

A Theory of Persistence in City Form:

Bursa, a case of the Ottoman city in Turkey

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Bachelor of Architecture
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Submitted to the Department of Architecture
in partial fulfillment of the requirements for the degree of

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ABSTRACT

The evolution of city form is an issue that has been studied extensively. Typically, however, the focus has been on change rather than persistence. During the process of change, many aspects of the city are left unaltered and remnants of the past survive vividly. Furthermore, the presence of the past constrains the way new intervention is carried out.

I propose the hypothesis that a city has an inertia that resists change. This inertia is distributed unevenly among urban artifacts, and a hierarchy of artifacts in terms of their rates of change can be established. The latent potential or capacity of urban artifacts permits them to adapt to changes without significant alterations in their physical structure. This capacity of artifacts allows them to support functions different from the ones for which they were conceived. This quasi-autonomous nature of urban artifacts also leads one to distinguish between an internal and external history of physical urban form.

The research methodology develops Conzen's "plan units" as a tool to analyze the morphology of plan units and their built forms. Plan units are morphological frames for the built forms within. In the occurrence of critical events however, plan units may be amalgamated, subdivided, or even removed. The thesis also focuses on the genesis, evolution, and site succession of urban artifacts.

Bursa, an ancient city in the western part of Anatolia is then adopted as a case study for the theory of persistence in city form. The morphology of a selected research area is studied in the aftermath of three critical events: Ahmet Vefik Pasa's intervention, the 1956 fire, and the beginning of industrialization.

Thesis Supervisor: Professor Stanford Anderson

Title: Professor of History and Architecture

*To my wife
and
family*

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INTRODUCTION

The city, however, does not tell its past, but contains it like the lines of a hand, written in the corners of the streets, the grating of the windows, the banisters of the steps, the antennae of the lighting rods, the poles of the flags, every segment marked in turn with scratches, indentations, scrolls.

Italo Calvino¹

The evolution of city form is an issue that has been studied extensively. Much of this work has focused on the impact of change on existing structure. The reverse issue, one that is relatively unexplored, is that during the process of change, many aspects of the city are left unaltered and remnants of the past survive vividly. Furthermore, the presence of the past constrains the way new intervention is carried out. The questions to be addressed in this thesis include: What aspects of a city persist through time? Why do certain monuments survive and thrive while other buildings become dispensable in the course of progress?

Various hypotheses have been offered to explain persistence in cities. For example, Marcel Poete refers to the persistence of a city's basic layout and plans during the process of growth, emphasizing the permanent nature of streets.² However, Poete's observations are more of a historical study rather than a theory. Other writers like Anderson³, Conzen⁴, and Rossi⁵ have made more significant contributions to explaining the nature and persistence of city form. Using their work as a starting point, this thesis attempts to develop a separate and distinct research methodology to investigate the structural relation among urban artifacts, and the link to the theory of persistence.

I propose the hypothesis that a city has an inertia that resists change. This inertia is distributed unevenly among urban artifacts. Various components of the city structure experience different rates of change, and a hierarchical order of inertia can be established. The latent potential or capacity of urban artifacts permits them to adapt to changes without significant alterations in their physical structure.

¹Italo Calvino, *Invisible Cities*, New York and London: Harcourt Brace Jovanovich, 1972, p.11.

²As quoted in Aldo Rossi, *The Architecture of the City*, Cambridge: MIT Press, 1982, p.59.

³Stanford Anderson, *On Streets*, Cambridge: MIT Press, 1978 and 'Critical conventionalism: the history of architecture,' *Midgard*, vol.I, no.1, University of Minnesota, 1987.

⁴M.R.G. Conzen, *The Urban Landscape: Historical Development and Management*, London: Academic Press, 1981.

⁵Aldo Rossi, *The Architecture of the City*, Cambridge: MIT Press, 1982.

The theoretical framework adopted in this thesis views urban artifacts as being quasi autonomous, partially detached from external factors like political, economic, and cultural factors. Instead, it focuses on internal factors which encompass architectural and typological issues. Structuring the inquiry into the external and internal history of a city facilitates exposition as these two disciplines are governed by separate rules and require different research methodologies. A critical event in the external history triggers reactions in the internal history, sometimes after a time lag and resulting in changes in the capacity of urban artifacts.

The methodology develops Conzen's "plan units" as a tool to analyze the morphology of plan units and built forms, the hierarchical relationship in urban artifacts, and plan units as a morphological frame for changes experienced by the built forms within. The need to understand the hierarchical relationship of urban artifacts is crucial not only at the methodological level, but is also particularly important for urban management and intervention. This understanding gives an overview of a city and enables one to predict and control the evolution of the urban landscape. It also makes us more sensitive to the inherent qualities and potential of a city.

The research methodology is general and has a wide range of applications. This thesis applies the methodology to the city of Bursa, an ancient city in the western part of Anatolia.

Bursa as a case study

Bursa, the first Ottoman Capital in Turkey, is an appropriate case study as it has a strong traditional past. In its heyday, scholars and merchants alike flocked to this city, the center of trade and religion. Monuments and public complexes were generously endowed, and they became the nuclei of urban growth. Bursa was also an important silk center. In the nineteenth century, the silk industry evolved from a traditional to an industrialized mode of production. Negatively, Bursa suffered from an earthquake in 1855, and from a silkworm disease a year later. In the course of the rebuilding of Bursa during the modernization of the Ottoman empire in the second half of the nineteenth century, many changes were wrought by Ahmet Vefik Pasa, an influential figure within the Ottoman elite.

Bursa's industrial heritage laid the groundwork for the introduction of the modern textile industry in the 1930s and the automobile industry in the 1970s. They are the key impetus behind Bursa's unprecedented urbanization, encouraging massive rural

immigration. A fire in 1956 wiped out a major portion of the central commercial area, which was soon rebuilt.

In today's modern Bursa, various monuments persist as reminders of its glorious past. Some stand as dignified as ever, while others appear anachronistic in the midst of their modern surroundings. While in Bursa, I was overwhelmed by the power of the landscape and the aura of the past. However, it cannot be said that there have been lack of attempts to transform Bursa. Bursa is therefore an excellent city in which to explore hypotheses concerning the relative inertia of various urban forms.

Outline of thesis

Chapter one begins with a discussion of internal and external history. It then develops a methodology geared towards the study of artifactual persistence within a city's internal history. Relevant aspects of Bursa's external history will be discussed in Chapter two, particularly the period between the mid-nineteenth century and the present, which will be the focus of this thesis. Chapter three applies the methodology developed in Chapter one to analyze persistence in the city of Bursa. The thesis concludes with a summary and evaluation of the analysis, and suggestions for future development in this line of research.

Chapter One: THEORY AND METHODOLOGY

An urban artifact has a life of its own beyond the intention for which it was created. The term "urban artifact" as used in this thesis refers not just to physical objects in the city, but also to the patterns of organization, spaces, and all designed or controlled aspects of the physical environment. The presence of an urban artifact in turn influences and structures the development around it. This phenomenon is elucidated in the writings of Anderson and Rossi, to be discussed later in this chapter.

The study of urban artifacts involves a critical inquiry into the history of a city. It requires an evaluation of the following interactive processes:

- 1) The genesis (production) of the urban artifact,
- 2) The evolution (life and role) of the urban artifact,
- 3) Site succession of new urban artifacts.

The above inquiry allows us to have a better grasp of the vast body of knowledge embodied in studies of cities, and serves as a guide to the present research.

Internal and external history; critical events

The primary problem should be to express the three-dimensional character of architecture clearly in such a way that inhabitants of a building should be able to live the cultural life of that generation successfully.

Kulka, paraphrasing Adolf Loos¹

While recognizing the complex web of culture in which an urban artifact is only a part, the above statement emphasizes the relative autonomy within the discipline of urban artifacts ("the three-dimensional character of architecture"). It suggests a way of looking at architecture which is particularly valuable in developing a critical theoretical framework for the analysis of urban artifacts.

In the context of this thesis, history may be divided into "external" and "internal" history. For our inquiry into the city as artifact, external history encompasses social, economic, political, technological, and other cultural factors. Internal history refers to

¹Quoted in Stanford Anderson, 'Critical conventionalism: the history of architecture,' *Midgard*, vol. 1, no. 1, University of Minnesota, 1987, p.45.

architectural and urban conventions as reflected in the artifactual typology and morphology.

There is often some confusion regarding the role of external history in shaping a city. A critical inquiry into this, as done by Rossi with reference to Maurice Halbwachs' work in the Haussman plan of Paris, rejects the deterministic influence of external history.² This research methodology adopts the view that while external history does play a role in articulating a city's internal history, the link between the two is often erratic, and non-instantaneous. The quasi-autonomy of urban artifacts is reinforced by Anderson. In 'Critical conventionalism: the history of architecture,' Anderson argues that an urban artifact can both induce and constrain later processes and yet also yield to functions different from the ones for which it was conceived.³ This brings us to the concept of "critical events."

A critical event arises when external history sparks off a moment that propels the internal history of the city forward, thus altering, though not necessarily simultaneously, the exploitation, and perhaps the knowledge, of architecture and urban form. For example, Napoleon III's concern with political stability and the outbreak of cholera were part of the external history that led to the Haussman plan.⁴ The Haussman plan was in turn the critical event that brought about advancements in architecture and urbanism in Paris. Similarly, modernism has made inroads into the entire architectural and urban history with the critical event being the introduction of new urban and building typologies to meet modern aspirations. Rossi, in his study of Paris with reference to the work of Halbwachs, points out that a critical event is typically associated with a key figure or personality.⁵

Genesis and evolution of urban artifacts

"Urban genesis" is defined as the process that gives place to a new urban artifact. It serves as a momentary bridge between the abstract aspiration of an individual or a society and the urban artifact which is the physical manifestation of such abstraction. The study of urban genesis provides insight into the choice and modes available to externalize the abstract aspiration. The choice and modes are by no means free. They are subject to

²Aldo Rossi, *The Architecture of the City*, Cambridge: MIT Press, pp.141-144.

³S. Anderson, *Midgard*, 1987, p.45.

⁴A. Sutcliffe, *The Autumn of Central Paris*, Montreal: McGill-Queen's Univ. Press, 1971, pp.11-178.

⁵A. Rossi, *The Architecture of the City*, p.143.

the constraints of site, existing artifacts, architectural and urban convention (internal history); and economic and technological considerations (external history).

An urban artifact has a life of its own. The evolution of an urban artifact is itself a part of the history of the artifact. In 'People in the physical environment: the urban ecology of streets,' Anderson points out that an urban artifact supports a wider range of activities beyond the intention for which it was designed.⁶ He further provides a theoretical understanding of the "loose-fit" of the physical environment with reference to the concepts of "potential, effective or influential, and latent" environment, which is discussed below.

The physical environment is an arena for potential actions and interpretations. The extent of this potential defines the robustness of the environment. This potential environment is reinterpreted by each user, thus yielding his or her subjective environment. The potential environment can be conceptualized into influential environment and latent environment. The influential environment is the realized potential environment. The latent environment is the unrealized potential environment which, together with the recognized but unexploited environment, account for the resilience of the environment. The potential or "capacity" of an artifact can be modified (increased or decreased) by physical changes.

