

AN IMPLEMENTATION OF A NEW SUSTAINABLE DESIGN APPROACH ON
PUBLIC SPACES: THE CASE OF ULUS SQUARE

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

SELEN KARADOĞAN

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
URBAN DESIGN IN CITY AND REGIONAL PLANNING

JUNE 2019

Approval of the thesis:

**AN IMPLEMENTATION OF A NEW SUSTAINABLE DESIGN APPROACH
ON PUBLIC SPACES: THE CASE OF ULUS SQUARE**

submitted by **SELEN KARADOĞAN** in partial fulfillment of the requirements for
the degree of **Master of Science in Urban Design in City and Region Planning**
Department, Middle East Technical University by,

Prof. Dr. Halil Kalıpçılar
Dean, Graduate School of **Natural and Applied Sciences**

Prof. Dr. Çağatay Keskinok
Head of Department, **City and Regional Planning**

Prof. Dr. Z. Müge Akkar Ercan
Supervisor, **City and Regional Planning, METU**

Examining Committee Members:

Prof. Dr. M. Adnan Barlas
City and Regional Planning, METU

Prof. Dr. Z. Müge Akkar Ercan
City and Regional Planning, METU

Prof. Dr. Ela Babalık
City and Regional Planning, METU

Prof. Dr. Aysel Uslu
Landscape Architecture, Ankara University

Assist. Prof. Dr. Melda Açmaz Özden
City and Regional Planning, Çanakkale 18 Mart University

Date: 13.06.2019

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Surname: Selen Karadođan

Signature:

ABSTRACT

AN IMPLEMENTATION OF A NEW SUSTAINABLE DESIGN APPROACH ON PUBLIC SPACES: THE CASE OF ULUS SQUARE

Karadođan, Selen
Master of Science, Urban Design in City and Regional Planning
Supervisor: Prof. Dr. Z. Muge Akkar Ercan

June 2019, 223 pages

Term sustainability draws more and more attention in current urban planning and design projects. It is a concept derives through sustainable urbanism that aims to create more livable, environment friendly city spaces. Sustainable public space design is seen as a key component to reach a complex system of sustainability in cities. As a compulsory approach to sustainability studies, it is not purely depended on environmental concerns but rather a composition of a better environment a better quality of life. Namely, it is a recently focused on issue that is actually necessary to understand our world and finding ways to preserve it while improving it.

The term which is usually used for city scale, will be searched new definitions in some specific public spaces. The thesis first develops design principles and qualities for sustainable public spaces. Main focus here is the human scale and interactive urban design that is infers to literature and between theory and design. By using human approach, users are the shapers of public space. The case study in the thesis will cover and examine rather the place satisfy the needs of the sustainable public space design qualities.

The model is designed as the first part, be developed later evolve to an application process, a measurement test of sustainability in a case study in a public square.

Considering all, it would be natural to say that evaluation of the interactions supplied by the space, preservation of natural life and habitat, environmental concerns and cultural values are becoming inputs of the process of search for answers to ‘What are the criteria of a sustainable public space design; case of Ulus Square’ along with new dimensions that are used to define sustainable public spaces.

Public space with given criteria the key tool for achieving sustainable environments and cities. Theory and existing structures will be combined and produce a harmonious model to show how the square designs can be sustainable. It is aimed to produce a demonstration model for the further studies on sustainable urbanism.

Keywords: Sustainable Design, Public Space, Public Square, Sustainable Public Space

ÖZ

KAMUSAL ALANLARDA YENİ BİR SÜRDÜRÜLEBİLİR TASARIM YAKLAŞIMI; ULUS MEYDANI ÖRNEĞİ

Karadoğın, Selen
Yüksek Lisans, Kentsel Tasarım
Tez Danışmanı: Prof. Dr. Z. Müge Akkar Ercan

Haziran 2019, 223 sayfa

Sürdürülebilirlik kavramı, mevcut şehir planlama ve tasarım yazınında giderek daha fazla dikkat çekmektedir. Daha yaşanılabilir, çevre dostu şehirler yaratmayı hedefleyen sürdürülebilir şehircilik anlayışı daha küçük ölçekte sürdürülebilir kamusal alan tasarımı olarak yani şehirlerde karmaşık bir sürdürülebilirlik sisteminin kilit bir bileşeni olarak görülmektedir. Sürdürülebilirlik, sadece daha iyi bir yaşam kalitesi meselesi değildir aksine, dünyamızı anlamının ve onu korumanın yollarını bulmanın gerekliliğine odaklanan yeni bir yaklaşımdır.

Genel olarak şehir ölçeğinde kullanılan terim özelinde, belirli kamusal alanlar için yeni tanımlar aranacaktır. Tez ilk olarak sürdürülebilir kamusal alanlar için ilke ve nitelikler geliştirecektir. Buradaki odak nokta, yazın ve teori ile tasarım arasındaki ilişkiden yola çıkarak çalışılan insan ölçeği ve etkileşimli kentsel tasarımıdır. İnsan temelli yaklaşım kullanılarak, kullanıcılar kamusal alanın şekillendiricileri olarak değerlendirilmişlerdir. Tezdeki alan çalışması sürdürülebilir kamusal alan tasarım ilkelerinin sağlanıp sağlanmadığını test ediyor.

İlk aşamada model tasarlandı, daha sonra bir uygulama süreci geliştirildi, bir kamu meydanında bir alan çalışmasına yani sürdürülebilirliğin bir ölçüm testine evrimleşti. Bütün bunlar göz önüne alındığında, doğal yaşamın ve habitatın korunması, çevresel

kaygılar ve kültürel değerler ile birlikte kamusal alan tasarımı Ulus Meydanı örneğinde, yeni boyutlar yaratarak sürdürülebilir kamusal alanlar nasıl tanımlanır sorusuna cevaplar aramak için kullanıldı.

Kamusal alan verilen ilkeler ile sürdürülebilir çevre ve şehirlere ulaşmak için anahtar araç olarak kullanılmıştır. Teori ve mevcut yapılar, meydan tasarımlarının nasıl sürdürülebilir olabileceğini gösteren uyumlu bir model üretmek için kullanıldı. Sürdürülebilir şehircilik üzerine daha ileri çalışmalar için bir gösteri modeli üretmeyi amaçlamaktadır.

Anahtar Kelimeler: Sürdürülebilir Tasarım, Kamusal Alan, Kamusal Meydan, Sürdürülebilir Kamusal Alan

To Kibar & Haydar Karadođan and Pembe & Kadir Kolu

ACKNOWLEDGEMENTS

This thesis is result of a devoted study that covers sustainable design which is internalized and therefore put great effort. On such a long journey, I must mention some of the people that have crucial roles in this process. To begin with I would like to thank to my advisor, Prof. Dr. Müge Akkar Ercan for her endless support and believing in me from the first day to the last. Her saying ‘It will always get better in *time*’ encouraged me and give me the power to do my best.

If everyone has a life-changing mentor and a teacher in their life, mine is Prof. Dr. Adnan Barlas. Throughout my university education, he is the person who inspires me in every dialog and makes me *dream* about Urban Design. He is the one that I will be following from my hearth with great respect and love.

I would like to thank Baykan Günay for sharing his endless knowledge and interest about Ankara and opening his personal archieve for the development of this research.

I owe gratitude to jury members, Prof. Dr. Ela Babalık, Prof. Dr. Aysel Uslu and Dr. Melda Açmaz Özden for their contibutions and their valuable comments on the thesis.

I am a person who is devoted to her friends, I would like to thank them for being who they are, being more than friends, a family for me. I am very grateful to have them with me along the way we walk together. We grew together with Cansu, Hazal, Mert, Seçkin, Elifnaz, Nacize, İrem, Atalay and Ufuk, I thank you all, the greatest planners I have ever known and Ecem my colleque and dearest friend. I personally owe too much to Destan and Eda for their endless patience, support and warm friendship. I would like to thank Mert Başkaya for his calm solutions, supportive behavior and friendship in my panic moments. Beril Özdemir is the one who I always enjoy sharing everything life brought us, she is my childhood and more and I could not ask for more. This thesis would not be the way it is without wise advises of Ezgi Su Gül, her always supportive and loving friendship, she is my *North Star* that always shines my World

whenever I feel lost. And I want to thank to Cihan, from the deepest point of my hearth for being tolerant and supportive without any hesitation in all conditions, believing in me infinitely, opening his kind hearth and making me feel blessed in every moment we enjoyed.

I reserve the best for the last. I cannot find words to describe the gratefulness I have for my family. They are my source of pure and undoncitoned love. I want to start with my mother Ayfer, who is the daughter of the greatest woman I have ever known, she is the closest thing to angel on earth. Everything I have accomplished so far is thanks to her and her faith in me. My other half, my teacher, my role-model in life is my father. I am the luckiest person since I raised by such a great family. My father is my *rock*, as the son of strongest people walked on this planet, he is my superhero. For all my life, I will try to be worthy to them and be loyal to everything they taught me. And of course, Eyşan, my little angel sister who is the joy of my life.

And my final words are for my grandparents who are not with us physically anymore, but *eternally* sleeps in my hearth. I dedicate this work to them by knowing they always watch me and help me until the time we meet again...

TABLE OF CONTENTS

ABSTRACT	v
ÖZ	vii
ACKNOWLEDGEMENTS.....	x
TABLE OF CONTENTS	xii
LIST OF TABLES.....	xviii
LIST OF FIGURES	xx
CHAPTERS	
1. INTRODUCTION.....	1
1.1. Research Aim & Motivation.....	2
1.2. The Problem.....	4
1.3. Research Question.....	4
1.4. Methodology	5
1.5. Structure of Thesis	7
2. HISTORY OF PUBLIC SPACE.....	11
2.1. Design Thinking with Concept of Nature.....	16
2.2. Public Space and Nature	20
2.3. Nature of Public Space.....	22
2.4. Public Space of Today	27
2.4.1. Modernism and Post Modernism	27
2.4.1.1. Modernism.....	28

2.4.1.2. Modernism Critiques.....	29
2.4.1.3. Post Modernism	29
2.4.1.4. Conceptualization of Space.....	30
2.4.2. Ecological Perspective.....	31
2.5. 21.Th Century.....	32
2.6. Public Space Design.....	32
2.7. Sustainability	35
2.8. Space Genealogy	36
2.8.1. Open Space or Public Space?	36
2.8.2. Sustainability or Continuum?	37
3. SUSTAINABILITY.....	39
3.1. Etymology of Sustainability	39
3.2. Introduction to Sustainability	39
3.3. Nature of Sustainability.....	41
3.4. Biophilia	43
3.5. On Human	44
3.6. Sustainable Design	45
3.7. Scale of Sustainability	46
3.8. Sustainable Urbanism.....	47
3.9. Sustainable Public Space.....	50
3.10. Three Pillars of Sustainability	53
3.11. Sustainable Public Space Design	55
3.12. Measurement of Sustainability	61
3.12.1. Sustainable Development Measurement.....	62

3.12.2. Sustainable Urban Design Measurement	63
3.12.3. Sustainable Neighborhood Measurement.....	65
3.12.4. Sustainable Public Spaces	67
3.12.5. Sustainable Block Measurement	68
3.13. Sustainable Public Space Design Elements	69
3.13.1. Social Aspect of Public Space.....	70
3.13.2. Economic Aspect of Public Space.....	71
3.13.3. Ecologic Aspect of Public Space.....	71
4. MODEL AND RESEARCH METHODOLOGY	73
4.1. Sustainable Public Space Design Model.....	73
4.1.1. Using Indicators	75
4.1.2. Systematization	77
4.1.3. Ambiguities	78
4.1.4. The Model	79
4.2. Dimensions of Sustainable Public Space Design Model	87
4.2.1. Human	87
4.2.2. Environment	89
4.2.3. Time.....	90
4.3. Research Method.....	91
4.3.1. Selected Research method: Single case study	92
4.3.1.1. Ulus Square (Meydan).....	95
4.4. How to study the sustainability of public space?	103
4.5. Research Tools.....	104
4.5.1. Direct observation	104

4.5.2. Spatial analysis	107
4.5.3. Questionnaire	110
4.5.3.1. Methodology	111
4.5.3.2. Questionnaire Design	111
4.5.3.3. Sampling	115
4.5.3.4. Weights, Choices and Limits	116
4.5.4. Environmental Data	117
4.6. How to analyze the collected data?	117
4.6.1. Evaluation Process of Direct Observation	117
4.6.2. Evaluation Process of Spatial Analysis	118
4.6.3. Evaluation Process of Questionnaire	118
4.6.4. General Evaluation	119
4.6.5. Visual Representation, Cobweb Diagram.....	120
5. FINDINGS AND COMMENTARY ON FINDINGS.....	123
5.1. Direct Observation	123
5.1.1. Shelter	123
5.1.2. Accessibility (Social).....	125
5.1.3. Locality	127
5.1.4. Typology of building	129
5.1.5. Accessibility.....	131
5.1.6. Continuity	134
5.1.7. Movement	135
5.1.8. Variety	137
5.1.9. Vitality	139

5.2. Conclusion of Direct Observation.....	143
5.2.1. General	143
5.2.2. The Square.....	144
5.2.3. Scope	145
5.2.4. Limitation	146
5.3. Spatial Analysis.....	146
5.3.1. Scale	146
5.3.2. Street/Block Structure	148
5.3.3. Connection of Spaces	151
5.3.4. Enclosure	152
5.3.5. Permeability.....	153
5.4. Questionnaire	155
5.4.1. Sub-Problems and Answers.....	155
5.4.2. Conclusion of Questionnaire	174
5.4.2.1. Observation on Questionnaire Process	175
5.4.2.2. Scope.....	177
5.4.2.3. Opportunities and Limits	177
5.4.2.4. Representation of Results	178
6. CONSLUSION.....	187
6.1. Scope and Limitation	192
6.2. On Future	193
REFERENCES	195
APPENDICES	
A. ANKARA POEM.....	215

B. Example Indicator Sets for Measuring Sustainability	217
C. Questionnaire Document	219

LIST OF TABLES

TABLES

Table 3.1. Sustainable Design Matrix. Developed by author from Carmona (2003, p.44).....	58
Table 3.2. Three-dimensional evaluation assessment (SEC model) of urban open space environmental perception” by Cafuta (2015, p.13699)	64
Table 4.1. Proposed model for Sustainable Public Space Design indicators, the example research areas are marked with (+).	84
Table 4.2. Cronbach Alpha and Paralel Test Results	113
Table 4.3. Levels of Perception Applied in Questionnaire.....	114
Table 4.4. Limits of Each Level In Questionnaire.....	116
Table 5.1. Case Processing Summary.....	155
Table 5.2. Descriptive Statistics of All Variables.....	157
Table 5.3. Descriptive Statistics Of ‘Interaction’ Indicator.....	158
Table 5.4. Descriptive Statistics Of ‘Relaxation’ Indicator.....	158
Table 5.5. Descriptive Statistics Of ‘Meaning’ Indicator.....	158
Table 5.6. Descriptive Statistics Of ‘Legibility’ Indicator	159
Table 5.7. Group Statistics, Data Representation of Answers According to Different Sexes.....	160
Table 5.8. Independent Samples Test and P Values Emphasized	161
Table 5.9. Descriptive Statistics of Age Groups.....	162
Table 5.10. ANOVA Results of Age Groups and Their Answers.....	163
Table 5.11. Sheffe Test Results According to Age Groups.....	164
Table 5.12. Descriptive Statistics of Education Level Groups.....	165
Table 5.13. ANOVA Test Results of Different Education Levels	166
Table 5.14. Sheffe Analysis for Different Education Levels.....	167
Table 5.15. Descriptive Statistics of Different Income Groups.....	168

Table 5.16. ANOVA Test Results of Different Income Groups.....	168
Table 5.17. Sheffe Analysis for Different Income Groups	169
Table 5.18. Descriptive Statistics of Frequency of Visit	170
Table 5.19. ANOVA Results of Frequency of Visit	170
Table 5.20. Multiple Comparisons (Sheffe Analysis) Of Frequency of Visit	172
Table 5.21. Descriptive Statistics of Participant’s Location Of Residences.....	173
Table 5.22. ANOVA Results of Participant’s Location of Residences	174
Table 5.23. Research Method Design and Results.....	183

LIST OF FIGURES

FIGURES

Figure 1.1. Methodology and Approaches of Research	5
Figure 1.2. Research Tools Used in Study	7
Figure 2.1. Public Spaces in History with Key Concepts	15
Figure 2.2. Pre-Modern Urban Space And Nature Relations	18
Figure 2.3. What Makes a Successful Place? (PPS, n.d.)	34
Figure 3.1. Sustainable cities index by Arcadis (Arcadis SCI Report, 2016)	48
Figure 3.2. Comparative Analysis Made by Author Via Arcadis Website	49
Figure 3.3. Common schematization of Sustainable Development (Vale & Ghamvapour, 2013)	54
Figure 3.4. The Strong Model of Sustainability by Ghamvapour & Vale (2013)	55
Figure 3.5. Elements of Sustainable Public Space Design	61
Figure 3.6. Urban Sustainability Dimensions (Alberti, 1996, p.389)	65
Figure 3.7. Three-dimension matrixes correlates types of open space to sustainability attributes. (Al-Hagla, 2008, p.5)	66
Figure 3.8. “The Priorities of Sustainability Parameters That Have To Be Applied To Selected Case Study, Beirut By Al-Hagla” (2008, p.9)	67
Figure 3.9. Thematic Frame of Research by Author	69
Figure 4.1. Benefits and Challenges of common guidelines (KPMG, 2016, p.13) ..	74
Figure 4.2. Research Design	76
Figure 4.3. Workflow of The Study via Proposed Model	79
Figure 4.4. Emergence of Sustainable Public Space Dimensions	80
Figure 4.5. Conceptual Connections Between Sustainable Public Space Design Indicators	81
Figure 4.6. Proposed Model of Sustainability and Hierarchical Classification	83
Figure 4.7. Perceptual Qualities of Urban Design (Ewing and Handy, 2009, p.66) .	88

Figure 4.8. Research Methodology	92
Figure 4.9. Ulus Square General View From South West. (Çalık, 2019 January)	95
Figure 4.10. Jansen’s Drawing for New Ulus Square, (Günay’s Personal Archive) .	96
Figure 4.11. Taşhan.....	97
Figure 4.12. 24 November 1927, Opening ceremony of Monument of Victory	98
Figure 4.13. Old photos from the square(Dericizade, 2019 March)	99
Figure 4.14. Turkish Lira that is used between 1939-1952. It has the monument on the back and Atatürk on the front.....	100
Figure 4.15. Site plan of Ulus Square, by Hermann Jansen from Günay’s Personal Archieve	100
Figure 4.16. 1939 Site Plan Shows the Intention of Moving The Monument From Günay’s Personal Archive.....	101
Figure 4.17. Taşhan and the Square in 1926 (50 Yıllık Yaşantımız, 1947).....	101
Figure 4.18. Research Tools Applied on The Case Study And The Related Indicator Sets Used.....	103
Figure 4.19. 5 Star Model, Analytical and Perceptual Stars. (Varna & Tiesdall, 2010, p.594)	120
Figure 4.20. 6-Dimension Model, to Make Comparison Between Publicness of Two Spaces (Melik Et Al., 2007, P.37).....	121
Figure 5.1. Shelter Elements in The Square.....	124
Figure 5.2. Social Groups and Spatial Distribution of Them (1).....	125
Figure 5.3. Social Groups and Spatial Distribution of Them (2).....	126
Figure 5.4. Local Materials in the Square	128
Figure 5.5. Paternoster Square-London (Marshall, n.d.).....	130
Figure 5.6. Ulus Square- Ankara (Hürriyet Newspaper, 2018)	130
Figure 5.7. Location of Ulus Square	132
Figure 5.8. Major Modes of Transportation Near the Square	133
Figure 5.9. Continuous Paths	134
Figure 5.10. Active and Passive Movement Patterns in the Square	136
Figure 5.11. Activity Types Observed in the Square	137

Figure 5.12. Protesting People in the Square (TMMOB, 2019).....	138
Figure 5.13. Animal Rights Protest in the Square (Yeniçağ Newspaper, 2019)	138
Figure 5.14. Functional Zones and Buildings in Ulus	141
Figure 5.15. İş Bank building throughout history (1) (İlksayfa Newspaper, 2018) 142	
Figure 5.16. İş Bank building throughout history (2) (İlksayfa Newspaper, 2018) 142	
Figure 5.17. Relationships Affecting Scale	147
Figure 5.18. Height of the Neighbor Buildings	147
Figure 5.19. Visibility According to Street/Block Structure	148
Figure 5.20. Vistas of the Monument from Selected Points.....	149
Figure 5.21. A photo before the monument is moved. Centrality of the monument and the alignments are visible through old train station.....	150
Figure 5.22. Connection of Spaces	151
Figure 5.23. 3d Visual of Ulus.....	152
Figure 5.24. Sense of Enclosure Implied by Structures.....	153
Figure 5.25. Road Network of Ulus.....	153
Figure 5.26. Figure-ground Analysis via Nolli Map	154
Figure 5.27. Comparison of Mean Numbers For 7 Variables Measured with Questionnaire.....	159
Figure 5.28. Age Distribution of Participants with Percentages	162
Figure 5.29. The Changing Perceptions on Different Age Groups According to Their Mean Numbers.....	163
Figure 5.30. Approximately Equal Distribution of Educational Levels of Participants	165
Figure 5.31. Frequency of Visit Distribution.....	171
Figure 5.32. Results of Social Needs and Morphology Indicator.....	179
Figure 5.33. Results of Circulation and Function Indicators.....	180
Figure 5.34. Comparative Analysis for 4 Indicators Examined in Case Study	182
Figure 5.35. All Indicators Subject to Ulus Square Case Study	184
Figure 0.1. Neighborhood Sustainability Assesment Index with categories, indicators, measures, units and weights (Yigitcanlar et al., 2015).....	217

Figure 0.2. Sustainable Cities International’s Indicators for Sustainability list
(European Commission, 2015).....218

CHAPTER 1

INTRODUCTION

Urban planning and design are subject to human since the first settlements. Urban population has been increasing rapidly causing serious numbers of people to live and join the work force of cities. With ever growing attention to cities, sustainability becomes more and more important issue in contemporary urban planning and design attempts. Generally, linkage to that term starts with creation of more livable, environmentally friendly urban spaces. In accordance with planning regulations, a sustainable urban form should be achieved to be able to produce new modes of conceiving the future urban spaces.

Modern field of urban planning conducts researches on the time periods ever since the very first settlement to the most contemporary ones. Urban design as complementary heading of planning walks hand in hand in continuous studies made on cities. That is why, it is possible to talk about the design principles and approaches of various ancient and modern-day cities. Aesthetic purposes contributed the long-life span of urban design as they are irreplaceable for human nature. Signification of urban phenomena with scientific approach, the 20th century had witnessed a large increase of literature about design principles. And urban design is as Baykan Günay says “nothing but the design of property lines”. Property is the fundamental of the design in all these time periods. That is the main reason that terms public and private are the most commonly referred terms in literature of urban design.

More specifically public space design is studied political, physical, morphological, utility, socially, and most recently environmentally approaches and etc. Here there are some examples regarding to literature; Sitte (1989) classified urban squares and draw the shapes with examples, Krier (1979) also by grouped the space as street and square

and based on geometrical shapes for place making process. These two references are related to urban morphology. On the other hand, ideas of Habermas in terms of public space as a ground for communication of ideas in a political view and Smith and Low (2006) held the subject in a more social context by arguing the class-based exclusion. Considering city as an organism, dynamism, a continuous change is inevitable by ever increasing population and correlational increase at changing expectations and demands of the all. New concepts covering and including environmental terms and definitions stand as need of modern-day public space design. These definitions not only focused on environmental design but also introduced more complex terms like resilience, smartness and finally sustainability. Thus, defining the relationship between sustainable development and public spaces produces inventory for design-based problem solving as emerging agenda of contemporary urban design. Using urban design themes and concepts are origin of defining, classifying them and also interconnecting them with appropriate conditions of a 21th century city spaces; public spaces especially.

1.1. Research Aim & Motivation

Sustainable urban life is the goal of 21st century cities. Creation of sustainable life is possible to succeed in variety of scales in urban form. By looking at this, degrees of urban design, different approaches and scales are appropriate for application. Key tool of the thesis is design criteria. In order to have an observable size and pattern of social activities public spaces are entities of this research. Theory and existing structures will be combined to be able to define a harmonious model for sustainable public spaces design.

Sustainable development gained attention with environmental studies. Not only for urban design, but also in other fields, it is a commonly preferred philosophy since there are physical evidences shows that human harmed Earth. McLennan (2004, p.15) uses the example of an experiment conducted by microorganisms. Briefly he explains

that, there are food enough for 100 units of time for microorganisms. Until the $t=99$ there are food stocks that seems sufficient for another time period. What they don't know is the food stock at $t=99$ is doubled $t=98$. In other words, resources facing an extinction at $t=100$ which means end of the time. even if another food stock as much as the previous one is given to the test tube, at $t=101$ it will all be consumed. Starting from that point of view, after realization of damages on earth, humanity tried to find new ways to 'undo' the harm they give. It is now a common thinking that, harmony is essential. That is valid for the cities, that hosts most of the world's population. For urban design studies, the test tube represents the city spaces. Exploring public spaces, producing them in harmony with nature, appropriate for human and providing a continuum for their vital usage stands as tone setting. In other words, it is not effective to design and produce otherwise.

Emerging sustainability in public space-based studies, provides broader angles for approaching better environments for all. Conducting a holistic research on literature reveals different parameters of public space design. Exploring the limits and opportunities of such a new concept with sustainable development goals, thus provides ingeneration of a new model of sustainable public space design. Produced model, measures the performance of selected site with set of indicators. It is important to note that, this is not a descriptive tool that decides whether a place is sustainable or not. It is not practical to mark a city as cogently 'sustainable' with certain definitions, however it is beneficial to attempt prescription as exemplar 'stepping stones' to more substantive future changes (Ryser, 2014; Cowley, 2015)."

The main aim of this research is to explore sustainable public spaces and to define the criteria (or components) of sustainable public space for testing the suitability of possible future areas. Also, by using a case study, existing structures and their impacts on their hinterland will be identified and possible solutions may be provided. Therefore, the thesis is expected to be a valid study for application of the theory on the real sites. Study starts with definitions, etymologic information and brief history of public spaces. At the very end, this thesis is expected to produce a design model

analog to a guideline that are the basic steps leading to sustainable design as goal and to ultimate goal; creation of better urban environments for people.

1.2. The Problem

As sustainable public space design is a young concept in literature, boundaries, definitions and criteria of its design principles are not clarified. This ambiguity prevents researchers from making single and comparative studies based on measurement of sustainable public spaces. Once something is not measurable then it is a hard process to detect problematic areas to interfere. Tests of sustainability in public spaces are investigated to see limits and opportunities of places without considering public space as only physical entities but rather units of urban environments that are places of everyday life and therefore should include human and environment relations. A one-way focus would not respond to the needs of sustainability as it has a complex network of relations and needs including all biotic and abiotic bodies.

1.3. Research Question

The main research question is: *'What is the model that is composition of criteria/indicator set to achieve a general framework of sustainable public space design?'*

To be able to provide a comprehensive answer, some sub-questions should be asked;

Chapter 2: How human and space relation is reflected to design in history?

Chapter 3: What is sustainable public space design? What are the ways to measure sustainability of a place?

Chapter 4: What are the criteria of sustainable public space design? Is sustainability can be tested with scientific methods by identifying qualities of a public space?

For the questionnaire, there are 7 hypotheses created and measured within the case study. These hypotheses are tested, and results are represented in case study at fourth chapter.

1.4. Methodology

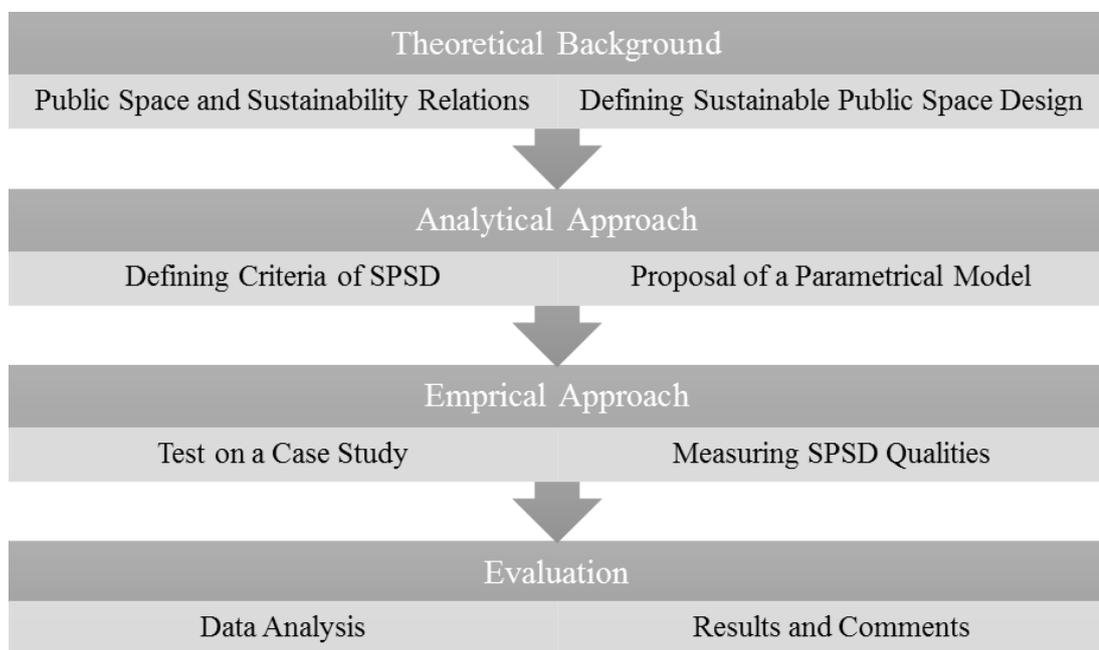


Figure 1.1. Methodology and Approaches of Research

An assessment model that will be defined in the fourth chapter of this research will be employed to be tested on a case study. Public spaces, as the case study of this research, are particularly selected, since they represent public sections that enable human based studies and also established with design concerns. Combining all, it would be necessary to say that interactions supplied by public space, preservation on

continuation of natural life and habitat, sensitivity to environment, cultural and historical values are becoming inputs of the process of searching possible answers to ‘ What are the criteria for designing a sustainable public space; case study of Ulus Square’ as well as economic and morphological dimensions and new dimension sets that combine and disperse some terms used in literature.

Inferring from literature review, conditions of creating or converting a place into sustainable public space is searched for. Namely, parameters of public spaces in literature are identified with deduction method. Obtained parameters are re-classified by eliminating not applicable parts and adding new conceptual terms. New classification and definitions assigned to sustainable public spaces are built a new proposed model with inductive method. In other words, two different wholes are fragmented, and recombined to create a new single whole.

The model is wished to be tested; therefore, case study method is chosen to see the extent of sustainability on an existing place. Case studies are the projection of implementing a set of any given data on an example study. It gives the researcher to determine dependent and independent variables by doing so, produces a research environment that factor of changes is observable.

Yin (1984, p.23) defines case study method “as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.”

Fidel, classifies 3 conditions for the general usage of case study method; “when a large variety of factors and relationships are included, no basic laws exist to determine which factors and relationships are important and when the factors and relationships can be directly observable (Fidel, 1984, p.273)” Considering this thesis, there are large sets of indicators and parameters that are studied with non-absolute relationship patterns and deterministic ways of reaching a sustainable space.

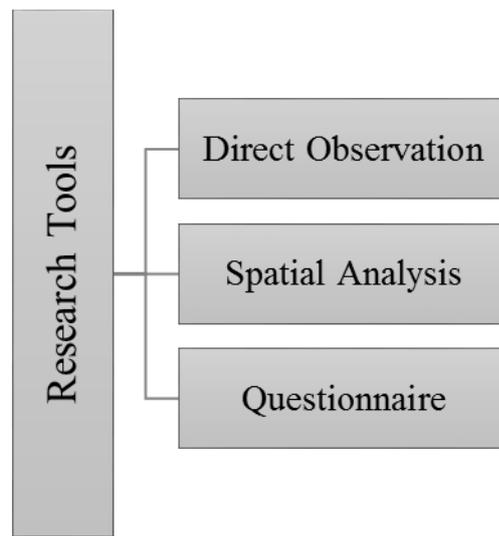


Figure 1.2. Research Tools Used in Study

Case study consists of three main research tools that are used to conduct a holistic case study. These are questionnaire, direct observation and spatial analysis. Selected tools are used to collect different types of data and together create a meaningful representation of sustainability of selected case study. In this research both quantitative and qualitative methods are used. Qualitative data are collected and converted into quantitative data, through case study. As a theoretical approach, the study starts with a systematic literature review on sustainability and sustainable urban public space [interpretive studies] in order to make a theory-based framework with descriptive studies. At the final, all data as meaningful information outputs represented via diagrams produced by input of quantitative data.

1.5. Structure of Thesis

Chapter 2 focuses on history of public space. A study focusing on sustainability of public spaces are expected to be start from the initial point where the term

sustainability emerged. To build a better understanding, correlation between public spaces and sustainability are intercourse with a '*terminus a quo*' (*starting point Latin*) which is accepted as nature and public spaces ever changing contact. This chapter starts from ancient Greece to current situation of public spaces in relation with nature and design.

Chapter 3 describes how the term sustainability emerged. With increasing attention to sustainable development, urban designers and planners studied on this term. Producing successful, vital and meaningful spaces have priority over acquisition of land in the basic sense. To achieve this, place making theory and sustainable development are studied together to enhance a comprehensive design guideline on public spaces. Some of the professionals approach the term with form, function, production of space, environmental determinism and so on. At this part of the research, different frameworks of them are studied in detail. Concept of sustainability and literature on it is examined from urban design scale to the building scale.

Chapter 4 studies 'The model' and research methodology. The chapter includes detailed descriptions on the new model. Process of creation, theoretical background, ambiguities and indicators are explained in detail. This chapter supports theory with innovative model and it's the in between condition of theory and practice. Chapter continues with methodology of the research. Research method, tools and techniques of research, data collection process and ways of analyzing these data are specified.

Chapter 5 serves results of findings and makes comments on these findings. The data collected and represented at chapter 4 are transformed into meaningful information. Relationship between sustainability and public space design is expressed through research outcomes. Cobweb diagram as graphic representation is used to show conditions of sustainability on selected case study.

Chapter 6 is conclusion. Concluding remarks are made, results of the research are evaluated, a brief summary of research rendered and debates on further researchers are propounded.

CHAPTER 2

HISTORY OF PUBLIC SPACE

“Unity in detail, complexity in whole” (Le Corbusier, 1934).

Quiddity of the studies about public spaces starts with ancient Greece. Acropolis is the primitive version of public space for Greek polis. It functioned on areopagus for fortification and served for mainly religious activities (Carmona et. Al., 2008). That functions changed over time when the dominant public space of the polis shifted to agora. The agora was the ground of the democracy in both physicality and spiritually. It is the democratic atmosphere that started the understanding of ‘public sphere’ (Stanley et. al., 2012; Carr et al., 1992; Madanipour, 2003; Carmona et al., 2008). Emergence of public buildings and even the buildings cannot be separated from political processes (Sonne, 1993). In this political situation agora also was meaningful with other activities such as market place, gathering points, and ritual activities. Not only mentioning squares, but also porticoes, paths and such elements that provides a complex unity in form and function of the Greek agora (Fleisher & Jones, 2010). A place for gathering to those town’s people, also a setting done which ceremonies and furthermore scenes were performed (Madanipour,2003, p.14). The greek city, was all along dominated by public structures and spaces rather than private ones. This gave the city, the perfection and bee character as Aristotle defines it (Benevolo, 1993). Porticoes and galleries functioned as transitional elements as one move from inside to outside, from private to public. For the Roman cities, it was in the 2nd century that activity places of daily social life have started to arise while forum remained its dominance (Thomas, 2007). Forum was the reaction, an upgraded version thus and adoption to the increasing complexity of social life and activities taking place in public space. Forum stands as a sum of the acropolis and agora considering its variety of activities hosted (Mumford, 1961). In terms of form, the shape of agora was square or

rectangular (Memluk, 2013), fitting into the gridal layout. For cities like Rome with imperial cult, the city was not only a composition of solids and voids; on the contrary these structures were not the elements that created the Roman city. It was rather 'people' (Thomas, 2007). Name of the ancient polis was 'originated from 'pimplemi' that means 'I fill' '(Onians, 1979). It is understood that the city was more than composition of buildings. When it comes to Rome, it is a more complex version of Greek agora. Since Rome hosted over one million population, not only the public spaces but also the public buildings around it were varied. Rome, with its various forums, and social institutions that are located at the center, created the Notion of city center and yield to the rest of the city that is the primitive chronicle of today's European cities (Carmona et al., 2008). Hall (1998); "By 113 AD Rome had vast spaces for walking, business and pleasure". In atmospheres that people, their social and political activities are crucial, the space served them and created by them as representation of citizenship grounds. The ancient idea can be cultivated from Habermas' idea of public sphere, space of the intertwined relations of democracy and the communication between different social groups (Habermas, 1962). Public space as agora and forum was created to achieve public centers which are appropriate and aristocratic (Mumford, 1961). As it is stated by Mumford (1961); it must be clarified that, public sphere of the agora in Greek polis, if examined with todays definition of public space would face with the exclusion issue. That is because the democratic atmosphere that is the key feature of polis, did not include the women, slaves and foreigners as citizens (Carmona et. al., 2008). However, the social differences give the issue another perspective, it is the common ground willingly created and designed since it was seen as the necessity of an interactive social life. Actually, the bond between urban space of today and the ancient looms here. Jeffrey Fleisher (2010), creates a relevance between agora and the Mall in Washington as they both are large open spaces surrounded with cultural and administrative functions and welcomes people as a public space emphasizing power structure. Some public space qualities that are also valid in contemporary public space discussions and communities with ancient public spaces are that;

- Public spaces including more than one function
- Public space as ground of democracy, that people can socialize and have conversations related to city
- Public space as commercial place
- Public space as gathering place an unconscious node
- Public space as visually appeal, aesthetic
- Public space with unequal rights to use and enter (Carmona et. al., 2008).

Of course, idea of publicness is not only limited with open space areas, they include public buildings in different time periods. Fundamentals of the public space research starts with ancestry since the ‘change’ it experienced over time must be examined to be able to learn how to sustain it. Even if there are remains belong to ancient World still, it is hard to make certain judgements about how they perceived and used public space. Along with the organic patterns of urban design, the specific design of public space indicates the aesthetic quality that is intentionally emphasized (Carmona et. Al., 2008). So, both civilizations used public space with its aesthetic qualities (Carmona et al., 2008). What was developed over time in Rome was the directing, controlling and emphasizing power over the space that later would be the place of political power and many other functions that are conscious nodes of regulating social life. That intentionality prepares the bases of research. But still, there are more accurate evidences in periods starting from Renaissance (at this point the study is mentioning about European cities in the light of evidences). In Medieval era, Europe sculptures, reliefs and other artistic elements became in between spaces of public and private. Behind that visuality, structure of the public space was dependent on power structures; religious center, administrative center, market place and many others (Benevolo, 1993). In this era, the forum was experienced a decrease in its quality of being the most dominant element of public life in its life span. Especially with the effect of

Christianity, the locus of the public life shifted to the church and the piazza which is the inseparable part of the church (Memluk, 2013). Mixed use of public space in antiquity leaves its place to a concept of plaza that is commonly related with the church. The plazas that are typically matched for Christian churches, facilitated a total togetherness of socioeconomic and recreational activities (Zucker, 1970; Carr et al., 1992; Carmona et al., 2008). In medieval age, domination of the church increased which caused a shift in public space towards focusing on mainly the church and its piazza. That is quite different from what Romans did over time, assigning different functions to different forums. Collection of all the functions in one center that is the church and piazza in this case remained left of the public space without any concerns about aesthetic environments. The main reason here is the holiness of the church, spiritual greatness reflected to the building and its piazza. One place that should be glorified assigned to church and the other parts of the city as the everywhere and everyone on earth are 'ordinary'. Socioeconomic functionality of the space maintained the vitality of public domain that continues even today with changing meanings. Some of the well-known public spaces are the retroactivity of their genesis. Until Medieval period, idea of public space with different versions such as "French place, Italian piazza, Spanish plaza, and Greek plateia; public spaces served as monumental focal points" (Thomas, 2007). Meaning of the space however, experienced change over time independent from its form. For example, transition to Christianity in Rome, public beliefs and rituals shifts to inner rituals, individualism. Increasing importance of private values, reflected to city by the changing structure of urban public space, mostly the square. Open public space is the place of everyday life. Before the individualistic values increase, the square and what is public was the place that every interaction and relations of daily life takes place. Changing types, sizes and functions of the public spaces over time echoes how *modus vivendi* is adopted to physical urban form by design (Carr et. al., 1992).



Figure 2.1. Public Spaces in History with Key Concepts

2.1. Design Thinking with Concept of Nature

There are several different ideas about how people perceived and used nature from the ancient times to modern day. Glacken (1967) supports that since the human exist on the earth; there is no nature without human intervention. But here focus is design principles and nature approaches assimilated through time in which a strong bond exists with human experience. Human transforms the space into a place. The transformation process therefore correlated with how civilizations perceived, experienced the space. Ancient Greeks firstly used the land by topography; they situated the acropolis on the top and the agora on the flat. This is the adaptation of nature by Greek thinking in accordance with their belief (Rogers, 2001). Harmony is the essential relationship pattern of this era. There is a basic similarity with Romans. They continued to be in strong relation with nature, in harmony but in a more complex way. A riveting shift from Greek to Roman is inviting the nature inside the walls. Greeks perceived the nature as something ‘there’, and the buildings were standing on the waves of the nature with a great respect at first and then with a great enthusiasm (Kostof & Castillo, 1995). Water elements with fancy fountains, sculptures and reliefs and porticoes as decorator of the space created a new representation of natural elements. Ideologically, nature was the source of law, the sacred source of truth given by God. Namely, for the both eras it is possible to realize that the city and its public spaces were not differentiated than nature. The world was created by Gods, but the land was designed by romans, themselves (Kostof & Castillo, 1995). Surrounding environments were mastered but are not excluded from daily life. Especially for Romans, these beautifying additions to the space, was no different than works on public space. General concept of urban design in Roman cities was different smaller designed elements collectively creates a bigger design, a greater whole (Lyttelton, 1987). MacDonald identifies the key word of Roman urbanism with the term armature.

The term is highly related with open spaces, connective architectural elements and public buildings (MacDonald, 1982). Cities are prototypes that have these alignments in inner logic of each town. In other words, public life in Roman cities is directly related to public space in terms of a total design approach, part of the one. The city was providing a walking experience by public buildings that are buildings for people (Zanker, 2010). In a more private context, Emperor Hadrian's Villa is one of the first of associative garden (Rogers, 2001). Tendency towards gardening continued in later periods. Decorative elements for allegory existed in Renaissance. Public space as producer of public life and at the same time a new social life on the common ground that increases the importance of public space, as the natural place of activities (Zucker, 1970). Changing thinking styles with Renaissance, expressed itself with changing perceptions on the land. Creating beautiful gardens was more important than the times before. Landscape was no longer only the small section of a plot but now representor of the universal axes. In a new paradigm of urbanization, that lines centering a monumental structure or a public space and lays through city (Rogers, 2001).

With the feudal city, the enclosed city of walls excluded the nature because of the bounded dense structure of the city. Differentiation got more distinct as the cities got denser. As a result, nature and the city became two different parts as one is insider and the other is outsider. Agriculture was the dominated relationship type with nature but still in segregated parts that territorial markers were the walls. Agriculture continued its existence by being the place of production, economic source and related to the urban landscape. In Renaissance, the concrete city wanted to be added its public spaces, open areas as going back to Classicism, envying to the ancient idea of town planning. In neo-classical period, organizational patterns of the city were based on 'symmetry and order'.

ANCIENT GREECE	ROME	MEDIEVAL	RENEISSANCE & BAROQUE
<ul style="list-style-type: none"> • Strong relationship • Nature as outsider, as something 'there' • Topography 	<ul style="list-style-type: none"> • Strong and complex relationship • Inviting inside • Source of law • Creating beautiful gardens 	<ul style="list-style-type: none"> • Nature excluded, outsider • Agriculture as form of relationship 	<ul style="list-style-type: none"> • Envy ancient • Garden different than rural land • Nature in private gardens

Figure 2.2. Pre-Modern Urban Space And Nature Relations

It is mostly related with the paradigm shift to ‘rationalization’ in Renaissance and Baroque styles (Memluk, 2013). In the Renaissance era, the functional public spaces of the medieval era tried to be now beautified (Carmona et al., 2008) to imply the power image in process of revitalization. Garden was differentiated from rural by its enclosure and it is classified as the ‘third nature’ while the second refers to agricultural landscape and the first is the wild nature (Rogers, 2001). On the other hand, Renaissance is the discovery period of the individuality and private terms in social life. The envied classical design was reconsidered. Axial and patterned designs, mostly for the green areas/gardens and parks, were not public. They served to an exclusive domain includes the surrounding home owners, upper class or the royals directly. Place des Vosges in Paris or Bloomsbury square examples reflect that kind of a nature-public use relation (Stanley et al., 2012). In Baroque Paris, example of Place des Vosges, is the power image of elites that is willed to be reasonably open to people (Carmona et al., 2008). It is not wrong to say that these public spaces are closer to contemporary city’s special gardens of private properties. Memluk (2013) identifies the Baroque period with 3 main design principles; ‘axial order, balance and hierarchy’. In that neo-classicism visuality was given importance: Appealing structures as sculptures, reliefs and landscape elements are used to ‘captivate the eye’. A very typical example of Baroque open public space with given qualities is piazza del

Campidoglio in Rome, designed by Michelangelo. Aesthetic view, and multi-dimensional character of space (width, depth, longitude etc. all are effective for sensing a place) load the open space with charge of giving some certain feelings. Some researchers focus on the political atmosphere, some on the ceremonial effect and many others. Whatever the functional use is, depending on the context, the open public space used to imply the people some certain feelings. In the upcoming periods, dense and high populated cities that are searching for empty big plots to satisfy the green area need, found the solution in opening up these private green areas to public. 17th century philosopher Descartes approaches world as a machine. And he interprets the relationship of nature with that machine as

“For the first time to consider the destiny of nature as separate and conflictual with that of man; This separation is embedded within man as a distinction between "reason"-place of truth-and "emotional sphere", place of imprecision and error, of the irrationality we share with beasts, of the negative part of nature. From here derives the tendency towards the dominion of nature which draws on the rational spirit's desire for power. This dominion passes through a principle of access to the laws of nature, according to which there are no conceptual limits to the visual capacity of the rational eye which is able to see, know, discover and measure everything- and therefore master it and forget nothing” (Porta, 1999; p.439-440)

For Rome, Zucker (1970) argues that the city created a form of public life and a life that takes place in public that gave the city the public space as the ‘natural locale’ of activities in urban life. Open spaces once more were the center of public life. However, social life in urban public space is not directly related with green areas before industrial revolution. Levy (2012) explains the difference between public park and square since the square is the element in ancient world corresponds to open public space. The park or garden is strongly related with nature while the other the square makes connections through ‘culture, history & memory’. Nature concepts and public sphere intersects at some points at time but then differentiate from each other as exemplified starting from the ancient Greece through industrial revolution.

