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SONIC ENVIRONMENT AND THE "WALKING URBANITE"

THE CASE OF ATATÜRK BOULEVARD, ANKARA, TURKEY

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Sonic Environment and the "Walking Urbanite"

The Case of Atatürk Boulevard, Ankara, Turkey

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by

Rabih Borji

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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.

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Signature :

ABSTRACT

Sonic Environment and the "Walking Urbanite"

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The term "*soundscape*" emerged and gained interest with the progression of studies in the field of urban acoustical environment. In the urban context, a*uditory perception* is as critical as the visual conception of the space. However the researches in this regard are not profound yet. From this departure point, the thesis interconnects a wide range of critical issues. It considers the relationship between space, form and movement through the *sonic experience* of the *walking urbanite*. The main research objective is to develop a spatial framework and approach to examine the *sonic condition(s)* along the Atatürk Boulevard. In this respect, this study specifies the components of the physical space which affects the type, range and level of *sonic effects*. Integrating these concepts requires innovative approaches, methods and tools.

Keywords: Soundscape, walking urbanite, sonic environment, sonic condition, sonic effect.

ÖZET

"Yürüyen Kentli" ve İşitsel Çevresi
Ankara, Atatürk Bulvarı Örneği

Rabih Borji
Master of Science, Mimarlık ve Kent Çalışmaları
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"Ses peyzajı" kavramı akustik ve işitsel çevre alanındaki çalışmalar ile birlikte ortaya çıkmış ve önem kazanmıştır. Kentsel bağlamda mekânın deneyimlenmesinde *işitsel algı* en az görsel kavrayış kadar belirleyicidir. Bu tez geniş bir yelpazede farklı kavramlar ve konular arasında ilişki kurmaktadır. Mekân, form ve hareket arasındaki ilişkiyi *yürüyen kentli'nin işitsel deneyimi* üzerinden tartışmaktadır. Araştırmanın temel amacı Atatürk Bulvarı'nın işitsel bağlamının ve koşullarının incelenebileceği mekânsal bir çerçeve ve yaklaşım geliştirmektir. Bu doğrultuda *işitsel etmenlerin* biçimi, kapsama alanı ve seviyesi ile fiziksel mekânın bileşenleri arasındaki etkileşim incelenmektedir. Bu kavramları ilişkilendirebilmek için yenilikçi yaklaşım, yöntem ve araçların geliştirilmesi gerekmektedir.

Anahtar Kelimeler: Ses peyzajı, yürüyen kentli, işitsel çevre, işitsel koşul, işitsel etmen.

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My past two and a half years at TED University, in the master's program of Architecture and Urban Studies, have been an extraordinary experience. It has been marked by educational pursuits, the companionship of dear friends, the exploration of new places/ideas, and the advisement of esteemed educators and mentors.

I offer my sincerest gratitude to my supervisor, Assist. Prof Dr. Cansu Canaran who have supported me throughout my thesis with their patience and knowledge whilst allowing me the room to work in my way. Their wisdom and commitments to the highest standard inspired and motivated me.

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I also wish to express my thanks to Mr. Emre Erkal who enlightened me about the theme of the study.

From Ankara to the martyrs of Beirut explosion on August 04, 2020, 6:07 PM

PREFACE

This thesis is my final work as the partial fulfillment for the Masters of Science in Architecture and Urban Studies (MAUS) at TED University. The MAUS program as an interdisciplinary setting allows researchers to work within their own experience and scope.

The story behind this thesis started when I first began my masters' studies at the MAUS program. As a foreigner and lover of discovering new places, I felt intrigued to take long strolls along the Atatürk Boulevard, the studio courses' research area, to soak multiple aspects and dimensions of the context. One day, at Ulus Square, I noticed that the surrounding ambience was quite louder than the music I was playing through the headphones. I found myself thinking about the sound(s) of the boulevard. What were the factors constituting the sonic atmosphere?

Researching on urban noise pollution introduced me to the notion of *soundscape*. Since then, I felt driven to analyze Atatürk Boulevard's sonic condition. I have studied the soundscapes of the boulevard for one year over the studio courses. I worked on an installation at the end of the second semester directly related to this specific topic. It served as a simulation of walking in the studio itself, although the intention was simulating the boulevard.

In the Photography and Urban Space course, I worked on a sound-photo mixed installation, in which the viewer, oriented by sounds, would try to find photos in a dark room. Furthermore, in the Visual Culture course, I tried to comprehend the difference between standing on a balcony and walking through the boulevard from a soundscape perspective.

All these studies led me to focus my analysis on the sonic condition of the Atatürk Boulevard. In my thesis seminar, I produced the first piece of the research puzzle in the form of a newspaper that tackles with the soundscape on the boulevard. After starting writing my thesis, I recognized that the *sonic environment* directly relates to the physical-built environment through what is identified as *sonic effects*.

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LIST OF ABBREVIATIONS

ISO: International Organization for Standardization

PSE: Primary Sonic Effect

SSE: Secondary Sonic Effect

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CHAPTER 1

INTRODUCTION

1.1. Scope of the Thesis

This thesis discuss the relationship between space, form and movement through the sonic experience of the walking urbanite. The main research objective is to develop a spatial framework and approach to examine the sonic condition(s) along the Atatürk Boulevard. In this respect, the study specifies the components of the physical space which affects the type, range and level of sonic effects.

Discussing the notion of "*walking urbanite*" and "*sonic environment*" leads one to think of the listener's prominent possible locations. From standing on a balcony to being behind the car's wheels, are options of what a listener can be. This research's primary focus is on the *listener eye-ear level* while walking, emphasizing the term walking urbanite.

The study consists of two main components. First, specifying the segmentation of the Atatürk Boulevard according to the sonic condition and walking condition. Second, analyzing sonic effects happening on each segment from a spatial perspective.

For that, Atatürk Boulevard is examined based on specific segments. The segments are identified depending on the rhythm of continuity or discontinuity of walking. It is intended to understand how the sonic effects along the Atatürk Boulevard affect the condition of walking and the experience of the walking urbanite.

1.2. Evolution of the Concept of Soundscape

Research into soundscape celebrated 50 years as a scientific field in 2019. In 1969, in the inaugurated issue of the premier scientific journal for environmental psychology, environment, and actions, the first scientific article using the term "soundscape" was published. After being introduced at the International Congresses on Acoustics in Seattle in 1998 to the broader community of noise and health researchers, the topic gained international momentum. The International Organization for Standardization formed a working group on ISO 12913 series creation in 2008, which is the first international standard in this area. The present research subject was initiated by investigating methods for soundscape evaluation to support the creation of the ISO12913 series. It was to examine requirements for data collection and reporting and aspects of data analysis. (Östen, Catherine, & R., 2019)

1.3. Soundscape as a Field of Research

Despite the rapidly increasing proof that supports the possibilities of enhanced urban sound performance, nearly no world cities seriously adopt soundscape planning and development projects that reinforce the gap in urban sound research and practice. In other words, the soundscape and walkability concept has been studied before as an individual entity by itself for each.

While urban interventions have mainly focused on the visual modality, one aspect of urban environments capable of playing a role in our overall perception is the auditory modality. For that, focusing on the sonic environment and the impact of walkability on it or vice versa in the built environment for the user comfort is what this research focus on.

This research encompasses a wide variety of methods and subjects. Soundscape assessment should be approached from a holistic, multi-sensory perspective to capture results that extend well beyond auditory judgments.

Two contributions examined the relationship between usage of the public space and soundscape. *Bild et al.* used behavioral modelling and questionnaires to analyze how soundscape perception affects social interaction. *Meng et al.* are studying how music affects crowd density and walking habits in a public space. In these situations, behavioral studies reported differences in evaluations of soundscapes by groups of people. (Axelsson, Guastavino, & Payne, 2019)

Some reviews concentrate on developing or enhancing the current methods for analyzing soundscape. Two studies followed a cognitive approach with the use of free sorting tasks undertaken by individual participants. Many reviews stress the significance of person-related and contextual considerations in determining soundscape. Contributions also highlight the role of environmental factors in soundscape evaluation, which had received limited attention previously.

This study will provide in-depth analysis to understand the:
- The main terms and concepts in this research field.
- The relationship between sonic effects, walking urbanite, and the physical space
- The sonic experience of the walking urbanite

1.4. Research Questions

1. What are the components of the physical space that affect the perception of the walking urbanite about the sonic environment?
2. How can we re-define the Atatürk Boulevard and its segments based on the sonic effects and walking condition?

1.5. Configuration of the Thesis

This thesis is divided into five main chapters. The first chapter, the introduction, will give a background information about the content of the study. It specifies the scope and aim of the research through asking questions. In chapter two, the conceptual framework will make it more explicit for the reader to understand the terms and

concepts of the research. Conclusive diagrams which link the terms and concepts with each other will be introduced in this section. Chapter 3 is where the sonic condition of the Atatürk Boulevard is analyzed based on its segments from the perspective of the walking urbanite. Chapter 4 is derived to discuss the primary and secondary sonic effects happening on the boulevard. This chapter defines each sonic effect and explains the direct/indirect effects on the walking condition. It also outlines the components of the physical space generating the context of the sonic effect. Chapter 5 will give a conclusion and comments on the further studies.

CHAPTER 2

SOUND AND PHYSICAL-BUILT ENVIRONMENT

"Primitive man found magical sounds in the materials around him - in a reed, a piece of bamboo, a particular piece of wood held in a certain way, or a skin stretched over a gourd or a tortoise shell - some resonating body. He then proceeded to make the object, the vehicle, the instrument, as visually beautiful as he could. His last step was almost automatic. The metamorphosis of the magical sounds and the visual beauty into something spiritual. They became fused with his everyday words and experience: his ritual, drama, religion - thus lending greater meaning to his life. These acts of primitive man become the trinity of this work: magical sounds - visual form and beauty - experienced ritual." Harry Partch, 1967 (Baschet, 1975)

2.1. Listening to the World Around Us

We live in a sonic world: from birdsong to vehicle alarms, from the noise of the street to the noise of our stomachs, from the meow of a cat to the clap of thunder. Stop a second, listen, concentrate: what are you hearing? (Olufsen, 2018)

The concept of sound landscape was introduced in 1977 by the Canadian composer R Murray Schafer and published in Our Sonic Environment and the Soundscape: The Tuning of the World: The Acoustic Structure of an Urban and Rural Environment and all its Audible Features. The soundscape enabled us to learn the nature, complexity, and change of the globe around us deliberately via noise for Schafer.

A unique acoustical signature or soundscape results from the combination of human, animal, and the predominant climate sounds, amplified and modified by the broader landscape's sound properties.

Schafer suggested two exercises to tune into soundscapes: Ear cleaning and sound walking. Ear cleaning in other words active listening, in which the listener is still and concentrates on the sound around him: those taken for granted. If ear cleaning attracts attention to your sound scene, the sound walks bring it for a walk, leading the viewer to walk and listen to the region's evolving sound scenes. (Olufsen, 2018)

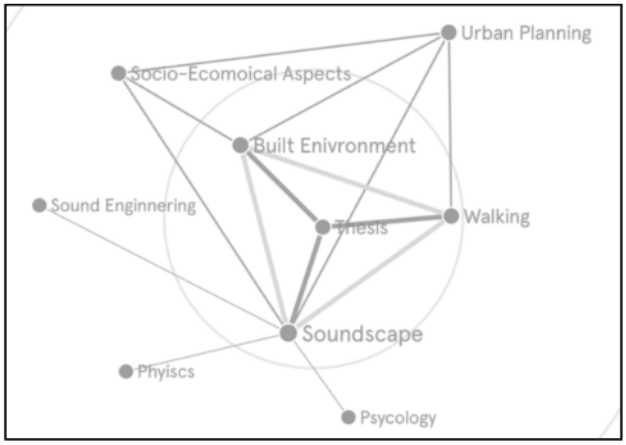


Figure 1 The relationship of different disciplines with reference to the position of this thesis (The author)

2.2. Domains of the Research

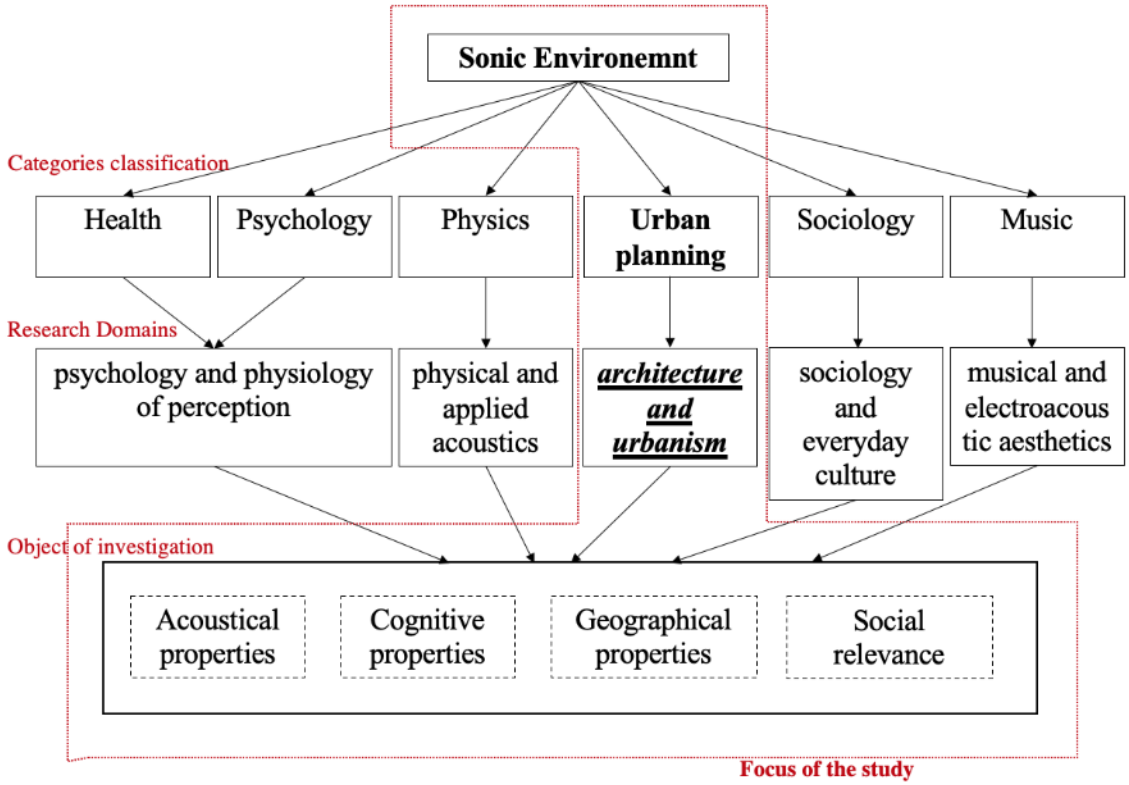


Figure 2 The focus of the study (The author based on (Niessen, Cance, & Dubois, 2010))

Different aspects of the general categories for soundscape are investigated through different research domains. These domains interconnect and integrate their results in shaping the concept of soundscape.

2.3. Basic Definitions

2.3.1. Soundscape

The auditory environment of an area has been called the sonic environment or soundscape, and people were defined as being in a surroundings of sound or in aural area. Others might consider the acoustic environment to be the ambient sound of place.

Soundscape exists through human perception of the acoustic environment; The International Organization for Standardization (ISO) provides a clear definition to

understand this innovation in acoustics. Soundscape is an "*acoustic environment as perceived or experienced and/or understood by a person or people, in context.*" (Lercher, 2015)

Most scholars advocate the place's soundscape as a person's perceptual construct of the acoustic environment of that place. That place will be physical, often outdoor, area (or space or location) that will have certain visual and other properties as part of its human- made (Built Environment) or natural environment. The resulting perceptual construct of the acoustic environment can be termed the soundscape.

There is not a common understanding among authors that soundscape is a human perceptual paradigm. Some prefer to use the term as a synonym for the physical acoustic environment, that is, "the collection of sounds in a place" or "the sound variations in space and time . . . of the built-up city and its different sound sources". Bryan C. Pijanowski refer to the soundscape as *"all sounds . . . emanating from a given landscape to create unique acoustical patterns across a variety of spatial and temporal scales."* (Pijanowski, 2011)

Soundscape as human notion is influenced through the sociocultural heritage and the psychological measurement with the sonic environment in context. Soundscape refers to safety, sustainability, active mobility (walking), and ecology.

The classifications of sounds might be *loudness, pleasantness, disturbance, and comfort*. The perception of sound can only be retraced by a multidimensional approach that covers the different dimensions. A common definition of *perception* published in Business Dictionary is "*the process by which people translate sensory impressions into a coherent and unified view of the world around them."* (Define Perception and How Does Affect Communication , 2017)

Soundscape is moving ahead in city planning and supports findings concerning e-mobility and the predicted acceptance by society. In essence, there is a big change concerning the view of expectation and expertise and its meaning for the development

of new products within the innovation of society. Soundscape is implied as an environment of sound with prominence on the way it is perceived and understood by the individual or society. (Thompson, 2002)

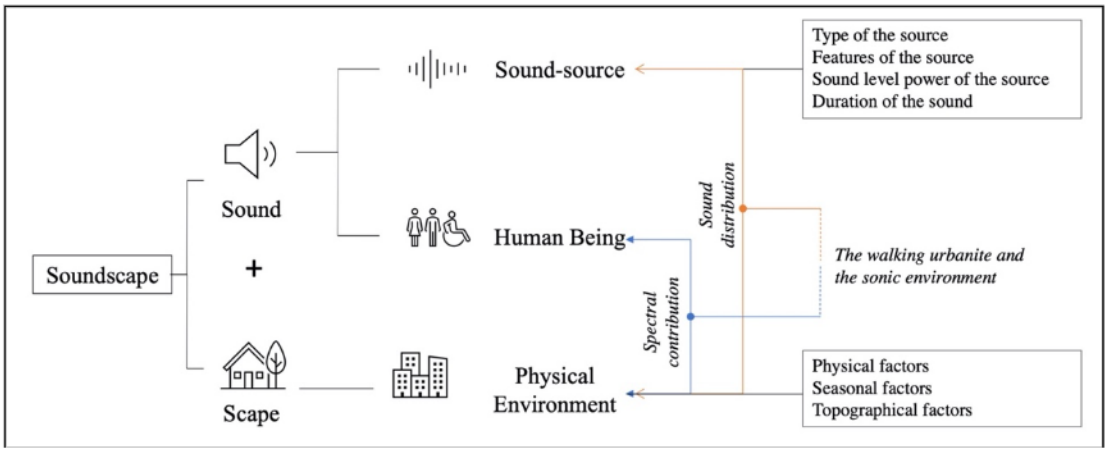


Figure 3 The soundscape research and the interaction between sound source, human being and the physical environment (Adapted from Özçevik & Can, 2012)

2.3.2. Walking

Walking is the perfect way to get to know the location. There is just much one can remember from behind the wheel of a car or the windshield of a train, zooming past objects before even hearing them, and while in a car, one always needs a destination.

On foot, one can walk, serendipity can kick in, and they can find stuff that they never thought they were searching for or listening to. (Elledge, 2018)

2.3.3. Walking Urbanite

Anyone who lives in an urban setting that identifies with an urban lifestyle. (P, 2010)

Urban experiences are varied and complex, frequently evolving as technology progresses, capital spending changes, and people move. They are created through strength and money, cleverness and labor. Urbanity is full of cultural and social context and everyday living demands. (Gieseking, Mangold, Katz, Low, & Saegert, 2017) Moving from place to place puts a city resident in touch with an exciting range

of people and material conditions. Such encounters can be overwhelming simultaneously and appear to keep the urbanite invisible inside the crowd. Sociologists Louis Wirth, Ernest Burgess, Robert Parc, and Roderic McKenzie from Chicago School in order to understand the social norms evolving in the urban context used ethnographic fieldwork in the 1920s and 1930s to illustrate the connections between social life and urban planning, suggesting that the urban environment forms human behavior. Although often regarded as too deterministic and too reliant on biological metaphors, the Chicago School deserves praise for basing its ideas in extensive fieldwork and discussing urban life effects. Many writers, artists, and activists have taken distinct strategies to explicit or challenge the metropolis's perceptions, looking for examples of each oppression and enjoyment. (Gieseking, Mangold, Katz, Low, & Saegert, 2017)

Sociologist Georg Simmel was one of the earliest to study social and psychological aspects of urban life. He believed there was a new phenomenon in the way people interacted in response to increased density. Simmel suggested that there are both positive and negative social and psychological aspects of city life. (Simmel, 1903)

Walter Benjamin explores what he calls the modernist phantasmagoria. He suggests that the spaces and goods created by industrial capitalism are fantastically altering everyday urban life. This era's dynamism is characterized by spacious interior environments enclosed by steel and glass, luxury goods, and capital investment in urban infrastructure. (Cohen, 1989)

Neither Chicago school, nor Simmel nor Benjamin have mentioned the term "walking urbanite" in a direct manner. A look at how they approached the urban, one can define how they described the social and psychological aspects of urban living, meant to be the "walking urbanite. After all, the walking urbanite is each individual that lives and adapt to an urban setting.

2.3.4. Sonic Experience

Sonic Experience is a challenging and wide-ranging study by one of today's most relevant teams of soundscape researchers – one that has gathered around French social philosopher and phenomenologist Jean-François Augoyard at the Center de recherche sur l'espace sonore et l'environnement urbain (CRESSON) at the National School of Architecture in Grenoble.

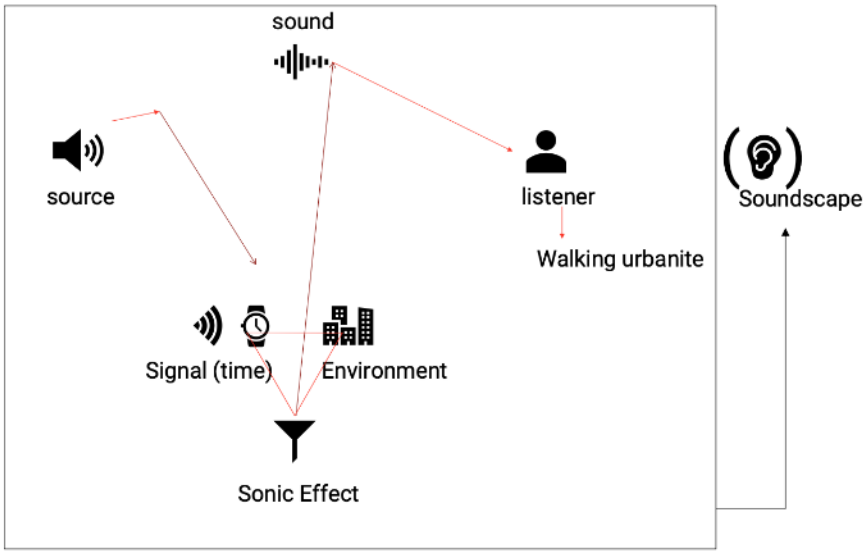


Figure 4 The relation between sound, built environment and the walking urbanite (The author)

"Man lives in an oppressive ocean of air constantly disturbed by vibrations known as sound waves." (Vinton Hunt , 1958)

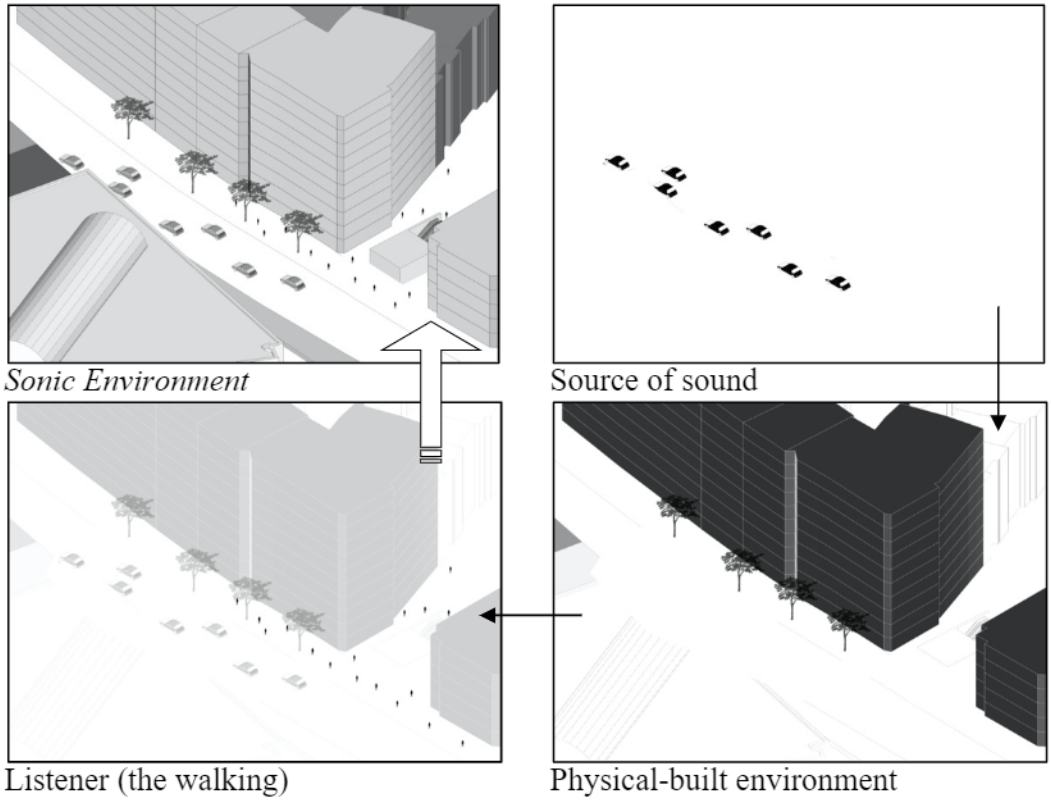


Figure 5 The formation of sonic environment explained at Kızılay – Sıhhiye segment of the Atatürk Boulevard (The author)