The notion of multiple influential environments, that is, the ability to absorb changing use and meaning, contradicts the concept of physical determinism. Following the same line of argument, the deterministic influence of external history on the genesis of an urban artifact is a misconception. The success of an urban artifact depends on its robustness and capacity, and the initial match between aspiration and realized built form within the convention of architecture and urbanism conditioned by time and place. Thus, an artifact may support the changing life of a city without being altered significantly.

Rossi advances this argument further by introducing the concepts of "primary elements."⁷ He defines primary elements as elements capable of accelerating the process of urbanization in the city. Very often they are not even physical, for they can be events that lead to the spatial transformation of a site. They possess a value "in themselves," but also a value dependent on their place in the city.

Although the concept of capacity accounts for the wide range of activities supported by an artifact, these activities are not boundless. The inert quality of an artifact ensures its continual existence, but at the same time conditions and inhibits its

⁶S. Anderson, 'People in the physical environment: the urban ecology of streets,' *On Streets*, Cambridge: MIT Press, 1978, pp.6-7.

⁷Rossi, *The Architecture of the City*, pp.86-87.

effectiveness and efficiency. In the course of time, many artifacts become obsolete. This leads to the evolution of existing artifacts to increase its capacity, the genesis of new artifacts, or "site succession." Site succession will be defined shortly.

Site succession of artifacts

In addition to urban genesis and evolution, the history of urban artifacts should include their location in the city. Site succession is defined here to mean the series of artifacts located one after another on a specific site. The nature of site succession reveals the internal dynamics of the city. There are two means by which site succession can take place, and they are not necessarily related:

- 1) Site succession through the course of events,
- 2) Site succession initiated by urban dynamics.

Site succession through the course of events

The life span of an urban artifact depends on its "firmness," defined as the structural stability of the artifact and its resistance against unpredictable disasters such as earthquake and fire. Rebuilding over time for reasons of structural stability is an ongoing process in the evolution of the city. Theoretically, this process of site succession need not alter the geometry of the plot and the land use pattern. The scale of the new structure should be relatively similar to the previous one. However, rebuilding offers an opportunity for change and very often the new building will respond to new conditions and building typologies.

Site succession in response to urban dynamics

The inert quality of less resilient urban artifacts constrains the operation of the city. This phenomenon is obvious in historical cities which are undergoing functional differentiation, densification, and expansion. When small urban artifacts in the prime central location of the historic city are unable to cope with new aspirations of the society or cater to industrialized modes of production, either the existing stable structure is rebuilt, or the new activities are located elsewhere in the city; thus even if the old urban artifacts are physically unaltered they assume a different role relative to the city as a whole. These aspects of urban dynamics have been dealt with extensively in other disciplines. For the purpose of this thesis, a survey of concepts developed within urban ecology provides a valuable insight into urban dynamics.

Urban ecology draws upon the biological analogy between the structure of the society and that of life forms. Just as an organ is made up of cells and tissues, the city is the physical manifestation of the social organization which is in turn the outcome of interaction among human species. The Darwinian natural selection process, comprising the forces of competition, dominance, invasion, and succession deeply rooted in the classical economic theory, contributes to the distribution of local spatial characteristics in the city.

The Chicago school approach, which forms the mainstay of urban ecology, originates with Park's attempt to develop a theoretical model by studying the community groupings of men through time and space, using the above naive biological analogy, and applying this model to cities.⁸ For example, according to McKenzie's "internal structure cycle" of invasion, competition, succession, and accommodation, the location of urban artifacts is the outcome of intense competition among different populations.⁹ Similarly, Burgess' "concentric zone model of urban form" attempts to explain and relate changes in land use patterns to the process of urban growth. His basic tenets are centralization and decentralization.¹⁰ The center of the city, by virtue of its locational and historical significance, dominates the spatial competition around it while newer and less important businesses are relegated to the periphery as the city grows.

These models rely heavily on the economic interpretation of spatial competition. Subsequently, they lead to three main camps: the neo-orthodox, referring to the original biological framework of explanation; the social area analysis which focuses on social ranking, urbanization, and segregation as determinants of social organization; and the social-cultural camp which emphasizes that cultural priorities can sometimes override economic concerns. These models suffer from an incomplete conceptualization of the environment.¹¹ The environment has been conceptualized as an abstract plane which does not take into account the individual quality, history, and specific locality of existing artifacts. Taken as a whole, however, the ecology approach contributes to a better understanding of the urban dynamics.

⁸R. E. Park, Ernest Burgess, and R. D. McKenzie, (eds), *The City*, Chicago: University of Chicago Press, 1925.

⁹*Ibid.*

¹⁰*Ibid.*, ch. 2.

¹¹William H. Michelson, *Man and His Urban Environment; a sociological approach*, Massachusetts: Addison-Wesley Publishing Company, 1976, pp.17-23.

Theory and methodology

The life of the city is propelled forward by critical events (figure 1.1). The impact of critical events can be very far-reaching and span over a long period of time, since critical events can adjust the capacity of the city and often result in a paradigm shift in the evolution of the city. Not all effects of critical events are anticipated.

The evolution of a city can best be studied by looking at the morphology of urban artifacts (figure 1.2). The morphogenetic approach refers to the tracing of the evolution of artifacts and their underlying formative processes. It provides information on the genesis, evolution, and site succession of urban artifacts. In the following, the morphogenetic approach is used to develop a methodology to deal with the theory of persistence in city form.

Morphogenetic tradition

The urban morphology or morphogenetic approach has its antecedent in the Germanic lands. A background to this approach is contained in Conzen.¹² This section touches upon only those aspects relevant to the methodology of this thesis.

The study of cultural geography requires a detailed description of the visible and tangible man-made forms on the ground, as well as their genetic and functional origin in terms of the aims and actions of man in the course of history and in the context of nature. This method is subsequently applied to the analysis of cities, namely town plan analysis. With appropriate cartographic techniques, it is possible to record and analyze the complex evolution of the city, both the functional and physical aspects. The town plan is recognized as the combination of three distinct but integral plan elements: the streets and their street system, the plots and their plot patterns, and the building arrangement within these patterns. Using this method of categorization, the town plan can be broadly conceived of as site, plan units, contents, and function. This method, as demonstrated by Conzen in the analysis of British townscapes, proves to be a useful tool in the analysis of the evolution of the city plan and the site succession within.

¹²M. R. G. Conzen, *The Urban Landscape: Historical Development and Management*, London: Academic Press, 1981.

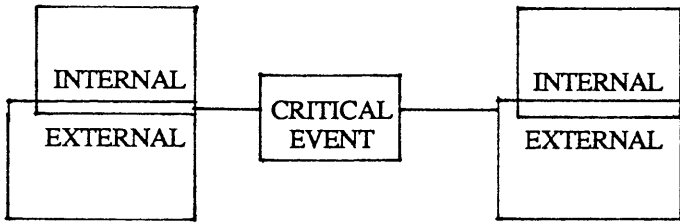


Figure 1.1 Critical events and paradigm shift

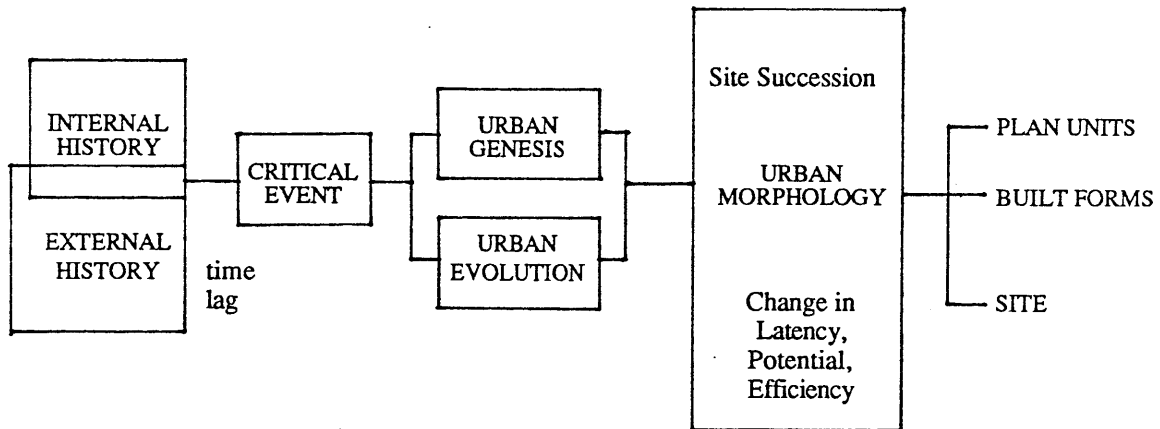


Figure 1.2 Evolving history of a city

Urban morphology as an approach to research methodology

Examination of the town plan shows that the three element complexes of streets, plots and buildings enter into individualized combinations in different areas of the town. Each combination derives uniqueness from its site circumstances and establishes a measure of morphological homogeneity or unity in some or all aspects over its area. It represents a plan-unit, distinct from its neighbors.

Conzen¹³

To paraphrase Conzen's approach, city form, or the structure of the city, consists of the site, plan units, spaces between plan units, and the contents of both plan units and spaces-between-plan-units. Human activities are supported within this man-made physical structure. The interaction between the aspiration of man and the city form is often complex and not always congenial.

For the purpose of this thesis, a simple method to identify plan units suffices. Plan unit is an area delineated by the street systems. The plan unit is often the private domain as opposed to the public domain of streets.¹⁴ To avoid conceptual problems in categorization, the spaces outside the plan units (or the street systems), should include not only all the public open spaces such as urban spaces, parks, and playgrounds, but also invisible public services like water pipes, sewer drains, and the like (figure 1.3).

Plan unit as a research tool

There are many ways to study cities. Examples include Habraken's thematic approach; Rowe's built and unbuilt analysis; and Rossi's emphasis on monuments, residential quarters and genius loci. Each one of them discloses certain layers of information to address specific issues of interest to the analysis, and will be incorporated selectively in my methodology.

¹³Ibid., p.14.

¹⁴As discussed by S. Anderson in *On Streets*, p.1, the line that marks the plan unit is a boundary with multiple meanings. It is often the line that delineates the public and private, individual and society, movement and place, built and unbuilt, architecture and planning.

