Habermas, (2010) also advocates the ideal of a public space, which is seen as common ground, as well as a public space in which the functioning of democracy is strengthened, which encourages exchange and understanding among various subcultural groups.

As a general definition, the concepts of public space include not only the city but also all settlements. Since the scope of the study is public spaces in urban areas, public spaces in the literature are included in the research study, especially in urban areas.

According to Walzer, (1986) the public sphere is the space we share with strangers we do not know. It is a space for peaceful coexistence and impersonal encounter, serving different purposes such as politics, religion, commerce and sports. At the same time, the character of the public sphere expresses and conditions our public life, our civic culture, our daily discourse (Walzer, 1986). Urban spaces create diversity with their different social, physical and symbolic characteristics, and they are formations that have certain boundaries with the common characteristics of structurally and functionally similar people and groups (Erdönmez & Aki, 2005). In general, it has been seen that public spaces in urban areas are defined as a common ground that covers various user groups and serves different purposes and functions, regardless of personal differences.

Madaniopur (2003) states that urban area is physically separated as public and private. At the same time, he argues that the public sphere includes the relationship of individuals to themselves and the rest, namely society and also makes the perception of public space through

individuals' bodies and personal spaces. It processes the relationship between body and mind, society and person in the matrix of the public sphere. Moreover Madaniopur states different definitions from Gold(1980), Tankel(1963) and Gehl (1987). Gold(1980) asserts that any underdeveloped area or any land and water area without cars and buildings in an urban area can be defined as 'open space' (Madanipour, 2003). In addition to his definition Tankel(1963) adds the light and the space relation in open space definition, any land and the light above is open space. Moreover Gehl(1987) declares that open space is acting as a scene for various social events and activities (Madanipour, 2003). While the definitions physically define open space, they are also made through their functions. Thus, due to the scope of the definition of open space, they are both unstructured areas in the city and at the same time, they are areas that provide the socialization ground for the citizens.

In the literature, Schulz and Erdönmez Akı, (2005) state that public spaces in cities are "encounter" spaces. At the same time, Schulz mentions that public spaces, although geometrically related, are not the same and are diverse, creating a kind of "microcosm". By inference from these definitions, public spaces can be defined as spaces within cities that are related to each other, have similar features, but have also different features within themselves.

2.1.2 Open space typologies

Open space encompasses a wide variety of public and private spaces, both in historic cities and new communities, and provides a framework for a variety of activities that may change with use over time (Council of Europe, 1986). With the shaping and diversification of the built environment in today's cities, open space typologies have also differentiated. It has been determined that the existing classifications in the literature are made according to the properties, functions or dimensions of open spaces.

Newman classified open space typologies according to property with a proposition he made in 1972 as public, semi-public, semi-private and private open space (Figure 2.3). While this model advocates the construction of the border in open space typologies, it also created a model for the hierarchy between different groups. He classified the open space with permeable, semi-permeable and impermeable boundaries and described the transitions of public and private spaces. Gathering areas are more central and large, private and semi-private areas are smaller, fragmented and located on the periphery.

In 1981, Kevin Lynch developed an open space typology that describes regional parks, squares, plazas, linear parks, adventure parks, wastelands, and playgrounds. In this way, it is a more specialized classification and no distinction is made regarding size or ownership.

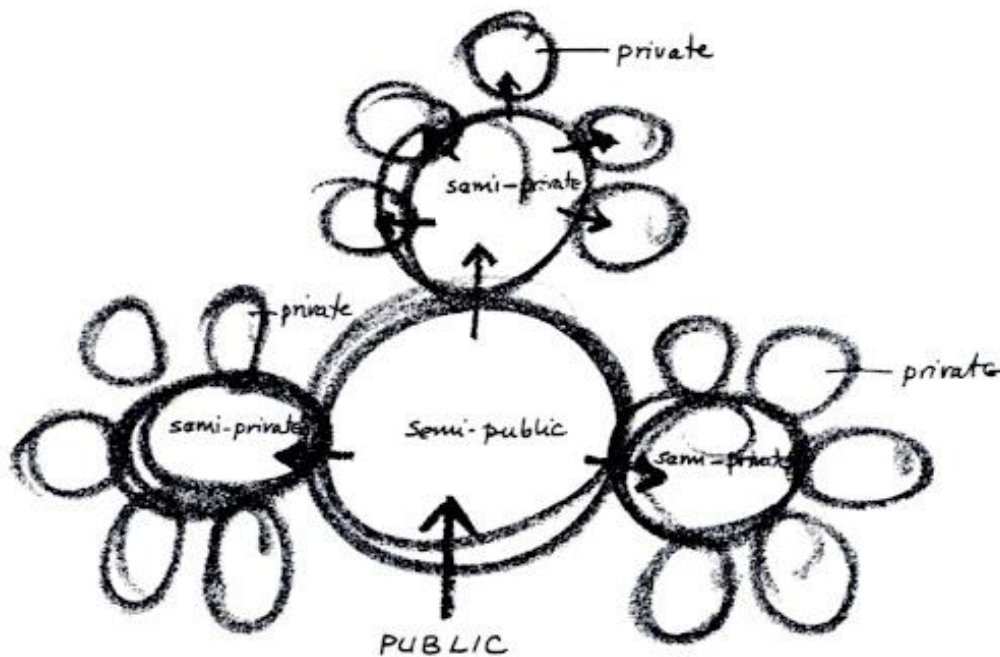


Figure 2.3 Defensible Space and the Open Society (Newman, 1972).

In 1981, Kevin Lynch developed an open space typology that describes regional parks, squares, plazas, linear parks, adventure parks, wastelands, and playgrounds. In this way, it is a more specialized classification and no distinction is made regarding size or ownership.

Carmona(2010) has treated public spaces differently; areas that are not well-managed and over-managed. Not well-managed areas; neglected space, invaded space, exclusionary space, segregated space and domestic space. Neglected spaces(1)Neglecting the public space physically and as a market, not giving due importance to the city causes the formation of such spaces. Invaded spaces(2) emerge when driving is prioritized and designed accordingly. Exclusionary space(3) is the places with physical and psychological obctacles.Segregated space(4) the separation of wealthy groups from the rest of society. Domestic, third and virtual space (5) It is the indoor virtual spaces that cause isolation from society.

Over-managed areas; privatized, consumption, invented and scary space. Privatized spaces(1) are places where privatization of public spaces is allowed. Consumption space(2) Increasing and competitive experiences cause the rapid depletion of public spaces. Invented space (3) these are areas that have lost their originality and spirit and become out of place because they are designed too much. Scary space(4) are places without safety or the fear of crime dominates the area and are places where security measures that restrict freedom are taken.

In 1992, The London Planning Advisory Committee (LPAC-) classified open space typologies hierarchically according to their size: small local park, local park, regional park, metropolitan park, regional park, and linear open space (Figure 2.4). In this way, when sorting by size, a distinction is made according to land use. Classification at different scales reveals the definitions of open space, especially in cities. As can be seen in the hierarchical grouping, the whole system is parks that cover each other and are intertwined, but with different qualities but forming parts of a whole. Since the parts of the system are interconnected, they can affect each other. Thereby each ring is significant to the other, and the quality or possible change of each ring may have the potential to affect other rings, and the whole.

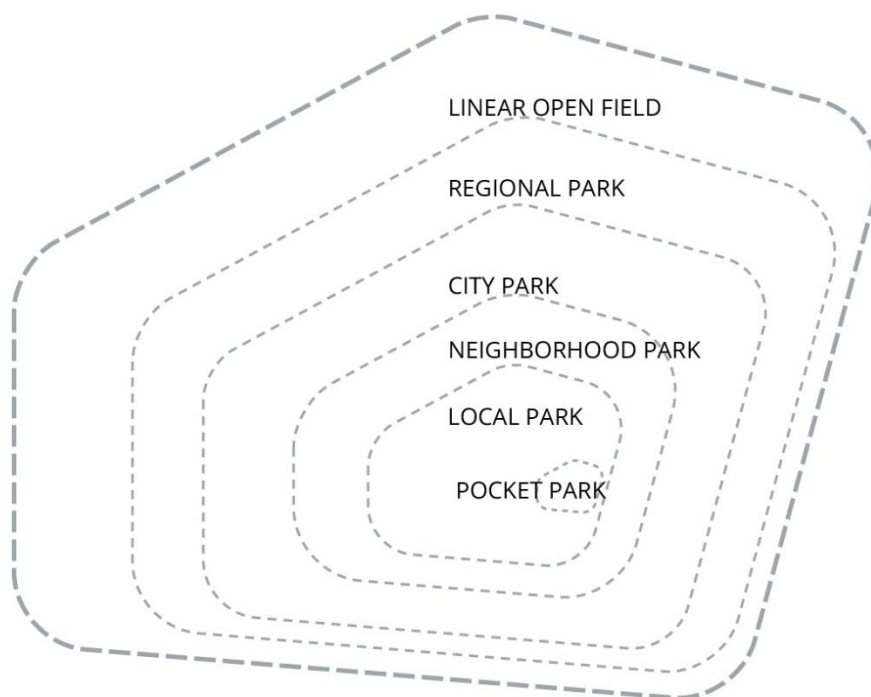


Figure 2.4 : The London Planning Advisory Committee –LPAC- Open space typologies (Visualisation: author, 2022).

2.1.3 Open space functions

Open spaces are versatile areas that can be designed to meet various needs and provide solutions to problems. According to Rogers (1999), the functions of open spaces include providing a place to experience and enjoy the city, relax, engage in various activities, host outdoor dining and street entertainment, participate in sports and political functions, and serve as playgrounds. Therefore, the urban open space is not an isolated unit; It is a vital part of the urban landscape with its unique functional array of streets, parks and squares (Rogers, 1999). In this definition, the urban landscape is considered as a living element directly related to the environment. For this reason, open space functions include multiple subjects and associated with various user groups and also is far from uniformity.

Urban open spaces have an important role that facilitates understanding and identification with the city. It has an ecological role not only in conserving vegetation and bringing it into urban areas, but also in promoting wildlife and improving understanding of nature. On the contrary, the role of social interaction has important contributions to the well-being of individuals and the development of society. It also has an economic value in environmental improvement, increases the attractiveness of the city by creating employment and increases economic vitality through investments (Council of Europe, 1986). The open space functions in question touch on most of the issues related to the city and its inhabitants, which have a wide spectrum from social life to urban ecology. In 2003, Woolley, deals with open spaces in terms of their function with similar topics to those listed by the Council of Europe. The topics of open spaces that provide different functions and benefits are listed under the following headings: social, health, environmental and economic. Open spaces, which offer many different opportunities, including passive and active social life, provide opportunities for people to participate in various activities. It also contributes significantly to the socialization of children. It's function in health; outdoor spaces have significant effects on both physical and mental health. Nature, which is important for physical health, exists in many different forms in the open space. Natural elements like sun, wind, green spaces, and water can enhance physical healing. Additionally, open spaces in cities have an important economic impact, offering employment opportunities, crop production (such as orchards and hobby gardens), and tourist attractions. Therefore, open spaces have a crucial role in the economic development of cities due to their socio-cultural, health, and ecological benefits.

2.2 Blue green infrastructure in public open spaces

Treating cities as a set of systems consisting of different systems brings together various relationships, ties and issues. Therefore, the intersection of the study topics of various disciplines can make the context, practice and management of landscape architecture a questionable element. In particular, the subject of infrastructure began to be integrated into the landscape and to be considered together with projects such as the Emerald Necklace (Figure 2.5) in the 19th century. Although the Emerald Necklace system was first built by Olmsted to prevent flooding caused by the Charles River, today it benefits the local community and Boston visitors in ecological, economic and social terms (Mell, 2008). ‘Infrastructure’ words alone cover the subject of Blue-Green Landscape Infrastructure.



Figure 2.5 : Emerald Necklace Conservancy (Url-1).

Benedict and McMahon, (2006) define green infrastructure as a network of interconnected spaces and other open spaces. Natural ecosystem values and functions sustain clean air and water. It provides a wide range of benefits to humans and wildlife. The green infrastructure used in this context is the ecological framework for environmental, social and economic health, in short, it is defined as a natural life support system (Ibid)

Green infrastructure was considered as blue-green infrastructure by Dreiseitl and Wanschura, (2016). It has been defined as an element that combines the requirements of sustainable water and storm water management with the requirements of urban planning and urban life. In this context, “Blue-Green Infrastructure Targets” have been put forward.

These targets are:

- It brings the urban water cycle closer to natural hydrological processes to provide more efficient water.
- Contributes to the visual and recreational beauty of the city's ecological and built environment.
- Helps manage conflicts between urban settlements and adverse effects on natural systems in innovative ways, by protecting ecosystems, caring for public open spaces, and adapting to climate change.
- Improves urban sustainability and livability . (Dreisitl & Wanschura, 2016)

Therefore, with these goals, the blue-green infrastructure system is targeted by protecting water and green in urban areas, integrating the social environment into natural systems, and keeping the existence of various ecosystems alive (Figure 2.6).