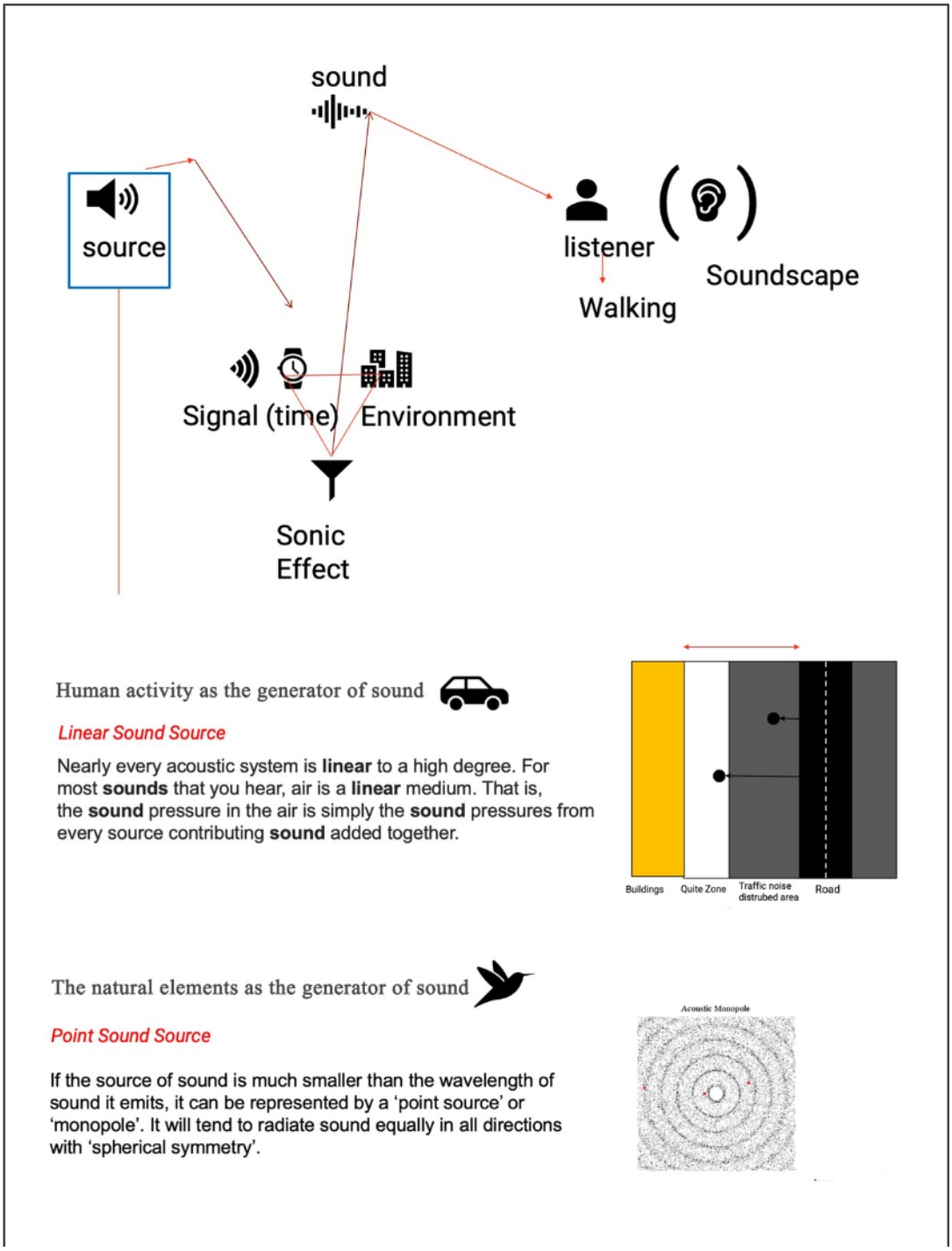


Figure 6 Sound sources affecting the walking urbanite (The author)

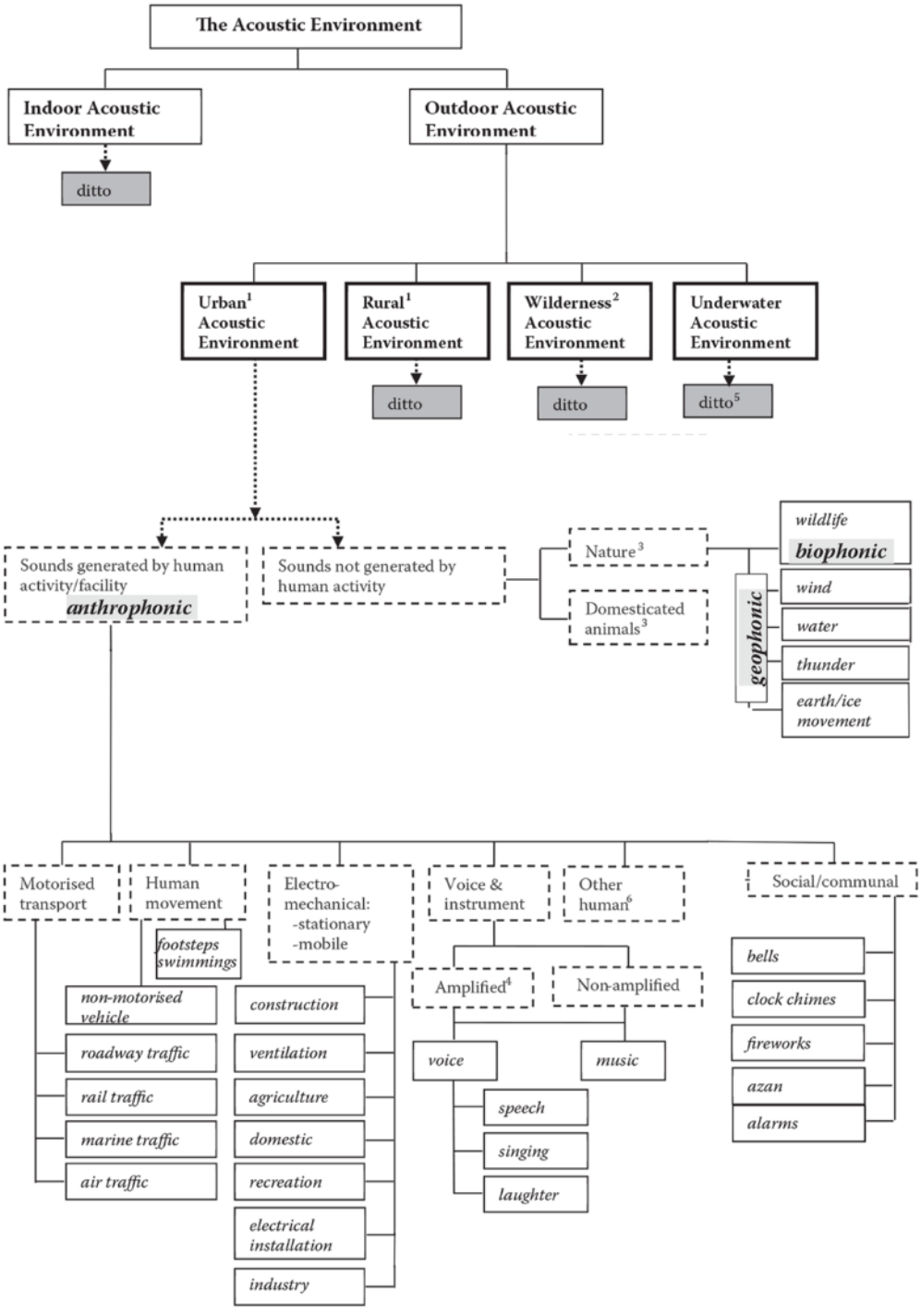


Figure 7 A classification scheme for categorizing sound sources in any acoustic environment that can be used to standardize sound source reporting across different studies. (Brown, Gjestland, & Dubois, 2016)

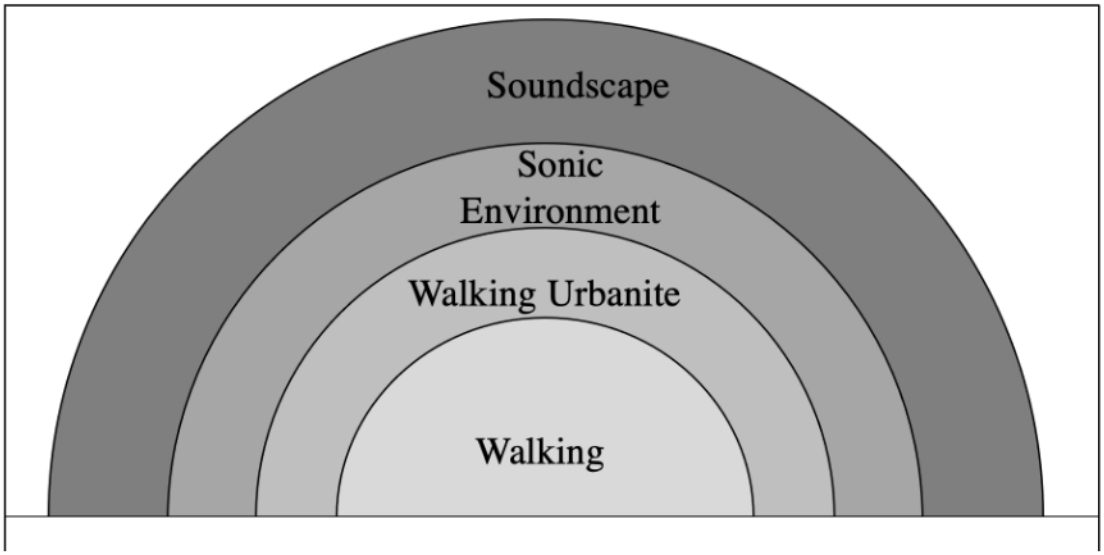


Figure 8 The position of the basic definitions in accordance to each other (The author)

The concept that soundscape is the holistic approach of perception of the walking urbanite while in the action of walking in the sonic environment. Moreover, linking the physical-built environment to the walking urbanite is the key factor of how the sonic environment emerges.

2.4. Fundamentals of How Sound Travels

Sound is the stimulus the human ear perceives as a result of rapid changes in air pressure. Typically these fluctuations are produced by some vibrating object, which establishes longitudinal wave motion in the air.

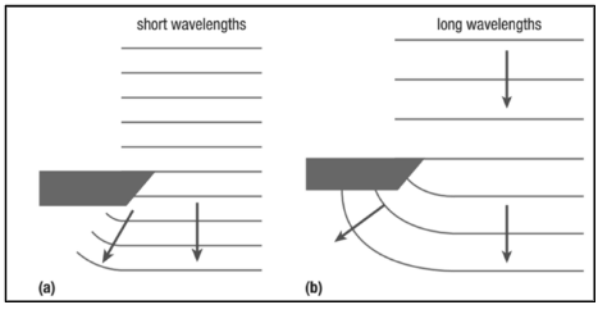


Figure 9 Waves by an edge (NEL, 2013)

When waves travel by an edge, (a) shorter wavelengths diffract less than (b) longer wavelengths. (NEL, 2013)

Most people have a certain intuitive understanding of what a wave is. Nearly everybody has seen ocean waves crashing on the seashore or observed the ripples that radiate out from the spot where a pebble hits a pond's surface. Sound waves are a particular category of generic wave class known as elastic waves. Elastic waves that possess the properties of mass and elasticity may occur in media.

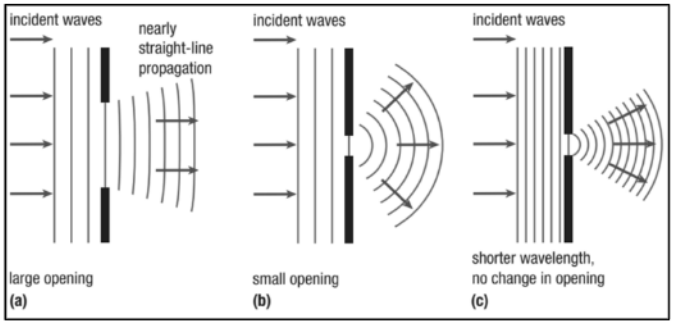


Figure 10 Waves diffraction according to opening size (NEL, 2013)

(a) and (b) as the size of the slit (aperture) decreases, diffraction increases. (c) with a shorter wavelength and no change in the size of the opening, there is less diffraction. (NEL, 2013)

Nevertheless, the essential difference is that the ripples are propagated by transverse waves (i.e., the velocity of the particles is at right angles to the direction of propagation), while the vibration in the air is propagated by longitudinal waves (i.e., the velocity of the particles is in the direction of propagation). (Ginn, 1978)

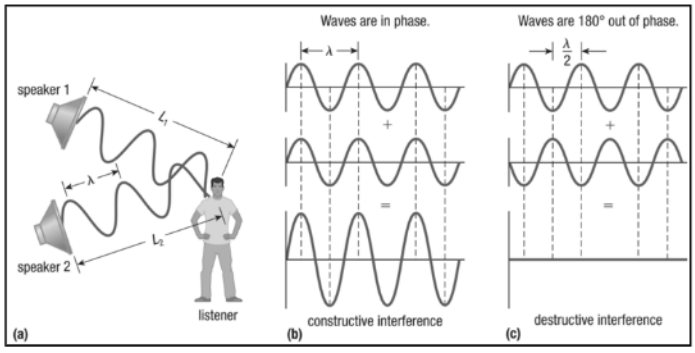


Figure 11 Sound waves and listener (NEL, 2013)

(a) if L1 and L2 are the same, the waves arrive at the listener in phase. (b) waves interfere constructively if they arrive in phase. (c) If L1 and L2 differ by, say $\lambda/2$, the waves arrives 180° out of phase, and they interfere destructively. (NEL, 2013)

2.5. Auditory and Visual Perception

It is now possible to present the elements and aspects of sonic and formal environments essential in auditory and visual perception. There are three broad groups, each of which relates to the sensory mode of experience of the elements:

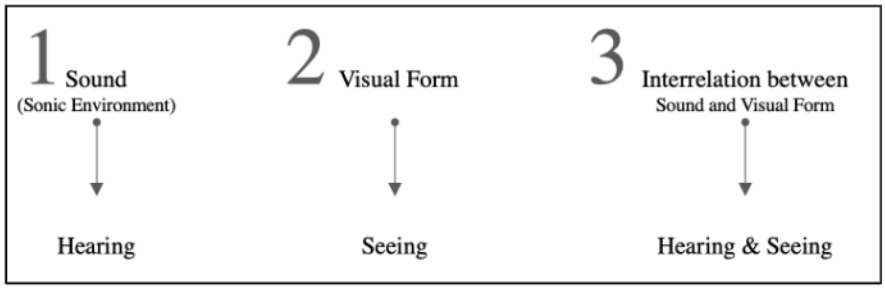


Figure 12 The group of which relates to the sensory mode of experience. (The author)

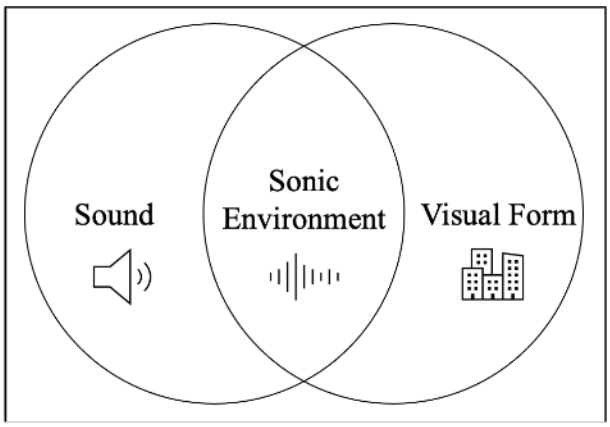


Figure 13 Sonic Environment: The interrelation between sound and visual form (The author based on (Southworth, 1967)

Table 1 Sound perception qualities and synthesis (Southworth, 1967)

SOUND

Form Qualities	
Type	Classification of sound depending on the origins of the sound
Location and Orientation	The kinetic characteristics, that is, whether the sound is dispersed or moving,
	The location or course of motion in space
	The sound's direction of orientation

Intensity and Territory	The level or loudness of the sound The territory or place where the sound can be heard
Quality	The sound timbre or frequency range The sound's transparency or masking effects
Temporal Pattern	Occurrence: frequent to infrequent Periodic to sporadic duration: long to short Rhythm: repetitive to non-repetitive
	Synthesis of the Form Qualities
Informative	The degree to which the sounds support a local environment's operation and spatial form and its city significance
Unique	The degree to which sounds are distinctive or contrast with their surroundings or a setting is in its sense.
Attention-Demanding	The degree to which sounds draw interest by their frequency, intensity, novelty or informativeness, regardless of individual purposes
Responsive	The degree to which settings allow sonic interaction by means of individual sound and environmental response production or regulation
Continuity	The degree to which sonic settings over a given time period contrast or proceed

Table 2 Visual forms (Southworth, 1967)

Visual Form	
Activity Form	
Type	Local: Activity within a context Flowing: movement along a path
Intensity	the amount of activity at a given spot
Visibility and Audibility	Visible activity: the operation of sound production and non-sound producing that can be seen from a given point

	Hidden activity: Sound-producing operation, which from a given point cannot be seen
	Spatial Form
Bulk and Spacing	The mass of buildings in relation to the dominant open spaces.
Topography	
Surfaces	the floor (Paving), wall (Facades), and ceiling (Canopies) materials and textures
Transparency	Visual penetrability of the structure and the level of which the interior is visible
Visibility	The degree to which the environment and the city background of the setting are revealed from a given point
Light	Shaded / open areas
Signs	Visible communication boards

Table 3 Evaluation of both sound and visual forms (The author)

SOUND AND VISUAL FORM	
Visible Activity and Sound	The degree to which the attributes examined enhance or overlap with each other
Spatial Form and Sound	The degree to which the attributes examined enhance or overlap with each other

CHAPTER 3

THE "WALKING URBANITE" AND THE ATATÜRK BOULEVARD

Walking is such an elementary activity of everyday life that hardly much thought is wasted on it, the physical "Action of moving or traveling at a regular and fairly slow pace by lifting and setting each foot in turn so that one of the feet is always on the ground." (Löffler, 2017)

What are precisely the qualities of walking? Why is walking so important for the urban experience and the development of urban imaginaries and acoustical environments? Moreover, why does walking in town play such a vital role-as opposed to moving through it through other means of transport? (Löffler, 2017)

Many listeners wonder; some turn around in amazement, knowing by degrees the impossibility of understanding the sound phenomena occurring on them in their entirety. (Schöny, 2015)

3.1. Forms of the "Walking Urbanite"

Ideas about the essence of vision and perception were dramatically shifting in the early nineteenth century. The new science era has sparked a series of studies into the essence of human experience, finding that perception was not a simple imitation of the real environment but a dynamic neurological phenomenon involving both internal and external factors. This had a significant effect on perception theories, placing it within the observer's subjectivity, thereby rendering the visual representation inaccurate and ineffective. In the modernizing cities of the mid to late nineteenth century, these new truths and uncertainties were put to the test, which offered a wealth of new visual images. (Baudelaire, The Painter of Modern Life and Other Essays, 1995)

Urbanity is a term that is complex, strong, yet hard to identify. Dictionaries define urbanity as a matter of urban life and relate it to having good manners and knowing

how to act in social circumstances or, in other words, every day. In the fields of planning and urban architecture, the quest for urbanity has been constant. (Rio, 2015)

Researches said the following about urbanity:

1- It is about disparities in a community, and the perception of otherness. ~Baudelaire
2- It is about being involved in the public domain while moving free from individual hegemony. ~ Richard Sennet
3- It is about the city's acceptance of diverse economic, political, and social backgrounds. Urbanity is in a city's vitality and diversity, and its spaces. ~Jane Jacob
4- It deals with the human aspect in a city ~Gehl

And though we cannot clearly describe urbanity in words and understand it more as a sensation, striving for urbanity is the noblest aim of our career of urban design — recognized here as the physical and sensual nature of the city. Only through our everyday encounters and explorations and, most definitely, walking can we truly appreciate urbanity and the urban design qualities of a community.

Walking without a particular intent is a profound way to explore urbanity, only to appreciate the stroll and what's found in it. This brings us to the concept of the flaneur, which brings us back to Paris in the 19th century, a time and place where science, culture, and urban life undergo profound changes. French culture was at the time the paradigm of advanced civilization in Western society, and Paris was considered the model city. On the one side, Paris was going through extreme architectural changes and a cycle of "modernization" under Mayor Haussmann and Napoleon III. (Rio, 2015)

Baudelaire put considerable focus on visual objects; these were the new city and the urban world. But he also put great emphasis on the manner in which this observation was made. He framed himself as a flaneur, he walked the streets with the aim of observing and inspecting. Above all, he sought the quality of modernity within the

urban crowd and described it as *"an immense joy to set up a house in the heart of the multitude, in the midst of the ebb and flow of motion."* (Baudelaire, The Flowers of Evil, 2007, p. 6)

Most activity in a path is a movement by definition. Paths require flow from origin to destination. Slow, brisk, low-volume movement differs from medium, quick, careful half-jogging. Some paths are only used to circulate, with no shop fronts or building functions activated or sidewalks that invite us to slow down and stay for a while. The gates, fun restaurants, sidewalk cafés, courtyards, and street stalls will be the animator for others. Such roads are primarily straight streets, exits, places to visit, stay and be part of the urban life. (Carmona & Tiesdell, 2007)

There is also variable and irregular spatial distribution between activities of the form and intensity of a road. Most paths have areas with a higher or lower level of action and areas with or without certain types of activity. The positioning of the building styles on the street (museum), external purposes (sidewalk cafe), links to feeder routes (intersection node), and public transit stops places (busses, subways) can be responsible for the purpose of the walking urbanite.

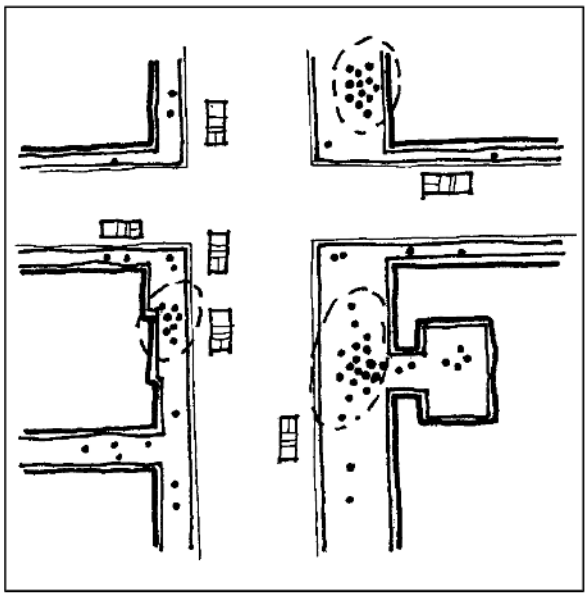


Figure 14 Walking urbanite forms at a main street intersection (Jacobs, Macdonald, & Rofé, 2002)

A group of still activities such as window shoppers standing in store windows or people seated in sidewalk cafes also exists. We sometimes find two flows, one faster and another slower, on wider paths. Or both groups may be "walking urbanite" going in different directions.

3.1.1. Stroller – Flaneur // The Flaneur-Like

To the flaneur, urbanity is the spectacle, and its understanding of the city is necessarily related to walking and movement, just like in a theatrical space encounter. The urban design philosophy has long found inspiration from these notions, recognizing perception as the primary source of images and environmental awareness. Camillo Sitte, for instance, (in his book The Birth of Modern City Planning 1965) argued that the visual stimuli generated by unexpected, dynamic, and shocking urban morphologies are more stimulating, aesthetically pleasing, and important to urbanity. (Collins & Collins, 1986)

Discontinuities of the facade and street edge, changing perspectives, variety, and contrasts, focal points, enclosures, and perception of any figure-ground are among the visual stimuli captivating our eyes and interest. (Rio, 2015)

The definition of flaneur is highly useful because it reflects him/her who, by observations and interactions as an observatory participant, is influenced explicitly and indirectly, deliberately and inadvertently by urban planning and the layout of cities. (Elkin, 2016)

The Flaneur concept, as discussed, is a 19th-century French term that describes a person exploring an area on foot for leisure. These days, it is hard to define a walking urbanite as a flaneur as the concept has faded with time. Flaneur-Like is a more accurate term to define anyone walking for the sake of leisure in our current time.

In the scope of sonic experience, a flaneur-like is a sound receiver participant who consciously or unconsciously interprets the sounds surrounding him/her in an environment.

3.1.2. Window shopper

Window shopping is also referred to as searching. It refers to an occurrence in which a customer browses or explores a store's products as a means of recreation or outward quest actions with no present intent to purchase it. Window shopping may be used as a pastime or to learn about the production of a product, label discrepancies, or sale rates, depending on the customer.

As a form of recreation, window shopping is strongly associated with the rise of the middle classes in Europe of the 17th and 18th centuries.

Glazing was a core feature of the grand shopping arcades, which spread throughout Europe from the late 18th century. Promenading in these arcades was a popular pastime for the growing middle classes in the 19th century. Window shopping traditionally involves visiting a store to check out a product. (Cleopatra, 2018)

At the Atatürk Boulevard, the window shopper refers to any men and women from working-level communities whose behavior and significances are focused on the subsistence economy. The window shopper can be a works housewife with a small salary. The socioeconomic state of being a window shopper signifies an insufficient degree of leisure and economic strength. The window shopper's life consists of a daily cycle: waking up, working, going home. Therefore it is a unique and exceptional opportunity to visit the inside of the shop. It is not just founded on consumption. The window shopper is a social category whose weakened role in production relations makes him less prominent in customer material relations. (Akçaoğlu, 2008)

3.1.3. Commuter

A person who travels some distance to work on a regular basis. (Lexcio, 2021) Usually, a commuter in the case of using public transportation will need to walk on the side walk to reach his work place. A commuter can be a flaneur or a window shopper, but just only after he leaves his workplace, heading back to the bus stop or metro station entrance.

Defining the forms of the walking urbanite is a vital to understand the human perception of the sonic environment. It is critical to assume knowledge about the walking urbanite sonic environment perception without defining the physical-built environment they are walking on. In the case of this study, the next section will classify the different typologies of boulevards. Then, introduce the Atatürk Boulevard and analyze its different segments. This will give a holistic image of the essential research keywords.

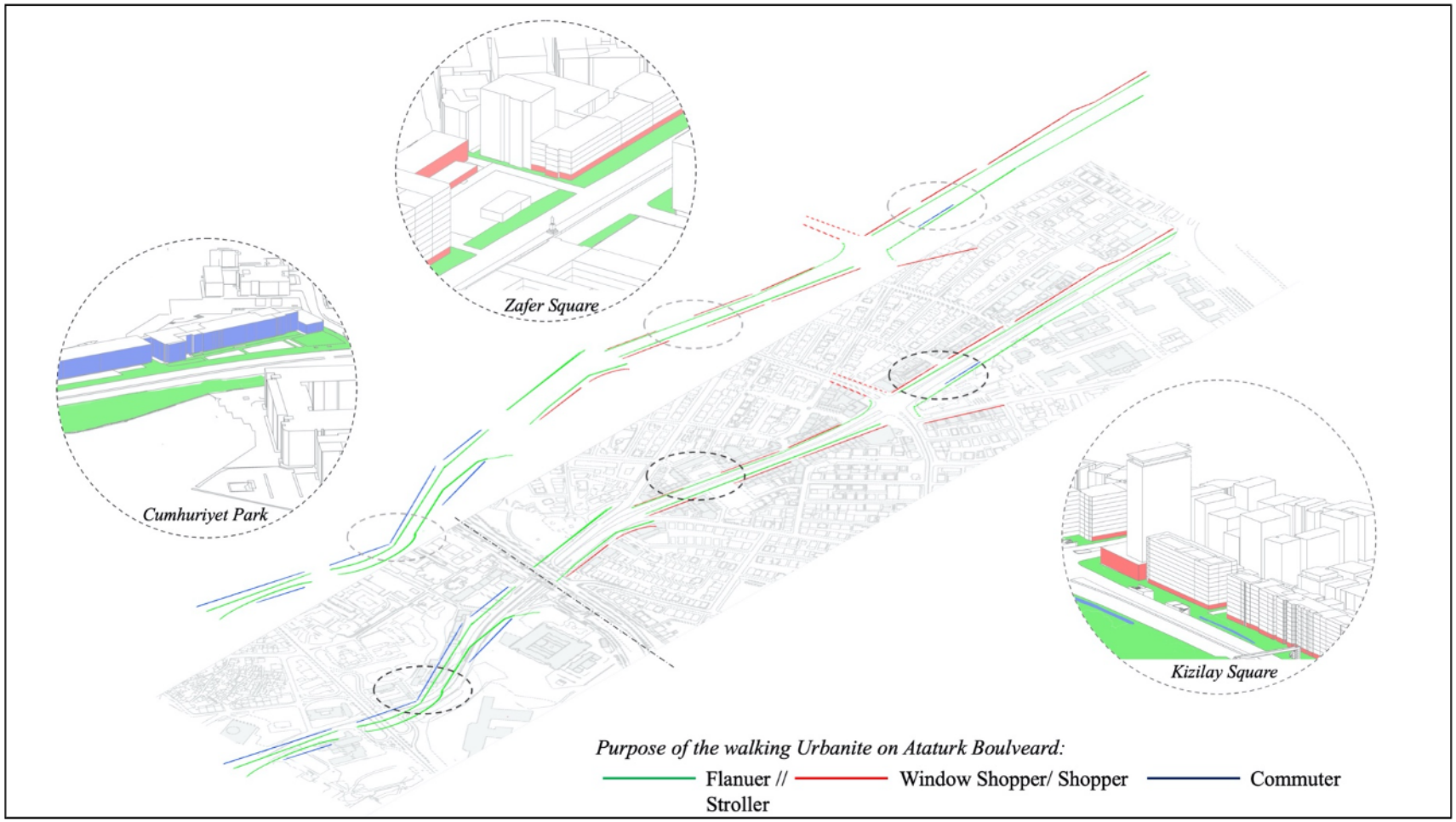


Figure 15 The walking action rhythm (continuity and discontinuity on the Atatürk Boulevard due to the sonic environment. (The author)

3.2. The Walking Urbanite in the Sonic Environment

Nowadays, the focus is mostly on melancholic sounds – which is called noise. Loud or unpleasant sounds can even pose health, productivity, and peace of conscience challenges. These unwanted sounds are often managed by creating unique windows, noise barriers, and high technology materials to hide or cancel them.