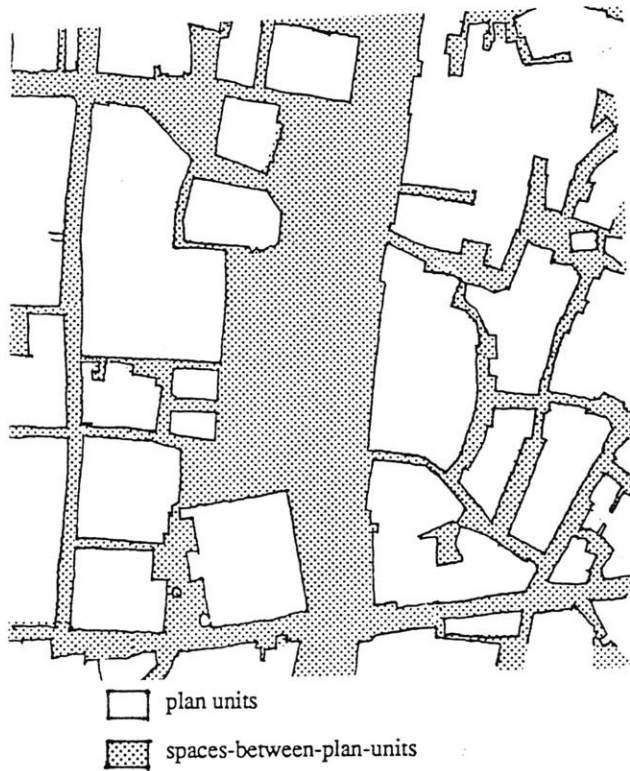


Figure 1.3 Plan units and spaces-between-plan-units

The accumulation of relicts--forms unchanged in a process of change--is one of the most fundamental morphological processes of the city. Relicts from different periods and morphological patterns survive in the shape of buildings and large parts of the town plan, giving rise to the historical layering in the city. This complicated process of urban evolution needs to be "deconstructed" to understand the previous urban dynamics and the interaction of artifacts that contribute to such a historical layering.

The approach of utilizing plan units as a methodology of research is important, as plan units allow simultaneous consideration of the built and unbuilt areas, typological character of built forms, public and private domains, ownership, and many other essential characteristics of the city. Plan units also serve as intermediate units which allow direct contact with the overall city plan by "zooming up," and the contents by "zooming down". Furthermore, comparative studies of plan units and contents of selected areas of the city plan will uncover the internal dynamics of the city particular to that location and time period. Conceptually, the methodology is a powerful tool that allows a comprehensive analysis of the city rather than a reductionist one.

The methodology provides a construct in which city form could be viewed as an aggregation of plan units and their contents or built forms.¹⁵ Plan unit is the simplest component in the structure of the city. The plan unit contains specific information on the evolution of its own history with reference to the city's general history, memory and life. Plan units allow one to grasp the structure of the city more easily by putting it within manageable scale and context. Abstract theories on city form can be "deconstructed" into simpler concepts with reference to the plan units. For example, building typologies refer to the built forms of plan units. Environment memory is simply the mental attachment to one or more plan units and the built forms within. Rossi's "monument" is simply the aforementioned built forms within plan units; his residential quarter is a number of plan units zoned for housing; and "genius loci" is the spiritual integration of built forms, culture, and landscape.

Looking at city form in the above way allows one to conceptualize the city in terms of its capacity and limitations rather than predetermined functions. This approach is relevant to the issue of persistence set up in the thesis.

¹⁵The terms "built forms" and "contents" of plan units are used interchangeably in this thesis.

Persistence in city form

The methodology outlined above allows research into the persisting aspects of city form. In order to carry out this research, one has to understand the relationship between one plan unit and another, and between plan units and their contents. This in turn requires an inquiry into the persistence of site, plan units, and built forms. A hierarchy of urban artifacts in terms of their persistence will be revealed. Explaining this hierarchy will contribute towards understanding the effect of persistence on the development of city form.

Persisting elements

Site includes natural landscape, topography, microclimatic character, and ecology. Barring sudden atmospheric changes or natural disasters, the persistence of sites in the short run is quite obvious. In the long run, however, this need not be true. For example, the city of Venice is much affected by periodic changes in the sea level, and land reclamation in Boston alters the geographical profile of the city.¹⁶

As the basic units of the city form, plan units usually show a great degree of persistence. They are able to absorb internal changes, or changes in their contents, without altering their own configurations. The persistence of plan units depend on factors like size and geometry. As for spaces-between-plan-units which house the street system and other infrastructure, they persist because of huge sunken costs, and because very often they are publicly owned.

Within the plan units, the persistence of the built forms varies, depending on the permanence of building material, "loose fit" or geometry and dimension of space, and human adaptability or attachment. Monuments of sentimental value and well-constructed buildings tend to persist.

Interaction between persisting elements

The topography of the site generally conditions the shape of the plan units. Location and proximity to natural elements affect the use of the plan units,¹⁷ and the growth pattern of the city. The climatic condition of the site and the available natural resources act as physical determinants of the built forms.

¹⁶Stanford Anderson's help in suggesting examples is gratefully acknowledged here.

¹⁷For example, in Bursa, early silk factories were located next to rivers for water power.

A plan unit serves as the morphological frame for the built forms within. Each plan unit also interacts actively with the outer space flanking its sides. The persistence of the borders of the plan unit depends on the stability of the interactive force between the "inside" and the "outside." The two interactions to be studied more closely in the following are the interaction between plan units and spaces-between-plan-units, and the interaction between plan units and the built forms within.

Interaction between plan units and spaces-between-plan-units

The size and geometry of the spaces between plan units determine the range of outdoor activities, services, and systems of circulation that are feasible. The ability of these spaces to support certain activities while inhibiting others can be thought of as its capacity.

Changes in the size of plan units affect the spaces between them and vice versa. This interaction is apparent when new modes of transportation or cultural aspirations are introduced into a city. Instances include the widening¹⁸ or narrowing¹⁹ of the spaces between plan units, or, in the case of urban renewal, the elimination of these spaces when two or more plan units merge.

Interaction between plan units and built forms within

There are basically three types of plan units, depending on the built forms within. There are plan units which are "saturated" with built forms; plan units with no built forms, such as public parks and gardens; and plan units which are intermediates between the first two, or those with a combination of built forms and garden spaces.

Plan units interact with their built forms in two ways. Firstly, plan units serve as morphological frames for their contents. This can occur in several ways, summarized in the morphological tree (figure 1.4). Both plan units and their built forms may remain unchanged through time. New built forms of the same or different typology may be added to a plan unit. In other cases, some or all of existing built forms within a plan unit can be demolished.

¹⁸Hausmann's intervention in Paris is an example.

¹⁹The transformation of Aleppo when the Muslims occupied the Roman city is characterized by the narrowing of streets.

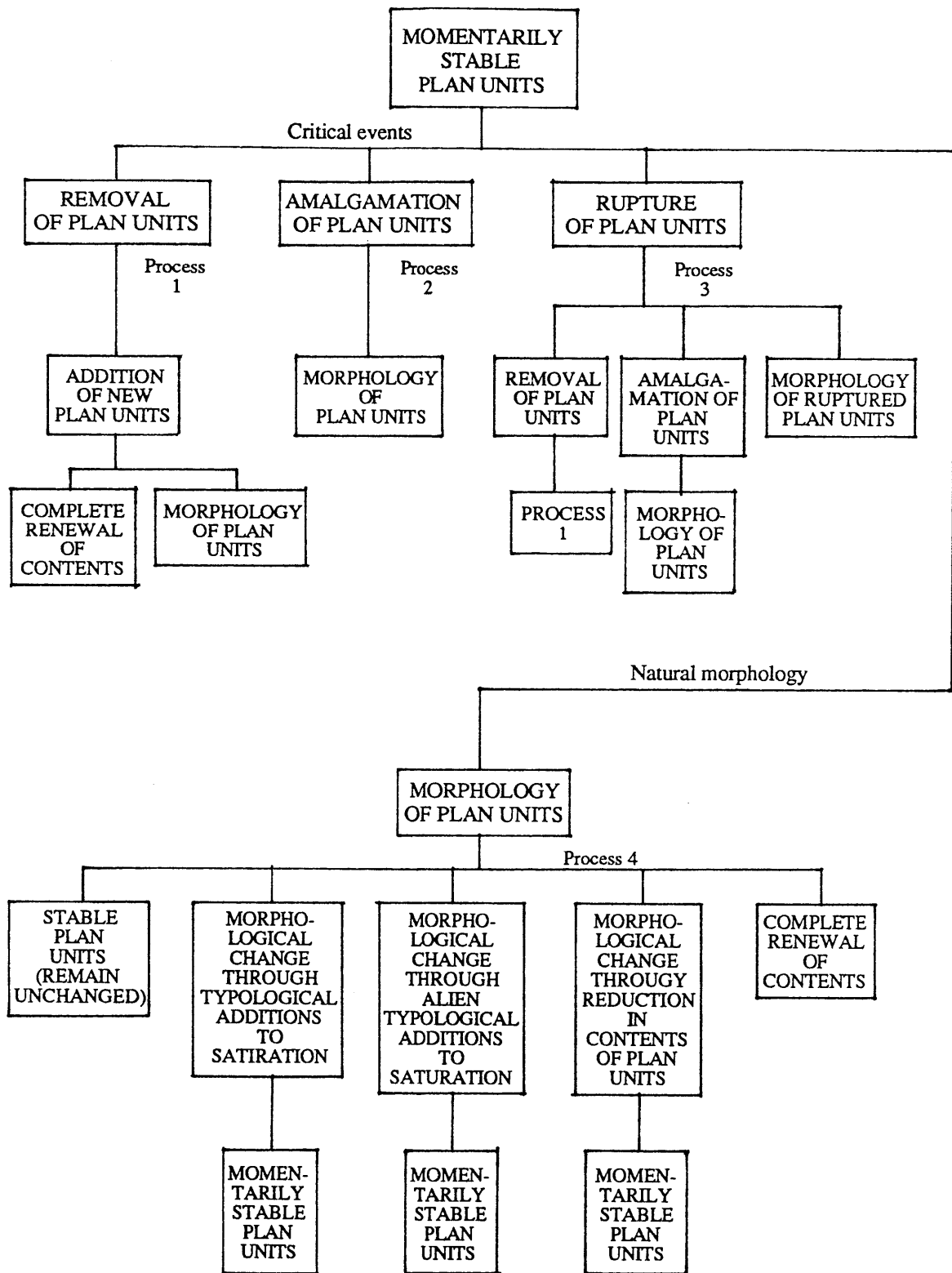


Figure 1.4 Morphological tree of plan units

Secondly, the built forms may actually act as the anchorage during the modification of plan units. Monuments play a very important role as the pivotal point in the evolution of the plan unit and consequently the street patterns and open spaces. During a critical event, entire plan units can be removed through site clearance, or existing plan units may be ruptured or amalgamated.

The research methodology outlined in this chapter will be applied to the study of persistence in Bursa. This will be discussed in more detail in chapter three, after the chronology of events in chapter two.

Chapter Two: HISTORICAL PERSPECTIVE

Whatever the changes, disasters or neglect, whatever progressive or felicitous stages it [Bursa] may have gone through, it has always preserved the spirit of its formative age, it conserves with us through it and breathes its poetry.

Ahmet Hamdi Tanpinar

Historical development of Bursa

The city of Bursa is situated in the northwestern region of Anatolia in Turkey (figure 2.1). It is located at the foot of the mountain range Uludag overlooking, to its north, a flat agricultural plain. Bursa is believed to be founded by Prusias in about 150 B.C.¹ After more than four centuries of Roman rule, it passed into the hands of the Byzantines. The city then consisted of only a settlement within a fortress and another at the hot spring area, Pythia (present day Cekirge).