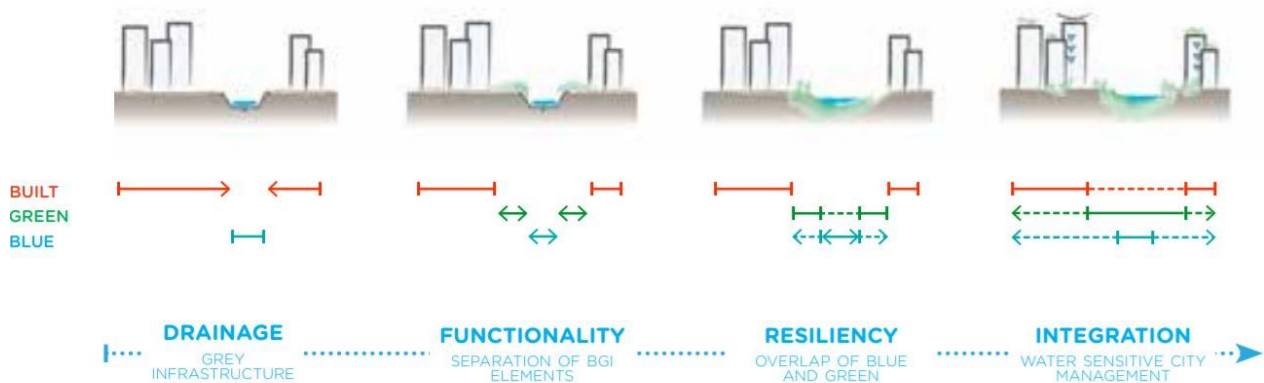


Figure 2.6 : BGI and built environment relation, (Dreisitl&Wanschura,2016).

In order to increase the liveability of cities, it was thought that blue-green infrastructure should be a part of urban life. The fact that blue and green elements are handled together with living spaces, not far from people, brings many advantages. Redefining the built environment with natural processes strengthens blue-green infrastructure, improves quality of life, supports storm water management and builds urban ecology (Dreisitl & Wanschura, 2016).

Green infrastructure is an essential part of the health and quality of life of sustainable communities. It can also be described as a multifunctional network system. For this reason, it supports natural and ecological processes both in the countryside and in the city (DCLG,

2008). The strategically planned network system includes high-quality green spaces and other environmental features. It needs to be designed and managed as a multifunctional resource to ensure and support sustainability (Natural England, 2009). Therefore, understanding how this network system works and reading the structure of the management style is an important part of the research.

2.2.1 Landscape infrastructure concept

Green infrastructure is a concept that connects existing and potential green space resources, fills the gaps, and provides a system with open space connections and centers (Benedict & McMahon, 2006). Parts of the system setup may include landscape infrastructure elements. The blue-green infrastructure is also defined as the network of relations between natural and designed landscape components (Lamond & Everett, 2019). There is a whole system consisting of landscape components. Understanding the working principle of the overall system and components, understanding the processes helps to understand the integration of blue-green infrastructure into landscape design.

Landscape is a mediator that responds to the temporary changes of systems, adapts and transforms, therefore it is open-ended, uncertain and meets the requirements of contemporary urban conditions. Waldheim supported this with the words of Allen: “landscape is not only a formal model for urbanism today, but perhaps more importantly, a model for process” (Waldheim, *Landscape Urbanism: A Genealogy*, 2002). It can be understood that there is no end product and not a single concept, but the landscape itself, which has a more variable and dynamic context.

Green infrastructure enhances nature and people life with various practices whilst ensuring land conservation by strategic and methodological ways (Weber & Allen, 2009). The Maryland Department of Natural Resources (DNR) treats green infrastructure systems as a "hub" and "corridors" relationship, terminologically and conceptually. Large green areas such as forests or wetlands are defined as “hubs”. These areas are connected to each other by linear elements such as streams and valleys, and these linear connections are called “corridors” (Figure 2.7). The main feature of green infrastructure is that corridors and centres are interrelated (Figure 2.7). As a total, the system provides series of elements creating a network with prioritization of green system. Opdam et al. (2002) states that a diverse array of ecosystems forms ecological networks within the organism transitions and interplay with the

matrix of landscape so the network of ecology is linked in between and includes different species (Opdam, Steingröver, & Rooij, 2005)

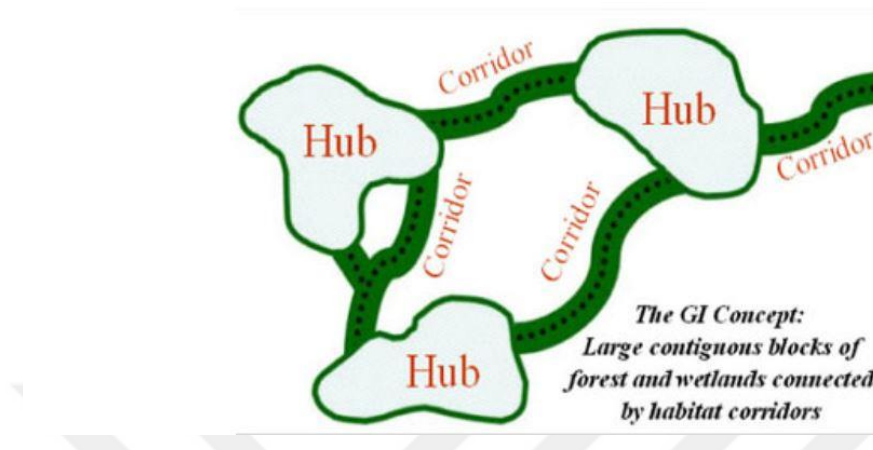


Figure 2.7 : The Maryland Department of Natural Resources, The GI Concept, (Url- 2).

The concept of green infrastructure enables wide and diverse professional disciplines to work together due to its wide relations with green areas (Lennon, 2015). Green infrastructure encompasses the socio-cultural diversity of cities. Thus, there are multi-centred, collaborative, multi-level decision-making processes and levels of governance with various actors. Inclusive models improve governance outcomes with environmental and social benefits, according to research (EBuijs, et al., 2016). The inherent multi functionality of the green infrastructure concept makes it impossible for a single industry to implement and requires the knowledge of various planning departments, while bringing with it both physical and functional connectivity requirements. It also tracks the evolution of ecosystem services over time. Green infrastructure provides a common denominator that can work together financially diverse resources (Weber & Allen, 2009). Therefore the BGI concept enables the collaboration of different sources. While this concept theoretically includes interdisciplinary participation, it also brings professional cross-sectional; in the form of planning, municipal administration and management, political commitments and citizen participation (Lindholm, 2017). In the general framework, it is claimed that the blue-green infrastructure is a multi-actor and multi-disciplinary system in various sources, since it is inherently versatile, multi-functional and dynamic in terms of the subjects it contains.

The blue-green infrastructure has multiple functions therefore it requires a versatile and dynamic perspective. At the same time, this concept, which includes many subjects and scales, is managed with various integrations. There may be integrated governance at many

different levels, such as multiple and top-down governance under various policies (Willems, 2021)

Willems have suggested that blue and green infrastructure can have 4 different dimensions of management integration;

1. Policy framework: Provides a set of strategies for translating the theoretical framework of blue green infrastructure into practice.
2. Policy areas: Governance policies of many different areas, such as community development, public health, nature conservation and local land use, deal with different departments and various functions, although in the main framework they are related to a single task.
3. Policy objectives: The blue-green infrastructure clearly articulates policy objectives and strategies for the common good.
4. Policy tools: These are the policy tools used to achieve the objectives. For example, using communicative, organizational, regulatory tools for climate adaptation.

As a result, definitions made for governance policies to function in a certain order; after the main framework is formed, it ensures the determination of the regions where the management will be applied and the targets for the management are determined, and then this process is concluded with the necessary governance tools.

Moreover, they state that while blue-green infrastructure integrates hydrological and biological water treatment into the system where green and blue work together, it strengthens urban ecosystems by triggering natural processes in built environments. Thus, it responds to the needs of sustainable water and surface water management in urban life and urban planning. The fact that green areas remain in the city as residual areas, are not planned, cannot be accessed, reduces infiltration by channelled stream beds and causes surface water flow to be rapid and excessive. With the integration of blue-green infrastructure into the urban fabric, green and wet areas, which are carbon sinks, increase the air quality in the city, rainwater harvesting; From the city's structures to its green areas, it becomes active with its natural beds and thus, biodiversity and wildlife are supported within the city.

Landscape infrastructure was examined within the framework of blue-green infrastructure within the scope of this research. Therefore, infrastructure problems and improvement methods are also discussed in this context. Cities are integrated with the landscape, becoming

more comprehensive and flexible than ever before, designed not only as pastoral, but holistically designed with complex dynamic systems that combine technological infrastructures, matrix and complex networks (Corner, 2020). James Corner, with the Field Operations studio he founded, has developed the 2018-2035 master plan for the Hebei region of China, which he aims to implement and supports this discourse (Figure 8). Operational landscape design and planning, infrastructures, networks and ecology are all integrated with natural systems, adaptable to the fabric of a high-density city, open to movement, flow and change (Corner, 2020). Furthermore, it can be said that in the proposed design, the infrastructure and the textures of the city transform into each other, creating a symbiosis that is directly related and beneficial to each other. Urban environmental planning, research and design has become a powerful concept in policy areas, as understanding of the potential of green infrastructure for ecology and society has increased (Dreisitl & Wanschura, 2016). Moreover, they state that while blue-green infrastructure integrates hydrological and biological water treatment into the system where green and blue work together, it strengthens urban ecosystems by triggering natural processes in built environments. Thus, it responds to the needs of sustainable water and surface water management in urban life and urban planning. The fact that green areas remain in the city as residual areas, are not planned, cannot be accessed, reduces infiltration by channelled stream beds and causes surface water flow to be rapid and excessive. With the integration of blue-green infrastructure into the urban fabric, green and wet areas, which are carbon sinks, increase the air quality in the city, rainwater harvesting; From the city's structures to its green areas, it becomes active with its natural beds and thus, biodiversity and wildlife are supported within the city.



3. LANDSCAPE INFRASTRUCTURE IMPROVEMENT BY URBAN ACUPUNCTURE

3.1 The Concept of Urban Acupuncture

The concept of urban acupuncture has been studied theoretically and practically in academia, more precisely, in the field of urban design and landscape architecture since the 1960s. Jaime Lerner, who was the mayor of Curitiba in the 1960s, considered urban acupuncture as a method in practices that theorized and implemented (Lerner, 2014). City planning is a long process; it includes different problems and too many actors, so problem solving methods can be diversified by creating new energy with a well-focused, simple intervention (Ibid). Small, precise and quick interventions can motivate the surrounding area to heal while solving problems in their own focus such as environmental, mobility and social sustainability. Therefore this can make a huge contribution to the planning process (Lerner, 2014). In other words, it conceptually defines the urban problems that need to be taken into account today and in the future, and underlines the need for solution-oriented work with the determined critical focus interventions. Lerner (2014) states the urban acupuncture gives ownership to public and it also provides community improvement with small scale interventions theorized the concept from a socialist perspective that is beneficial to society (Lerner, 2014).

Marco Casagrande (2020) considers urban acupuncture as the theory of the biourban; He linked sociology and urban design with the traditional Chinese theory of medical acupuncture. He defines urban acupuncture as a design methodology that focuses on the urban fabric with tactical, small-scale interventions, targeting ripple effects and transformation on the larger urban organism. It aims to be in contact with local knowledge specific to the region through designated intervention points. By its very nature, urban acupuncture is flexible, organic, and reduces stress and industrial tension in the urban environment – thus orienting the city towards the organic: urban nature as part of nature. Urban Acupuncture produces small-scale, but ecologically and socially catalytic improvement on the built human environment (Casagrande, 2020).

In terms of designing cities, Manuel de Solà-Morales (2008) puts forward the idea of physical production which he believes it consists of the forms of urban growth. Moreover, the city is described with regard to: new and old town, corporate housing, garden cities, self-built areas and small town growth, etc. In addition, he reveals the understanding of urban acupuncture with these words:

“To act with punctures, pressures, injections is to distribute energy through the skin. It is the epidermis of the urban fabrics that enables us to transform internal metabolisms of its organism”

In deciphering the urban issue, the accumulated qualitative energy on the most neutral and sensitive areas creates the collective character. Feeding these areas with culture and complexities makes them notional material, social structures of intersubjective memory. (GSD, 2013). In a short period of time, with the set of strategies, public spaces can be revitalized by autonomous and catalytic interventions (Casanova & Hernandez, 2015). Casanova and Hernandez also liken the city to the human body system as Morales (2008). The therapy to the city heals the defence system of the city and balances traumatic changes (Casanova & Hernandez, 2015). In order to function conveniently, the aim of the urban acupuncture method is to adjust the energy flow in the city (Daugelaite, Grazuleviciute-Vileniske, & Landauskas, 2019). As a result, strategic interventions have the potential to improve the local landscape and subsequently the regional landscape.

The city as living organism is sensitive and multi-dimensional. In lieu of large scale urban regeneration interventions, coping with point based challenges can be more sensitive and responding (Casagrande, 2016). The challenges in the urban environment in terms of environmental and social scopes can be solved rapidly, with fine targeted and less effort interventions.

In consequence, urban acupuncture is the appropriate interventions to the strategic areas. The city consists of different parts which are connected each other. It is an operational process; interventions on sensitive points have effect on further places (Enia & Martella, 2019). This also supports Lerner (2007)'s turtle shell; he likens the aerial view of the city to a turtle's shell. It is a place to live, work, relax and play. Although it consists of different blocks, it is a whole. It symbolizes the mobility principles, cultural identity and sustainability of the ideal urban environment. He underlies that the integration of urban functions is a certain need to the cities (TED, 2007).