2.2. Public Space and Nature

Both nature and space had earned and lost meanings throughout the history. There are some important nodes at the urban history that causes great changes in urban context. These are called as urban revolutions. Childe (1950), explains two of them as they change everything about daily human life; the Neolithic revolution and the urban revolution. At this part, modern meaning of public space and nature is examined the period started with industrial revolution.

Industrial revolution was more than changes in economic mode of production. It was rather an initial change that resulted in increased population and economic power in cities. In 19th century, with industrialization, urbanization process accelerated. New industrial zones in city peripheries, brought the new housing areas for working class in cities. Although the rural life was the main pattern of work and life cycle and was covering most of the world's population, urban life as a new way of life emerged into the life of pre-rural people. Pressure on the cities increased based on the lack of infrastructure, transportation, clean water and even environment supply for rapidly increasing population. Economic changes were the first circle of chain. Social changes and life styles of people followed. As the nodes, destinations, houses namely many elements of cities have experienced that change, in more distinguishable way, the city morphology changed. It is more of a systematic change rather than an inner change of every single element, circulation patterns, movement of people in work-home and home-work line, infiltration of cars to daily transportation created new networks, new patterns in urban area. Nature concerns and environmental movements on the other hand, came only after the problematics of the industrial city had certain effects. Unhealthy conditions of city life brought the need for healthy environments especially for the proletariat who have experienced the problematic inner-city conditions of everyday life (Kahraman, 2017; Gedikli, 2007). In 'The Condition of English Working Class', Engels defines unhealthy conditions of the city (Engels, 1892). Attached and very small houses that have no gardens are even sometimes shared with animals

(Ersoy, 2007). But the city as the 'place' of reproduction of labor, the working class should have been provided new spaces. In other words, the first movement was for the low-income group and their children's playgrounds. When it is the end of 19th century, it was a response to the industrial city. With the emergence of new middle class, public green spaces evolved to recreational places and parks harmonic to their convenience time (Carr et. Al., 1992). At this point the public green space emerged as a new urban type. Green was provided usually in neighborhood scale, small openings that invites the sunshine and fresh air into the building masses. In terms of design this era was not focusing on the design of the public space. The need was realized but the connections between public spaces and their relations functionally were not set. As a social space that is specifically designed for recreational needs of living, bred in 19th century (Stanley et al.,2012; Crouch, 1981; Cranz, 1982; Carr et al., 1992). These public spaces used to relieve the need for healthy social environments. Along with the benefits, New parks, open areas and gardens were created for cities and people brought issues such as being perceived as breathing niches that caused a loss in social meaning (Vale & Ghamvapur, 2013). Congruently to the other major changes that caused paradigm shifts, approaching green areas as reproduction of labor areas led to changes in definition of public space. The garden rather than representation of power with its axially designed, picturesque image, committed to be city people's including the working-class social integration ground. Solving one problem created new problematic areas such as new meaning attributions to terms private, public, green areas; parks and gardens, urban life etc. Not only in definitions but also way of living the social life is closely related to be a part of a city. Industrial revolution effected many dynamics of everyday life. Machinery technology and the new mode of production created cultural changes that are the adaptation moves to contemporary urban life (Rogers, 2001). Individuality, private and personal terms became legible in both landscape and urban design fields. 18th century landscape was picturesque. Visuality, was set on open large spaces. It is a reinterpretation of the ancient; a new point for the roles of the urban and rural and placing the nature element into that equation. After the industrial city, attempts to unify this duality more precisely,

creating a city life condition into rural became a popular phenomenon via utopias. Green belts are used as the design elements of that attempt (Hebbert, 2008) which are seen as the buffer for the unhealthy conditions created by the industry. Transfers made basically, from enclosure to openness, from individuality to flows and from geometrical visibility to sanitary functionality. ‘In reaction to the brutal environment of industrial city, green space seemed an unquestionable benefit; the most gentle and universal form of social engineering’ (Abrams, 2003). Interest on large green public spaces and diversified activity places on the public area came along with the 20th century urbanism. Green belts and buffers in city scales are products of this era. Ever changing dynamics in urban life, as in the industrialization period, continued in the form of reaction to automobile and needs for increasing population of the cities. Americans also exemplified the European boulevard and parks and green areas to create more beautiful urban environments while supporting the upper classes recreational needs in the industrial city (Carr et. Al., 1992). That’s why the following times, recreational function of public space came forward.

2.3. Nature of Public Space

“Public space is the stage upon which the drama of communal life unfolds” (Carr et al., 1992).

A study about sustainability starting from its history, aims to provide an understanding of public space that is ever-changing and to influence the designer that creates the structure that perhaps will be existing more than s/he. The bridge between the past and the future is necessary for designing the future’s past, namely today. Camillo Sitte is an example of inspiration taken from the past to shape a modern-day environment in case of 19th century Vienna (Carmona et al., 2010). Referring to all, nature of the public spaces is examined.

Public space is one of the main sub-headings of urban design. Defining public space thus, can be supported by inferences from what is urban design. Tibbalds (1988a)

defines urban design as “everything you can see out of the window”. It is highly related with daily life and environment we live in. As it is a young field, certain definitions and descriptions are not possible. Dagenhart&Sawicki (1994) then says if there is ‘everything’, so the ‘nothing’ is also urban design. Urban design studies generally use the dualities or contrasts to have better assumptions. Some dualities can be listed as parts/wholes, public/private, process/product etc. by Raci Bademli (Bademli,2005). while moving on to public space and public space design, approaching it by using that contrasts would broach the subject with many dimensions. As in many studies related urbanism, some structures are identified by dilemmas. The most related example is the public / private dualist terms. However, there are no actual sharp lines between public and private, quite the opposite, at some point they are intertwined and lucid (Valentine, 2001). Günay approaches the public-private duality with respect to property pattern. The term private is clearer. For the non-private space, there is a need for regulations of an authority for public that unfolds the urban design is a public policy. Term public is usually explained by the contrary Word; private (Madanipour,1999). Public-private duality is chosen to have an understanding of what is public so that what is public is studied by what is private and what is public and is what is not private means it is public? ‘Looking at the public-private distinction is one way of decoding and interpreting the social and spatial organization of a city’ (Madanipour, 1999). Public space studies vary according to its approaches. Activity, form and meaning, property patterns, social interaction and function are some main headings. Carmona (2010) says that “the crucial part is defining the crux rather than its edges and borders”. That's valid for the further studies about sustainable public space design. Actually, that brings the need to understand what should not be sustained if we want to sustain a significant other. Günay (1999), explains the term referring to Roman law. He describes the publicness with more than one term; *res publicae*, *res communes* and *res universitates*. *Res publicae* reflects the space directly for the public use such as rivers, harbours, sport areas and etc. (Günay, 1999; Pound, 1959, p.110). These roman originated words are used to distinguish the private and public property which is related to state and governance system. On the other hand, *res universitates*

refer to the spaces that are owned by the state but open to all, public use (Günay, 1999). *Res communes* defines the ‘things that can be used but not owned’. These are not always grounded spaces as exemplified by Günay (1999) ‘air, rivers, sea and sea shores.’ In the case of Roman cities, the public and private spaces are not chosen one over the other but the coexistence of these two in city form (Arendt, 1969). Both state and the city state hold the *Res publicae* and *res universitates* for the people. Günay (1999) relates the Piazza Navona’s (Rome) still existence. Leon Krier’s *True City* is (taken from Carmona et al., 2010, p.86); *res publica* + *res private*. In contemporary situation, commonness and publicness shows difference. The public space in urban area such as streets, roads, water front lands are not property belong to state- as *res universitates*- but operated by it (Günay, 1999 ;Lukes and Scull, 1983). That means the state is the responsible organ to built, protect, renovate and many others while the place belongs to public. In recent situation, more generally, public targets the equal individuals from state’s perspective. However, considering spatially, public space is hard to define with single explanations firstly because of the ambiguous spaces that exist in a city and does not have a clear status. Secondly, conditions of being public can change according to its context and place. However, the ownership pattern gives clues of where is public and where is private, context dependent situation may show the otherwise.

“Public spaces, refer to areas that anyone can use but cannot claim their possession” (Barlas, 2006, p.31). Carmona uses 3 qualities for degree of publicness; ownership, access and use (Carmona et al., 2010). These terms are used to clarify today’s public spaces contradictory situation on public and private. He also, states that the blurred line between public and private realms are the reason of different levels of publicness (Carmona et al., 2010).

“Public space relates to all those parts of the built and natural environment where the public have free access. It encompasses- all the streets, squares and other right of way, whether predominantly in residential, commercial or

community/civic uses; the open spaces and parks, and the “public/private” spaces where public access is unrestricted (at least during daylight hours). It includes the interfaces with key internal and private spaces to which the public normally has free access.” (Carmona et al., 2004; p.10)

‘A review of the law literature (Jowitts dictionary of english law; Strouds Judicial Dictionary of Words and Phrases; Words and Phrases Legally defined; Vernez-Moudon, 1992), shows that in legal terms, if a space is considered a public space, ownership and right of access cannot be seen as obstacles to its public use, despite their inherent restrictions for public access. Even in a primarily private place, public access may be achieved most of the time, and if denied, may be sought legally. Public places cannot legally prohibit interactions with other users, only the nature of those interactions’ (Madanipour, 1996, p.147-148).

To combine all, to name a place as public ownership pattern is not the certain indicator. Use and access are also key factors. In an ancient city it is clearer and more differentiated between public and private. But in today's cities, the more complex structure of society and social life, the definitions are intertwined. In some cases, privately owned spaces are highly under use of public and even behave as core of social life.

Walzer (1986) describes public space as a place that interactions made with strangers who are not familiar to us, not people we work with or have any relation. It is the place of various activities including political, commercial, recreational, religious and sportive activities that sets healthy relationship through individuals and society itself (Wooley, 2003). Public space is the general environment that covers the communalities of society. It may include functional needs, rituals, festives and protests that is shaped by the societies need and features. However, it can also include the private as in shopping benches, landscaping and many other functional types. In other words, public space is a search for ‘simply finding a place to exist’ (Carr et al., 1992).

“A broad definition of public space would cover anywhere that is universally accessible to citizens and could therefore include everything from national parks to town hall foyers.” (Shaftoe, 2008, p.75)

Fleisher (2010), emphasizes on the power structure of the public spaces. By looking at the role of open public spaces through time, with its being place of political activity and ceremonial practices, public spaces are highly related with power. Also adds that ‘we need to think of open space, in all times and places, as places where power and authority is stated and restated, power is challenged and contested, as well as where daily acts occur, and life unfolds’ (Fleisher, 2010). Public space also became an attractor of political interest. Public spaces are in the center of political activities, represents power of the rulers or some elites, or on the most contrary used by confronters for reformation (Madanipour, 1999). Creating better urban environments, mega projects, and many other public works are directly about the space-human relations. In such a large scaled agenda of politics, the space emerged as a multidimensional element. The future oriented promissory projects and multidimensionality reveals the natural spontaneity of sustainable design. In other words, studying the public space design without sustainability frame would be using one perspective or concept to identify the space which can create blank walls both in thematic research and reality.

Some scholars argue that public spaces are facing a decline (sennett 1994, bonilla 2012, boyer 1996). That is explained with the increasing importance of privacy and private values such as individualism. As opposed to private, public thus, lost its significance. Suburbanization, and increasing private values replaced the inner-city parks with suburban greenery. Rather than neighborhoods, fringes became the wanted. Sadabad example may be given similarly; fringe green areas focus locale of recreation and pleasure, in 18th century Istanbul Sadabad was one of that attraction points. Namely, the decline is in the public ‘life’ not only in space. ‘Society shifted strongly toward the security and pleasures of private life’ (Carr et. Al., 1992, Fischer, 1981;

Sennett, 1977). That is the case of increasing privatization of public area. However, the privatization is an issue about the ownership pattern, it does not simply indicate a decrease in public life. Privatized public spaces are in some cases still under the use of public. Moreover, those spaces are designed to serve to public as attraction points of cities.

“A public space can therefore be defined as space that allows all the people to have access to it and the activities within it, which is controlled by a public agency, and which is provided and managed in the public interest” (Madanipour, 1996, p.148).

“Public space is the stage upon which the drama of communal life unfolds” (Carr et al., 1992, p.3).

Madanipour also makes connection between the public space and public realm. Public space defined as “the spatial reflection (he uses manifestation) of public sphere, a place for intersubjective communication” (Madanipour, 1996, p.149). That implies the social quality of public spaces and underlines that space is the projection of public life and relations, areal representation of life of commons.

2.4. Public Space of Today

2.4.1. Modernism and Post Modernism

In the historical framework, each part of the time had their own approaches to the nature-human-city relationship. In the 20th century, modernism and its effects are experienced through space. Picturesque design qualities of 18th century was abandoned, enclosure quality had major shifts from perspective of urban open public space design. This era aimed ‘bringing nature to town’ (Hebbert, 2008). After the 20th century, the case is related with the new emerged industries in city lands. Air pollution, unsanitary living conditions, namely the negative effects of industrial city is tried to be prevented via green open spaces. At this point, it should be noted that the tendency

to design breathing places, lungs for cities is appreciated in this thesis in terms of intend however, in reality these green spaces are not always beneficial. In some cases, these spaces as left-over areas are detrimental to identity (Jacobs,1992). More morphologically, attempts to increase the number of green areas in cities (and sometimes in larger scales like neighborhood or street level) some fractions of the city became 'left-over' (Vale & Ghamvapour, 2013).

Some of the scholars such as (Cranz, 1982; Heckscher & Robinson, 1977 as cited by Carr et al.1992, p.10) used the term 'lungs of the city' for green open spaces that provides oxygen and open space for air circulation needed for urban space. It was both a "psychological and physical" response to the city life (Carr et al., 1992). On the other hand, Jane Jacobs and many others supported the idea that not the all green parts and fractions of the urban area are beneficial. On the contrary undefined, left over spaces may cause loss of identity and many other values whereas not contributing to oxygen level of the air in a desirable. That's why a single conclusion is not reached, every single site should be considered individually in its own context.

2.4.1.1. Modernism

Along with modernism, conceptual changes are visible also in America. The Emerald Necklace by Olmsted is an example of modernism with its more open, connected green areas distributed in city scale with linkages (Hebbert, 2008). In Europe, the change is less radical. New vision is dealing with green public spaces collectively as a whole beyond their individualistic existence. Independent structures are replaced with compositional open spaces. This composition is not just an inner flow, it is a sequence of intertwined flows; integrated with other parts and functions and embedded. Flow also, is the tool of making connections for the functions. It brings the necessity of relation of accompanying function's coherence that is a system for a city.

20th century city had transportation systems based on railways and roads that were supported with the greenery and parks with visual purposes. Buffer is the more developed version of this idea for that city. A contemporary example is the İstanbul city walls; a century ago the bostans, gardens, cemeteries and many other different functioned open green areas served as buffers. Tough, a very recent study made by Funda Başbütüner defines the walls as urban ‘fissure’ (Başbütüner, 2010). This is the case with a metropolitan city with walls. In different cases the buffer lands may transform both physically and functionally. Increasing density in plots, caused a decrease in number of individual gardens. In a modern industrial city, green areas and open spaces are concerned as a basic human need and since it is a ‘need’ it only satisfied with physical parameters, in that case square meters per person. Standardization helped solving the need issue, but later caused a decrease in number of well thought and designed places (Hebbert, 2008).

2.4.1.2. Modernism Critiques

Modernism had many critiques, one about the open spaces is that modernism has a positive view about integration but ignores the functionality of every single element (Hebbert,2008). The general system of a city was working what was overlooked is the smaller unit systems such as neighborhoods or districts that have the most human scaled city life of everyday. That also means the will to ‘bringing nature into the city’ couldn’t be achieved, more explicitly felled away conceptually. “Image of nature was controlled, improved and gardenesque and assumed intensive maintenance” (Gilbert, 1989).

2.4.1.3. Post Modernism

Post modernism come to existence as a counter-argument to modernism. Rather than a new approach it is a reinterpretation of modernity thinking. Some scholars define post modernism as an advanced version of modernism (Harvey, 1989). In general, Post modernity is the response to the stimulus of modernity, a reflection of societal changes on space and open public space in that case and finally about the difference created by that reflection of change. Trancik explains the post-modern urbanism's aim as 'making figurative space out of the lost landscape' (Trancik, 1986). Unlike modernity, 're-enclosure tendency' (Hebbert, 2008), a shift from outside to inside and from openness to closeness are some qualities of post modernism. It is not an enough clarification for that paradigm shift, as nature of post modernity single definitions are abandoned, and multi-dimensional terms are preferred. In spatial environment of urbanism, multi functions of green is the umbrella term for activities, health benefits, ecological value and so on. That means human dimension is now included into equation and combined with nature. Harvey (1989), explains postmodern urbanism as something without social aims; space design is not related with any social project, it is rather autonomous and designed. "Less can be more" (Hebbert, 2008).

2.4.1.4. Conceptualization of Space

Modernism as international style, modernist buildings not carrying any associations beyond their own "magnificent declaration of modernity" (Carmona et al., 2010). Dominating the nature, seemed necessary for the liberation of man, as the first step of modernity. Time, as the new city thought to be mechanic and linear; Newtonian absolute time and space. That means as mastering the nature in 'space', foreseeing the future and ruling it in 'time'. Modernism approached space as the place existing with related social occasions. "Modernist heritage is defined as following referring to Athens Charter: its elitism, its abstraction. Its basic anti-humanism its prescriptive nature and its recalcitrance to social control" (Porta, 1999; p.450). Modernism is univalent whereas Post-modernism is multivalent (Carmona et al., 2010). Post

modernism considered the space 'independent and autonomous' (Harvey, 1989). It considered time and space as multidimensional, Euclidian. Post modernity criticizes the modernity, in terms of trying to adopt the space to the urban rationalization with its substantially symbolic spaces.

2.4.2. Ecological Perspective

Postmodern thinking criticizes the modernity about being not ecological. Modernity used nature as something to dominate by human and the machinery of the new city. As in decisions made by CIAM (Le, 1973), green areas are given importance under spare time activity places. In one of the most important written documents of modernism, the open public space as green areas are as defined spaces, used for buffer purposes, namely to differentiate the road and the rest. Nature on the other hand, was not limited with borders, continued as far as eye could catch. The buildings, were not designed to be a part of the nature but stood different, dominated. Modernity did neither only aimed to control the nature, nor the time and future. Changing paradigms, and living styles brought an ipso facto equation to public space design process. As held in the first parts of the study, the basic relation was between design and nature. In different time periods, one did prevail the other and the reverse. Some periods focused on design and some others prioritize the nature. While moving onto the contemporary structure, it is necessary to understand another parameter to the equation. Previously explained condition of industrial cities should be evaluated by its reflection to social life. New life styles according to economical Dynamics, upraised the 'individuality'. This individuality included the privacy of the house, and also one's inner self. Sennett (1977), links this situation to a decline in public life and 'publicness' which supports the idea of individuality. Personal, related to 'one' term, segregating people from masses, shows the time for adding 'human' in all concepts. Thus, nature and design relation gained human dimension and as a spontaneous but not unexpected outcome of modernity-postmodernity and industrial city cumulatively. These all, prepared the bases of a genesis of ecological perspective. McHarg (1971), says that 'Ecology is the science of home'. He also infers that human is an organism

which seeks to understand the organism. That means, ecological approach is inseparable from human. It is a need to understand, prevent and even undo what we have done to our home, to earth. Sustainability and sustainable design hereby, are the superior concepts evolved from ecological perspective, in the most basic since human involvement to the design and nature.

2.5. 21.Th Century

2.6. Public Space Design

Design, as an artistic term is related to human and its aesthetic appreciation. Together with the spatial studies, design is being used as a tool of emphasizing some certain feelings to the masses. Starting from the agora, the public space especially the square addresses the society. Convenience of the social structure and the public space is related with design. That refers to the space's ability to answer the needs of the society. Namely, coherence of the designed public space with its social context makes it the nurturer and the fed one which means a longer life-span. The political debates imply its connection to power structure. Even if the concept of political power and trends changed over time the role of the public space as it excites feelings as heroism, nationalism, holiness, fitting into a society and many others, has not changed. This stabilization is the justification of that public space is the place of big steps for every nation. About symbolization of power Knox (1984, p.110) says that: "...to legitimize a particular ideology or power system by providing a physical focus to which sentiments could be attached". Evoking these feelings are dependent on context while it is also affected by the spatial qualities of the place which is design itself. The depth, height, layout, openness, enclosure, visuality even acoustics qualities of the place are correlated with the human psyche in public space. It is deduced that, public space design is the design of human feelings and behavior, design of societal action on public ground with a spatial perspective. It is a concept that gained importance after the industrialization. The dense and rapidly urbanized cities and regulation attempts

resulted in combination of no meaning public spaces and left-over spaces. Making these sites meaningful thus, is an important phenomena of public space design.

Design of the public space is important since it is the systematization of the process and determines the wanted conditions on the space. Design is the indicator of whether the spatial, physical, social, economic and environmental goals are reached. It is a process that shapes not only physical boundaries and the structures of the land, more so it is a socio-spatial holistic process which aims the harmonic existence of its all biotic and abiotic elements. It is both the process and the product (Madanipour, 1996). Such a complex system thus brings the need for specific parameters and design principles. Shan Xiao (2014, p. 8-10), uses 5 main principles for public space design; “people oriented, commerce oriented, fit into larger context, value regional culture and make the sense of place”. Succession of the places are also tested by specified criteria. These criteria show variance in the literature. Some basic parameters are; accessibility, form, function, perception, identity and adoption to context. Project for Public Spaces makes an intensive classification about succession and failure of public spaces. They indicate 4 main criteria; accessibility, activities, comfort and sociability as main categories by referring to place-making theory. And they developed a ‘place diagram’ tool that has more detailed criteria and provides a scale from the user’s perspective on the place.

Figure 2.3 shows that Project for Public Spaces (PPS) diagram for creating successful public spaces with place-making theory. It includes ‘sustainability’ as a sub-category, but for this study it is used as the umbrella term of public spaces.

WHAT MAKES A GREAT PLACE?

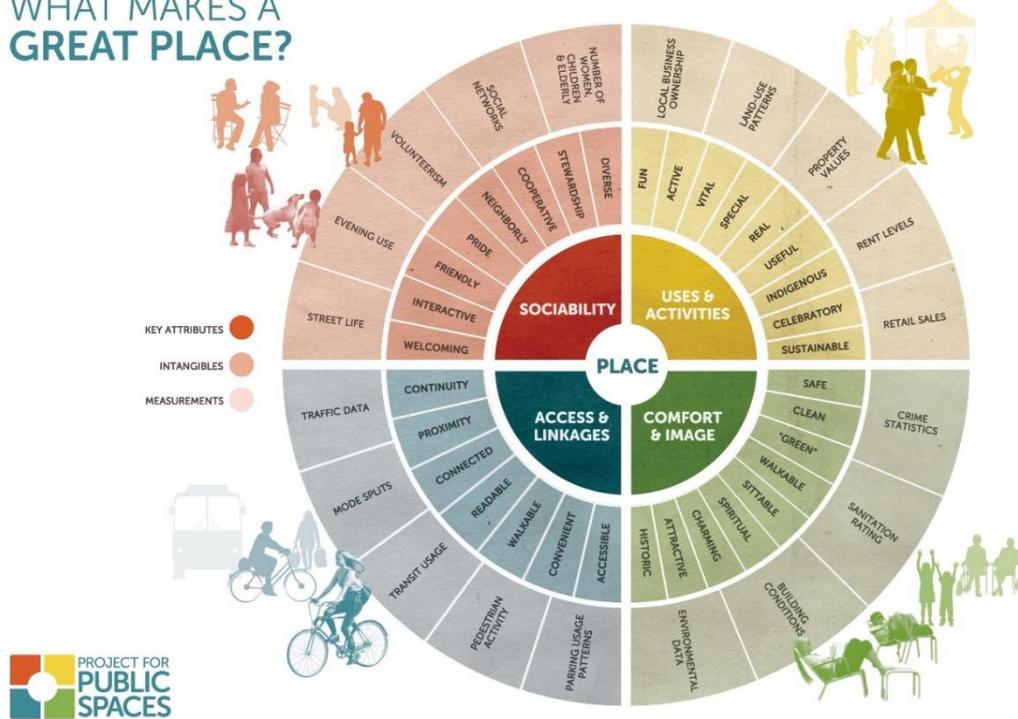


Figure 2.3. What Makes a Successful Place?¹ (PPS, n.d.).

Many revitalization and redevelopment projects are focusing on the regeneration of public space with design tool. Wooley (2003) identifies that design has ability to solve urban problems and says that ‘design of the space has direct effect on the possibilities of social activities. Also, Tibbalds (2001) by referring to a decline in public space, design and maintenance have ability to solve problems. Trancik, in his book ‘Lost Space’ (1986, p.3-4) says that ‘Public spaces in need of redesign.’ In overall, public spaces have the power of influence the society and affected by it. That dual relationship is been used for shaping both the physical environment and the society. Construction of the space thus, is important with its design process. Nathan Shedroff (2009), stresses in his book Design is the Problem; the problem areas are sometimes

¹ Retrieved from <https://www.pps.org/article/grplacefeat>

resulting of bad decision making processed by designers, and their over design persistence. As a consequent, design is to be sustainable.

2.7. Sustainability

Cities and their relationship with nature, with its public spaces are discussed. In all times, human and their interest on nature and including it in design process are visible. Economic and social conditions of given times caused significant differences in perspectives. But it was only after the industrialization that the cities faced the problem of nature damage. The bad living conditions of industrial workers and city inhabitants became the reason of first steps about sanitary life standards. Nature, the home of the all things was abandoned but needed back for the first time. For example; City Beautiful Movement in America aimed to beautify the physical appearance of cities so that the problems mostly related to inner city areas would be handled with the power of visibility. Formation of sustainability concept reached until 1980's. until that time the modern human placed himself in a superior position than nature; the one that exist to provide us shelter and food, nature was gone by the board (McLennan, 2004). However, it was not until the 1990's that the first real attempts for countries to take responsibility and meet under the term sustainable development. Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" by World Commission on Environment and Development also known as Bruntland Report (1987). Ecological concerns are combined with economic and social ones because the finite sources of earth came across with danger of extinction. The risks showed itself in earlier stages; in 1970's the main apprehension was about energy, energy consumption and using cleaner energy resources and it is referred as the first main stone on sustainability for the modern movement (McLennan, 2004). The human tries to create what he previously destroyed.

2.8. Space Genealogy

2.8.1. Open Space or Public Space?

Open spaces include all the ‘not structured areas of a city’. Streets, plazas, squares, green areas, natural elements such as; lake, mountain, sea etc. are all examples of open spaces. It can be seen and differentiated by using solid-void diagrams. Nolli map, a figure-ground map illustrates the open spaces of Rome clearly. On the other hand, public spaces are spaces that are for the use of the public. More detailed discussion on public spaces are in upcoming parts. Here, the main issue is the open space and public space confusion. These are interchangeable words according to period they are studied. To understand modern day public spaces, adaptation processes of spaces through changing paradigms should be known. Public spaces are products of changes that are affected by trends experienced in past and adopted to recent conditions. Even the changing uses, types and functions of the spaces, the need for public spaces did not show a significant evolution since it is an integral component of cities. In a study starting from history of public spaces thus, open and public terms used significantly together. It is because public spaces are commonly the equivalent spaces of open spaces in ancient times. So, this research starts with the investigations based on agora which is the earliest and the ancestor type of contemporary public space. Square, agora or forum was the actual places of the social life, and daily activities occur. Rather than a life-on-streets, streets were elements of a network that are led by a main square. Such structures as stoa, theatre, gymnasium and even the temple are public as well as agora. But the other public type, structures usually represent single function. However, it should be noted that, agora and forum are the grounds of citizenship where the political activity is mainstream. Another specific point that must be considered in evaluation of ancient period is the citizenship pattern. Every member of the city was not referred as citizen. It can be inferred that publicness of ancient Greece and Rome was set on segregation. Public was not equal to all. Open space types alternate as; acropolis, agora, forum, square and later the streets and green spaces; gardens, parks and nature in general. And public spaces have intersection domain with open spaces.

2.8.2. Sustainability or Continuum?

Sustainability is “meeting the needs of the present without compromising the future generations”. Continuum on the other hand is the ‘continuity of a sequence’ the uninterruptedness of a process. That makes continuum only time dependent. Whereas sustainability is time dependent but, not completed with the existentiality of a given thing in time. It is a more holistic term that has special needs that covering 3 pillars intersection; economic, ecologic and social and time dimension. And sustainability refers to defined boundaries of terms, specific fields such as sustainable design and public space design but the continuum is used at more general, ambiguous bounded terms such as growth and development.

That’s why public space design is mentioned with sustainability term. Aim of the study is showing that public spaces have to be sustainable; they are important elements of human life, including many values as social, physical, health, economic, natural, ecologic and so on. Observing them as resources of everyday life and benefitting them while preserving their continuum is the essential point of public space design studies.

CHAPTER 3

SUSTAINABILITY

3.1. Etymology of Sustainability

The word 'sustainability' is combination of sustain + ability. In early stages it meant the ability of 'defense' namely to protect. But the term originated from Latin word 'sustinere' combination of 'sub'; under, and 'tenere'; to hold (Onions, 1964, p.2095). "1610s, "bearable," from **sustain** + **-able**²". Attested from 1845 in the sense "defensible;" from 1965 with the meaning "capable of being continued at a certain level." *Sustainable growth* is recorded from 1965. "1907, in reference to a legal objection, from **sustainable** + **-ity**. General sense (in economics, agriculture, ecology) by 1972." (Sustainable (adj.). (n.d.)

3.2. Introduction to Sustainability

"Sustainability integrates natural systems with human patterns and celebrates continuity, uniqueness and place making" (Early, 1993).

The world is rapidly urbanizing. Starting from the 20th century, population living in the urban area have shown a significant increase -by the year 2010, half of the population live in cities (UN, 2014). Carmona (2010), "Sustainable design is paramount if we leave it for future generations. Planning and design in terms of notion pursued sustainability. Urban design agenda has shifted to broader concept of environmentalism". That also brings a "holistic and integrated approach" (UN Human Settlements Program, 2000). In January 2015, United Nations prepared an agenda for

² Retrieved from https://www.etymonline.com/word/sustainable#etymonline_v_30620

sustainable development goals and presented in UN Sustainable Development Summit in September 2015. Agenda has 17 major goals one is (number 11) directly related with the cities, 'Make cities and human settlements inclusive, safe, resilient and sustainable' (UN, 2015, p.14). In general, the as per in article 11, aim is to transform cities into an equal conditioned, basic needs are satisfied, safe, healthy environments that prioritize vulnerable ones with an 'participatory, integrated and sustainable' urban planning. It also includes economic, social and environmental goals in line with sustainable spaces. In the 7th subheading it clearly states that "by 2030, provide universal access to safe, inclusive and accessible, green and public spaces..." (UN, 2015, p.22). That means, the public spaces are hot topic to global agenda of sustainable development. In 2015, Paris Climate Change Conference by United Nations Framework Convention on Climate Change, 200 countries have agreed on limitations and cautions for the next 5 years to minimize the negative effect of cities to nature. This agreement is important since it is a binding document. Main goals are reducing the greenhouse gas emission, air pollution and environmental pollution to a controlled specific limit. Focusing on the ecological principles, it also places a particular importance to sustainable economy. In October 2016 UN Habitat Conference on Housing and Sustainable Urban Development, in field of spatial development, public spaces have issue papers in The New Urban Agenda.

There are 2 explanations on sustainability as a noun in Oxford Dictionary (n.d.). First: "The ability to be maintained at a certain rate or level". And the second is "Avoidance of the depletion of natural resources in order to maintain an ecological balance". Sustainability becomes more and more important in current urban planning and design projects. It is because it aims to create more livable, environment friendly more specifically according to United Nations World Commission on Environment and Developments Bruntland Report (1987), "it is meeting the needs of present without compromising the ability of future generations to meet their own needs". Namely, it is a recently focused on issue that is actually necessary to understand our world and finding ways to preserve it while improving it. This report is significant since it

prepared the basis for further researches about the measurement about sustainability. In the next chapters, the thesis will also develop a set of criteria and the measurement parameters on sustainability.

3.3. Nature of Sustainability

It is undeniable that earth has carrying capacity. Inspiration for the focus on the nature is relevant with pessimism on ‘How will future be?’ question and its ambiguity. Throughout the history, people wished to know about future by fortune telling, predictions and augurations. Balance between the nature and the human nature and restoration of it centered the environmental studies. Not consuming today and also making the world ‘a better place’ for the future is aimed (McLennan, 2004). Kunstler (1993), adds that the concern is not only for nature, it is also for dead cities, places and strips. Ways to solve environmental problems, tools and mechanisms became research interests. Many of our solutions to environmental problems are produced by design. Good design as one of the ways of ‘healing’ what was damaged. “Design is the first signal of human intention” (McDanough, 1993, p.3).

Sustainable design is not a style, it is a philosophy.

“Sustainable design is not a stylistic endeavor, it is an approach to design not an aesthetic exercise thus it can never go out of style or be discussed as a fad. And secondly, because it is a philosophical approach to design, it can be used on any building type at any scale; indeed, it can transcend the design of buildings to include any object or project under design. It is a philosophy that simply asks for “What is the most we can do on a given project to enhance the quality of the built environment, while minimizing or eliminating the impact to the natural environment?” (McLennan, 2004, p. 5).

Mclennan (2004) defines sustainable design as a philosophy rather than a trend. It is a philosophy because ‘it is way of seeing the world through a particular thought pattern or doctrine’ suitable for the sustainable design (Mclennan, 2004, p. 36). Following or creating patterns character, explains the necessity of criteriazation. It is valid for the philosophies that there are basic assumptions to be able to collect the ideas in an common ground. “Sustainable design process is organic, unlike other philosophies, its design principles are not invented but discovered” (Mclennan, 2004, p. 37). Sustainability term alone, defined as a ‘moral code’ which means codes; rules and principles accepted by a group about the human behavior in a wanted manner. Similarly, “sustainability is the responsibility of people for their environment”. Having sustainability perspective provides different angles on how one perceives the world. By being a philosophy, ‘sustainable design thus offers set of rules to apply our responsibilities and make a change through our world views created by itself’. This explanation is harmonic with the ouroboros which gained acceptance as the symbol of sustainability in terms of representation of ‘cycle of life’. Keynes (1923, p.80) said “‘in the long term, we are all dead’” so the markets view is short term. But following his book, it is seen that what he really wants to imply is the not behaving as tomorrow has same conditions with today. One can infer that, human should not consume today as there is the same quantity of resources will exist tomorrow. Human has intention to continue. It is the case for the all-natural elements, the basic need of biotics is about the continuation. Nature does that in its daily actions. Every cycle is about starting and finishing incessantly. Through the history, human built, to transfer its knowledge and structures. A being which is aware of its mordial life, unconsciously building for eternity. Namely, is it possible to say intention of sustaining is primordial?

There are 2 fundamental beliefs of sustainable design philosophy (Mclennan, 2004);

1. Our way of living life styles has negative impact on environment

2. We have responsibility as caretaker of earth; craft our societies in a way that allows for continued survival of our species and those that we share it with.

This philosophy has clarified its basic assumptions but still it is very young. Literature on the sustainability, emergence of the term dates back to 80's whereas the philosophy and the criteria of sustainable design starts after 2000's. It is possible to find some goals and design principles dating back to earlier periods under the heading of environmental design. Actually, sustainable design offers 'the list of things that must be' which is the togetherness of the different design approaches. That includes the economic and social dimensions as well as the environmental dimension. In contemporary studies there are lots of efforts to systematize these design principles. As a part of process, this philosophy still in its early stages develops rapidly with new methods and techniques used as discussed in measurement part. Unlike many others, "this philosophy has no author or divine sources" (McLennan, 2004, p.38).

3.4. Biophilia

"Good design respects idea of biophilia and finds ways to interject life and life-like processes throughout the design" (McLennan, 2004, p.168).

Biophilia is defined as the 'love' and affiliation based for nature in the very first studies by Erich Fromm. With time, the term expands its meaning and used as 'the need of all living for co-existence throughout life'. Extensity of what referred as biophilia is increased with contemporary studies. In this case, connection with the sustainability occurs. They both in a similar manner create inputs for design-based studies. Rather than environmental determinism biophilia is a more convenient and integrable term with recent studies. Biophilic design is therefore an attempt to integrate and produce life solutions in design and architectural design. While sustainable design refers to a more general concept, an umbrella term, biophilia as a term explains the approach of the thesis in terms of the patterns that are sought for. The most definite example is the

effort to understand the relationship between human and nature/environment. The reason that the existence of the relationship is not approached skeptically is the bond between that two. What change over 'time' is the patterns of that relation. Namely, successful design is to provide conditions of sustainability with respect to biophilia. Sustainable design is therefore an attempt to accepting the human and nature as the basic concerns while designing the conditions of them harmoniously with time. time is not used as only a mechanical element but rather the life styles, conditions, social, economic and political structure of the period. At the literature part, spatiality of public spaces and nature are identified according to the conditions of the period. Accordingly, biophilia sets the resemblance with the contemporary needs of human and environment. It is the reason that this term is used with the 'bringing nature indoors because people are now having to be in it' because of the city life dependent to buildings. By referring to similar terms and especially biophilia, the aim is to clarify the new approach on sustainable design with its three elements of human, environment and time.

3.5. On Human

“How we fit into scheme of things” (McLennan, 2004, p.43).

It is about people. Better places for people, giving control to people, comforting the people. Human is not the outsider of sustainability schemes and diagrams, rather it is center of interest. Sustainable design aims to undo the damage given by people while extending the life quality of people. That is the bottom line that differentiates the environmental determinism and the sustainability. It is about creating places that gives sense of place, meaningful places. By 'meaning' it is referred as 'people not only perceive as being 'where', but also how they 'feel'' and for 'sense of place', 'genius loci'; feeling at attachment spiritually not only physical (Carmona et al., 2010). It is connecting people to their environment. If the attachment is not set with the people, it is the real end of life for the space. Life span of the places are dependent on people. in

other words, sustaining is not just continuum of ecology, it is correlated with the people about activities, patterns, themes they use. That is why, as inferred in history of public spaces, sustainable thinking stands as the relation between human and its environment.

3.6. Sustainable Design

“Sustainable design is a sub-set of the modern environmental movement...” (McLennan, 2004, p.27). “Sustainable design is a design philosophy that seeks to maximize the quality of the built environment, while minimizing or eliminating negative impact to the natural environment” (McLennan, 2004, p.4). Sustainable design covers, ecologic, economic and social dimensions along with cultural, political, spatial frameworks. That is the character of sustainable design, it is a composition of many interrelated elements and thus, not proper to be distinguished from one to another. Recent studies are in a search for a comprehensive framework. But to see how, as a term sustainable design evolved and became present in relation to ecological design movements. With ecological perspective McLennan (2004) classifies chronologically the phases of modern-day sustainable design.

1. Biological beginning
2. Our indigenous history
3. Industrilization
4. The modern sustainable design movement

“Sustainable urban design is a process whereby all the actors involved work together through partnerships and effective participatory processes to integrate functional, environmental, and quality considerations to design, plan and manage the built environment” (EU, 2004, taken from Carmona, 2010, p.55).

“The goal of sustainable design is to eliminate negative environmental impacts through skilled and sensible design, to exclude non-renewable resources, to make the least impact on the environment, and to symbolize the connection between natural environment and humans” (Kim & Kwon, 2018, p.4).

Sustainable design should be context and place dependent. Every place prepares its own condition, thus quality of space or design site, should consider of natural conditions which supports idea of ‘regionalism’ (McLennan, 2004). Scope of the sustainable design covers both locality and regionality. That confirms holistic approach needed for sustainable design. ‘Holistic thinking requires thinking outside conventional processes and realizing that most barriers are perceptual rather than real’ (McLennan, 2004, p.91).

Sustainability is not only about end-product, it is about process. Therefore designing the process, obtaining research by design. Namely, sustainable design includes process oriented small implications and actions that together creates gradual change.

3.7. Scale of Sustainability

Cities are taking steps in local scale on sustainability, yet the concept of sustainability needs a global framework as approach since the nature is the anchor point it based, its study is one and shared by all (Carmona, 2010). Philosophy of sustainability indicates that it is a ‘way of thinking’ and rather a conceptual trend; it is a need for the continuity of the natural environment. This quality, as discussed in introduction, put the topic into agenda of the international institutions. On the other hand, applications of sustainable principles have several scales defined in those global papers. There are 3 main categories in sustainable policy making; global, national and local levels. Carmona defines 4 spatial scales; buildings, spaces, quarters and settlements (Carmona, 2009b). Flowing in between scales, not only the criteria changes, but also scope of the necessary actions shows difference. It is possible to classify that situation

by moving to larger scale, actions are more design based and personal, whereas on the smaller scale, decisions are policy based and concern of a public domain. Making change, is possible in every scale from a private house to a global context. However, the test for sustainability evaluation is dependent on the scale. To have accurate results, the balance between scales, definitions of each term should correspond to same meanings. Each scale brings their own necessities, actors taking responsibility and even the number of actors in the design process. Carmona (2010), uses 'distinctiveness' term to explain the local, biotic support for the natural and wild life, in scale of districts uses open spaces and urban corridors. Another scale phenomenon is related with human. Balance is one of the key terms. Sustainability is not the pure intention to protect natural environment, it is preserving it by improving quality of life for human (IUCN, 1991). That extends the scale of sustainability from planet to human, the balance searched for. The change wanted to be measured thus should be feasible in human living conditions.

3.8. Sustainable Urbanism

There are different studies held all around the world, mostly for measuring sustainability and by doing so having chance to compare cities and their competitive advantages as a need of highly globalized world. In such an age of information and technologies defined with flows, cities are approached as the place of capital flow, human capital flow and natural capital flows. KPMG (2016), mentions 4 methods for measuring sustainability in cities, city scale. These are The Circles of Sustainability model developed by the Global Compact Cities initiative, The Green City Index, The Improvement and Efficiency Social Enterprise (IESE) Cities in Motion Index ,The GNH Index developed by the Happiness Alliance.

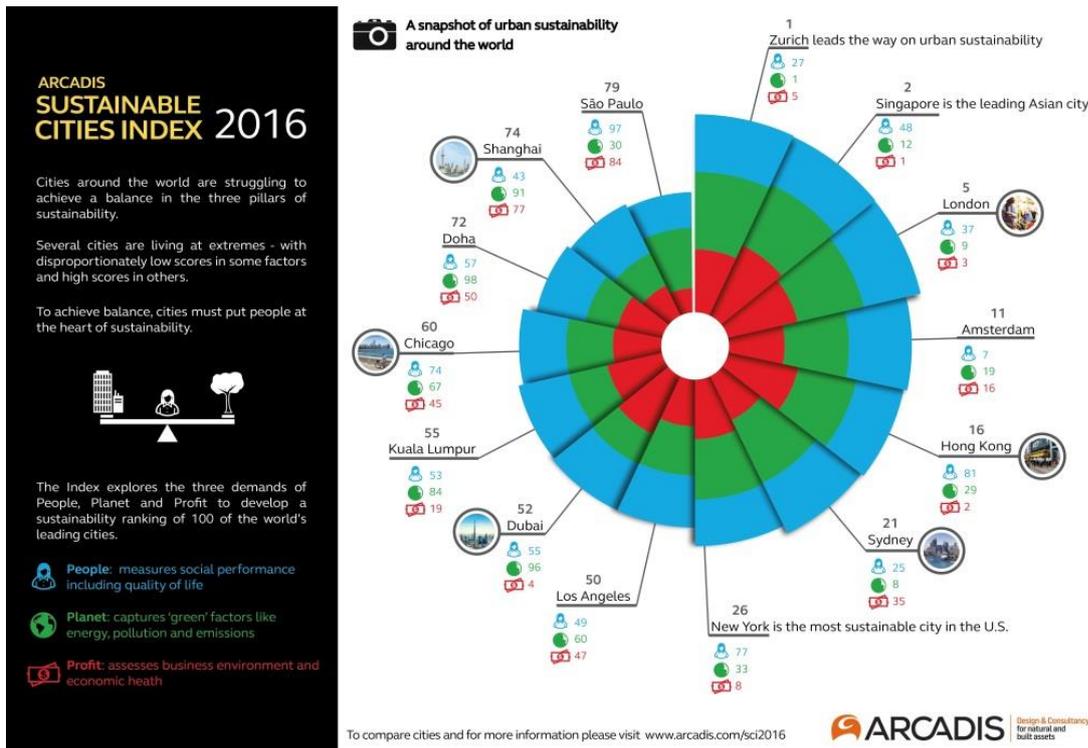


Figure 3.1. Sustainable cities index by Arcadis (Arcadis SCI Report, 2016)

Sustainable City Index, which includes 100 cities all around the world and lists them according to the parameters developed from the UN Sustainable Development Goals (SDGs). This study is made by a consultancy and design company Arcadis. The company collects data each year and lists the most sustainable cities. Their motto is Citizen Centric Cities for 2018, and report on the index implies that, studies are made with human focused perspective. That is why the 3 pillars of sustainability is converted and linked to people (social dimension), planet (ecological dimension) and profit (economic dimension). At the 2018 index, London scores best in overall; ranking second in both people and profit and eleventh in planet (Arcadis SCI Report, 2018). Istanbul is the only Turkish city exist in the list though it is at 82th rank. As methodology, the index is divided main 3 groups correlated to pillars. Each pillar had criteria that weights at total %100. These results both investigated separately and together for an overall result. Some general results of the research are; Northern

European countries have significant scores at planet dimension, American cities have relatively higher scores at profit dimension compare to its other dimensions and European cities generally are in a balance of 3 dimensions (Arcadis SCI Report, 2018). To see a Turkish city example, London and Istanbul are compared with those dimensions in Figure 3.2.