Bursa became part of the Ottoman Empire after it was captured from the Byzantines by Orhan Gazi in 1326. The Greek and Jewish population who formerly resided in the fortress, subsequently known as Hisar, were moved out and resettled to a district below it. The capture of the city was followed by an urban transformation intended to "Islamize" the environment. A palace was built, and the Byzantine church was converted into a mosque (figure 2.2).

After a period of consolidation and peace, urban development began outside the fortress. The Orhan Gazi mosque, a hamam (public bath) and a han (commercial complex) were built to the east of the fortress. This group of public buildings served as the nucleus for urban growth. The area subsequently developed into the traditional commercial center, characterized by a bazaar spine, while new residential districts emerged around it. The traditional commercial area remains, to the present day, the most important commercial area of Bursa.

The commercial center had no protective walls around it. This was unusual at a time when walls were considered prerequisites for defending cities against hostile invaders, and reflects the stability felt by the region under Ottoman rule. During the subsequent prosperous reigns of Bursa, new kulliye (public complexes) located away

¹Iffet Orbay, *Bursa*, The Aga Khan Award for Architecture, 1983 award ceremony, pp.5, 18. Also, see "Bursa" entry in the *Encyclopedia of Islam*.

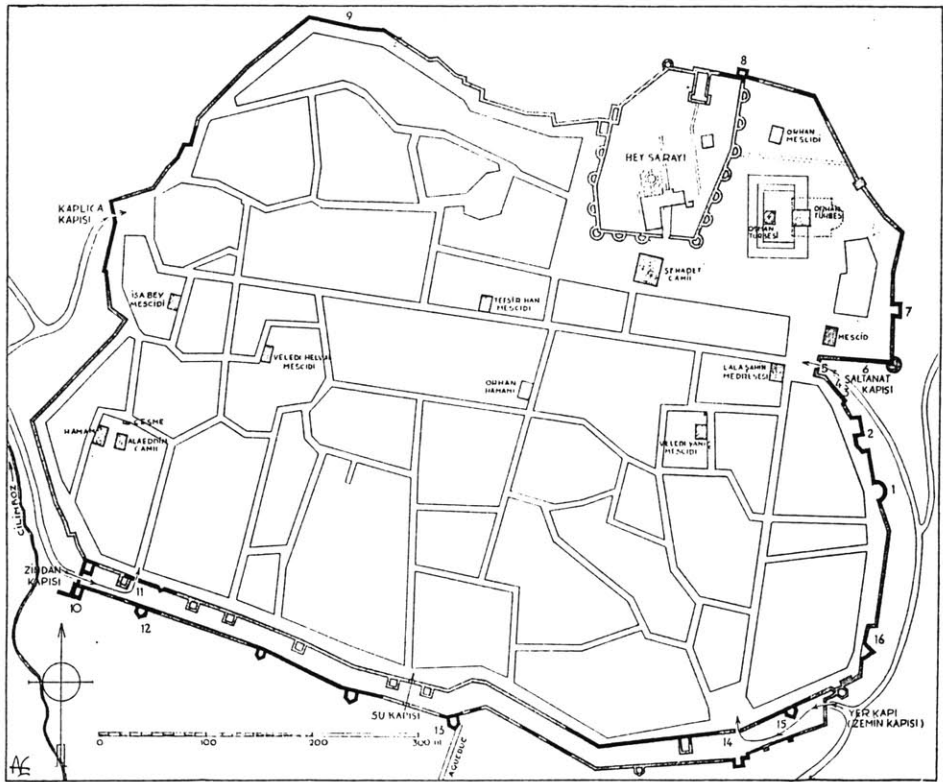


Figure 2.2 Plan of Hisar indicating the location of the palace; the Orhan Mosque is where the Byzantine church used to be.

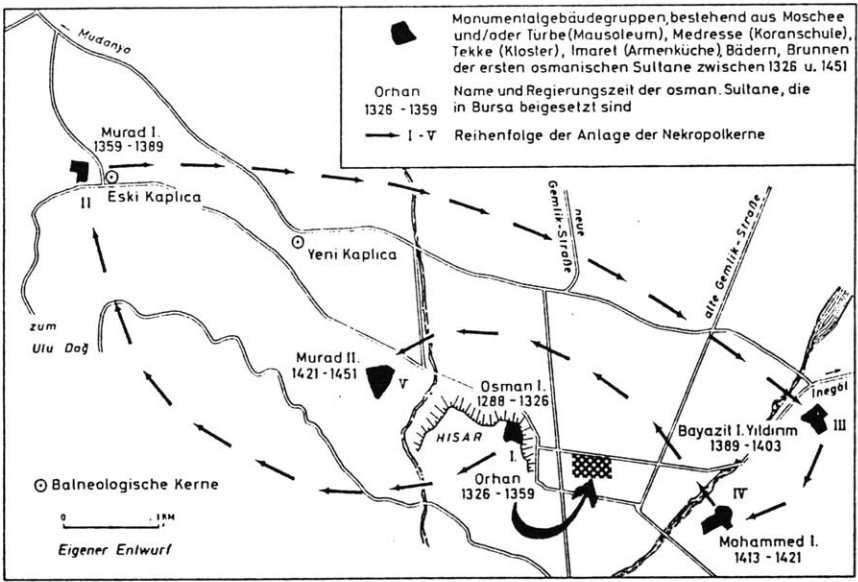


Figure 2.3 The location of the first kulliye in the central commercial area, and the sequence of kulliye complexes at the residential neighborhoods.

from the commercial center were generously endowed by sultans and high officials (figure 2.3). They served as the urban focus for residential districts such as Cekirge, Yildirim, Emir Sultan, and Yesil. These buildings, of which mosques were the most important, were usually found on top of hills at the most commanding positions (figure 2.4). Within each residential district were typical cul-de-sac street patterns and traditional Turkish houses which respected the topography, creating the picturesque townscape for which Bursa is admired. The city continued to expand, and under the reign of Bayazid I, the Ulu Cami (Great Mosque) was built in 1399 (figure 2.5).

The Turks, many of whom were nomads, were encouraged to urbanize in order to consolidate the power of the empire. The kulliye and the associated public conveniences were established in an attempt to foster this urban settlement.² In addition, the presence of the mosque, a key feature of each kulliye, was an ingenious way to Islamize the landscape from the land of the Christians. The idea of a kulliye as an urban center is not an Ottoman invention. It was apparent in the Seljuk and in the Byzantine periods too; the Turks developed and refined the idea, exploiting it as a mode of urbanization and colonization.

Bursa derived its prominence more from historical rather than logistic reasons. Geographically, Bursa's location in relation to the traditional trade routes is not the most ideal. Iznik, captured in 1329, and situated near the strategic meeting point between the northern trans-Anatolia route and the diagonal route through Anatolia, might have been a more convenient location for a trade center. Bursa's hilly landscape gave it the advantage of security and a familiarity not provided by Iznik's plains. In addition, Ottoman control and tax policies prevented the formation of other trade centers to rival Bursa. Bursa became an important international trade center for silk and spices. The previous trade route which converged at Sivas was shifted to Bursa. The land route from Damascus, Aleppo, Konya, and Kutahya regained its importance while Antalya served as an important port for the sea route linking Bursa to Alexandria (figure 2.6).

In the year 1402, Bayazid I was defeated by Tamerlane, the Mongol emperor, and Bursa was partially destroyed. From then onwards until 1453, Bursa was replaced by Edirne as the imperial capital, although Bursa remained the city where sultans ascended to the throne and the royal were buried. During the prosperous reign of Murad II in 1421-

²Halil Inalcik also talks at length about the role of kulliye as cores of new settlement areas, but with specific reference to Istanbul, in his "Istanbul" entry in the *Encyclopedia of Islam*.



Figure 2.4 View of the kulliye at Yesil neighborhood; building at left is the tomb and to its right is the mosque

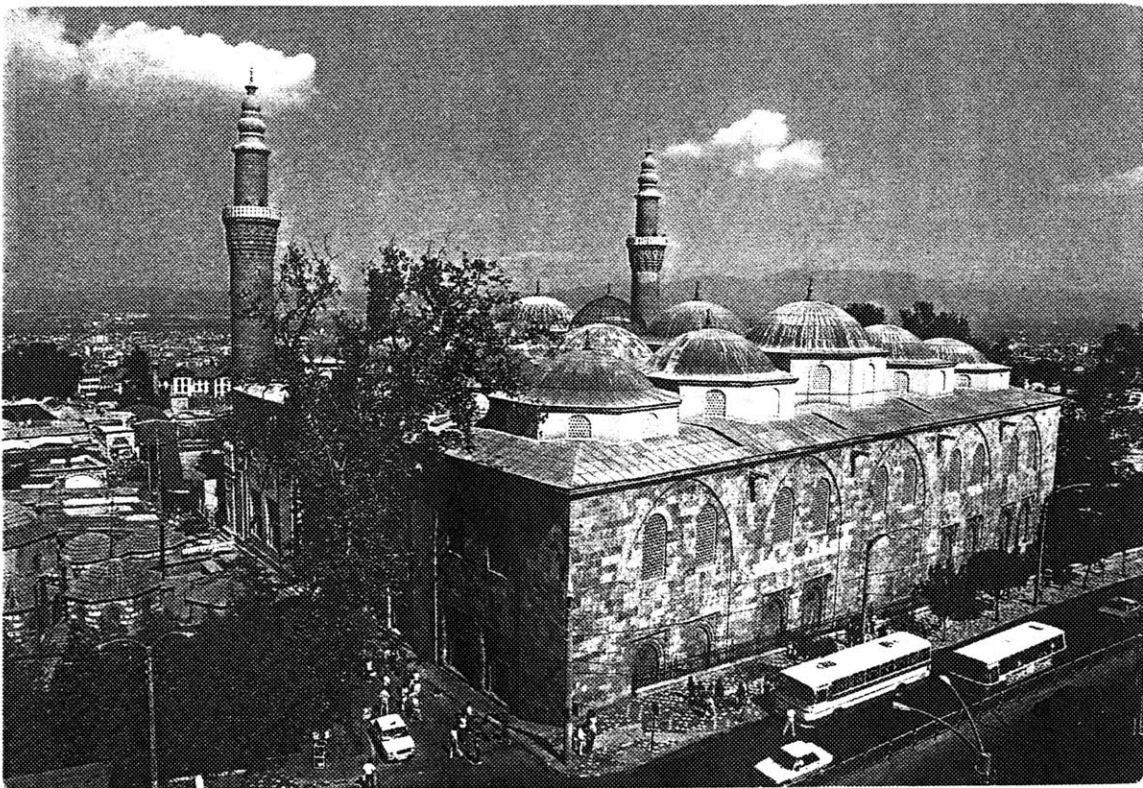


Figure 2.5 View of the Ulu Cami; a unique hypostyle mosque



Figure 2.6 Trade routes during the Ottoman Empire, 1300-1600



Figure 2.7 View of Kulliye Muradiye from Hisar

1451,³ Bursa made a quick recovery and greatly expanded. The Kulliye Muradiye was endowed by Murad II in 1424 and named after him. Subsequently, it became an important royal burial ground (figure 2.7).