3.2 Historical Background

Although not very old, the history of urban acupuncture has a considerable history both theoretically and practically (Lerner (2004), Casagrande(2008), Sola Morales(2013), Gingell(2010), Frampton&Ibelings(2008), Hoogduyn(2014)). There are three figures stand out in the literature on urban acupuncture theory:

- Jaime Lerner
- Manuel de Solà-Morales
- Marco Casagrande

Jaime Lerner (1), he served as mayor of Curitiba for 3 terms (1971–1974, 1979–1983 and 1989–1992). He is an architect, urban planner and politician. By transforming the crime-prone, neglected city of Curitiba in the 1960s, Lerner increased green living and social innovation. Moreover he published his book called “Urban Acupuncture” in 2003 (Hoogduyn, 2014). In his book he focused on various projects in terms of urban revitalization by some incentive interventions and transformation. It is about the hope and dream of curing the disease in cities. He considers the concept as the restoration of vital signs with a simple healing touch. Moreover, he mentions that this healing is not only for a specific point but also a regional improvement together with its surroundings (Lerner, 2014).

Manuel de Solà-Morales (2) is a Catalan architect and urban planner who is known for his practice during the cultural and economic revival of Spain (Gingell, 2010). He has made many significant contributions to The LUB (Barcelona Urbanism Laboratory) which is an urban planning research center in Spain (GSD, 2013). He claims that architecture and urban planning are disconnected from each other in time and thinks that one is more technical while the other is more aesthetic and visually oriented. He thinks that there is a gap between them so he focuses on that gap in terms of his work (Gingell, 2010). Therefore, this gap that he filled while thinking together about disciplines that were related to each other but diverged from each other in the process enables him to practice the new urban theory: urban acupuncture. In 2008, he published his book “A Matter of Things” compiled from the practices he applied in various geographies. He conveys his touches in the urban fabric and how he solves

complex challenges (Solà-Morales, Frampton, & Ibelings, 2008). He has a positivist attitude towards cities, also mentions in his book with following thoughts:

“Cities are not becoming uglier, (but are) growing (visually) richer. Though formal relationships are less common the city is not in retreat to cyberspace, there are more places and more contact.”

By imitating the surfaces of the city as leather, he emphasizes that every wrinkle should be studied with the same importance as all the others (Gingell, 2010). He uses urban acupuncture theory metaphorically, emphasizing the importance and value of every little detail of the city.

Marco Casagrande (3) Casagrande is a Finnish architect and also a social theorist. He is the head of 'Ruin Academy' in Taiwan, Taipei together with Aalto University SGT Sustainable Global Technologies Center (Hoogduyn, 2014). Casagrande introduced the concept of third generation city during his studies in Taipei. In the past, Taipei was directly related to nature, the city of Taipei, which was formed by the river, later became a victim of industrial time and was adversely affected by pollution and uncontrolled floods. He aims to unite the city, which is living in its second period with these negativities, with nature once again. He defines his methodology, which aims to restore the city's river to the city, as urban ecopuncture (Casagrande, 2011). He creates the notion “Third Generation City” which is the era of ecological urban revitalization. Defining the city as an organic machine, Casagrande argues that the new era should be intertwined with nature and that it should exist again with it. He argues that architecture is not under human control but controlled by realities, and the only reality is nature (Hoogduyn, 2014).

Generally urban acupuncture is a notion with more than 60 years past (Figure 3.1). Lerner, one of the pioneers basically defines the terms as healer, innovative, certain and multi-scale (Lerner, 2014). Morales mentions the strategic and systematic way of the notion and also he also highlights the significance of network (GSD, 2013). Casagrande is also following them by defining as tactical but unlike the others, for the first time he directly related nature with this concept. He defines it as biourban notion and for his practice in Taipei he creates the sub notion called ecopuncture (Casagrande, 2011). The concept acts like an urban acupuncture notion however more focused on natural features. Moreover, associating urban acupuncture with local consciousness is also different from the other definitions. The landscape urbanism theory developed in parallel may have influenced the definitions of the concept of urban

acupuncture after the 1980s. After the industrial urban identity in the 19th century, the second movement continued with landscape planning in the 20th century. Afterwards, the concept of landscape urbanism emerged with the cleaning of the remains from the industrial time and the integration of ecological functions into the cities (Waldheim, *Landscape as Urbanism* , 2016). For this reason, Marco Casagrande's associating the concept of urban acupuncture with nature may have resulted from the horizontal relationship of similar contexts. Lerner argued that scale can be of various sizes, however in studies conducted in the 2000s, it was mostly associated with small-scale, micro, and small interventions. According to the World Bank's statistics, 4.4 billion people which is the 56% of the world's population live in cities and it is expected that by 2050 it will be more than doubling. (The World Bank, 2022). It has also been seen that the increasing urbanization, especially after 2010, has been associated with new concepts in the development of the concept of urban acupuncture such as “urban renewal method”, “urban catalyst” and “tactical urbanization” (Shidan & Qian, 2010), (Unt & Bell, 2013). In general, the keywords those stand out from the theoretical and practical in the literature; quick, small interventions, tactical, operational, creating big effects with small interventions, regenerative and systematic.

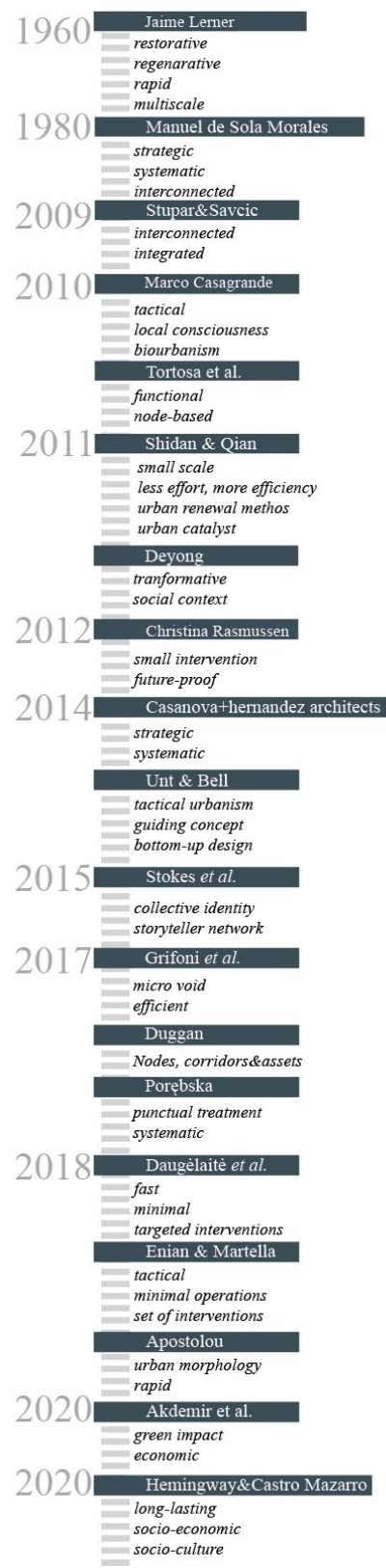


Figure 3.1 : Timeline.

3.3 Urban Acupuncture Today

Today, urban acupuncture theory has developed and transformed into various practices with different projects that offer solutions to different problems in many different geographies in various ways and help cities to heal.

Lerner in his book *Urban Acupuncture* (2014) listed some of the examples that came into our mix at different scales as follows; The Canney district in San Francisco is on a neighborhood scale, while Park Güell in Barcelona is on a local park scale. Sometimes it can be a more punctual, cultural and artistic structure, like Frank Gehry's Guggenheim museum (Lerner, 2014).

He mentions that successful city transformations have many different methods and secrets, but the most important and common feature is that they realize the transformation with new beginnings, open to a new awakening. He argues that cities are mechanisms that respond to these innovations (Lerner, 2014). In the examples he refers to, it is seen that the projects bring solutions to different problems in cities. They are projects that encourage the city to transform, in some cases with ecological, sometimes cultural or social issues. For instance Casagrande's Treasure Hill (Figure 3.2) has a significant impact on social structure in Taipei local villages. The government wanted to remove illegal settlements and make public parks. However Marco Casagrande thought that it was not a positive way to renew such area. He kept the settlements, restored the farms and built stairs that connects farms and houses (Casagrande, 2016).



Figure 3.2 : Taipei Treasure Hill (Casagrande, 2016).

It is possible to see mobility, network and interconnection issues as more intelligent and innovative solutions are needed in today's crowded cities. Hence urban acupuncture also appears in mobility within the city. For example, the BRT (Bus Rapid System) that Lerner realized in Curitiba is one of them. It is a solution for transportation issues in city. To move more efficiently, they created special bus lines and the city plan had more integrated transportation system with these bus corridors, it provides massive amount of people to go from one point to another (Plans, 2017)

The station square in Leuven which was called as 'Stationsplein' (Figure 3.3) was renovated in 2002 by Manuel de Solà-Morales and his team. The intervention on site was in terms of infrastructure and public space with the new bus station, road tunnels and connection to rail network. Without changing the existing layer, he added new highway layer underneath in order to support mobility infrastructure. (Morales, ND). The project includes public space redefinition with infrastructure. The fact that public space and infrastructure feed each other can be proof of good acupuncture intervention.

Planning is a holistic process and it cannot be expected to occur suddenly and bring about a sudden transformation. It is the initial spark that initiates the process, stimulates the transformation and then encourages the transformation to continue. This is how Lerner defined good acupuncture, and today acupuncture interventions are like sparks that start the process. The BRT system is used in 168 different countries (StreetFilms, 2009) Moreover the Stationsplein project is not only a station project, but also a project that affects the entire transportation system with the entrance of the city. Paley Park, which promoted the transformation of green infrastructure as a pocket park in New York (Architects, 2018).

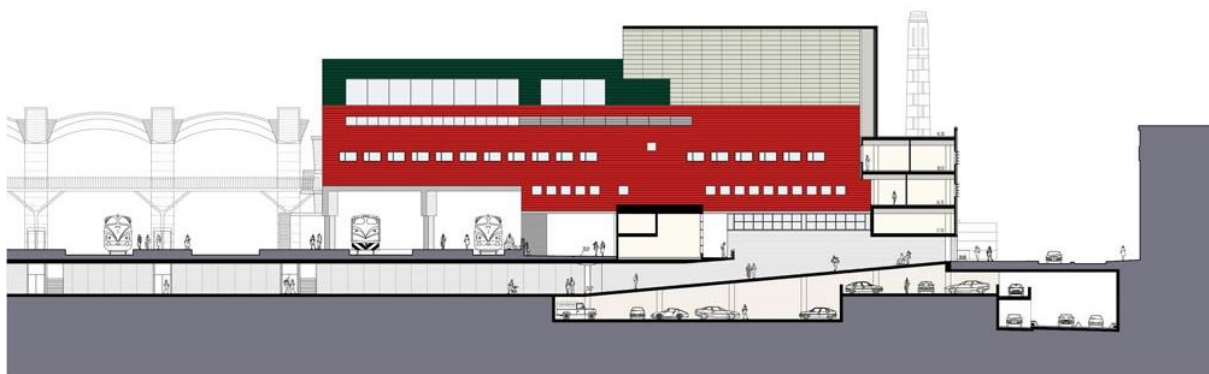


Figure 3.3 : Stationsplein (Morales 2002).

3.4 Blue – Green Infrastructure and Urban Acupuncture Relationship

The complex and aging transportation network of the 20th century has caused some difficulties for the 21st century in terms of infrastructure and economy. Therefore, it is necessary to design infrastructure systems that need to be developed with innovative solutions prepared for different scenarios. Duggan emphasizes that healthy, safe, pedestrian friendly and connected, regenerative initiatives should manage systematic change according to the next 100 years projection (Duggan, 2016). The reason why its landscape can also serve as an infrastructure is that both offer pragmatic and immediate solutions and advantages. (Strang, 1996). Therefore landscape is no longer ‘scenery’ or picturesque background, but the infrastructure itself. Duggan mentions that different sub-topics of benefiting from urban regenerative infrastructure systems through urban acupuncture techniques which are:

- Technical
- Environmental
- Community
- Economic

In order to reach technical solutions, long-term maintenance with environmentally friendly solutions should be considered. Meanwhile sustainable design solutions and regenerative infrastructure brings about green solutions. Thereupon, with the liveable street approach, collaborations of public and private bring about community investment. Eventually economic revival comes with business opportunities, green jobs and development of workforce (Duggan, 2016). Defined regenerative infrastructure systems have included various disciplines and decision makers. To indicate the hierarchy and workflow of these disciplines, he defines a chart and this graphic adequately explains the general working principles (Figure 3.4).

In 2009, a plan proposal was made for the renewal of the historical centre of Arnhem in various stages and the renewal and transformation of the urban fabric left after the war. It is aimed to create an urban infrastructure with subjects such as the riverside as a public space, the establishment of entertainment and cultural centres, and the creation of the city port. By keeping the post-war cultural heritage alive, urban infrastructure is supported with various architectural structures. In addition, suburbs are also renewed and urban mobility becomes

one of the main stones of this infrastructure (Morales, 2009). This project is the proof that the blue infrastructure is the supporter of the cultural and public transport network and is a whole with it.