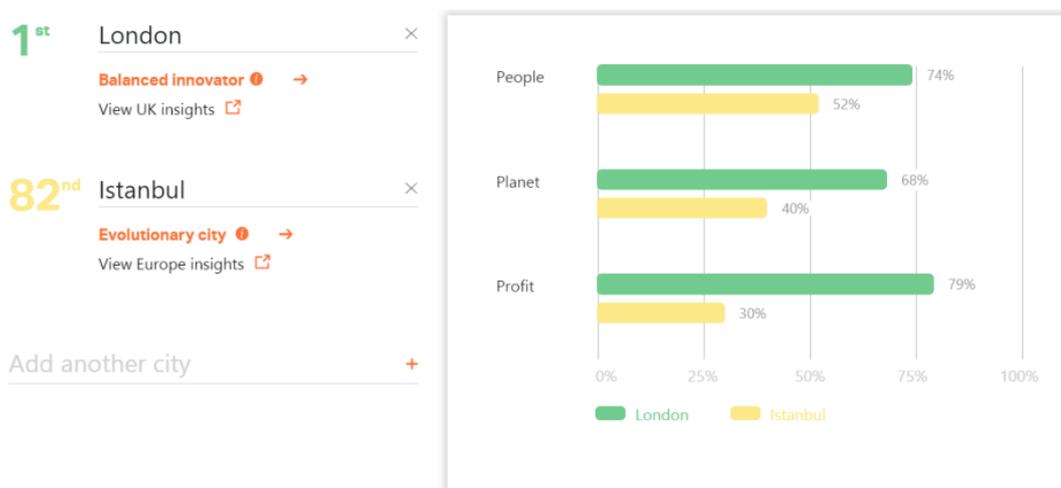


Figure 3.2. Comparative Analysis Made by Author Via Arcadis Website³

Sustainable Sydney 2030 is a strategic plan prepared at 2013. Prepared by the Council of the City of Sydney, the report builds on the sustainability definition on Brundtland Report and address three key terms; Green, Global and Connected (City of Sydney, 2015). Greenness refers to not only the environmental concerns such as efficient use of energy or global warming, it also focuses on the green areas of the city; open areas and public spaces networks. Term global is highly related to economy and also knowledge and flow of it in global context. Connected refers to a broader term. It both address the physical connection through walking, cycling namely accessibility

³ <https://www.arcadis.com/en/global/our-perspectives/sustainable-cities-index-2018/citizen-centric-cities/>

network and ‘virtual’ connection between place and human; sense of belonging, social well-being, equity and contribution. For 2030 targets of Sydney, there is a ‘design guideline’ produced to define actions to apply sustainability criteria with design according to qualities of the city (City of Sydney, 2017).

3.9. Sustainable Public Space

“Public space, we would argue, is now of central political importance to questions of sustainable, equitable and enriching urban life” (Worpole and Greenhalgh, 1996; p.25)

Cities are the places of capital flows, thus there is a relationship between development and urbanization. Public spaces are the place of social interaction, the smallest fragment of the public life that is experienced in daily life. They are multidimensional and reflect the general qualities of the city. Studying public spaces, gives clues about the economy, ecology, social structure and even the spatial configuration, namely a prototype of the overall city image.

A city is idealized as harmonic composition of its public and private spaces as exemplified by Krier’s True City. So, the public part is integral element of the city. It provides grounds people to meet, to socialize or to perform certain activities in daily life. Sustaining the public space, have critical importance because of the benefits that are irreplaceable by any other component of a city. Public spaces have many benefits. These benefits that are shown in the ‘sustainable public space’ part detailly are outcomes of the roles that public spaces take. Memluk (2013), describes that benefits by visuality and environmental aesthetics in urban scale and being recreational, enjoyable spaces from human scale. Akkar Ercan (2007, p. 115) lists that roles as “physical, ecological, psychological, social, political, economic, symbolic and aesthetic roles”. Furthermore, sustainable public spaces give chance to approach the place with sub headings as ecological, economic and social.

Ecological benefits are generally related to green area and open air it provides. Green areas, rivers, seas and other natural elements are habitat of indigenous organisms. That areas are also contributing to the well-being and health of the human. Parks, gardens, forests and many other types of green areas are source of fresh air. Along with that, hard landscaped open public spaces invite the air circulation. A successful combination of that hard and soft landscapes refreshes the urban air, that is mostly a solution for what today's cities deprive the most, air quality. Public spaces enhance climatic conditions and the environment (Wooley, 2004). Supports sustainable transportation modes (Gehl & Gemzoe 1996; 2000), prevents heat island effect, augments air quality, decreases air pollution, reduces water runoff (Carmona et al., 2008; Littlefair et al., 2000; Whitford et al., 2001; Shashua-Bar and Hoffman, 2000; Upmenis, 2000).

Health benefits have 2 categories; physical and mental well-being for human (Wooley, 2004). For the physical health, public spaces courage physical activity and exercise. Physically; provides sports grounds and sportive activity places, good for lack of activity disorders. Mentally; improves mental health and decreases stress and depression, (Hartig et al. 2003; Halpern 1995). It is even clearer that a sustainable public space allows other living organisms natural life settings.

Socially, it effects children, their play and improves learning capabilities (Carmona et al., 2008; Wooley, 2004). It is also important for adults; it is the place of social interaction, communication and learning. Social effects contribute to culture and identity of the place. It contributes to the process of 'producing common meanings' for a society by being ground of it.

Economically, a sustainable public space enhances the land value, property prices, business value and investment opportunities of the surrounding (Luther and Gruehin 2001; Phillips 2000). Indirectly, successful public spaces invite new jobs and variety of functions that is also a benefit for diversity of the place. Even the agora had economic importance, it was the place of financial exchange.

Politically, public spaces are the ground where all power related structures and the political changes occur. It is not just a physical element, a piece of land, but more than that it is a 'common ground'. It is seen that the political or social activity held on a public space (mostly known with squares) are called and linked with the name of the space. Gezi Parkı is one of well-known and recent example of it.

Physically, it provides the area of 'movement' which creates the circulation pattern and determinant of 'walkability'. Previously it was implied that in Rome, there were grandiose open spaces. And systematization of the city was based on kinetogenesis (a perception of walking person briefly) (Macdonald, 1982). All these implies the importance of the movement space, physical qualities of public space.

About the roles and benefits of public space, Göbeklitepe represents some of these aspects. The site is not accepted as a 'settlement' and does not fulfills the needs of being a city. However, what is seen on Göbeklitepe is a public space that provides a common ground for people, either used with religious purposes or politically. It is rather different that a public space still represents its common features without the existence of the housing area. With that qualities, Göbeklitepe reflects a space on which the thoughts are discussed and confronted. And it is seen that the symbolization of values is highly represented. It is certain that today and, in the past, it had highly symbolic meaning with its monumentalism.

Because of the structural similarity of urbanized areas, the approach needed for public space design should be generalized and global. That is the basic explanation of a need in measurement scale for the test of the public spaces. Public spaces are the selected units of sustainable development. That is because the public space allows control; by design, function and rules (Olanescu and Agachi, 2015). Private domain of the space thus, harder to observe and regulate. Another reason is suitability for movement (Olanescu and Agachi, 2015). Public spaces are the circulation pattern elements of the cities. As in the case of Rome, main movement route was the collection of public spaces.

As in different disciplines, urban design aims to adopt concept of sustainability into its process. In that case there are different point of views on ‘what makes a city sustainable?’. To reach goal of sustainable public space, researchers try to combine place making theory and the sustainability (Vale & Ghamvapur, 2013; PPS, 2011). That is a hot topic with the integration of place identity. “Distinctive landscapes, Natural features, locally distinctive built form, Streets patterns which respond to the context, Special spaces of natural or cultural significance, Skylines and roofscapes., Building materials, Local culture and traditions” are 9 parameters for place identity in sustainability context by Magdi (Magdi, 2014).

“Stay flexible in defining sustainability”; it is a work in progress that is “not mature enough” (Stauffer, 2011). Efforts to increase sustainability of a place is a positive factor that extends the scope of the study. That is why, better definitions, classifications are always welcomed to seek.

Considering all, sustainable public space is, as a intersection zone of 3 pillars but more than that, places that have many qualities and aspects, places that have a common meaning to its people and focuses on the environment and human relationship while aiming to prolong its existence. Namely, human, environment and time are main dimensions of sustainable public spaces.

3.10. Three Pillars of Sustainability

Common schematization of sustainable development consists of 3 elements; economy, ecology and sociology. These equal sized circles and their intersections show variety of relations. The middle of the diagram, there is the sustainable design. However, in recent studies this diagram is tried to be innovated, it is still valid. And the advantage of it is simply, the strengthen effects of the elements on each other. It is single standing different elements composition that creates stronger effects together. “It means resolving the conflict between the various competing goals, and involves the simultaneous pursuit of economic efficiency, environmental responsibility, and social

cohesion” (Cafuta, 2015 p.13691). 3 pillars of sustainability (social, economic and ecologic) and some assistant factors (psychological, health) are explained by their benefits on public spaces. For each field and study, this diagram is adopted and use. In urban design, the economic, ecologic and social values of space, concurs the sustainable urbanism. As in the basics of urban design and gestalt theory, the whole is greater than the pieces that is composed of. It is the thing, in the sustainable public space. The 3 pillars are the reference points to reach the goal of sustainability. It must be noted that a sustainable public space therefore is the combination of sustainability criteria and the successful public space criteria. By succession meant the inclusion of all the qualities that are referred to public spaces rather than only ownership pattern. In other words, successful public spaces are used, vital spaces that carries the common meaning imputed to it.

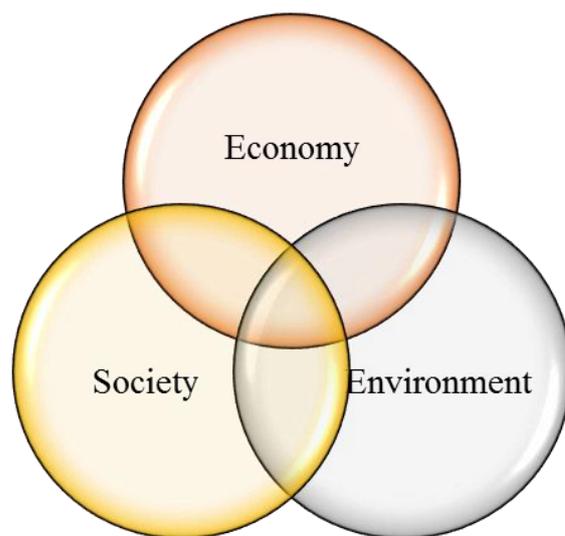


Figure 3.3. Common schematization of Sustainable Development (Vale & Ghamvapour, 2013)

As implied in Figure 3.3, representation with three pillars is the common schematization of sustainability and sustainable development. The intersection area corresponds to sustainability, sustainable development.

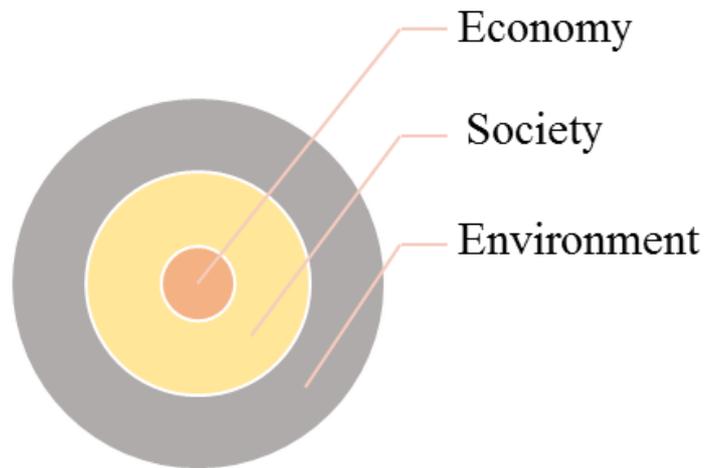


Figure 3.4. The Strong Model of Sustainability by Ghamvapur & Vale (2013)

In order to get through sustainable public space and its schemes, scholars use place making theory and sustainable development goals and produce examples as ‘strong model’ proposal at figure 3.4. above.

The common representation of sustainability shows the terms used to reach ‘sustainability’. In that case, sustainability is more than these parts that creates the intersection area. It is the route that leads to sustainability for every study field. This study aims to apply sustainability principles on public spaces, by creating an urban design guideline. Namely, common schemes are representing how we came into sustainability. It is now, the definitions created for sustainable public spaces, to define the extent of a broad concept of sustainable urbanism and partitions of it.

3.11. Sustainable Public Space Design

1. Human is commune with mother nature, birthed into it, spends life in it.
2. Human relationship with nature is dynamic. Relatively different levels of interaction through time depending on trends of eras.

3. Considering nature concepts, industrialization damaged the natural more than ever.
4. Public spaces, open green areas and recreational opportunities for the new working class.
5. Public spaces as a need for all people.
6. Public space as the integral part of cities, tool of democratic ground, ecological interest in design agenda.
7. Sustainable public space design as a natural outcome of nature-human relationship.

(Developed from Wooley, 2004, p. 151)

Restorative design and ecological design terms are generally used instead of sustainable design (McLennan, 2004). Although there are intersecting domains in between the terms, it is a common misunderstanding. Sustainability is a greater term than capacity of maintaining. But restorative and ecological design concepts are primitive forms of sustainable design process.

When the subject is sustainability there exist two types of basic relationships; the first one is the 'time' dimension and the second one is the 'environmental' dimension. Time dimension is about the long-termless of any sustainable design project. Coherently with the sustainability concept, each design is planned with a wide span of time. Secondly, the environmental relation is about the best-practice. Project's environmental concerns are not the prime goal, harmony with nature along with the comfort of the human being is essential for a sustainable design.

In spatial studies, Reiter (2004), develops his study SPS (Sustainable Public Space) study on 3 things; "coherent identity of a place, the co-existence and the contextuality". Another different frame is linking sustainability to urban form. In that case some forms are exemplified within a thematic research. Jabareen (2006) uses "compactness, sustainable transport, density, mixed land uses, diversity, passive solar design and greening design" concepts as related to urban form.

There are different classifications about the content of the sustainability umbrella term. In field of architecture, Rigdon and Kim (1998), used Economy of Resources, Life cycle design and Humane design trio to define sustainable structure. And basing on these concepts, a set of strategies are developed. Stauffer (2011) lists his principles on sustainability as “Scale (a good fit with neighbors, neither ramshackle nor grandiose), Access & mobility (easy to get into, out of and around it), consumption & waste (efforts to minimize are evident and effective), Re-use (make use of recycled building materials when feasible), Location & siting (make the most of orientation to sun, topography, wind, natural and man-made infrastructure) and absence (preserve open space and is no larger than necessary for its functions”. He approaches sustainable design from public spaces perspective and at the same time refers to both architecture and smaller scale, urban conditions.

Carmona (2009, p.5) refers 7 principles of sustainable design principles which are not agreed upon with a certainty yet are commonly referred in literature on sustainable development. These are “futuraity, environmental diversity, carrying capacity, the precautionary principle, equity/quality of life, local empowerment and the polluter pays”. Futurity is about opportunities of tomorrow dependent on today’s actions. Environmental diversity is the encouraging different forms to support natural qualities. Carrying capacity is the continuation of activities in accordance with the allowance of environment. The precautionary principle is taking precautions since nature is unpredictable and ‘before actions’ are more favorable than ‘after actions. Equity/ quality of life is related with the basis of sustainability; the human needs, effective and equal use of resources. Local empowerment is the process-oriented character of sustainable development. Defining these principles brought the step of linking and inverting them into urban design. Thinking what is urban as a part of nature, and as an organism existentially has a capacity to recover itself by design tool (Carmona, 2009). Leafing through the studies made on sustainable design, a matrix is created by Carmona (2010, also in 2003 but revised). He produces a way of

classification, a link between urban studies and general 7 principles of sustainability and reaches a general framework for sustainable design.

Table 3.1. *Sustainable Design Matrix. Developed by author from Carmona (2003, p.44)*

	Hough, 1984	Bentley, 1990	Commission of European Community, 1990	Blowers, 1993	Haughton and Hunter, 1994	Barton
DIVERSITY AND CHOICE	Diversity	Variety, permeability	Mixed development		Variety, permeability	
DICTINCTIVENESS			Regional identity	Heritage	Creative relationship, organic design	
HUMAN NEEDS		Legibility		Aesthetics, human needs	Security, appropriate scale	Human needs
BIOTIC SUPPORT			Open space	Open space, biodiversity		Open space networks
CONCENTRATION		Vitality	Compact development		Concentration	Linear concentration
RESILIENCE	Process and change	Resilience			Flexibility	
RESOURCE EFFICIENCY	Economy of means	Energy efficiency	Reducing travel, energy reduction, recycling	Land/minerals/energy resources, infrastructure and buildings	Economy of means	Energy efficient movement
SELF-SUFFICIENCY	Environmental literacy			Self-sufficiency	Democracy, consultation, participation	Self-sufficiency
POLLUTION REDUCTION		Cleanliness	Ameliorating pollution through planting	Climate/water/air quality		Water strategy
STEWARDSHIP	Enhancement through change		Integrated planning			

					European Union Working Group on Urban Design for Sustainability, 2004	
	URBED, 1997	Rogers, 1997	Frey, 1999	Edwards, 2000		Reiter, 2004
DIVERSITY AND CHOICE	Integration and permeability, a rich mix of uses	A city of easy contact, a diverse city	Mixed use, hierarchy of services and facilities	Mixed use, diversified tenure	Vibrant, mixed use, connected streets	Coexistence, Diversity of functions, people, population; Openings; free access
DISTINCTIVENESS	Sense of place		Sense of centrality, sense of place		Beautiful, distinctive, identity, sense of pride, respect for heritage	Collective Identity, integration significance; aesthetics
HUMAN NEEDS	Quality space, a framework of safe legible space	A just city, beautiful city	Low crime, social mix, inequability	Shelter and safety, open space for social interaction, healthy, secure, comfortable	Secure, healthy, equitable, cohesive with privacy, supports social capital, human scale, balanced economy	Naturalness; human scale
BIOTIC SUPPORT			Green space, public/private, symbiotic town/country	Ecological well being, natural habitat integration	Integrated landscape, biodiversity, green structure	
CONCENTRATION	A critical mass of activity	A compact, polycentric city	Containment, densities to support services	High density	Compactness, density to support public transport	Density and proximity
RESILIENCE	Ability to adopt and change		Adaptability	Adaptable, extensible	Adaptable built form	Adaptation to modifications
RESOURCE EFFICIENCY	Minimal environmental harm	An ecological city	Public transport, reduce traffic volumes	Public transport, renewable energy, rainfall capture, low energy/water use	Land re-use, resource conservation, public transport efficiency resource and recycling technology	
SELF-SUFFICIENCY			Some local autonomy, some self-sufficiency		Integrated networks and systems pedestrian and cycle networks	
POLLUTION REDUCTION			Low pollution and noise	Pollution and waste strategies	Pollution avoidance, support microclimate	
STEWARDSHIP	A feeling of stewardship	A creative city		Integrated land use and transport planning		Participation

	Jabereen, 2006	Farr, 2008	Al-Hagla, 2008	Clarke, 2009
DIVERSITY AND CHOICE	Mixed uses, diversity in housing types and prices	Mixed of land uses, housing types	Increasing accessibility, permeability, circulation of people and freedom of choice, diversity of relationships and landscape elements	Mixed use high streets, housing mix, permeable block structure, social streets
DICTIONTIVENESS	Diverse architecture	Identifiable center and edge of neighborhood scale	Local distinctiveness and heritage, sense of place	
HUMAN NEEDS			Safety, equity and social inclusion	Local community facilities, surveillance, privacy, mixed and inclusive communities
BIOTIC SUPPORT	Greening, biodiversity	Biophilia	Enhance local habitat diversity	
CONCENTRATION	Compactness, density to support transit	Compact, walkable size	Neighborhood size	Polycentric urban structure, density gradients, reduce parking
RESILIENCE				Long term maintenance
RESOURCE EFFICIENCY	Sustainable transport, passive solar design	High performance buildings and infrastructure	Closing local resource loops, local or recycled material use, reducing non renewable resources	Orientation for solar energy, public transport
SELF-SUFFICIENCY	Walking and cycling	Integrated networks of walkable streets, connected	Space management; providing paths and cycle routes	Walkable community, shared surfaces, participation
POLLUTION REDUCTION	Green urban drainage		Cutting green house gas emissions and energy	
STEWARDSHIP			Increasing local self determination, community participation and involvement	Urban management focused on sustainability

Sustainable design matrix created by Carmona (2010), is devised by author, updated with the recent studies on sustainable public space and neighborhood. It shows the growing literature with detailed studies on sustainable public space.

Darkest green areas show the larger scale of the sustainability studies; in this case neighborhood scale. The lighter green areas represent sustainable public spaces, while overall matrix shows the sustainable design matrix.

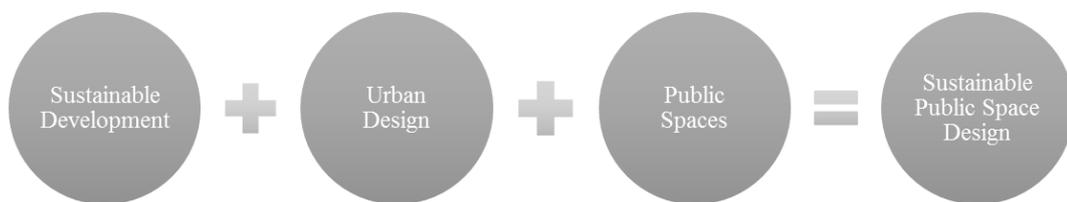


Figure 3.5. Elements of Sustainable Public Space Design

Sustainable development and sustainability principles approached with urban design perspective via public spaces are the emergence of the sustainable public space design (SPSD). It is possible to say that sustainable public space design is having an urban framework to sustainability which is a philosophy. Rather than pure, action-based deterministic studies, it requires a frame for approaching the design process.

3.12. Measurement of Sustainability

Lang with a pragmatic principle for Urban design (1994, p.348) argues: “rather than assuming technology will always find an answer, urban designers should take an environmentally benign position, designing flexible and robust environments that enable and facilitate choice and can accommodate change. It is not a pure technical process, it is a guideline for the designer”.

3.12.1. Sustainable Development Measurement

UNCSD (United Nations Commission on Sustainable Development) worked on the concept of sustainable development to turn them into parameters. This effort for a multi-national standardization shows the need for a global context. However, Eurostat tested the given methodologies and it was seen that some of them did not work or was not appropriate to the specific cases (Eurostat, 2006). Namely, there must be used a systematic and scientific research method which is flexible and adoptable to different study areas. At the same time, it must be testable and measurable. Then is it possible to measure a qualitative data about sustainability? To be able to maintain a convenience to every condition, tests must be specific to case, context dependent. It is valid in situations when subject of design and the measured 'things' are same. For example in measurement of 'accessibility'; in all public space design processes it must be gauged with a test for appropriate questions to selected site. That goes parallel with the need for a generic model which is flexible and context dependent as the first step of identifying sustainability situation. 2002 Sustainable Development Summit in Johannesburg, is the prime step for different countries to develop their own sustainability parameters (UN, 2008). Deciding the codes of sustainable public space design is important because change is only possible if it is something measurable. That explains the necessity of parametrizing sustainable design.

UN (2008) held an exploratory study, that approaches sustainability parameters and their appropriateness with the capital approach, economically. It focuses on the policies so that enables a performance test that compares varied countries. The first indicator domain has two sets; foundational well being and economic well being. The second column of the table has stock indicators that define the first indicator domain. And the last column includes the flow indicators that are the measurement bodies of the table. In this capital approach based research, social approach and efficiency (resource and energy) are not studied. It clearly says that for the further research with social

dimension new set of indicators must be idealized. As scope, it is stated that the study is exploratory without any concerns of creating a general parametrization. It stands as a conceptual framework for evaluation of the broad in scope concept of sustainability.

3.12.2. Sustainable Urban Design Measurement

Coplák & Rakšányi (2003) with a different approach defines how criteria should be. They list the qualities as being; “representative, simple, easy to use, founded on reliable knowledge that is easily available, regularly updateable, well organised, comparable in Europe (preferable is global comparability), holistic and comprehensive” (p.67).

Cafuta (2015) has a more general approach. He proposes a new model for the assessment of sustainability; SEC model that is a popular guideline for contemporary studies on sustainability by building on the topic discussed via Agenda 21. “There is a tendency to answer all those questions using the following hypothesis: By using the top-down approach principle and deductive or inductive conclusions, it is possible to create a holistic assessment model to assess the sustainability of urban environment visual arrangements and to carry out comparative environmental analyses within different time sequences. Such an assessment model represents the base evaluation unit” (Cafuta, 2015, p.13695) The model is created by following systematic principles and top-down approach with a decomposition method. Model is named with the first letters of sustainability dimensions defined by author. These are “suitability for everyone, environmentally acceptance and cost effectiveness” (Cafuta, 2015). 3 main dimensions are detailed first with basic dimensions and then with factors and indicators. Smallest unit (indicators) are used as representator of each questions of questionnaire helded in the selected site. This study measures the perception of the user’s by questionnaire. Each question used different techniques; one used extreme points (such as dangerous-safe), another question was based on activities came front.

Two case studies are studied and at the final stage inductive and deductive conclusion methods are used.

Table 3.2. *Three-dimensional evaluation assessment (SEC model) of urban open space environmental perception” by Cafuta (2015, p.13699)*

FACTORS	INDICATORS	ASPECTS	QUESTIONNAIRE TERM POSSIBILITIES WITHIN TWO EXTREMES
1.1 Psychological	1.1.1 Individual feeling	• Attraction	Not attractive-attractive
		• Pleasantness	Unpleasant-pleasant
	1.1.2 Attracting attention	• Relaxation	Tense-released
		• Composition	Simple-complex
1.1.3 Orientation ability	• Arouse interest	Boring-interesting	
1.1.4 Sense of safety	• Stimulation	not arousing-arousing	
1.2 Sociological	1.2.1 Land use	• Overview	not visible-visible
		• Safety	Dangerous-safe
1.3 Aesthetic	1.3.1 Location aesthetic	• Land use intensity	walking, stopping, sitting, socializing, playing, cycling, rollerblading, skating, sightseeing tour
		• Space arrangement	Disordered-ordered
	1.3.2 Ability to recognize space order	• Dominance	object line, single object, open space, paved surface, greenery
		• Interesting	Uninteresting-interesting
1.3.3 Light effect	• Pleasant	unpleasant glow-pleasant glow	
	• Compliance	Incompatible-compatible	

Alberti (1996), defines sustainability as a specific relation *between human and environment*. She defines 3 dimensions; these are “Urban quality, Urban flows and Urban patterns” (Alberti, 1996). Table below shows the defined criteria and themes that are urban sustainability dimensions and the measurement indicators of urban sustainability. The author uses different measurement indicators for each of given terms.

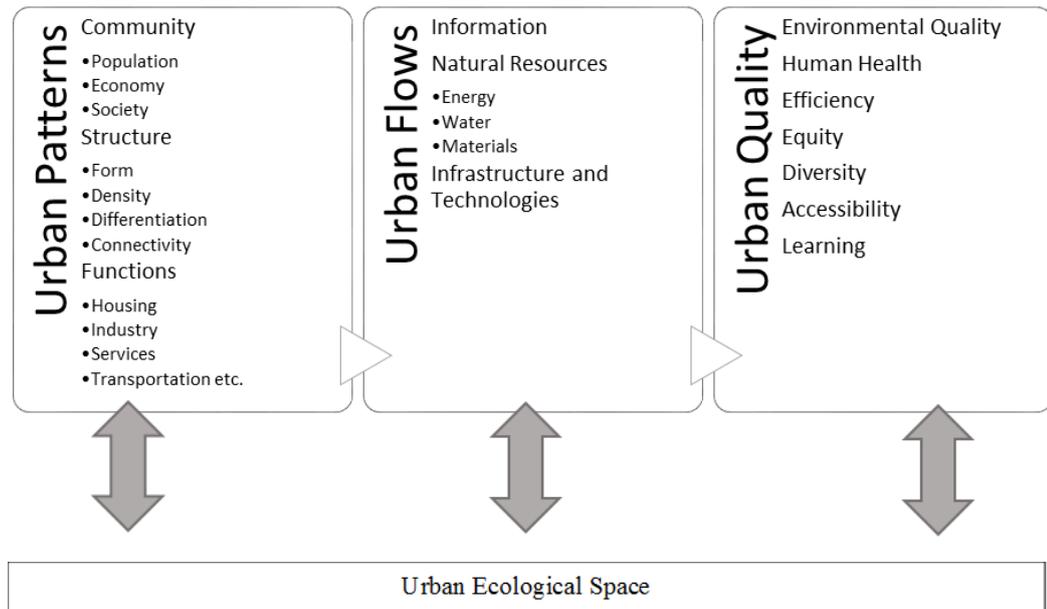


Figure 3.6. Urban Sustainability Dimensions (Alberti, 1996, p.389)

3.12.3. Sustainable Neighborhood Measurement

Yiğitcanlar et al. (2015) put emphasize on the importance of neighborhood unit, on the way to create a sustainable urban life. They mention a Neighborhood Sustainability Assessment (NSA) tools for a generalized systematic measurement globally. The system has 3 steps; scoring performance of the selected neighborhood unit by using assessment tool, determining the neighborhoods point on sustainability and stating the scope of neighborhoods sustainability goals (Yiğitcanlar et al., 2015; Sharifi & Murayama, 2013). Authors specifically points out that, evaluation of sustainability is a controversial since weight of the scores differentiation in different cases results in incomparable situations. Likert scale is one of the exemplified techniques of evaluation for an easier understanding. Quantitative data, according to given weights are measured and total scores are used to determine the sustainability of studied neighborhoods. (Please see appendixes)

Al-Hagla (2008) studies role of open spaces and sustainability relationship in a neighborhood scale. In his study a three-level model which emphasizes on social and ecological dimensions is used. First step is identifying the type of open space, second step is determining the selected type open space's objectives. And the last step is preparing a test of measuring selected areas sustainability.

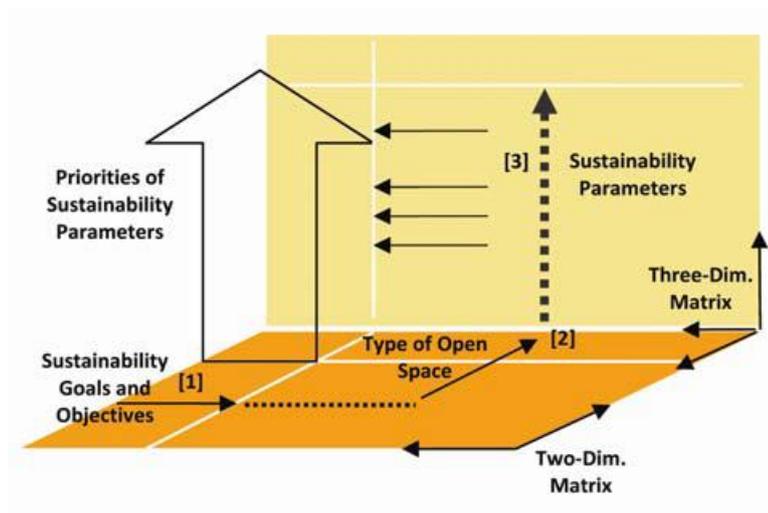


Figure 3.7. Three-dimension matrixes correlates types of open space to sustainability attributes. (Al-Hagla, 2008, p.5)

As methodology, he uses weight system of each parameter assigned by author. Direct influence, indirect influence and non-are 3 choices that have grading from 2 to 0 accordingly. Results are numeric data, and represented with a cobweb (Varna & Tiesdall, 2010) diagram which shows the of top priority intervention areas and actions to improve them.

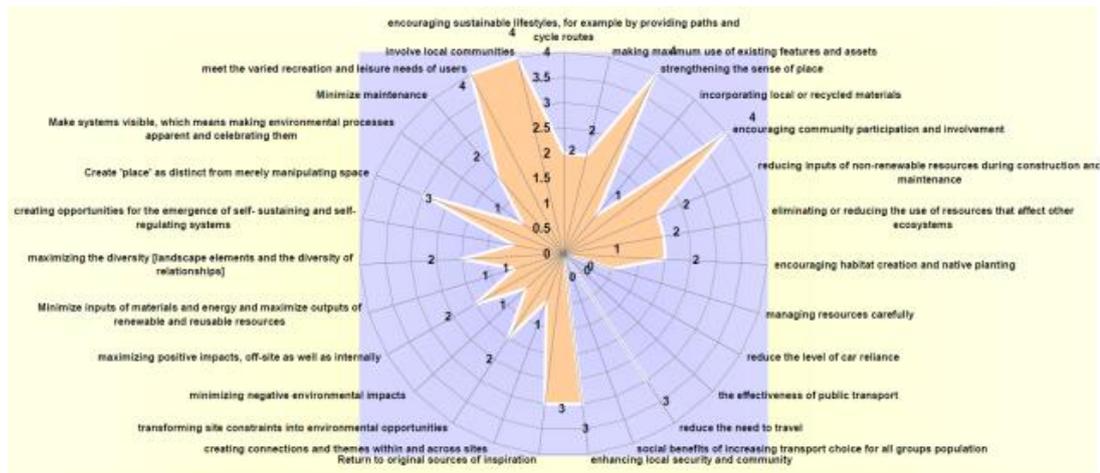


Figure 3.8. “The Priorities of Sustainability Parameters That Have To Be Applied To Selected Case Study, Beirut By Al-Hagla” (2008, p.9).

As it is emphasized in Figure 3.8 the visual end-product gives clues about the existing situation in the first flesh even if every single necessary intervention is not legible. He uses cobweb diagram, evaluates its test on selected case study. By doing so, missing problem areas are evident.

3.12.4. Sustainable Public Spaces

Coisson et al. (2016), used a bioclimatic approach for a redevelopment Project for open spaces. They first, studied the qualities of selected area, historical background and made analysis with a design perspective. Bioclimatic approach as design research tool is used; environmental factors as wind, sun, shade, namely open space comfort criteria taken as well as urban morphology. Details of the criteria were based on a previous study held by the RUROS Project (Rediscovering the Urban Realm and Open Spaces) that uses quantitative data (Coisson et al., 2016).

Sanei et al. (2017) Uses the term sustainable public spaces, explains the term with the 3 pillars of sustainability; a space at the intersection of social, economic and ecologic

dimensions. That is represented as the application of sustainable development principles to urban space. Study lists a table of criteria in two sections; direct effects and indirect effects. Direct effects are the ‘social, economic and ecologic’ instruction set, on the other hand indirect effects are ‘functional, aesthetic and physical’ instructions that also have major roles on achieving sustainable public spaces.

3.12.5. Sustainable Block Measurement

Assessment and Measurement tools of Sustainability; BREEAM UK (BRE Environmental Assessment Method) 1990, LEED US (Leadership in Energy and Environmental Design) 2000, CASBEE Japan (Comprehensive Assessment System for Built Environment) 2001, DGNB Germany (Deutsche Gesellschaft für nachhaltiges Bauen) 2007 (Lylykangas, 2016). LEED and BREEM are computer-based programmes that evaluates the given subject according to selected criteria. And provides results with numeric data and converts them into classification (LEED uses green, silver, gold and platinum adjectives hierarchy). These given programmes provide a detailed analysis of one selected situation of sustainability. It means that these tools use one pillar of sustainability with quantitative parameters. In the most common, ecological dimension is considered by abandoning the social processes and many others. That shows a gap in literature which is the need for a holistic thinking approach to sustainability. Rather than single studies, interrelated a systematic approach is needed. System approach builds connections between the inseparable parts (Shedroff, 2009).

A search for a generalized systematic approach for sustainability is beneficial since the necessity of it is realized in every scale. Lylykangas (2016), defines the goals of standardization with 2 components; harmonizing and creating a shared understanding and lists the advantage of it as; ‘Global applicability, Independency of commercial rating systems, Holistic approach on sustainability, Aspects of sustainable

construction are clear and understandable, Assessment methodology guidelines (indicators) are clearly described.’ The earth, air and many natural resources are not place dependent, these are the unique elements that shared and used by all. By organizing such a system, it should be noted that it is not possible to claim one single true design for sustainable design. Similarly, to design itself, characteristically there are multiple choices that works for a specific system. In that case, it is not accurate to select either certain criteria nor a search for convenience to criteria. Rather, definition of a conceptual framework, supports a theoretical background, prepares the conditions of a research question that evolves to hypothesis. That qualitative approach allows for quantitative studies which has the ability to define numeric vacancy in desired conditions.

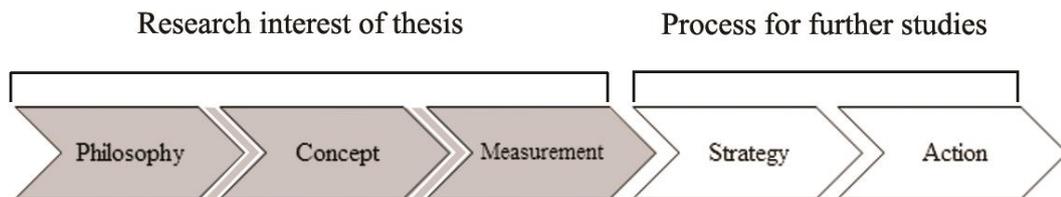


Figure 3.9. Thematic Frame of Research by Author

3.13. Sustainable Public Space Design Elements

In the most general sense, a public space is evaluated as sustainable considering the 3 pillars; social, economic and ecologic dimensions. These headings are both qualities of public spaces and the qualities that are for sustainable design process in ideal. It shows that the design of public spaces is not be thought without compromising sustainability criteria. Ross king (1999), describes sustainable city with 3 main dimensions. First one is the ecological dimension; that is the most detailly explained aspect in this thesis. Nature is handled with its quality of cycling inventively. The second dimension is economic sustainability. That covers the ecological sustainability

which means, in broader view economic sustainability focuses on the environment friendly production, allocation of the resources and their distribution (King, 1999). He adds that the definition of the economic sustainability is a leading factor to local production that is also followed by touristic expectations.

Before, roles of public spaces are listed at Sustainable Public Space part. Now, outcomes and values supplied to public spaces and their relationship with human is examined as aspects of public spaces.

3.13.1. Social Aspect of Public Space

Public spaces are the interaction grounds of people and space. Along with social benefits provided by public spaces, the space itself has social dimension by referring to public, to people. The social dimension is one of the 3 pillars of sustainability. Carmona (2010), uses 5 main headings under the social dimension; “People and space, the concept of public realm, Neighborhoods, Safety and security, Controlling space and Equitable environments”. That shows the wide range of topics it includes and relates the contemporarily studied phenomena as inclusivity, equity, exclusivity of space. These debates are crucial to define what is the limitation of public? Is a place that not for everyone’s use still public? Or more generally, how public is defined?

Power of the built environment is known and used as a control tool or guideline for people’s decisions depend on the space. The first scientific observation made by Whyte on the ‘behavior and choices of people in space’ indicates that the bond between the people and surroundings are in a certain relationship (Whyte, 2005). The space and the people are in a continuum of interacting with each other.

In *Life Between Buildings*, Gehl (1987), defines activities take place on the public space and the social relations made on it. Defines the social and interaction

opportunities and levels of that relations are dependent on the public space. Thus, social life is an issue of public space design.

3.13.2. Economic Aspect of Public Space

Public spaces attract investments. These investments are both for business and for housing. About businesses, public spaces attract variety of activities that provides economic revenue. These attractions are location based; being close to public spaces provides competitive advantages. Small businesses choosing a new business location rank open space, parks and recreation as a number-one priority (The Trust for Public Land, 2001). Also, since these spaces have large number of users, possible client numbers increase naturally. Location is best exemplified by people's willingness to pay more for houses that are closer to green areas, parks, squares and public spaces in general. In Berlin in 2000, proximity to playgrounds in residential areas was found to increase land values by up to 16 per cent (Luther and Gruehn, 2001). Namely, public spaces have positive effects on economy. That is related to the accessibility to daily needs, activities and social life.

3.13.3. Ecologic Aspect of Public Space

Ecological aspect is the most emphasized on the Chapter 2. As defined in that part, nature and the public spaces have gradient relationship forward and backwards through time. Ecology dimension is the first dimension that pops up in one's mind when the subject is sustainability. Public spaces while contributing to human life, enhances the nature, natural life of other biotics. Together with all, natural factors such as penetration of sun light, air circulation and wind, temperature, percentage of humidity and amount of rain or snow fall are important natural factors for a sustainable design from ecological perspective.

CHAPTER 4

MODEL AND RESEARCH METHODOLOGY

4.1. Sustainable Public Space Design Model

Proposed sustainable public space design model works as a performance test that includes set of primary indicators and their measurements to see ‘the need for intervention’ concepts.

Why determining sustainable public space design criteria is necessary?

It is in the simplest sense, to solve problems related to urban design. The ideal condition of any space is being sustainable. It is the natural, tone. This condition is similar with designing ‘livable cities’; being livable is not a pro for a city, it is a condition for its existential being, purpose of existing. Therefore, it is inevitable to design sustainable spaces which bring the notion of how to design such spaces. Selecting criteria is not the aim; it is the tool for successful urbanism, for producing inputs to decision making processes. It is well aware that, it is not seem possible to prepare a performance measurement tool by considering all parameters (at least for now, who knows about future?). This is the actual point that wished to be emphasized, focus is considering as much possible criteria to be ‘more’ completed, approaching the research as a holistic process. This is an example study of a design guideline that enables preparation of needed strategies and actions for a better environment for people.

Benefits of using common guidelines

- The opportunity to compare cities
- A comprehensive breakdown of many drivers of sustainability
- The opportunity to meet a defined standard
- Academic research and corroboration
- A way to determine whether all relevant issues are covered
- A means to identify areas in which the city can perform better

Challenges of using common guidelines

- The inclusion of key performance indicators that are irrelevant to a city's priorities
- The time required to participate in a method that uses numerous key indicators
- Prohibitive costs in times of budgetary constraints
- The likelihood of a program being in the pilot stage and having few comparator cities

Figure 4.1. Benefits and Challenges of common guidelines (KPMG, 2016, p.13)

“The choice of which variables should be measured, and which criteria should be used to measure them depend on how we define urban sustainability” (Alberti, 1996, p.382). That situation has 2 main dimensions; definition of sustainability and variables change because of scale or public space type. The first one, definition, as mentioned is not certainly agreed upon or set boundaries on. There are commonly preferred definitions as Brundtland Report. With growing literature, meanings devoted to sustainability are extending. That is also brings need for drawing the scope of the research and flow in that lines. Otherwise, it causes an effort to touch every concept about life which is not theoretically optimal. Sustainable public space design criteria are for determining problems of a selected place and foreseeing what is needed to be done. To combine all, each study is unique, and every different perspective brings a new definition that is not completely unusual but focusing on some aspects more than already made studies. Carmona (2009) mentions about the second dimension; scale. It is considered as an important issue since producing different actions which does not move as deduction, is not coherent with the idea of holistic view of urban design thus

public space design. But it is clear that each scale of study, brings their own set of actions. For example, achieving sustainable buildings focuses on the material, construction and efficiency of individual structures whereas a sustainable neighborhood includes movement patterns, alignment of structures, social and ecologic indicators. Urban design as character stands in-between and around, of smaller and larger scales, briefly between city and building.

Model is a representation of how sustainable public spaces are approached. It is therefore dependent and indissociatable from the general concepts and thinking styles of today's. Designing for the future, although the uncertainty it has, is what sustainable design is working for. It does not prove wrong the sustainable thinking; on the contrary it encourages finding ways of imagining future by using today's inventory. This situation remains representative in case of model being flexible and adoptable. That is also coherent with the sample model design studied in this thesis. Aim is producing better environments for future, not deterministic model production.

“Sharifi and Murayama also noted that most of these tools possess ambiguities in terms of criteria weighting, scoring, and rating system with no mechanism for local adaptability and participation” (Yiğitcanlar et al., 2015, P.2572).

4.1.1. Using Indicators

Indicator defined as “a parameter, or a value derived from parameters, which points to, provides information about, and/or describes the state of a phenomenon/environment/area, with a significance extending beyond that directly associated with a parameter value” (Gabrielsen & Bosch, 2003; European Commission, 2015).

The basic assumption related to using indicators is similar with the process of urban design. As in the studio works or in project designs, the study starts with the research

made on area to identify problems attached to place. These problems are the first steps of deciding necessary actions to achieve a desired future. Preparing algorithms, SWOT analysis and flow charts are some examples of this initial processes of design. All these starting points are to classify and divide the problem to produce systematic solution sets. “The idea of using indicators is based on the assumption that the qualities of a good and a bad city can be divided into sub qualities (components) and that these sub qualities can be measured by means of statistical, i.e., quantitative indicators or they can be otherwise examined separately using distinguishable qualitative characteristics as the means (Coplák & Rakšányi, 2003, p.65).” System approach builds connections between the inseparable parts Thus having a set of indicators, eases the design process and guides the designer in an common manner. Here, the contradiction is presumption of the accuracy of indicator. That is, will later be discussed at the limitations part.