The silk industry in Bursa dated back to the Byzantines. The silk industry was basically controlled by private enterprise, creating a prosperous Muslim bourgeoisie. In the second half of the fifteenth century, the upper and middle classes make up about seventy percent of Bursa's population.⁴ Even when Istanbul was captured by the Ottomans in 1453 and became the third imperial capital, Bursa remained important as a religious center and for its silk industry.

Bursa's historical prominence as the first capital had left behind a tradition of famous scholars, religious institutions, saints, and tombs. Teachers, students, and visitors flocked to these religious institutions, further reinforcing this tradition and attracting new vakif endowment for religious purposes. Wealthy merchants and prominent state leaders established their own charitable institutions, creating jobs and providing urban facilities. Bursa was also well known for its therapeutic baths of mineral water. Ubucini commented, "Everything conspires to make Bursa a type of sanctuary in the eyes of the Ottomans, a place of pilgrimage like holy cities of Mecca and Madina."⁵

The role of Istanbul as the imperial capital made it a prime international trade center which soon surpassed Bursa. However, the commercial activities of Bursa did not decline; in fact Bursa grew to become the largest city and commercial center in Anatolia.⁶ Supported by skilled craftsmen, the silk trade and industry continued to be the basis of prosperity for Bursa. The well-developed infrastructure, such as the large number of hans and attractive urban facilities, facilitated the overall success of commercial enterprise. Raw silk from Persia and the vicinity was transported to Bursa and processed to cater to the demands of the palace and orders from Europe. Between 1599 and 1628, Abbas the Great attempted to divert Persian silk from the Ottoman market, but this only induced the Ottomans to encourage its own silk production in Bursa and its environs.⁷

The rising dominance of Istanbul led to a reorganization of the trade routes. The Bursa-Kutahya pilgrim route remained important, and so was the route that linked

³According to Halil Inalcik, *The Ottoman Empire; the classical age 1300-1600*, London: Weidenfeld and Nicolson, 1973, pp.210-211, Murad II abdicated in favor of his son Mehmet II in 1444, but returned to the throne in 1446.

⁴"Bursa" entry in *Encyclopedia of Islam*, p.1335.

⁵A. Ubucini, *La Turquie actuelle*, Paris: Hachette, 1855, p.24.

⁶H. Inalcik, *The Ottoman Empire*, p.146.

⁷See footnote 3.

Istanbul through Bursa to the hinterland of the south. However, Bursa was bypassed by the northern trans-Anatolia route in the early seventeenth century.

The Industrial Revolution in Europe had a critical impact on Bursa. In the eighteenth century, Italy and France began producing good quality silk as well. The signing of the Anglo-Turkish Commercial Treaty in 1838 opened up the Turkish market to the West. Imported machine-made goods reached all corners of the Ottoman Empire and shattered its economic base. The prosperity in Bursa was affected by cheap silk and cotton imports from Europe, and competition from the port city of Izmir.

A brief description of the silk industry at this point will be useful. The production of silk consists broadly of three stages in the following sequence: the raising of silk worms, the unreeling of cocoons to produce reeled (raw) silk, and the weaving of raw silk. The first two processes have to be integrated since reeling must be carried out before the cocoons hatch. The weaving process can take place independently. Prior to industrialization, these three processes were carried out within Bursa's cottage industry. Technological changes in Europe had a direct impact on the silk industry in Bursa. In 1824, manufacturers in Lyons, France invented the mechanical reeling process and revolutionized the European silk industry. By the 1830s, a new type of silk weaving looms had taken over silk production in France. These looms required threads of standard gauges too precise to be achieved even by skilled workers and this standard could only be maintained by reeling in steam filatures.

Steam powered silk reeling machines were introduced in Bursa in 1837. This transfer of technology catered to an excess demand in Europe for raw silk, especially during the shortage caused by the silk worm epidemic in Europe between 1843 and 1865. The absence of a similar transfer of weaving technology led to an exodus of weavers into reeling. Silk mechanization marked a new phase of industrialization and urban development in Bursa.

Bursa was the first Ottoman city to industrialize. This activity coincided with the decline of the Ottoman Empire. The war with Russia and numerous military defeats led to attempts to modernize the Turkish army based on the Western model. The Janisary Corps was dissolved in 1826, paving way for the reform of the Ottoman Empire with the implementation of the Tanzimat Charter in 1839.

The reform agenda of the Tanzimat Charter embraced the following⁸:

⁸Zeynep Celik, *The Remaking of Istanbul*, Seattle: University of Washington Press, 1986, p.32.

- 1) Modern European society was considered superior to the Ottoman society, and the solution to the problems of the empire was sought in the importation of Western institutions and methods;
- 2) Traditional institutions which were impediments to progress had to be eliminated so that new ones could be established.

This marked a drastic break from the traditional institutional systems, resulting in radical social and political changes which left their imprint on the urban landscape. Western ideas were adopted to revive the economy. Major institutional restructuring took place to improve efficiency and management. The new technology and labor organizations marked a distinctive break from the past. Foremen from the West were employed to operate the machines while young local women, mostly Christians, were employed in silk reeling. Employment in the silk industry was nicely integrated with the needs of the agricultural sector, since the intense reeling period coincided with the off peak agricultural season.

A class of Ottoman elite associated with the administration of the Empire and economic restructuring emerged, and played a leading role in the process of industrialization. Bursa also attracted foreign investment and foreign partnership in the silk industry. Major silk factories were located along the two rivers Gokere and Celimboz, which were Armenian and Greek neighborhoods respectively.

While the shift from cottage industry to mechanized factory production brought about rapid economic development, it also made Bursa heavily dependent on the production of raw silk for export. Within a period of only one decade, the traditional weaving handicraft had disappeared completely. In addition, the agricultural plain in the northern part of Bursa was converted into mulberry plantations to provide mulberry leaves for the silk industry. This prosperity did not last long, however. A major earthquake struck in 1855, followed by a deadly silk worm disease a year later. These catastrophes, together with wars and the instability of the Ottoman empire, finally took their toll, and the silk industry in Bursa was shattered.

During the Crimean War, extensive credit was made available to the Ottoman Empire by its allies, France and Britain, to finance military expenditure. In 1881, the Public Debt Administration was established by the Western allies of the Empire to manage its burgeoning foreign debt, which had escalated into a crisis. This was a means for the West to further exploit Bursa's resources. The silk industry was reestablished in Bursa as silk was in high demand in Europe.

The first map of Bursa after the earthquake was produced by a group of surveyors led by Subhi Bey in 1861. The map showed the locational distribution of the silk industry within the traditional urban structure of Bursa, prior to restoration and restructuring (figure 2.8). A major urban intervention was later undertaken by Ahmet Vefik Pasa, an influential figure within the Ottoman court. As ambassador to France in 1860, he observed the reconstruction of Paris under Haussmann. Ahmet Vefik Pasa became the Prime Minister of the Ottoman Empire after serving two terms in Bursa, first as city inspector between March 1863 to October 1864, and the second as governor between February 1879 and October 1882.⁹

Ahmet Vefik Pasa initiated and oversaw the construction of roadwork, canals, a drainage system, schools and hospitals, as well as the restoration of historic monuments. He also encouraged the expansion of industry and agriculture. In response to the concern of the Ottoman Empire for the transportation network and taking advantage of the derelict condition of the city after the earthquake, new roads echoing Haussmann's boulevards were constructed (figure 2.9). This bold intervention paved the way for the modern development of Bursa. Even today, the major traffic systems through the heart of the city stem from this intervention. Ahmet Vefik Pasa's farsightedness is obvious when comparing Bursa with other traditional cities.

During Vefik's term as the governor of Bursa, war refugees from the lost territories of the Ottoman Empire were resettled in a new area below the fortress, with its distinctive checker-board street pattern.

Bursa was occupied by the Greek army from the First World War to September 1922.¹⁰ The capital of Turkey was subsequently transferred to Ankara in 1923. Wars and economic instability in the Ottoman Empire finally led to the formation of the Turkish Republic in 1923. This marked another phase of development in Bursa.

Bursa benefited from the First Five-Year Industrial Plan which explicitly favored development outside the port cities Istanbul and Izmir. The necessary infrastructure was already present in Bursa, and its labor cost was much lower. Political connections helped too. Bursa was regarded as home ground by the then Minister of Finance, Celal Bayar, who was a close associate of Ataturk, the Turkish president. Celal Bayar's support proved to be essential in the overall economic development of Bursa.¹¹ In 1938, Ataturk opened the state-owned Summer Bank Textile Mill which regained for Bursa its status in

⁹Leila Thayer Erder, *The Making of Industrial Bursa: Economic activity and population in a Turkish city 1835-1975*, Ph.D. dissertation, Princeton University, 1976, p.241.

¹⁰The Municipality of Bursa, *Bursa, Turkey*, Ankara: Donmez Offset, latest publication.

¹¹L. T. Erder, *The Making of Industrial Bursa*, p.96.