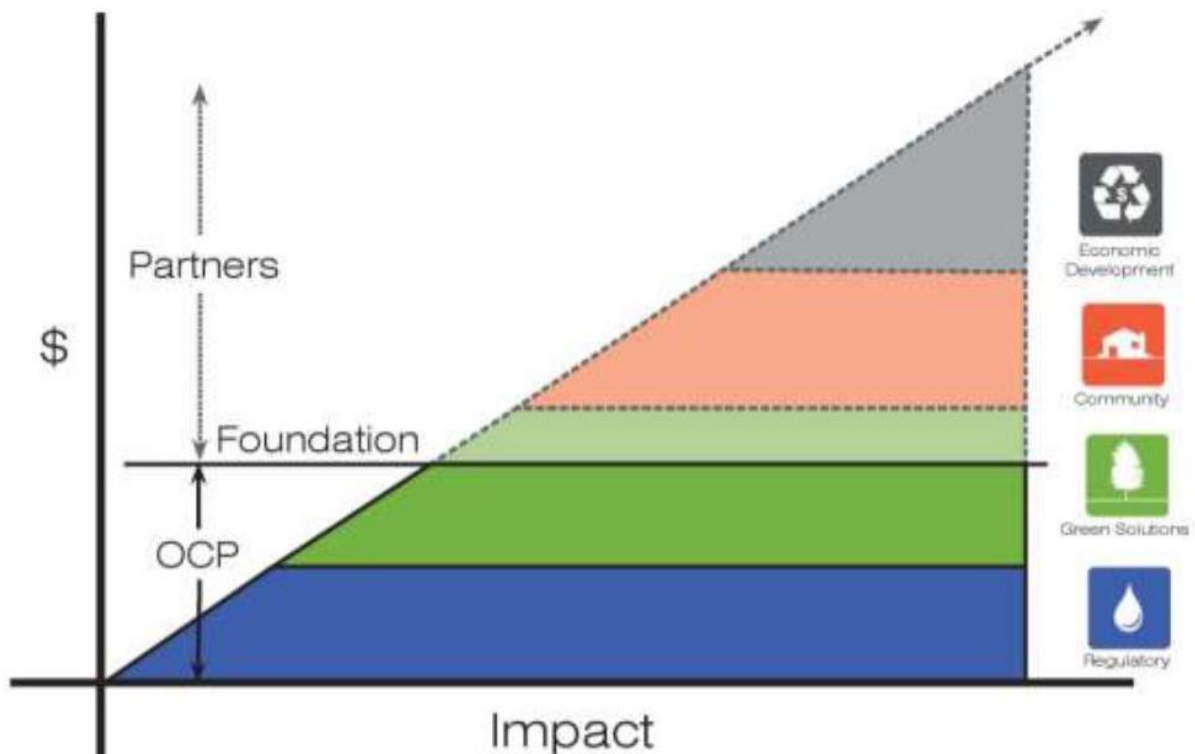


Figure 3.4 : Tim Duggan: Regenerative Infrastructure Through Urban Acupuncture, 2016.

Instead of establishing large recreation areas and green areas, pocket parks offer more advantageous opportunities. It is both smaller in scale and more economical in terms of cost. Lerner argues that Paley Park in New York is a good example of pocket park that stimulates urban transformation. This method, which also benefits local planning, supports green infrastructure and can be an incentive for other interventions (Architects, 2018).

4. LITERATURE ANALYSIS

As a result of the extensive literature study, a concept diagram was created (Figure 4.1). This scheme basically progresses in the form of a timeline from the 1960s to the present. The schema, which includes time, person and definitions, helped to establish certain criteria for the evaluation to be made in the later stages of the study.

The concept of urban acupuncture in landscape architecture has been the subject of interest of many different disciplines such as researchers, architects, urban planners and academics since the 1960s. Over time, they contributed to the theoretical and practical development of this concept.

The concept of urban acupuncture was theorized by 3 pioneering names (Jaime Lerner, Manuel de Sola Morales and Marco Casagrande), and the concept foundations were formed in line with the practices of these people in public spaces and academia. It has been seen that people from various disciplines have diversified and developed the concept over time.

In general, the concept of urban acupuncture definitions as follows: rapid, regenerative and restorative (Apostolou, 2018; Daugelaite et al., 2018; Lerner, 2009), strategic, systematic and interconnected (Casanova+hernandez, 2014; Morales, 1980; Probska, 2017; Stupar and Savcic, 2009), point-based, small-scale and target-oriented (Daugelaite, 2018; Shidan & Qian, 2011; Christina Rasmussen, 2012; Prebska, 2017; Enian & Martella, 2018). Some definitions are made directly from the social context perspective such as local consciousness, storyteller network, socio-economic and socio-cultural (Casagrande, 2010; Stokes et al., 2015; Hemingway&Castro Mazarro, 2020). Some definitions have been expanded with various urban design jargons such as tactical, biourbanism, urban catalyst, tactical urbanism, urban morphology and bottom up design (Apostolou, 2018; Casagrande, 2010; Shidan&Qian, 2011; Unt&Bell, 2014).

All definitions are grouped under 7 different main topics in total; scale, intervention, duration, user group, blue-green impact, social impact, potential bottom-up impact. The purpose of this grouping is to evaluate case studies not independently of the

concept of urban acupuncture, but directly in the context of theory and current issues from the past to the present.

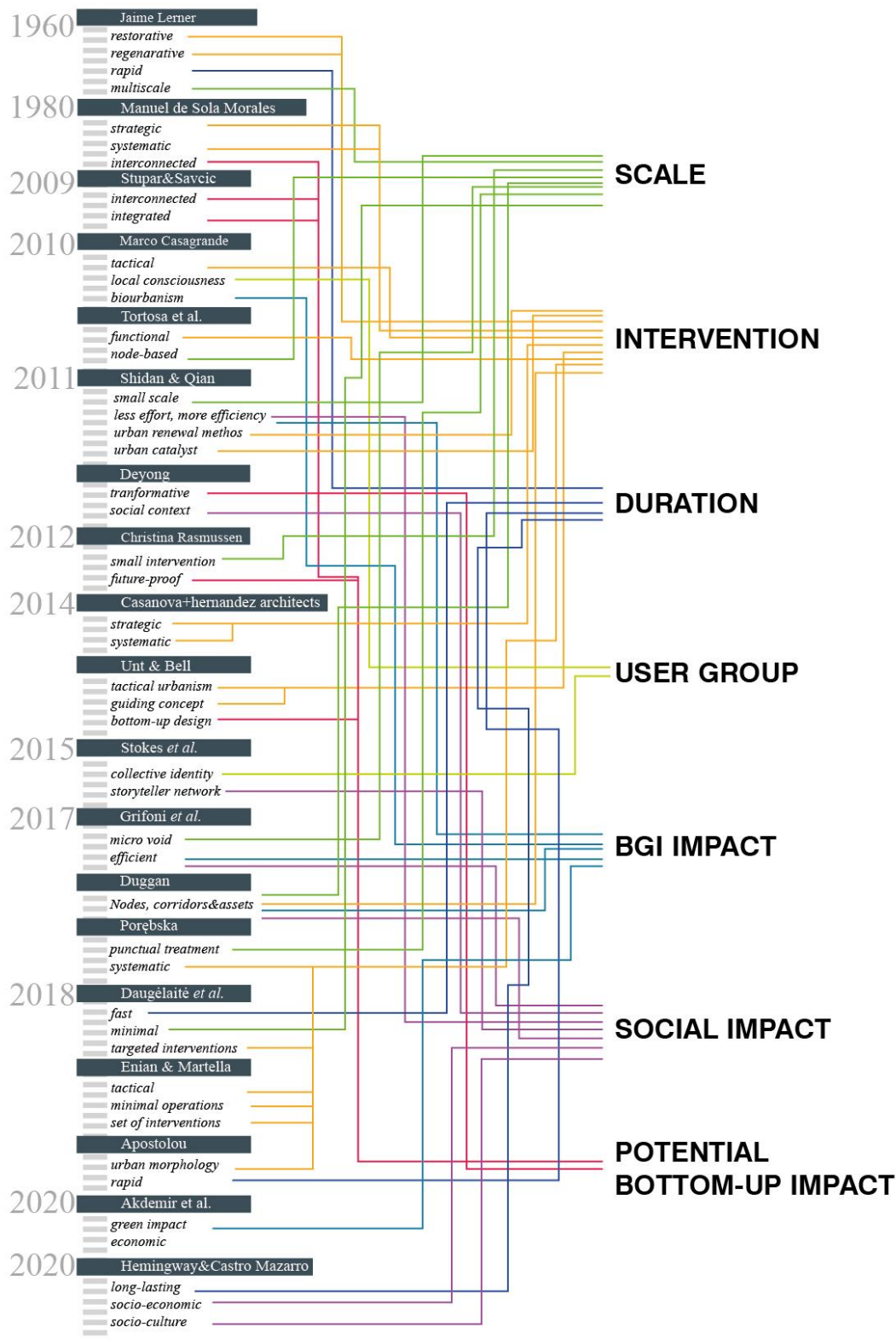


Figure 4.1 : The scheme of conceptual framework.

5. COMPARATIVE CASE STUDIES

In the first stage of the study, the concept diagram, which was revealed by the literature research, provided input for this section, which includes comparative case studies. Comparative case studies were examined through existing projects in the literature. The case studies method is widely used in landscape architecture research and is a suitable method for investigating the complex phenomena of designed landscapes (Brink et al., 2017). Since the concept of urban acupuncture is also a design method in cities with complex systems, it has been tested with various case studies and sample projects have been examined in line with the purpose and questions of the research.

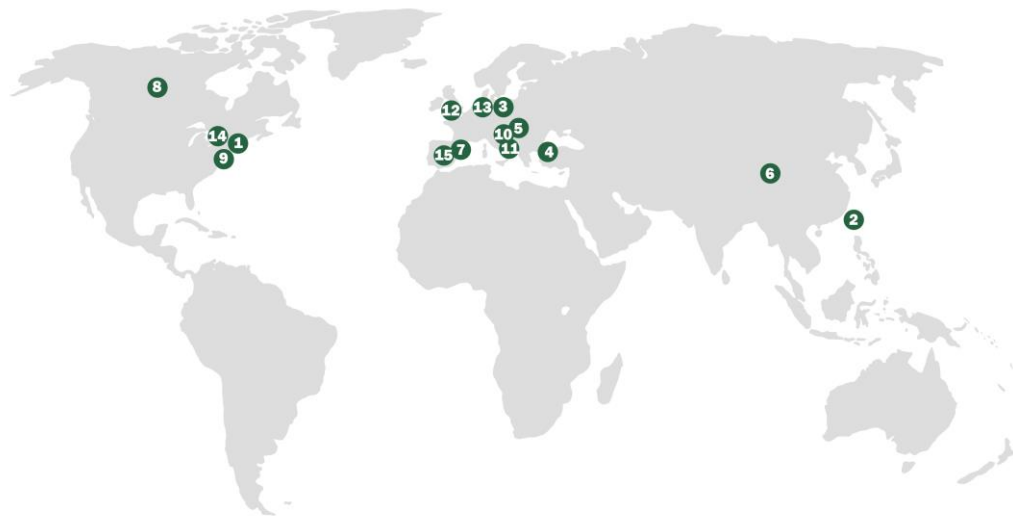


Figure 5.1 : Map of case studies.

Projects with urban acupuncture value from different geographies (Figure 5.1), with various locations, cultures, and climates, were selected. At this stage, the projects were diverse in terms of purpose, location, and scope. The selected projects are from different continents, including America, Europe, and Asia, totaling 15. Four of them are located in the America, two in Asia, and eight in the European region. One project is from Turkey.

When conducting case studies, evidence should be systematically collected to examine various variables (Bell, 2005). For this reason, a system was determined first. Primarily the variables removed from the concept diagram were listed before the comparison was made: Scale, Intervention, Duration, User Group, Blue Green Infrastructure Impact, Social Impact, Potential Bottom-Up Impact.

Project ‘footprints’ have also been added to the table so that projects can be coded for future comparisons. Thus, the projects were coded with the traces in the plan image of each project. Moreover the information of location and designer of projects added to the table as ‘Location’ and ‘Designer’ code. A matrix was prepared with all of these variables (Figure 5.2). The diversity of the variables played an important role in the selection of the case studies. Projects at different scales, in different types of interventions, in different spectrums that have effects on social and blue-green infrastructure in various aspects, temporary or permanent, from the current scale to the upper scale, were examined. In terms of project intervention typology; streetscape, pocket park, point-based, city square, courtyard, waterfront renewal, installation and urban park creates the variety (Figure 5.3).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLOGY

DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT

Figure 5.2 : Matrix base for case studies.

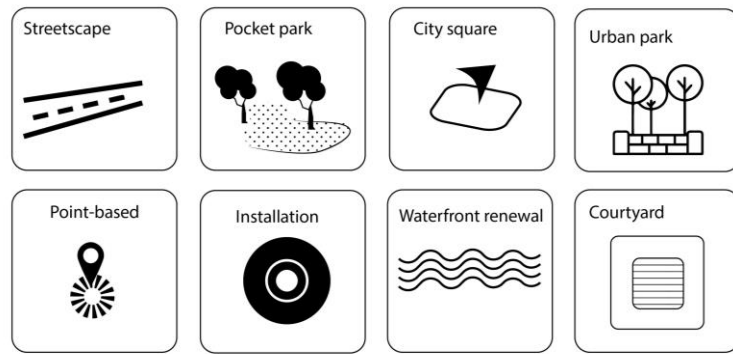


Figure 5.3 : Urban Acupuncture intervention typologies.