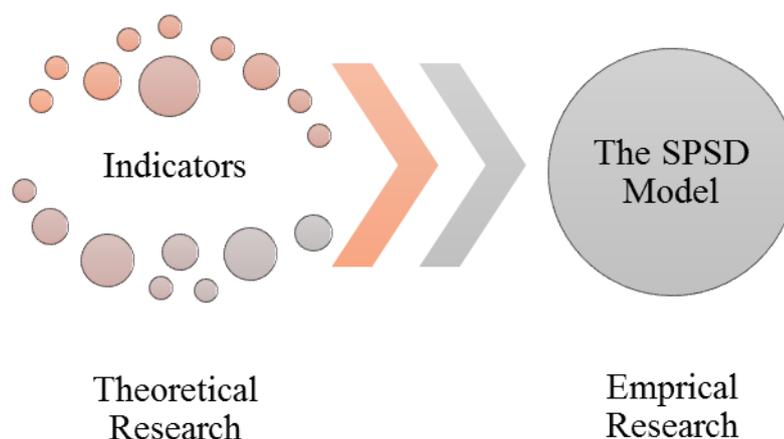


Figure 4.2. Research Design

Figure 4.2 shows that the SPSD model which is the empirical part of the study is a collection of single indicators within some groups that are obtained via theoretical background studies made in the previous chapters.

“By using indicators, we can seek to measure the **state** of the city in relation to a good, in this case, sustainable city, which is the target state. The state can also be also measured as problems or deficiencies in relation to the target state. Then we can measure steps; this means that we measure the state and the extent of **change** in the state at different points of time in relation to the goal. Flow concepts are used to measure the **inputs**, in other words, the measures taken, and the policies used to change the state” (Coplák & Rakšányi, 2003, p.66).

4.1.2. Systematization

In all scientific studies, the purpose is understanding the system of life in backgrounds. It is what Stephan Hawking (2017) defined as the ultimate aim of science in his book *Brief History of Time*. “Even if there is only one possible unified theory, it is just a set of rules and equations. What is it that breathes fire into the equations and makes a universe for them to describe? (Hawking, 2017)”. When the subject is sustainability, similar systematization is made. The 3 pillars of sustainability are the most common known example of it. It provides a general framework and subheadings that allow different fields to adopt and classify their studies. Systematization then allows to produce indicators, measurements and at the final stage actions.

Mcharg (1971), with an ecological approach stands against to the “internationalization of modernity” and supports that studies must be based on “intrinsic qualities of a given locale”. This thesis has an in-between approach that supports the idea of generalization while using the local qualities and conditions as data sources.

Not all studies in search for systematization or understanding the systems behind actions and things aims to move forward to reach a final stage. In some cases, the actual desire is to find the system itself. Gaia Hypothesis by Lovelock (2000), is an example of that type of a search. It is highly related to concept of sustainability since it focuses on nature, environment, health and many issues regarding to life.

Sustainable design therefore wills to define codes and indicators that are both to understand and to apply on reality.

4.1.3. Ambiguities

The most common ambiguity about sustainable public space design is agreeing on indicators of it. The before investigated literature supports that, even if there are commonly accepted indicators still, it is not possible to bound the subject. Research on the philosophy and concept of sustainability shows that indicators must be site and context dependent. That means same set of criteria may not represent the same conditions for different public space types. One criterion that is wanted to seem unnecessary or unwanted for another study. An indicator which is wished to have higher scores may be an unwanted indicator for another sub-set of indicators. On the other hand, defining optimum criteria number is uncertain. Using out-numbered indicators may cause loss in meanings. “As the number of indicators grows, there is a problem of indicators tending to cancel each other” (Varna & Tiesdall, 2010, p. 592).

Another ambiguity is defining criteria. That brings the need for certain definitions of terms used or the researcher is needed to provide the meaning of selected terms to avoid confusion. Social dimension is an example of that situation. Unlike physicality, social processes are harder to define if they are based on perception.

As happens at the last step of a design project, ambiguities related to measurement is again the last subject. Building on a quasi-objective decided indicators, measuring them, assigning them weights and evaluating them is not to be expected objective. There are some studies using indexes to make quantitative analysis on sustainable public space design. That brings two blurred areas; the first one is who decides weight of each criteria and how? And the second one is in what ways qualitative and quantitative analysis intertwines and produces one single conclusion?

These ambiguities are not aimed to clarify with this thesis. Main focus is understanding nature of sustainability and producing a set of indicators that works coherently with its principles. It is a way finding in a foggy weather. To achieve good design, it is not a must to classify every aspect and divide them into parameters. Selecting a method to apply and producing a guideline is one of the possible ways of approaching sustainable public spaces.

4.1.4. The Model

A parametrical model is proposed to measure sustainability of public space designs. Sustainable public space has 3 main components; human, environment and time. Sustainable design and public space design concepts produce the sustainable public space design model. The model is both a guideline for starting up a new design or a performance test for those already exists.

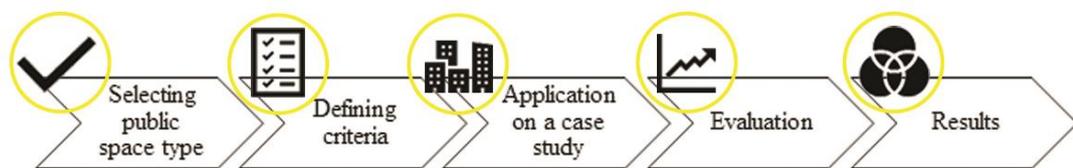


Figure 4.3. Workflow of The Study via Proposed Model

As described in the figure 4.3 the model is the composition of defining criteria and application on a case study part. It is the tool of measurement.

By referring to the historical analysis, it is concluded that a relationship between human and its environment exist in public space studies. Therefore, sustainability is considered as the rearrangement of social, economy and ecology dimensions as the

network of relationships under human, environment and time headings. Figure 4.4 describes the emergence of this new approach.

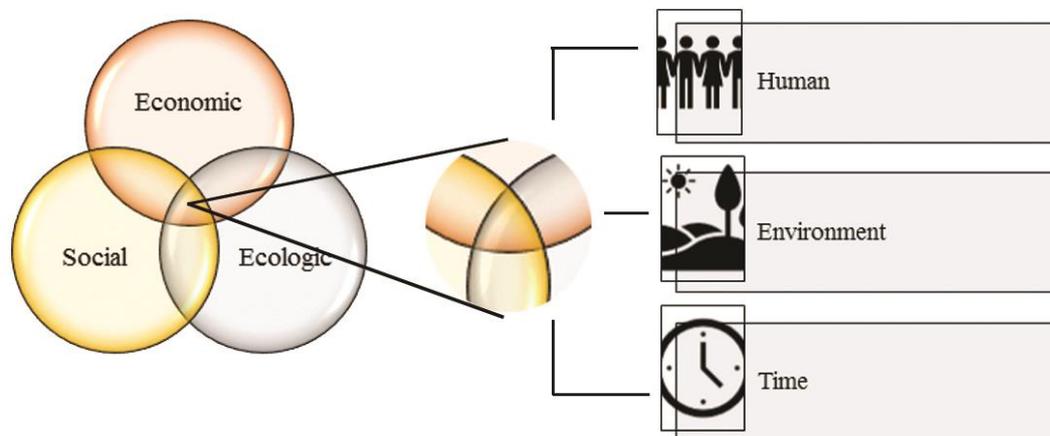


Figure 4.4. Emergence of Sustainable Public Space Dimensions

3 pillars of sustainable development are handled as the birth of sustainability concept. The intersection of these three elements are the ‘needed’ parts to obtain a sustainable development. On the other hand, this situation is not the exact correspondence to the sustainable spaces, it is a general concept to create a bigger frame for approaching any studies related to sustainability. Reminiscing the relationship patterns between human and its environment, sustainable public space design is defined as a process that includes 3 pillars but is a bigger whole that has the basic relationship and composed of human, environment and time dimensions.

Human and environment have always been in close relationship. Even if the content of the relationship varies, existence of relationship has shown no difference. Accordingly, adding time dimension is not the only innovation; what is changed gradually is the human-environment pattern. Time is the outcome of the necessary innovation within the changing conditions of the pattern.

To define the design of the SPSD Model, a network diagram is created. Figure 4.5 shows the indicators and conceptual relationships within a hierarchical circular order.

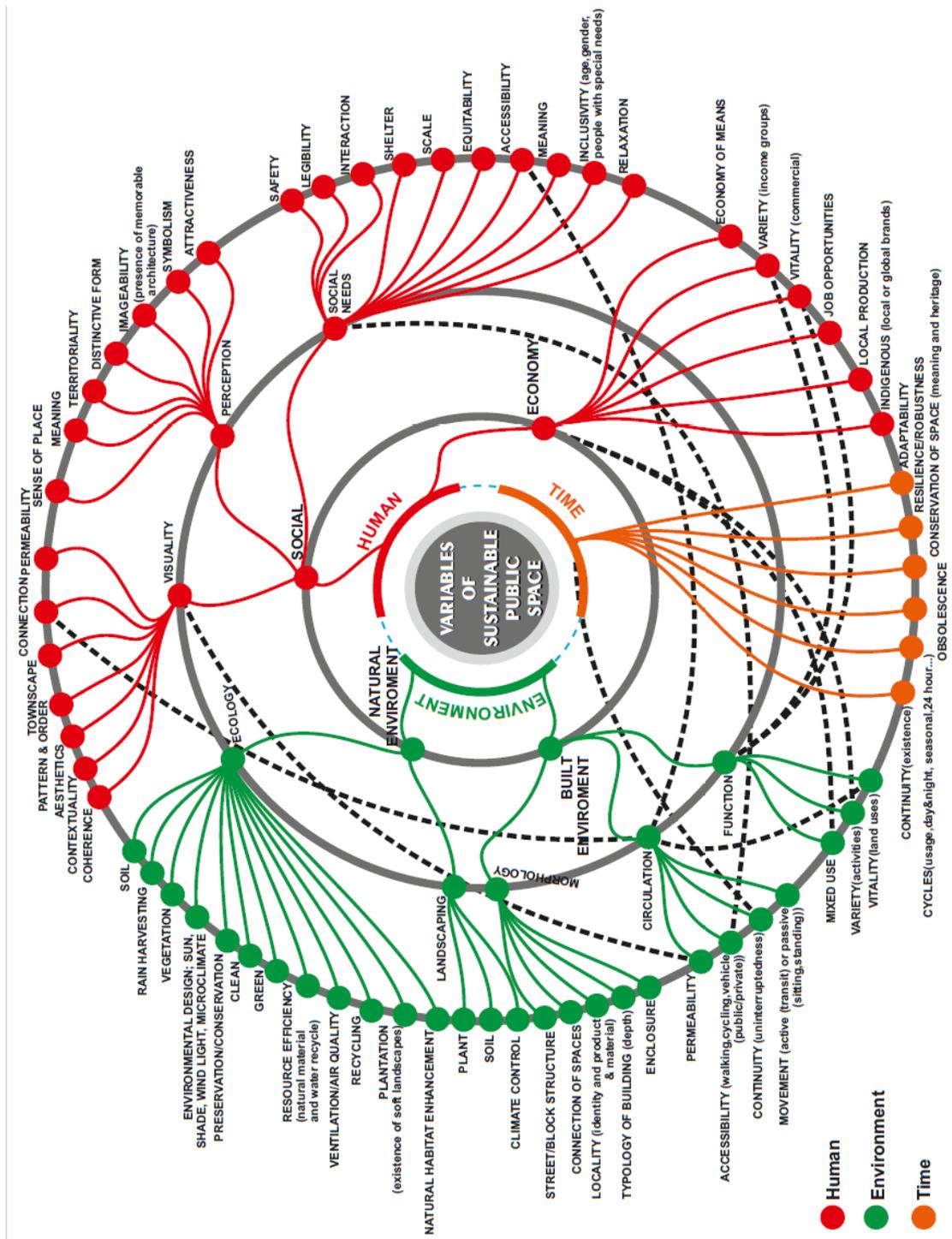


Figure 4.5. Conceptual Connections Between Sustainable Public Space Design Indicators

These variables of sustainable public space are acquired in 3 steps; first to have a classified framework Carmona's Sustainable Design Matrix is studied. That's because his study is a systematic collection of literature. To develop the matrix, contemporary studies are added to the matrix; most recent studies are investigated and combines. As second step, a content analysis made briefly to see, the most commonly studied terms. The terms are grouped and meanings of them according to their authors are defined. By doing so, a list of scholars criteria on sustainable design in various scales are obtained. Thirdly, qualities of a successful public spaces, place-making theory and the variables obtained from matrix are combined. Referring to the literature review made, contemporary definitions of sustainable public spaces and their design criteria are investigated and combined to have a holistic framework on sustainable public space design. The table below, shows the indicator set of SPSD. Each term is used in relation with others.

Making logical connections between themes and concepts, areas of intersections and the lines that construct these relations are helping to broaden the theoretical framework of studies on sustainability. To be clearer, one example can be term accessibility; it refers to both physical allowances to pass or enter and social appropriation of one's accessibility, availability to a space. These terms can be listed as; permeability, continuity, variety, vitality, accessibility, connection. According to scope of any study, these variables may change or vary and briefly variable is defined "as an element, feature, or factor that is liable to vary or change" (Gabrielsen & Bosch, 2003; European Commission, 2015). Actually, using interrelated themes and visualizing their relations is the authenticity and contribution of the research. Design is covered as primary tool. However, design is not obligated to complete task of converting theory to reality, even more, it has a thematic task that is setting relations between different concepts that are need of contemporary public spaces and converting them all into reality.

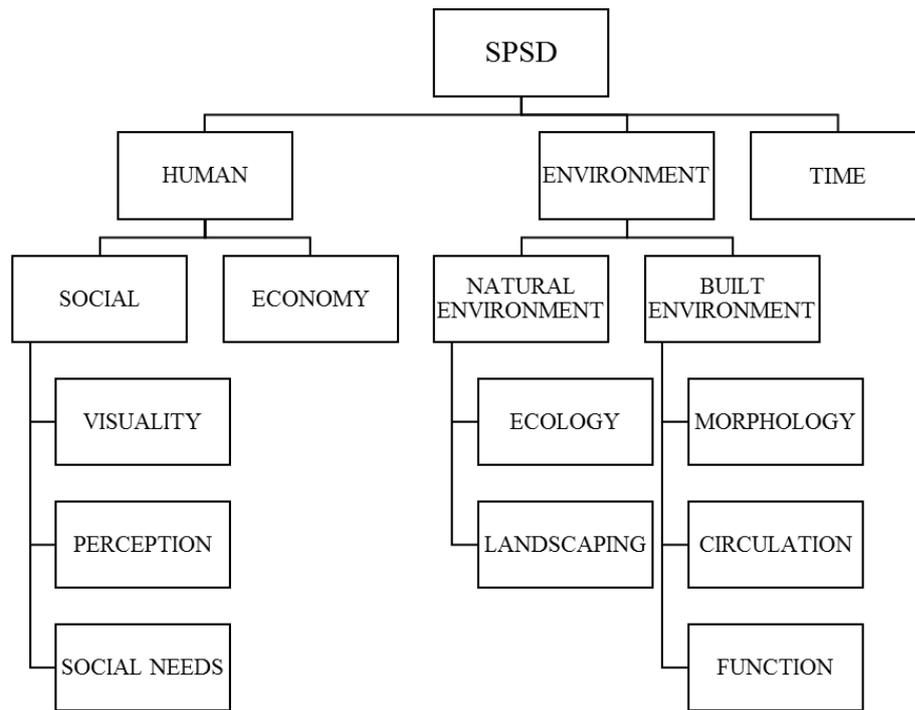


Figure 4.6. Proposed Model of Sustainability and Hierarchical Classification

Figure 4.6. is the general classification of new sustainable public space design model. Human, environment and time categories and their sub-headings are given. Economy and time are expressed through indicators without any other in between groupings. On the other hand, social is studied with visuality, perception and social needs; natural environment with ecology and landscaping; built environment with morphology, circulation and function sub-headings.

This study, specifically emphasizes on measurement tools of the sustainable design. Creation of the model is a step to achieve that goal. Table 4.1 shows the all categories included in the model and focuses on the indicators that are the variables of sustainable public spaces. These variables and their definitions have crucial importance since they are the materials that are actually searched for during the study. Variables that are exemplified and the possible research tools are stressed out.

Table 4.1. *Proposed model for Sustainable Public Space Design indicators, the example research areas are marked with (+).*

Variables of Sustainable Public Space	Variables to Be Examined	Research Tools to Be Used
1. HUMAN		
A. SOCIAL		
A.1. Visuality;		
• Coherence		DO
• Contextuality		DO
• Aesthetics		DO/Q
• Pattern & Order		DO
• Townscape		DO
• Connection		DO
• Permeability		DO
A.2. Perception;		
• Sense of place		Q
• Meaning		Q
• Territoriality		Q
• Distinctive form		Q
• Imageability (presence of memorable architecture)		Q
• Symbolism		Q
• Attractiveness		Q
A.3. Social Needs;		
• Safety	+	Q
• Legibility	+	Q /mental map
• Interaction	+	Q
• Shelter	+	DO
• Scale	+	SA
• Equitability	+	Q
• Accessibility	+	DO
• Meaning	+	Q
• Inclusivity (age, gender, people with special needs)	+	Q
• Relaxation	+	Q/DO

A. ECONOMY		
• Economy of means		Q
• Variety (income groups)		Q
• Vitality (commercial)		DO/Q
• Job opportunities		Q
• Local production		Q
• Indigenous (local or global brands)		DO
1. ENVIRONMENT		
A. NATURAL ENVIRONMENT		
A.1. Ecology		
• Environmental design; sun, shade, wind, light, microclimate		DO
• Preservation/conservation		DO
• Clean		DO
• Green		DO
• Resource efficient (natural material and water recycle)		
• Ventilation/air quality		Environmental data
• Recycling		Environmental data
• Plantation (existence of soft landscapes)		DO
• Natural habitat enhancement		DO
• Soil		
• Rain harvesting		
• Vegetation		
A.1. Landscaping		
• Plant		
• Soil		
• Climate control		
B. BUILT ENVIRONMENT		
B.1. Morphology;		
• Street/block structure	+	SA
• Connection of spaces	+	SA

• Locality (identity and product & material)	+	DO
• Typology of building (depth)	+	DO
• Enclosure	+	SA
B.2. Circulation;		
• Permeability	+	SA
• Accessibility (walking, cycling, vehicle (public/private))	+	DO/Q
• Continuity (uninterruptedness)	+	DO
• Movement (active (transit) or passive (sitting, standing))	+	DO
B.3. Function;		
• Mixed use	+	DO
• Variety (activities)	+	DO
• Vitality (land-uses)	+	DO
1. TIME		
• Continuity (existence)		Old maps
• Cycles (usage, day & night, seasonal, 24 hour...)		Q
• Obsolescence		Oral history
• Conservation of space (meaning and heritage)		Oral history
• Resilience/robustness		DO
• Adaptability		DO

Table 4.1 provides a general view to the variety of research tools to be used. Since this study is a new gate to the studies related to sustainable public spaces, the sub-headings with the most variegated research tools are selected to be exemplified through a single case study. This selection method is chosen over others to show more implication methods.

4.2. Dimensions of Sustainable Public Space Design Model

Moving from sustainable development to sustainable public spaces, a new framework is created to be in a harmony with the concept of sustainability and the conditions of 21st century city and its fragments. Rather than environmental determinism and prolonged existence understanding, the model represents spatial concepts in boundaries of sustainable design. At this part of the study, human, environment and time dimensions and their intertwined situations are examined.

4.2.1. Human

Throughout the history, human and nature had changing roles and relationship types. It is evident that human became the dominant factor, controller of the environment after shifting through industrial city. Now, in such conditions of life, human is not possible to be neglected, furthermore the most needed element of the sustainable design. In literature, terms as participation, inclusivity and quality of life are drawing attention. It is also an effort to designing with human while designing for them. Sustainability stands as a philosophy that aims to increase the quality of human life, creating better environments for human. Therefore, it is a great consideration of people's social and economic conditions. These two headings are combined since they are related to human dimension and not possible to exist without human. "Neither space nor time can not be understood outside the context of social action (Harvey, 1989, p.224-225)". Creating an socio-spatial bond with sustainability, 'social' is studied in 3 main bodies; Visuality, Perception and Social Needs.

Visuality is considered as one of the key Stones of creating successful public spaces. Carmona et al., Cullen, Sitte and many others studied this term. Seeing, is the first phase of sensing the space. It is also known that, aesthetic qualities and visuality became dominant in urban design in so much that, creating 'beautiful' scenes had

precedence of function or quality of space. City Beautiful Movement, is an example of that trend.

After sensing the space, human creates an idea an image of it. “Perception is the process of attaining awareness or understanding of sensory information. What one perceives is a result of interplays between past experiences, one’s culture and the interpretation of the perceived” (Ewing and Handy, 2009, p.67).

adaptability	distinctiveness	intricacy	richness
ambiguity	diversity	legibility	sensuousness
centrality	dominance	linkage	singularity
Clarity	enclosure	meaning	spaciousness
coherence	expectancy	mystery	territoriality
compatibility	focality.	naturalness	texture
comfort	formality	novelty	transparency
complementarity	human scale	openness	unity
complexity	identifiability	ornateness	upkeep
continuity	imageability	prospect	variety
contrast	intelligibility	refuge	visibility
deflection	interest	regularity	vividness
Depth	intimacy	rhythm	

Figure 4.7. Perceptual Qualities of Urban Design (Ewing and Handy, 2009, p.66)

The last sub set under social aspect of human dimension is ‘social needs’. Carr et al., (1992, p.85) identifies three crucial terms about human dimension of public spaces; needs, rights and meaning. And imply that, “it is important to examine needs, not only because they explain the use of places, but also because use is important to success. Places that do not meet people’s needs or that serve no important functions for people will be underused and unsuccessful” (Carr *et al.* 1992: 91–2). Human needs are classified by Maslow (McLeod, 2007) with a graph. This thesis, takes samples of each type of need, that fits properly to an urban square. At the physiological needs; shelter, safety needs; safety, scale, love and belonging; interaction, inclusivity, relaxation, esteem; equitability, accessibility, legibility and meaning.

4.2.2. Environment

Environment is expected to have the strongest relationship with sustainable design. As it is studied in literature review part, the term sustainability's genesis itself has inseparable bonds with nature. Studying these relations showed that human is always in a benign position with its environment; at some points human and nature were in a strong relation that is highly intertwined as example of Greece and Rome and at some other point, nature stands as untouchable visual pleasure element as example of Baroque. Design is the tool to regulate this condition of continuous relation. That is why, studying design concepts is intertwining the balance between human and its environment.

Environment is studied in two different sections; natural environment and built environment. Reason of this classification is to separate the 'human intervention' and natural occurrences. However, the natural cycles and the functions are changing because of the human actions, cities and the urban environment are still, parts that include built environment and affected directly from it. Built environment is the part that researchers come up with solutions via design or other tools. This is a responsibility that covers all the related bodies. On the other hand, natural environment parameters are to regulate our environment to split the difference between human comfort and preserving nature as it is. This type of relationship is the mediator, the optimum solution for a balance and harmony between human and its environment.

"Space is a fact of nature" (Harvey, p.249). Environmental movements of modernity turned its face onto sustainability with the help of the place-making theory. Place-making stands as "a philosophy and a process that strengthens the connection between people and places they share" (Kent, 2015). In theoretical background of the model, along with sustainable design criteria, place-making theory and criteria of creating

successful places are sought. Considering the environment component with both natural and built environment; the place-making have great importance. Kent (2015) defines this importance as “The place-making movement, has emerged as a way to bring environmentalism back home”.

4.2.3. Time

Sustainability and sustainable development are commonly studied with time dimension. It is not directly seen as a pillar but sustaining as a philosophy conditions a long-life span. Carrying today’s values, meaning and resources to tomorrow, efficient use of them without restricting human needs is one of the goals of 21th century cities that are places of human life.

Harvey (1991) defines time & space relations through post modernity. Modernity is linked with a absolute experience of space and time. Medieval space was ‘sensous and direct’, Renaissance period produced space with artistic and scientific developments adopted to space. Those changes in space and time, causes changes in socio-political order as well. Post medieveal experience of time and space is mentioned as ‘time-space compression’ (Harvey, 1991). He also states that, theoretically time is the dominant factor compare to the space. But in such conditions of ‘nationalistic feelings and mythologization of space’ the the space comes forward (p.208). And virtue of space and nationalism is threathened by post-modern ideal of internationalism and time. One time-one space relations of modernity shift to multiple times and spaces. In such conditions, sustainability debates are accumulating around the confusions that, what time and space experience, and conceptualization of them, are idealized and accepted as the reflection of social actions occurred in given space. Each study area, therefore have unique qualities that are wished to sustain and by all that means is needed a site-specific study, considering ‘time’ periods the space has been affected.

This thesis approaches time in two ways. Firstly, time as continiuity of life, existing and ‘functioning’ in future as a part of sustainability. Secondly, sustaining the life

pattern of a place; regarding to different time periods and dependently changes happen on a place unceasingly. And that change brings the problem of ‘sustaining what’, which period of space is willed to carry future?

It is important to note that, this criteria set is neither an end product nor an absolute tool of sustainable public space design. Definitions of the terms are determinant factors of their scope. Therefore, depending on the research and its opportunities, it is possible to shorten or extend the study considering the public space type and the endemic qualities of site. Application of model and the research tools to be used for variables are shown with plus marks. These selected lists include the most complex research tools and their combinations. In order to exemplify each tool, application and the definitions of these terms are investigated in ‘Research Tools’ part.

4.3. Research Method

Research methodology is a general look at the process of research. Identifying the topic, pointing out a phenomenon brings the need to define problems, accordingly defining the research methodology; domain of research tools and techniques to collect systematic data and main target; meaningful information. To combine all, this part of the study includes the needed research instruments, ways of data collection and analyzing techniques to test sustainable public space design qualities on a selected site.

Figure 4.8 explains the process of research methods in parallel with converting data from qualitative to quantitative parts. Research tools measured indicators and scoring techniques are identified. In other words, figure draws a framework to assess a sustainable design with a single case study.

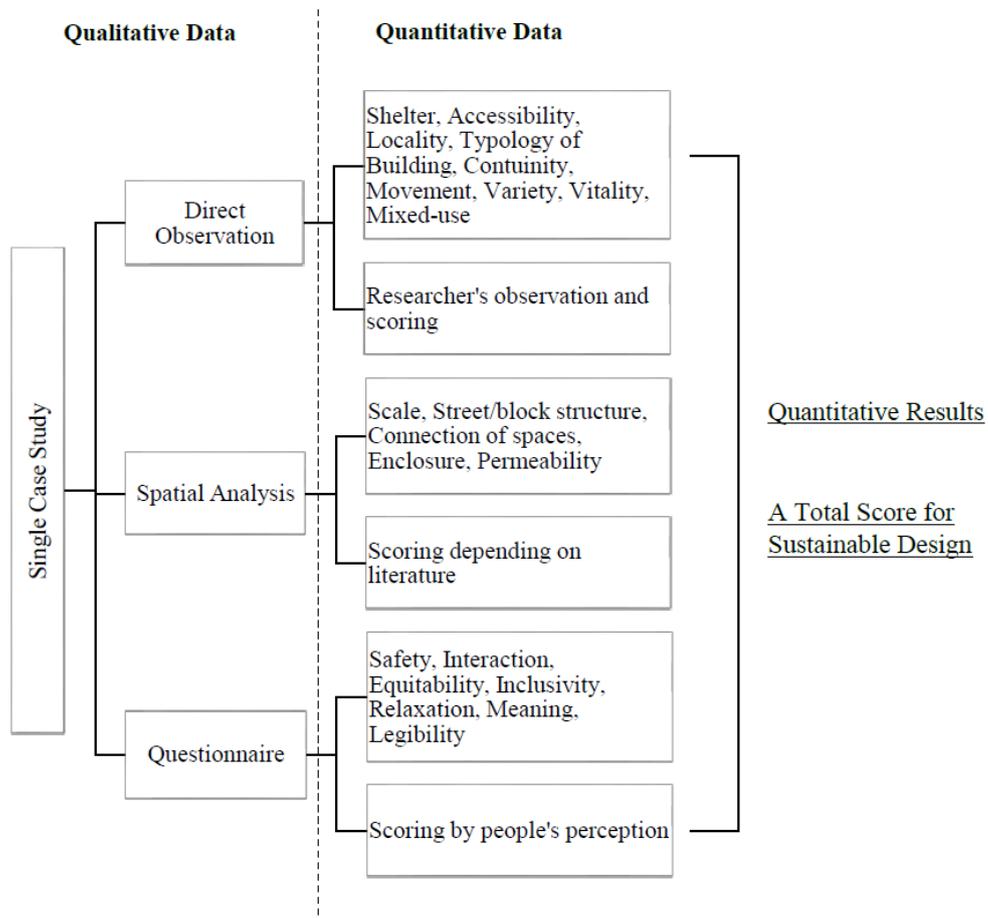


Figure 4.8. Research Methodology

4.3.1. Selected Research method: Single case study

Case study method, as a research methodology selected for this thesis along with other research methods. The main reason is consistency of urban design and sustainability studies representing a complex network of relationships. “Case studies can be considered a robust research method particularly when a holistic, in-depth investigation is required” (Zainal, 2007, p.1). Need for a holistic approach for urban studies and including the human dimension thus, makes possible to use case study method. This method is a way of decoding a phenomenon in a clearly defined space

by applying and observing the change with in a geographically well-defined, small spaces (Zainal, 2007). Selecting to apply ‘single case study’ is because of the seeking data for a specific place. Measurement of sustainability on a site is accepted as an independent inquiry and thus, observable for each space individually. It is possible to conduct a research with multi case studies which enables to compare sustainability performances of different sites.

Case study method is chosen because the public spaces are the small units of observable everyday social life. Public spaces are the laboratory of the overall of city unit. Changes and the outcomes of actions taken, are expected to reflect on the public life. That is similar with the focus on studies given to public rather than private. It is the instrument to sustainable urbanism. Considering all, using a single case study method, shows an application of produced model. The model, by being a composition of different dimensions and their indicators, needs variety of research tools. Case study is advantageous since it allows to combine different tools of research in one study.

Gehl and Gemzoe (2000, p. 87) made a classification of contemporary cities public spaces according to its functions; “main city square, recreational square, promenade, traffic square, monumental square”. Carr et al. (1992, p.79-81) also makes a typological table of contemporary urban public spaces with example case studies. These types are; “Public parks, square and plazas, memorials, markets, streets, playgrounds, community open spaces, greenways and parkways, atrium- indoor market place, found spaces-everyday spaces and waterfronts”. Many other researchers focused on the detailed works on squares. In literature review part, the study started with reference to Greek agora. Because the public spaces, mostly the squares are the contemporary versions of agora. Actually, definition of this case study, is closer to Italian ‘piazza’ considering the open and close structures that exist together in a coherent manner. Closed structures includes public buildings, that are memorized with its piazza or just landmarks, sculptures and ruins.

“plaza is . . . a mostly hard-surfaced, outdoor public space from which cars are excluded. Its main function is as a place for strolling, sitting, eating, and watching the world go by. Unlike a sidewalk, it is a place in its own right rather than a space to pass through” (Marcus and Francis, 1998, p.14). Squares, different than streets encourages passive movement; make people stop and perform activities that are shaping the place, and gives ideas about human behaviour in the space. Even form, width to length ratios and functions differentiate squares from the Street, they are interconnected in their etymological roots. “1830, from Spanish *plaza* ‘square, place.’ from Vulgar Latin *plattia*, from Latin *platea* ‘courtyard, broad street’ (Online Etymology Dictionary, n.d.)”. Turkish version of word is ‘meydan’ which roots back to Arabic word ‘myd’ means large open space. Meydan later entered to other languages like Ukrainian, ‘maidan’.

“Open squares are the classical places where people have gathered throughout history and they still epitomize most people’s stereotype of public space. Even within this typology, there is a huge range of sizes, shapes and functions” (Shaftoe, 2008, p.76). Combining all, square is the selected type of public space. Reasons are briefly; convenience to study in terms of scale and size; enclosed structure, definable boundaries, historical background that represents time dimension and to see and examine why this type of public space is continuous without groundbreaking changes through agora. Movement is another key word. Square does not directly lead a linear movement as Street and many other public space types. Square is not the transit line, it is generally a meeting point; the destination itself. Standing, watching, sitting and other passive activities are characteristic of this places. “Psychologically the square signals staying. Whereas movement space says “go, go, go,” the square says: “stop and see what’s happening here and Both feet and eyes have left an indelible mark on urban planning history (Gehl and Gemzoe, 2000, p.38).” Encouraging passive engagement to space, gives opportunity to observe people; their relation to space and their experiences that are created by time.

4.3.1.1. Ulus Square (Meydan)



Figure 4.9. Ulus Square General View From South West⁴. (Çalık, 2019 January)

For the evaluation of SPSD, Ulus Meydanı in Ankara is selected. The place stands as a central public space of republican city of Ankara. It stands inbetween the Citadel and the old parliament building. It is also covered with commercial, cultural, historic and administrative functions. However, today the city represents the republican Turkey by being a young capital city with its physical form; Ankara existed and was important as Ancyra, Galatian city under the Roman empire. The city is expected to be important by having Monumentum Ancyranum and Res Gestae which is the inscriptions of life and achievements of Emperor Augustus. Although the written part is not the original, the copy of original text in Greek and Latin to spread the power of

⁴Retrieved from: <http://www.hurriyet.com.tr/yerel-haberler/ankara/sosyokent-ile-ulus-degisecek-41095629>

empire (Güven, 1998). Not only the Roman city but also republican city of Ankara, used Ulus as center for many years.

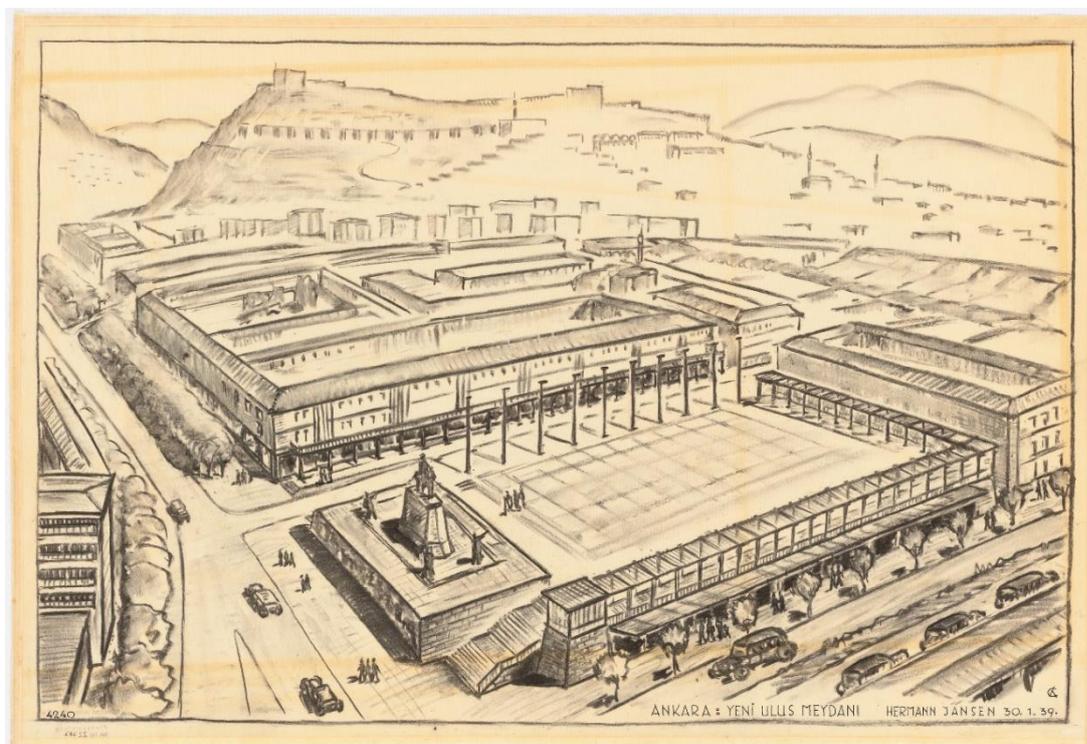


Figure 4.10. Jansen's Drawing for New Ulus Square, (Günay's Personal Archive)

Ulus Meydanı, represents its monumentality and meaning with a landmark; Zafer Anıtı known as Ulus Monument. It is the first statue of republican Turkey (Tunçer, 2001). Reproduction of war scene's with Atatürk statue, represents the national symbolism of republican city. The monument gives the place a meaning that is sheared for and desired for a new born nationalism of republic. In Jansen Plan, instead of Zafer Anıtı (Victory Monument), there were a triumphal arch that represents the connection between the old city and the new city (Tse, 2016). The square was called 'Taşhan' square; a name given by a neighbour building Taşhan, actually served as traditional 'han'; hotel, a place to accomodate. It was built with pink limestone from

Hıdırlık hills outside that gives the place its name Taşhan and inside mudbrick (Darka, 2003).



*Figure 4.11. Taşhan*⁵

Taşhan, later sold to Sümerbank (Balım, 2005), and built its head office. Today, that building also does not exist, instead, Ankara Social Sciences University building does but still, people of Ankara remember and refers place as Sümerbank.

Square later called as ‘Hakimiyet-I Milliye’ and finally the one is used today, ‘Ulus Square’. Günay stresses out that, Leon Jaussely names the square as Ulus, rather than ‘millet’, that assigns a conceptual meaning and also name of the Anafartalar Street is a reminder of the Battle of Gallipoli’s most important front line Anafartalar. By referring this information, it is inferred that the square, is not randomly nor created

⁵ Retrieved from: <http://www.eskiturkiye.net/2585/sumerbank-binasi-yerindeki-eski-tashan-ankara>

neighbor named, every stone in creation of a modern city for a young republic is considered. Before the construction of Anıtkabir, this public space hosted ceremonies; it was the public space that memorizes the city, inseparable part of Ankara. “The city earned a national memorial landmark that was needed to create a focal point, which is actually more than sculptures, but animation of war that keeps alive the Anatolian War of Independence for the next generations (Kreiser, 2010)”.



Figure 4.12. 24 November 1927, Opening ceremony of Monument of Victory⁶

⁶ Retrieved from: <http://www.eskiturkiye.net/571/zafer-anitinin-acilisi-ulus-24-kasim-1927>



Figure 4.13. Old photos from the square⁷(Dericizade, 2019 March)

“The new bronze Victory Monument stood as a single focal point, an icon for popular sacrifice” (Tse, 2016). At the opening ceremony of the monument, Mehmet emin Yurdakul, read his poem on the ‘victory’ and later grinded out his famous ‘Ankara’ poem (1939) (please see appandexes). Close to the square, there were the first modern patisserie (50 Yıllık Yaşantımız, 1947, p.52), İstanbul Patisserie that was focal point of socio-cultural life; a place people go to spend time, drinking tea and a meeting point. This meaning gives place a unique quality. Along with this, this square is designed to be a center. In 1926, stone bricks paved to Cumhuriyet street which has a garden next to it (50 Yıllık Yaşantımız, 1947, p.54).

In Jansen plan, the monument is placed in the intersection point of roads, a direct alignment to the old station. Along with the Lörcher Plan, a spine that reaches to citadel exists with the projection of the monument is visible.

⁷ Retrieved from: <http://dericizade.blogspot.com/search/label/Ulus>



Figure 4.14. Turkish Lira that is used between 1939-1952. It has the monument on the back⁸ and Atatürk on the front

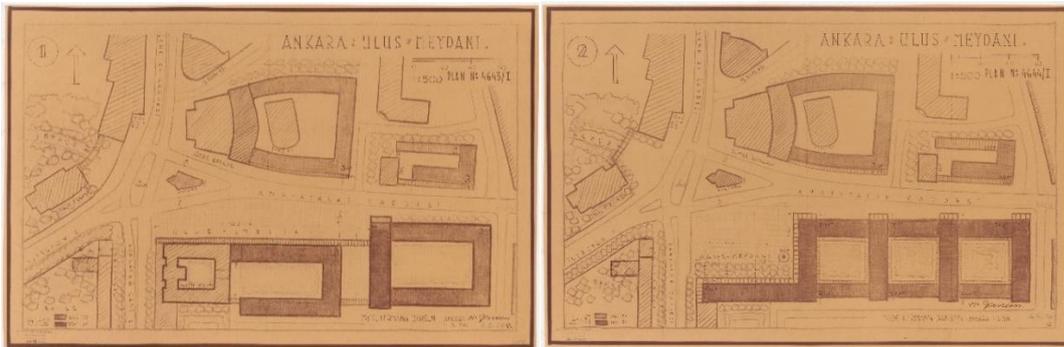


Figure 4.15. Site plan of Ulus Square, by Hermann Jansen from Günay's Personal Archive

⁸Retrieved from: http://www.numismaticmarket.com/?cmd=satis&tip=101&id=7529&banknot=2_Emisyon_2_5_Lira_TC_Kagitpara_Koleksiyonu.htm

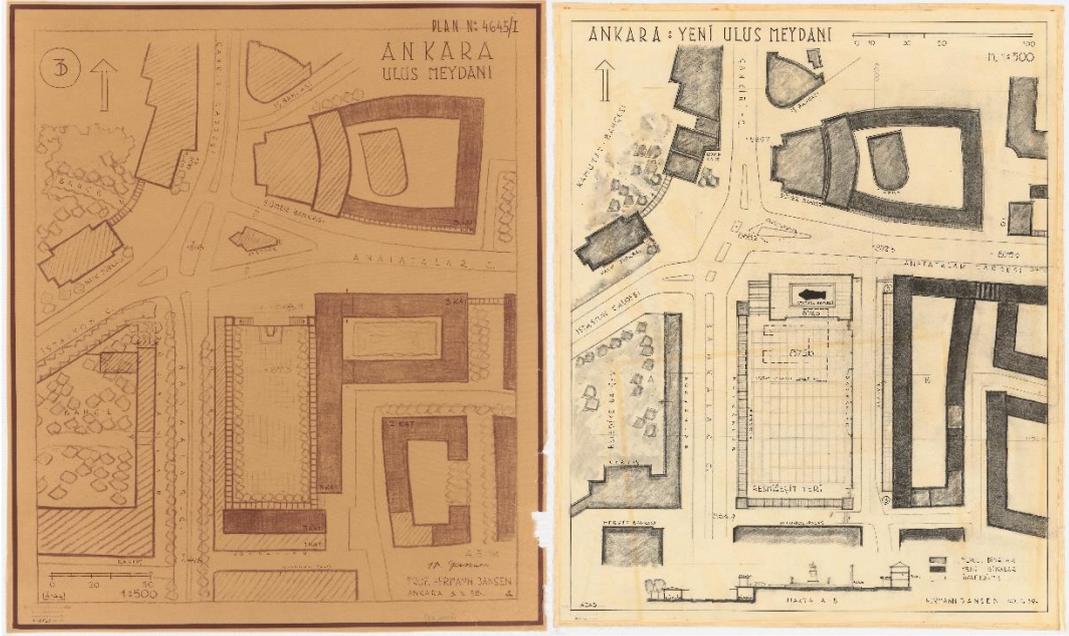


Figure 4.16. 1939 Site Plan Shows the Intention of Moving The Monument From Günay's Personal Archive



Figure 4.17. Taşhan and the Square in 1926 (50 Yıllık Yaşantımız, 1947)

Ulus İş Hanı (Office Block), defined the square and gave its enclosed character. The monument was moved from central point of intersection of Anafartalar street and Cumhuriyet street; leading to central station. In this case, the place referred as Ulus Square is today's road intersection. Importance of the monument represents itself; moving monument, shifted the square and all the experiences belong to Ulus Square. The new place of the square was shaped by Office Block. It was designed as a modern commercial building, one of the first example of International Modernism movement in Turkish practice (Asar, 2012, p.85). The complex has both vertical and horizontal elongation and structurally exist today. Functionally, the building damaged by a fire in 1946 and after that structure renovated with courtyards while changing usage; Dar'ül Muallim School in Ottoman era and Board of Education in Republican era (Sönmez, 2014) turned into a Office Block with a design competition. "Originally, the building constructed in memory of 25th reign year of Abdülhamit as an 'Art School'; it's walls were cut stone of Ankara and the inside of the building was wooden" (Sönmez, 2014). The master building, dominant structure of the square today is part of that complex and known as Directorate of Youth and Sport.

It is valuable to see the extents of Ulus Meydanı in terms of Sustainable Public Space and therefore understand the reasons of that spatial shift of centrality. Cultural and memorial meaning of the place is revealed with historical background. History gives clues on patterns of daily life experiences in the space. Understanding it and studying accordingly hints the scope of the research; *the thing is aimed to be sustained*. In the next part, spatial qualities of public spaces are related with Ulus Square. It does not have an organic pattern which enables to study and investigate public space design qualities Therefore, studying the sustainability of Ulus Meydanı, reveals the design qualities of such an important and unique space of Ankara and allows evaluation of current structure and making comments on the future scenarios about this central value of Ankara.

4.4. How to study the sustainability of public space?

This thesis is a research instrument for a popular topic of urban design; sustainable public space design. Since it is a young concept, the literature is growing very fast by the contributions made by authors composed of architects, designers, planners and many other field's professionals. That is why it is a dynamic concept dangling between the theory and practice. The study is standing in-between the theoretical study and an action-based study. Specifically, it aims to define the necessary steps to reach a performance test of a selected public space by using and exploring the boundaries of sustainable public space design concept. To do this, some criteria sets are selected to exemplify research methodology. These criteria sub-sets and their research tools for the case study are expressed with figure 4.18.