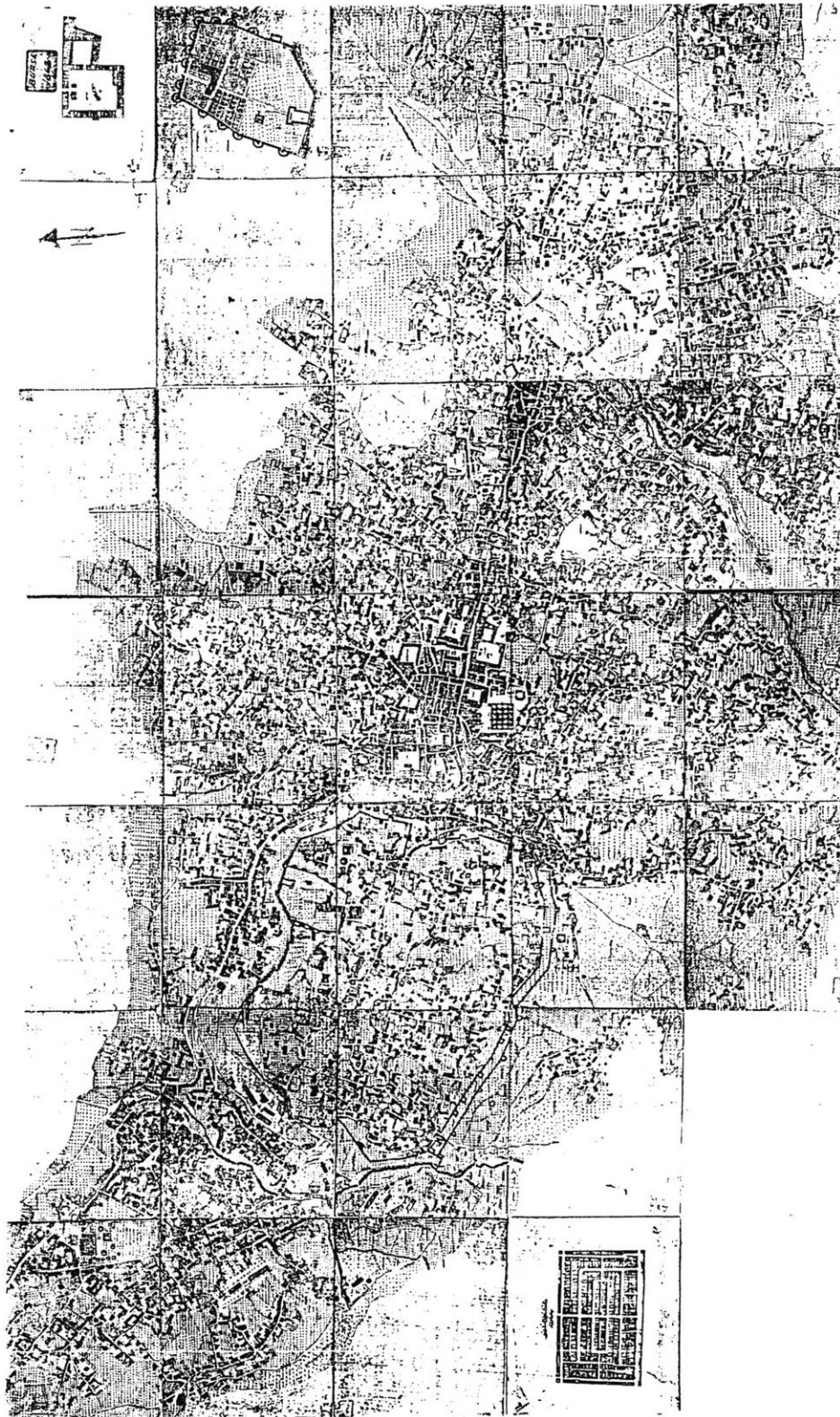


Figure 2.8 Map of Bursa drawn in 1861

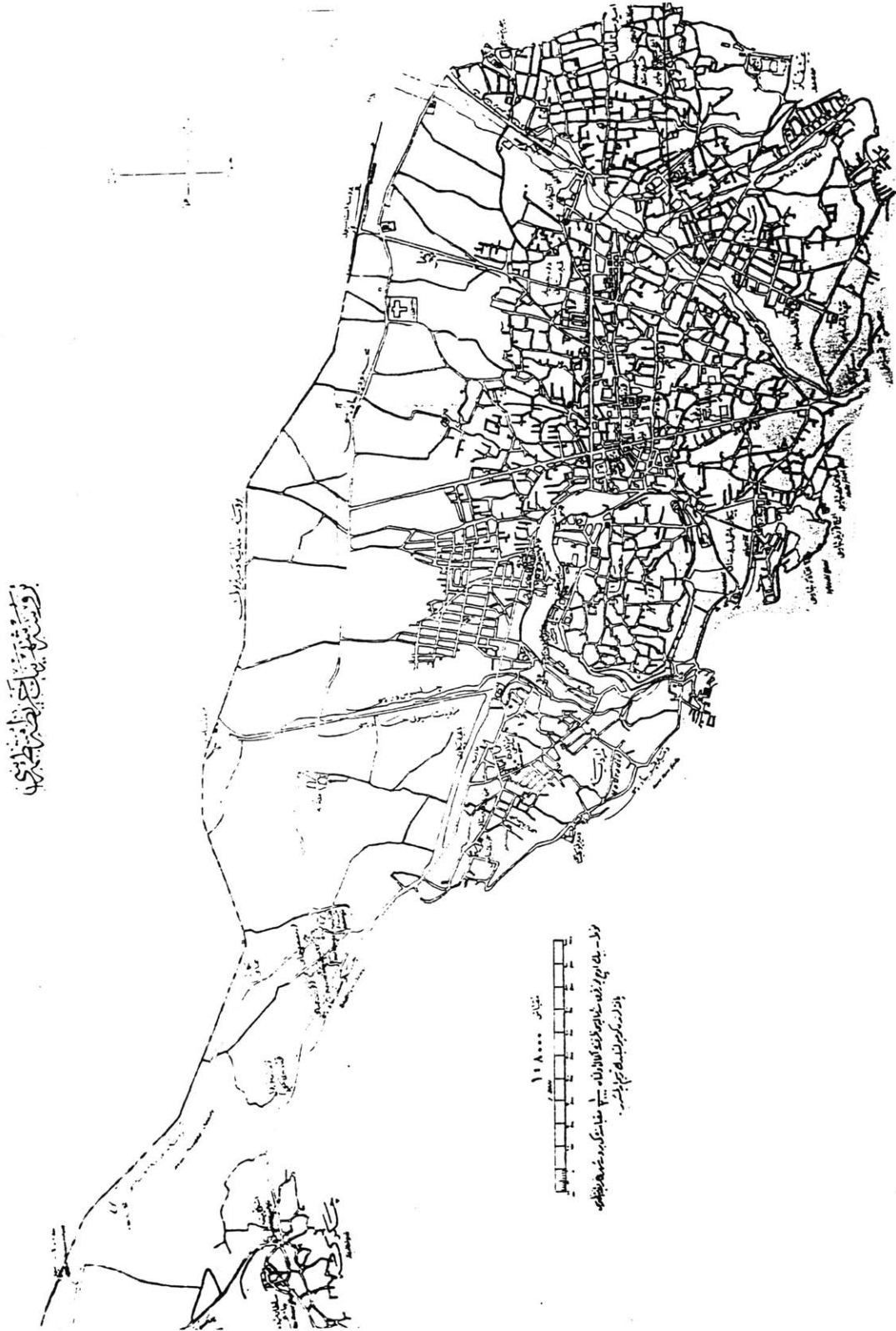


Figure 2.9 Map of Bursa showing intervention by Ahmet Vefik Pasa

textile production, and revitalized the economy. Private initiative took over the economic development of Bursa in the 1950s and an organized industrial estate was proposed by the Chamber of Commerce and Industry.

In 1956, a major portion of the central commercial area was burned down. Luigi Picinato, the Italian chief planner in Bursa, worked out the rebuilding scheme for the area affected by the fire. He also proposed the first master plan to preserve and divert development away from the historical center, and prevent encroachment on the agricultural land (figure 2.10).¹²

Due to lack of leadership, this master plan was never fully implemented. Instead, the entire industrialization and urban development followed an anarchic path. Two major automobile plants were built by the end of 1970. One of them is located at the organized industrial estate, while the other is located at an unorganized industrial district in the center of the valley. The booming automobile industry, together with the textile industry, attracted rural migrants to Bursa, further exacerbating existing shortages in housing, social services, and transportation.

The urban environment was transformed through both horizontal and vertical expansion. The horizontal expansion invaded the valley while vertical expansion transformed the character of the urban environment. In 1983, another master plan was introduced to direct urban growth (figure 2.11). The intention of the master plan was to prevent expansion into the valley. A highway linking Izmir to Ankara was planned to redirect the growth of Bursa into a linear city.

In early 1985, area preservation was initiated by the Ministry of Culture and Tourism, and the Public Works Department. There were attempts to halt the extensive destruction of historical buildings, and preserve Bursa as a tourist center for history and culture.

Bursa within the changing perspective of Ottoman cities

This section looks the changing role of Bursa within the network of Ottoman cities. Of interest is the relative size of Ottoman cities. The gap between any city designated as the imperial capital and the next largest city was always very large. The building of the imperial capital took place at the expense of other intermediate cities since

¹²Iffet Orbay in *Bursa*, p.18, referred to an even earlier master plan drawn up in 1941 by Prost. However, the authorities in Bursa have no record of this plan, and I cannot verify that it ever existed.