However, the positives we use to navigate, give us a sense of space, and connect us to our activities, are also present in the soundscapes. Those sounds may be very welcome, but the same sounds will not be accepted in the park, where people go to the busy streets, rest, read a book, and avoid the busy streets. The meaning is also a vital part of how we decide what we want and expect. (Steele & Kerrigan, n.d.)

The walking urbanite is guided by the visual and sound structure of locations and, in particular, by the environment ahead of them and the possibilities; we find the following steps for continuing our strolls and impressions of the city. Morphological discontinuities, unintended perspectives, and dead-ends, multiple policy choices, short lines, abrupt surprises, comparisons, sequential perceptions, anxiety triggers are all factors to disturb our pace of walking.

Social and human experiences are essential for the awareness and sense of place of vitality. The flaneur is active in events that liven up and give sense to the streets and spaces they walk in. A site or street is robust if it offers a diverse range of land uses, densities, activities, and behavioral choices that sustain its vitality at various stages.

3.3. Boulevard Typologies

Most people care about the streets at all, and they tend to prefer one street to another; they go out of their way to be on certain streets and avoid others, they find that travel, shopping, or visiting friends is more pleasant on some than on others.

By the 1950s, multiway boulevards had long been on a downhill slide as an understood and favored street type. They had fallen prey to a narrowly focused way of designing streets, an approach that viewed the unencumbered vehicular movement as the overreaching concern.

Boulevards also provided building sites for new development, accommodating a growing middle class's desires for new urban residences, cafes, and restaurants. One of their most significant roles was to provide order and understanding to the whole city as it expanded and diversified under the impulse of industrialization. They were monumental connections to major destinations. (Pavia, 2016)

Table 4 Boulevards typologies (Adapted from "The Boulevard Book") (Jacobs, Macdonald, & Rofé, 2002)

Typology 1	*Definition*
Central Median	Has a wide central landscaped median flanked on either side by roadways and sidewalks. The central median maybe pedestrian promenade; or it may simply be planted with grass, tress, and shrubbery.

Section Diagram



Example:



East Boulevard, Charlotte, USA

Typology 2	*Definition*
Boulevard street	It is nothing more than a street with a wide central roadway and broad, tree-lined sidewalks along each side. It is characterized by gracious tree plantings, wide walkways, the anticipation of well-designed buildings and, in some cases, a desired high-status address, rather than a distinctive design. *(Example: Haussmann Boulevards in Paris).*

Section Diagram



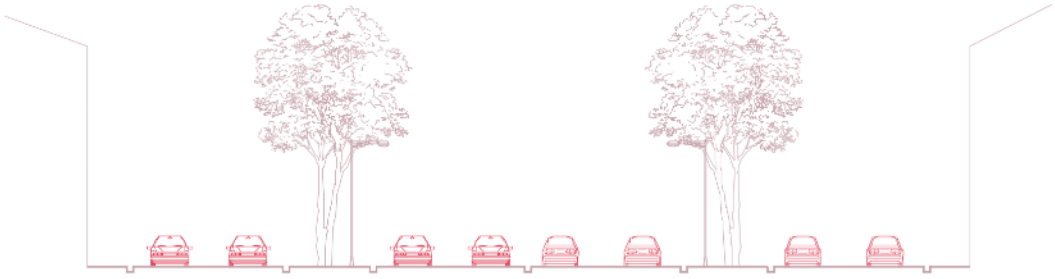
Examples: Champs Elyes / Paris





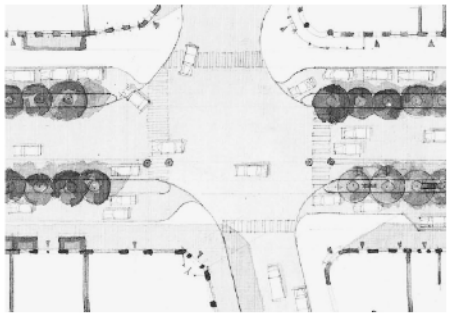
Typology 3	*Definition*
Multiway Boulevard	Designed to separate through traffic from local traffic and, often, to provide special pedestrian ways on tree-lined malls. It is designed for recreation. Characterized by a central roadway of minimum 4 lanes for generally fast and non-local traffic. The medians can be of various widths. The sidewalks may or may not have their own lines of trees.

Section Diagram



Examples: Avenue de la grande armée / Paris



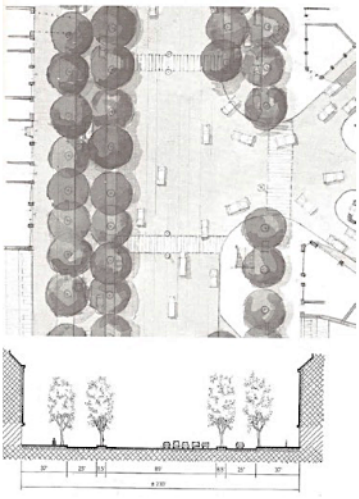


Boulevards – the word itself, perhaps as much as the physical reality – define the city. (Drawingfromthearchives, 2014)

Paris has many boulevards, and they have great variety. All are compared to other streets in the city and have regularly spaced trees and buildings that generally

complement each other in height, materials, and architectural details and that define their edges.

Example:



Avenue De La Grand Armee

the wide sidewalks along the streets provide room for many things: stairs to metro below, large new kiosks, Paris famous circular information kiosks, benches, and pay phones. While the pedestrian volume is not heavy, there is usually a steady flow of people.

The building that line it are all of same height and regularity. At the same time the width of the central road makes it hard to cross on foot. As a consequence, the two sides seem divorced from each other.

3.4. Atatürk Boulevard: A Historical Background

Atatürk Boulevard is considered the spine of the capital city Ankara since the independence revolution known as the Republican Era. The history of the Atatürk Boulevard, beginning from Hakimiyet-i Milliye Square (Ulus Square), where the War of Independence was organized and where the most active protests of the time were held, and continuing to Çankaya Residence (Koşk), is in a way the history of the Republic revolution. In the urbanism of the late 19th and early 20th centuries, the road, which was formed in the measure and order that was seen as characteristic of modern life, is the most significant feature of the planning and architecture of the capital Ankara, as an emblem of the growth of Anatolia toward Istanbul. The Atatürk Boulevard is the direction and goal of the Republic movement. The landmarks, sculptures, and venues of the Boulevard are targeted by Republicans. The Republic of Turkey has undergone the past of the revolution and retains the most significant activities on the institution. This is the reason the Atatürk Boulevard, which has the characteristic of a cultural and historical heritage to be maintained, is tried to be disconnected from our urban and social life and our memory by actions representative of the lack of tradition and Republic consciousness in the 2000s. Boulevard is losing

its urban-like surroundings. It is converted from an urban spine where cultural and musical events, recreational activities, and public buildings are formed together, to a road where the maximum speed of cars is significantly degraded. (Keskinok, 2009)

Ankara, a new center of Turkish nationalist opposition and an effort to oppose the symbolic imperial center of the Ottoman Empire. In this time, Ankara was evolving into a forgotten Ottoman urban structure; the roads were dusty in summer and muddy in winter. (Günay, 2012)

In 1923, Ankara was the vital face of the uprising. A modern regime which is carried out with substantial structural reforms. A new, modern republic's natural testing area is the capital city. New behaviors were introduced to the contemporary Turkish community's repertoire. The Turkish Republic is constructing the Atatürk Boulevard as a model construction area, both in terms of its location and its development goals. (Kesim, 2009)

a. Lörcher Plan 1924:



Figure 16 Ankara: Lörcher Plan 1924 (Cengizkan, 2004)

German city planner Carl Christoph Lörcher established a plan for the city of Ankara in 1924. In March 1925, a large area of land in the south of the city was expropriated for urban redevelopment. Since it was not included in the proposal, Lörcher was asked to create a new plan for Yenisehir. This would include government buildings and residences for state employees. (Batuman, 2013)

The boulevard that stretched from Ulus to Kızılay was drawn and the creation of the first house began in 1925. In 1928, while the efforts for afforestation began, with its uncommon settlement, boulevard was like a band which lies in the emptiness. This area eventually became the core of the city as the line of urban traffic and space for the promenade. (Uğuz, 2008)

The Lörcher plan had an important role in determining mostly the physical components of the city of Ankara. The plan focused on water and sewer system and lightning. Indeed this plan main function was designing streets, squares and axis. (Cengizkan, 2004)



Figure 17 Atatürk statue at Zafer square in 1927 (Keskinok H. Ç., 2009)

b. Jansen Plan 1927:

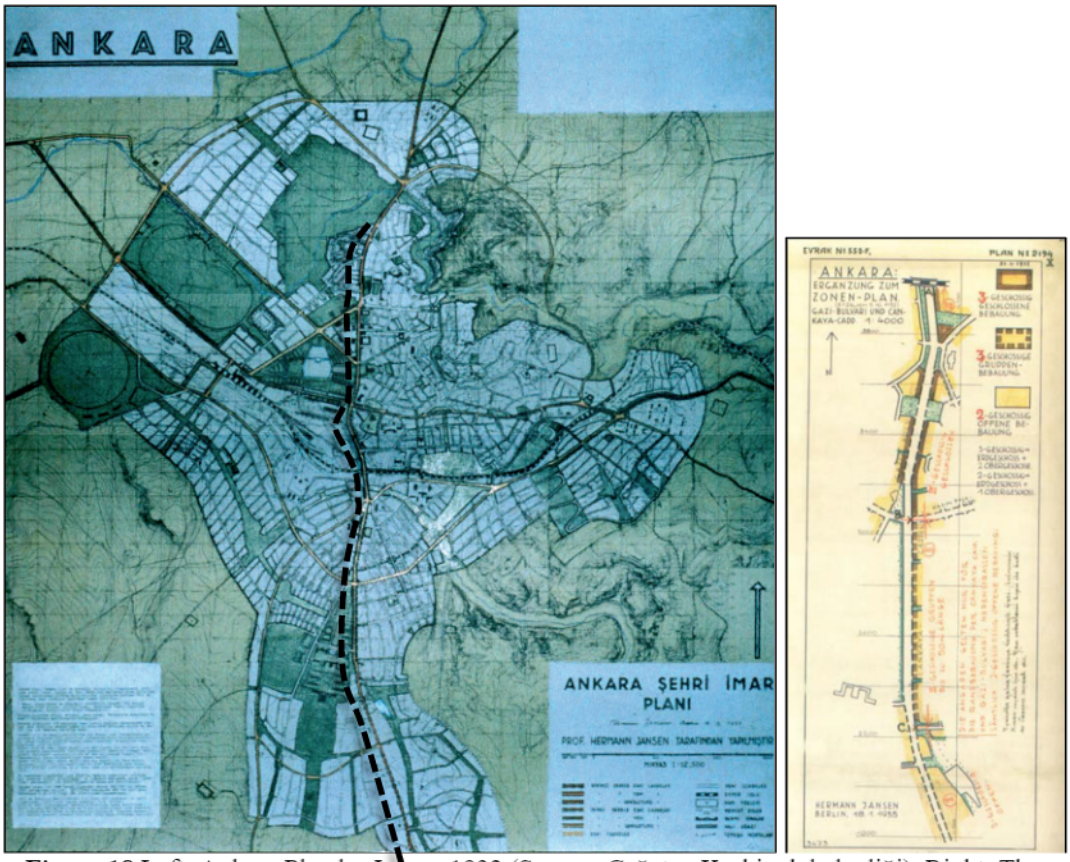


Figure 18 Left: Ankara Plan by Jansen 1932 (Source: Çağatay Keskinok belgeliği), Right: The Atatürk Boulevard, Jansen Plan 1927 (Keskinok H. Ç., 2009)

The Jansen strategy was critical for deciding the spatial structure of Ankara. Jansen Plan halted its uncontrolled haphazard rebuilding scheme. It would be beneficial to have a concurrence in the architectural framework and to constrain the scattered settlement. (Uğuz, 2008)

Atatürk Boulevard emboldened the square-system, adding both physical and social importance. Another important configuration that the Atatürk Boulevard is similar to boulevard development is the greenery structure of it. (Kesim, 2009) National parks are used for social control, and they are a sign of national pride, built as an influence from the French gardens concept.



Figure 19 Zafer square towards Ulus 1933 (Keskinok H. Ç., 2009)

c. Uybadin-Yücel Plan 1957

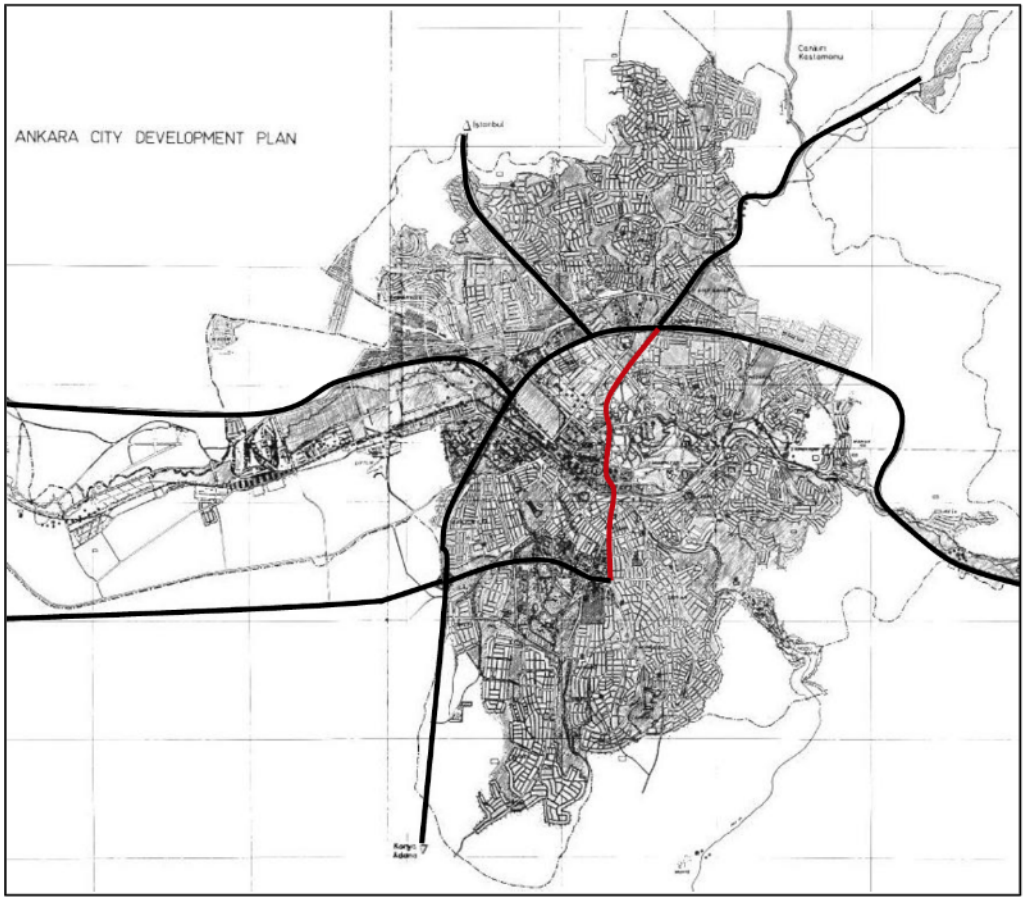


Figure 20 Uybadin-Yücel Ankara plan 1957 / in red highlighted the location of the Atatürk Boulevard (Source: Faculty of Architecture Documentation center, METU)

In 1950 a new period of the Atatürk Boulevard development started. The interventions that started to happen had political and social necessities rather than an urban ones. The Uybadin-Yücel plan was to create what is to be called a "modern society." After that period in a couple of years, the rent priority became dominant over the public priority (Kesim, 2009). The overarching purpose of this initiative was not to create a space but to create a space for the young modern republic's governmental goals. The strategy would reduce the accelerated spatial and economic growth of capital (Keskinok H. Ç., 2009). It is easily visible from the plan that it is based on the traffic flow. As seen in this proposal, the boulevard met a natural goal.

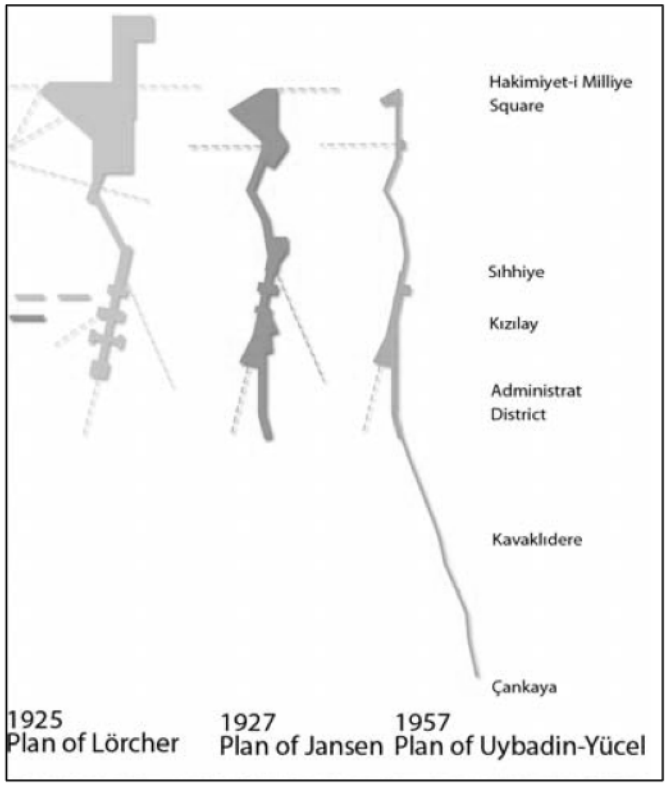


Figure 21 Historical transformation of the Atatürk Boulevard (Kesim, 2009)

One can observe from the plan evolution of the Atatürk Boulevard that the latter started to lose the value of the squares which were a foundation in the boulevard planning.

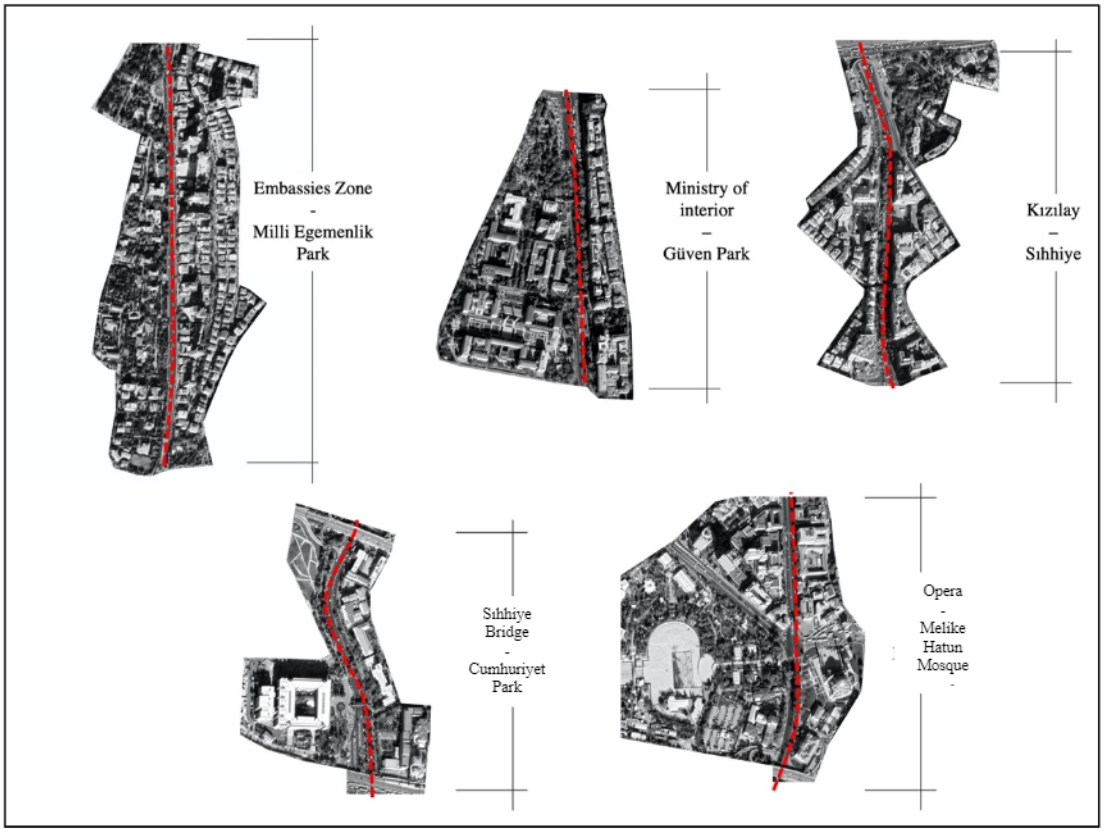


Figure 22 The Atatürk Boulevard segments based on walking rhythm and sonic conditions (The author)

3.4.1. The Sonic Environment Throughout Time on the Atatürk Boulevard

Talking upon the importance of streets and squares, it was intended to make the Atatürk Boulevard a walkable space. The wide sidewalks, the green areas and plantations, and the continuity of the walking line, were the main factors of making the boulevard a livable walkable street for social interactions importance. On the other hand, from the aspect of the sonic environment, the urban acoustics was not much taken into consideration at that time for two main reasons:

1- The concept of soundscapes was not yet a field of concern for urban planners.

2- For the design of the Atatürk Boulevard it was critical to discuss the sonic environment as the materials used that time; especially paving; were an important factor for noise.

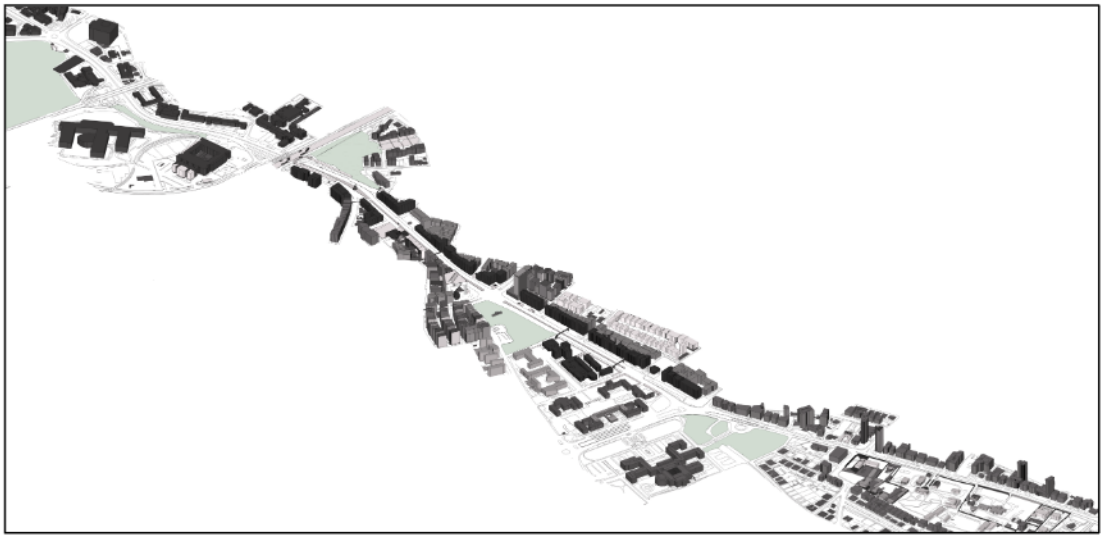


Figure 23 Atatürk Boulevard illustration 2020 (The author)

3.5. Segments of the Atatürk Boulevard

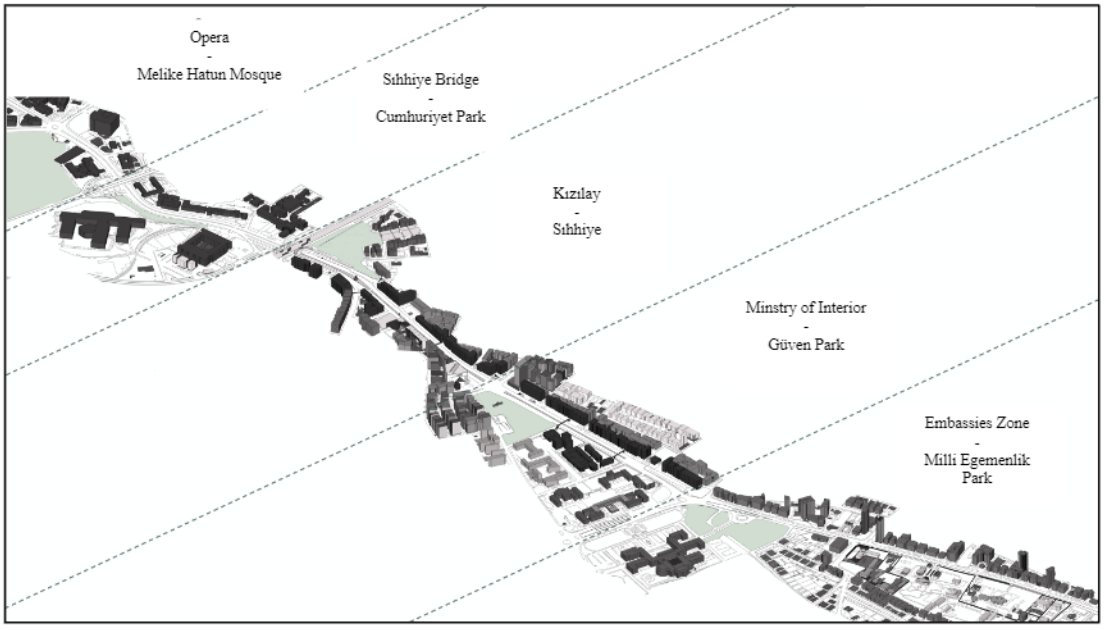


Figure 24 Segments of the Atatürk Boulevard based on the walking rhythm affected by the sonic condition. (The author)

The Atatürk Boulevard can be segmented upon different conditions. The main 2 conditions this research focus on are, the spatial condition and the sonic condition.

Comparing these 2 conditions together can provide a clear interpretation that the Atatürk Boulevard has multiple segments made up of different sections, and by that both the walking and sonic experience vary for one segment to other.