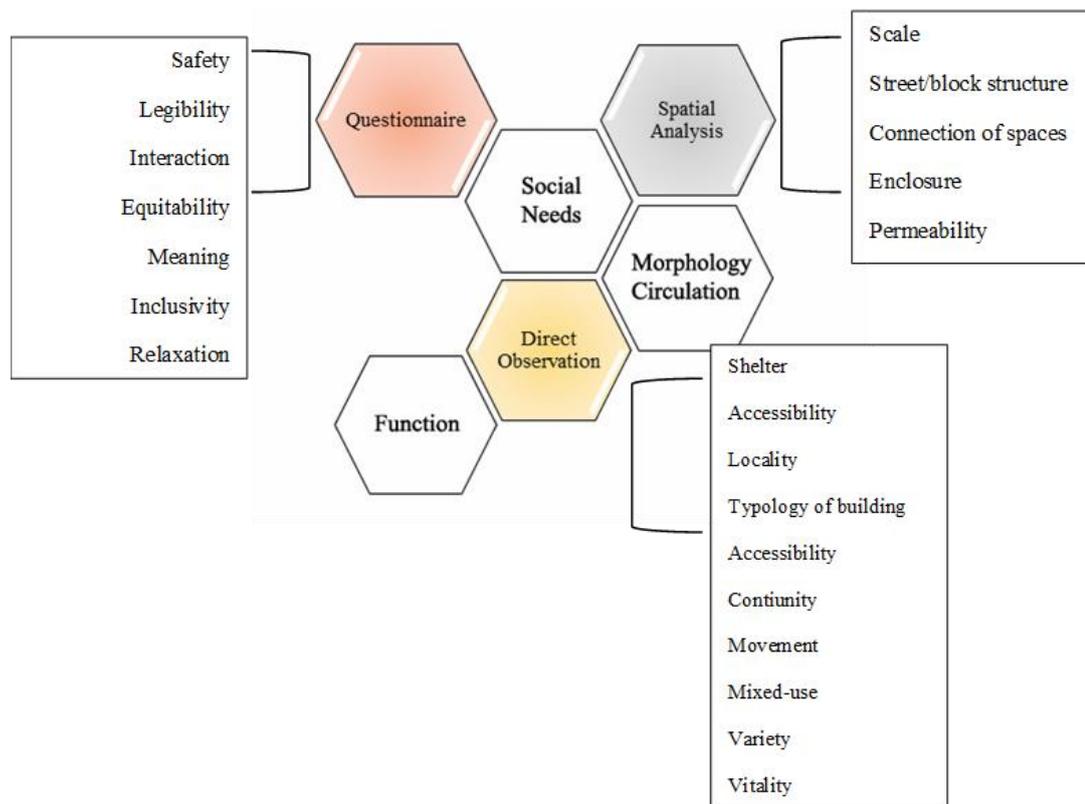


Figure 4.18. Research Tools Applied on The Case Study And The Related Indicator Sets Used

The model is composed of 3 main elements and sub-sets of them. Each criterion is shown by research tools to be used. Social needs < Human dimension and Morphology+Circulation+Function< Built Environment < Environment dimensions are measured with given tools. As it is clear on the table of model, these sub-sets are the most mixed use of research tools.

This study aims to open up a new way to examine a public space's sustainability, that is why to show more tools and their working system together. By looking at this case study, each set is possible to study as it provides samples of research tools. Rather than focusing on a single tool as 'built environment', human dimension is added to count social experiences that are vital for public spaces.

4.5. Research Tools

Research tools are necessary for data collection. That means 'observations on studied phenomena' are collecting in a systematic way to convert data into information. Main purpose of a researcher is identifying the phenomenon and revealing the relations between them (Seyidoglu, 1993, p.32). Data is indicator of these phenomenon that is why, is the essential part of conducting a research. for this research, direct observation, questionnaire and spatial analysis tools and their combination is selected and applied. By doing this, expert view of researcher and the user's perspective both are included to study.

4.5.1. Direct observation

Direct observation technique allows researcher to make observations without interrupting or causing any behavioral change on the observed domain. Unlike questionnaire, that technique is dependent on the researcher, that is why it is one of the most natural environments that are mostly done when the domain is unaware.

Namely, it is a way of studying on a natural setting, which is already there and not effected to measure any quality on a research. And also, that tool provides data that are unexpected or not possible to collect via questionnaire. It is crucial to know, in what manner the site is going to be observed, which data is necessary to collect and how that data will be used as information.

In case of Ulus Square, direct observation technique is selected for Circulation, Morphology and Function classifications under Built Environment sub-heading. These criteria sub-sets are available since they are evaluable by an expert's objective judgment. First, the sustainable public space design model provides the extent of observation made on site. Second, researcher makes visits to site for one week (week days and weekends) to collect basic data, and for another week to confirm the accuracy of research. It is also important to note that, the site is previously well known by researcher. There are 2 major direct observation data collection techniques used for this study; ones that are concludable by any visitor, for example if there is a shadow element or not and the second one makes necessary to produce a map or written document that presents data. Researcher makes observation 'on site' and uses maps and conceptual schemes to mark condition of selected indicators. These are For Social Needs; shelter, accessibility, for Morphology; locality and typology of building(depth), for Circulation; continuity and movement, accessibility for Function; variety and vitality indicators. This technique is differentiated from spatial analysis as they are dependent on the observer. It is also appropriate to use spatial analysis, but this is correlated with the experience and knowledge of researcher and the new technology entered to urban design studies, such as GIS and other computer tools that enables variety of spatial analysis.

Direct observation includes the process of site observation and taking notes accordingly. These notes include schemes, diagrams, verbal observations and marking on base maps that is taken to the site with the researcher. For 'shelter' indicator in Social Needs; existence and quantity of shelter areas and structures are searched for.

'Accessibility' in the same domain are represented by marks on a base map that illustrates the distribution of social groups on plaza. '**Locality**' is related to the material and production that are coherent with the city of Ankara. Structure of the landmark (Zafer Anıtı), material, and pavement of the plaza are all considerations of this component. '**Typology of building**' studies the dominant building and building structures that neighbours and gives the sense of enclosure to the plaza. Architectural period and its qualities and in general building related research is held on this indicator. '**Contiunity**' used to refer 'uninterruptedness'. This is the ability of a pedestrian that experinces the site by walking, contiunie without being obsticled. Existence of walls, barriers, fences and high slopes are examples of it. These obsticles are crucial for people with special needs and their experiences of space. '**Movement**' indicator is one of the core terms of studies focuses on public squares. Public spaces are generator of active and passive movement in daily life. Active movements are the ones that lead people to 'go' directly or transit passes whereas passive movement as characteristic quality of squares encourages to sit, watch, stand and others. In other words, passive movement is about sparing the time for that specific space. For the case study, observations are projected on the base map to see the points of passive movements and active movement pathes that are shown with circulation diagram. For accessibility, whether exist public transportation, vehicle access, bicycle routes and pedesterian movements will be shown on a map. Best stiuation of accessibility is evaluated by the modes of transportation and locations of their stops that are in direct relationship with plaza. '**Variety**' is considered as the variety of 'activities'. This indicator searches for, which type of activities are helded at which point of the square. In relation to that '**vitality**' component studies different land uses and their usage. How people create paths in a plein square to reach their willed land uses. By the functions and locations of that uses, the site earns its quality of being vital or otherwise. **Mixed use**; variety of functions will be marked on map. By number of different functions and the total area numbers, level of mixed use will evaluated. Shannon entropy index and the term entropy are used the literature background of that calculation. But for this case study, mixed use indicator is not evaluated byitself, it is

combined with the results of variety and vitality components, since they are based on land uses.

4.5.2. Spatial analysis

Spatial analysis is the process of producing information from mostly the geographical and locational data, that enables to use maps and such tools. That analysis is directly related to space and therefore are inevitable parts of urban design studies. For this study, variety of maps is used to illustrate the physical indicators and also mathematical formulations that exist in the literature.

In Social Needs set; scale, in Morphology set; street/block structure, connection of spaces and enclosure, in Circulation; permeability sub sets are investigated through spatial analysis. Depending on the researcher, these variables are not to be strictly measured as example of this model. Rather than using direct observations, spatial analysis is chosen to be in same route with previous literature. Detailed application of case study explains how these analyses are implied and the results are converted into a logical sequence with the rest of the indicator sets. Which spatial analysis is chosen for each indicator is explained to show the references of literature and calculation methods.

Scale is considered a social need. It has a psychological aspect that people are comfortable in some sizes. That's why, the morphological data are used to decide a Social Need parameter. "urban space and buildings are huge, built-up areas are spread out, details are lacking and there are no or few people." (Gehl, 2010, p.54). Visuality is an important component of scale based studied. According to Liu (2013, p. 25), Sitte and Lynch optimizes the surface area of a plaza in between 0.20 ha and 0.28 ha. Remaining in this size, provides people best sense of the plaza. Sitte (1889), classifies plazas into wide and deep types according to their shape, Ulus plaza, is a wide type since the width is 58 m and the length is 47m approximately. These sizes give clues

about the depth of the plaza; which is defined as 1 or 2 times of main building, in this case the plaza is not considered a deep plaza since the building has greater high than size of plaza. Xiong (2000 as cited in Liu, 2013, p.20-27), uses a formulation to find architectural field, in this case the building and the plaza's scale.

Street/block structure; layout pattern of streets leading to plaza and the plaza itself. Hierarchy of roads and walkability is related to that structure. In terms of pedestrian activity and accessibility it is important to identify Street structure. The pattern of the building is also a component of block structure which is sometimes the definer of the plaza rather than streets. "The layout and configuration of urban block structure is important both in determining the **pattern of movement** and in setting parameters for subsequent development. Conceived as a public space network, such structures open up possibilities and - in conjunction with basic typologies/codes/ rules about physical parameters - can provide coherence and 'good' urban form, without necessarily being deterministic about architectural form (Carmona, 2003, p.80)". To evaluate Street/block structure, degrees of movement are used. This is a scale that consists pedestrian movement and car movement together. That represents flow from connecting streets and angles to the selected site. Mehta (2014, p.67) measures "Visual and physical connection and openness to adjacent streets or spaces" determined by observations.

Connection of spaces; is determined by the connecting streets and other public spaces in relation to. Krier (1990) defines open and closed squares by looking at the interlocking streets and openings. Searching for connections and its ways provides to find whether there are a open space network or not, if so how do they work together. To uncover the connection relations, as done by in space syntax analysis, composition and configuration schemes leads to 'corresponding graph' of connections made by Street structure (Marshall, 2005). "Connectivity is taken as the number of routes with which a given route connects" (Marshall, 2005, p.120).

Enclosure; “For Sitte (as cited by Carmona, 2003, p.142), enclosure was the primary feeling of urbanity, and his overarching principle was that 'public squares should be enclosed entities'. Design of the intersection between side streets and square was one of the most important elements: it should not be possible to see out of the square along more than one street at a time.” Some ratios are given by researchers that are believed to give the best sense of enclosure. For example, Carmona (2003, p.141) sets the upper limit of width to length ratio is 1/3 for plaza and at the same time lower limit of the Street and 2/3 gives the balance, equality. While Mehta (2014, p.67) measures ‘sense of enclosure’ via direct observation.

There are different ideas on the ideal amount of enclosure according to width and length ratio. “The amount of enclosure, and the resulting degree of containment, partially depends on the ratio of the width of the space to the height of the enclosing walls. The most comfortable viewing distance for a building is from a distance of about twice its height... (Carmona, 2003, p.139)” Allan Jacobs (1993) says that the proportion must be at least 1/2 (height to width). Other studies propose numbers at minimum 1/6 and as optimum 3/2 (Ewing and Clemente, 2013).

“The condition of enclosure generated by the height-width ratio of the space is related to the physiology of the human eye. If the width of a public space is such that the cone of vision encompasses less street walls than the opening to the sky, then the degree of spatial enclosure is slight. A 1:6 height-to-width ratio is the minimum for appropriate urban spatial definition. An appropriate average ratio is 1:3. As a general rule, the tighter the ratio, the stronger the sense of place. (cited by Ewing and Hardy, 2009, p.75; City of Raleigh, 2002)

Permeability; “which means the extent to which an environment allows a choice of routes both through and within it (Carmona, 2003, p. 64)” and accessibility indicators are studied through maps. General view of the area reveals the Street connections (also studied in connection of streets indicator), dead-end streets, and the pattern of the urban morphology in 2d.

Nolli map will be used for permeability; to see the space allows for physical permeability. Along with that, building structures and their passages, gateways are examined in the square and neighboring buildings to see if the space is porous to let people pass inside.

4.5.3. Questionnaire

Questionnaires are helpful tools when the research is based on human and behavior. It gives results that are not to be assumed by an outsider, that's so because each person's perception, feelings and thoughts are different for a single site. To enrich the common ground of people, questionnaires are beneficial to use.

Qualitative and quantitative data are both applicable to questionnaires. For this research along with direct observation and spatial analysis; Close ended questions with ordered choices (Likert scale or demographic data such as ages or education levels), are asked to measure indicators related to 'Human needs. Questionnaire is designed to target the main points about social needs of people in Ulus. Questions are directly to the point and simple to be clear and easy to understand by all. Complex terms as 'meaning', and 'legibility' are tried to simplify with multiple questions regarding to them. Rest of the test relies on if parameter is existing or not and the reasons behind that existentiality. 7 indicators are projected to questionnaire; safety, legibility, interaction, equitability, inclusivity, meaning and relaxation. For the full text of questionnaire please see the appendixes part.

At this part of research, sustainability of Ulus Square is tested by its 'Social Needs' sub heading via questionnaire tool applied to participants. If exist, the relationship between their perception of the square and their demographic variables is tried to be identified. Methods to solve the main research problem and sub-problems are focused on. To reveal the methodology, firstly general design of questionnaire is explained. In

following, preparation and application of questionnaire and analysis made on gathered data will be explained.

4.5.3.1. Methodology

This part of the study is an empirical study that aims to determine people's perception related to sustainability of Ulus Square. Since the study focuses on to find out if exist a differentiation between demographic variables (sex, age, education level, income, frequency of visit and location of residence) and perception on the 'social needs', it is a comparative type of correlation screening model (Kıncal, 2010, p.112). By doing so 'borders' of the study is determined.

For the research, 7 sub problems identified and only for the first one hypothesis not developed. Rest of the sub-problems are designated as follows.

The sub-problems are grouped under H_0 and H_1 hypothesis; H_0 represents 'not differentiated' conditions whereas H_1 is the situation with a meaningful differentiation. Sub problems are listed as; sex, age, education level, monthly income, frequency of visit and location of residence. These problems are necessary to learn about the social information and profile of the users. Rather than direct focus on spatial components, social structure is given importance and sought answers with sub problems leading to the main research questions. These problems are created specifically for the questionnaire therefore includes information collected on site without any personal observation.

4.5.3.2. Questionnaire Design

This empirical study, needed an questionnaire document to be prepared with its study on human perception levels on social needs. By using degrees of perception, it is

possible to measure people's information amount and to state the source of that information (Büyüköztürk, 2002). In this case, to determine people's responses to their social needs is willed to be use a questionnaire as main tool of research.

A general look at the questionnaire;

The document consists of 2 main bodies. Before moving onto those parts, a general information about the research the material focuses on and the basic information as duration of the questionnaire and so on. Are explained to the participants. In the first part, demographic questions are asked. By this way, user profile of the study area are discovered. The questionnaire, aims to find out different social groups of square and their perception levels in accordance with their demographic variables. For the second, there is again an explanation part that explains the format of Likert Scale questions. And the main body of the questionnaire starts at the second section of second part. At this part 27 questions with 5 degree Likert Scale is used. As it is mentioned before, this questionnaire is applied to Social Needs indicators.

To be easily understandable and clear, the questionnaire of research is controlled for several times by considering these; terms, headings, connotations and each question in order to prevent confusion. There are no questions about personal manner, behaviour and private information.

Preparation of the questionnaire executed incrementally. In the first step, problems and sub-problems of research are decided. By doing so, boundaries of the study is clarified, accordingly limits of the questionnaire is determined. In the second step, literature review provided the terms and indicators of 'social needs' and inferring from that a document of 27 questions with a general scope. This generalized questions, converted into an appropriate set of questions to collect necessary data, without disturbing respondents. At the third step, design of the questionnaire and the content of the questions are discussed over, measurement performance and cognitive penetrabilities are evaluated. Completing this all steps, reliability tests are applied.

Development of Questionnaire

Validity (relevancy to research subject and getting answers relevant to questions), reliability (coherency, the ability of getting similar results if the application is repeated) and functionality (well-prepared, organized and easy to understand) are three main concepts that focused on process of preparation of questionnaire.

Demographic questions (first 6) are independent variables while the main 27 questions are dependent variables of this research. Selected 27 questions are as apriori work pre-applied on a smaller sample size of 50 people. Data gathered from that sample is evaluated in SPSS 16.0 and reliability tests are made for these 27 variables. Assessment of results shows that the scale to measure social needs is highly reliable. With this pre-assessment, the scale is found to be applicable therefore it is accepted as the tool of analyzing whole set of data, repeated on all questionnaires. In reliability tests, Cronbach Alpha coefficient is used. Another technique of estimation is applying Parallel test to crosscheck the obtained data.

“Alpha was developed by Lee Cronbach in 1951 (Cronbach, 1951) to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. Internal consistency should be determined before a test can be employed for research or examination purposes to ensure validity. (Tavakol & Dennick, 2001, p.1)”

Table 4.2. *Cronbach Alpha and Paralel Test Results*

Cronbach Alpha	Paralel
0,890	0,892

As statistical data implies, the scale is highly reliable and non of the questions is found out to be not working.

Content of Questionnaire

Document of questionnaire (please see appendixes part), starts with an explanatory information about general qualities; purpose of study, duration and how to answer it. The first group of 6 questions are related with demographic variables. The second main body starts with explanations again including an example to show using Likert scale.

Table 4.3. *Levels of Perception Applied in Questionnaire*

Levels of Perception				
Hiç Never	Bazen Sometimes	Kismen Partially	Çoğunlukla Usually	Hep/ Tamamen Always
1	2	3	4	5

Distribution of questions are arranged according to its complexity. In order to comfort the participants, the most basic and direct indicators are searched. The first question measures ‘**safety**’. 2nd, 3rd And 4th questions are to measure ‘interaction’ indicator. Easthope & Mcnamara (2013) makes a research about social interaction in a square. Social interaction questions are created by referring their study. “People need to feel that they are part of a group or a community, to feel belonging, need for identification of the self” (Barlas, 2006, p.87). 5th question is about ‘**inclusivity**’. 6th one supports previous question and also related with ‘equitability’. 7th and 8th are about outdoor comfort and generally ‘**relaxation**’. Carmona (2003, p.93) says that ‘**meaning**’ of a space is related with 2 types of functions; primary and secondary. To measure primary function questions 9,10 and 11 used to determine ‘economic’ and ‘social’ function of

place. 12, 13 and 14 are to identify areas quality of centrality that why people use this place and how they perceive it which also contributes to meaning component. Thus, 15, 16,17 and 18 are measuring secondary function that Carmona (2003, p.93) mentions; symbolic function. Those questions are to express participants first thoughts popping in their minds. Namely, questions 9-18 are for meaning. Number of questions increased due to the complex character of term 'meaning' and to gain optimum accurate understanding. "**Legibility** refers to the ease with which the spatial structure of a place can be understood and navigated as a whole" (Ewing and Clemente, 2013, p.18). Kevin Lynch (1960, p.2-3) defines legibility as "apparent clarity of cityscape and ease of parts can be recognized and can be organized into a coherent pattern". "In terms of public spaces, knowing where you are, knowing how to get to where you want to be and feeling that the space has visual coherence" (Shaftoe, 2008, p. 48-49). Koseoglu & Onder (2011, p.1192-1193) defines 'legibility' with recognizability of buildings; landmarks and spatial configuration, urban form. Raubal & Winter (2002 as cited in Koseoglu & Onder, 2011, p.1193) describes 3 main features for 'saliency' of landmarks; visibility (facade, form and function), semantic (cultural and historic) and structure (location). "A landmark lifts a considerable area around itself out of anonymity, giving it identity and visual structure" (Tunnard & Pushkarev, 1963, p. 140)). Questions 19,20 and 21 are for the saliency that contributes to the 'legibility'. To complete this indicator 22,23,24 and 25th ones about spatial configuration and urban form of the place; recognizability of it and way finding were used as key elements. That means questions 19-25 are for legibility parameter. Finally, the last two questions are to identify people's thought about past value and future value of the place. These last one's are for creating a framework of people's perception by referring to time dimension of sustainability.

4.5.3.3. Sampling

The questionnaire is applied on the people that are working close to the square, people in the square and people in Ulus. In more detail, commercial facilities, craftsmen, food

market, minibus drivers, security staff, people come for business, visitors of Ulus and Hacıbayram, tourists, non-governmental organizations (present at the site) and students. In total 142 participants are attended to the questionnaire among lastly mentioned groups. In the limitation part, reasons behind this sample size is discussed in detail.

4.5.3.4. Weights, Choices and Limits

Scoring system of the scale and representation of findings are converted into analyzable quantitative data. This gives the information which is the essence of commentary chapter. In other words, people's scores as answers are turned into meaningful numeric data for statistical analysis. Therefore, an interval is needed to place each respondent's choice. Table 4.3 below is calculated with (maximum score-minimum score)/number of choices = interval formula. In this case $(5-1)/5=0,80$. Since the lower limit is 1, the limits of each weight is shown.

Table 4.4. *Limits of Each Level In Questionnaire*

WEIGHT	CHOICES	LIMITS
1	Never	1,00-1,79
2	Sometimes	1,80-2,59
3	Partially	2,60-3,39
4	Usually	3,40-4,19
5	Always	4,20-5,00

4.5.4. Environmental Data

Environmental data is the data that is site specific and usually defined with statistical numbers or qualitative aspects. For example, to search for a places historical background environmental data is necessary. More tangible aspects such as amount of rain fall, number of sunny days, ventilation statistics, infrastructure values and many other data are also considered environmental data. This type is rather harder than any other type because of the possibilities of gaining data. Most of the data are not publicly shared or do not exist for small scale areas and small cities. In this study, environmental data needed indicators are not exemplified on the selected case study.

4.6. How to analyze the collected data?

4.6.1. Evaluation Process of Direct Observation

Direct observations made on the site simultaneously with questionnaire and spatial analysis. Verbal expression of people during the questionnaire provided the main data set for the direct observations. Compare to questionnaire, these observations are harder to convert to scientific data since they are highly dependent on the researcher and context of the site qualities such as culture and character of place.

Conducting direct observations is a problem field of qualitative and quantitative data conversions. Questionnaire produced statistical numeric data, to make a comprehensive research with all data collection tools and techniques specific to case are therefore be in either qualitative or quantitative. This is also the first step of making comparative studies in or intra subjects that is explained further in previous parts to imply the need of systematization in a sustainability study. Mehta (2014), makes a quantitative research on public spaces. In the study, some measured indicators are also gathered via direct observations. Basically, uses ‘determined by the observer’ expression is used to quantify given data.

Direct observations are given scores by the researcher depending on the present situation of the square. 8 indicators are examined and added to the final results along with questionnaire and spatial analysis.

4.6.2. Evaluation Process of Spatial Analysis

Spatial analysis are combination of observations, physical measures and theory. In some cases, theory itself produces quantitative data, while some others remain qualitative. In urban design studies, recent researches focus on this duality and studying spatial studies within convertible data sets. Computer programmes that make spatial analysis, does it in the complex way of decoding which means physical attributes and other data are used to produce maps and illustrations to represent the visual material. Therefore, for this thesis, spatial analysis is handled as an important tool to provide quantitative data depending on qualitative and qualitative aspects. Scoring system again used for this type of analysis. Intervals of answers are determined by researcher referring to theory of urban design.

At the findings and commentary of findings chapter (Chapter 5), conceptual schemes, photos, maps and visual materials are used to show results of spatial analysis. Final results obtained from this analysis are added to other gathered data.

4.6.3. Evaluation Process of Questionnaire

Once application of questionnaire is completed, hypothesis created for sustainable public space are tested via statistical analysis.

To reveal people's perception on 'social needs', descriptive analysis done with collected data for the first sub problem. Specifically for this problem there are not any

hypothesis created. These analyses are; mean, standard deviation, percentage and frequency distribution.

Second sub-problem is correlation between sex and perception of 'social needs. To find out 'if there is a 'meaningful differentiation' arithmetic means and standard deviations are calculated and T-Test is done since there are two groups in sex domain. Confidence Interval is assumed as 0,95. Third, fourth, fifth, sixth and seventh sub problems are tested with arithmetic means and standard deviations but, because of the existence of more than 2 groups of answers one-way analysis of variance (ANOVA) are made. This analysis is selected because: "[ANOVA](#) is especially suited for experimental designs that involve pairing or blocking, repeated measures on the same subjects, or when looking to see if different factors in the experiment interact with each other (Smalheiser, 2017, p.149)".

In some cases, to be able to determine the relationship between two or more variables ANOVA is not sufficient by itself, to support it and minimize the error number. "A limitation of ANOVA is that it indicates whether cell means are different from one another but does not specify the pattern of relationships among cell means (Buckless & Ravenscroft, 1990, p.934)" Post-hoc analysis in detail Duncan and Sheffe analysis made. Sheffe analyses are tools that reduce errors in measurement of every type of linear relationships.

4.6.4. General Evaluation

There are several choices of tools and techniques to measure sustainable design of public spaces. Three of them; direct observation, questionnaire and spatial analysis are shown on selected case study; Ulus Square.

Inputs of these analysis are both qualitative and quantitative data. In order to obtain a single end product that demonstrates the sustainability of the public space, creation of a common domain is necessary. After the evaluation of direct observations and spatial analysis, the researcher is expected to give scores on a Likert scale, to be coherent

with the questionnaire. Together, all of these analysis reveals mean numbers for each sub-heading; Social needs, Morphology, Circulation and Function. It is possible to extend the study and add other sub-headings for a more comprehensive approach. For now, this thesis aims to show the results with cobweb diagram which is helpful to detect the lacking points in design process.

4.6.5. Visual Representation, Cobweb Diagram

Varna & Tiesdall (2010, p. 587) search for a representation of publicness of public spaces with “easily understandable visual illustrations”. They explain other measurement tools, in the design process of their ‘Star Model’. Searches for that type of material, corresponds the need for visualization of measurements in public spaces. That adoptability, and preference of other scholars, to meet with other researchers at the same representational language, this type of tools is applied to SPSD measurement results. Varna & Tiesdall (2010), explains different typologies of similar models and they develop a ‘Star Model’ which has a center piece in star shape which is used to represent publicness of a space, is visually in all conditions bands a star together.

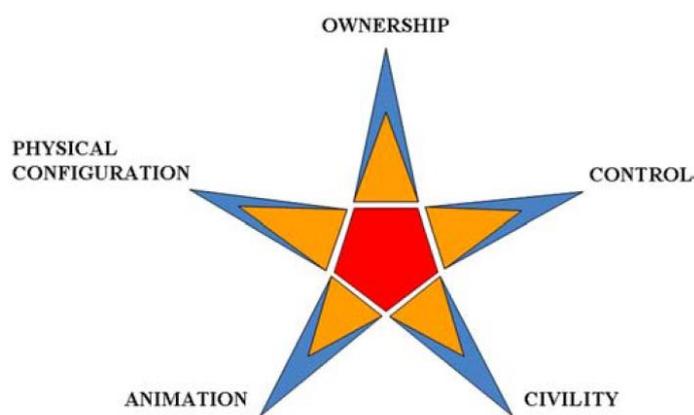


Figure 4.19. 5 Star Model, Analytical and Perceptual Stars. (Varna & Tiesdall, 2010, p.594)

The final product is eventually a ‘star’, the higher the star the higher the publicness. Here, the authors have a concern about the visuality of the end-product. Since this is

a thesis that only aims research that covers the problem definition and solution process on a selected case study is seeking to detect the lacking points of the space. Therefore, another diagram; Cobweb diagram is preferred to reflect and image of the existing situation on the space. “Such diagrams are useful in pictorially representing a multi-dimensional concept or phenomenon” (2010, p. 587-588).

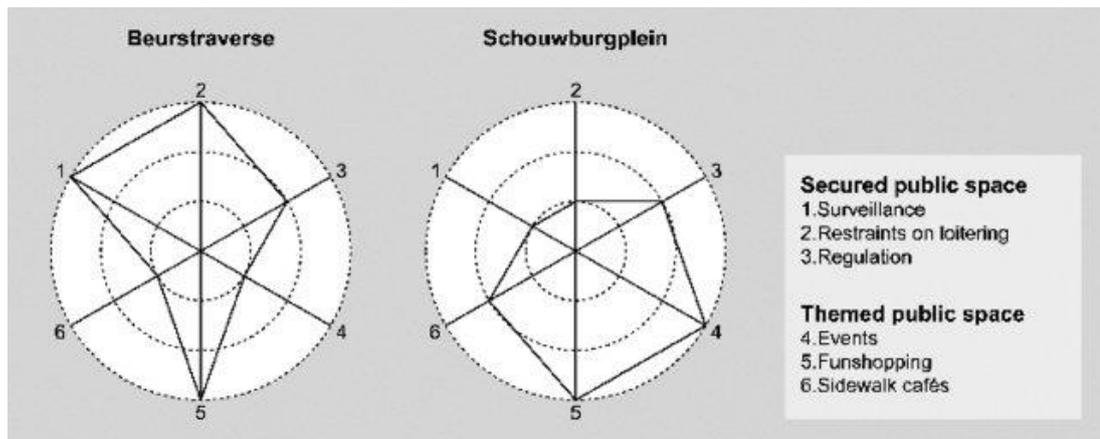


Figure 4.20. 6-Dimension Model, to Make Comparison Between Publicness of Two Spaces (Melik Et AL., 2007, P.37)

In the most basic, Cobweb diagram is defined as the linking the points that are individual scores of research area. Higher scores expand the shape of the diagram and that final shape is the overall result of the study. In this case, sustainability of a public space design measurement results is represented with that ‘enclosed’ shape. Convexity or concavity of the shapes, either have positive or negative meanings. The dimensions that have positive meanings with a convex shape is the indicative of ‘lacking areas.

Advantages of diagrammatic representation is briefly listed as; providing ground for comparisons between different areas or different time periods of a single space and convenience to visualize social studies, converts statistical data into meaningful, understandable material.

To sum up, there is a cobweb diagram used at Chapter 6 to reflect the results obtained by Direct Observations, Spatial Analysis and Questionnaire. It has similar qualities with a five-star diagram but measures more components that is dependent to researcher's preferred scope of the study. Lacking points or high scores is not used to make deterministic claims about a place's level of sustainability. It makes a relative measurement. Produces a representation tool to allow comparative analysis. As well as comparing two examples, it is also useful for detecting problem areas of a single location.

CHAPTER 5

FINDINGS AND COMMENTARY ON FINDINGS

5.1. Direct Observation

5.1.1. Shelter

In study of public spaces, especially the case area is streets, squares and such 'open spaces', existence of shelter is multi effective. When it is achieved by structures, it also supports sense of enclosure and safety. Vast open spaces do not encourage people to feel comfortable as seen in Maslow's hierarchy of needs, shelter is needed. It is noted that, by shelter here what referred is the sunshades and entrance points of buildings which are mostly to avoid whether conditions rather than human's basic need of protection. Whether conditions are mostly related to 'avoiding sun and rain' that is because, squares are by character are classified under the open public spaces. Therefore, it is the ordinary situation of squares to be exposed to air conditions. Passages, arcades, porticoes and porches are examples of such structures that are related to whether conditions and products of that process of seeking shelter. For example, arcades are helpful for wayfinding in a linear space in foggy weather.

In case of Ulus Square, shelter elements are canopies and entrances of building blocks. At the south of the square there is a café that provides outdoor seating but does not open sunshades (building at the back shallows the area during day time, at this point it must be noted that buildings facing the square are quite high which means according to date and time, they provide shading occasionally). Namely, the space does not provide many shelter opportunities as expediently. Figure 5.1. shows the shelter elements in the square.

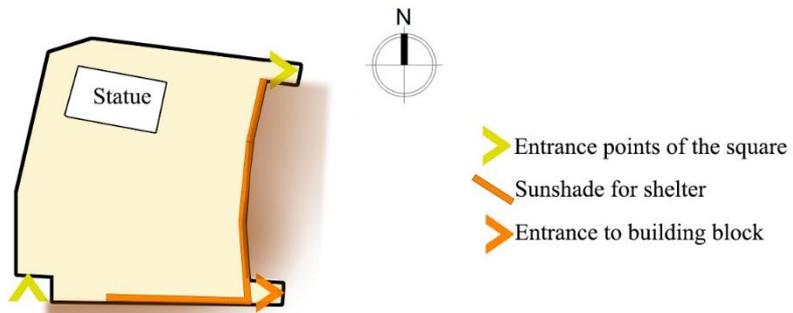


Figure 5.1. Shelter Elements in The Square

5.1.2. Accessibility (Social)

Social accessibility considered as the different social groups (age and gender) and their possibilities of using public spaces and services without obstructions. Increasing social accessibility, supports inclusivity, variety of people and functions and results with equitable environments.

Urban design is a tool for achieving social accessibility in broader sense. Disabled people, people with special needs, children, elderly people and many other social groups are considered in design process. The figure 5.2 represents the spatial distribution of observed social groups at the moment of observation.

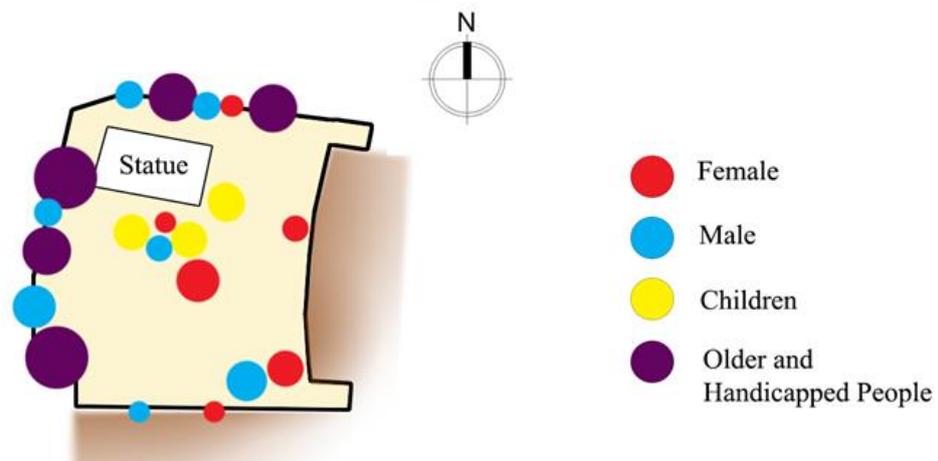


Figure 5.2. Social Groups and Spatial Distribution of Them (1)

Direct observations made at the square and the photos taken (Figure 5.3) gives clues about the general situation about spatial distribution of social groups. The colors used in Figure 5.2 for social groups are applied to photos taken on site to imply these different groups.



Figure 5.3. Social Groups and Spatial Distribution of Them (2)

In case of Ulus Square, it is learned that, there are variety of social groups. The square is physically available to user groups and their activities. However, there is a significant group of users; older people that are the stabile. Existence of variety of groups, their activities and differentiated spatial distributions are distinguishable. In special occasions (protests and celebrations) these distributions shift and the central part of the square is used by interest groups. For example, in the Animal Rights protest there were people from all social groups (female, male, children and old people) including their pets without significant spatial agglomeration other than center. The figure above is the representation of general situation in the square.

5.1.3. Locality

“Urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology and building practice (Carmona et al.,2003, p.11)”. Design of a public space must reflect the qualities of space and surrounding. Locality is achievable through urban and architectural form, function, material. These all contribute with elements that give sense of familiarity, contextual convenience.

Ulus Square with its Statue of Atatürk and Turkish soldiers gives nationalistic feelings of heroism and nationalism. There is a reason that the square is called ‘Ulus’ not ‘millet’ or any others. Combining with the questionnaire interviews, people have strong image of The Monument. In material selection, using local stones to create contrast and harmony together. Being one of the main stones of the Republican Ankara, the square represents highly local qualities in terms of urban design and architecture. Convenience of buildings surrounding the square are detailed in ‘typology of building’ indicator.

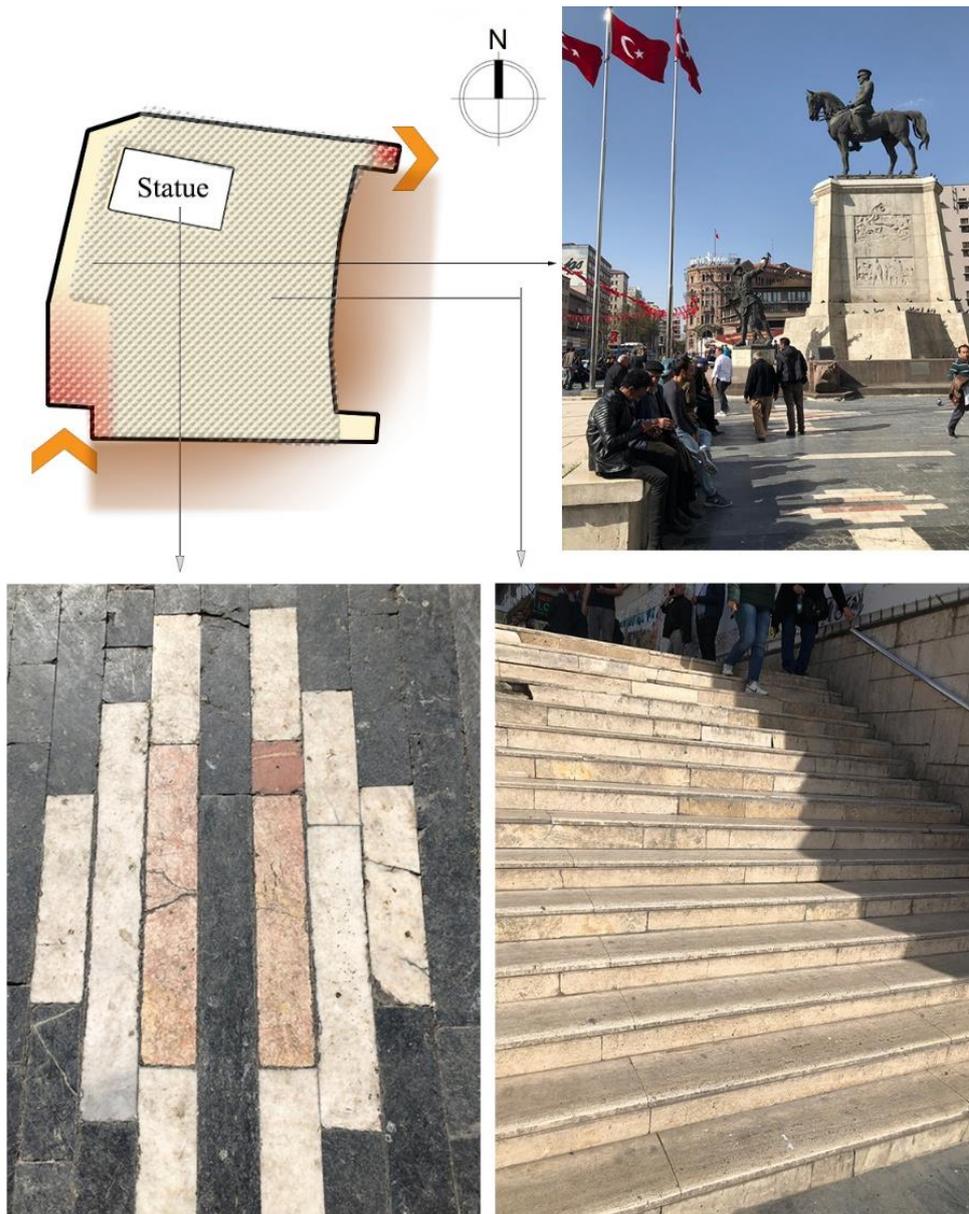


Figure 5.4. Local Materials in the Square

At the site there are no existing landscape elements, therefore it is not appropriate to search for endemic or local natural elements. However, some other landscape elements as walls, lightining, ramps, benches, stairs and street furnitures are searched for. It is

seen that these elements remained their locality features with their material component rather than shapes and designs.

5.1.4. Typology of building

Typology of building indicator has a broad scope that includes not only neighbor buildings and structures but also every structure that has a meaning in typological context. It is possible to observe different building types that defines squares. And also squares that define building structures. Above there is examples of both London and Ankara, in terms of its buildings; shapes, materials, orientations, relation with square and architectural types. In Ulus Square, in order to understand the building typology, architectural meaning of the structures is sought for.

Turkish architectural trends are listed chronologically as First national architecture period, foreign architects of republic, new approach towards the contemporary movements, Second national architecture period and finally Rational-international period of modernism. Ankara Palas (1927), is a product of First national architecture by Vedat Tek and Kemalettin bey; Ziraat Bank (1929) building; by Guilo Mongeri. Operet building (1948) by Paul Bonatz as second national architecture period example. Ulus İş Hanı, which is dominant building complex of Ulus square (Spor Genel Müdürlüğü building and the han together), carry some of these architectural periods' qualities. Buildings that are in a close distance to the square, that usually constructed after 50's, are representing Modern Turkish Architecture and designs are selected through architectural competitions (Yardımcı, 2008). The square has been the arena where one can observe national and international architectural styles in terms of varying architectural approaches to the production of built environment during the 20th century in Turkey (Altan, 2004). Modest façade and the plain roof as in between period of first and second national movements, symmetry and architectural style of scales as second national movement and volumetric qualities along with material selection are corresponds to Rational-international movement period (Asar, 2012).

Looking at this classification, the building complex is closer to modern movement period of after 1950's.



Figure 5.5. Paternoster Square-London (Marshall, n.d.)



Figure 5.6. Ulus Square- Ankara (Hürriyet Newspaper, 2018)

Figure 5.5 is an example from London, Paternoster Square which is an example of how the square is an integrated part of the typology and shape of the surrounding buildings. Rather than putting the space as a separate entity, the space looks as the layout of the bounded structure of buildings. On the other hand, in Figure 5.6 Ulus Square reflects its harmony in its own context. Typology of the buildings neighboring the square are in unity with design of the square considering the spatial structure in 1960's. The physical changes experienced by space are causing changes in typology also. Most importantly recent projects about Ulus Office Block will affect the square and its typology along with many qualities.

Contemporarily, debates about demolishing the building complex is still contradictory. It is undeniable that the structure, has its qualities regarded to Turkish architectural history. Non-effective use of its function seems as a factor of decreasing attention to it. Once people cannot reach it, but rather see it as a big, massive structure without having an idea of its inner qualities or functions. Without entering to a place, it is not possible for someone to have a considerable experience of space. It is similar that, European square with a cathedral or church (ex: Duomo di Milano), is a composition of building which is highly public and its square for all people. In case of Ulus Square, the master building is only a visual element that provides enclosure. It does not have an active circulation and not used by all. This is not a 'must' but knowing the previous usage of complex, as Ulus İş Hanı, a systematic structure which is defined by Nalbant (n.d) as 'pure modern' and 'uniquely harmonious with its micro surrounding environment in terms of urban scale' it is a framework of approaching the complex.

5.1.5. Accessibility

Ulus Square is located at the center of Ankara. Even if, contemporarily the centrality has shifted in the city, Ulus remains its power as commercial center. With that

commercial activities and administrative facilities existence, Ulus is expected to be highly accessible. The square stands in the heart of Ulus (Figure 5.7), central roads directly lead to the square. Planning attempts up today held in area, caused changes in road structure, but still some spines are considerably legible and distinguishable such as central station connection. The geometry of these spines emphasized the contrast between the organic pattern of the area near to Citadel.

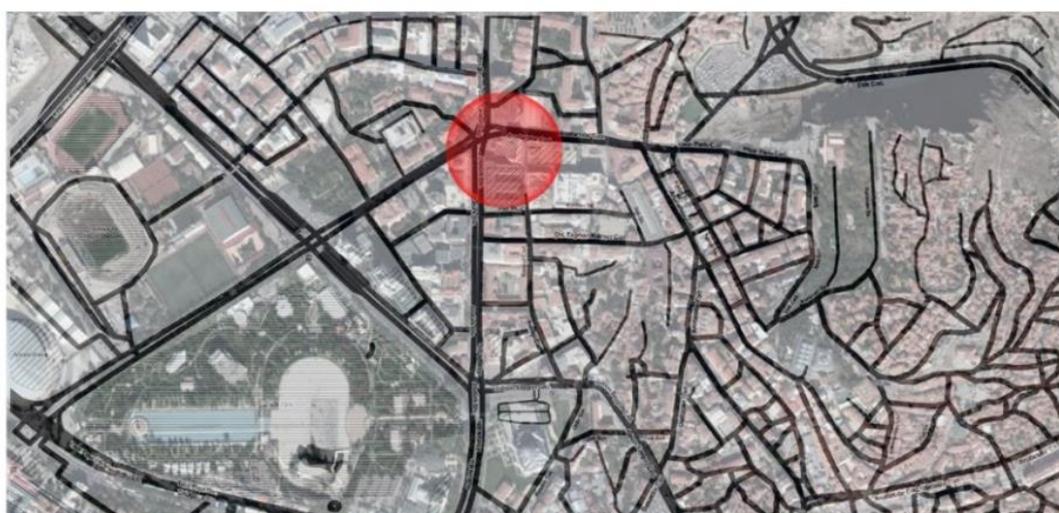


Figure 5.7. Location of Ulus Square⁹

Figure 5.7 shows the location of the square in Ulus District. Gençlik Park (lower left), Citadel area (right), and the square in between these areas are visible. Main roads and axial alignments imply the locational importance of the square.

Figure 5.8 is a closer look at the square. The yellow arrows show that alignments as old station (left) and citadel (right) leading roads. And main transportation facilities are shown.

⁹ Illustration made by author on Google Earth visual material.