The projects chosen for evaluation were exclusively those that had been implemented, in order to ensure greater accuracy in the evaluation process. Projects that were still in the concept or implementation stage were not included in the selection.

Projects from diverse geographical locations and under varying conditions were chosen to observe and compare how urban acupuncture is applied in different situations. Factors such as location, duration, landscape intervention, blue-green infrastructure, and bottom-up effects were considered. Samples were taken from different geographies to ensure a broad representation. It is worth noting that the majority of the selected projects are located in Europe, as this region provides diverse examples of urban development and structure improvement through acupuncture intervention. These examples also demonstrate various and unique characteristics. Overall, the inclusion of projects from different regions adds depth and diversity to the evaluation process.

- **Paley Park, Manhattan**

Paley park is a pocket park in Manhattan. The evaluation matrix as shown in Figure 5.4. The park has man-made waterfall and high trees as canopy. In between the skyscrapers constructed waterfall has the potential to block the city chaos and noise. With the high honey locust trees and water feature the area provides calm and relaxing aura for visitors. It can be a nice resting point for those who are tired of the stress and speed of the city (Figure 5.5). At the same time, due to the fact that the built environment such as Manhattan exceeds the human scale and is cramped, such small getaways that people can easily access can be good for both the peace of the city in general and the continuity of green spaces (Url-3).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Manhattan, New York	Zion Breen Richardson Associates	390 m2	Pocket park	Permanent	Business people Residents Tourists	Man-made waterfall cooling down temperature Acacia trees as green canopy	Gathering people together Socializing between towers	Incentive effect for Manhattan urban fabric

Figure 5.4 : Paley park evaluation matrix.



Figure 5.5 : Paley park (Url 3).

- **Treasure Hill of Taipei**

Taipei, the capital of Taiwan, the government decided to demolish the settlements in the slum in 2003. The evaluation matrix as shown in Figure 5.6. Living areas in Taipei, a settlement that lived with constant floods, were located at the upper elevations, while the lower elevations were used for agriculture. Due to the fact that the demolition vehicles could not reach the buildings on upper levels, only the connections to that area such as bridges and stairs were demolished. The quality of life of the locals, whose spatial access has become difficult over time, has decreased. Casagrande aimed to heal this destruction with a group of local people of the city (Casagrande, 2015). Connections to the Treasure Hill were built with local awareness and local techniques (Figure 5.7). Destroyed agricultural lands began to be used again and the treasure hill was revived with local consciousness and collective production (Url-4).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Taipei, Taiwan	Marco Casagrande	500 m2	Stairs Orchard	Permanent	Locals Tourists	Orchards enhances biodiversity in the city of Taipei	Enhances neighbourhood relations, became safer place	Precedent for Taipei riverside districts

Figure 5.6 : Treasure hill of Taipei evaluation matrix.



Figure 5.7 : Treasure hill of Taipei (Url-4).

- **Copy Garden Rotterdam**

Copy garden is copying one park or one part of the park to places that are not green and unviting. The evaluation matrix as shown in Figure 5.8. It is located on the meeting point of Gaffelstraat and St Mariastraat streets in Rotterdam. The copy garden is the painting on façade which continues with real natural planting areas and walking path near the façade. Therefore it seems as one part both with the real ones and the painting together (Figure 5.9). Shrubs and a Japanese ornamental cherry placed on the pocket park as a continuation of the photo on the wall. With this small intervention, the adjacent street to the building and the small adjacent park becomes attractive for public (Url-5).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Rotterdam, Netherlands	Mothership	100 m ²	Pocket park and facade	Permanent	Locals Tourists	Enhances green infrastructure as pocket park	Creates local gathering area	Can be initiative for neighbour

Figure 5.8 : Copy garden evaluation matrix.



Figure 5.9 : Copy garden (Url-5).

- **Mecidiyeköy Square, Istanbul**

Mecidiyeköy square is one of the busy central points of Istanbul. One of the city's main squares had become the centre of traffic and chaos. The evaluation matrix as shown in Figure 5.10. Within the scope of the renovation project of the Istanbul Metropolitan Municipality, caps and KAAT architects, one of the local offices, carried out the renovation project of the square. The square was opened to the public in 2021 and has become a qualified both transit and stopping square. The project offers a 24-hour living square in the center of the city, isolated from noise and intensity. While the two architectural masses in the square reinterpret the interior-exterior relationship with their 360-degree transparent structure, they bring the public together with art in daily life (Figure 5.11). The project proves how the most chaotic point of the city can be transformed into a quality space, where landscape and architecture are harmoniously compatible with the public interest (Url-6).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Istanbul, Turkey	Caps Office	7800 m ²	City Square	Permanent	Locals Tourists	Support blue infrastructure with softscape to catch runoff water also enhances biodiversity in city	Enhances social gatherings and various activities	creating a public space&park in the middle of heavy traffic chaos. Can heal surrounding

Figure 5.10 : Mecidiyekoy square evaluation matrix.



Figure 5.11 : Mecidiyekoy square (Url-6).

- **Museumsquartier Courtyard Vienna, Austria**

Located in the center of Vienna, the project is one of the important art and culture spots. The evaluation matrix as shown in Figure 5.12. It is a 90,000 m² complex with various service and living spaces such as galleries, courtyards, cafes and residences. Colorful modular public furniture that supports this context in landscape design allows the square to be used in various and different ways (Figure 5.13). It is seen as the locomotive of local culture with its various 60 cultural initiatives (Url-7). Many different programs from many different art collections to fashion, theater, dance, literature, children's and game culture and street art have come to life with the initiatives of these 60 different cultural institutions.

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Vienna, Austria	Johann Bernhard Fischer von Erlach	4300 m ²	Courtyard	Permanent	Locals Tourists	Some greenery spots enhance blue-green infrastructure	Meets art & culture and people. Place to sit, gather, festive	Can be an initiative for neighbour to meet art and culture both in architectural masses and landscape

Figure 5.12 : Museumsquartier Courtyard evaluation matrix.



Figure 5.13 : Museumsquartier Courtyard (Url-7).

- **Urban Bloom AIM Architecture, Shanghai, China**

Urban Bloom is the story of the transformation of a car park into a public space. The evaluation matrix as shown in Figure 5.14. The area with an urban garden setup has been designed to increase the comfort of the open space. Artificial materials are used in the design. It offers a chance to breathe for those coming from areas such as the office and mixed-use places around it. Round transparent objects reminiscent of a tree filled with various leaves are attached to the poles used in the design (Figure 5.15). Urban Bloom, an example of an urban transformation project at the local level, also emphasizes the importance of enjoying the urban space (Url-8).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Shanghai, China	AIM Architecture, URBAN MATTERS	330 m ²	City Square	Permanent	Locals Tourists	Instead of direct impact on blue-green infrastructure, the use of natural elements in artificial way	Society explores space and environment together, brings people on same surface	Creating pleasure point in between blocks, can replicate itself within the city

Figure 5.14 : Urban Bloom evaluation scale.



Figure 5.15 : Urban Bloom (Url-8).

- **Superblock of Sant Antoni**

Superblock is a pedestrianization and street improvement project in Barcelona. . The evaluation matrix as shown in Figure 5.16. It has been developed for a healthier and more comfortable street setup. It is a project that aims to meet green space and social needs while reducing air pollution. With a flexible modular and adaptive design method, they have supported the squares and corners of the streets (Figure 5.17) and their ends with various urban furniture and green areas. Some areas were also emphasized by customizing with graphic designs on the floor (Url-9).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Barcelona, Spain	Leku Studio	16180 m²	City Square & Streetscape	Permanent	Locals Tourists	Increases green areas and biodiversity in the city, decreases pollution and	Offers urban niches to socialize, activate and rest under trees	Can be an inspiration to prioritize urban placemaking rather than vehicle network

Figure 5.16 : Superblock of Sant Antoni evaluation matrix.



Figure 5.17 : Superblock of Sant Antoni (Url-9).

- **TULIP – Your place at the table, Canada**

It is a public project implemented with the aim of socializing with the new normal during the pandemic process. . The evaluation matrix as shown in Figure 5.18. Designed as an installation in Montreal, the design is a reinterpretation of a 100-metre-long table. The table is placed among the existing trees and furniture (Figure 5.19). The table waving under the trees offers different experiences to the visitors. The yellow color palette, which contrasts with the tone of green, keeps the environment alive and makes it festive (Url-10).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Montreal, Canada	Maude Lescarbeau and Camille Blais	3260 m ²	Urban table	Permanent	Locals Tourists	An integrated urban element has been placed in the existing green space	Place where people can socialize and relax and breathe within the rules of the pandemic.	Important for similar areas that it takes shape according to the presence and activates the environment.

Figure 5.18 : TULIP – Your place at the table evaluation matrix.

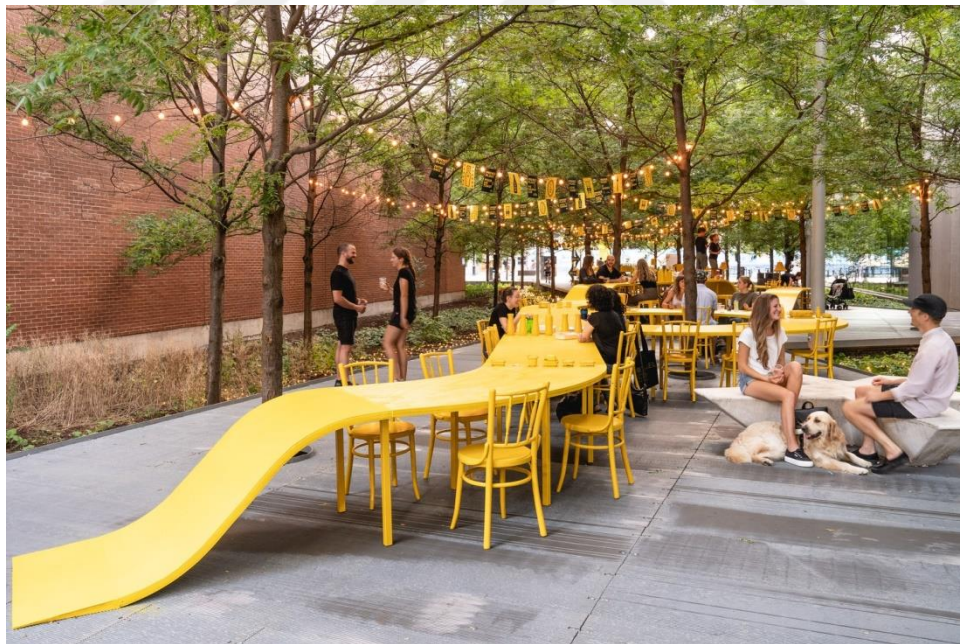


Figure 5.19 : TULIP – Your place at the table (Url-10).

- **Brooklyn Bridge Park Tidal Wetlands, USA**

The Tidal wetlands project is one of the projects that bring together natural systems and the public. . The evaluation matrix as shown in Figure 5.20. It allows people to experience different seasons with various outdoor scenarios. The project, which ensures the establishment of the urban landscape and the local ecosystem balance, offers relaxing, nostalgic and enlightening experiences (Figure 5.21). The project also aimed to increase awareness of the eastern river and, accordingly, to ensure the management of pocket parks in the surrounding area (Url-11).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Brooklyn, USA	Michael Van Valkenburgh	900 m ²	Urban Park	Permanent	Tourists Locals	Responds to the seasonal changes in the coastal ecosystem, is located at the point where the blue-green infrastructure meets the public.	It allows large and small social groups to come together in the heart of the city, at the same time, intertwined with nature, accompanied by a landscape.	The transformation of the city coastal water interface for the benefit of the public and nature is a viable design method for all coasts.

Figure 5.20 : Brooklyn Bridge Park Tidal Wetland evaluation matrix.



Figure 5.21 : Brooklyn Bridge Park Tidal Wetland (Url-11).

- **Kopli beach, Tallin, Estoonia**

The Kopli coast, which was designed with BlueHealth within the scope of Horizon 2020, aimed to offer different experiences to users with various point interventions. . The evaluation matrix as shown in Figure 5.22. In the project, which improves and diversifies open space experiences, interventions were made for 3 different landscape types; reed, beach and cliff. Various boardwalks, resting and viewing areas, and areas for trekking are designed within the landscape (Figure 5.23). It is also a design proposal that strengthens the coastal ecosystem (Url-12).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Tallinn, Estonia	Merle Karro-Kalberg, Heiki Kalberg, Tanel Breede	2 km	Waterfront regeneration	Permanent	Locals Tourists	Strengthens the coastal ecosystem in terms of coastal flora&fauna	Boardwalks, resting and viewing areas, enhances social interaction.	While it has an impact on the entire coastal ecosystem, it also sets an example for similar places.

Figure 5.23 : Kopli Beach evaluation matrix.



Figure 5.22 : Kopli beach (Url-12).