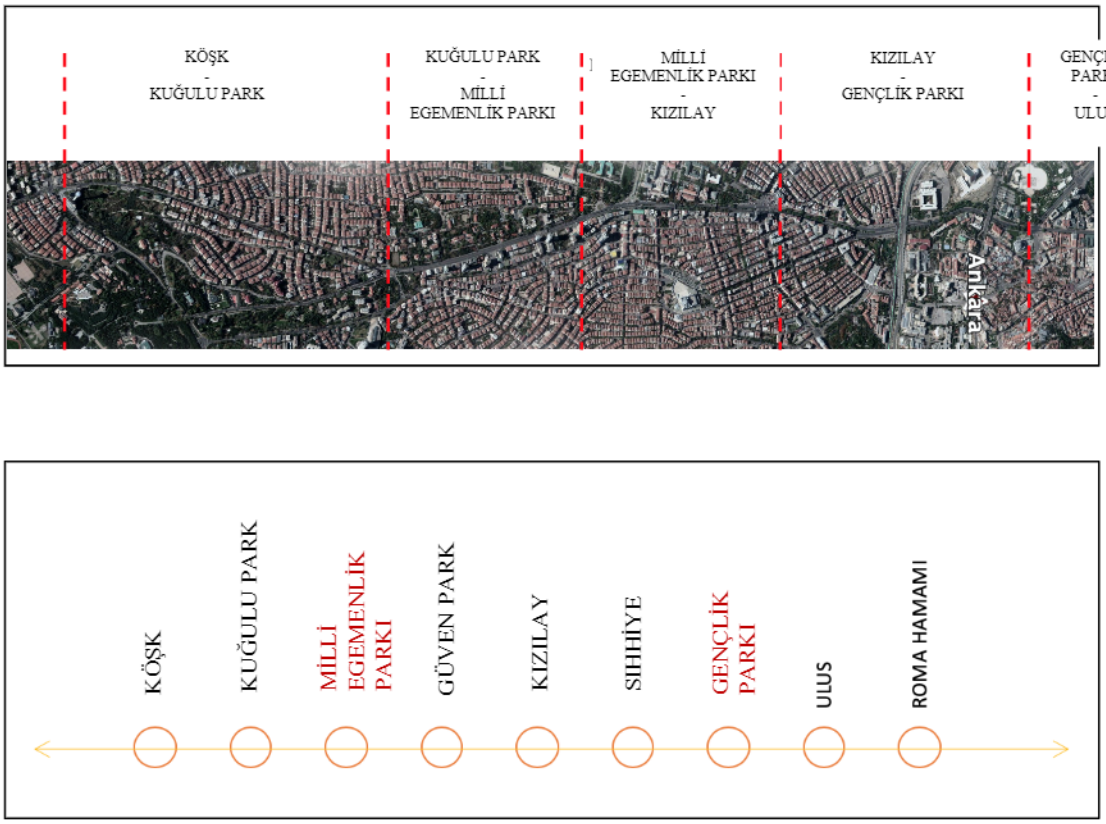


Figure 25 Division of the Atatürk Boulevard according to physical-built environment (in red: the segments this paper focus on mostly) (The author)

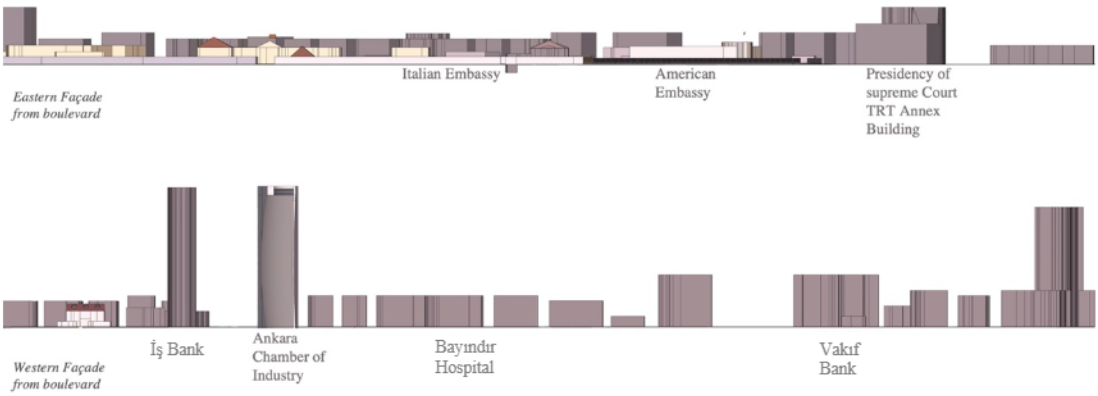
3.5.1. Zone 1: Embassies Zone - Milli Egemenlik Park

The segment is 1.12 km in length with a mostly flat surface to walk. The east side of the Atatürk Boulevard at this segment is where the walking action is focused. That is because of the embassies' border condition with the security walls introduced all along the west side.

The boulevard's width with underground tunnels connecting to different roads plays an essential role in emerging the sonic environment and the building facades' discontinuities and the variation in the building heights.

The boulevard has its maximum width at this segment, reaching approximately 32 meters for both sides, excluding the sidewalks.





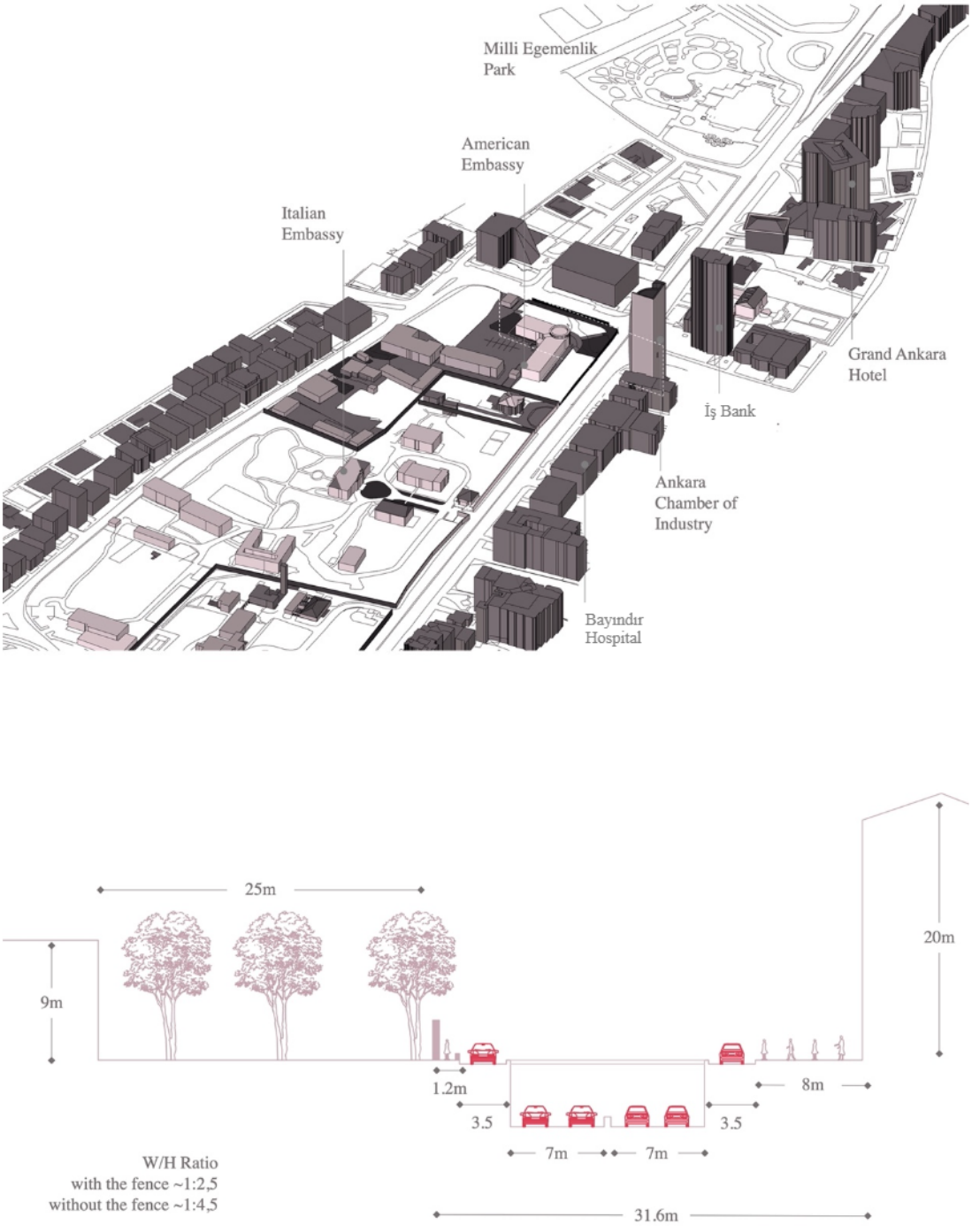
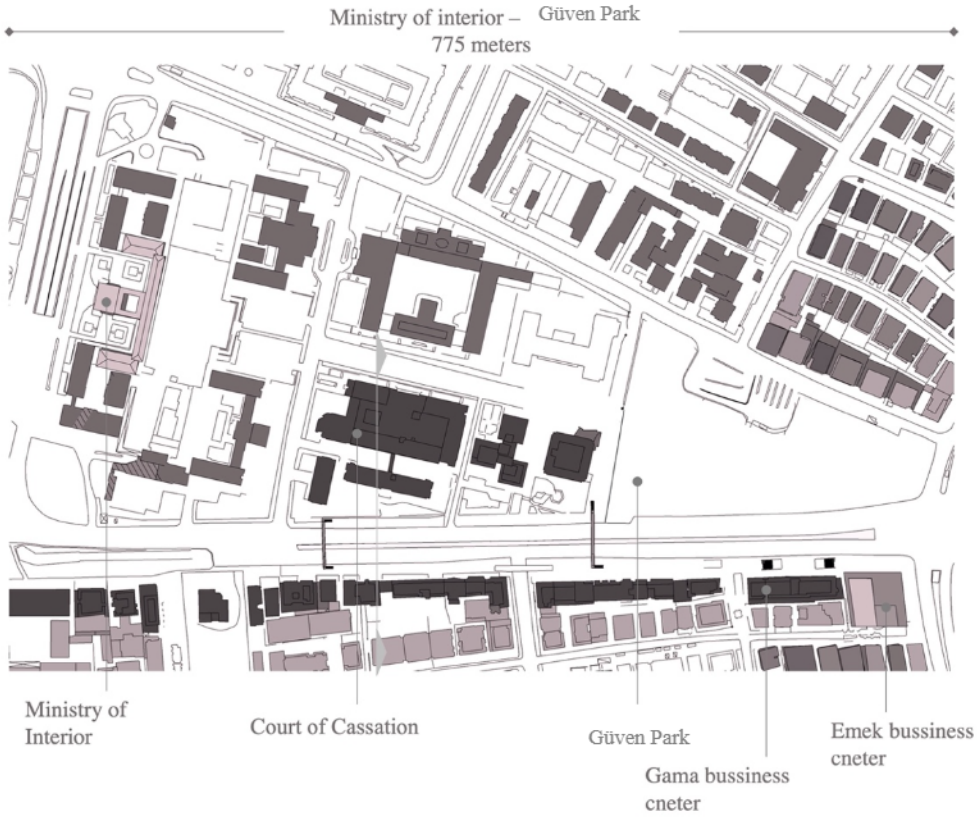


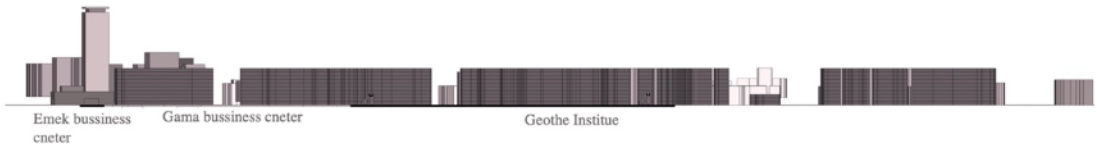
Figure 26 Embassies Zone - Milli Egemenlik Park segment illustrations (The author)

3.5.2. Zone 2: Ministry of Interior – Güven Park

The segment is 0.77 km in length with a mostly flat surface to walk. People are mostly walking on the east side of the boulevard because of the border condition due to the governmental buildings' fencing on the west side. The facades here are more compact and continue as the building function is more commercial, mostly on the east side.

The Güven Park east strip is used as a waiting bus area, making the sonic environment not fitting with the boulevard's indented park designs. In addition to that, the minibuses parking area at the west part of it. The park is more of a shortcut between transportation modes (buses, minibuses, and metros: 3 metro station entrances and exits).





Eastern Façade
from boulevard



Western Façade
from boulevard





Figure 27 Ministry of Interior – Güven Park segment illustrations (The author)

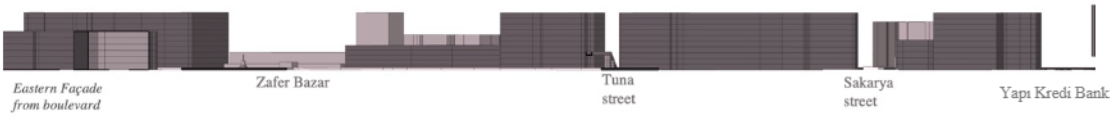
3.5.3. Zone 3: Kızılay – Sıhhiye

The segment is 0.86 km in length with a mostly flat surface to walk. Walking activity happens on both sides of the boulevard at this segment, where there a concentrated commercial variety. Also, the Kızılay bus hub is located along both sided to most destinations in the city of Ankara.

This segment features the Mustafa Kemal Atatürk statue facing the Zafer Park and shopping center as a resemblance of the republican era of the capital city.
Besides, the segment features the Hittite Sun Course sculpture, which is considered the city's symbol. At the end of the segment, Abdi Ipekçi Park is located as a space for the walking urbanite to distract themselves from the boulevard's chaos.


Kızılay – Sıhhiye
865 meters
Sakarya Street
Kızılay Shopping Mall
Zafer Shopping Center
Hitit Monument
Abdi-İpekci Park


Western Façade from boulevard
Kızılay Shopping Mall
Zafer Park (previously)


Eastern Façade from boulevard
Zafer Bazar
Tuna street
Sakarya street
Yapı Kredi Bank

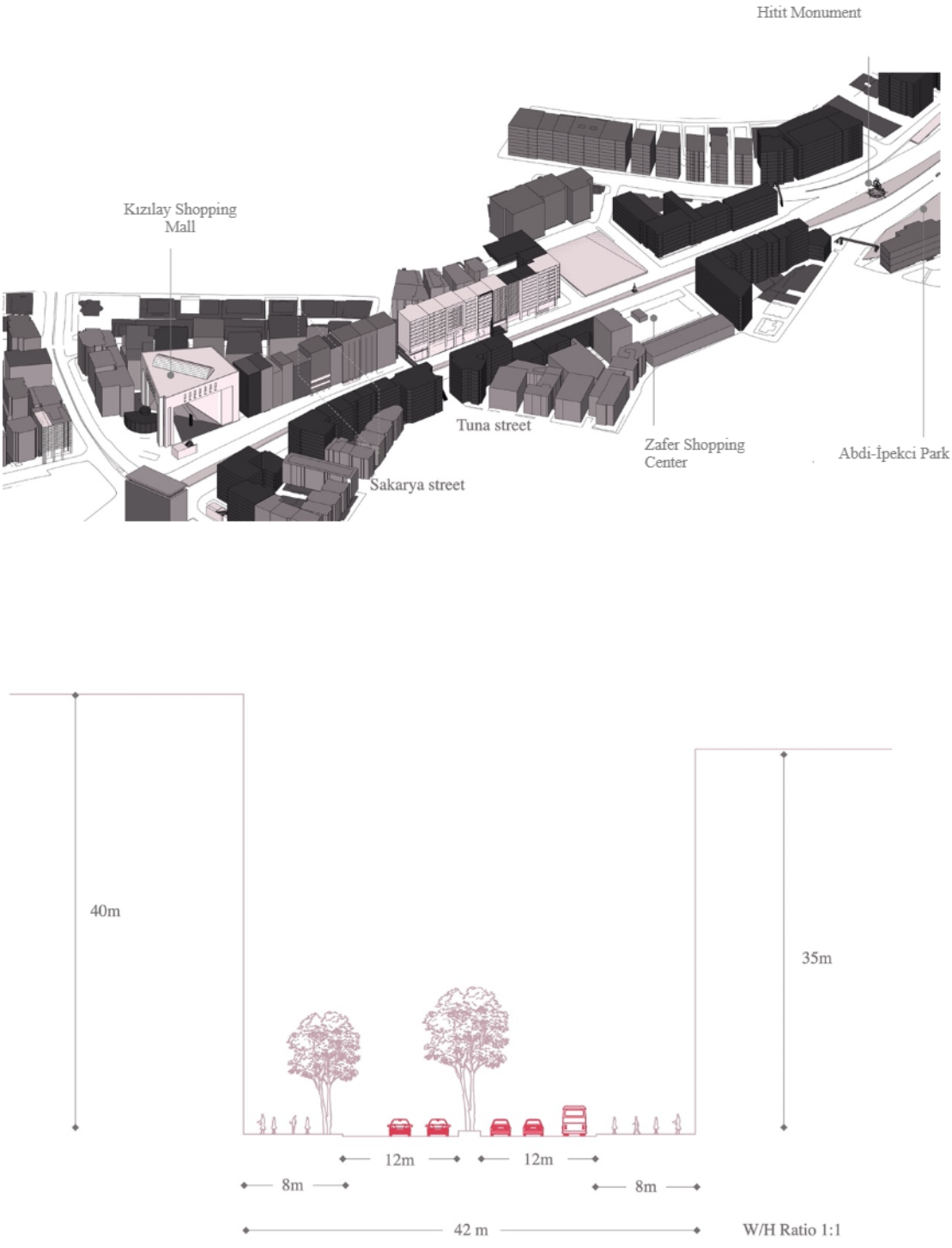
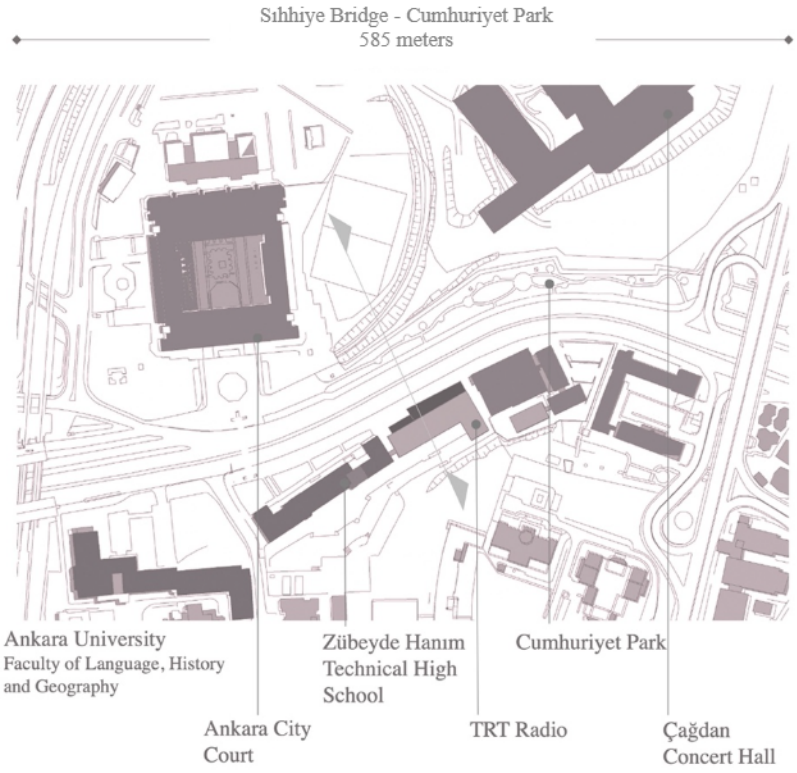
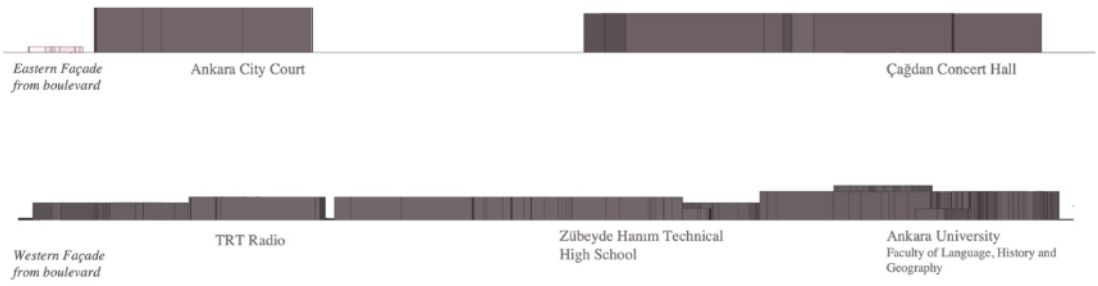


Figure 28 Kızılay – Sıhhiye segment illustrations (The author)

3.5.4. Zone 4: Sıhhiye Bridge – Cumhuriyet Park

The segment is 0.6 km in length with a mostly flat surface to walk. Usually, there is not much walking activity happening in this segment because of the enclosure level (openness) and the educational facility (Ankara University) where the entrance is admitted to the students and faculty members. Most of the walking urbanites are usually located on the west side near the city's supreme court as a central bus hub is located as a continuation for the stops under the Sıhhiye bridge.





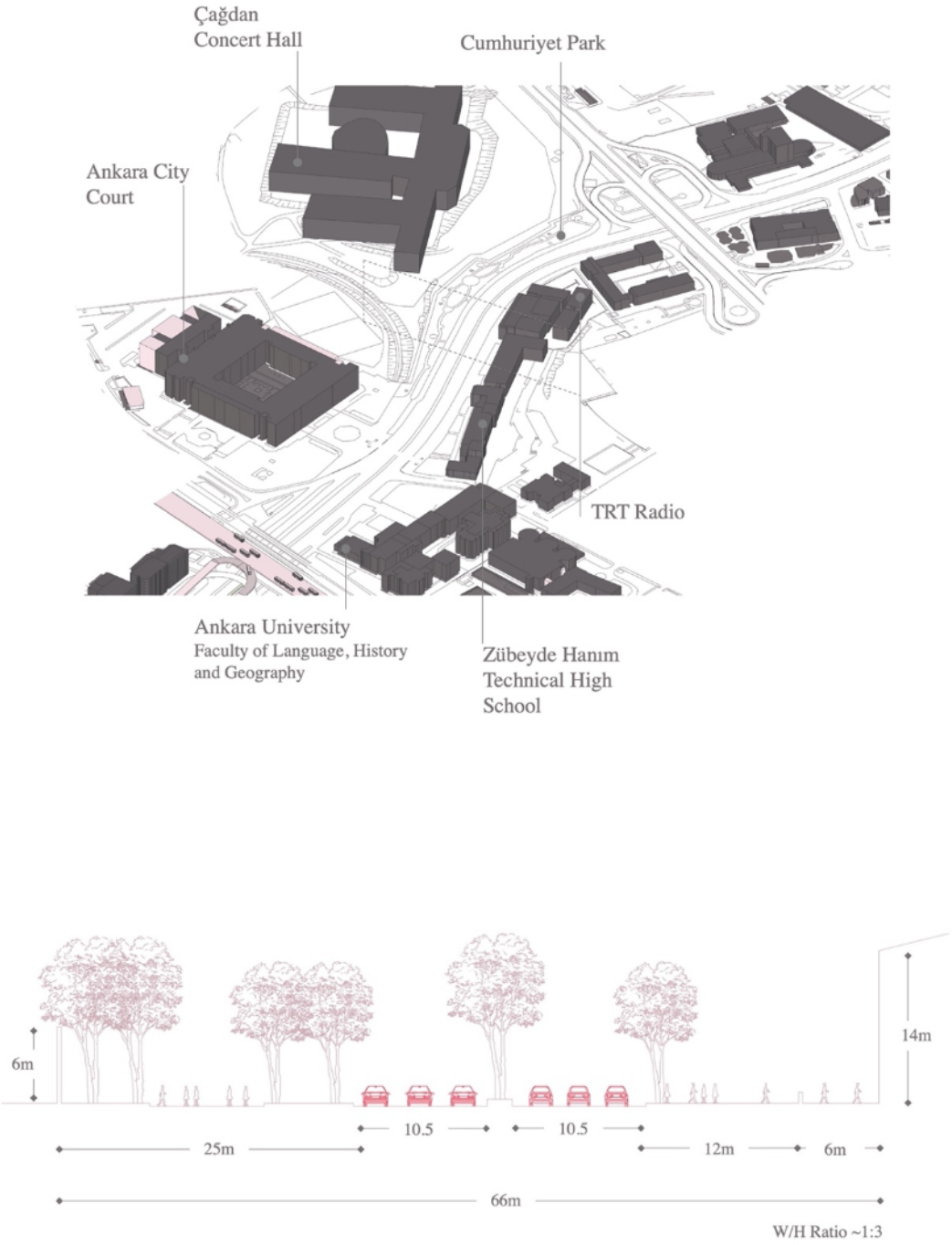
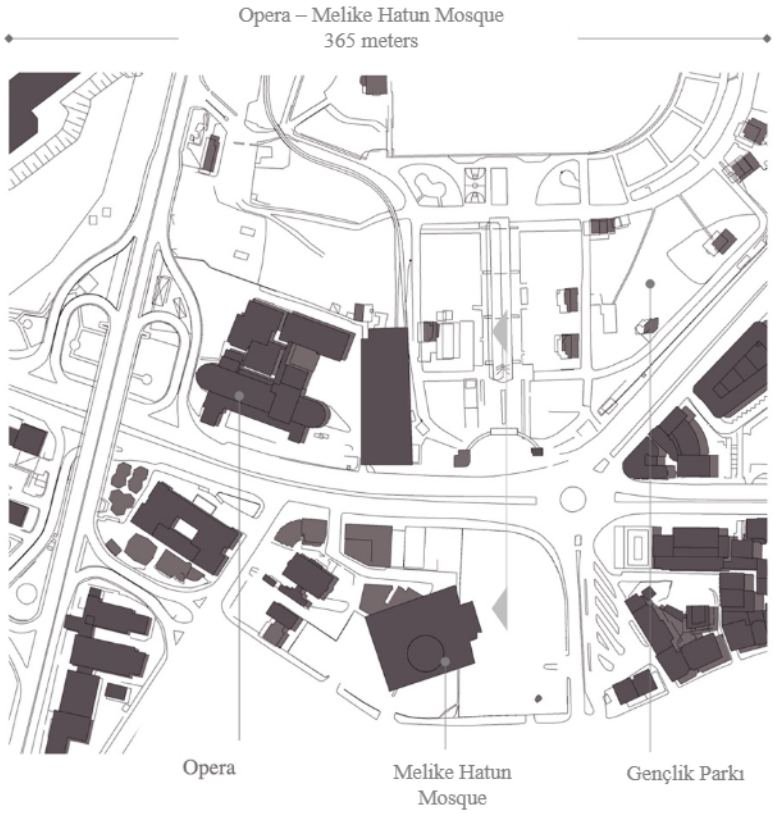


Figure 29 Sıhhiye Bridge – Cumhuriyet Park illustrations (The author)

3.5.5. Zone 5: Opera – Melike Hatun Mosque

The segment is 0.4 km in length with a mostly flat surface to walk. The walking activity is focused in this area for three activities, heading to the mosque for prayer, heading into the park or waiting for the bus. In this segment the walking urbanite is located on both sides of the boulevard as the activities start to become various.