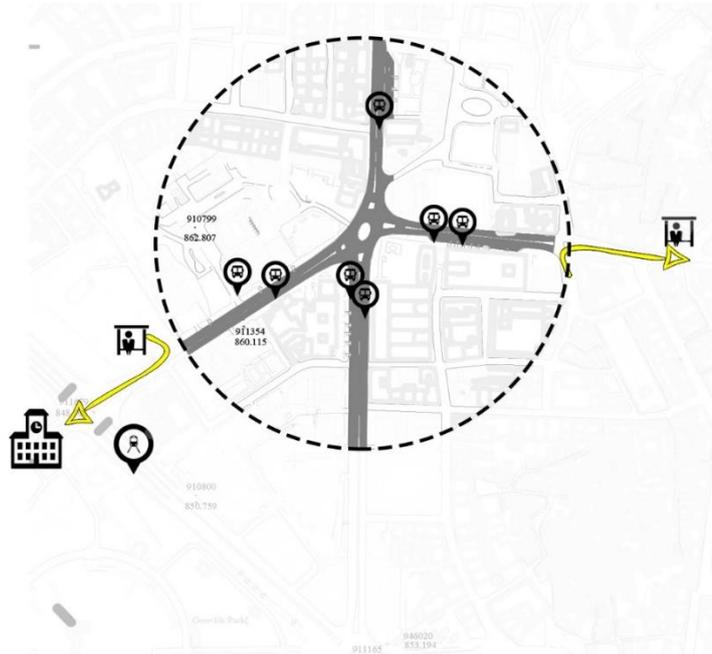


Figure 5.8. Major Modes of Transportation Near the Square

The Figure 5.8 shows the major roads that carry most of the traffic in Ulus, around the square within a walkable distance schematically. From left to right, central station (old), Metro stop, major waiting points of minibuses and bus stops are shown. People of Ankara uses Ulus, as their transportation node, transfer place and destination. In observations related to accessibility, the place is highly accessible with public transportation and vehicles. From pedestrian perspective, the square is accessible with sidewalks and pedestrian crossings, but the pressure of the vehicles is felt near the roads. That means there is an excessive number of vehicles and consequently traffic congestion. In addition to that, there is not any infrastructures for bicycle transportation that indicates a lack of pedestrianization implementations. Highly accessible and walkable squares have priority on sustainable public spaces.

5.1.6. Continuity

Continuity is used in urban design studies refers to both ‘continuity of existence’ which is related to time dimension and therefor interconnected with the sustainability terms, and also ‘continuity of movement’; uninterrupted circulation allowed by space. Continuity is crucial for the experience that space offers.

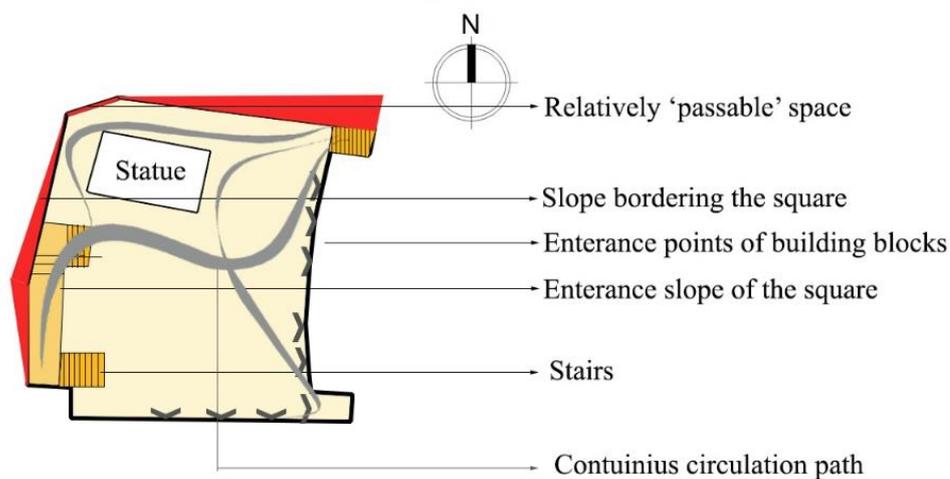


Figure 5.9. Continuous Paths

In Ulus Square precinct, continuity is shown with the most preferred circulation paths. Existence of walls at the northern part and north-west direction creates a ‘red line’ that does not allow to pass in 3 dimensions. Inner area of the square hosts continuity of pavement and material and visual openness which covers the full area of the square. Space’s convenience for people with disabilities is also considered. Location of the monument, being at the north-west part of the square frees the center of the square, that is the quality that eases the free circulation paths. At this point, the square is

studied from the perspective of ‘experience of a walker’. The square is a place to spend time and also a trans passing place that produces the circulation diagram above.

Physical continuity is eligible to set links with movement indicator.

5.1.7. Movement

Movement indicator is in the heart of the public space studies. Public spaces are categorized according to their type, function and movement they encourage. What is differentiate streets and squares is not only their linearity or geometry but rather, the movement they lead people to do and relatedly the activities held in space.

Squares are studies with their active and passive movement patterns since they contain both in different cases. Composition of both activities provide success in those spaces. In other words, a place that is only used for pass, as a shortcut a transit gateway does not make the area used. It becomes an empty lot, a gap in the urban context. To avoid it, and to create vital urban spaces that are used, both type of activities is to presence.

Here, the movement studied is a search for ‘pedestrian movement pattern’. Figure below shows the distribution and the volume of active and passive movements in the square.

Out corners of the square is preferred mostly for passive movements as sitting, watching around and waiting. Combining with the ‘social accessibility’, this passive movements are the one that performed by older people that come to spend time in the square whereas females and children mostly uses the center of the space with active movement such as walking, playing, feeding birds, transpassing and taking photos.

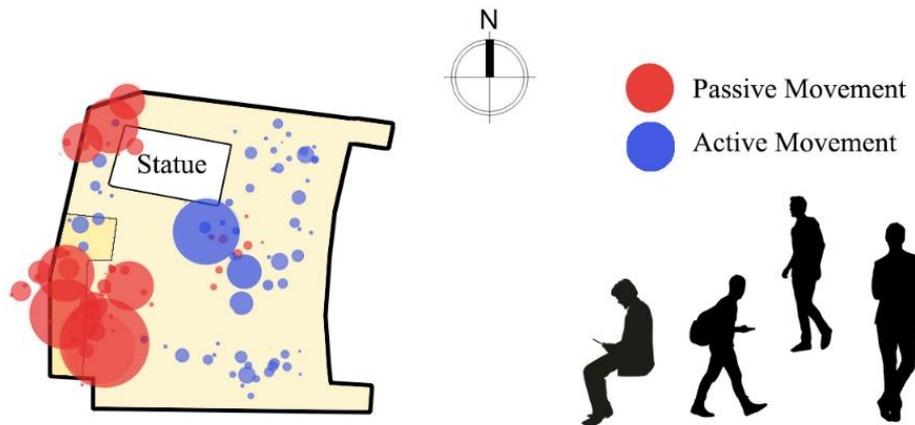


Figure 5.10. Active and Passive Movement Patterns in the Square

5.1.8. Variety

“In theory a coherent space should be all of a piece, yet many of the spaces that people love contain variety and diversity, both of built form and activity (Shaftoe, 2008, p.54)”. Variety indicator is studied in terms of activities.

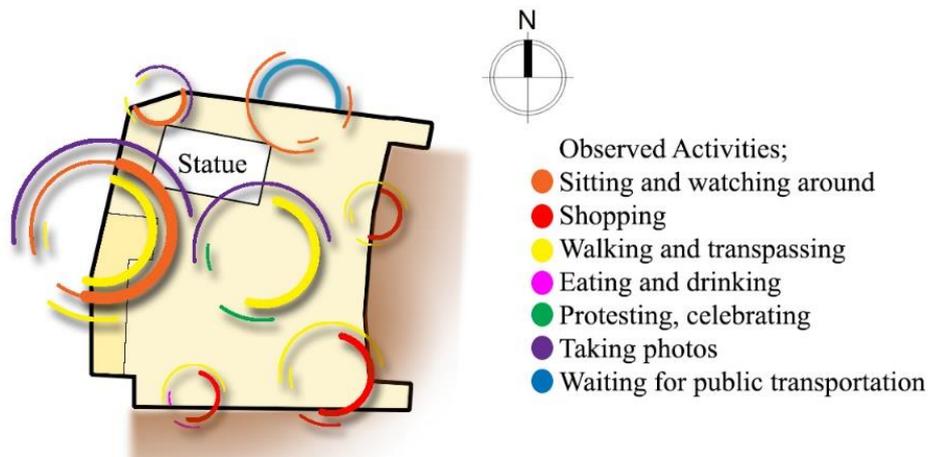


Figure 5.11. Activity Types Observed in the Square

In the observation process of the square, there was an opportunity of vitnissing variety of social activities. Spatial distribution of those activities is represented at the figure above. Sitting and watching around stands as the dominant activities takes place daily. Protests and celebrations are occurring at special days.



Figure 5.12. Protesting People in the Square (TMMOB, 2019)



Figure 5.13. Animal Rights Protest in the Square (Yeniçağ Newspaper, 2019)

Variety of activities are connected to the user group of the place. As discussed in the social accessibility heading, special occasions cause changes in the space's activities

for a short period of time. The monument in the square, becomes a reference point of such activities. In the first photo above, this point is clearly visible while second photo reflects a similar approach from the monument perspective.

5.1.9. Vitality

Vitality is related with the activities. Montgomery (1998) studies activities as a part of place making theory and explains its relationship with vitality as “Activity is very much the product of two separate but related concepts: vitality and diversity (p.97)”. Vitality is the life that place has, the source of its life, *elan vital* (Barlas, 2006, p.52, Montgomery, 1998).

In Ulus square case, vitality is considered as the vitality provided by land-uses around the square, in Ulus district. This is studied as such because of several reasons; firstly, Ulus as the historic and commercial center have various functions and land-uses, secondly the square hosts a few stores and cafes that is not a domain which reflects and explains the vitality in the square and finally the square is at the node of many functions and therefor affected also by those functions.

The figure below shows the buildings that creates vitality in the area. İşbank building and Ankara Social Sciences University (old Sumerbank) are not evaluated in this section since they are focused as facing the square, elements that are in a closer relationship with square. In this sense Ulus Square and surrounding buildings are shows just to imply its location. As shown on the diagram with colors, Ulus have different functions that appealed by all. These functions and the structures that are also attraction points are increasing the vitality of the square. Recently, İşbank building is converted into a museum, as one of the main stones of Republican Architecture.

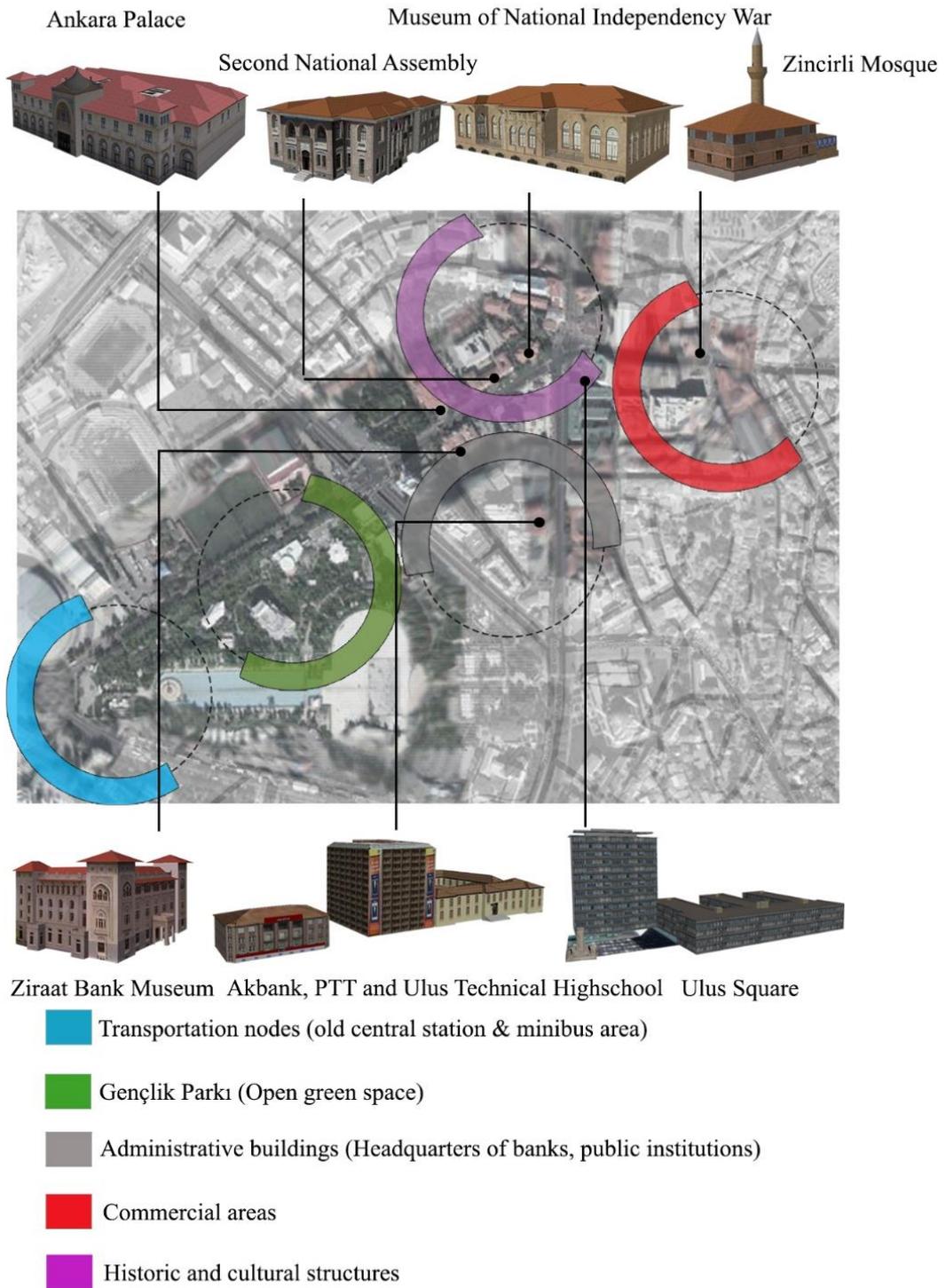


Figure 5.14. Functional Zones and Buildings in Ulus



Figure 5.15. İş Bank building throughout history¹⁰ (1) (İlksayfa Newspaper, 2018)



Figure 5.16. İş Bank building throughout history¹¹ (2) (İlksayfa Newspaper, 2018)

¹⁰ Retrieved from: <http://www.gazeteilksayfa.com/ulustaki-tarihi-is-bankasi-binasi-muze-oluyor-37602h.htm>

¹¹ Retrieved from: <http://www.gazeteilksayfa.com/ulustaki-tarihi-is-bankasi-binasi-muze-oluyor-37602h.htm>

İş Bank, transforms its building into Economic Independency Museum. The building constructed at 1924 is an asset that currently start to host its first visitors.

Composition of direct observations on ‘vitality and variety’ indicators reflects the situation of mixed-use indicator. As it is seen on the figures and the information gathered from on site observation, there are various functions in Ulus. It is an ordinary situation considering the place as a ‘center’ however by being heart of the city it does not carry only administrative and commercial functions. Ulus is cradle of socio-cultural activities in city of Ankara. It is possible to say that the place sustains these variety of functions. On the other hand, demolition decisions on Anafarta Bazaar are expected to cause changes on the area’s functions.

5.2. Conclusion of Direct Observation

5.2.1. General

On sunny days, the area is vital and full of people. This study is held during spring time, namely these observations represents the situation of that given time span. The place brings the mind term movement; there are many people moving around and not moving at all inside the square. It is possible to see every pattern of movement in this context. There were busses that carry students, because the date was close to 23 April. Vehicles caused congestion, busses, minibusses, tour busses and private cars were intense. On another weekend there were a protest for ‘animal rights’ and another protest to call for 1st of May organizations. These all indicates that the square carries the function of being the ground of public sphere and its active, vital use.

Along with the touristic visits and protests there were also people who makes frequent visits to site. These people’s profile is generally male and old males. During the protests the square had the most spectrum of social groups (female, children, families, old people and even their pets) that is not common to find in daily pattern.

The majority of people accumulated around the monument. Old males and males profiles preferred this location for their passive engagement through space. Females were not outnumbered in the square, but they were circulating around Anafartalar Street and Vegetable Market close to it. It infers that females performing active movements; uses functions whereas males do both an active circulation and passive movement in square. Along with that groups, Hacıbayram Mosque and its area, were popular among Arab tourists and Ankara Social Sciences University hosted students in front of the building even in weekend. All these shows that there are different social groups and their own territories that they are dominant in terms of number of people. Ulus Square, with its location stands in between variety of functions and activities. Therefore, it is possible to find members of each social groups even if they do not use the place but transpasses it.

One of the most common reason of visit was shopping. Comparing to other places, there were shops that sells the goods ranging from food to clothes for wholesale prices. Social profile affects it and get affected from it. Economic status of people using space is usually lower class while the shop owners and craftsmans are considerably middle class. Old people come for shopping without paying money for public transportation with busses. Namely, many people use shopping places and markets for their needs, but goods and services are not at a high standard except a few local production shops. Fleshing out the history, Ulus had first bars, restaurants, pasticceria, shops and many others. Low standards and changing social profile thus, gives the feeling of an obsolent place.

5.2.2. The Square

There were a few tourists and a few females. People that spend time in the square sits to the places that space allows. Borderline of the square and walls of it is the spot for sitting. In higher boundary line (North direction) people stands and watches. Ulus

Square is a central locale of spending time and waiting. Not having particular places to sit (limited number of cafes and small kiosks that are take-away), increases the selection of the square. In this case, whether conditions are important factors of usage of the space, for the further studies it is more comprehensive to observe area in other seasons. People spending time in the square show similarity with Islamic city public space, specifically mosque courtyards. Behavior patterns and the aim of time spending makes this connection. People that have day time free go there to be with people, without any activities, even without interacting with others and without a purpose, accumulating with self-like people.

Center of the square is usually occupied by children playing and tourists (local or not) taking photos. Apart from that, center is empty. Location of the monument is an important factor for this situation. Not being in the center, gives sense of asymmetry, and different territorialization of space. For an observer, the square is dividable spatially into sub-spaces.

5.2.3. Scope

Observations made about square is studied in Ulus district in general. The square is an important public space of the area. Therefore scope of the study is beyond the limits of the square but general observations made by basing on the observations and oral interviews to gain an image of Ulus and the square. After data gathering, observations are focused on the square; how people move, interact and behave in the space is watched. These observations are made during the process of questionnaire and included not only researcher's perspective but also opinions of people using that space.

5.2.4. Limitation

Limits of site observation are briefly, bias and researchers own ideas, experiences and perception on space affects the data obtained from observations. Even if the data gathering process is a subjective process still, having one eye on the topic limits the scope of the study. The more people are active in this research process, the more perspectives are gained, and accuracy of the observations are increased. Conditions of observation is another important factor; season, whether conditions (sunny, rainy, cloudy, windy etc.) and hours of the 'on site observation' are basic reasons. Observations made in spring, in April and during daytime. Number of people that provides oral information are another limitation. By doing so, only the people who are willing to share information and their experiences of that space is collected. Therefore if that domain represents the universe of user profile of the square is uncertain.

All the data obtained by direct observations are meaningful when they evaluated together with other data gathering techniques. The oral history of the area is learned by the process of questionnaire along with the observations on site and spatial analysis.

5.3. Spatial Analysis

5.3.1. Scale

Scale indicator is a sub-set of the Social Needs dimension. By looking at the physical numeric data the actual needed outcome is a social condition that is determined by 2d and 3d qualities of space and architecture.

Scale of the area is calculated by the total area of the square and the relation of buildings facades that are facing the square. Directorate of Sport and Ulus Business Block have direct relationship with the square. Namely, they are the main buildings that imply the enclosure and scale. In area calculation, height of the buildings is used

to measure architectural field while the 2d measurements give the people' best sense of field.

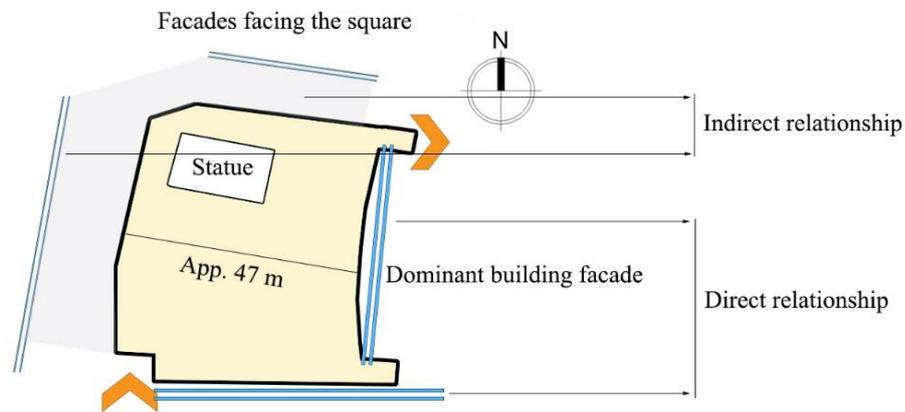


Figure 5.17. Relationships Affecting Scale

Area is approximately 0,27 ha. This number corresponds what Sitte and Lynch defines as optimum interval. Optimizing an interval of maximum 0,28 ha is because of idealizing the ancient. For the architectural field the formula is $P_1 = H/D$, $P_2 = W/D$. Distance is accepted as the west entrance of the square and the results are closer to “Balanced field” which is a desired outcome according to Xiong (2000, as cited in Liu, 2013).

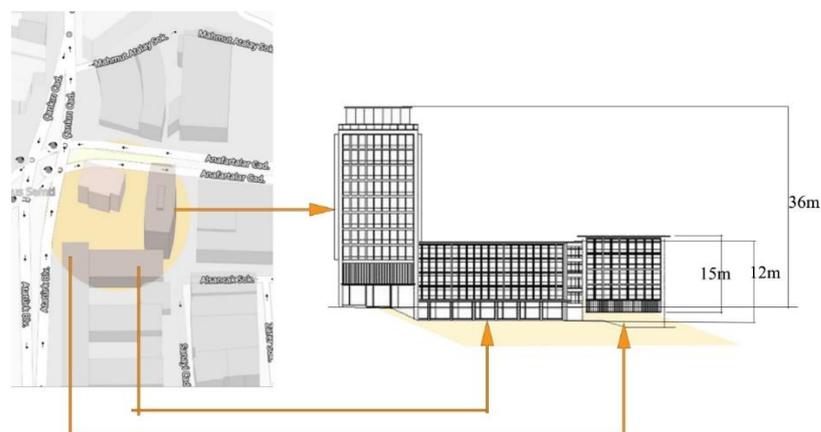


Figure 5.18. Height of the Neighbor Buildings

In Ulus Square case, the dominant building that implies architectural field selected as Directorate of Sport with its considerably dominant location and height. This situation is visible at the 3d diagrams of the space.

5.3.2. Street/Block Structure

Street/block structure defines the effects of surrounding environment on the square with its qualities encouraging movement, and visual openness. Some points in the area which have the most pedestrian flow are selected to analyse the visibility and the stain that is determined by urban structure.



Figure 5.19. Visibility According to Street/Block Structure

The figure below (5.20) shows the monument as reference point from most pedestrian flowed streets. Watching points are not selected at the south part because of the enclosure provided from that angle with presence of building blocks that limits the vista.

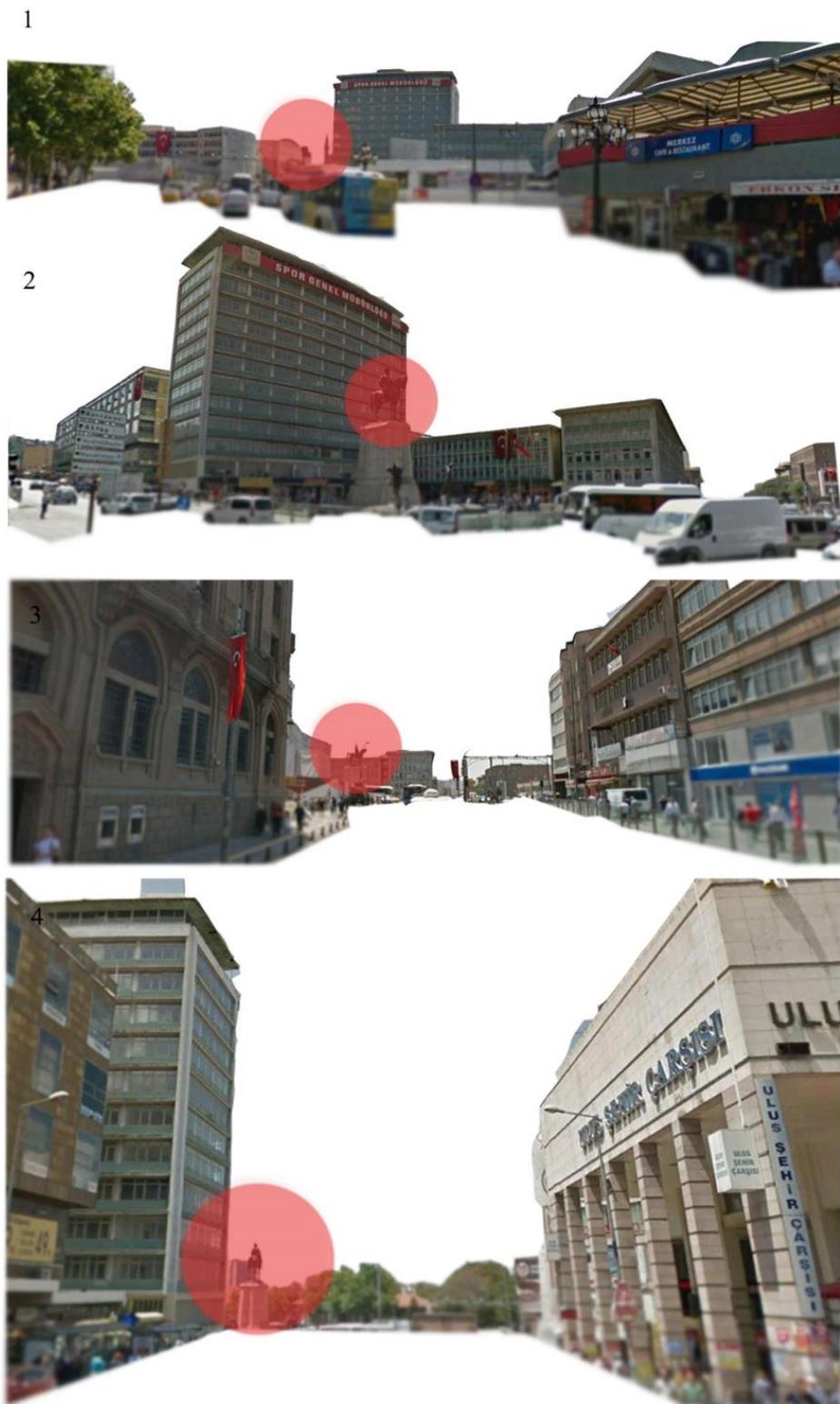


Figure 5.20. Vistas of the Monument from Selected Points

Surrounding urban environment of the square allows both visual and physical access to the space. It is relevant that the square was meant to be the anchor point, a reference, a reminder of national values and located (referring to first location) at the heart of spine starting from Old Station, reaching to Citadel and intersecting with the route to Yenişehir.



Figure 5.21. A photo before the monument is moved. Centrality of the monument and the alignments are visible through old train station¹²

Considering that qualities, the area corresponds to its target, with connections it provides. Connection of spaces indicator details that quality along with the street/block structure.

¹² Retrieved from: <http://www.eskiturkiye.net/3377/ulus-meydani-ankara>.

5.3.3. Connection of Spaces

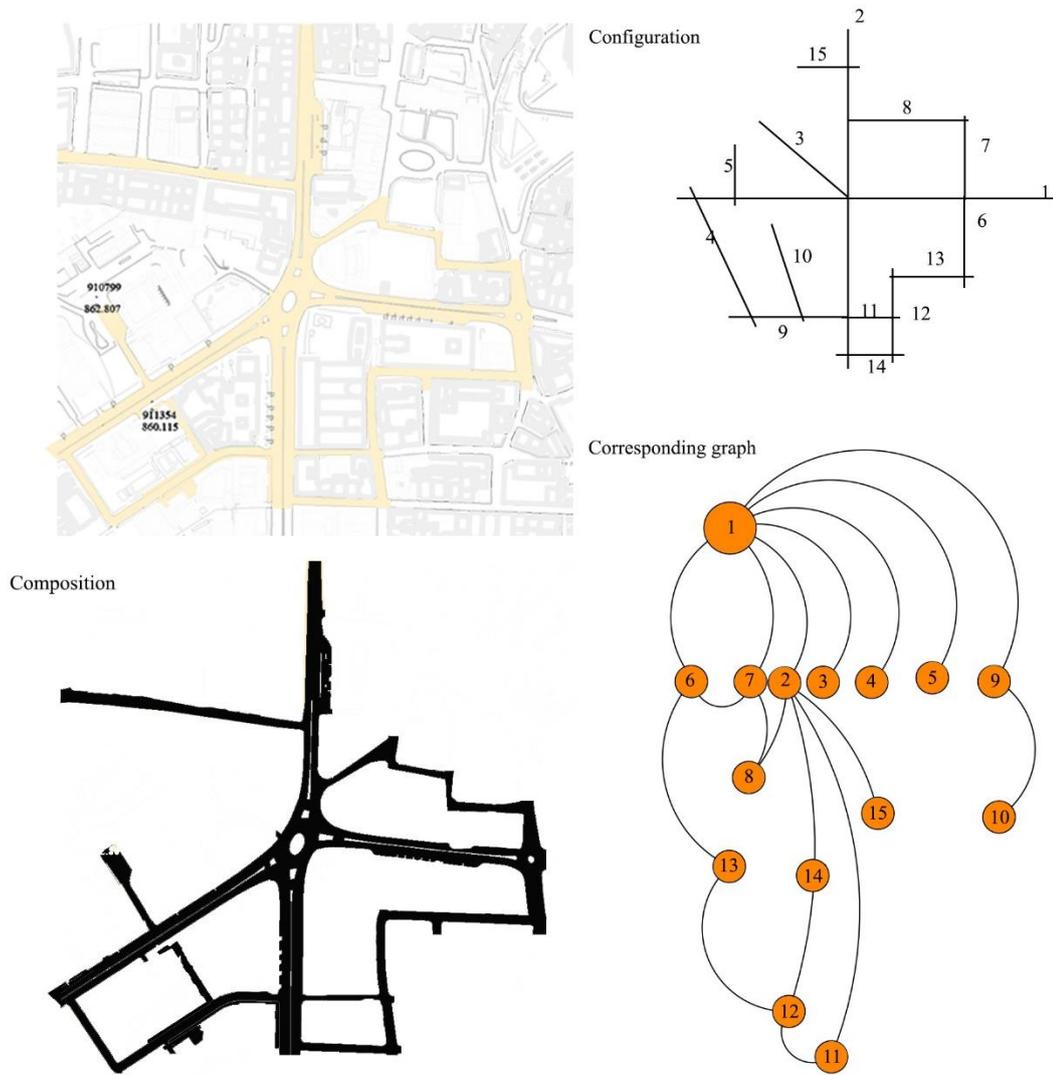


Figure 5.22. Connection of Spaces¹³

¹³ Illustrations made by author according to Marshall's(2005) definitions and visualization for connection of spaces.

Connection of spaces figure is prepared based on the selection of main connector street of square as Anafartalar Street (represented with number 1). Anafartalar street carries many historic and cultural buildings and functions aligned on it. It's connection to Old Station and Citadel emphasizes that role of the street. Number 1 and 2 (Atatürk Boulevard) are the main streets of the area, as it can be seen on configuration graph. First, composition is defined and then configuration and corresponding graphs are produced according to them. As a result, at the final stage it is concluded that the square has high connectivity through streets.

5.3.4. Enclosure

Enclosure of the space is inferred by the structures in and around the place. “The enclosure of space in this manner is the purest expression of a sense of place, the centre. It is here that order is created out of the undifferentiated chaos of the world beyond” (Moughtin, 2007, p.99).



Figure 5.23. 3d Visual of Ulus¹⁴

¹⁴Retrieved from: <https://mapeditor.yandex.com.tr/#/?z=15&ll=32.834546%2C39.944100&l=nk%23map>

Width to length ratio is approximately 4/5. This ratio stands in the possible interval defined by scholars. Namely, the Ulus Square implies a strong sense of enclosure.

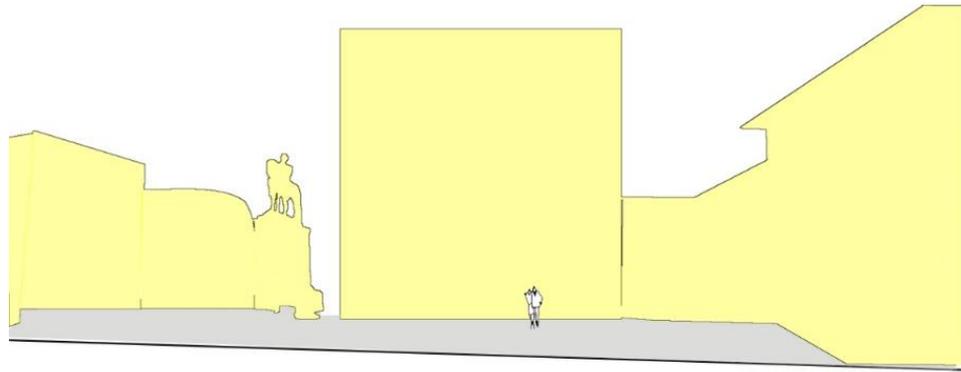


Figure 5.24. Sense of Enclosure Implied by Structures

5.3.5. Permeability



Figure 5.25. Road Network of Ulus

Looking at the Ulus in general, it is seen that there is existence of both designed, connected and permeable spaces and more organic, fragmented and non-permeable spaces co-exist. It is known that many overlapping planning attempts have role in that situation. Over plan, legal processes and the unplanned growth all factors of nonpermeable situation of Ulus. The square is on the other hand have high permeability compare to other parts of the district.

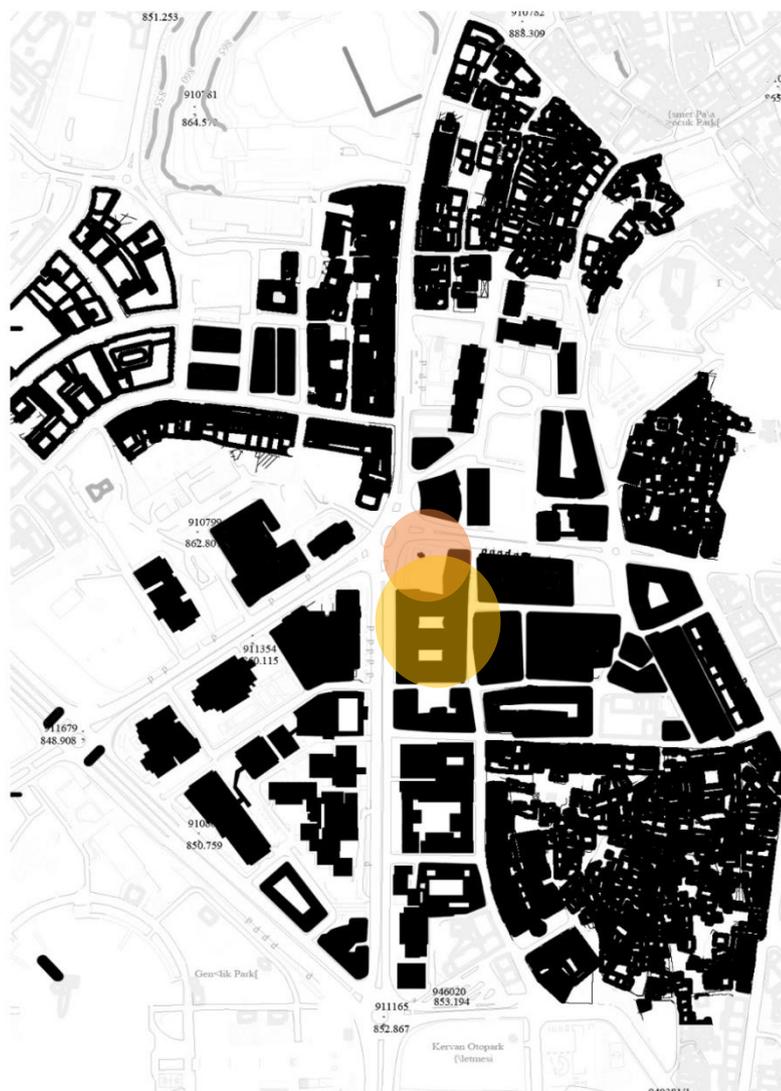


Figure 5.26. Figure-ground Analysis via Nolli Map

Taking a closer look at the square and its surrounding, Nolli map in Figure 5.26 is used to show figure-ground relationship. By this way permeability of space is studied. Ulus Office Block (yellow circle) with its entrances and passages, supports the permeability of the square (red circle). It is very easy to reach courtyards and moving around the square. Considering these gateways, the figure-ground graph and being at the intersection of roads, it is concluded that the space has optimum permeability.

5.4. Questionnaire

Data related to the evaluation of questionnaire are represented below. 142 questionnaires are completed with a study made in Ulus Square. Cronbach Alpha results (.890) showed that, the scale is highly reliable.

Table 5.1. *Case Processing Summary*

		N	%
Cases	Valid	142	100,0
	Excluded ^a	0	,0
	Total	142	100,0

a. Listwise deletion based on all variables in the procedure.

5.4.1. Sub-Problems and Answers

First Sub-Problem;

The table below, uses simple descriptive statistics and listed them according to the mean values. Therefore, it is the general detection of perception on social needs of people. First group highlighted shows the indicators that get the highest score and the second group shows the least scored indicators among all. Questions about social actions and safety significantly took lowest means. Cultural and historical value related questions have the best score. In general, these results show that people in

Ulus, relates the cultural and historical values with the square the most whereas they have concerns about social structure of the place according to their perception.

These 27 questions are the manifestation of 7 indicators of SPSD. Some indicators are tested with 1 question. Because of that their mean number are not shown independently.

In Table 5.2 descriptive statistics table lists all the variables of the questionnaire and lists them according to their scores on answers, in that case mean numbers. As it is clearly seen that, all the questions are answered by participants. Previous formula to detect the real values of answers is used since the minimum and the maximum scores are the same and equal to 1 and 5. Therefore, answers between 4,20 and 5 limits are represent 'always' choice and score 5. In the same way, answers between 1 and 1,79 limits represent 'Never' choice and score 1. In other words, mean numbers rather than being numbers with one integer, are numbers in between the possible choices and their weights. Combining all, at the table below, the yellow area represents the 'always' choice. 14th, 15th, 16th and 17th questions are related to function and meaning of the space. 19th and 20th are related with legibility and the 26th is about people's future opinions about the square. It is implied with the yellow area that, these variables and dependently function, meaning, legibility and future of the space is perceived more positive than other variables asked with the questionnaire. Similarly, 1st safety, 3rd interaction, 6th equitability and 11th economic and social function measuring questions have the lower score of choices represents 'never'. In such a case, the green area at the below of the table 5.2 emphasizes the most negative perception on social needs for Ulus Square. Remarkably, different than the rest of the questionnaire, Variable 1 and 6 have the maximum score of 3 while others have 5. That implies the most negative opinions of user's and accordingly creates the priority area of intervention.

Table 5.2. Descriptive Statistics of All Variables

	N	Minimum	Maximum	Mean	Std. Deviation
V16	142	1	5	4,46	,980
V15	142	1	5	4,44	,964
V26	142	1	5	4,36	1,027
V19	142	1	5	4,29	1,022
V20	142	1	5	4,23	,948
V14	142	1	5	4,21	,988
V17	142	1	5	4,20	1,007
V27	142	1	5	4,18	,925
V21	142	1	5	4,04	,971
V23	142	1	5	3,89	,931
V5	142	1	5	3,79	1,214
V24	142	1	5	3,66	1,031
V25	142	1	5	3,62	1,171
V12	142	1	5	3,61	1,418
V22	142	1	5	3,46	1,102
V13	142	1	5	3,34	1,196
V18	142	1	5	3,29	1,500
V10	142	1	5	3,27	1,526
V2	142	1	5	2,75	1,369
V4	142	1	5	2,68	1,412
V9	142	1	5	2,63	1,302
V7	142	1	5	1,94	1,019
V8	142	1	5	1,90	,970
V11	142	1	5	1,79	1,030
V3	142	1	5	1,51	,840
V1	142	1	3	1,46	,603
V6	142	1	3	1,27	,475
Valid N (listwise)	142				

For the others that are subject to indicators with multiple questions are represented below with their maximum and minimum answers, mean numbers and standard deviations.

Table 5.3. *Descriptive Statistics Of 'Interaction' Indicator*

	N	Minimum	Maximum	Mean	Std. Deviation
INTERACTION	142	1,00	5,00	2,3122	,95214
Valid N (listwise)	142				

Table 5.4. *Descriptive Statistics Of 'Relaxation' Indicator*

	N	Minimum	Maximum	Mean	Std. Deviation
RELAXATION	142	1,00	4,00	1,9190	,88453
Valid N (listwise)	142				

Table 5.5. *Descriptive Statistics Of 'Meaning' Indicator*

	N	Minimum	Maximum	Mean	Std. Deviation
MEANING	142	1,70	4,80	3,5254	,79800
Valid N (listwise)	142				

Table 5.6. Descriptive Statistics Of 'Legibility' Indicator

	N	Minimum	Maximum	Mean	Std. Deviation
LEGIBILITY	142	1,00	5,00	3,8833	,69583
Valid N (listwise)	142				

The figure below shows the mean numbers of each indicator measured with the questionnaire. 'Safety' and 'equitability' have the lowest score whereas 'inclusivity, legibility and meaning' have the highest. It is interesting that people think that Ulus Square is not equitable, proper to different social groups but on the other hand, it hosts variety of these groups.

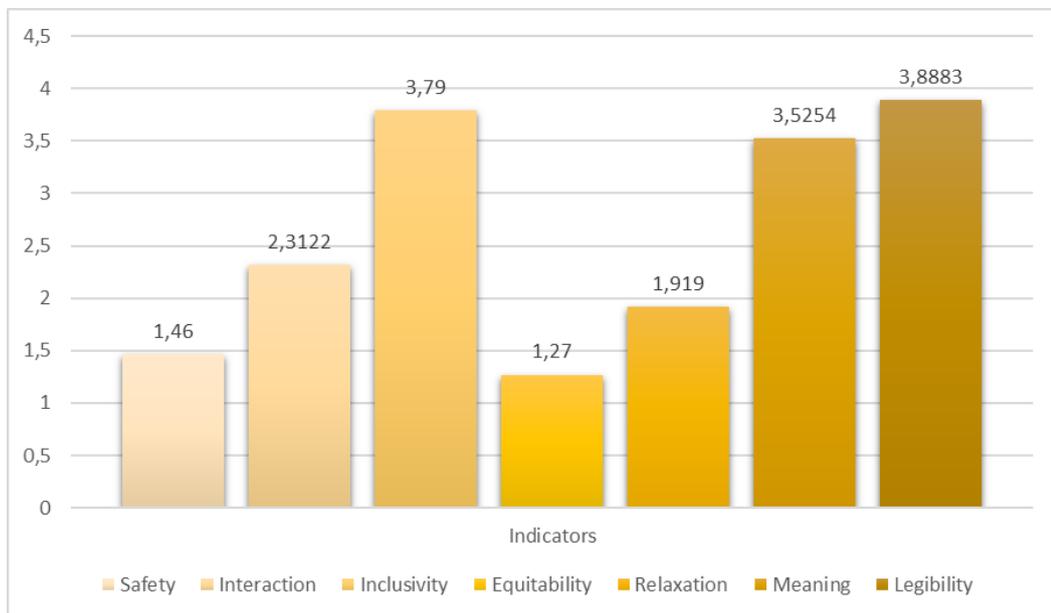


Figure 5.27. Comparison of Mean Numbers For 7 Variables Measured with Questionnaire

These descriptive statistics implies that the square has a powerful image in people. Indicators such as ‘legibility’ and ‘meaning’ with their complex structure get the highest scores, which supported the idea that people tend to prefer answers related to the ‘essence’ of the square. National feelings, effect of monument, architecture of the surrounding buildings are all effective contributors of the social dimension of the square. However, the same results imply that safety and directly social related (inclusivity, interaction, equitability) indicators are the factors that have negative impact on perception of ‘social needs. These relatively lower scores are intervention niches of the sustainability debate. Design based strategies are the ones that answers these negative impact components.

Second sub-problem;

Second sub problem is the correlation between sex and perception on social needs. T test is applied since there are two groups of variables; male and female. The table below is the group statistics of sexes.

Table 5.7. *Group Statistics, Data Representation of Answers According to Different Sexes*

SEX	N	Mean	Std. Deviation	Std. Error Mean
VTOT 1	44	3,0842	,50986	,07686
2	98	3,3522	,56301	,05687

It is clear from the results that number of males (2) is significantly higher than females (1). The questionnaire applied to people in and around the square and the shops near the square. The craftsmen that filled the questionnaire were mostly males rather than females. It is also stated at direct observation part there are more males in the area noticeably apparent.

Table 5.8. Independent Samples Test and P Values Emphasized

	Levene's Test for Equality of Variances		T-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
VTO Equal variances assumed	,611	,436	2,699	140	,008	-,26805	,09931	-,46439	-,07172
Equal variances not assumed			2,803	90,894	,006	-,26805	,09562	-,45799	-,07812

Both the variables are $p < 0,05$ (Sig. value), that means there is a significant difference between males and females. With that results, it is seen that males that are greater number in the area have more positive perception about given questions on Ulus Square (they rated higher). Therefore, H_1 hypothesis is valid for this indicator.

Third sub-problem;

Third sub-problem is the correlation between ages and perception on social needs. The table 5.9 is descriptive statistics of ages.

First group represents age interval between 0-14, second 15-29, third 30-44 and the fourth 45+. Distribution of participant numbers with their ages are given in Figure 5.28. As it is seen the square is a place with all age groups either using or transpassing the space.