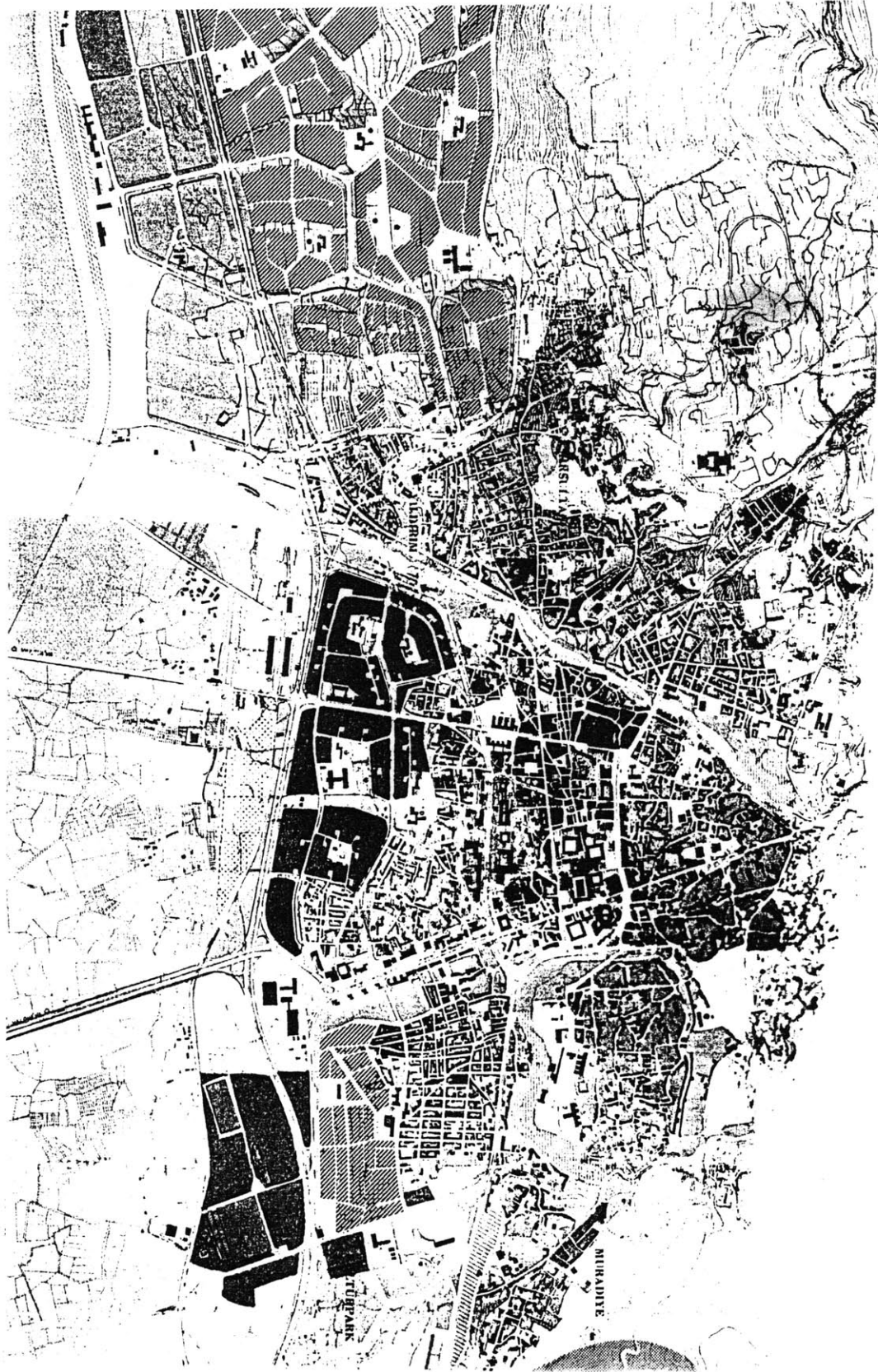


Figure 2.10 First master plan of Bursa by Picinato

BURSA KENT BÜTÜNÜ
1/5000 NAZIM PLANI

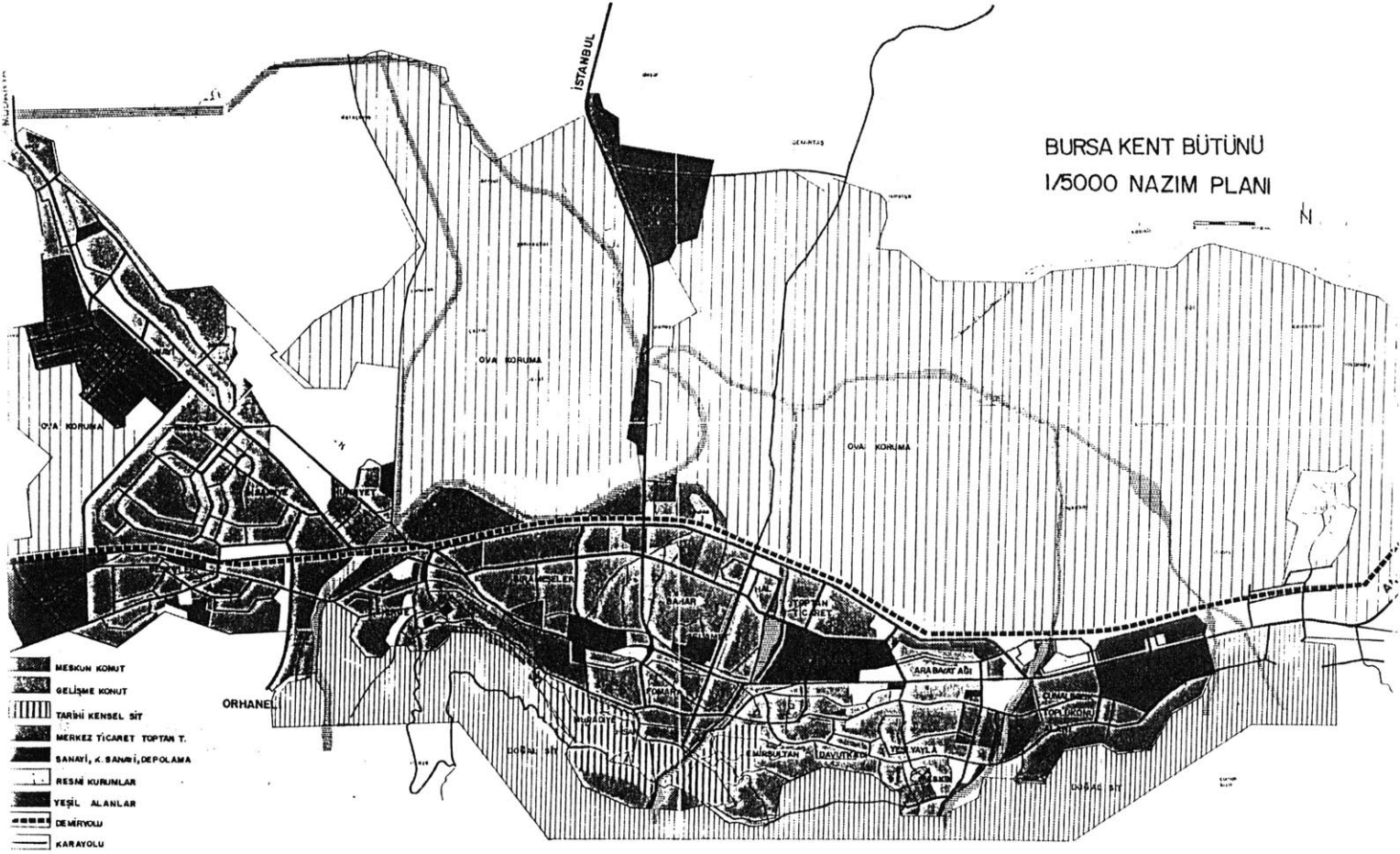


Figure 2.11 Master plan of Bursa in 1983

tax revenue and other resources had to be rechannelled. This gap was in part deliberate, to emphasize the supremacy of the capital, and in part because provincial towns and villages were usually parcelled out as "timar," a source of revenue for imperial administrators and warriors, and had little impetus to develop. Cities outside the capital functioned primarily as military garrisons, administrative control points, transit-points for long distance trade, and craft centers whose specializations were dictated by the capital.

Bursa enjoyed rapid growth when it was the Ottoman capital. After 1402, it became a commercial center. Subsequently, it served as a specialized trade and production center for Istanbul. Coupled with its religious significance, this meant a continual flow of endowments to Bursa which ensured its growth even after it lost the capital status. The Koza Han was built from such an endowment.

With diminishing Ottoman imperial control over city sizes in the nineteenth century, new regional centers began to emerge. The 1838 Anglo-Turkish Treaty led to the development of coastal cities like Izmir which challenged the status of Bursa.

In the early twentieth century, Bursa benefited from its proximity to Istanbul and Izmir, both of which remained important despite the transfer of the Turkish capital to Ankara. There was a spillover of private capital from these two cities to Bursa to take advantage of Bursa's lower labor cost, and proximity allowed close supervision of these investments.

Railroads were an important mode of transportation in Turkey in the nineteenth century. Bursa was linked to the Mudanya port by a short railroad which began its operation in 1894. However, in spite of strong lobbying efforts, Bursa was left out of the overall railroad linkages to the hinterland of Central Anatolia. At present, there are attempts to revive the Bursa-Mudanya railroad link to cater to renewed industrial vigor in Bursa. Bursa is also linked via highways to all major cities and the Gemlik and Mudanya ports which are situated on the Marmara Sea. In terms of population size, Bursa is now the fifth largest city in Turkey after Istanbul, Ankara, Izmir, and Adana.

Urban population and spatial expansion

The population of Bursa increased from 30,000 at the time it was captured by the Ottomans to a peak of 100,000 when it was the imperial capital.¹³ In 1831, just prior to mechanization in the silk industry, the population was reported to be 60,000. From then

¹³L. T. Erder, *The Making of Industrial Bursa*, p. 60.

until the formation of the Turkish Republic in 1927, the population of Bursa fluctuated according to natural disasters, political stability, and job availability. A summary of the population of Bursa from 1831 to 1927 corresponding to key events is shown in table 2.1. A more detailed discussion of population changes in this period can be found in Erder.

A comparison of the plan of Bursa in 1776 (published in 1837) and the official plan in 1861 reveals that the spatial size of the city between those two years was relatively unchanged.¹⁴ Mechanized silk factories were built on existing open land in the city rather than at the city fringes (figure 2.12). Obviously, population and land utilization in Bursa were able to vary considerably within the same spatial area, demonstrating significant latent capacity in the existing urban structure. Significant spatial expansion in Bursa only began in the early twentieth century after the establishment of the housing area below Hisar by Ahmet Vefik Pasa for war migrants.

Yet, the dramatic spatial expansion in Bursa happened between 1950 to 1965, when the population more than doubled.¹⁵ The city grew to about two and a half times the 1914 size, due mainly to growth at the city fringes, where new textile factories and squatter settlements were located (figure 2.13).

The 1983 plan of Bursa shows the area of the city as almost double that of 1965. Spatial expansion encroached upon agricultural land in the north, and the hilly terrain in the east (figure 2.14). However, population increase in the same period was almost four-fold. This increase in population was due to rural migrants seeking work. Even today, population increase through rural migration exceeds that of natural increase, and this poses a threat to the regional culture of Bursa.

The two automobile factories in Bursa were built far away from the city center and were, strictly, not part of the overall spatial expansion. However, these factories accelerated the process of urbanization in the city by boosting the demand for housing.

Within the period under investigation, fluctuations in population did not correspond to the spatial growth of the city. The distribution of population across the city was uneven, with greater concentration at the city center and the traditional residential neighborhoods for historical reasons, and because of the better facilities available there. Stewig observed that the more wealthy residents tend cluster around prestigious localities in the city such as Cekirge, while rural immigrants stay in squatter settlements at the city

¹⁴Reinhard Stewig, 'Bursa, Nordwestanatolien,' *Schriften des Geographischen Instituts der Universitat Kiel*, no.32, 1970, p.195.

¹⁵Ibid., pp.180, 217.

Table 2.1
Bursa's Population
1831-1927

| Year | Population | Critical Events |
|------|------------|--|
| 1831 | 60,000 | |
| 1844 | 50,000 | Mechanization in silk reeling Earthquake |
| 1863 | 70,000 | |
| 1865 | 100,000 | |
| 1879 | 35,709 | Collapse in silk Reconstruction of the city |
| 1885 | 33,674 | Ottoman Debt Administration Recovery in silk reeling |
| 1895 | 76,703 | Out migration of urban minorities Balkan Wars-World War I |
| 1918 | 65,577 | War of Independence Exchange of populations |
| 1927 | 61,451 | |

Source: Leila Erder, *The Making of Industrial Bursa*, p.66.