Eastern Façade from boulevard



Western Façade from boulevard

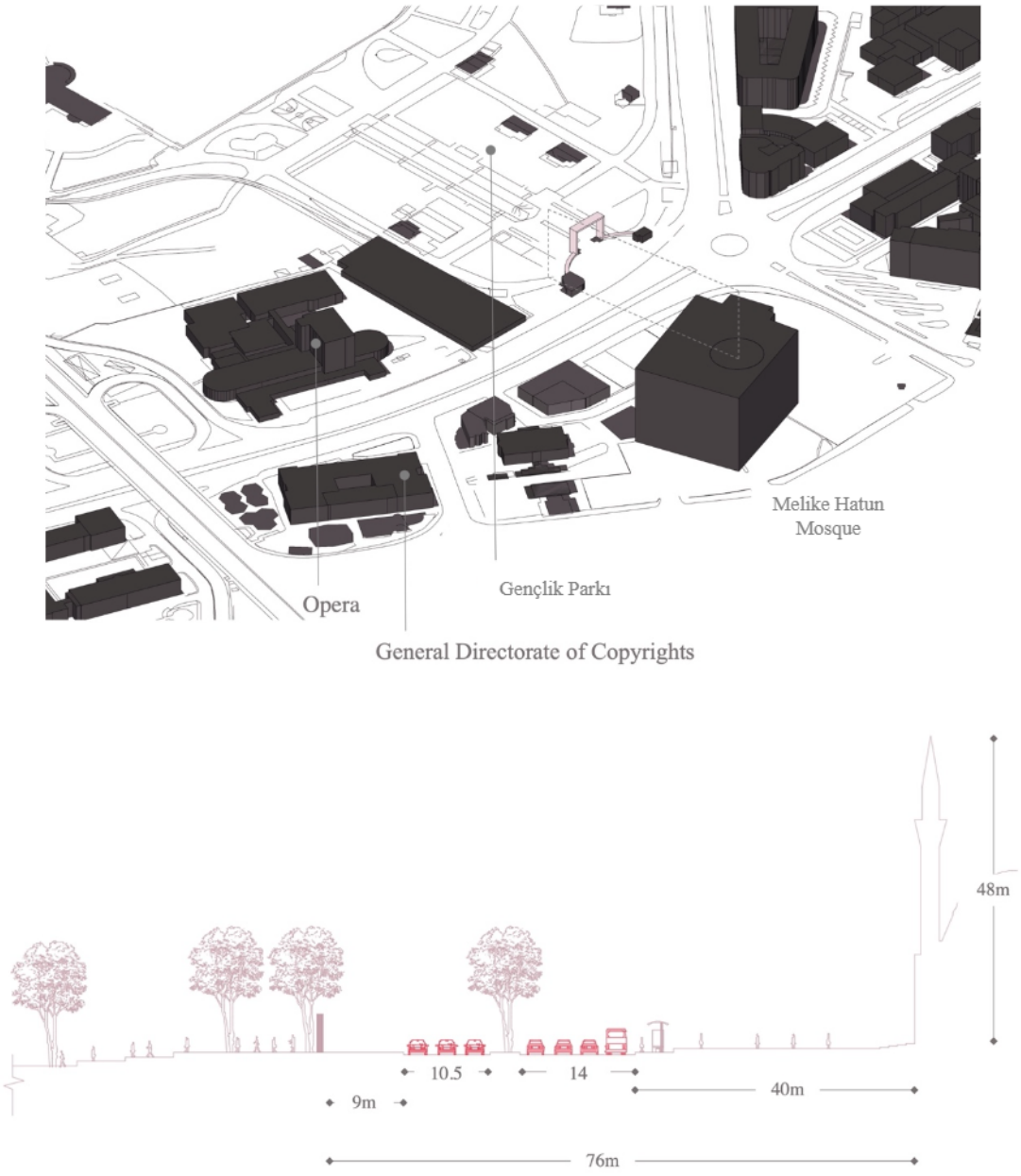


Figure 30 Melike Hatun Mosque Gençlik Parkı segment illustrations (The author)

3.6. Physical Components of the Boulevard

Concluded from the segments and the walking rhythm: the main components of the physical space that affects the walking pattern illustrated below. As they directly influence the walking pace, these components are directly related to a place's sonic environment.

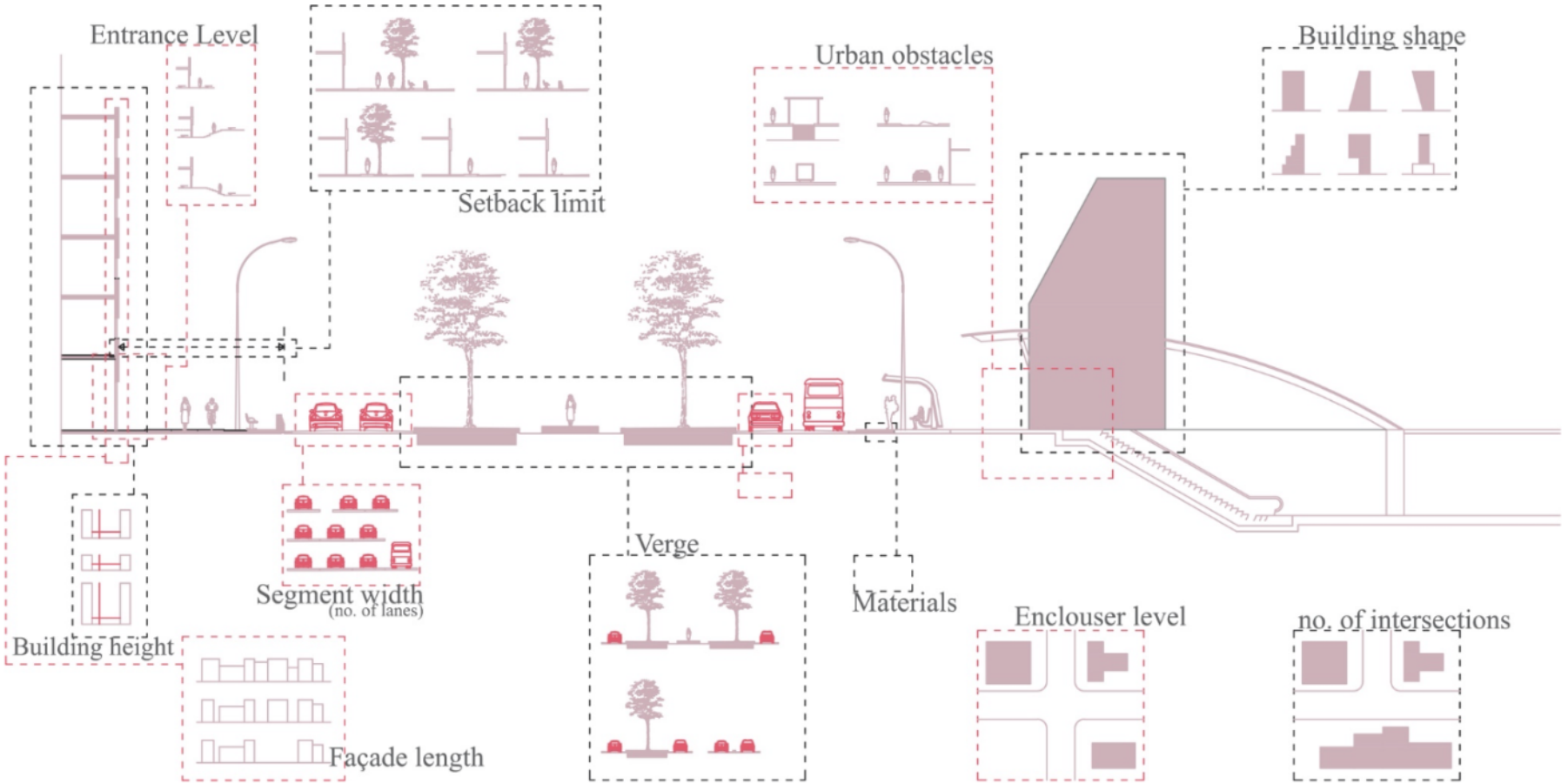


Figure 31 Physical components of the boulevard affecting the walking condition (The author)

CHAPTER 4

SONIC EFFECTS AND THE PHYSICAL-BUILT ENVIRONMENT: ATATÜRK BOULEVARD

4.1. Sonic Effects in the Urban Context

Like any other system, the urban sound system can be subjected to two forms of operations: an object of description or an object of transformation (Augoyard & Torgue, 2006). Throughout the 1980s, several different approaches to sonic space definition were developed. Nevertheless, the visual architecture typology's dimensions and proportions cannot agree with the sonic space's properties.

Two necessary interdisciplinary instruments for sound analysis were developed during the 1960s and 1970s: the "sound object[1]" and the "soundscape." Both have three functions: classification, interpretation, and interdependence.

Schaeffer disrupted noise, sound, and music classifications in academia. This piece introduces a general auditory phenomenology. The primary definition is defined not as a musical entity, but more specifically as an entity of sound that can reflect any world's sound.

The sound-object principle can be used in three different ways. It explains the relationship between the physical signal and the perceptive intentionality from a realistic and empirical perspective, without which there would be no perception. It is a phenomenological search for the nature of sound from the theoretical point of view. Finally, the sound source is meant to be the basic unit of a broad and interdisciplinary *solfège*[2] of sounds from the instrumentation point of view.

[1] the smallest self-contained component of a soundscape, which is interpretable by its characteristic of spectrum, loudness, and envelope form. (Schaeffer, 1966)
[2] Study of the elementary principles of music and its notation.

The soundscape definition seems too broad and blurred, while the sound object appears to be too basic (in terms of organizational levels). Acoustic sources, inhabited space, and the related pair of sound perception and sound action are just some of the terms that we should consider in our observation while studying the sonic environment.

The concept that has finally been embraced and put at the center of the framework is the "sonic effect[3]," which is becoming increasingly important in the three areas where it is convenient: social sciences, applied acoustics, and urban studies.

“Sonic effect” is another systematic effort to comprehend the sound world occurred in the 1970s. The critical area of application is the sonic aspect of various environments (rural and urban) surrounding human beings in their everyday lives. In France, in 1980, architect and sound designer Bernard Delage related and studied the story of the invention of "soundscape." Some urban environmentalists believed that the sound environment need not be restricted to acoustic assessment (in its strict sense) or the focus on noise only. (Augoyard & Torgue, 2006)

A soundscape understanding provides the opportunity to access the dynamic response to noise from a group outside the quantitative measurement details. Schafer when he first coined the term "soundscape" in the 1960s, he acknowledged the critical impact of the acoustic environment, a concept adopted as a tool for rethinking the perception of "noise[4]" and its effects on humans. The task was to take into account the limitations of acoustic measurements and their cultural aspect, an idea introduced by Schafer's neologism and continuing work. (Schulte-Fortkamp & Jordan, 2016)

The lack of standard definitions to define and design all of the environment's perceptible sound sources, be they disruptive stimuli, musical sounds, or some other sources. The soundscape definition seems too broad and blurry, while the sound object seems too abstract (in terms of organizational levels) to allow us to work comfortably on the scale of everyday activity and the scale of architectural and urban spaces. To use a linguistic

[3] To replicate a complex acoustic environment, where sounds are representative and important for generating a desirable ambience/acoustic space. (Beeby, 1966)
[4] The best distinguishing descriptor of "noise" is still "unwanted sound." This makes noise a descriptive concept because many people have different perceptions about what noise is. (from: https://www.sfu.ca/sonic-studio-webdav/handbook/Noise.html)

example, the soundscape corresponds to a text's entire structure, while the sound object corresponds to the first compositional level: words and syntagma. We are short of straightforward methods to work on an intermediate stage, the one of sentence grammar or – to leave the linguistic contrast – the stage of a code specifying potential configurations between the three words to be considered in our observation: acoustic sources, occupied space and the pair of sound perception and sound action linked together.

The sonic effect; often observable and usually linked to a given context's physical characteristics; was not objectively or subjectively reducible. The idea of sonic effect appeared to explain this interplay between the physical sound world, the sound world of a socio-cultural group, and each individual's "internal soundscape."

In the social sciences, the sonic effect was first used. The second field of application of the sonic effect is constituted by urban planning and the sound instrumentalism. Architectural and urban knowledge are considered necessary in understanding the sonic environment as the physical space itself shapes many sonic effects.

Most effects of sound depend directly on spatial context. Without a particular organization and morphology of space, there can be no reverberation, cut out, or filtration for example. Urban zoning, the layout of road systems, traffic maps, and the distribution of socioeconomic activities can also offer other efficient possibilities for useful information or interpretation to citizens.
Sound is a transmission and is thus explicitly related to circumstances. It is related to the features of the built environment and the hearing and listening physical conditions.

The sonic effect is not a concept. The survey of objects to which it refers stays free. The notion is only partly understood; Paradigmatic is the sonic effect. It is characteristic of the modal or instrumental sound dimensions. It gives a hint to their existence and standing.

The basic meaning of the word "effect" that we can use easily is found in physics, multi-media art, and in the industry of electronic and numerical instruments. It also carries a semiotic, philosophical significance.

During the last two centuries, physicists turned their attention to "effects" as facts whose appearance did not directly refer to a cause. The result is not an entity in itself, in this context. Noise or sound in the Doppler Effect does not "transform" physically; it is the relationship between the walking urbanite and the emitting object (sound source).

Sound has always been a privileged device for 'creating an effect,' to amaze. Sound has an immediate emotional force that every culture has used. In the ordinary sound environment, this surplus of feeling that occurs in the perception of sounds in a remarkable sense or during an extraordinary circumstance does not disappear. In this way, there is no relation between the sound and the sonic effect, but rather a collection of reciprocal references between the physically observable, if often abstract, sound and its perception, the particular fashioning by which it enters into perceptive creation.

Many results participate entirely in the creation of space at the level of architectural creation and urban design and contribute to defining its identity. The sonic effect is probably one of the most subtle tools of the urban design process. Designers' lack of understanding about this notion is possibly due to a mental blockage created by visual culture and learning.

Southworth's study first indicated how sounds influence visible city perception. A restricted visual space can be expanded to a vast auditory space in a particular urban setting utilizing acoustic qualities. In other words, acoustic knowledge embraces and extends spatial perception beyond many physical and visual restrictions. One essential parameter that is inseparable from the overall setting is determining the characteristics of a particular urban setting, environmental sounds. (Biçer, 2019)

The walking urbanite on the Atatürk Boulevard is aware of the sonic environment but not of the sonic effects while on the road. Sonic effects happing on the Atatürk Boulevard can be classified into two categories:

1- Primary sonic effects (PSE)
2- Secondary sonic effects (SSE)

This classification is due to the impact of the effect on the walking urbanite despite of their category. Primary sonic effects are directly affected by the physical-built environment and affecting more (as numbers) people regardless of time. On the other hand, secondary sonic effects are effects that the walking urbanite might or might not experience while walking. Secondary effects are usually constrained by time.

First, the list of tables below will discuss the secondary sonic effects (SSE) referring to the Atatürk Boulevard to provide a clear example of each. Then the 5 primary sonic effects will be disused in depth again referring the Atatürk Boulevard.

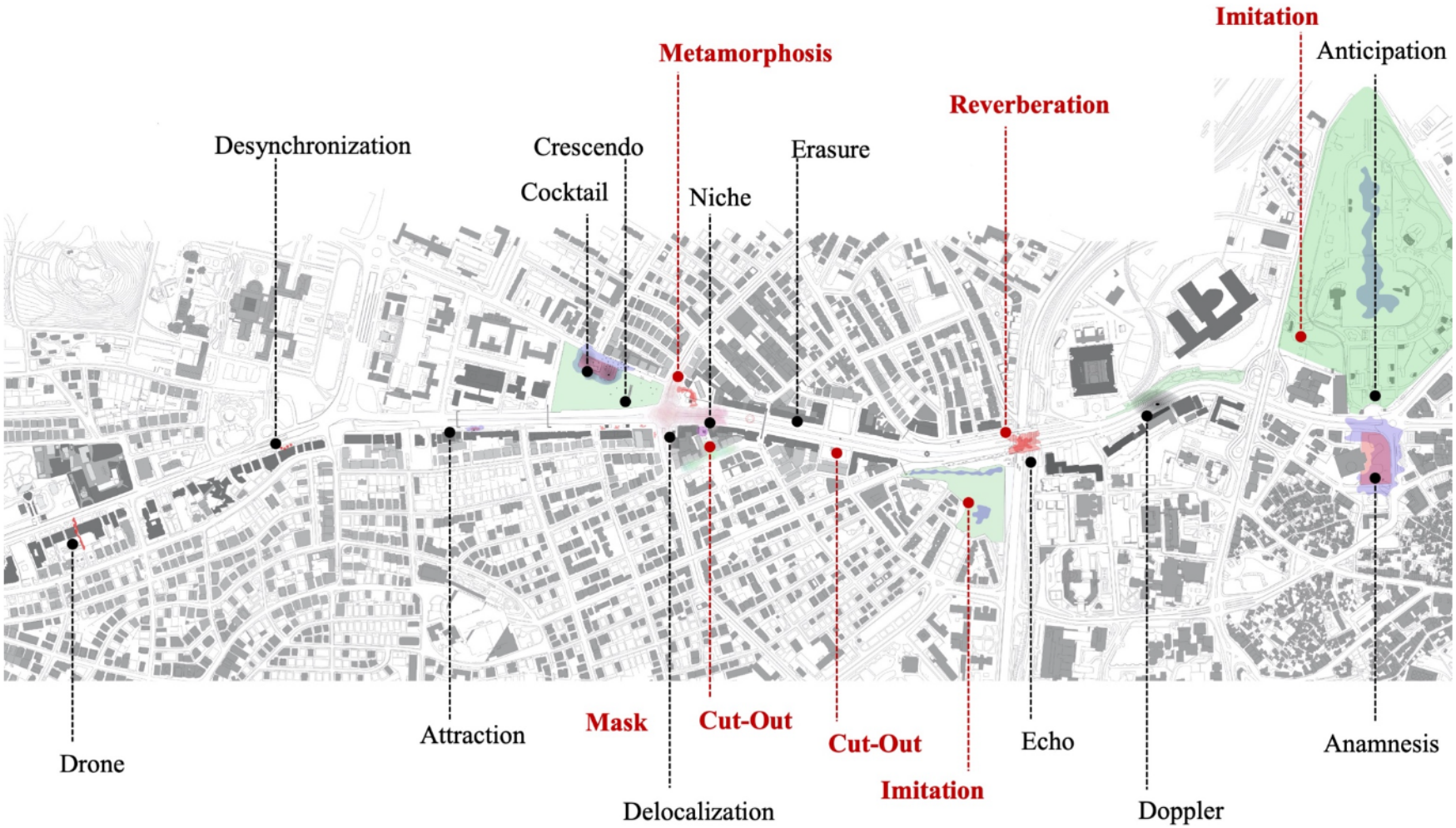


Figure 32 Sonic effects on the Atatürk Boulevard (The author)

4.2. Primary Sonic Effects

4.2.1. *Cut-Out*

The cut-out effect refers to a sudden decrease in amplitude associated with an unexpected shift in a sound's spectral envelope or a reverberation alteration (e.g. switching from reverberant to dull spaces). This effect is a major articulation mechanism between spaces and locations; it punctuates movement from one ambience to another. (Augoyard & Torgue, 2006)

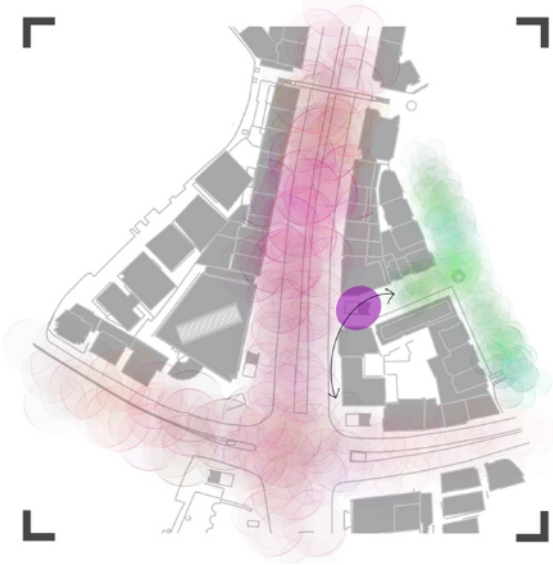
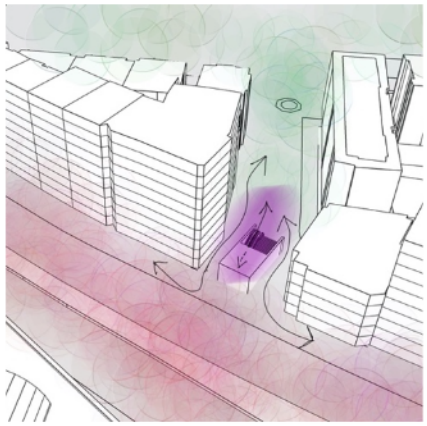
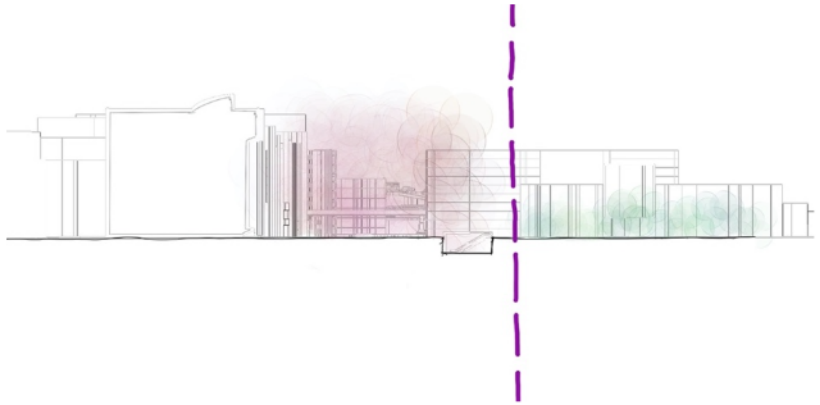
Two types of cut can be defined:

1- The one that take place at the level of utterance.
2- The one that is determined by the space organization.

The effect is perceived due to two major points. First, the movement of the listener, where the listener will experience a drop of intensity, change of ambience or a complete change of the sound source.
When the listener is moving, it appears to be that the ear is playing the role of perceiving the change. In fact, the role of the built environment plays an important role of how each person is perceiving the surrounding sounds.
In the case of Zafer Shopping center, the effect appears clearly while entering through the sliding door. The significance of the effect happens because of the width of the side walk where the distance to the main street (width of the main street with the speed of traffic)

Cut out effect occur: when going from a car traffic zone to a pedestrian zone, from a residential area to a commercial area, ***from a boulevard to a street*** (case of Sakarya street), and more generally from an open space to a closed one (entering a shopping center).

Table 5 The Cut-Out case study of Sakarya Street (The author)

CUT-OUT	The cut-out effect refers to a sudden decrease in amplitude associated with an unexpected shift in a sound's spectral envelope or a reverberation alteration (e.g. switching from reverberant to dull spaces). This effect is a major articulation mechanism between spaces and locations; it punctuates movement from one ambience to another. (Augoyard & Torgue, 2006)	
 Sakarya Cad. Entrance from the Atatürk Boulevard	Axonometry  Form of Walking: Stroller Window shopper Shopper	Section  The definition of CUT-OUT in the Atatürk Boulevard aspect: 1. Cases similar to Sakarya street: The drop of sound intensity happening became of the conditions of propagation as the listener is moving. 2. Cases similar to shopping streets entrances: The experience of contrast between public and private space especially at building entrances.

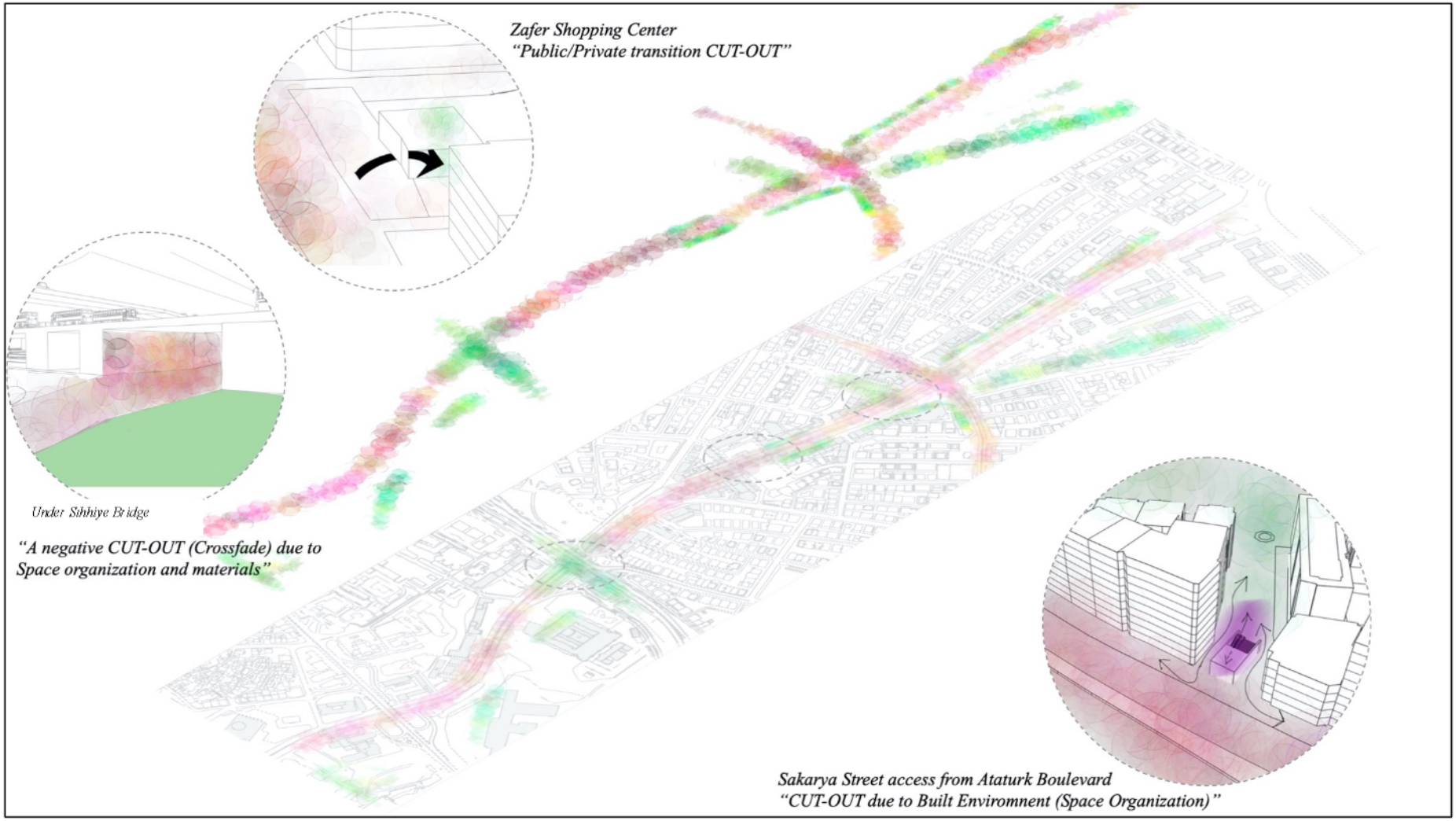


Figure 33 The CUT-OUT sonic effect along the studied segment (The author)

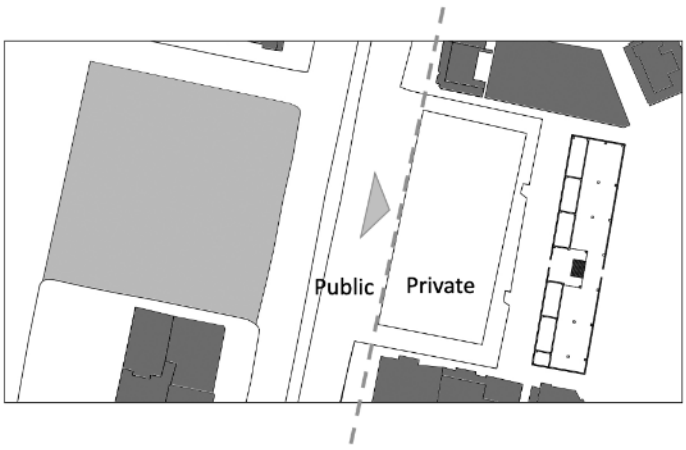


Figure 34 The Cut-Out effect at the building entrance level of Zafer center (The author)

The difference between public spaces and private spaces is felt here. The entrances to the building are spaces that particularly favor the presence of the cut-out effect. Entering a home or a corridor, or crossing a courtyard, are everyday activities that create more or less contrasting cut-out effects between spaces of different rank. In this case, the effect is measured by a decrease in intensity characteristic of the public / private transition, even though the alteration of the spectral envelope following the change is still very clear.