Table 5.9. Descriptive Statistics of Age Groups

VTOT

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	6	3,1728	,23965	,09784	2,9213	3,4243	2,81	3,41
2	31	3,2162	,58585	,10522	3,0014	3,4311	1,74	4,04
3	60	3,1543	,50236	,06485	3,0245	3,2841	1,96	4,11
4	45	3,4716	,60030	,08949	3,2913	3,6520	1,37	4,30
Total	142	3,2692	,55930	,04694	3,1764	3,3620	1,37	4,30

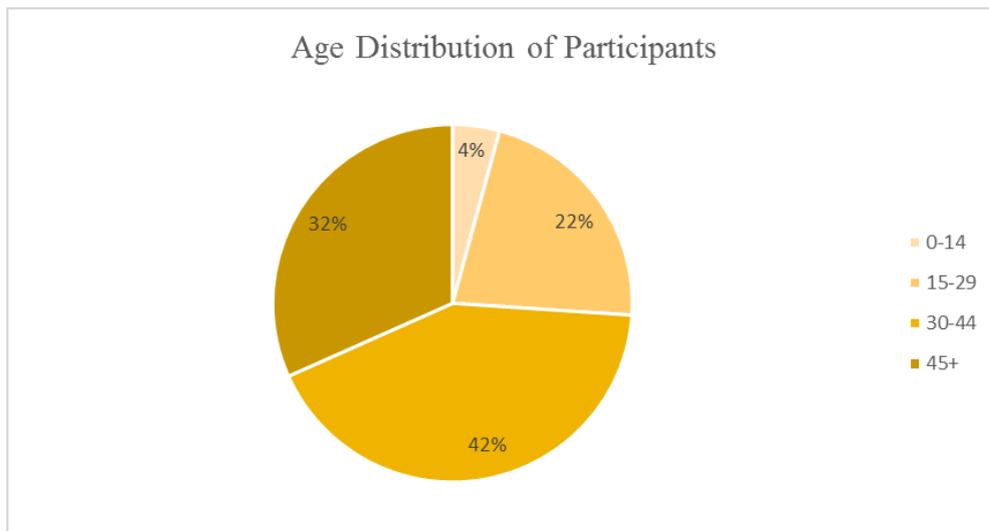


Figure 5.28. Age Distribution of Participants with Percentages

Age distribution chart shows that majority of the participants are between 30-44 years old and they occupy the %42 of all questionnaires. Children between ages 0-14 are the least occupation group that filled the survey and they have the second lowest

rating. ANOVA test is applied to that component since there are more than 2 groups to see if there is a significant difference.

Table 5.10. ANOVA Results of Age Groups and Their Answers

ANOVA					
VTOT					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2,778	3	,926	3,092	,029
Within Groups	41,329	138	,299		
Total	44,107	141			

$P < 0,05$ means there is a significant difference between groups. To see the extent of that difference, Sheffe analysis made on 'age' and 'social needs' perception.

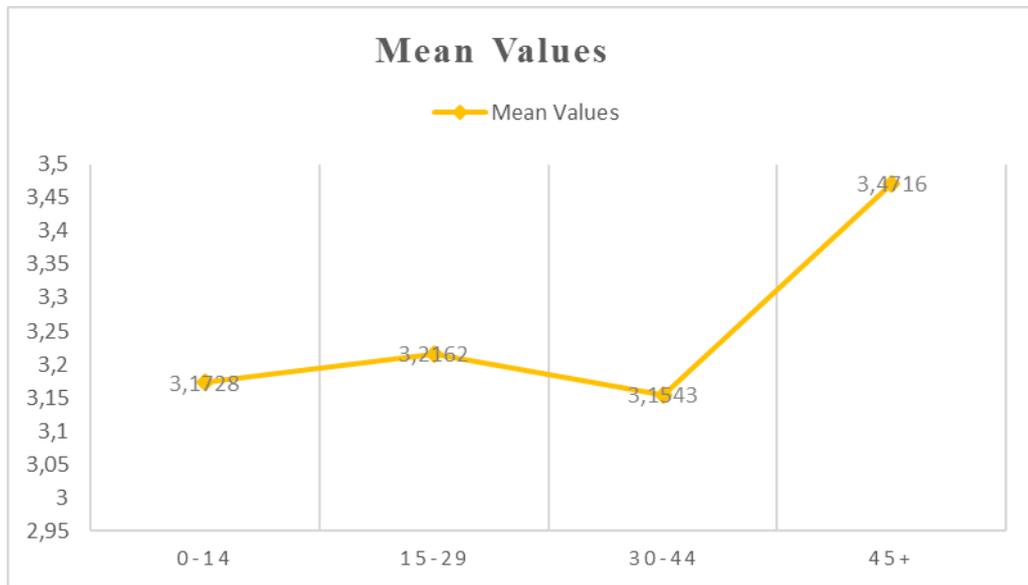


Figure 5.29. The Changing Perceptions on Different Age Groups According to Their Mean Numbers

Table 5.11. *Sheffe Test Results According to Age Groups*

Multiple Comparisons

VTOT
Scheffe

(I) AGE	(J) AGE	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-,04341	,24408	,999	-,7342	,6474
	3	,01852	,23432	1,000	-,6447	,6817
	4	-,29877	,23784	,665	-,9719	,3744
2	1	,04341	,24408	,999	-,6474	,7342
	3	,06193	,12105	,967	-,2807	,4045
	4	-,25536	,12773	,266	-,6169	,1062
3	1	-,01852	,23432	1,000	-,6817	,6447
	2	-,06193	,12105	,967	-,4045	,2807
	4	-,31728*	,10792	,038	-,6227	-,0118
4	1	,29877	,23784	,665	-,3744	,9719
	2	,25536	,12773	,266	-,1062	,6169
	3	,31728*	,10792	,038	,0118	,6227

*. The mean difference is significant at the 0.05 level.

Sheffe test shows that there is a significant relationship among 3rd (30-44) and 4th (45+) groups. This table indicates that although third group (30-44 years old) seem as the dominant age group of Ulus, their ratings are the lowest among all other groups while the fourth group (at or above 45 years old) have the most positive rating. Therefore, H₁ hypothesis is valid.

Fourth sub-problem;

Fourth sub-problem is the education level and the perception on ‘social needs. Compare to the age component, education has more equal distribution. The reason is

the questionnaires made in the shops and stores are applied not only the shop owners and workers but also to their customers. Additionally, Ankara Social Sciences University students and people visiting the site for work, and trans passing are joined the research to have a more equal distribution.

Table 5.12. *Descriptive Statistics of Education Level Groups*

Descriptives

VTOT

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	22	3,5825	,41388	,08824	3,3990	3,7660	2,78	4,30
2	29	3,5057	,31212	,05796	3,3870	3,6245	2,81	3,96
3	28	3,4458	,46243	,08739	3,2665	3,6251	2,07	4,11
4	45	3,0329	,53580	,07987	2,8719	3,1939	1,37	4,07
5	18	2,8210	,71098	,16758	2,4674	3,1745	1,74	4,04
Total	142	3,2692	,55930	,04694	3,1764	3,3620	1,37	4,30

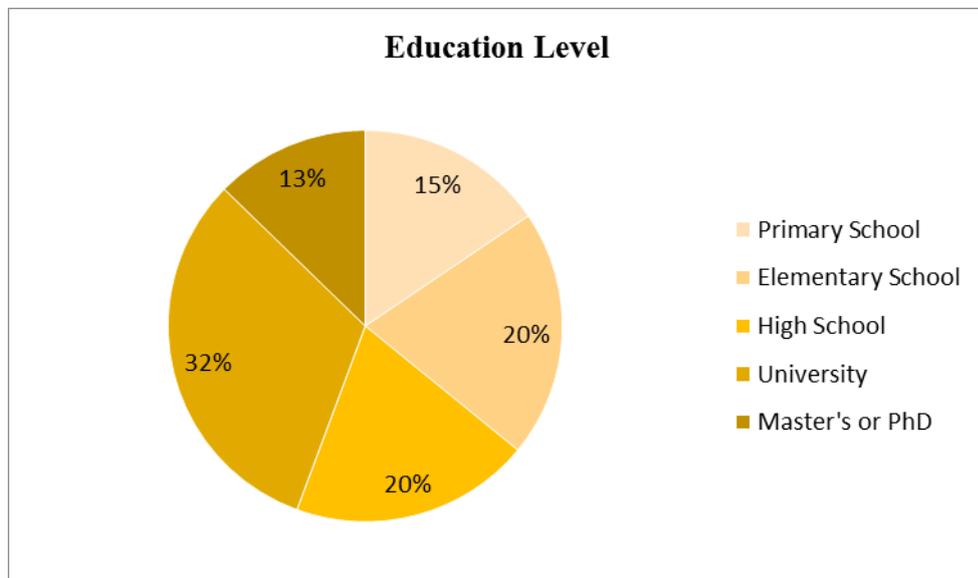


Figure 5.30. Approximately Equal Distribution of Educational Levels of Participants

Table 5.13. ANOVA Test Results of Different Education Levels

ANOVA					
VTOT					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10,783	4	2,696	11,083	,001
Within Groups	33,323	137	,243		
Total	44,107	141			

$p < 0,05$ therefore there is a significant difference among groups.

Table 5.14. *Sheffe Analysis for Different Education Levels*

Multiple Comparisons

VTOT
Scheffe

(I) EDU	(J) EDU	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	,07674	,13944	,990	-,3587	,5122
	3	,13672	,14051	,917	-,3020	,5755
	4	,54957*	,12830	,002	,1489	,9502
	5	,76150*	,15675	,000	,2720	1,2510
2	1	-,07674	,13944	,990	-,5122	,3587
	3	,05998	,13067	,995	-,3481	,4680
	4	,47283*	,11744	,004	,1061	,8396
	5	,68476*	,14799	,000	,2226	1,1469
3	1	-,13672	,14051	,917	-,5755	,3020
	2	-,05998	,13067	,995	-,4680	,3481
	4	,41285*	,11871	,020	,0422	,7835
	5	,62478*	,14900	,002	,1595	1,0900
4	1	-,54957*	,12830	,002	-,9502	-,1489
	2	-,47283*	,11744	,004	-,8396	-,1061
	3	-,41285*	,11871	,020	-,7835	-,0422
	5	,21193	,13754	,668	-,2176	,6414
5	1	-,76150*	,15675	,000	-1,2510	-,2720
	2	-,68476*	,14799	,000	-1,1469	-,2226
	3	-,62478*	,14900	,002	-1,0900	-,1595
	4	-,21193	,13754	,668	-,6414	,2176

*. The mean difference is significant at the 0.05 level.

Sheffe analysis show that 1st,2nd, and 3rd groups are significantly differentiated from 4th and 5th groups. The first three groups are represented at 4th level of perception whereas the last duo remains at 3rd level. Combining all, people have educational level

to high school graduates have more positive perception of ‘social needs’ in Ulus Square. Therefore, H₁ hypothesis is valid.

Fifth sub-problem;

This sub-problem is related with monthly income. Commercial activities held in the place and direct observation outcomes implies that expectation is groups with lower income prefer the area for their daily needs. To answer the hypothesis, descriptive analysis and post-hoc analysis is given below.

Table 5.15. Descriptive Statistics of Different Income Groups

Descriptives

VTOT

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	45	3,4667	,37881	,05647	3,3529	3,5805	2,78	4,30
2	43	3,2429	,57578	,08781	3,0657	3,4201	1,74	4,04
3	54	3,1255	,62901	,08560	2,9538	3,2972	1,37	4,11
Total	142	3,2692	,55930	,04694	3,1764	3,3620	1,37	4,30

Table 5.16. ANOVA Test Results of Different Income Groups

ANOVA

VTOT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2,899	2	1,450	4,890	,009
Within Groups	41,207	139	,296		
Total	44,107	141			

There is a significant difference ($p < 0,05$) between groups. The 1st (minimum wage and below) group is differentiated than the 3rd group (over 4001 TL monthly income). 1st group is at the fourth level interval, whereas the 3rd group remained at the third interval of 'social needs' perception. Therefore, hypothesis H₁ is valid for fifth sub-problem.

Table 5.17. *Sheffe Analysis for Different Income Groups*

Multiple Comparisons

VTOT
Scheffe

(I) INC	(J) INC	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	,22377	,11611	,160	-,0635	,5111
	3	,34115*	,10990	,009	,0692	,6131
2	1	-,22377	,11611	,160	-,5111	,0635
	3	,11738	,11128	,575	-,1580	,3927
3	1	-,34115*	,10990	,009	-,6131	-,0692
	2	-,11738	,11128	,575	-,3927	,1580

*. The mean difference is significant at the 0.05 level.

These findings are matching with expectations. 3rd group are the ones that usually visits the site for work and business. That also indicates Ulus is still at the heart of business flow of everyday life of Ankara.

Sixth sub-problem;

Sixth sub-problem is about frequency of visits made to the square. For this variable, the higher the mean number, the smaller number of visits are made to site. Descriptive analysis is given below.

Table 5.18. Descriptive Statistics of Frequency of Visit

Descriptives

VTOT

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	53	3,5031	,51327	,07050	3,3617	3,6446	1,96	4,30
2	19	3,4737	,28995	,06652	3,3339	3,6134	2,93	3,93
3	23	3,2995	,42683	,08900	3,1149	3,4841	2,52	4,11
4	20	2,9815	,53083	,11870	2,7330	3,2299	2,15	4,04
5	27	2,8532	,60410	,11626	2,6143	3,0922	1,37	3,89
Total	142	3,2692	,55930	,04694	3,1764	3,3620	1,37	4,30

Table 5.19. ANOVA Results of Frequency of Visit

ANOVA

VTOT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10,044	4	2,511	10,099	,001
Within Groups	34,063	137	,249		
Total	44,107	141			

$p < 0,05$ therefore there is a significant difference among groups.

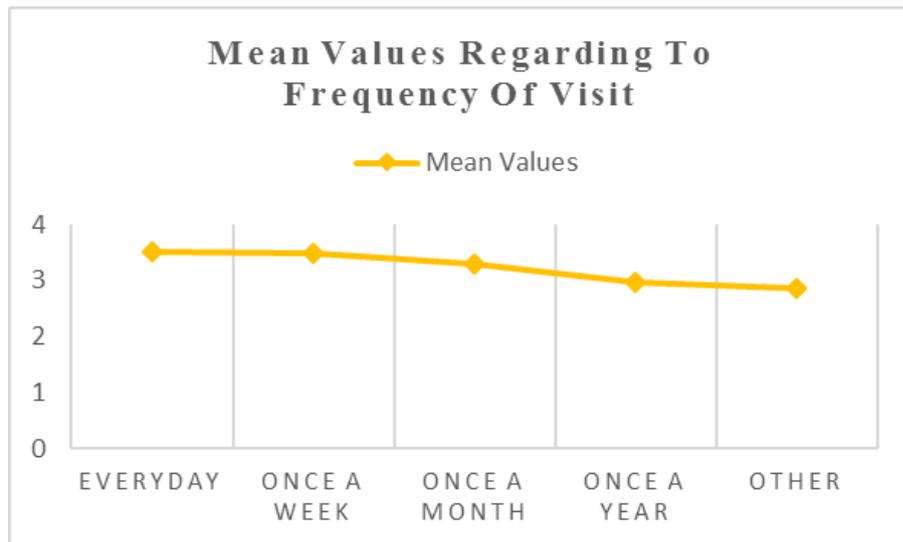


Figure 5.31. Frequency of Visit Distribution

Table 5.20. Multiple Comparisons (Scheffe Analysis) Of Frequency of Visit

Multiple Comparisons

VTOT
Scheffe

(I) FREQ	(J) FREQ	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	,02946	,13333	1,000	-,3869	,4458
	3	,20363	,12450	,615	-,1852	,5924
	4	,52166*	,13085	,004	,1130	,9303
	5	,64992*	,11790	,000	,2818	1,0181
2	1	-,02946	,13333	1,000	-,4458	,3869
	3	,17417	,15458	,866	-,3085	,6569
	4	,49220	,15974	,055	-,0066	,9910
	5	,62046*	,14931	,003	,1542	1,0867
3	1	-,20363	,12450	,615	-,5924	,1852
	2	-,17417	,15458	,866	-,6569	,3085
	4	,31804	,15245	,365	-,1580	,7941
	5	,44629*	,14149	,046	,0045	,8881
4	1	-,52166*	,13085	,004	-,9303	-,1130
	2	-,49220	,15974	,055	-,9910	,0066
	3	-,31804	,15245	,365	-,7941	,1580
	5	,12826	,14711	,943	-,3311	,5876
5	1	-,64992*	,11790	,000	-1,0181	-,2818
	2	-,62046*	,14931	,003	-1,0867	-,1542
	3	-,44629*	,14149	,046	-,8881	-,0045
	4	-,12826	,14711	,943	-,5876	,3311

*. The mean difference is significant at the 0.05 level.

In general, the group that visits the square less often is the one that have lower scores on measured 'social needs'. 1st group has significantly positive perception scores than 4th and 5th, 2nd and 3rd groups are better approaching than 5th. It is coherent to find that 5th group of people do not prefer this place and thus have a worse image of place compare to other groups. Even these people do not exist there for their daily activities, the mean number (2,8532) implies that variable rated at 3rd level of perception. Combining all, H₁ hypothesis is valid.

Seventh sub-problem;

This sub-problem is related with places of residences, locations of their houses according to districts. This demographic variable is added since the square is at the heart of the city and used by all. It is one of the most well-known public spaces of Ankara. To see the extent of that user pattern, people's location of residences is examined. Descriptive table is given below.

Table 5.21. *Descriptive Statistics of Participant's Location Of Residences*

Descriptives

VTOT

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	51	3,1714	,66050	,09249	2,9856	3,3572	1,37	4,30
2	29	3,1992	,59929	,11128	2,9713	3,4272	1,74	3,96
3	23	3,2641	,42454	,08852	3,0805	3,4477	2,22	3,93
4	14	3,6587	,23387	,06251	3,5237	3,7938	3,26	4,07
5	10	3,4778	,31834	,10067	3,2501	3,7055	3,04	3,93
6	15	3,2420	,49629	,12814	2,9671	3,5168	2,30	4,04
Total	142	3,2692	,55930	,04694	3,1764	3,3620	1,37	4,30

Table 5.22. ANOVA Results of Participant's Location of Residences

ANOVA					
VTOT					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3,201	5	,640	2,128	,066
Within Groups	40,906	136	,301		
Total	44,107	141			

In other sub-problems the results of ANOVA tests provided the information that there was a significant difference between the given groups and their answers. Uniquely, for this variable's results show that, location of residences does not change or dependent on the perception on 'social needs' of people in Ulus. Since the P value is greater than 0,05, there is no need to apply Sheffe or any Post-Hoc tests. As a result, Ho hypothesis is valid.

This is an interesting outcome of the research, it is normal to assume that people with similar income, culture and social tastes are tended to gather together in terms of location. The other demographic variables showed significant differentiation among groups, whereas location itself does not represent a variety of perception levels.

5.4.2. Conclusion of Questionnaire

The questionnaire is used to measure people's perception on 'social needs' in Ulus Square. 7 main indicators (Safety, Interaction, Inclusivity, Equitability, Relaxation, Meaning and Legibility) related to sustainable design model, are examined. These indicators are correlated with demographic data; reasons behind these social topics are

wished to be revealed. To do this, 7 sub-problems and related hypothesis are created and answered via analysis. In the light of all analysis, it is concluded that, only the 'location of residence' indicator has no significant difference within respondent groups. Namely, H₁ hypothesis were valid except the 7th sub-problem. Most of the measured indicators performed above the average, that causes an increasing gap between results, and becomes easier to detect.

5.4.2.1. Observation on Questionnaire Process

General

The questionnaire made with people in and around square. Selecting shops near the area is a great tool to see the actual users and everyday observers' idea on site. The Minibus drivers were very into the subject. There was a high number of participation and social interaction during the observations. People spending time in the square was not very into answering questions. Craftsman and security staff of the Old Assembly participated sincerely. Other participants can be listed as; street sellers, food sellers (meatball, liver, buffet workers), shoe repairer, patisserie workers and many others. Moving onto Anafartalar street, the attention decreased mostly by the old people just sits at the benches. Some of the people considered this questionnaire as a part of political documents that collects their personal data. Anonymous participation is explained but still, people worried and refused to take the test. Near Anafartalar street, food market, patisserie, cafes (traditional coffee houses), dessert store joined to questionnaire. Some side streets are walked and tried to convince people to fill out. Moving through the citadel, bag stores and jewelry stores were many in number. Those places have people that known the space for a long time, so that opportunity to listen Ulus from them is seized.

Their voluntary participation was mostly their wish to have a better urban environment in Ulus. They specifically pointed out that, change is necessary to make values Ulus

carry live for other generations. Main motivation of participants was to experience a better urban environment for Ulus socio-spatially.

Content

The most commonly referred issue was people's concern on safety. The main reasons of it are; theft, drug dealing, mafia and the fornixes as the root cause of safety problems. That's why families are not occupying the Ulus district late hours of night they say.

The craftsmen feel belonging to space but at the same time, they don't consider themselves as a part of the society in the square.

A specific group of old people that makes frequent visits to the square are avoiding making social interactions with craftsman and other people they are unfamiliar. They are using the space without any purpose other than sitting and watching around. At the same time, they don't feel belongness to the space but thinks that the square has a significant value that must be protected. This group observes the square as the place of avoiding social interaction and being alone for free and being an outsider of everyday rush of people.

After filling out the questionnaire, majority of participants stated that the square reminds them national values, Atatürk and the Monument. Once the safety and the infrastructure of problems are overcome people are eager to continue using the space and passing it down to future generations. Ulus seen as the center of the city by the users. People call Victory Monument as 'Statue'. Since they are familiar with historic buildings, they don't find it distinctive, but ordinary and recognizable.

Majority states that the square is not convenient for different social groups especially people with disabilities. Sidewalks and the yellow lines of them are not continuous so it is a problematic area along with safety issues for people with special needs.

What is expected from an urban project is the increasing standards and quality of the space for attracting tourists and experiencing a better environment.

5.4.2.2. Scope

Theoretically scope of the questionnaire is possible to be widen. At this point, the research problem and aim of the research are key determinants of number and content of the indicators.

Questionnaire held with 142 participants in and around Ulus Square. Not only the people that spend time in Square but also, craftsmen or people working near the square, which means people that have a specific idea of the place and makes visits there eventually are targeted. Along with that, people found in the square randomly, students and people came for business provided a variety of answers for this research. In this sense, the research has a broad scope since it covers a balanced distribution of different social groups for a comprehensive study proceeded in Ulus Square.

5.4.2.3. Opportunities and Limits

Opportunities are basically about structure and design of the questionnaire. The document does not have many questions that are long and exhausting. There are brief and short questions, easy to understand, not complicated structure. It also consumes little time of respondent. Attention given to respondent by researcher and interesting subject of research that is respondents real used place of everyday life both contribute to eagerness of participation. During the questionnaire process, being face to face with the respondents increased the answered number of questions, in other words confusions are eliminated by researcher right at the moment. And also, people felt more responsibility about their surroundings, and wished to observe physical changes at the square.

Limitations are mostly about applying process of questionnaire. Existence of only one researcher, is a limitation in terms of filling many questionnaires. Talking and convincing people individually took a considerably long time. Frequent visits are made to the site to be able to collect more data. A group of researchers have possibility to reach out more people on site. In general, on site studies are hard to conduct especially when they are about human based studies. It also refers to the scope of the research. Basing on social studies, makes hard to define the boundaries of the questionnaire. Scope, scale and undisturbing question selections are critique points in preparation phase of the document. As much as possible respondents are tried to be reached since it is a very commonly used place as city center and the universe of research represents very big data, but it was very common to observe people behave abstain. Main reason is the political surveys made on the site previously (almost 1 month ago); people thought this study as a part of political surveys to detect their ideology and collect their data mostly names. Concluding all, it is not a very easy task to complete the convincing people to fill out the questionnaire.

5.4.2.4. Representation of Results

Data obtained from research tools, are organized to represent with cobweb diagrams. As studied previously, proposed parametrical model, which is recollection of indicators of sustainable design and place-making theory in a systematic way, is grouped according to their research tools and investigated. Relatedly, findings of research are classified with research tools. At this part of the research, these indicators are re-grouped to represent indicator sets. By doing so, it becomes easier to read the results of each sub-set and obtain information inputs for further actions.

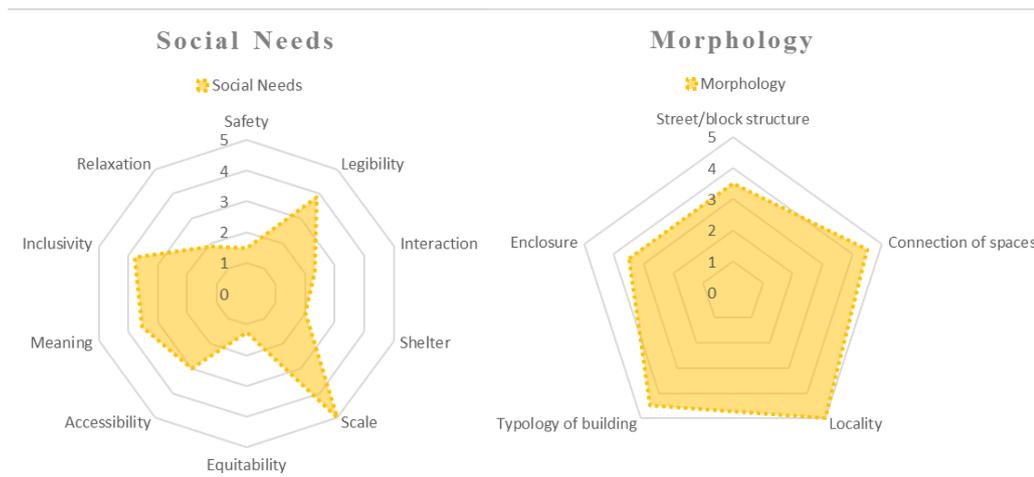


Figure 5.32. Results of Social Needs and Morphology Indicator

There are 10 indicators under the **Social Needs** sub-set. The most fluctuated difference among indicators is ‘Social Needs’ sub-heading. Unlike others (morphology, circulation and function), this set is measured with questionnaires applied on site. Answers related to people’s perception and have a relatively lower score since it is dependent on more than 1 person. Social Needs results are mostly obtained by questionnaire and depending on people’s perception that’s why, it is expected to be undulant. ‘Safety’ and ‘equitability’ are drawing attention, they are the qualities that space provides the least. ‘Scale’ indicator has significantly high score, that is evaluated via spatial analysis and found out to be in standards of other researchers. The visual representation shows an amorphous shape that is concave. As a result, ‘Social Needs’ sub set have both positive and relatively negative results. That means all indicators under that heading does not represent equal results that requires changes on the Ulus Square. Design interventions that are targeting social components are to be applied. Meaning and legibility indicators inferred that, people have a strong image of the square in their mind. National values and heroism are implied through Monument of Victory. Even physical changes applied to the square in time, the monument because of its importance, kept at the heart of Ulus.

To conclude, social indicators are in need of intervention. A public space, that is at the center of the city with such important meaning is to strengthen in social dimension. Design actions to increase the social part of sustainability are to be implied, in order to have a coherent space with other indicators that are applicable for Ulus.

Morphology sub-set is a composition of direct observation and spatial analysis research tools. Namely, it is expected to obtain more positive results compare to ‘Social Needs’. Looking at the extreme points, locality have the best score in overall, and ‘enclosure’ and ‘street/block structure’ have lower scores despite they have scores above the average. The visual have a convex shape that is very similar to the layout of the cobweb diagram. In the light of all, morphology sub set provides high scores on each dimension. In the way leading to sustainability, morphologically the place has positive attributes that does not require major changes but rather small actions to boost the morphological qualities of Ulus Square.

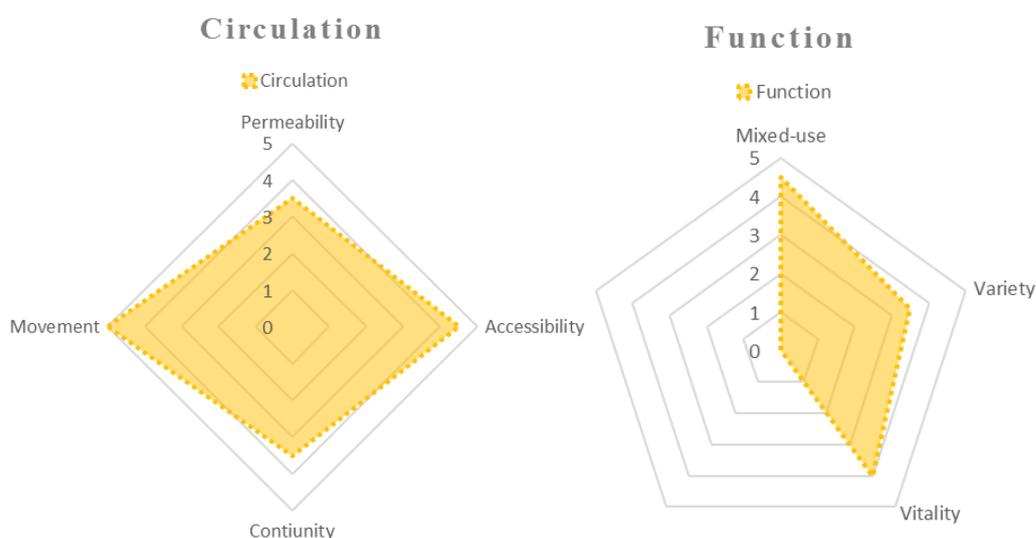


Figure 5.33. Results of Circulation and Function Indicators

Ulus Square, as a central public space, witnesses the all types of **circulation** and transportation patterns of the city. It is known that major destinations of Ankara, finds a route of public transportation either starts or passes from Ulus. Circulation sub-set is studied under 4 indicators. These indicators cover broad areas in their scopes and consequently used in minimal number. Unlike social conditions, circulation patterns are examined without any expectations of new discoveries. With that information, the visual representation shows a balanced situation in terms of circulation. Convexity of the shape points out that small interventions, applied on space is enough to minimize negative impacts on Ulus Square. Existing circulation patterns are both affecting and affected by function sub-set, since the movement is likely to occur in-between functional spaces. It is better to make interpretations on the space together with the ‘function’ indicators. At this point, the consideration is ‘why the shift from being in space to passing from space?’. The square is not a place that people stands and enjoys the moment, but rather a functional node used in between spaces. A group of old people still uses the space to sit and spend time, but this situation is not occurring because of the qualities and comfort the space provides, it happens because the space provides places to sit, in very busy and fast pattern of Ulus district.

Ulus draws attention with its commercial and administrative **functions** along with being the cultural and historic center of Ankara, in terms of functions. It is location and being the place of social life in Ankara after establishment of Republic, many functions are attracted to, and even the first examples are experienced in Ulus. Karpiç, İstanbul patisserie and the cinema are only a few examples of it. Direct observation is the tool used to measure the indicators of ‘function’ sub-set. Results are as expected implies high scores. The visual represents a convex shape that highlights positive attributes related with function. Since sub-set includes only 3 indicators, the shape is not aligned with the pentagonal, however, studied indicators provide such high scores that ‘function’ set is found optimum.

Comparative Analysis

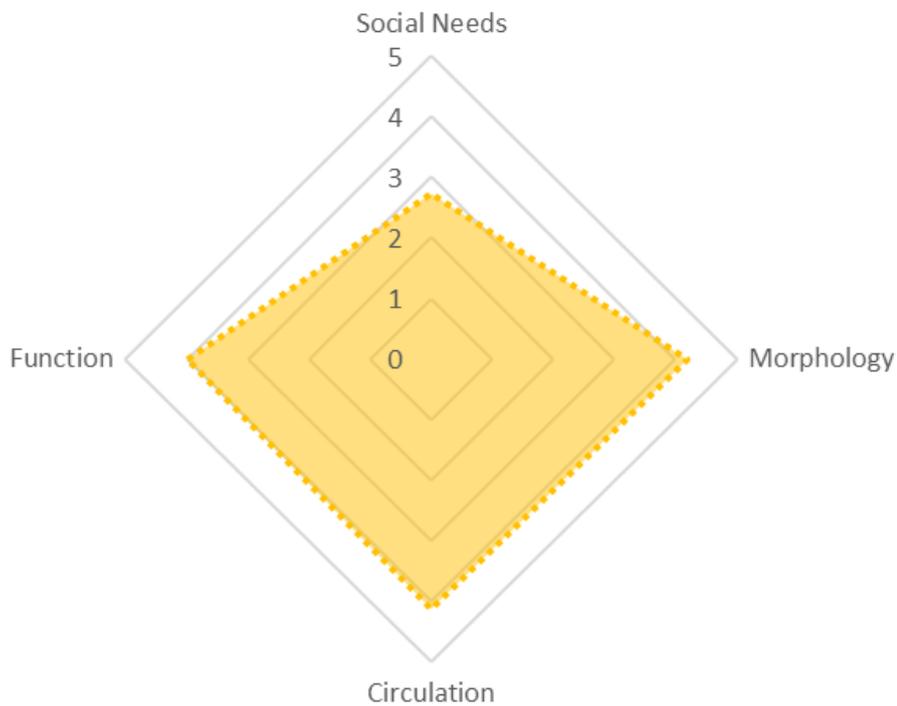


Figure 5.34. Comparative Analysis for 4 Indicators Examined in Case Study

Comparative analysis combines all previous information gathered from all research tools applied. At the first look, 'social needs' is significantly different than 'morphology, function and circulation' that are under 'built environment' which seems to have a very balanced inner coherence in visual representation. That would acquire the information that, 'built environment' is in similar trend and shape with each of its indicators. In such a condition 'social needs' are to investigate with other 'social' sub-sets that are 'visual and perceptual'. A general look without other social indicator sub-sets, the shape of overall results is convex and balanced.

Table 5.23. *Research Method Design and Results*

	Indicator	Tool	Method	Score
Social Needs	Safety	Q	1st question of questionnaire	1,46
	Legibility	Q	19-25th questions of questionnaire	3,88
	Interaction	Q	2-4th questions of questionnaire	2,31
	Shelter	DO	Existence of shelter elements	2
	Scale	SA	Sitte and Lynch's optimum scale	5
	Equitability	Q	6th question of questionnaire	1,27
	Accessibility	DO	Observation on site by marking on maps	3
	Meaning	Q	9-18th questions of questionnaire	3,52
	Inclusivity	Q	5th question of questionnaire	3,79
	Relaxation	Q	7th and 8th questions of questionnaire	1,91
Morphology	Street/block structure	SA	Connecting streets, angles and movement	3,5
	Connection of spaces	SA	Marshall's street structures and connections	4,5
	Locality	DO	Coherence of design and material selection	5
	Typology of building	DO	Architectural elements and their qualities	4,5
	Enclosure	SA	Sitte, Carmona, Jacobs, Ewing and Hardy's ratios	3,5
Circulation	Permeability	SA	Nolli map, figure-ground relationship	3,5
	Accessibility	DO	Public transport, private car and pedestrian movement	4,5
	Continuity	DO	Existence of obstacles, slopes, walls and stairs	3,5
	Movement	DO	Active and passive movement patterns	5
	Mixed-use	DO	Different functions and landuses enhancing vitality	4,5
Function	Variety	DO	Different activities performed by users in the square	3,5
	Vitality	DO	Usage of places in Ulus, around the square	4
			Average=3,529	

Tested Indicators

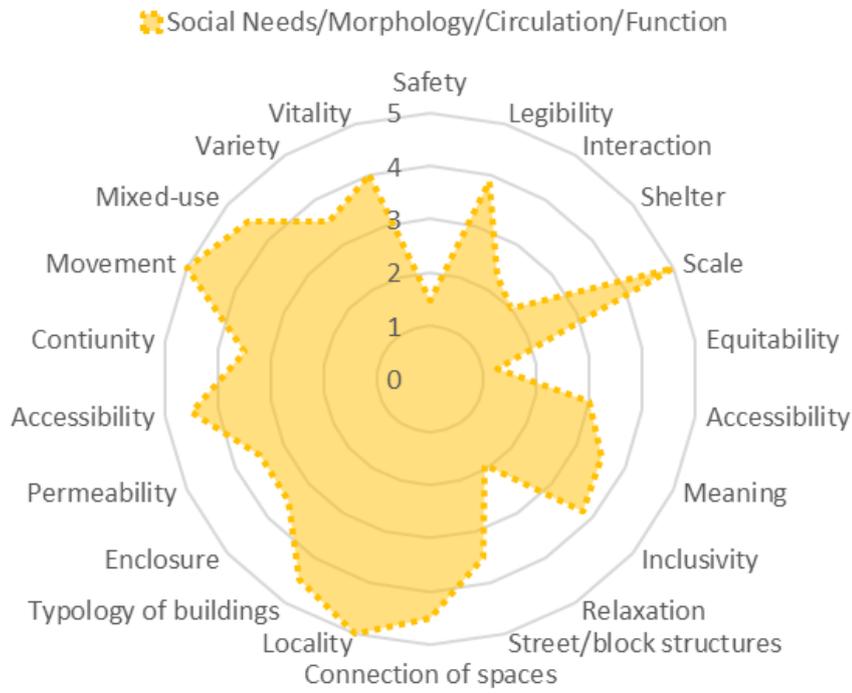


Figure 5.35. All Indicators Subject to Ulus Square Case Study

All the indicators that are examined within this research and their quantitative results are expressed via a cobweb diagram in Figure 5.35. Major indicator groups; sub-sets and the individual indicators are shown together in order to obtain a holistic approach on sustainability of Ulus Square. As it is mentioned before, size of the shape is linked to overall sustainability whereas the lacking points does not directly mean that subjects are unsustainable. The amorphous shape, eases to read the current situation of the square, shows the immediate in need points and also points with highest score by all means successful indicators through sustainability. By doing so, this research produces a visual end product that is for everyone to wonder the such qualities and their levels in Ulus Square.

In literature review, starting from the history of public spaces leading to sustainable public space design, qualities of creating successful spaces in terms of sustainability studied. The produced model for sustainable public space design identifies the criteria of such public spaces for their evaluation. Application and evaluation are together detailed via case study. As a result, projection of the theoretical study is shown with Figure 5.35 in a comprehensive manner. It is deduced that; ‘built environment’ conditions of the designed space perform within a balance and coherence. The most fluctuated variables are belonging to social conditions that is normal, considering the complexity of social relations and behaviors. Information gathered from questionnaire, provided the knowledge of image and meaning of the square in user’s mind. National values are found out to be assigned to the space and further the boundaries of the square, Ulus district in general is matched with the historic and cultural values for people. Not all the variables are studied strictly within the boundaries of the square since it is an inseparable part of what Ulus evokes in mind. It is certain that, exemplification of the all variables defined with the model would provide detailed information on other aspects of sustainable design. That also means, discovering social structure further along with perception and visuality sub-sets. Then, it would be possible to cover the broader structure of sustainability and the advantaged and disadvantaged variables specifically determined for Ulus case study.

There is always a better, more sustainable places. What encourages this research is the endless work and attempts are applicable if the subject is sustainability. In all means, design must be leading to find better solutions for problems.

CHAPTER 6

CONSLUSION

This thesis focuses on sustainability of public space design criteria with a proposal of a parametrical model on a selected case study. Flow of the study starts with literature, continues with design of the model and its application. At the final step, information is organized according to the key findings of case study. The process is summarized with its purposes as follows:

In literature, sustainable development is studied with place-making theory. Place making itself deals with the form and impact while sustainability works with people and places and provides “selection of right actions sustainability goals” (Myrick, 2011).

Sustainable design is a long journey that has just begun. Just like in the test tube example, humanity in its long-life span reached the consciousness in last decades. Effects of damage given to nature, physical impacts that are almost impossible to avoid with the industrialization, pushed people to realize the situation. This thesis starts with the Greek agora qualities after 4th century. The time span between Greek polis and industrial city and industrial city to modern cities examples emphasize the speed of humanity in not being in harmony with its nature. Realization of damage and seeking ways of preserving it brought environmental determinism and environmental design. For example, *Silent Spring* by Rachel Carson (1962) was one of that attempts to draw attention on environmental issues.

In this thesis, history of public spaces and nature is to see the extent of sustainability studies within a spatial context while searching the need and the meaning of term ‘sustainability’. This research focuses on a selected time period, defines framework of

the research, that requires historical references. Defining sustainability as a philosophy, its boundaries are drawn. Later on, parts of sustainability and sustainable development is studied. Revealing the components of it, is the node of an urban design approach.

In order to conduct a comprehensive study, the thesis would touch every aspect mentioned and not mentioned in theoretical framework with help of other professionals as urban planners, designers, policy planners, architects, landscape architects and others is believed to upgrade the research with their detailed studies on their fields. Namely, this study approaches the sustainability broad term with urbanistic purposes and examines a young concept; sustainable public space design.

The main research question of the research is: *'What is the model that is composition of criteria/indicator set to achieve a general framework of sustainable public space design?'*

And other sub-questions to support main question are;

- How human and space relation is reflected to design in history?
- What is sustainable public space design? What are the ways to measure sustainability of a place?
- What are the criteria of sustainable public space design? Is sustainability can be tested with scientific methods by identifying qualities of a public space?

Main question searches for a scientific model to measure sustainable design criteria on public spaces. Therefore, a parametrical model that is a composition of selected indicators from literature review is proposed. Scope of the model and definitions of terms are discussed. 3 main research tools are used, and data collected on site; direct observation, spatial analysis and questionnaire. Data collected within methodological classifications and obtained results are reclassified according to the model. By doing so, research questions are answered throughout flow of the thesis.

As methodology, the thesis aims to systemize obtained information. This is a necessary situation for the sustainability. In terms of production, study aims to define a guideline/set of parameters for a holistic model. To do this, theory is used as an inventory of database. Previously collected data about sustainable public spaces studied which is an important factor for the accuracy of the research. Applied-evaluated approach is used on a case study is the addition to theoretical study with parametrical model that draws a conceptual framework. Case study is therefore, the selected research methodology, it is used to convert qualitative type of data to quantitative data and allows to a comprehensive evaluation. In the basic sense, place making concepts and sustainable design concepts are interpreted together to reveal the relationships among them and to reorganize them. First research by design is done to detect indicators and indicator sets and then with the application of the case study, design by research is done to reach the ultimate goal; sustainable public spaces.

Considering traditions of thought expressed by Carmona et al. (2003, p.6) there are 3 main traditions; “visual-artistic tradition that is highly related with form (Sitte, Cullen, Le Corbusier and many others are considered in this group) ‘social usage’ tradition related with function and perception of the space (Lynch, Jacobs, Alexander and others) and the last one is ‘place making’ that is the seemed to subject the components of the city and their relations and aims to produce successful spaces”. Sustainable urban design is the last step of all these traditions that is accepted as a need for contemporary city that is a natural result of these processes. In this thesis, all traditions are examined with their pros and cons and adopted to SPSD indicators.

“Place identifies across property lines often irrelevant to the experiential sense of place. But design of property lines, designers can increase the ‘place potential’ (Carmona et al., 2010, p.123)”. The design-based approach is preferred since the public space, in this case Ulus Square represents an entity that is produced with design and common meanings that is assigned to space.

Public spaces are the core of this study. Why should we sustain public spaces? They have many benefits; social, economic, psychologic, physical, biologic etc. among all, they are the places that are the grounds for production of common meanings, values are produced. Public space is the place that ‘gather’s people together. That’s why, the research is based on the publicness of the space. Regardless of the type of public spaces, the target is to produce a ‘point of view’. What is essential is the publicness.

About publicness, when the roots are searched, sustainability and publicness relation is possible to be discussed based on the Cicero’s definition of *res publica*. “The *res publica* is therefore,’ said Africanus, ‘the property of the people. But a people are not any collection of human beings brought together in any sort of way, but an assemblage of people in large numbers associated in an agreement with respect to justice and a partnership for the common good” (Cic. Rep. 1.39, As cited by Hodgson, 2016, p.7). Kruschwitz (2013), relates the Cicero’s idea on people assemble with sustainability: “*Res publica* as the common welfare of people (*populi* as mentioned by Cicero), people, common agreement and shared usefulness are the producers of sustainability of governance that is the *prima causa*, the reason of people gathering together”. That is in-between point of *res publica* and the state, so if the conditions of *prima causa* is not responded within institutions and state, then is it possible to expect any sustainability? It may be the political perspective along with economic changes that is the main factor of change experienced in a place. Requirements of *res publica* as place of people, as a spatial unit then, are connected ideologically with the philosophy of sustainability.

In case of Uluş there are demolition decisions made on precise buildings and places. Ownership patterns that belong to the municipality are at the center point of discussions. These decisions are not dependent only on the landowner. Uluş Square is a heritage that is common welfare of all people, not only people of Ankara but every people who is somehow involved with the place. It is very contradictory for a public place studied under sustainable design is the subject of demolition decisions and

reproduction with replica functions while losing its locality and authenticity by homogenization of space. So, in this sense, is it really expected that the space reproduces itself with rebuilding physical structures? On the contrary, it affects basic social relations along with spatial entities and thus causes interpretation of as Harvey (1991) defines 'throw away society'. Rather than, enhancing the existing values, destroying the old and building new onto it only erases the traces of the actual structure that is the place of what is wished to be sustained. Namely, reproduction of the space is not possible with the process that is ongoing now. Instead, reorganization, small design interventions, policy regulations is enough to recover the damage done. This study bases the last phase of the Ulus Square, after 60's. Because the visual reflection of modernity of young republican city and the community's building sense of belonging is completed at that period with the construction of Ulus Office Block and other buildings that are definers of the square. It must not to be underestimated the meaning behind each and every building and the square as an inseparable part of that design. Their part in history of Ankara is undeniable. Being in memories of every person that experienced space, the place has historic and cultural assets dating back to Roman empire. How it is possible to let the space vanish even the space is selected as a case study with its convenience to be a sustainable public space. The change wanted to applied is not be limited with morphological qualities, economic and politic changes are involved to process. It is an ordinary situation for all spaces, that happens with time. But those effects brought by time are possible to be limited by the establishment of collective conscious.

In other words, studying SPSD for such a space is the 'art of revealing the process of change' over time. For Ulus, we must protect what needs to be protected 'rather than continuously reinventing'. The square is an iconic place with memorable architecture and the monument is unique as it is the first statue of the Republican Turkey. Not only with the meaning, existentially it has undeniable importance. Rather than unending renovations which in all means should not be demolishing old one and building a new one is not the right attitude towards a sustainable place.