- **Level Up, Croatia**

Level up is the product of an architectural workshop in Rijeka, Croatia. . The evaluation matrix as shown in Figure 5.24. It is a project to open an unused and idle roof next to the Dead Canal in the Rijeka Delta for public use in a different way. The project generates temporary urbanism through material and spatial discontinuity as opposed to built and permanent architecture (Figure 5.25). Emulating the growth and continuous change and transformation of cities, it redefines an industrial balcony to the Delta. The structure, which consists of a series of raised platforms, also offers users different experiences and perspective (Url-13).

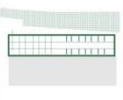
FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Croatia, Hrvatska	Brett Mahon, Joonas Parviainen, Saagar Tulshan, Shreyansh Sett	110 m ²	Installation & Structure	Temporary	Locals Tourists	No direct impact on BGI	Offers users different experiences and perspective while socializing	To activate idle areas, temporary structures increase the dynamic at different times in various parts of the city.

Figure 5.24 : Level Up evaluation matrix.

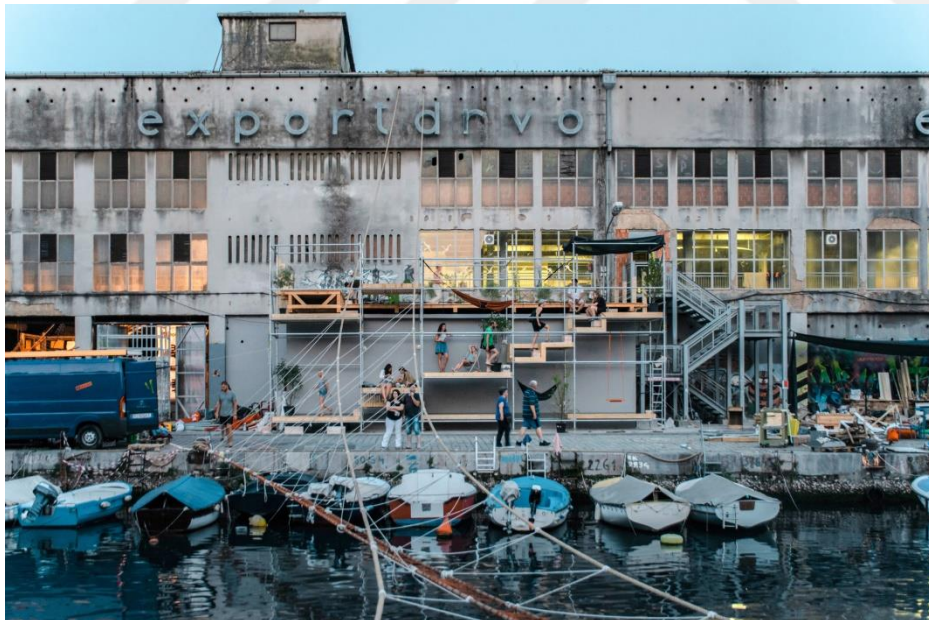


Figure 5.25 : Level Up (Url-13).

- **Teats Hill, Plymouth, UK**

Teats Hill is a coastal improvement project in the city of Plymouth. . The evaluation matrix as shown in Figure 5.26. The poor quality and difficult access to the shore makes it difficult for public use. Therefore, direct access to the coast and the coastal ecosystem, along with various activities in the area, has been defined. Some of these are sports and playground, bicycle path, gathering and event space (Figure 5.27). It also aimed to support the local vegetation and wildlife on the coast, which supports the coastal ecosystem. With the information signs in the area, the public is informed about how the recreation and natural area should be protected and used. Thus, the intersection of the city, nature and people connection is strengthened. The project can establish links between activity and health and well-being (Bell, et al., 2020)

FOOTPRINT	LOCATION	DESIGNER	SCALE	TPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Tallinn, Estonia	Brett Mahon, Joonas Parviainen, Saagar Tulshan, Shreyansh Sett	8800 m ²	Waterfront regeneration	Permanent	Locals Tourists	Supports the local vegetation and wildlife on the coast, which supports the coastal ecosystem	Provides sports and playground, bicycle path, gathering and event space	While coastal rehabilitation is taking place, public opening and improvement can also be done in the rest of the coast.

Figure 5.26: Teats Hill evaluation matrix.



Figure 5.27 : Teats Hill (Url-14).

- **Room for the River**

The project, carried out in Nijmegen, the Netherlands, is a different breeding project. The evaluation matrix as shown in Figure 5.28. The Waal River has caused many floods as it curves sharply in the city of Nijmegen. Aiming to make more room for the river as of 2012, the project opened a bypass channel parallel to the sharp turn. With the additional branch (Figure 5.29), the increased water height due to climate change has decreased and at the same time, flood disasters have been prevented. The project, which was carried out with the method of living together with completely natural systems, prepared a ground for social activities on the newly formed coast in dry times-when the water is low (Url-15).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Nijmegen, Netherlands	H+N+S	350 m	River reclamation Bypass channel	Permanent	Locals Tourists	The increased water height has decreased and flood disasters have been prevented.	Provides sports and playground, bicycle path, gathering and event space	It has prepared a ground for social activities on the newly formed coast in dry times-when the water is low

Figure 5.28: Room for the River evaluation matrix.



Figure 5.29: Room for the River (Url-15).

- **Softwalks- NY**

Softwalks is Bland Hoke and Howard Chambers' punctual public space activation project in New York. The evaluation matrix as shown in Figure 5.30. Due to the increasing construction in the city, the sidewalks on which the pedestrians walk have become idle and unusable. The project aims to meet public needs by making these areas useful. The diversification of public furniture (Figure 5.31) set with different configurations provides urban activation. With furniture sets such as seating units, hanging flower pots, and counters, it creates pleasant spaces where users can spend time in a social environment while passing by (Url-16)

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	New York, USA	Hoke and Chambers	3000 m ²	Streetscape	Permanent	Locals Tourists	Enhances biodiversity within the city	Creates pleasant spaces where users can spend time in a social environment while passing by	Potential to activate streets and can have wider impact when it can implement strategically

Figure 5.30 : Softwalks – NY evaluation matrix.



Figure 5.31 : Softwalks – NY (Url-16).

- **Moll de la Funsta, Barcelona**

Moll de la Funsta located in Barcelona, the project area was not suitable for public use as it was previously occupied by busy roadways, industrial activities and ship docks. The evaluation matrix as shown in Figure 5.32. With the planning made afterwards, the municipality implemented a renovation project for the public to use the coast comfortably and to organize activities along the coast. Road sections have been regenerated and access to the shore has been improved (Figure 5.33). In the design, access was diversified and adapted to the site, with platforms at different levels on the shore. It has become an iconic and exemplary coastal project of Barcelona (Url-17).

FOOTPRINT	LOCATION	DESIGNER	SCALE	TYPOLGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
	Barcelona, Spain	Manuel de Solà Morales	500 m	Waterfront renewal	Permanent	Locals Tourists	Road sections regenerated and access to the shore has been improved Vehicles decreased	Provides sports and playground, bicycle path, gathering and event space	Offers social spaces with pedestrian-friendly coastal recreation

Figure 5.32 : Moll de la Funsta evaluation matrix.



Figure 5.33 : Moll de la Funsta (Url-18).

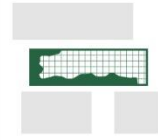
PROJECT	LOCATION	DESIGNER	FOOTPRINT	SCALE	TYPOLGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
Paley Park	Manhattan, New York	Zion Breen Richardson Associates		390 m ²	Pocket park	Permanent	Business people Residents Tourists	Man-made waterfall cooling down temperature Acacia trees as green canopy	Gathering people together Socializing between towers	Incentive effect for Manhattan urban fabric
Treasure Hill	Taipei Taiwan	Marco Casagrande		500 m ²	Stairs Orchard	Permanent	Locals Tourists	Orchards enhances biodiversity in the city of Taipei	Enhances neighbourhood relations, became safer place	Precedent for Taipei riverside districts
Copy Garden	Rotterdam, Netherlands	Mothership		100 m ²	Pocket park and facade	Permanent	Locals Tourists	Enhances green infrastructure as pocket park	Creates local gathering area	Can be initiative for neighbour
Mecidiyeköy Square	Istanbul, Turkey	Caps Office		7800 m ²	City Square	Permanent	Locals Tourists	Support blue infrastructure with softscape to catch runoff water also enhances biodiversity in city	Enhances social gatherings and social activities with art comfortable areas	Creating a public space&park in the middle of heavy traffic chaos. Can heal surrounding
Museumsquartier Courtyard Vienna	Vienna, Austria	Johann Bernhard Fischer von Erlach		4300 m ²	Courtyard	Permanent	Locals Tourists	Greenery spots enhance blue-green infrastructure	Meets art & culture and people. Place to sit, gather, festive	Can be an initiative for neighbour to meet art and culture both in architectural masses and landscape
Urban Bloom AIM Architecture	Shanghai, China	AIM Architecture, URBAN MATTERS		7800 m ²	City Square	Permanent	Locals Tourists	Instead of direct impact on blue-green infrastructure, the use of natural elements in artificial way	Society explores space and environment together, brings people on same surface	Creating pleasure pont in between blocks, can replicate itself within the city
Superblock of Sant Antoni	Barcelona, Spain	Leku Studio		16180 m ²	City Square & Streetscape	Permanent	Locals Tourists	Increases green areas and biodiversity in the city, decreases pollution and	Offers urban niches to socialize, activate and rest under trees	Can be an inspiration to prioritize urban placemaking rather than vehicle network

Figure 5.34 : Matrix of Case Studies

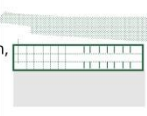
PROJECT	LOCATION	DESIGNER	FOOTPRINT	SCALE	TPOLOGY	DURATION	USER GROUP	BGI IMPACT	SOCIAL IMPACT	POTENTIAL BOTTOM-UP IMPACT
TULIP Your place at the table	Motreal, Canada	Maude Lescarbeau and Camille Blais		3260 m ²	Streetscape	Permanent	Locals Tourists	An integrated urban element has been placed in the existing green space	Place where people can socialize and relax and breathe within the rules of the pandemic.	Important for similar areas that it takes shape according to the presence and activates the environment.
Brooklyn Bridge Park Tidal Wetlands	Brooklyn, USA	Michael Van Valkenburgh		900 m ²	Urban Park	Permanent	Tourists Locals	Responds to the seasonal changes in the coastal ecosystem, is located at the point where the blue-green infrastructure meets the public.	It allows large and small social groups to come together in the heart of the city, at the same time, intertwined with nature, accompanied by a landscape.	The transformation of the city coastal water interface for the benefit of the public and nature is a viable design method for all coasts.
Kopli beach	Tallinn, Estonia	Merle Karro-Kalberg, Heiki Kalberg, Tanel Breede		2 km	Waterfront regeneration	Permanent	Locals Tourists	Strengthens the coastal ecosystem in terms of coastal flora&fauna	Boardwalks, resting and viewing areas, enhances social interaction.	While it has an impact on the entire coastal ecosystem, it also sets an example for similar places.
Level Up	Croatia, Hrvatska	Brett Mahon, Joonas Parviainen, Saagar Tulshan, Shreyansh Sett		110 m ²	Installation & Structure	Temporary	Locals Tourists	No direct impact on BGI	Offers users different experiences and perspective while socializing	To activate idle areas, temporary structures increase the dynamic at different times in various parts of the city.
Teats Hill Plymouth	Tallinn, Estonia	Hannon Homes of Teignmouth		8800 m ²	Waterfront renewal	Permanent	Locals Tourists	Supports the local vegetation and wildlife on the coast, which supports the coastal ecosystem	Provides sports and playground, bicycle path, gathering and event space	While coastal rehabilitation is taking place, public opening and improvement can also be done in the rest of the coast.
Room for the River	Nijmegen, Netherlands	H+N+S		350 m	Waterfront renewal Bypass channel	Permanent	Locals Tourists	The increased water height has decreased and flood disasters have been prevented.	Provides sports and playground, bicycle path, gathering and event space	It has prepared a ground for social activities on the newly formed coast in dry times-when the water is low
Softwalks- NY	New York, USA	Hoke and Chambers		3000 m ²	Streetscape	Permanent	Locals Tourists	Enhances biodiversity within the city	Creates pleasant spaces where users can spend time in a social environment while passing by	Potential to activate streets and can have wider impact when it can implement strategically
Moll de la Funsta, Barcelona	Barcelona, Spain	Manuel de Solá Morales		500 m ²	Waterfront renewal	Permanent	Locals Tourists	Road sections regenerated and access to the shore has been improved Vehicles decreased	Provides sports and playground, bicycle path, gathering and event space	Offers social spaces with pedestrian-friendly coastal recreation

Figure 5.35 : Matrix of Case Studies - 2

5.1 Star of Evaluation Scale

To evaluate the projects after creation of matrix as seen in Figure 5.34 and Figure 5.35, the evaluation scale (Figure 5.36) was created based on the concept diagram obtained from the literature research. It has been prepared by considering the scale, impact on Blue-Green infrastructure (BGI), social impacts (SI), duration and potential bottom up impact of the projects. Each is graded on a line and takes the form of a star with the project in the centre. According to the values, the points in each line are combined and the evaluation trace is created. Thus, the evaluation of more than one parameter of the project can be made with a single graphic expression. The 'scale' and 'duration' assessments of the project do not need a transformation as they are already quantitative assessments. However, since parameters such as blue-green infrastructure impacts, social impacts, and potential bottom up impact were qualitative-based assessments, quantification was required for 'high-medium-low' assessments on each evaluation line (Figure 5.37).