Figure 35 Sakarya Street entrance from the Atatürk Boulevard 1990 and 2020 (Source: Google Earth)

There are two similar effects to Cut Out which are blurring and erasure.

Blurring is the sudden disappearance of a sound while moving from one place to the other.

Erasure is the fact that the listener forgets the sound as entering an new sound atmosphere or environment.

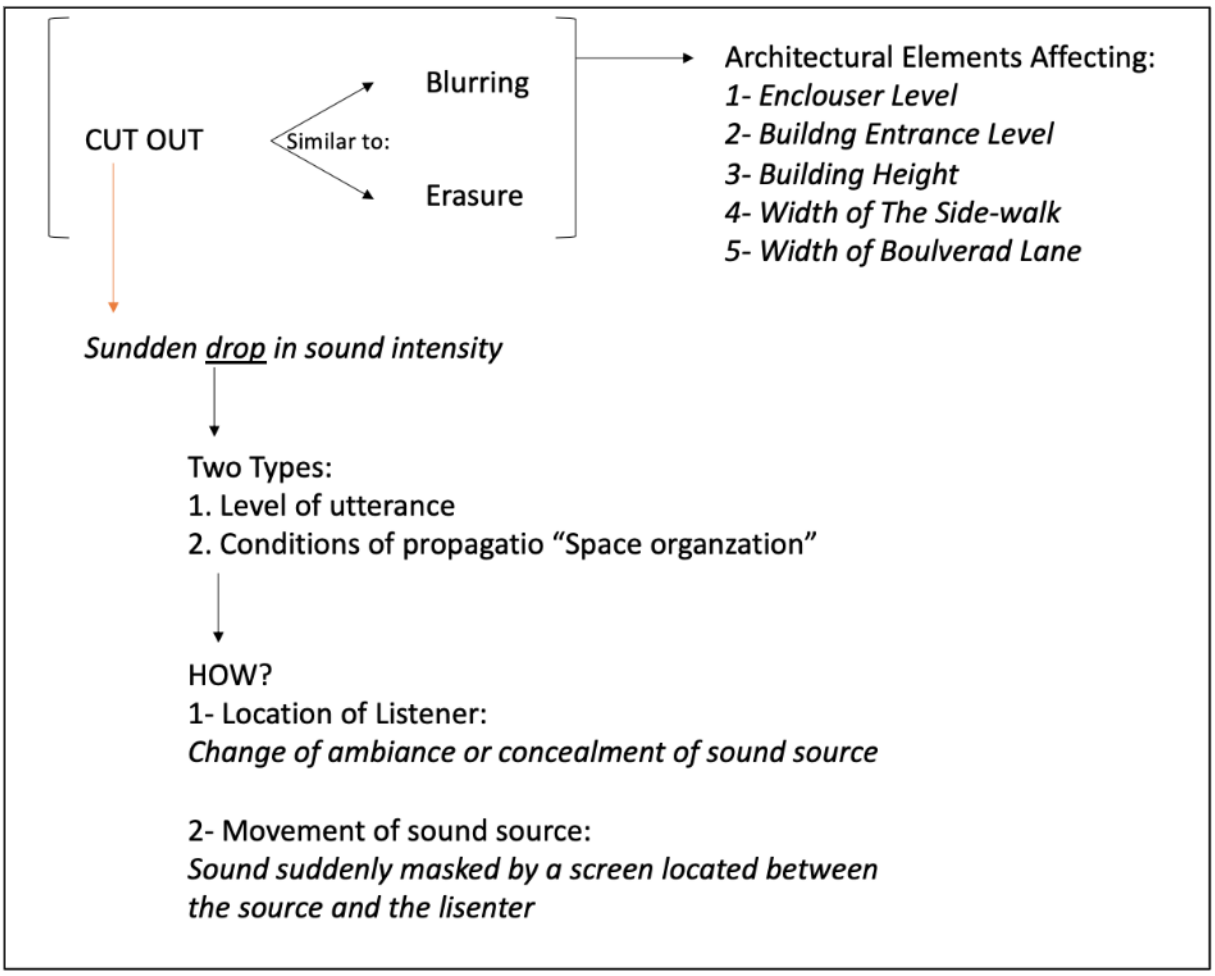


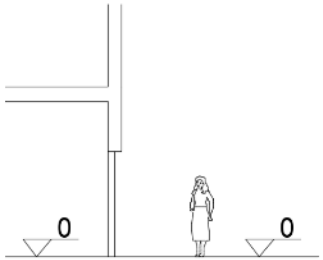
Figure 36 CUT-OUT Sonic effect summarized layout (The author)

Building Entrance Level as an example of the physical-built environment effect on cut-out:

Usually the Cut out sonic effect happens to appear at the same level where the sound intensity drop. This means, the sound source, the listener and the new listener location are all at the same level.

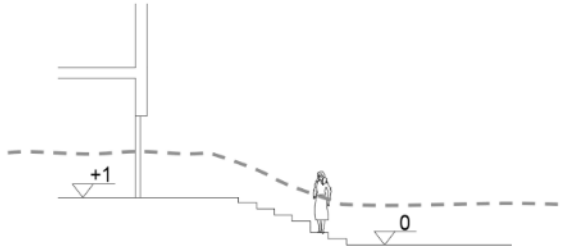
In the case of the Atatürk Boulevard all the Cut Out effects appear clearly at the ground level only. In both types (level of utterance and space organization) if the listener change the level then the sonic effect is no more a cut out.
Table (6) below describes in depth how same level and different levels affect the perceiving of the sonic effect.

Table 6 Building entrance level effect on the CUT-OUT sonic effect (The author)



Ground Level entrance

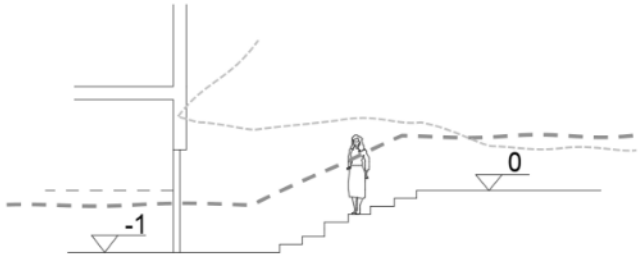
At the ground level the public / private transition helps the Cut out effect to be identified directly as the transition in the listener happens to change in a sudden which will lead to sudden drop in intensity of the sound changing the ambiance around.



> Ground level entrance

In the case where the building entrance level is lower than the street level, the sonic effect happening because of this change is not anymore cut out but it is Fade.

Fade is the disappearance of a sound by gradual decrease in volume. A fader is a volume regulated potentiometer.



< Ground level entrance

Changing level from ground level to a higher level: The Cut out can be still perceived by the listener yet with the physical activity of climbing stairs or walking on a ramp the intensity drop effect will be less as the listener is aware of the change that will happen.

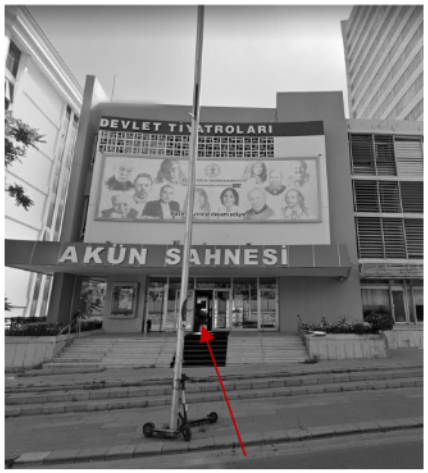
In this case the effect happens to be more of Erasure rather than Cut Out.

Ground Level entrance



Mostly when entering any building directly from the boulevard side walk. (Example: entering to Gama business center – Kızılay)

> Ground level entrance



When climbing stairs to reach the building entrance. (Example: Akun Theater)

< Ground level entrance



When descending the stairs to reach the building entrance. (Example: 100. Yil Bazar – Ulus)

4.2.2. *Imitation*

A sound emission intentionally created according to a reference model. Imitation implies the use of a cultural code which enables the sound emission to recognize this style. Imitation is used as a mechanism in the global nature of a sound utterance, and it functions in a nuanced way; imitation means a sense of meaning on the part of the emitter and, to be correctly understood, requires the awareness of the relation on the part of the listener too.

In urban planning, it introduces a particular semiotic effect in the urban environment by introducing "natural" sounds (water, leaves or wind). The sound designer tries to create a country side environment in the city, or at least represent it.



Figure 37 Abdi-İpekci Park, Sıhhiye (Source: http://2.bp.blogspot.com/-4ALKQ3RsvMA/VALgKLsxrkI/AAAAAAAAEz4/wL31esDPLWc/s1600/DSCN3495.JPG)

In any way, cities can be hostile areas. However, in keeping with individual, social and economic complexities, they may also deliver enjoyable atmospheres. The sense of environment and well-being plays a relevant role in the interpretation of the nature of the ambient sound. Urban parks are part of the city fabric and, at least relative to the surrounding neighborhoods, they are generally well embraced by people for offering restoration, certain "quiet" and more friendly locations. In order to test the coherence of the sound with the dynamics of the park and to consider what makes

those areas interesting to the tourist, research on the soundscape of the park has been carried out. (Bento-Coelho & Soares, 2014)



Figure 38 Water fountains at the entrance of the Gençlik Park. (Source: Google Earth)

Many parks are set out in a comparatively small area, but made to look larger by playing with the experience of the walking urbanite in subtle ways, including the articulation of forced viewpoints and the manipulating of interactions between time and space. (Cerwén, 2020)

After a rapid decrease in sound volume, this Soundscape Activity takes advantage of the relative calm encountered. This is especially useful when used to provide a sense of tranquility as a first impression in combination with an entry. In most of the parks along the boulevard, 'tranquility caused by comparison' could be observed to different degree, but the impact in the Gençlik and Abdi İpekçi Parks was especially conspicuous.

Given its urban position in the middle of road traffic and other disruptive events, Abdi İpekci and the youth parks are remarkably quiet. Garden walls combined with vegetation efficiently screen the surrounding city, and the remaining noise is masked by the soothing sound of water. The most pronounced result is the entrance to the park,

where a trail takes the walking urbanite through a small entrance and then directly to the right for optimum noise reduction.

In memory of Abdi İpekçi, Abdi İpekçi Park, also known as "Sanitary Square," was opened in 1981. Its surface area is 36,800 m2. There are wide grass areas in the park, a pool, a tea garden, a playground, and a two-handed sculpture opening up to the sky.

This park is located next to the bridge at Sıhhiye. It is a place for young and elderly people, those who go to the market, those who take the subway, those who come with their beloved ones, on the way to work or to school, because of its location, close to Kızılay and bus stops. Any of the areas near to the park are Hacettepe Hospital, Ankara Hospital, and the City Courthouse.

For anyone searching for branches of trees hitting the lake, the sound of water and a little shade, the park is the choice. Although it protects against the summer heat, in the winter of Ankara, not many people are found here.

The definition of cut-out as described by Augoyard and Torgue is closely linked to 'tranquility caused by contrast'. Cut-out is characterized as a sudden drop in intensity associated with a sudden shift in a sound's spectral envelope or reverberation alteration as discussed earlier (Augoyard & Torgue, 2006). The authors underline the potential of architectural and urban planning cut-outs as a way of articulating the transition between various types of spaces, such as private and public spaces. Tranquility is not listed per sonic environment, although it can be inferred from the context, as the difference between intensities is highlighted.
"Quiet sound's" are subtle sonic characteristics. However, they can be rich in knowledge and complexities and therefore promote enhanced listening. Usually, "silent sound's" are correlated with a low ambient noise level.

Table 7 The Imitation case study of Abdi İpekçi Park and the Gençlik Parkı (The author)

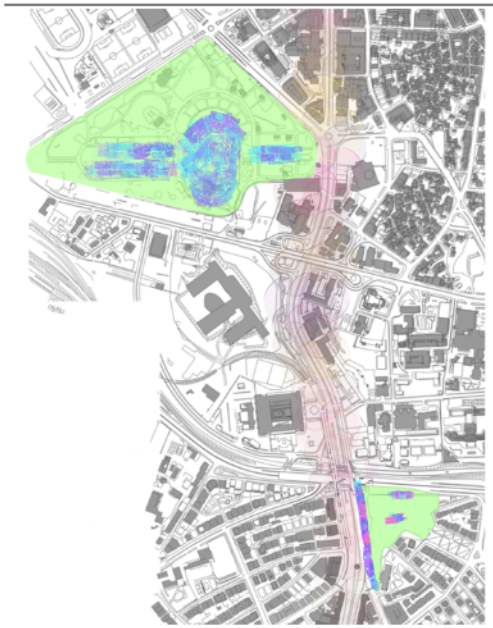
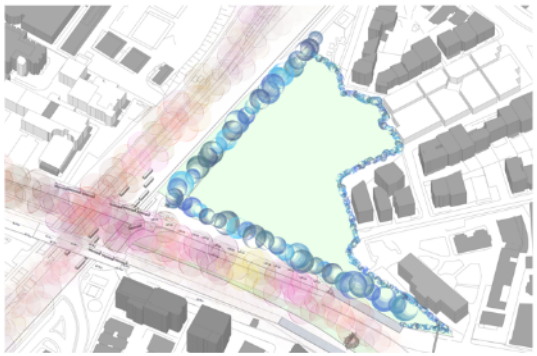
Imitation	A sonic effect that refers to a sound emission that is intentionally produced according to a reference style. Imitation means the use of a code in the sound emission that enables identification in this type. (Augoyard & Torgue, 2006)
 Abdi-İpekçi and Gençlik Parkı along the boulevard	Axonometry  Form of Walking: Stroller / Flaneur
	 The definition of Imitation in the Atatürk Boulevard aspect: *The sense of a calm (can be green) area along a busy chaotic vehicular street.*

Table (8) below show picture frames from 3 different videos of the Gençlik Parkı from 3 different durations.

QR-code 1 Videos from the Gençlik Parkı in 1984, 1994 and 2019 (Source: Youtube)

QR-code 2 Water fountains at the Gençlik Parkı (Recording by the author)

The purpose is to show that while planning the main urban park of Ankara, planners where focusing on the visual appeal this park will bring to the user. As discussed before, because the physical-built environment components affecting the walking and visual perception are approximately the same affecting the sonic ambiance of a space. We can see that because of the surface area, plantations and water elements the park

plays a role of an escape from the chaos of the city of Ankara especially being directly at the border of the Atatürk Boulevard.

Also, figure (36) of Abdi-İpekçi Park shows that it was purposely planned to bring the village sense into the busy city of Ankara.

The park in its configuration today is a visual and sonic escape from the hectic stress of the city. Its location directly on the Atatürk Boulevard close by the Sıhhiye bridge which is one of the most noisy environments, makes the walking urbanite while entering it feels that they are out of the busy context of the boulevard.

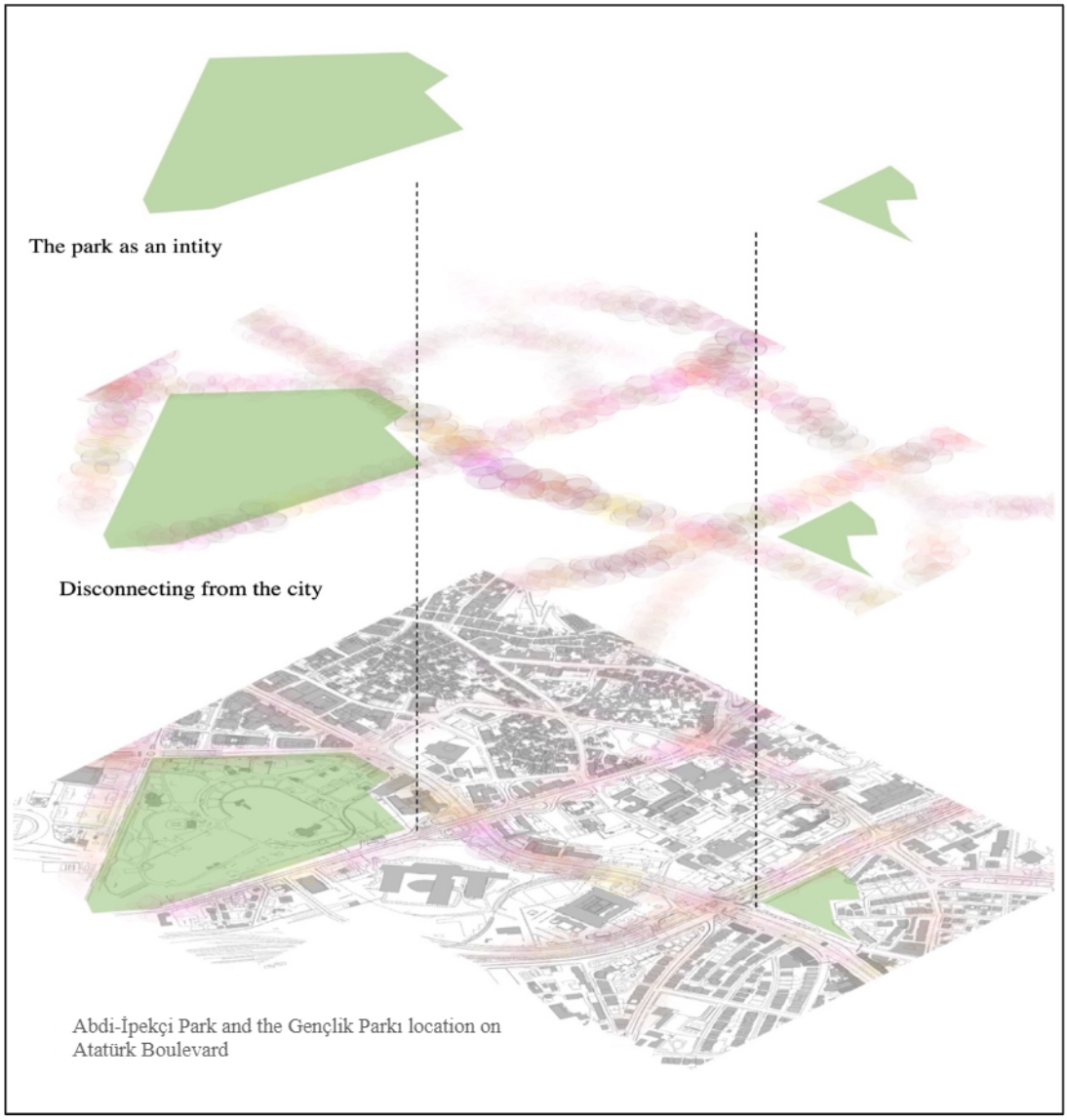
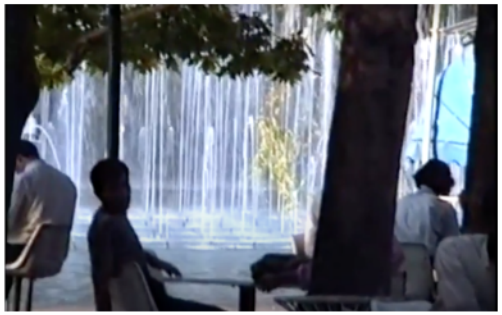


Figure 39 Location of Abdi İpekçi Park and the Gençlik Parkı (The author)

Table 8 Gençlik Parkı in different times (Source: Youtube)

1984	1994	2019
		
		
		

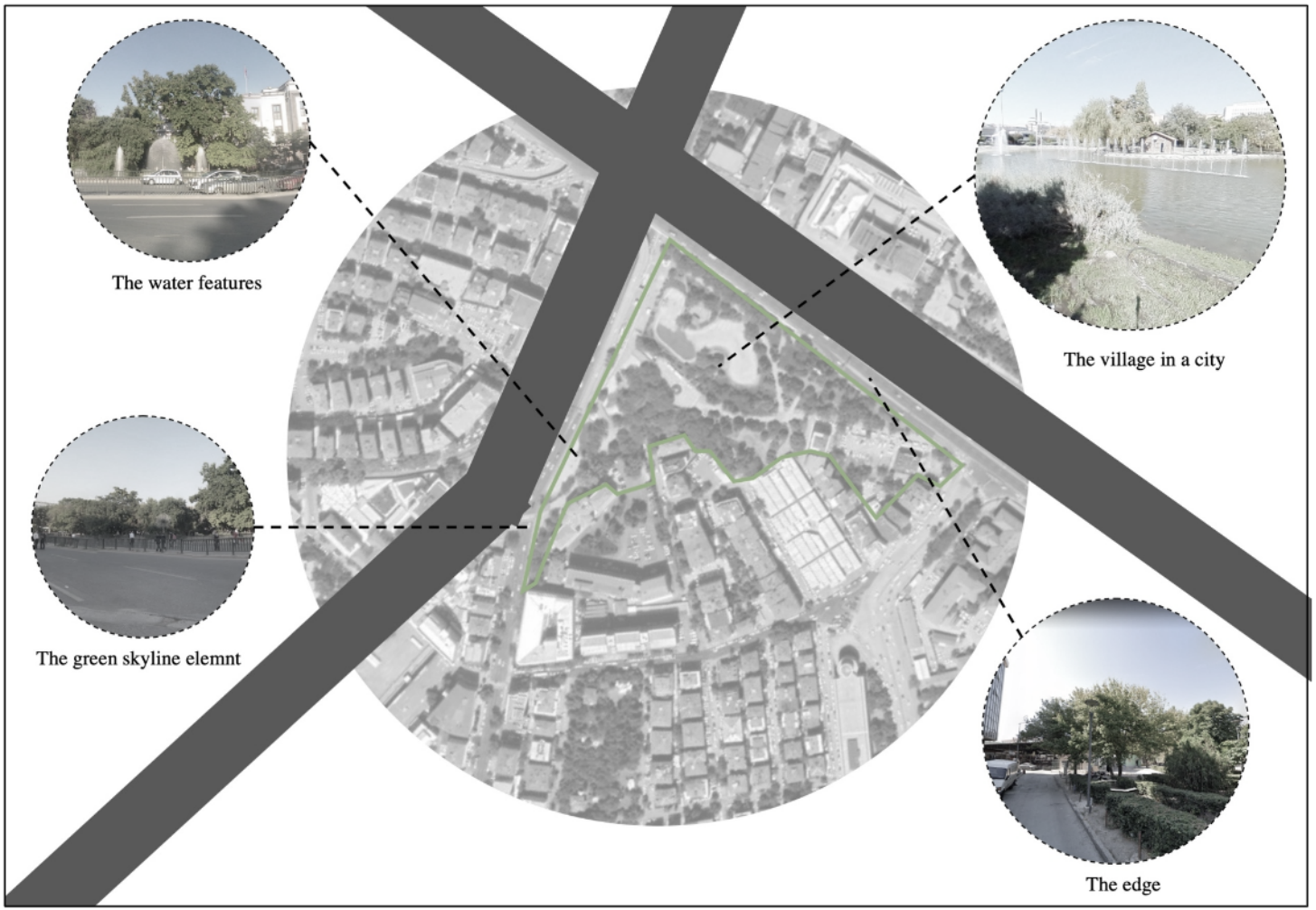


Figure 40 The Imitation sonic effect features at Abdi-İpekçi Park (The author)

4.2.3. *Mask*

The mask effect is the appearance of a sound that, regardless of its volume or the distribution of its frequencies, partly or entirely hides a particular tone. The effect is also a spontaneous psychophysiological response. This effect, which is readily illustrated acoustically, can be perceived to be either parasitic or positive in the masking sound. (Augoyard & Torgue, 2006)

There is two masking forms – parasite and favorable – will cause counter-values in this area. The same sound type generates different subjective perceptions depending on the context. For example, fountains build a wireless mask that allows the city's urban drone to be avoided. The same fountain may seem to be parasitic in a quiet place.



Figure 41 Lottery seller at Kızılay square (source: https://www.dha.com.tr/yurt/ankarada-milli-piyangonun-yilbasi-biletlerine-yogun-talep/haber-1803350)

QR-code 3 Female lottery seller at Kızılay square (Sound recording by the author)

In simple words, the masking effect can be perceived as a sudden sound in a context in with no time frame.

On the Atatürk Boulevard, each resident of Ankara have experienced the effect no matter if they are aware of the sonic environment or not. Regardless of the category of the walking urbanite as a flaneur, commuter or shopper, the masking effect will affect each equally.



Figure 42 Turkish bagel (simit) seller on the side walk (Source: TRT Haber)

For example, the effect can be perceived when the simit or lottery sellers on the sidewalk promote for what they are selling by yelling or loud announcements.
The location of these sellers is static yet the sound produced vary on direction and in time durations.

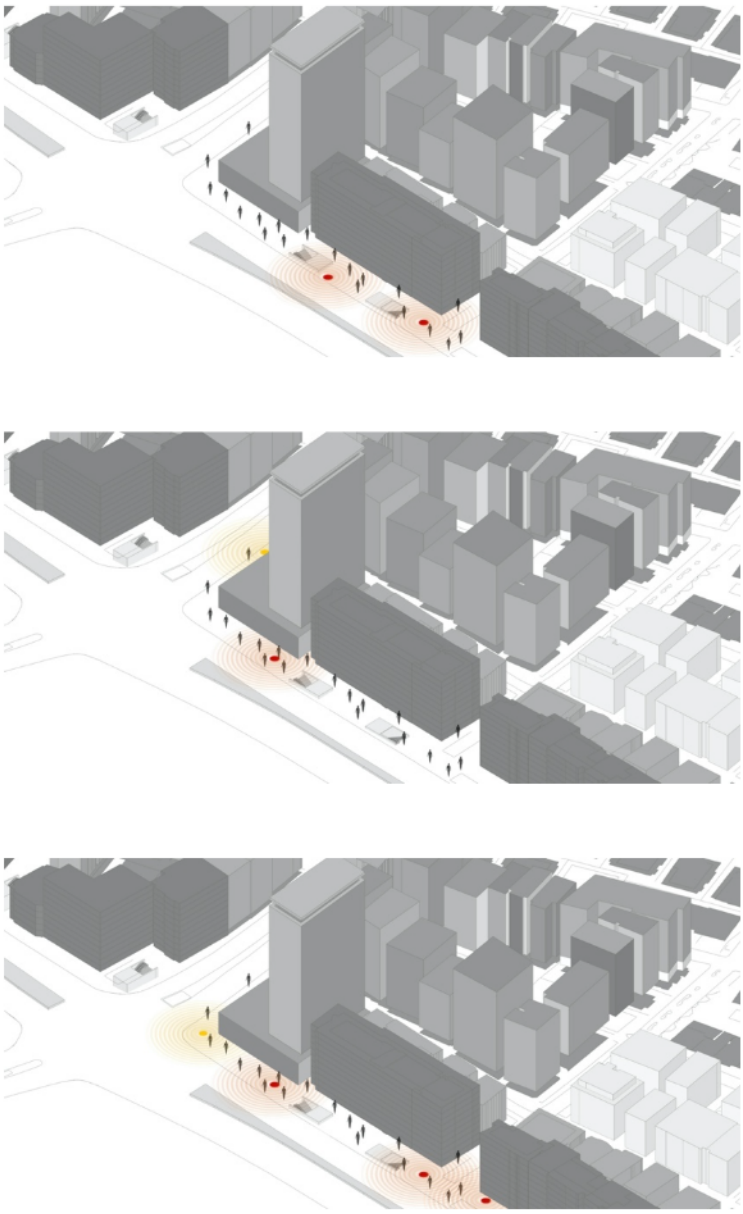


Figure 43 The masking effect: Same static location of seller, same space but different time intervals (can be minutes or hours) (The author)

4.2.4. *Metamorphosis:*

The walking urbanite is highly influenced by the movements made by the sound components. The mythic reference to "Metamorphosis" denotes the confusion in structural ties between disparate fragments of totality.