At the final stage of thesis, cobweb diagrams are used for visual representation of results gathered from direct observation, spatial analysis and questionnaires. Key findings of the results are mentioned. First look at the diagrams indicates that ‘social needs’ sub-set is the one with relatively lower scores. It is an expected result, since it depends on people’s perception and is the mean number of multiple respondents. Other research tools also use a grading system, but they are based on the observation and analysis of researcher. Every indicator that needs intervention are seen on diagram with points closer to origin.

6.1. Scope and Limitation

The thesis uses a ‘parametrical model’ as a tool. The model covers urban design concepts to address the lacking points of sustainable design. However, it is not possible to produce a single model that parametrize and address every aspect of a space. Actually, the aim is removing the barriers of creativity of designer. The tool allows one to organize the model to produce more successful examples. This research is a guideline in the road of reaching sustainable design. Targeting, ‘being more comprehensive in scope and holistic approach’ is both in the content of scope and also limitation. Place is integral part of life, namely it cannot be studied without context of everyday life.

In brief, in such a subject, it cannot be expected to provide a common agreement. Researcher does not have absolute information and resources. Especially, studies including a social dimension are not accurate if the source is the researcher’s inventory. In the final diagrams, the intervention points are highlighted. But as a limitation this thesis provide information only to detect that areas. Necessary actions and policies are not included, rather leaved to be subject of a further research. In other words, this study is the first part of a broader study. For the second step some suggestions that have dependent factors as; type of public space (model is produced

regardless of public space type but actions are in direct relationship with the type of the public space), scale (actions are dependent on the scale, small interventions or more comprehensive policy making are two examples in extreme points) and vision (that is the road map through a wished future and ordered actions for it).

6.2. On Future

“Architecture and communities, we build, will be the largest single artifacts we will leave to future” (McLennan, 2004, p.241). As the meaningful togetherness of architectural elements, urbanism in future will be sustainable. What is needed is to take responsibility not only environmentally, but in all means to encourage adaptation to change to sustain it.

This study is retrospective and refers to the situation of 1960 and afterwards. For the further studies a more comprehensive approach, with retrospective (including previous periods) and prospective studies would create a whole understanding for the research.

Looking over the developments at last decades, sustainable development came a long way. From pure environmental determinism to ‘creating better environments for people with people’ is a whole new understanding. Rapid increasing innovations and technology is expected to continue in World. As in the case of modernity-post modernity shift, time and space relations are expected to change according to the change happen in the other aspects of life. It was a similar case with the experience of Industrialization. It was the time that technological break down affected the life pattern and consequently spatial organization of settlements. In the future what is expected has no difference. With the technological developments, sustainable design will be met at an optimum level. Increasing demand of the world, and with the increasing attention paid by agencies, governmental institutions and international organizations,

agenda will turn to sustainable design directly. Future is, has to be and will be sustainable.

REFERENCES

50 Yıllık Yaşantımız 1923-1973 (1975), c.1 Milliyet Yayınları.

Abrams, R.(2003), 'Byker revisited', Built Environment, 29, 117-31

Akkar Ercan, M. (2007) *Public spaces of post-industrial cities and their changing roles*. METU Journal of Faculty of Architecture. 24(1): 115-137.

Alberti, M., (July-November 1996), *Measuring Urban Sustainability*. Environmental Impact Assessment Review, Volume 16, 4-6, p.381-424

Al-Hagla K. (2008). *Towards A Sustainable Neighbourhood: the role of open spaces*. International Journal of Architectural Research 2008;2(2):162–77.

Altan, E., (2004), *Ulus Meydanı ve Çevresinin Mimarlık Tarihi'ndeki Yeri Üzerine Bir Değerlendirme*, Unpublished Paper.

Arcadis, (2018) Citizen Centric Cities Sustainable City Index Report. (2018) https://www.arcadis.com/media/1/D/5/%7B1D5AE7E2-A348-4B6E-B1D7-6D94FA7D7567%7DSustainable_Cities_Index_2018_Arcadis.pdf

Arcadis, (2016), Sustainable Cities Index Report 2016, retrieved from: <https://www.arcadis.com/en/global/our-perspectives/sustainable-cities-index-2016/>

Asar, B. (2012). *Ankara Ulus tarihi kent merkezindeki ticaret binalarının değişimi ve mekânsal analizi* (Master Thesis, Selçuk Üniversitesi Fen Bilimleri Enstitüsü)

Bademli, R. R. (2005). *Kentsel planlama ve tasarım öğrencilerine notlar*. TMMOB Şehir Plancıları Odası.

- Balım, P. (2005). Ankara'daki Otellerin Gelişimi ve Değişimi, *Yüksek Lisans Tezi*, Gazi Üniversitesi Fen Bilimler Enstitüsü Mimarlık, Ankara
- Barlas, M. A. (2006). *Urban Streets & Urban Rituals*. Middle East Technical University Faculty of Architecture.
- Başbütüner, F. (December 2010). *Urban Fissure: Reconceptualization Of The Land Walls Within The Urban Milieu Of İstanbul*.
- Benevolo, L. (1993). *La città nella storia d'Europa*, [translated by N. Nirven, 2006], Rome
- Bruntland, G. (1987). *Our Common Future: The World Commission on Environment and Development*. Oxford University Press, Oxford.
- Buckless, F. A., & Ravenscroft, S. P. (1990). *Contrast coding: A refinement of ANOVA in behavioral analysis*. *Accounting Review*, 933-945.
- Büyüköztürk, Ş., 2002, Anket Geliştirme Unpublished Lecture Notes, Ankara, Ankara University Faculty of Educational Sciences
- Cafuta, M.R., 2015, *Open Space Evaluation Methodology and Three-Dimensional Evaluation Model as a Base for Sustainable Development Tracking*. *Sustainability*, 7, 13690-13712.
- Carmona M. (2009). *Sustainable Urban Design: Definitions and Delivery* International Journal for Sustainable Development, 12(1): 48-77
- Carmona, M. (2003). *Public places, urban spaces: The dimensions of urban design*. Oxford: Architectural Press.
- Carmona, M. (2010a). *Contemporary public space: Critique and classification*, Part One: Critique. *Journal of Urban Design*, Vol. 15, 123–148.

- Carmona, M., De Magalhaes, C., and Hammond, L. (2008). *Public Space: The Management Dimension*. London, UK: Routledge.
- Carmona, M., Tiesdell, S., Heath, T., & Oc, T. (2010). *Public Places, Urban Spaces: The dimensions of urban design* (2nd ed.). Oxford, UK: Architectural Press.
- Carr, S., Francis, M., Rivlin, L. G., and Stone, A. M. (1992) *Public Space*. Cambridge, UK: Cambridge University Press.
- Carson, R. (2002). *Silent spring*. Houghton Mifflin Harcourt.
- Childe, V. G. (1950). *The Urban Revolution*, *Town Planning Review*, 21, 3–17.
- City of Raleigh (NC). (2002). *Urban Design Guidelines*. Raleigh Comprehensive Plan: 3-5.31. Available at www.raleigh-nc.org/planning/CP/Text/Chapter_03/PART%20%20URBAN%20DESIGN%20GUIDELINES.PDF
- City of Sydney. (2015). *Sustainable Sydney 2030 Community Strategic Plan*. [online] Available at: http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0005/209876/Community-strategic-plan-2014.pdf
- City of Sydney. (2017), *Sustainable Design Technical Guideline*. [online] Available at: https://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0014/310073/2017-306818-FINAL-SDTG-Sustainable-Design-Technical-Guideline-COS-Final_V1.3-accessible.PDF
- Coisson E., Del Lestro, S., Gherri, B. (2016). Sustainable Redevelopment of Public Spaces in City Centres: A Bioclimatic Approach. Paper presented at World Multidisciplinary Civil Engineering-Architecture-

Urban Planning Symposium 2016, Prague, Czech Republic,
WMCAUS 2016

- Coplák, J., Rakšányi, P., 2003, Planning Sustainable Settlements, Handbook Based On The Partial Results Of The Ec Research Project “Ecocity – Urban Development Towards Appropriate Structures For Sustainable Transport”, Slovak University of Technology, Bratislava
- Cowley, R. (2015). Reframing the Problem of Public Space in the Sustainable City. *RC21 (Research Committee 21), The Ideal City: between myth and reality. Representations, policies, contradictions and challenges for tomorrow's urban life, Urbino, Italy, 27-29.*
- Cranz, G. (1982). *The Politics of Park Design: A History of Urban Parks in America*. Cambridge MA: MIT Press.
- Cronbach, L. J. (1951). Coefficient Alpha And The Internal Structure Of Tests. *Psychometrika*, 16(3), 297-334.
- Crouch, D. P. (1981). *The Historical Development Of Urban Open Space*. In L. Taylor, editor, *Urban Open Spaces*. New York, NY: Rizzoli, 7–8.
- Dagenhart, R. and Sawicki, D. (1994). *If urban design is everything, maybe its nothing*, *Journal of Planning Education & Research*, 13, 143-6.
- Darka, S., 2003, 15-19. Yüzyıl Ankara Hanlarında İşlevsel Dönüşümler, Yüksek Lisans Tezi, *Gazi Üniversitesi Fen Bilimleri Enstitüsü Mimarlık Fakültesi*, Ankara
- Koseoglu, E., Onder, D.E.. (2011). *Subjective and objective dimensions of spatial legibility*, *Procedia Soc. Behav. Sci.*, 30, pp. 1191-1195, [10.1016/j.sbspro.2011.10.231](https://doi.org/10.1016/j.sbspro.2011.10.231)
- Early, D. (1993). *What is sustainable Design*, *The Urban Ecology*, Society of Urban Ecology, Berkeley

- Easthope, H., Mcnamara, N., (2013), Measuring Social Interaction and Social Cohesion in a High Density Urban Renewal Area: The Case of Green Square, State of Australian Cities Conference, Sydney, January 2013.
- Engels, F., 1820-1895. (1892). *The Condition of the Working-class in England in 1844 with preface written in 1892* : By Frederick Engels Translated by Florence Kelley Wischnewetzky. London :Swan Sonnenschein & Co. Peternoster Square
- Ersoy, M., 2007, *Kent Planlama Kuramları*, Imge Kitapevi Yayınları
- Eurostat,(2006), Eurostat Experience In Measuring Sustainable Development And Goals For The Wg, Working Paper No. 11, First meeting of the Joint UNECE/OECD/Eurostat Working Group on Statistics for Sustainable Development, Luxembourg, 3-4 April 2006.
- European Commission. (2015). Science for Environment Policy In-depth Report: Indicators for Sustainable Cities (eds.) by the Science Communication Unit, University of the West of England (UWE), Bristol
- Ewing, R. H., & Clemente, O. (2013). *Measuring urban design: Metrics for livable places*.
- Ewing, R., & Handy, S. (2009). Measuring The Unmeasurable: Urban Design Qualities Related To Walkability. *Journal of Urban design*, 14(1), 65-84.
- Farr, D. (2008). *Sustainable Urbanism: Urban design with nature*.
- Fidel, R. (1984). The Case Study Method: A Case Study. *Library and Information Science Research*, 6(3), 273-288.

- Fleisher, J.B., Wynne-Jones, S., 2010. Archaeological Investigations at Songo Mnara, Tanzania: Urban Space, Social Memory and Materiality on the 15th- and 16th-century Southern Swahili
- Fromm, E. (1973). *The Anatomy of Human Destructiveness*.
- Gabrielsen, P. & Bosch, P. (2003) *Environmental Indicators: Typology And Use In Reporting*. EEA, Copenhagen.
- Gedikli, B. (2007). Stratejik Mekansal Planlama: Planlamada Yeni Anlayışlar, Yöntemler ve Teknikler. "*Kentsel Planlama Kuramları*", p. 229-277.
- Gehl K and Greenhalgh L (1996) *The Freedom of the City*. Demos, London
- Gehl, J, and L, Gemzøe (2000) *New City Spaces*, Copenhagen, The Danish Architectural Press.
- Gehl, J. (1987). *Life Between Buildings: Using Public Space*. New York: Van Nostrand Reinhold.
- Gehl, J. (2010) *Cities for people*. Covelo: Island Press (2010)
- Gehl, J. and L. Gemzøe (1996) *Public Spaces, Public Life*, Copenhagen, The Royal Danish Academy.
- Ghavampour, E., Vale, B., (2013) *Sustainability in Public Space and the Changing View of Nature*, Melbourne
- Gilbert, O.L.(1989), *The Ecology of Urban Habitats*, London, Chapman&Hall.
- Glacken, C. J. (1967). *Traces on the Rhodian shore: Nature and culture in Western thought from ancient times to the end of the eighteenth century* (Vol. 170). University of California Press.
- Günay, B., (1999). *Urban Design Is A Public Policy*. Ankara, Turkey: METU Faculty of Architecture Press.

- Güven, S., (1998). "Displaying the Res Gestae of Augustus", *Journal of Society of Architectural Historians*, Vol. 57, No. 1, pp. 30-45.
- Habermas, J. (1962). *The Structural Transformation of the Public Sphere* [translated by T. Burger and F. Lawrence, 1989]. Cambridge, MA: MIT Press.
- Hall, P. (1998). *Cities in Civilisation*, London, Weidenfeld & Nicolson.
- Halpern, D. (1995). *Mental Health and the Built Environment*, London, Taylor and Francis.
- Halpern, D. (1995). *Mental Health and the Built Environment*, London, Taylor and Francis.
- Hartig, T., G.W. Evans, L.D. Jamner, D.S. Davis and T. Garling. (2003). 'Tracking restoration in natural and urban field settings', *Journal of Environmental Psychology* 23(2): 109–23.
- Harvey, D. (1989). *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change*. Oxford, UK: Blackwell.
- Harvey, D. (1991). *The condition of postmodernity* (Vol. 14). Oxford: Blackwell.
- Hawking, S., (1998 first edition, 2017). *A brief history of time*. New York :Bantam Books
- Hebbert, M.,(2008), Re-Enclosure Of The Urban Picturesque: Green space transformations in post-modern urbanism. *Town Planning Review*, 79(1) pp. 31-59
- Hodgson, L. (2016). *Res Publica and the Roman Republic: 'Without Body Or Form'*. Oxford University Press.

- IUCN/UNEP/WWF. (1991). *Caring for the Earth: A Strategy for Sustainable Living*. Switzerland: Gland.
- Jabareen, Y. R. (2006). Sustainable Urban Forms: Their Typologies, Models, and Concepts. *Journal of Planning Education and Research*, 26(1), 38–52. <https://doi.org/10.1177/0739456X05285119>.
- Jacobs, A. 1993. *Great Streets*. Cambridge, MA: MIT Press.
- Jacobs, J. (1992). *The Death And Life Of Great American Cities*. 1961. New York: Vintage.
- Kahraman Z. E. (2017). Kent Sosyolojisine Giriş (Introduction to Urban Sociology), In *Şehir Planlamaya Giriş* (Introduction to City Planning), Eds. Suna S. Özdemir, Burcu Özdemir Sarı ve Nil Duruöz Uzun .İmge Kitapevi, 329-359.
- Kazimee, B. A. (2002). Sustainable Urban Design Paradigm: Twenty-Five Simple Things To Do To Make An Urban Neighborhood Sustainable. *WIT Transactions on Ecology and the Environment*, 54.
- Kent, F. (2015, April 21). Reframing the Environmental Movement with Placemaking. Retrieved from <https://www.pps.org/article/happy-earth-day-reframing-the-environmental-movement>
- Keynes, J. M. (1923). *A tract on monetary reform*. London: Macmillan and Co., Limited., 80-82.
- Kim, J.J. and Rigdon, B. (1998) Sustainable Architecture Module: Introduction to Sustainable Design. National Pollution Prevention Center for Higher Education. The University of Michigan, Michigan, 8-15.
- Kim, S., Kwon,H., 2018. "[Urban Sustainability through Public Architecture](#)," [Sustainability](#), MDPI, Open Access Journal, vol. 10(4), pages 1-21, April.

- Kıncal, R.Y. (2010). *Bilimsel Araştırma Yöntemleri*, Ankara, Nobel Yayınları.
- King, R.,1999, Sustainable Urban Design. In Foong Foo, Belinda Yuen, Belinda K. P. Yuen (eds) *Sustainable Cities in 21th Century*, pp. 81-99, Faculty of Architecture, Building and Real Estate National University of Singapur
- Knox, P. L. (1984). Symbolism, styles and settings: the built environment and the imperatives of urbanized capitalism. *Architecture and Behaviour*, 2(2), 107-122.
- Kostof, S., & Castillo, G. (1995). *A History of Architecture: Settings and rituals*. New York: Oxford University Press.
- KPMG. (April 25 2016). The Future of Cities; Measuring Sustainability
- Kreiser, K. (2010). Heykeller ve Anıtlar. Retrieved from <http://www.goethe.de/ins/tr/ank/prj/urs/geb/mon/trindex.htm>
- Krier, L. (1979), *The Cities Within A City*, Architectural Design, 49, 1 9-32.
- Krier, R. (1990), Typological Elements Of The Concept Of Urban Space, İn Papadakis, A. and Watson, H . (1990) (eds), *New Classicism: Omnibus Edition*, Academy Editions, London, pp. 212-19.
- Kruschwitz, P. (2013, October 23). Cicero, On Sustainable Government. Retrieved from <https://thepetrifiedmuse.blog/2013/10/23/cicero-on-sustainable-government/>
- Kunstler, J. H. (1993). *The geography of nowhere: The rise and decline of America's man-made landscape*. New York: Simon & Schuster.
- Kürkçü, G., (2019). *Anafartalar Documentary*. Ankara
- Lang, J. (1994) *Urban Design; The American Experience*. Van Nostrand Reinhold, New York, p.348.

- Le Corbusier, & International Congresses for Modern Architecture. (1973).
The Athens Charter. New York: Grossman Publishers.
- Le Corbusier, Cahiers, June 4 1934
- Levy B. (2012). Urban Square as the Place of History, Memory, Identity, In :
 Dusica Drazic, Slavica Radisic, Marijana Simu (eds), *Memory of the
 City*, Kulturklammer, Belgrade, p. 156-173.
- Littlefair, P.J., Santamouris, M., Alvarez, S., Dupagne, A., Hall, D., Teller, J.,
 Coronel, J.F. and Papanikolaou, N. (2000), *Environmental site layout
 planning: Solar access, microclimate and passive cooling in urban
 areas*, BRE/European Commission JOULE/DETR, London.
- LIU, C.2013. *Research On Scale Of Urban Squares In Copenhagen*. Master of
 Science Programme in Spatial Planning with an emphasis on Urban
 Design in China and Europe
- Lovelock, J. (2000). *Gaia: A new look at life on earth*. Oxford: Oxford
 University Press.
- Low, S., & Smith, N. (Eds.). (2013). *The politics of public space*. Routledge.
- Luther, M. and D. Gruehn. (2001). 'Putting A Price On Urban Green Spaces',
Landscape Design, 303: 23–5.
- Lylykangas, K. (2016 October). *How To Measure Sustainability? The
 Assessment Of Sustainability In Construction And Architecture*.
 Presentation at SBE16 Conference, Tallinn and Helsinki.
- Lynch, K. (1960). *The Image of The City*. Cambridge, Mass: MIT Press.
- Lyttelton, M., 1987, *The Design and Planning of Temples and Sanctuaries in
 Asia Minor in the Roman Imperial Period*, in *Roman Architecture in
 the Greek World*, Edited by S. Macready and F.H. Thompson, London,
 38-49

- Macdonald, W.L., 1982, *The Architecture of the Roman Empire: An Urban Appraisal*, Yale University Press
- Madanipour, A. (1996). *Design Of Urban Space: An Inquiry Into A Socio-Spatial process*. Chichester: Wiley.
- Madanipour, A. (1999). ‘Why Are The Design And Development Of Public Spaces Significant For Cities?’, *Environment and Planning B: Planning and Design*, 26(6): 879–91.
- Madanipour, A., 2003. *Public and private spaces of the city*. Routledge, London; New York.
- Magdi, Shaimaa. (2014). *Towards a Successful Sustainable Public Space: A parametrical Approach to strengthen sense of Place Identity (An Egyptian Case Study)*. *Global Built Environment Review*.
- Marcus, C.C & Francis, C. (1998) *People Places: Design guidelines for urban open space*. 2nd edition, Canada: John Wiley & Sons, Inc.
- Marshall, P. (2017, March 2). *London’s Paternoster Square - owned by Mitsubishi Estate - was closed during the Occupy protests of 2011* [Photograph found in London]. Retrieved from <https://www.architectural-review.com/essays/typology-public-square/10017533.article>.
- Marshall, S. (2005). *Streets & patterns*. Spon Press, Oxon.
- McDonough, W., 1993, *Design, Ecology, Ethics And The Making Of Things: Centennial Sermon On The 100th Anniversary Of The Cathedral of St. John the Divine, New York City, February 7 1993*; <http://www.mcdonough.com>

- McHarg, I. L., & American Museum of Natural History. (1971). *Design with Nature*. New York: Published for the American Museum of Natural History.
- McLennan, J. F. (2004). *The Philosophy of Sustainable Design: The future of architecture*. Kansas City, Mo: Ecotone.
- McLeod, S. (2007). Maslow's Hierarchy Of Needs. *Simply psychology, 1*.
- Mehta, V. (2014). Evaluating Public Space. *Journal of Urban design, 19*(1), 53-88.
- Memluk, M.Z. (2013). Designing Urban Squares. In *Advances in Landscape Architecture*; Özyavuz, M., Ed.; InTech: Rijeka, Croatia.
- Montgomery, J. (1998). Making A City: Urbanity, Vitality And Urban Design. *Journal of urban design, 3*(1), 93-116.
- Moughtin, C. (2007). *Urban design: street and square*. Routledge.
- Mumford, L. (1961) *The City in History: Its Origins, its Transformation, and its Prospects*, New York, Harcourt Brace Jovanovich.
- Myrick, P. (2011, April 21). The Power of Place: A New Dimension for Sustainable Development. Retrieved from <https://www.pps.org/article/the-power-of-place-a-new-dimension-for-sustainable-development>
- Nalbant, K. (n.d.). ULUS “Bir başka” güzelleşecek şimdi! Retrieved from <http://www.mimarlarodasiankara.org/?id=1454>. New York: Oxford University Press.
- O. Olanescu, M. Agachi, (2015), *Acta Technica Napocensis: Civil Engineering & Architecture* Vol.58 No4, 31-47

- Onions, Charles, T. (ed) (1964). *The Shorter Oxford English Dictionary*. Oxford: [Clarendon Press](#). p. 2095.
- Onions, J.,1979, *Art and Thought in the Hellenistic age: The Greek World View, 350-50 B.C.*, London
- Phillips, P.L. (2000) *Real Estate Impacts of Urban Parks*, Issue Paper, Washington, DC, Economic Research Associates.
- Plaza. (n.d.), In Online Etymology Dictionary. Retrieved from: <https://www.etymonline.com/search?q=plaza>.
- Porta S. (1999), *The Community and Public Spaces: Ecological Thinking, Mobility and Social Life in the Open Spaces of the City of the Future*, «Futures, The Journal of Forecasting, Planning and Policy», 31 4.
- Pound, R. (1959). *Jurisprudence* , Vol II Part 3, Minnesota West Publishing Co.
- PPS (Project for Public Spaces)., (2011), What is Sustainable? (2011 May 1) , retrieved from: <https://www.pps.org/article/what-is-sustainable>.
- PPS (Project for Public Spaces)., What Makes a Successful Place?; What is Place-making?, retrieved from: <https://www.pps.org/article/grplacefeat>
- Raubal, M. & Winter, S. (2002). Enriching wayfinding instructions with local landmarks. *Geographic Information Science*, Volume 2478, Springer, Berlin / Heidelberg.
- Reiter S. (2004). “Correspondences Between The Conception Principles Of Sustainable Public Spaces And The Criteria Of outdoor Comfort”, Plea2004 - The 21th Conference on Passive and Low Energy Architecture. Eindhoven, The Netherlands, 19 – 22 September 2004
Page 1 of 6.

- Rogers, E.B. (2001). *Landscape Design: A Cultural And Architectural History*. New York : Harry N. Abrams, <http://www.loc.gov/catdir/toc/fy031/00048480.html>
- Ryser, J. (2014, May). Planning Smart Cities.... Sustainable, Healthy, Liveable, Creative Cities... Or Just Planning Cities? In *REAL CORP 2014–PLAN IT SMART! Clever Solutions for Smart Cities. Proceedings of 19th International Conference on Urban Planning, Regional Development and Information Society* (pp. 447-456). CORP–Competence Center of Urban and Regional Planning.
- Sanei, M., Khodadad, M. and Ghadim, F.P. (2017) Effective Instructions in Design Process of Urban Public Spaces to Promote Sustainable Development. *World Journal of Engineering and Technology*, 5, 241-253. <https://doi.org/10.4236/wjet.2017.52019>
- Sennett, R. (1977). *The Fall of Public Man*. Cambridge: Cambridge University Press.
- Seyidođlu, H., (1993) *Bilimsel Arařtırma ve Yazma El kitabı*, 5th ed., Istanbul: Güzem Can Yayınları
- Shaftoe, H., & International Institute for Environment and Development. (2008). *Convivial urban spaces: Creating effective public places*.
- Sharifi, A.; Murayama, A. (2013). A Critical Review Of Seven Selected Neighborhood Sustainability Assessment Tools. *Environ. Impact Assess. Rev.* 38, 73–87.
- Shashua-Bar, L. and M.E. Hoffman (2000) ‘Vegetation as a climatic component in the design of an urban street: An empirical model for predicting the cooling effect of urban green areas with trees’, *Energy and Buildings*, 31(3): 221–35.
- Shedroff, N. (2009). *Design is the problem: the future of design must be sustainable*. Rosenfeld Media.

- Sitte, C. (1889), *City Planning According to Artistic Principles* (translated by Collins, G.R. and Collins, C.C., (1965), Phaidon Press, London.
- Smalheiser, N. (2017). *Data literacy: How to make your experiments robust and reproducible*. Academic Press.
- Sönmez, S. (2014, June 28). 23 Aralık 1947 MEB Yangını: Hindemith belgeleri de burada yanmıştı... Retrieved from <http://www.sanattanyansimalar.com/yazarlar/savas-sonmez/23-aralik-1947-meb-yangini-hindemith-belgeleri-de-burada-yanmisti/136/>.
- Sonne, W.,1993, Der politische Aspekt von Architektur , in Die Griechisch Polis: Architektur und Politik, Tübingen, 11-16
- Stanley, B.W., Stark, B.L., Johnston, K.L., Smith, M.E. (2012). Urban Open Spaces In Historical Perspective: A Transdisciplinary Typology And Analysis, *Urban Geography*, 33, 8, pp. 1089–1117.
- Stauffer, D. (2011, May 1). What is "Sustainable"? Retrieved from <https://www.pps.org/article/what-is-sustainable>.
- Sustainability | Definition of sustainability in English by Oxford Dictionaries. (n.d.). Retrieved from <https://en.oxforddictionaries.com/definition/sustainability>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, 2, 53.
- The Trust for Public Land (2001) Economic Benefits of Open Space Index (online). New York, The Trust for Public Land. Available from: http://www.tpl.org/tier3_print.cfm?folder_id=727&content_item_id=1147&mod_type=1
- Thomas, E., 2007, *Monumentality and the Roman Empire; Architecture in the Antonine Age*, Oxford University Press, Chapter 6, p.107-126

- Tibbalds, F. (1988a). Ten Command Ments Of Urban Design, The Planner, 74(1 2), 1 .
- Tibbalds, F. (2001), Making People-Friendly Towns: Improving the Public Environment in Towns and Cities, (2nd edn), London, Spon Press.
- Trancik, R. (1986). *Finding Lost Space: Theories of Urban Design*, New York, Van Nostrand Reinhold.
- Tse, J. (2016, December 11). Ankara (1929-35)/ From Paper to Product: Scrapping of the Triumphal Arch and Replacement with the Victory Monument. Retrieved from <http://fac.arch.hku.hk/asian-cities-research/ankara-1929-35-from-paper-to-product-scrapping-of-the-triumphal-arch-and-replacement-with-the-victory-monument/>.
- Tuna: Ulus'ta sıkıntı çekilecek. (2018, October 11). *Hürriyet*. Retrieved from <http://www.hurriyet.com.tr/yerel-haberler/ankara/tuna-ulusta-sikinti-cekilecek-40983304>
- Tunçer, M. (2001). Ankara Şehri Merkez Gelişimi, *T.C. Kültür Bakanlığı Yayınları*, Ankara,19
- Tunnard, C. & Pushkarev, B. (1963). Man-Made America—Chaos or Control? (New Haven, CT: Yale University Press).
- UN General Assembly. (21 October 2015). Transforming Our World : The 2030 Agenda for Sustainable Development
- UN, (2014, July 10). World's Population Increasingly Urban With More Than Half Living In Urban Areas | UN DESA Department of Economic and Social Affairs. Retrieved from <https://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html>.

- UN, (2016, October 21). *New Urban Agenda Adopted at Habitat III* in The United Nations Conference on Housing and Sustainable Urban Development. Retrieved from <https://unhabitat.org/new-urban-agenda-adopted-at-habitat-iii/>.
- UN, 2008, *Measuring Sustainable Development Report* of the Joint UNECE/OECD/Eurostat Working Group on Statistics for Sustainable Development, New York & Geneva
- UN, Human Settlements Programme. (2000). *UN-Habitat annual report*. Nairobi, Kenya: United Nations Human Settlements Programme.
- Upmanis, H. (2000) 'The Park Has Its Own Climate', *Swedish Building Research* 2: 8–10.
- Valentine, G., 2001, *Social Geographies*; Space and Society, Prentice Hall
- Van Melik, R., Van Aalst, I., & Van Weesep, J. (2007). Fear And Fantasy In The Public Domain: The Development Of Secured And Themed Urban Space. *Journal of urban design*, 12(1), 25-42.
- Varna, G., & Tiesdell, S. (2010). Assessing The Publicness Of Public Space: The Star Model Of Publicness. *Journal of Urban Design*, 15(4), 575-598.
- Vernez Moudon, A. (1992). A Catholic Approach To Organizing What Urban Designers Should Know, *Journal of Planning Literature* 6(4): 331-349.
- Walzer, M. (1986). 'Public Space: Pleasures and Costs of Urbanity', *Dissent* 33, 4: 470–475.
- Whitford Ennos, A.R. and J.F. Handley (2001) 'City form and natural process: Indicators for the ecological performance of urban areas and their application to Merseyside, UK', *Landscape and Urban Planning*,

- Whyte, W. H., Municipal Art Society of New York., Street Life Project., Direct Cinema Ltd., & Bainbridge Brass Quintet. (2005). *The social life of small urban spaces*. Santa Monica, CA: Direct Cinema Ltd.
- Woolley, H. (2003). *Urban Open Spaces*. Spon Press, London.
- World Commission On Environment And Development. (1987) *Our common future*, Oxford;
- Wu, J. (2013). Landscape Sustainability Science: Ecosystem Services And Human Well-Being In Changing Landscapes. *Landscape ecology*, 28(6), 999-1023.
- Xiao, S., (2014), Public Space Design for Urban Complex; Public Space Design of the Metropolitan Urban Complex, Xuyong, Luzhou, China (Professional Project Report), Department of Urban and Regional Planning University of Wisconsin-Madison, April 9 2014.
- Xiong, M. (2000). The Architectural Field And The Scale Of Squares. *Creation of Architecture*, 2000: 3
- Yardımcı, S. (2008). *Transformation of Urban Sphere: Hacibayram Square and its Environment, Ankara* (Masters Thesis, Middle East Technical University).
- Yigitcanlar, Tan, Kamruzzaman, Md., & Teriman, Suharto (2015) Neighborhood sustainability assessment : evaluating residential development sustainability in a developing country context. *Sustainability*, 7(3), pp. 2570-2602. <https://doi.org/10.3390/su7032570>
- Yin, R.K., (1984). *Case Study Research: Design and Methods*. Beverly Hills, Calif: Sage Publications.
- [Yurdakul, M.E. \(1939\) Ankara, Mehmet Emin Yurdakul Eserleri, Türk Tarih Kurumu Basım Evi, 1969](#)

Zainal, Z. (2007). Case Study As A Research Method. *Jurnal Kemanusiaan*, 5(1).

Zanker, P. (2010). *The Emperor and Rome; Space, Representation and Ritual*,
Cambridge University Press

Zucker, P. (1970). *Town and Square: From the Agora to the Village Green*.
New York, NY: Columbia University Press.

APPENDICES

A. ANKARA POEM

Türk Gençliğine

Ankara, gerçektir çok yüzler gördü;

Bu şehri zabt için fâtilhler seçti.

Bu şehir, başlara çelenkler ördü;

Bu şehrin içinden alaylar geçti.

Lâkin ey Atatürk, bu ünlü şehre.

Sana eş bir yiğit ayak basmadı;

Târih'i yazan el bur'da bir kerre,

Adına benzeyen bir ad yazmadı.

Zîrâ, sen bu şehre doğru girerken,

Ak saçlı esirler sürüklemedin;

Korkudan titreşip yola dökülen

Çocuğa, kadına, "Ölüm!" demedin.

Bu şehrin önünden sen, Tiranlar'a

Tahkirler yağdırdın, yumruk uzattın,

Sezarlar rûhunu taşıyanlara.

Tanrılar gibi bir yıldırım attın.

Bu şehrin içinde Cumhuriyete

En halkçı bir ruhla ün kazandırdın;

Bir ölün üstünden insâniyete
Bir Yeni İsparta doğdu sandırdın.
Bu şehri fen, san'at timsâlleriyle
“Bir fikir beldesi” diyerek kurdun;
Dehâ'nın şi'r olan hayâlleriyle
Bu şehri yontarak renk, nakış vurdun.
Bir eski dünyâyı yıkmak isteyen
Dehâ'nda yarının rûhunu buldun;
“Taassub ve cehli yık, devir!” deyen
Bir yeni dünyânın öncüsü oldun.

(.....)

Mehmet Emin YURDAKUL

B. Example Indicator Sets for Measuring Sustainability

Categories	Indicators	Calculations	Units	Weights
Environmental	Land use mix	Total land use mix (LUM) value/Total parcel area Where total LUM = $\sum (pk \ln pk) / \ln N$, k = Category of land use; p = proportion of land area devoted to specific land use; N = # of land categories	Index value	5.83
	Dwelling density	Dwelling units/Residential area Where: Residential area include internal street + half width adjoining access roads)	Dwelling unit Per ha.	5.27
	Impervious surfaces	[Total impervious area (TIA)/Total neighborhood area] × 100 Where, TIA = roads, buildings, driveways, sidewalks, drainage, car parks	Percentage	5.21
	Internal connectivity	Total Intersections/(Total Intersections + Cul-de-sac)	Index value	5.86
	External connectivity	Total perimeter length/# entry and exit points	Meter	5.43
	Open space provision	Total open space/total residents	Square meter per person	6.02
	Non-motorized transport	[Total walkway + cycle length]/total street length	Percentage	5.77
Social	Access to public transport	$(EDna/EDa) \times 100$ Where Dna = # of dwellings located within a 600 m of a bus stop; Da = Total dwellings	Percentage	5.86
	Access to education	$(EDna/EDa) \times 100$ Where Dna = # of dwellings located within a 600m of a educational facility; Da = Total dwellings	Percentage	5.77
	Access to local services	$(EDna/EDa) \times 100$ Where: Dna = # of dwellings located within a 600 m of a local service center; Da = Total dwellings	Percentage	5.46
	Access to recreational space	$(EDna/EDa) \times 100$ Where Dna = # of dwellings located within a 400 m of a park; Da = Total dwellings	Percentage	5.64
	Access to community centers	$(EDna/EDa) \times 100$, Where Dna = # of dwellings located within a 600 m of a community center; Da = Total	Percentage	5.24
	Access to emergency services	Average response distance from 3 types of emergency services (i.e., police, ambulance, fire department)	Kilometers	5.08
	Crime prevention and safety	Total length of blind frontage/total frontage length	Percentage	5.8
Economic	Traffic calming	Streets segments with traffic safety measures/total street segments	Percentage	5.14
	Commercial establishment types	Number of diverse types of business activities	Number of types	5.51
	Affordable housing	Total affordable houses/Total residential in study area	Percentage	5.69
	Housing option diversity	$1 - \sum (n/N)^2$, where n = total dwelling is a category, N = total dwellings in all categories	Index value	5.42

Figure 0.1. Neighborhood Sustainability Assessment Index with categories, indicators, measures, units and weights (Yigitcanlar et al., 2015)

Sector	Indicator	Measures
Economy	Unemployment rates/ Jobs	Underemployment/employment/ unemployment rates; Percentage of green jobs in the local economy; Average professional education years of labour force
	Economic growth	Annual GDP growth rate; Annual GNP growth rate; Net Export Growth rates (% increase of country's total exports minus the value of its total imports per annum; Foreign Direct Investments (Capital/Earnings accrued from listed FDI's per annum)
Environment	Green spaces	Percentage of preserved areas/ reservoirs/ waterways/parks in relation to total land area; Percentage of trees in the city in relation to city area and/or population size
	Reduce greenhouse gases/ Energy efficiency	Total amount of GHG emissions per city and per capita; Percentage of total energy consumed in the city that comes from renewable sources
	Mobility	Transportation mode split (Percentage of each mode of transportation, i.e. private, public, bicycles, pedestrians); Average commute time and cost
	Water quality/ Availability	Total amount of water availability; Water quality index/score; Proportion of population with access to adequate and safe drinking water
	Air quality	Levels of Particulate Matter (PM_{10} – mg/m^3); Levels of Particulate Matter ($PM_{2.5}$ – mg/m^3)
	Waste/ Reuse/ Recycle	Recycling rate (Percentage diverted from waste stream); Volume of solid waste generated
Social	Complete neighbourhood/ Compact city	Access to local/ neighbourhood services within a short distance; Crime rates; Measures of income distribution and inequality
	Housing	Percentage of social/ affordable/ priority housing; Breakdown of housing sector by property type (owner occupied/ rental, single occupant/couples/family/multifamily etc.)
	Quality public space	Percentage of roadways in good condition; Percentage of green space (public parks) coverage in relation to city area and/or population size
	Education	Number of schools with environmental education programs; Adult literacy rate
	Sanitation	Percentage of population with access to water-borne or alternative (and effective) sanitary sewage infrastructure
	Health	Mortality rate/ Life expectancy; Percentage of population with access to health care services

Figure 0.2. Sustainable Cities International's Indicators for Sustainability list (European Commission, 2015)

C. Questionnaire Document

BÖLÜM I

Bu bölümdeki sorularla sizin demografik durumunuza ilişkin bilgiler saptanmak istenmektedir. Aşağıda yer alan sorularda, sizin durumunuza en uygun düşen seçeneğin baş tarafında yer alan parantezin () içine lütfen “X” işaretini koyunuz. **Örnek (X)**

1. Cinsiyetiniz?

- 1. Kadın
- 2. Erkek

2. Bulduğunuz yaş aralığı?

- 1. 0-14
- 2. 15-29
- 3. 30-44
- 4. 45 ve üzeri

3. Eğitim seviyeniz?

- 1. İlkokul
- 2. Ortaokul
- 3. Lise
- 4. Üniversite (Ön lisans, Lisans)
- 5. Lisans Üstü (Yüksek lisans, Doktora)

4. Aylık kazancınız hangi aralıkta bulunmaktadır?

- 1. Asgari ücret (2020 TL.) ve altı
- 2. 2021 TL. – 4000 TL.
- 3. 4001 ve üzeri

5. Ulus meydanına ne sıklıkla gidersiniz?

- 1. Her gün
- 2. Hafta da bir iki
- 3. Ayda bir iki
- 4. Yılda bir iki
- 5. Diğer (hiç, bazen, yolum düştüğünde vb.).

6. Ankara'da hangi semtte (ilçede) yaşıyorsunuz?

- 1. Çankaya - Yenimahalle - Akyurt,
- 2. Etimesgut - Sincan
- 3. Keçiören - Mamak
- 4. Altındağ - Pursaklar
- 5. Gölbaşı - Kahramankazan
- 6. Dış ilçe ve köyler (Ayaş, Balâ, Beypazarı, Çamlıdere, Çubuk, Elmadağ, Evren, Güdül, Haymana, Kalecik, Kızılcahamam, Nallıhan, Polatlı, Şereflikoçhisar vb.)

BÖLÜM II

(I.Kısım)

Bu bölümde, “Sürdürülebilir Kamusal Alan Tasarımının Sosyal İhtiyaçlarını” tespit etmeye yönelik sizlerin “Ulus Meydanı’na” ilişkin sosyal ihtiyaçlarınızı ortaya koyan sorular yer almaktadır. Bu yolla sürdürülebilir kamusal alan çözüm önerileri geliştirmek amaçlanmaktadır.

Bunun için her soruda belirlenen sürdürülebilir kamusal alan sosyal ihtiyaçlarına yönelik konuları dikkatle okuduktan sonra, bu konuları nasıl algıladığınıza karar verip, bu kararınıza uygun “Algı Dereceleri” bölümünün altında yer alan parantez içerisine “(X)” işareti koyunuz.

Ölçekte yer alan 1, 2, 3,20 sıra numaralı soruları okuyunuz. Her numaranın karşısında yer alan ihtiyaç derecelerini değerlendiriniz. Bu amaçla (*Hiç, Bazen, Kısmen, Çoğunlukla, Hep/Tamamen*) ihtiyaç dereceleri ölçeğe konulmuştur.

Hiçbir soruyu cevapsız bırakmayınız, Şayet bu beş ihtiyaç derecesinden her hangi biri kendi ihtiyaç derecenizi tam olarak yansıtmıyorsa lütfen size en yakın olanı işaretleyiniz.

ÖRNEKTİR

S. Nu.	Ulus Meydanı’na İlişkin Sosyal İhtiyaç Konuları	Algı Dereceleri				
		Hiç	Bazen	Kısmen	Çoğunlukla	Hep/Tamamen
		(1)	(2)	(3)	(4)	(5)
1.	Ulus Meydanı’nda kendinizi güvende hissediyor musunuz?	()	()	()	(X)	()

BÖLÜM II

(II.Kısım)

S. Nu.	Ulus Meydanı'na İlişkin Sosyal İhtiyaç Konuları	Algı Dereceleri				
		Hiç	Bazen	Kısmen	Çoğunlukla	Hep/Tamamen
		(1)	(2)	(3)	(4)	(5)
1.	Ulus Meydanı'nda kendinizi güvende hissediyor musunuz?	()	()	()	()	()
2.	Meydanda çalışan ya da bulunan insanlarla etkileşime ne sıklıkla giriyorsunuz?	()	()	()	()	()
3.	Meydanda sosyal bir aktiviteye katılıyor musunuz?	()	()	()	()	()
4.	Kendinizi ne kadar meydana ait ve buradaki toplumun bir parçası olarak görüyorsunuz?	()	()	()	()	()
5.	Bu meydanda farklı sosyal gruplar bulunur mu?	()	()	()	()	()
6.	Bu mekân farklı sosyal gruplara (bebekli aileler, çocuklar, gençler, kadınlar, erkekler, engelliler, yaşlılar vb.) uygun mudur?	()	()	()	()	()
7.	Bu mekan sizce ne kadar konforlu?	()	()	()	()	()
8.	Kendinizi burada ne kadar rahat hissediyorsunuz?	()	()	()	()	()
9.	Ekonomik faaliyetler (alışveriş, ticaret, satınalma, çalışma, iş vb.) için meydana gitme ihtiyacı duyuyor musunuz?	()	()	()	()	()
10.	Sosyal faaliyetler (insanlarla buluşma, vakit geçirme, eğlenme vb.) için meydana gitme ihtiyacı duyuyor musunuz?	()	()	()	()	()
11.	Ulus meydanı kent merkezi olma özelliklerini ne ölçüde taşır?	()	()	()	()	()
12.	Ulus meydanı iş/ticaret merkezi olma özelliklerini ne ölçüde taşır?	()	()	()	()	()

13.	Ulus meydanı kültür ve tarih merkezi olma özelliklerini ne ölçüde taşır?	()	()	()	()	()
14.	Ulus meydanı diyince aklıma Cumhuriyet ve Atatürk geliyor.	()	()	()	()	()
15.	Ulus meydanı diyince aklıma Zafer anıtı geliyor	()	()	()	()	()
16.	Ulus meydanı diyince aklıma toplanma alanı ve dolmuş durakları geliyor.	()	()	()	()	()
17.	Ulus meydanı diyince aklıma alışveriş yerleri geliyor	()	()	()	()	()
18.	Zafer anıtı aklıma ilk konumunu getirir	()	()	()	()	()
19.	Zafer anıtı aklıma tarihi ve kültürel anlamını getirir	()	()	()	()	()
20.	Zafer anıtı aklıma görüntüsünü getirir; rengi, şekli	()	()	()	()	()
21.	Meydan çevresindeki binalar ve içindeki heykeller tanınabilir şekillere sahip mi?	()	()	()	()	()
22.	Burada yönünüzü kolay bulabiliyor musunuz?	()	()	()	()	()
23.	Meydandaki binaları kentteki diğer binalardan ayıran kendine özgü şekilleri, konumları ve diğer yapısal özellikleri gibi farklılıkları var mı?	()	()	()	()	()
24.	Meydanda bulunan binaların konumları ve şekilleri burada daha kolay yön bulmayı sağlıyor mu?	()	()	()	()	()
25.	Ulus meydanının taşıdığı değerleri (<i>Cumhuriyet, zafer anıtı, müzeler vb.</i>) geliştirme, yayma ve diğer nesillere aktarma ihtiyacı duyuyor musunuz?	()	()	()	()	()
26.	Meydanda bulunan tarihi ve kültürel varlıkların (<i>müzeler, heykel, zafer anıtı vb.</i>) yeri, konumu, rengi şekli, figürleri vb. özelliklerinin Ankara ile bütünleştiğini düşünüyor musunuz?	()	()	()	()	()

-Teşekkür ederim -