The user group is grouped into locals and tourists. Since the projects are on a local scale, they are generally projects that meet the needs of the locals, but they are also projects that improve the city and are related to tourism and economy. While making the evaluation, those who contribute to tourism together with the local users are evaluated for tourists since they are mainly tourism.

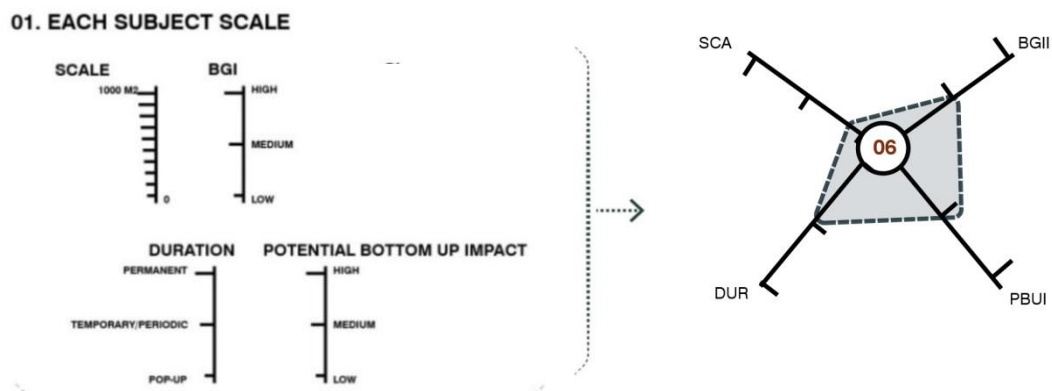


Figure 5.36: Star of Evaluation Scale (SES)

5.1.1 Scale (SCA)

All projects related to the subject of scale should be evaluated in terms of each other. The ranges for the 'Low – Medium - High' levels were determined based on the projects with the largest and the smallest areas. The project with the largest area of 16500 m² is the 'Superblock of Sant Antoni' project. The project with the lowest square meter is the 'Level Up' project with 110 m². As a result of the calculations according to these:

- 0-5500 m² - Low
- 5500-11000 m² - Medium
- 11000-16500 m² - High

5.1.2 Blue green infrastructure impact (BGII)

Blue-green infrastructure evaluation, one of the fundamentals of the research, was quantified according to certain criteria. These criteria were evaluated not only with the blue and green patches owned throughout the project, but also with their contribution to the blue-green infrastructure of the region. The fact that the acupuncture effect has the potential to transform into a ripple effect and improve the entire infrastructure has been part of this evaluation. Projects with only green or blue patches that do not fit into their location are projects that can feed the environment in a limited number without being fed by their environment.

If the examined project contributes to the blue-green infrastructure in both ways, it gets 4 points and is evaluated as “high”. It receives 1 point for each contribution to blue-green infrastructure. If it does not contribute to any, it is considered “low” with a score of 0.

5.1.3 Duration (DUR)

Projects that are implemented using the urban acupuncture method or have an acupuncture effect are divided into two categories: permanent and temporary. Permanent projects may demonstrate the acupuncture effect during the implementation process, while temporary projects are intended to have a quick impact. Permanent projects are classified as "High", while "Medium" and "Low" labels are assigned to temporary projects. Case studies within the scope of the

workshop and those with a duration of less than 6 months were evaluated as "Low", and non-permanent projects with a duration of more than 6 months were evaluated as "Medium".

5.1.4 Potential bottom up impact (PBUI)

All projects are evaluated for their potential bottom-up impact. Urban acupuncture interventions can create a regional effect by making small, strategic moves, which is one of the main goals of this method. This allows for cities to improve on a larger scale. The potential bottom-up impact usually starts small, like a ripple effect, and gradually increases in scope. Assessing this effect is initially a qualitative assessment, which can then be quantified, sometimes according to the scale of the project. The impact usually increases or decreases in direct proportion to the reference from the scales of the projects. However, a small-scale project such as Casagrande's stairs and other minor improvements in Taipei can have a big positive social impact. In the Cheonggyecheon River restoration project, the implementation of a single corridor not only enhances the city's blue-green infrastructure, but also promotes the development of its social and cultural structure. However, as there is no established method to quantify this effect, it was included in the evaluation scale based on various sources and the data obtained. The 'Level up' project, while being a temporary and tactical initiative, still plays a role in the city's social-cultural infrastructure, though its bottom-up impact may be considered low as it does not generate long-term ripple effects. Conversely, although Paley Park is a small pocket park, it serves as a respite among the tall buildings in Manhattan, and thus its bottom-up impact is considered high as it has the potential to inspire the creation of more pocket parks in the area.

SCALE**SCALE**

Projects with the maximum and minimum square meters will be based.

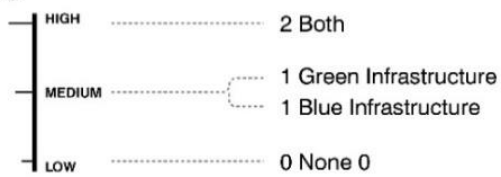
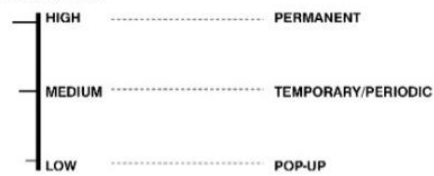
BGI**BLUE-GREEN INFRASTRUCTURE****DURATION****POTENTIAL BOTTOM UP IMPACT**

Figure 5.37: Summary of Assessments.

5.2 Case Studies Evaluations

The evaluation of various projects, particularly those utilizing the "urban acupuncture" method as identified in the comprehensive literature review, was conducted. Case studies of projects utilizing this method were analyzed, in addition to those that exhibit characteristics of or have the potential to exhibit the effects of urban acupuncture, even if the method was not explicitly mentioned by the designers. An examination of projects that aim to enhance cities through various spatial interventions in diverse geographical locations was conducted, with the goal of addressing the research questions and objectives.

A star evaluation scale, designed as a method of comparing case studies, was applied to each project. To facilitate visual comparison, the results of the star evaluation scale were summarized in a matrix. This allows for an easy comparison of the project's footprint and evaluation scale on the x-y plane simultaneously. Notably, the light blue-colored figure, representing the overall evaluation, assumes distinct forms for each project, varying in size depending on the criteria.

Most of the projects focused on urban park projects, but there are also projects with various other characteristics, such as the BRT Curitiba, which is a public transportation project. The footprint and scale of the BRT is different than other case studies, as the area is not measured in square meters, but rather by the length of the system. This is also the case for river projects, such as Cheonggyecheon and Nijmegen, as they are linear in nature and the relevant information provided is the length, not the area.

Relationships between different parameters of the projects can also be established in the projects that are examined in line with the criteria determined by the evaluation scale. Bilateral or tripartite relationships can be established and interpreted, such as the direct proportion between project scales, contribution to blue-green infrastructure, or time and potential bottom-up impact.

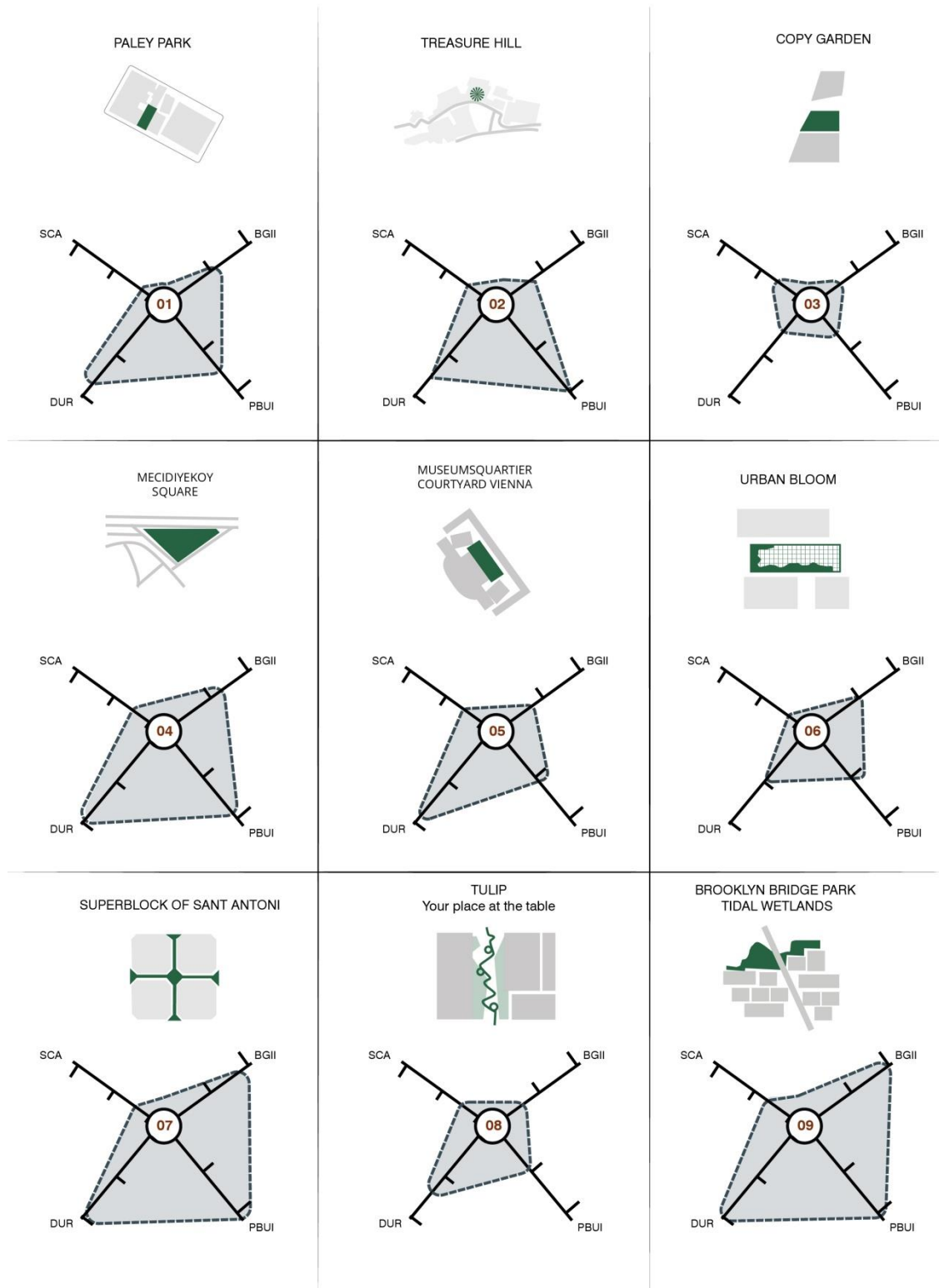


Figure 5.38 : Evaluation scale implementation.

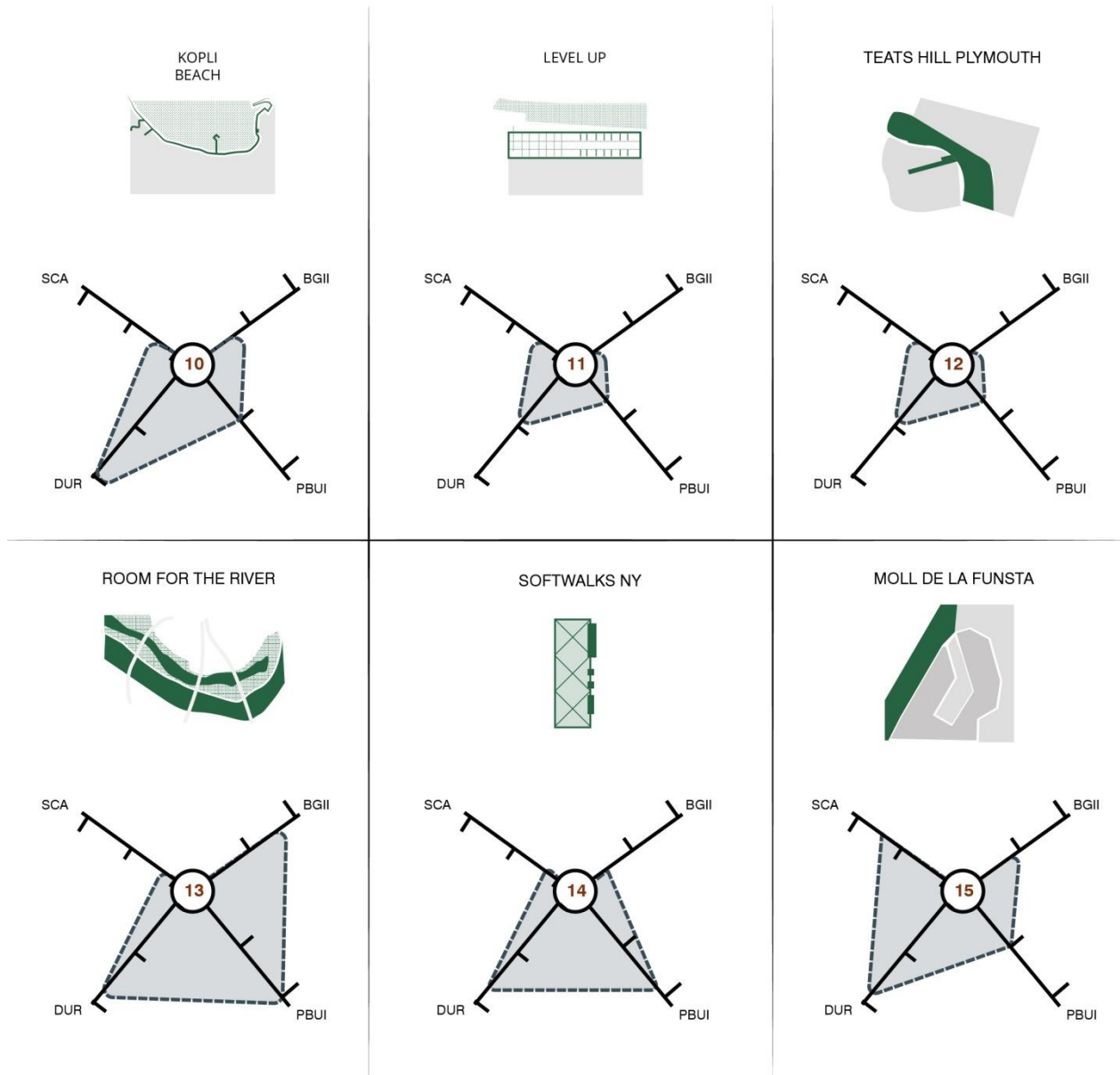


Figure 5.39 : Evaluation scale implementation -2.