It is safe to assume that reverberating acoustical spaces will favor the sound transforming metamorphosis effect in some instances.

Almost always, the combining of different influences is prevalent, but none is absolute. Far-away sounds are less distinct in a reverberant field. The consistency parameters are generally determined by the relationship between the sonic energy from the initial milliseconds and the total energy, based on impulsive responses from a listening space. (Augoyard & Torgue, 2006)

The building form has a powerful effect on the way it is visually perceived. The building form / urban context relationship can also affect how a sound is identified and recognized.

This effect influence arises from the combination of the overlaps of sound tones and intensity. At the Kızılay shopping mall entrance and because of the building form, the urban context sounds are forced to merge again (figure 40). As the walking urbanite around the center is already exposed to traffic noise because of the open area in Infront of the center entrance, they will feel a rise in the auditory intensity while accessing the shopping center's entrance metamorphosis effect happening.

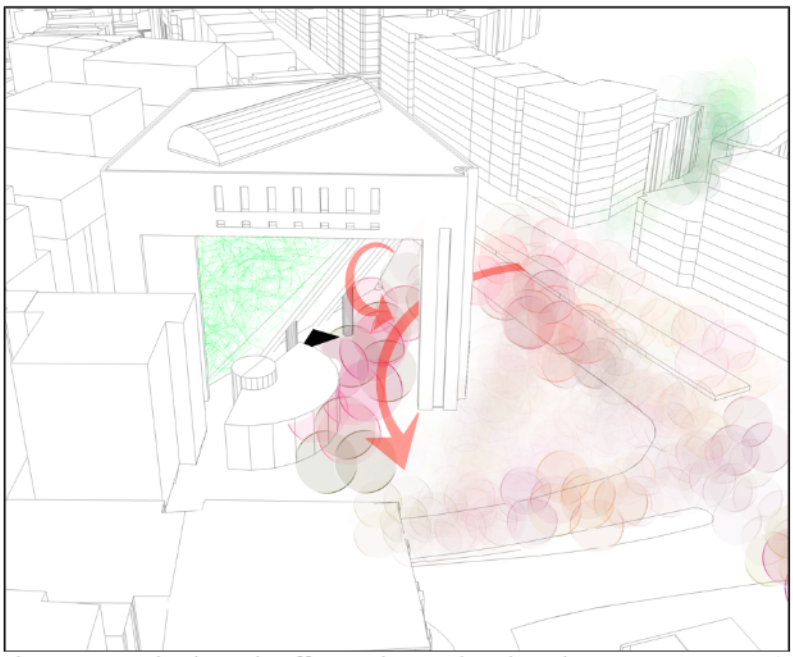


Figure 44 The metamorphosis sonic effect at the Kızılay shopping center entrance (The author)

4.2.5. *Reverberation*

A propagation effect that continues a sound after its emission has been stopped. The direct signal is complemented by sound reflection on surfaces in the surrounding area. The longer these reflections retain their energy, the longer they reverberate. Reverberation is generally called, or echo, in daily language, the “cathedral” effect. (Augoyard & Torgue, 2006)

The reverberation of a place is conditioned by urban and architectural shapes (yards, squares) as well as materials reflecting (concrete, plaster, glass, marble) and absorbing materials (carpet, wool). Spatial forms determine significant reverberation in certain specific locations: the center of a circle, the focal points of ellipses, parables, and hyperbolas, and all the volumes of revolution generated by these curves. Reverberation control is essential in architecture. Surfaces materials reflecting the sounds increase the reverb.

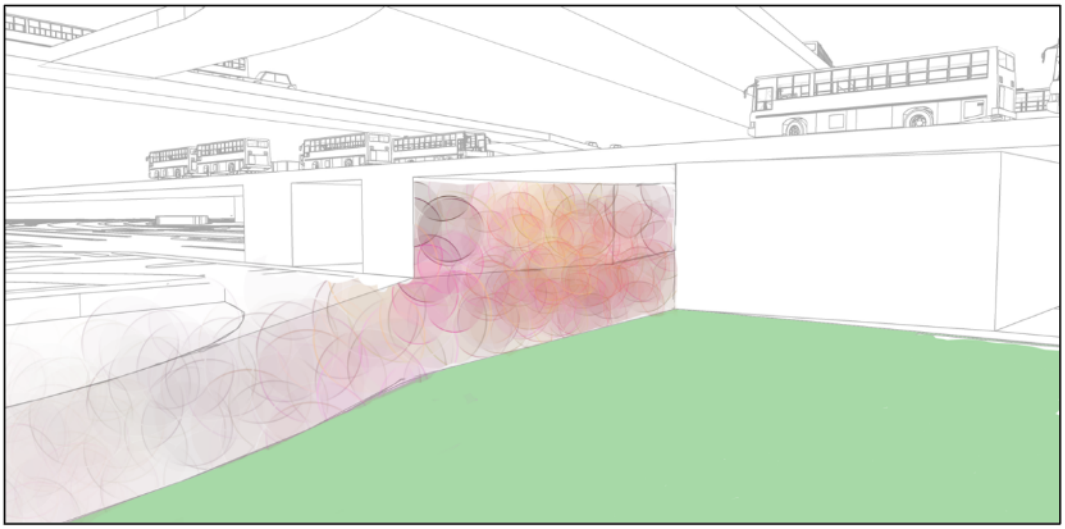


Figure 45 Under the shiyyie bridge reverberation sonic effect (The author)

4.3. Secondary Sonic Effects

4.3.1.	***Anamnesis***	Recollection, especially of a supposed previous existence. (lexico, n.d.)
	SSE.01	An evocation of the past.

Spatial structure and hence visual perception are often used to facilitate the production of this effect. The senses work together to enhance memory. The acoustics of a place often record its sound. Therefore, the evocation of a position which is only taken into account in its sound sense is often synesthetic.

Any major changes in an architectural or urban environment can be viewed as a difference between the past and the current.

Example:	Before and after the Melike Hatun Mosque

Before the mosque



Figure 46 Parking lot barriers 2014 (Maps, A.Adnan Saygun Cd, 2014)

The plot was working as a car parking serving all the surrounding of the old town of Ankara.

After the mosque



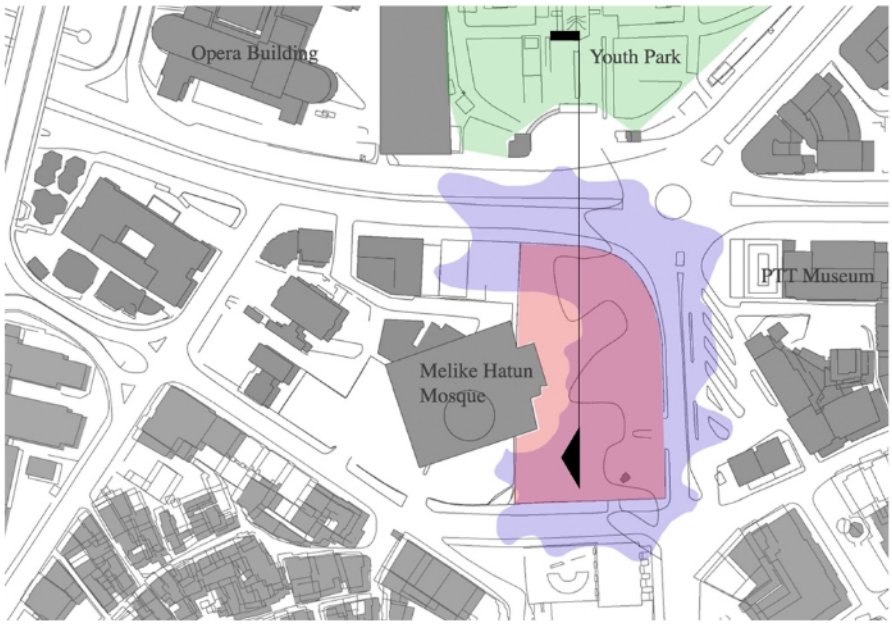
Figure 47 Melike Hatun Mosque 2017 (Maps, A.Adnan Saygun Cd., 2019)

After the construction of the mosque, a new massive block was introduced to the area.

Being such a big open allowed the air flow easier because of the Youth park facing. Also, allowing the traffic noise to scatter in the air.

Adding to it an open space in case of bigger numbers of prayers made the zone a wind sound trap especially in the winter times. And because of narrowing down the urban open space, it made it a noise corridor meaning that the noises emitted by the cars and buses passing on the boulevard travel through and become louder as the signal continue travelling.

The current condition (after the Melike Hatun Mosque)



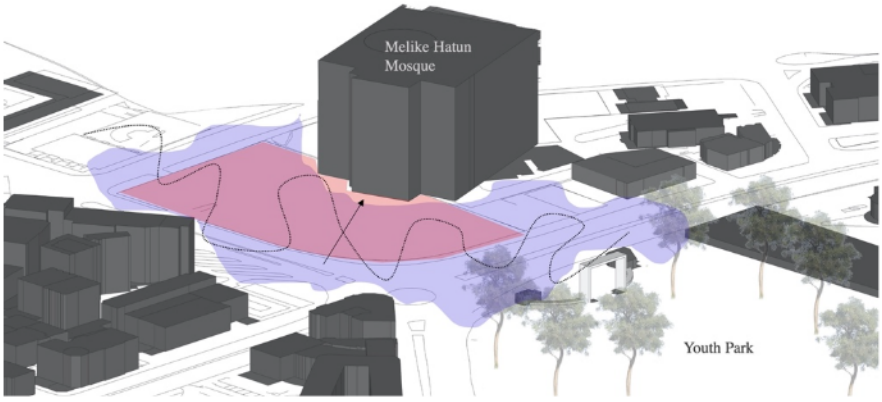




Figure 48 Up to down: Figure Ground / Isometric / section illustration showing the Anamnesis sonic effect in the context of Melike Hatun – Gençlik Parkı (The author)

QR-code 4 The wind at Melike Hatun Mosque square [the after intervention) (sound recording by the author)

4.3.2. ***Anticipation*** SSE.02	The action of anticipating something; expectation or prediction. (Dictionary, n.d.) Expecting a sound or hearing sounds that may not be true because of the context; also known as "Pre-Hear".

The anticipating effect is also attributed to a certain sound expectation. It happens as if the event's wish produced its own sound surround.

The anticipation of a car or train going by is also a reminder of this effect: any slight murmur or noise is perceived as a message of the intended impact. The bombing threat can also contribute to intense anticipation effects in combat.

Example:	Kids screams and water sound at the entrance of the Youth park.



Figure 49 Left: The Entrance of Gençlik Parkı from Atatürk Boulevard Side // Right: In the Gençlik Parkı (Source: Google Earth)

As a citizen of the city you become more familiar with the sounds around you. At the entrance of the Youth Park at the Atatürk Boulevard and because of the notion of being an environment for water fountains and children's theme park, the two sounds you will be already hearing even before entering are of both.

That is because the park is related directly to action belonging to water or playing.

4.3.3. ***Attraction*** SSE.03	A sound phenomena to attract and polarize attraction of the walking urbanite.

It's a sound that have a strong attraction because it contrasts with surrounding sound environment context.

Singers and musical groups aim continuously to draw passersby in busy cities, for example. Such noises are strong because of the discrepancy between the surrounding hubbub and the sound condition. The lure that characterizes the creation of such sound events ill-uses a siren, which exclusively appears in the acoustic space and whose source sometimes cannot be traced. (Augoyard & Torgue, 2006)

Example:	On street artists



Figure 50 a group of singers in Karanfil Street (Source: https://www.sinerjik.org/2018/02/sokak-sanatcilariyla-roportajlar/)

Singers and music groups are constantly seeking the attention of the walking urbanite in very busy streets.

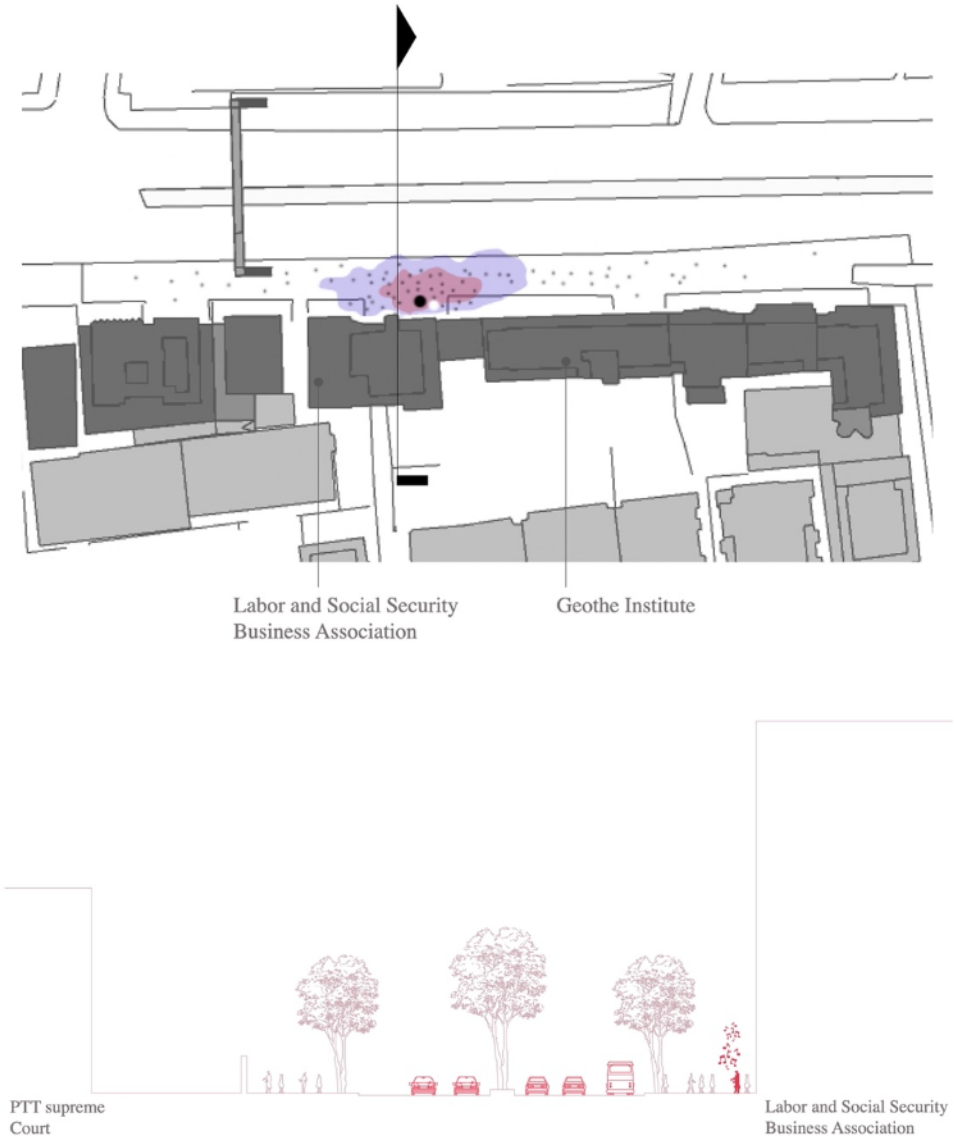


Figure 51 Up to down: Figure Ground / section illustration showing the Attraction sonic effect in the context of side-walk near Labor and security business association building. (The author)

4.3.4.	***Cocktail*** SSE.04	The focus on one sound source disregarding all other sounds in context.

This effect is named by E. Cherry, refers to our capacity to concentrate on the voice of a single sound by the neglect of unrelated details from the surroundings in comparison to the sound room where we can observe best.

Sound components are almost equaling amplitude and frequency in this kind of metabolic context: it is the accumulation of the sound components that produces the environment. (Botte, Canevet, Demany, & Sorin, 1989)

Example:	The call of minibus drivers at Güven Park.



Figure 52 MiniBus parking area in Güven Park (Source: https://www.memurlar.net/haber/867142/dolmus-duraklari-guvenpark-tan-kaldiriliyor.html)

This effect is in direct relation to the perception of the walking urbanite. The Minibus drivers are always yelling to catch the attention of the pass byers. Here, if you are not willing to take the minibus you will not concentrate on that sound, while if your target is to travel from that point to the other you will be focusing on that particular sound source in order to specify which minibus will take the way you are willing to travel to.

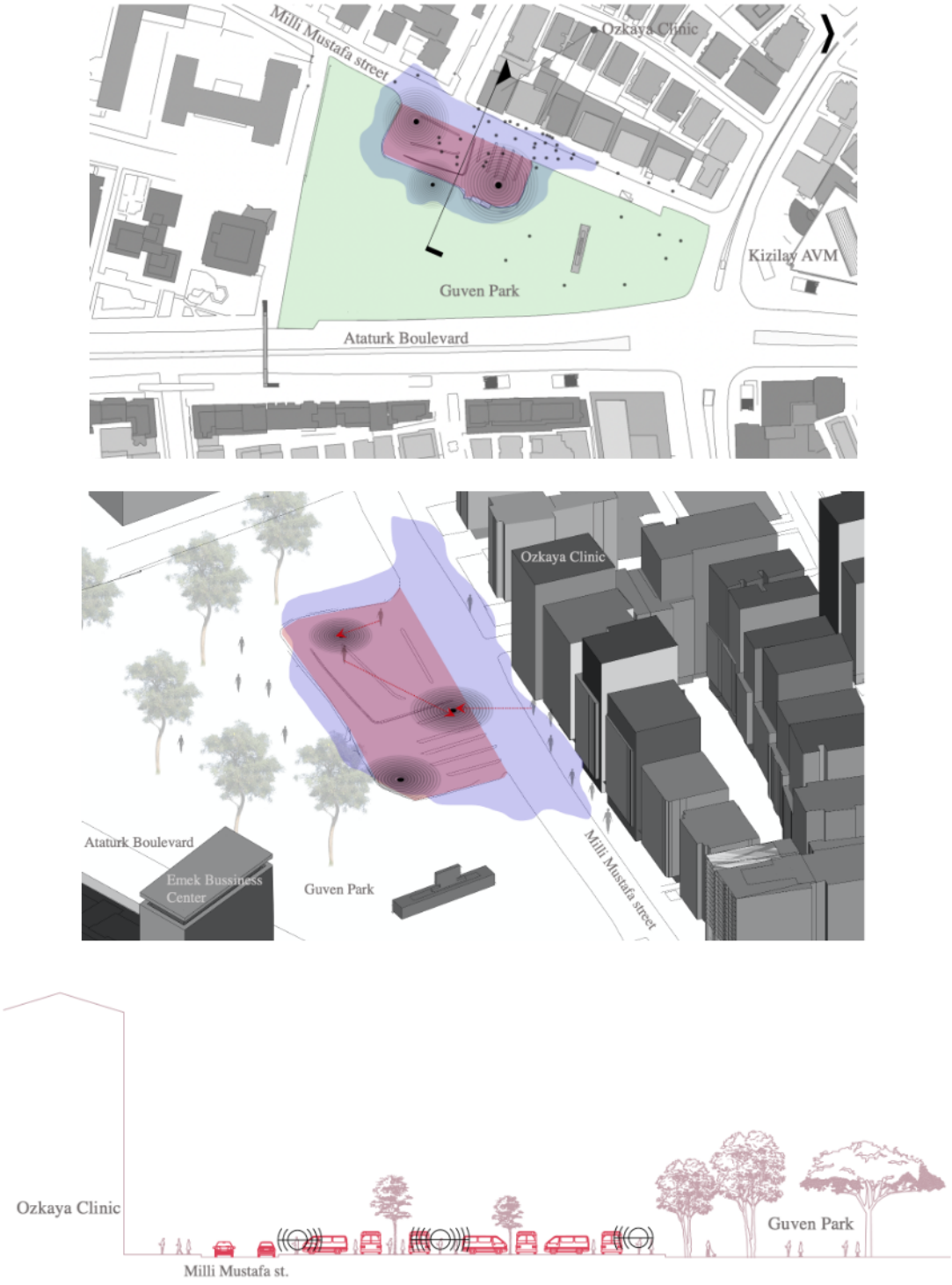


Figure 53 Up to down: Figure Ground / Isometric / section illustration showing the Cocktail sonic effect in the context of Güven Park (The author)

4.3.5.	***Crescendo*** SSE.05	The highest point reached in a progressive increase of intensity for a specific duration of time.

This is a result of a gradual increase in sound intensity. This popular effect with its unique music notation can be seen in a broad variety of contexts: the way a sound source is handled, a car accelerated, a computer starts, a murmur rises, etc.

Example:	The buses stops along the studied segment.

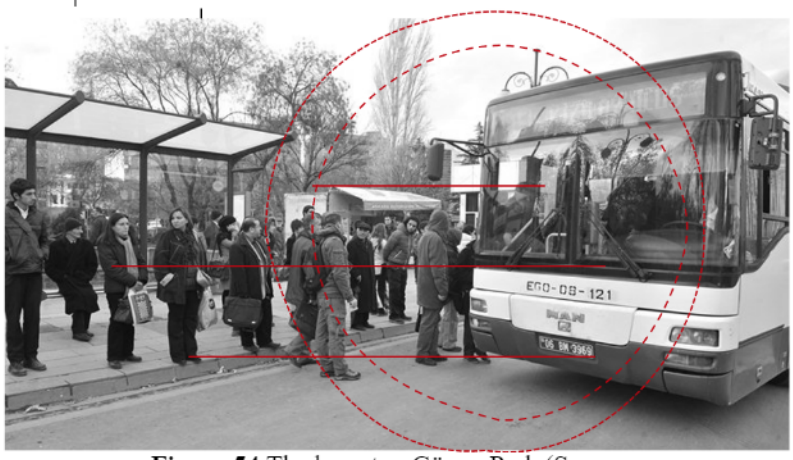


Figure 54 The bus-stop Güven Park (Source: http://www.toplutasimhaber.com/images/posts/category/ankarada-ego-otobusleri-rayli-sisteme-entegre-oluyor.html)



Figure 55 The bus stop at Güven Park figure ground map (Source: Google Earth)

4.3.6. ***Delocalization*** SSE.06	To detach sound from the correct or normal position. This means the identification of an inconsistency in the localization of a sound source.

The listener doesn't know where the sound comes from; the listener, however, knows precisely where the sound appears to originate from with the delocalization effect, while at the same time being mindful that it is an illusion.

Example:	The exhaust fans at the Yapı Kredi Bank at the Atatürk Boulevard / Ziya Goklap Intersection that works during the day only.

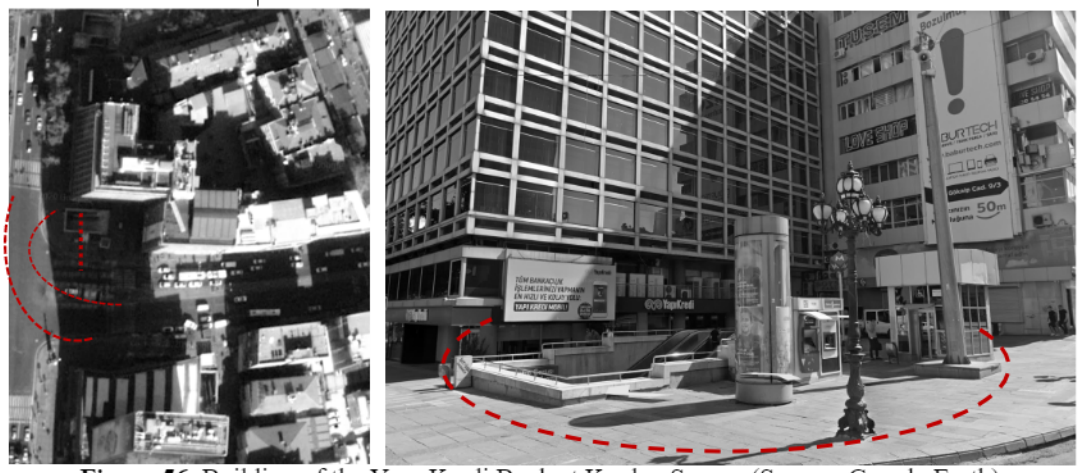


Figure 56 Building of the Yapı Kredi Bank at Kızılay Square (Source: Google Earth)

4.3.7. ***Desynchronization*** SSE.07	The emergence of a sound emission that breaks the regularity of a rhythm or a well-established sound structure, creating a sense of incongruity, is characterized by desynchronization, a temporal decontextualization effect. (Augoyard & Torgue, 2006)

The event may have the same sonic nature as the elements that it disrupts, as if someone interrupts another individual without respecting a conversation's rhythmic alternation. It is crucial to have the social dimension of the desynchronization effect.

Example:	Any newly opened shop along the boulevard. ***(the day of the opening only)***



Figure 57 A newly opened cloth shop (Source: Google Earth)

QR-code 5 Fenerbahce shop at the Atatürk Boulevard playing music to attract the walking urbanite (sound recording by the author)

4.3.8. ***Doppler*** SSE.08	The Doppler effect is a variation in the frequency of the wave in response to the observer traveling closer to the wave source. It was named after the Austrian scientist Christian Doppler, who introduced the phenomena in 1842. (DrBob, 2001)

A sound pattern that travels closer is considered to be higher than it really is, while the same signal that moves away is perceived to be lower. This effect is the product of a variation of the speed of propagation of the sound and the movement of the sound source. When both the sound wave and the sound source shift in the same direction, the perceived frequency changes or vice versa. (Augoyard & Torgue, 2006)

Example:	A police car / ambulance passing by.



Figure 58 An ambulance car (Source: TRT Haber)

This effect can take place at any segment of the Atatürk Boulevard at any time. The walking urbanite if happen to be at the same location and time where an emergency car (police, ambulance, fire …) pass, he/she are forced to experience the doppler sonic effect.

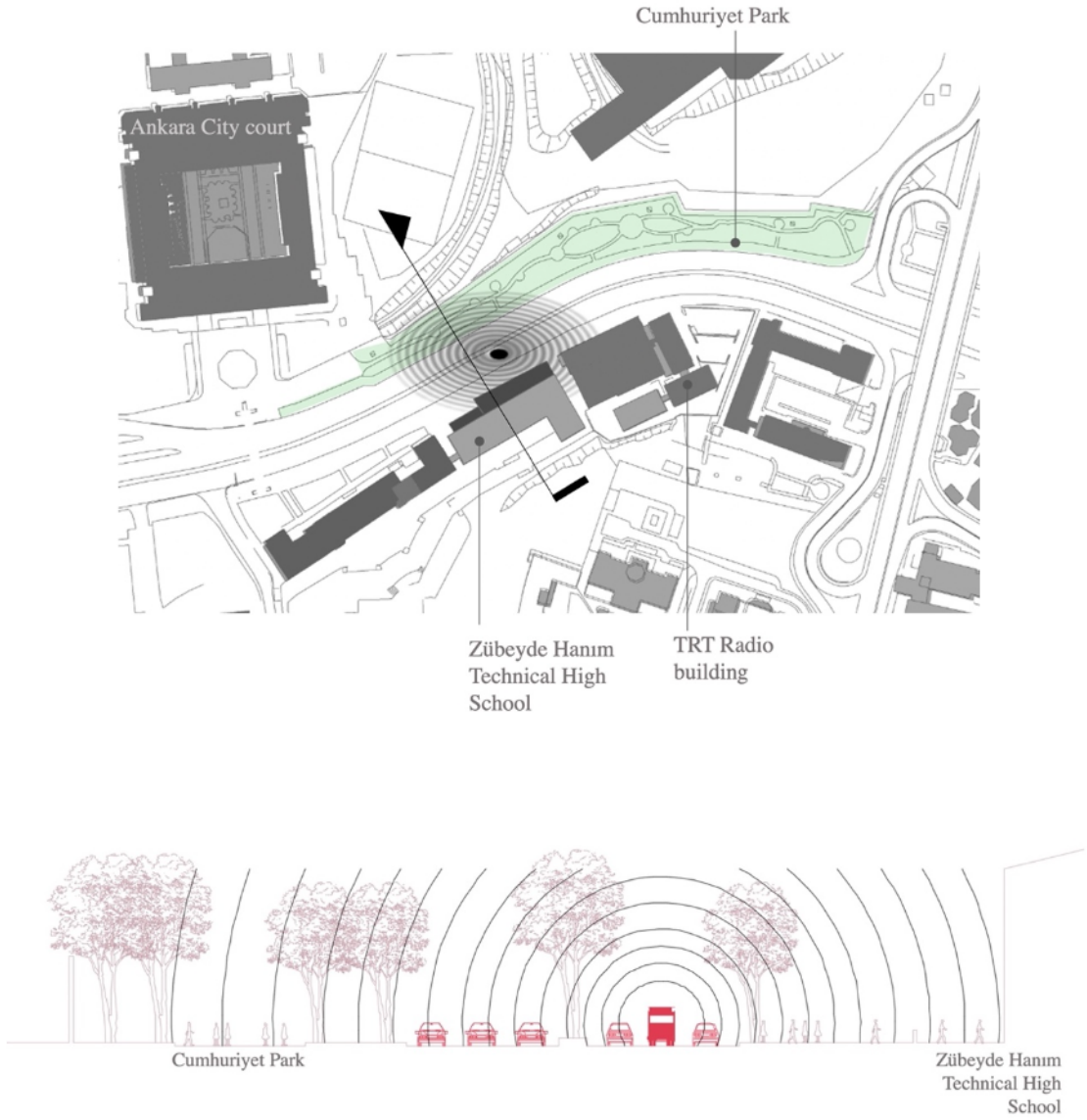


Figure 59 Up to down: Figure Ground / section illustration showing the Doppler sonic effect in the context of Cumhuriyet Park (The author)

4.3.9. ***Drone*** SSE.09	The drone effect refers to the presence of a continuous layer of steady pitch in a sound set with no significant variation in amplitude. (Augoyard & Torgue, 2006)

Sea, water, torrent, and wind are all natural entities that create drone sonic effect which can be interpreted positively or negatively by the walking urbanite.

The wind blowing through the passages evokes the architecture physical discomfort and a certain climate of distress.

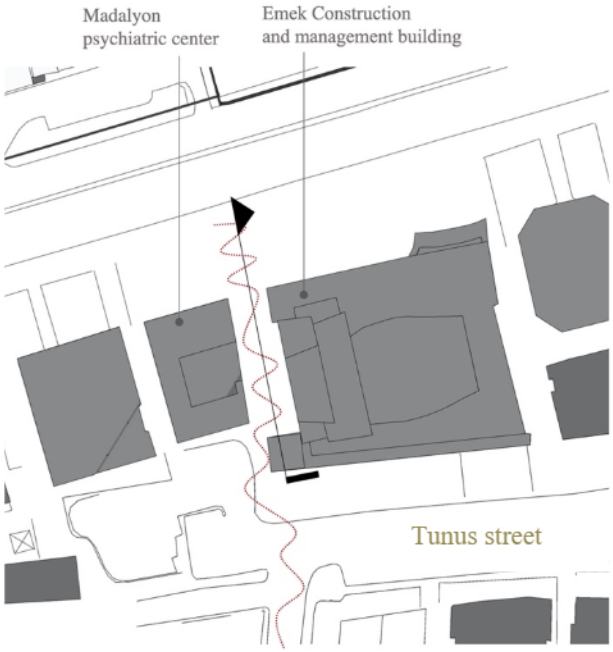
Schafer introduced the term "Soniferous gardens" in soundscapes which are comprised of instruments enriched by rain or wind.

Example:	The passage between the side-walk of the Atatürk Boulevard and Tunus street.

Usually at the Atatürk Boulevard and the first adjacent parallel streets there is passage connecting. These passage are mostly side-walks that vary in width.
A clear drone sonic effect can be perceived in one particular passage connecting the boulevard to Tunus street. This particularity is because of the narrow width of the passage and the height of the building surrounding it (the corner of Akun theater). In addition, the connection happening there is through a stairs and not a flat surface. All these factors helps the wind to move faster in between leading to the doppler sonic effect.



Figure 60 Passage between Madalyon Psychiatric Center and Emek Construction and Management building (Source: Google Earth)



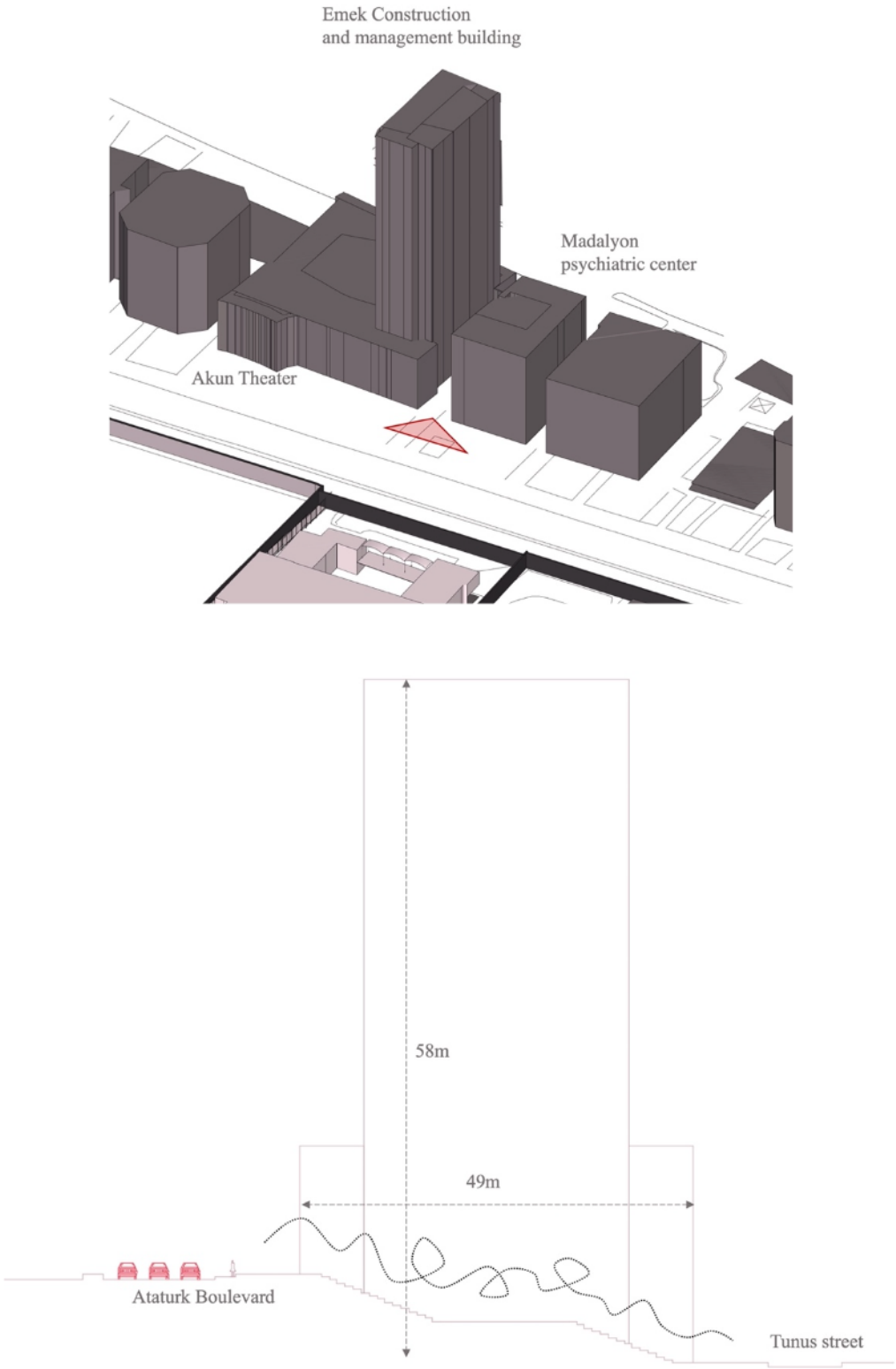


Figure 61 Up to down: Figure Ground / Isometric / section illustration showing the Drone sonic effect at The passage between the side-walk of the Atatürk Boulevard and Tunus street. (The author)

4.3.10. ***Echo*** SSE.10	Echo is a single or multiple amplification of a sound emission, connected to a reflection in the diffusion space. The word derives from Echo, a mythological nymph condemned to never utter first, but only to repeat the last syllables of others. (Augoyard & Torgue, 2006)

The effect is directly related to reverberation sonic effect. Reverberation in basic terms is due to adding one or more surface echoes to the immediate sound between the source and the subject in the ambient room, and results in what is often referred as an echo by the walking urbanite. (Balaÿ, 2016)

Reverberation sonic effect is discussed before in section 4.2.5.

Example:	What is perceived by the walking urbanite under Sıhhiye Bridge.



Figure 62 Sıhhiye Bridge from Abdi-İpekçi Park side (The author)

4.3.11. ***Erasure*** SSE.11	The erasure effect refers to one or more sound components in an auditory sequence that are erased from experience or memory. Such selective coerce is a simple inaction of listening. Many of the audible signals in a day are heard without being heard and then overlooked. (Augoyard & Torgue, 2006)

The term erasure can be perceived to some walking urbanite as white noise. White noise is random noise that has a flat spectral density, and because of so it is overlooked and forgotten. This effect is a result of a routine accumulation the walking urbanite (mostly commuters) experience on daily basis.

Example:	Waiting for the bus after work at Kızılay.

With a routine route of using the bus a mode of transportation between home and work, the walking urbanite; as a commuter in this case; starts not to give attention to some sounds around him/her. It is the same case scenario when it comes also to the visual environment around.

As some people workplace is on the boulevard directly and because the mode of transport is the bus, the commuter focus is shifted from hearing the sound of the arriving or departing bus to rather other more unpredicted sounds that might occur.



Figure 63 Bus waiting station at Güven Park (Source: Tren Haber)

4.3.12. ***Filtration*** SSE.12	This effect appears when some very specific sound frequencies are emphasized on or understated.

The walking urbanite perceive this effect when there is a modification in the sound frequency they are familiar to.

The effect is experienced mostly due to the difference in the sonic environment between indoor and outdoor. In specific, going out to the balcony from inside (home, office, etc…), where the balcony is located on a main street, boulevard or a crowded urban context.

The human hearing system, from the outer ear to the brain, is itself a filtering process. Subjectivity also acts as a filter that is influenced by the degree of knowledge of sound situations, memory and possible connotations. (Augoyard & Torgue, 2006)

Example:	Standing at a balcony overlooking the boulevard.

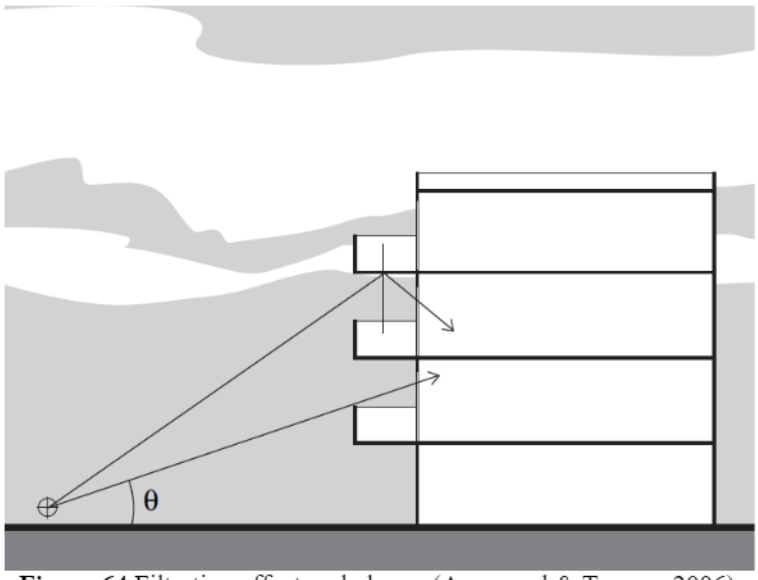


Figure 64 Filtration effect on balcony (Augoyard & Torgue, 2006)

4.3.13. ***Niche***	Sonic forming of an event.
SSE.13	A sound message in a sound context amalgamated in at the most favorable time of the walking urbanite.

Generally, a niche is a focused, unique field of industry that you're in and really enjoy. (Reyburn, 2018)

In the sonic environment aspect, to understand niche we must understand the meaning in both spatial and temporal dimensions. It contains possibilities that are connected to the layout of the social space.

When someone walks in the middle of the city rush, they can take advantage of a moment of silence to greet someone on the other side of the street.

When a walking urbanite is strategically positioned, it helps make his sound effective. This sort of position could be created intuitively through experience; it's very natural. It does not necessarily depend on rational thinking, although it can have impacts on sound transmission.

Example:	Taking the escalator to enter the metro station.

Taking the metro as a mode of transport, puts the walking urbanite in a sonic environment that allows him/her be aware of what is next. While descending from the side walk at Kızılay down to the metro, the sound level starts to decrease on the escalator down. This moment of reduced noise level / calmness is a shift between 2 different sonic ambiances. The first is the sounds the walking urbanite was exposed to while walking on the side-walk to the sounds of the security machines at the entrance of the metro station after taking the escalator.



Figure 65 Kızılay metro entrance from Sakarya street (Source: Yandex maps)

4.4. Evaluation

The components of the physical space which defines the border and void condition also form the sonic effects. Road profiles, setbacks, vertical and horizontal surfaces, entrances and exits, gaps between buildings, level differences, articulation of the facades (porous or perforated facades which reflects, absorbs or reverberates the sound) and such are all factors which affect the type, range and level of the sonic effects. Hard and soft landscape, trees and plantations and materials also have critical impacts on the sonic condition.

Table 9 Walking condition in relation to sonic environment: Sonic effects and physical components (The author)

:components of the physical space directly affecting the "sonic effect"	Walking Condition									
	Set back limit	No. of intersections	Urban Obstacles	Enclosure Level	Entrance Level	Building Height	Façade Length	Building Shape	Trees and Plantation	Materials
	Road Profile			Border Condition		Façade Articulation				

Sonic Effects	Primary Sonic Effect			
		Cut-Out	Sakarya street	The width of the Sakarya street with the kiosk centered at its entrance with the two buildings surrounding are the key elements flourishing the perceiving of the effect.
		Imitation	Abdi-İpekçi Park	The sense of openness and escape from the chaos of the city lead the walking urbanite to the need of this effect. In addition, the use of water elements and natural alike pavements are the keystone that make the walking urbanite visit the place over and over.

:components of the physical space directly affecting the "sonic effect"	Walking Condition									
	Set back limit	No. of intersections	Urban Obstacles	Enclosure Level	Entrance Level	Building Height	Façade Length	Building Shape	Trees and Plantation	Materials
	Road Profile			Border Condition		Façade Articulation				

Sonic Effects	Primary Sonic Effect			
		Mask	Street Peddlers	Being on the side-walk with no trigger factor to warn the walking urbanite, you find yourself with no choice but hearing the peddlers sound. At that particular time you experienced the mask effect. The issue can be partially resolved if the municipality provide specific organized locations along the side-walk.
		Metamorphoses	Kizialy Shopping Center Entrance	The building form force the sounds from the urban context to merge (cars, people, automatic mall entrance doors). The walking urbanite if a flaneur who is just passing by from that particular space as a shortcut or a shopper who is willing to enter the shopping center, experience the metamorphosis effect unwillingly.

:components of the physical space directly affecting the "sonic effect"	Walking Condition									
	Set back limit	No. of intersections	Urban Obstacles	Enclosure Level	Entrance Level	Building Height	Façade Length	Building Shape	Trees and Plantation	Materials
	Road Profile			Border Condition		Façade Articulation				

Sonic Effects	Primary Sonic Effect	Reverberation	Under Sıhhiye Bridge	The Sıhhiye Bridge is a critical case as it is surrounded by different sonic effects and ambiances. Under the bridge the walking urbanite perceive the sounds the hear as echo. This is correct to a limit, where under the bridge and because of the concrete material used, the bus stops and the shops all the sounds emitted are reverbed in the space. This process produce a sonic environment that the walking urbanite perceive negatively due to the reverberation effect. The solution for a more pleasant sonic ambiance under the Sıhhiye Bridge is to: 1- Reconsider the materials 2- Relocate the bus stops to before entering or after exiting
Sonic Effects	Secondary Sonic Effect	Anamnesis	Melike Hatun Mosque	The walking urbanite perception of a before and after state like the case at the lot where Melike Hatun mosque was built. Previously acting as a car parking with solid walls fences around ;absorbing / reverb the sounds in the area; to huge building block with an open plaza around; allowing the wind to whistle in high intensities. The dramatic change is the main source for this sonic effect. As there is not a way to undo the changes the anamnesis effect will always be there to the walking urbanite on the side walk beside the mosque.

:components of the physical space directly affecting the "sonic effect"	Walking Condition									
	Set back limit	No. of intersections	Urban Obstacles	Enclosure Level	Entrance Level	Building Height	Façade Length	Building Shape	Trees and Plantation	Materials
	Road Profile			Border Condition		Façade Articulation				

Sonic Effects	Secondary Sonic Effect			
		Anticipation	Gençlik Park entrance	To pre-hear is the simple direct definition of the effect. The sound the walking urbanite hears are not necessarily really. The moment they decide to enter the Gençlik Park and because the place is perceived for being an amusement park, they can think that sounds of kids screaming or robotic games sounds are what will be heard. This can be what is heard but not for sure that it will be heard.
		Attraction	Side-walk Singers	As the name of the effect, attraction is to attract the walking urbanite to the sound source, where the latter is a pleasant ambiance to be in.
		Cocktail	Güven park	To take a minibus from Güven park makes the walking urbanite need to focus on the drivers sounds announcing the route they will be driving. The cocktail effect is experienced as a matter of choice, where you put yourself in the state where you have to dismiss all the sounds in context to focus on one specific sound source.
		Crescendo	Waiting the Bus	As the walking urbanite is waiting the bus they will take as a mode of transport, and when the bus arrive, as the visual concentration is only at the bus so do the sonic perception. In other words, all other sounds are dismissed because of a high intensity sound the user have to follow.
		Delocalization	Yapı Kredi Kızılay	The out of sonic content. The exhaust fans located beside Yapı Kredi bank at Kızılay delocalize the sonic environment because of their dominancy.

:components of the physical space directly affecting the "sonic effect"	Walking Condition									
	Set back limit	No. of intersections	Urban Obstacles	Enclosure Level	Entrance Level	Building Height	Façade Length	Building Shape	Trees and Plantation	Materials
	Road Profile			Border Condition		Façade Articulation				

Sonic effects	Secondary Sonic Effect			
		Desynchronizing		On the day a new shop opens, as important they want to attract the walking urbanite visually by some decorations on the side walk, they also try to attract them by loud music as an example. This happens only at the day of open breaking the sonic ambiance of the context.
		Doppler	Vehicle with siren	A high intensity sound that formulates a specific sonic environment at the time it happens and force the walking urbanite to undergo it. A police car or an ambulance are examples of the key starters of this effect.
		Drone	Passage between Atatürk Boulevard and Tunus street	As the passage width is narrow in comparison to the buildings heights surrounding it. The passage become an air tunnel producing the whistling sound leading to the drone effect.
		Echo	Sıhhiye Bridge	Taking a bus from under the Sıhhiye Bridge or taking the stairs to reach Celal Bayir Boulevard, The walking urbanite perceive the sounds as an echo sonic effect because of the reverbed repetition of sounds. In reality the effect they are undergoing is called Reverberation where echo is a part of.
		Erasure	Walking to work	With a routine use of bus as a mode of transportation between home and work, the commuter starts neglect some sounds around him/her.
		Niche	Kızılay metro	Taking the metro as a mode of transport, puts the walking urbanite in a sonic environment that allows him/her be aware of what is next. While on the escalator going down to the metro station, they start to be aware of the beeps of the security machines for example.

CHAPTER 5

CONCLUSION

It is essential to take into account the vibrancy of the boulevards while assessing its attractiveness for the walking urbanite. Sonic condition of the boulevards is a critical aspect of perceiving the city as vivid. In this respect, more and more professionals in the field of architecture and planning as well as decision makers intend the boulevards to become more welcoming places.

There is a lack of consideration of sonic environment in place-making. Sound is an integral aspect of the urban fabric, and it can be utilized at various scales in planning and design projects. A city's visual appeal is one of the major qualities of its uniqueness and identity. On the other hand, the sonic environment also has a significant influence on a city's character. Without proper analysis of the acoustic environment, it might lose its distinctive nature.

The urban acoustic environment can affect living and working spaces positively or negatively. Sounds may draw or repel the walking urbanite. In this respect planners, architects and policy makers should not neglect the sonic environment while planning/designing the urban space. The boulevards as public spaces must be designated in such a manner that it can provide adequate level of both informal and formal activities to entertain and attract the walking urbanite. Sonic conditions, when integrated in the urban design process, might improve the liveliness and vitality of urban spaces and therefore thrive public spaces.

Sonic environment is much more than noise. With proper knowledge and methods sounds and sonic effects might have positive impacts on the walking urbanite. Sound perception has to be examined along with visual perception in the urban context to produce a vibrant and vital space. Simple planning solutions can significantly enhance sonic conditions. The distinctive urban soundscapes can be examined, preserved, and deliberately planned. The sonic environment is critical as one needs to have adequate

harmony in order to walk down a path. In a way, an urban space conceding the sonic ambiance will make the walking urbanite more outgoing and involved. This research through relating the components of the physical space to the sonic effects, presented how minor improvements would enhance the experience of the walking urbanite.

It is persuasively clear on the Atatürk Boulevard that the traffic speed and the sonic condition it creates lead to the immediate increase in walking speed. Of course, rapid walking speed is not necessarily an inappropriate attribute in urban settings, such as, engaging in sports or outdoor activities. However, this fast rhythm of walking is a response to the chaotic fast-paced life of the today's boulevard.

Furthermore, the study has shown that exposure to a disturbing auditory environment can influence people's choice to be there. The same environment can be more or less appealing on the basis of the presence or absence of certain sonic effects. The types, ranges and levels of the sonic effects, which constitute the sonic atmosphere on the Atatürk Boulevard, are not static. Along with the interventions on the boulevard and the transformation process of Ankara, the sonic environment has always changed.

Sonic conditions can be differentiated and associated with different social purposes. Music, sound and noise are used as spatial - temporal territories on the boulevard, which can have a major influence on how people walk. This conviction is directly related to the sonic effects discussed in the previous chapters.

This thesis aimed to put the essence of a mainly "obscured" field of urban studies. The research on the sonic atmosphere of the Atatürk Boulevard; its relationship with the physical-built environment; and how it affects the walking urbanite interconnects a wide range of critical issues that never appealed to our mind at first glance. Visual experience plays a vital role in the city's individuality, but without proper consideration of the sonic atmosphere, it loses its distinctive characteristics. Integrating these concepts requires innovative approaches, methods and tools.

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APPENDICES

APPENDIX 1: GLOSSARY OF TERMS

Anamnesis
Recollection, especially of a supposed previous existence.

Anticipation
Expecting a sound or hearing sounds that may not be true because of the context; also known as "Pre-Hear".

Attraction
A sound phenomena to attract and polarize attraction of the walking urbanite.

Blurring
The sudden disappearance of a sound while moving from one place to the other.

Cocktail
The focus on one sound source disregarding all other sounds in context.

Commuter
A person who travels some distance to work on a regular basis.

Crescendo
The highest point reached in a progressive increase of intensity for a specific duration of time.

Cut-Out
A sudden decrease in amplitude associated with an unexpected shift in a sound's spectral envelope or a reverberation alteration.

Desynchronization
The emergence of a sound emission that breaks the regularity of a rhythm or a well-established sound structure, creating a sense of incongruity.

Doppler
A variation in the frequency of the wave in response to the observer traveling closer to the wave source.

Drone
The presence of a continuous layer of steady pitch in a sound set with no significant variation in amplitude.

Echo
A single or multiple amplification of a sound emission, connected to a reflection in the diffusion space.

Erasure
One or more sound components in an auditory sequence that are erased from experience or memory.

Filtration
When some very specific sound frequencies are emphasized on or understated.

Flaneur/Stroller
To the flaneur, urbanity is the spectacle, and its understanding of the city is necessarily related to walking and movement, just like in a theatrical space encounter.

Imitation
A sound emission intentionally created according to a reference model.

Mask
The appearance of a sound that, regardless of its volume or the distribution of its frequencies, partly or entirely hides a particular tone.

Metamorphosis
The confusion in structural ties between disparate fragments of totality.

Niche
A sound message in a sound context amalgamated in at the most favorable time of the walking urbanite.

Noise
Unwanted or loud sound.

Reverberation
A propagation effect that continues a sound after its emission has been stopped.

Solfège
Study of the elementary principles of music and its notation.

Sonic effect
To replicate a complex acoustic environment, where sounds are representative and important for generating a desirable ambience/acoustic space.

Sonic environment
An environment of sound with emphasis on the way it is perceived and understood by the individual, or by a society. It thus depends on the relationship between the individual and any such environment. The term may refer to actual environments, or to abstract constructions such as musical compositions and tape montages, particularly when considered as an artificial environment.

Sound object: (as defined by R. Schafer)
The smallest self-contained component of a soundscape, which is interpretable by its characteristic of spectrum, loudness, and envelope form.

Sound
Atmospheric oscillations within the audible range of the human ear.

Soundscape: (as defined by ISO)
Acoustic environment as perceived or experienced and/or understood by a person or people, in context.

Walking urbanite
Anyone who lives in an urban setting that identifies with an urban lifestyle.

Walking
The perfect way to get to know the location.

Window shopper
An occurrence in which a customer browses or explores a store's products as a means of recreation or outward quest actions with no present intent to purchase it.

APPENDIX 2: SOUND LIBRARY QR CODES

Male Lottery Seller	Shop playing music	Wind whistle at Melike Hatun Mosque plaza.
Female lottery seller	Water fountains at the Gençlik Parkı	Cars + walking urbanite talking