The evaluation scale applied to each project as shown in Figure 5.38 and Figure 5.39 provided the opportunity to compare all parameters and project types. While some parameters vary in all projects, some parameters are mostly the same in many. For example, the 'duration' parameter has been evaluated as 'high' in general because most projects are permanent. It has been observed that there is a strong relation between 'bottom-up impact' and 'duration'. For example, the Superblock of Sant Antoni project is a street improvement and public space project and was evaluated as 'high' because its duration is permanent. At the same time, since it transforms the city and makes the 4 streets and small squares of the city pedestrian priority and livable, and the repetitive part of the city is streets and squares, it can be easily applied in other parts of the city and the bottom-up improvement system can work well.

Many of the projects have also affected the environment in which they are located in the context of social impact. One of the evaluation criteria, 'social impact', was found to be independent of criteria such as scale or blue-green infrastructure, but associated with the duration of the project. For example, the softwalks NY project is a permanent project with a high social impact, so both criteria evaluated as 'High'. On the other hand, when the evaluation scale of the Level Up project is examined, both criteria are evaluated as 'Low' since both its duration and social impact are low, and the evaluation method is shortened for duration and social impact in this project. An inference can be made on this subject: the duration of the projects requires a little more time, which is not temporary, instead of a short time to improve the environment. This dual relationship is similar to the duration and the blue-green infrastructure impact. For example, Museums Quarter Vienna has been rated as 'high' for social impact and duration. However, in the Urban Bloom project, it is seen that both are evaluated as 'Low' in direct proportion. In fact, the trio of time-social impact-bottom-up impact can affect each other indirectly.

Another parameter related to duration is the blue-green infrastructure. Since blue-green infrastructure is a living and holistic system, instead of pop-up or short-term projects, long-term, permanent, well-planned projects that are open to change and transformation help to improve the infrastructure. Therefore, the relationship between 'duration' and 'blue-green infrastructure impact' is strong. For example, when the Brooklyn Bridge Park Wetlands and Urban Bloom projects are compared, this relationship is clearly noticeable.

The Brooklyn Bridge Park project is a permanent and blue-green infrastructure transformation initiative, whilst the Urban Bloom project is a non-permanent, neighbourhood-scale transformation of public spaces. The park in Brooklyn serves as a lasting interface between the city and water, providing substantial support for the city's resilience, water management, and green spaces. As such, it holds a high value in terms of blue-green infrastructure. In contrast, the Urban Bloom project offers a temporary respite for the public, but its contribution to blue-green infrastructure is considered low.

Although the projects were assessed using the same standards and criteria, there were instances where they received vastly differing evaluations due to differences in context and criteria. For example, both the BRT project and the Kopli Beach project have low levels of social integration. The BRT project aims to provide a solution for the city's public transportation needs. It makes a significant contribution to blue-green infrastructure indirectly, but is lacking in terms of social integration. The Volgermeerpolder project has a significant impact on blue-green infrastructure, but its social integration is weak. Urban acupuncture has a distinct focus that aligns with the objectives of the projects. The Volgermeerpolder is a project for natural succession and rehabilitation, serving as a walking area and partially as a natural park for the surrounding villages. The BRT project, on the other hand, addresses public transportation needs and improves infrastructure by reducing carbon emissions, but its purpose is limited to transportation, resulting in low social integration. Although the Cheonggyecheon River, Sagrera Park, and Room for the River initiatives share similarities, they differ in certain aspects. The Cheonggyecheon River and Sagrera Park, which rank highly on the scale, offer a linear public space within the city that enhances social integration and provides blue-green infrastructure. While the Room for the River Nijmegen project has a similar aim and character, it has low value in terms of social integration. The project's purpose is to create a channel bypass, resulting in a large bypass channel running through the city. While it provides a new shoreline for the city and improves its blue-green infrastructure, as well as reducing the risk of flooding, it doesn't have the same impact on social integration as the other stream projects. Consequently, despite similarities in high and low values, the evaluations differ contextually due to differences in project objectives.



6. DISCUSSIONS AND CONCLUSION

As cities become more populated, the design approaches for public spaces have also evolved and become more diverse. The concept of blue-green infrastructure is particularly noteworthy as it is not separate from the landscape and has a direct relationship with it, leading to mutual growth and development. Simultaneously, city design methods must be practical, appropriate, and solution-focused. In particular, the design of public spaces in large cities requires the approval of various administrative procedures, making the process slow and complicated. The study focuses on the urban acupuncture method as a means of improving the blue-green infrastructure and social context in problematic areas of cities through urban and landscape design. In this context, the benefits and advantages of urban acupuncture as a design method were examined. As the research topic intersects the blue-green infrastructure of the city, social infrastructure, and the urban acupuncture design method, the interconnections and relationships between these concepts were studied. This research was conducted with a technical research design (as stated in 1.3 study design). The study was carried out systematically, following the established flow, which helped to establish a strong conceptual foundation for the second phase. Due to its significance, literature research played a crucial role in the study. It has been observed that urban acupuncture has been practiced in various ways throughout history and continues to evolve in the present. Projects proposed as solutions, particularly in cities facing increased complexity due to construction, have followed the vision of urban acupuncture pioneers and contributed to the growth and development of this method. For instance, as mentioned by Lerner, the regional impact of small interventions can be seen in many examples, such as the series of pocket parks in Manhattan. Additionally, projects like Brooklyn Bridge Park and Room for the River demonstrate the integration of nature into urban areas, showcasing that no part of the city is more important than another, as emphasized by Morales in the importance of a systematic and strategic network in urban

acupuncture. Overall, these projects provide tangible evidence of the effectiveness of urban acupuncture in creating livable spaces for people in cities.

The literature review analysis identified certain concepts that were input to the secondary part of the research (as stated in 4. Literature Analysis). It can be sorted as follows:

- Scale

The scale varies in urban acupuncture samples. A 300 m² city park and a 16500 m² nature development area can be projects designed with this method.

- Intervention

In the context of design intervention, urban acupuncture can be realized with various interventions. It can be in different spectrums from city squares, parks, and coastal projects to nature improvement areas.

- Duration

Projects realized in the context of urban acupuncture are designed either permanently or periodically/temporarily. It has been observed that duration affects various parameters such as blue-green infrastructure in different projects, but does not affect some parameters such as user group.

- User Group

Each project has its own user group. In general perspective they are all public that's why the widest context includes two groups; locals and tourists.

- Blue-Green Infrastructure Impact

Blue-green infrastructure is the living and complex structures of cities. Because the urban acupuncture method is strategic and curative, it can contribute to blue-green infrastructure in many ways. Pocket parks, urban parks and strategic squares can be designed within the city, providing benefits such as storm water management and biodiversity.

- Potential Bottom-up Impact

The potential bottom-up impact has not been measured as precisely as other criteria. Overall, larger footprint projects can touch more ground, increasing the potential bottom-up impact.

Urban acupuncture projects are closely related to the concepts of landscape design, urban blue-green infrastructure, social context and can be examined in the context of

these criteria. For this reason, the comparative case studies made in the second stage were examined one by one in line with these criteria and brought together on an analytical plane (see 5. Comparative Case Studies - Matrix of Case Studies). In order to make the comparison consistent and effective, an evaluation scale has been developed (see 5.1. Star of Evaluation Scale). Since the overall evaluation criteria are both qualitative and quantitative, the qualitative ones are made suitable for quantitative evaluation and quantified according to certain principles (see 5.1.1. – 5.1.5.). While evaluating the projects, they were first quantified and then a simple analytical evaluation was made in the form of 'low-medium-high'. Thus, a three-stage common evaluation scale was created. At the same time, this method has been found suitable for comparative case study, making it easier to read from the graph and compare. As a result of research and evaluations, it has been seen that the urban acupuncture method has developed blue-green infrastructure and social integration in various cities in different geographies and has potential for the future. The urban acupuncture method allows landscape design to be a solution-oriented, integrated and open-to-development system in the infrastructure of the city as a product of not only aesthetic but also an operational process in public spaces. It has been concluded that it is a method that solves many problems at the same time, such as storm water management and public space comfort in cities, in a tactical and strategic way. By using this method, the ownership of public spaces can be given to the public, which prioritizes community development in the design of the city. This solution-oriented approach can provide fast and urgent solutions to problems in the city, rather than relying on lengthy and costly urban planning processes. The benefits and advantages of this design method have been studied, and it has been established that urban acupuncture can contribute to the ecological and economic development of the city, as well as improve the blue-green infrastructure and social context of the city. With urban acupuncture, it is possible to minimize the negative effects of rapid urbanization on the physical open space and comfort of living things by reducing carbon dioxide emissions and increasing wetlands and green areas.

Especially in a sprawling metropolis like Istanbul, solution-oriented, practical, and viable projects have the potential to create more livable public spaces compared to long-term projects that may take years to complete. Urban acupuncture interventions offer solutions for the city by bypassing or expediting the processes leading up to project implementation and beyond.

6.1 Limitations

Field work could not be done due to the pandemic and the variety of the case studies. The author had prior familiarity with only the Mecidiyekoy Square project among those evaluated. Evaluations were made according to online literature information. Therefore visual and physical assessments and seeing may make minor changes in the evaluations. For example, if the social impact criterion had been made by talking directly to the locals living in that region instead of written sources, different information could have been obtained.

Since this study, which scientifically deals with the subject of urban acupuncture in the discipline of landscape architecture, also covers many issues with social foundations, ambiguities are inevitable especially when evaluating projects, such as potential bottom-up impact or social impact. Ambiguities can be seen from time to time in some qualitative-based evaluation criteria. However the researches are deepened by different sources and supported by scientific data. In this way, some ambiguities have been tried to be minimized based on certain foundations in qualitative evaluations.

6.2 Contributions and Further Research

The urban acupuncture method consists of superficial information consisting of the definitions and practices of pioneering names in the current literature, which often cannot go beyond the definition of the concept of 'acupuncture'. One of the contributions of the study is to add a certain depth to the literature. As of 1960, written and online sources were examined, compiled and filtered to contribute to the research, and a diverse and chronological literature study was conducted by comparing different sources. The literature study, both for urban acupuncture and for the subject of the thesis, related issues such as blue-green infrastructure, urban space, and public spaces are also discussed in parallel. Thus, a research contribution was made to the literature, benefiting from diverse sources. Aiming to compare the concept of urban acupuncture with the definitions of different sources and people. Furthermore to establish its relationship with the blue-green infrastructure and social integration, which are fundamentals of the city. At the same time, it has been observed that the urban acupuncture resources available in the literature have not been examined in detail in terms of blue-green infrastructure. For this reason, the

infrastructure-acupuncture relationship is brought to the literature with this research. At the same time, examining this relationship in the social context in parallel has expanded and enriched the scope of the research.

The evaluation scale developed in the study contributes to the literature as an evaluation method. This method helped to evaluate the case studies examined within the scope of the research according to the criteria obtained from the literature. Within the scope of the study, especially in case studies, it is a suitable tool to measure the qualitative and quantitative characteristics and potentials of the projects at the same time in line with certain criteria. A method has been created that also helps to compare projects with each other. The assessment scale developed for evaluation is an assessment method open to future use and development for comparative case studies. This method is open for discussions and further development by other researchers. Although it is used as a comparison of case studies in this research, it can also be used to compare various topics in different studies. It is a multifunctional method especially because of its potential to compare multiple evaluation criteria at the same time. In this study, evaluation was made with 5 criteria, the number of these criteria can be diversified and the criteria to be compared can be increased.

As a result, with the study, the relationship between urban acupuncture, blue-green infrastructure and social context in the literature was enriched with different sources and chronological concept definitions were studied. With the urban acupuncture method, the improvement potentials of the cities in the blue-green infrastructure and social context were investigated. In the next stage, the acupuncture effect of the cities was measured and compared on a common ground through the existing projects with the original method developed. In this study, different criteria were compared and discussed at the same time. Another unique value of the study is that the comparison is based entirely on theoretical and practical foundations in the literature.



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