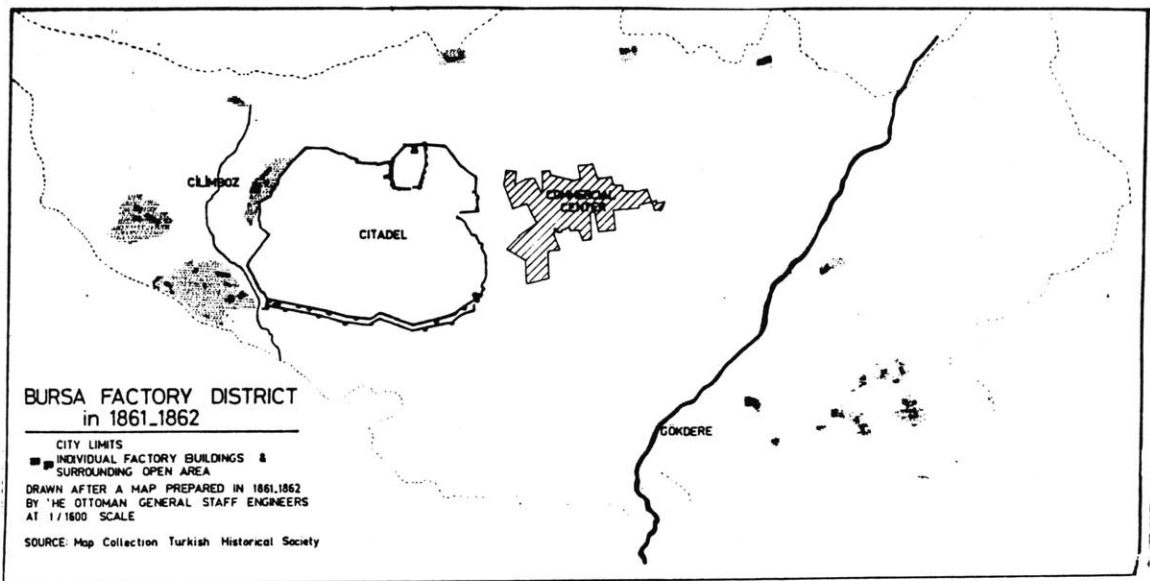


Figure 2.12 Location of new factories at the city fringes

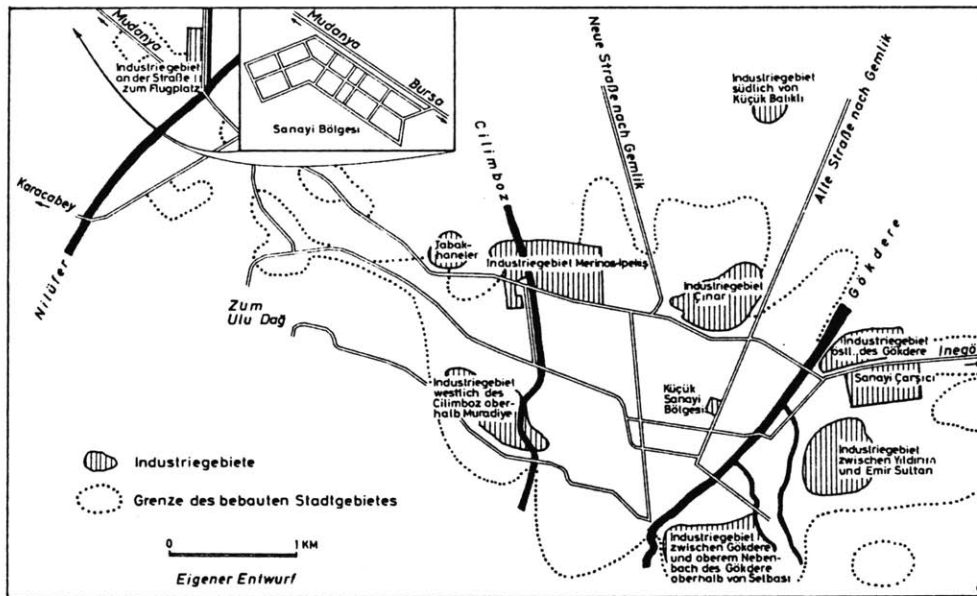


Figure 2.12 Location of new factories at the city fringes

Bursa's Population
1927-1985

| Year | Population |
|------|------------|
| 1927 | 61,690 |
| 1935 | 72,187 |
| 1940 | 77,598 |
| 1945 | 85,919 |
| 1950 | 103,812 |
| 1955 | 128,875 |
| 1960 | 153,866 |
| 1965 | 212,518 |
| 1970 | 275,917 |
| 1985 | 800,000* |

* City planner's unofficial estimate
Source for 1927-1970: R. Stewig (1970), p.180.

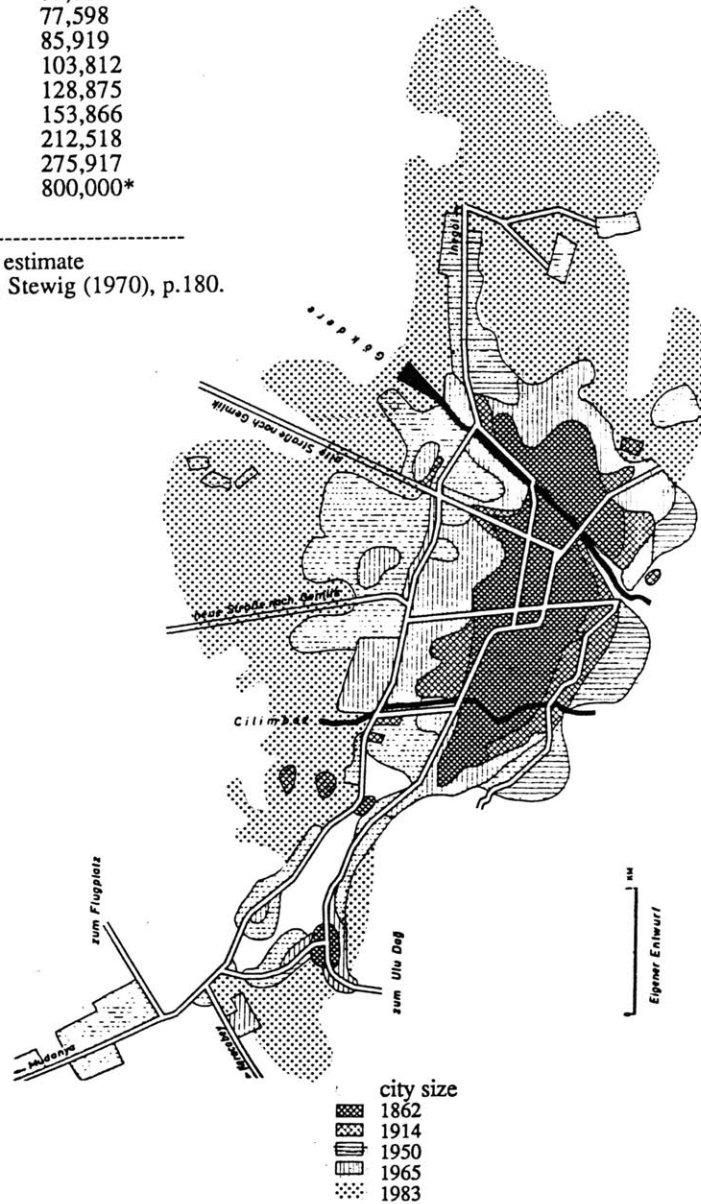


Figure 2.13 Spatial expansion of Bursa, 1862-1983

fringes.¹⁶ However, during my recent visit, I noticed the emergence of bungalow typology at the city fringes and the out migration of the wealthy from Bursa to the coastal town Mudanya. Some large traditional houses in the city center have been subdivided and rented out to the poor.

Urban life

Life in Bursa centered traditionally around the commercial area and residential neighborhoods. The commercial area was a cultural center as well as a center for economic activities like production and exchange, and various public facilities were found there. Traditional craft was controlled by the master craftsman while the kadi (governor) supervised both trading and craft activities. The traditional city center revolved around the bazaar spine. Each specialized trade took place in a designated han or within a particular section along the bazaar spine. The commercial area was an important local and international meeting place for cultural and information exchange.

At present, commercial activities and modern facilities in Bursa are concentrated in the expanded commercial area. Within the changing role of the bazaar spine in relation to the development of the city, certain activities along the bazaar spine persist and several hans still carry their traditional trading activities. For instance, the Bedestan retains its role as the jewellery center, a portion of the Koza Han is still used as a cocoon trading place, and a variety of traditional products are still available. Some traditional production activities, such as metal work, are still economically viable and are supported within the bazaar spine. In some cases, the traditional physical structures remain to house different activities. For example, some hamams have been converted to shops or furniture showrooms. The commercial area is also visited frequently by villagers for shopping. The Ulu Cami, a historic monument of great importance to Bursa, attracts people from all parts of the city for Friday prayers.

On the whole, the bazaar spine persists both in terms of its economic functions and cultural heritage. There is an interesting mix of modern and traditional production and exchange activities in the present commercial area. Textile merchants catering to the region are grouped together, with each occupying a small space within the Bakircilar covered bazaar. The textile factories are located at the outskirts of the city and orders are

¹⁶R. Stewig, 'Bursa, Nordwestanatolien,' *Schriften des Geographischen Instituts der Universitat Kiel*, no.65, 1986, pp.164-169.

processed using efficient telecommunication and transportation systems. This is the case where the successful integration of technology allows a place to continue providing centralized facilities.

Under the direction of an imam or religious leader, each residential neighborhood was traditionally a decentralized social unit organized around a mosque and other public facilities, including kahve (coffee shop) and kiraathane (public reading room). Between prayers, people passed the time with coffee, epics, and poetry.¹⁷ The mosque served as the administrative center and was the headquarters of the imam. The imam represented the residents in all external affairs, and was responsible for the overall well-being of the community. Street cleaning, for example, was delegated to individual households.

The modernization of the Ottoman administrative system along Western lines during the Tanzimat reform altered both the traditional role of the religious leaders and civic responsibilities within the neighborhoods. Community spirit has been diluted with the secularization of Bursa and the influx of immigrants. Medium-rise apartments house families of diverse origins rather than people of the same kin, and internal migration within the city occurs frequently. However, the mosque and the associated social activities remain permanent features of Bursa.

The social production of urban artifacts

The Ottomans, following the Islamic tradition, undertook public works as a charitable act. This idea was developed within the Ottoman tradition into the imaret system, which provided public services in the city. The imaret was an essential social concept in all Ottoman town plans, giving them their own distinctive character. It played a key role in developing the urban network system and in the growth of traditional cities. The imaret was a conglomeration of institutions--mosque, madrese, hospital, traveller's hostel, sabil (water fountain), roads, bridges, and many other urban facilities. Religious and charitable institutions were grouped around the mosque, while commercial establishments stood nearby.

Founders of imarets usually created them as vakifs. The purpose and conditions of a vakif were stated explicitly in the deed of endowment, known as the vakfiye, and administered by an appointed chief trustee. The vakfiye was drawn up and entered by the

¹⁷Osman Nuri Ergin, *The Historical Development of Local Administration and Urbanism in Turkey*, (Istanbul: Turkiye Turing ve Otomobil Kurumu), 1985, p.42.

kadi in his register, and confirmed by the sultan. The vakif system ensured the continued existence of public services, which were financed from vakif profits without touching the capital. It was believed that once endowed, vakifs belonged to God and no government had the authority to overturn them. The vakif was a financially and administratively autonomous foundation. The imaret was therefore not a state organization although many sultans and high government officials contributed generously to its construction and maintenance. It existed through the grace of individual donations, albeit with the support of official and religious institutions.

This mode of urbanization, through the imaret system, was a very effective way of introducing the Ottoman urban image to the colonies. It was thus used as a means to islamize new territories. The imaret was, moreover, a decentralized system entirely dependent on private effort and public participation for its operation, without the state having to take on municipal duties.

During the modernization of the Ottoman Empire in the early part of the nineteenth century, a central administration for vakifs was created and made a Ministry in 1840. The Vakif Ministry was subsequently abolished by one of the secularizing laws of 3 March 1924, (no. 429). Vakif affairs were transferred to a general directory subordinate to the Premier, which was given the task of liquidating vakif estates by selling them to communities and other organizations for public benefit.¹⁸

Since modernization, the entire process of urbanization followed a different path. The state took on the responsibility of providing and administering urban facilities and network. Initiated by the Ottoman elite, Western standards were adopted to regulate the urban environment. The new urban design philosophy came as part of the Tanzimat reform package. Mustafa Resit Pasa, one of the authors of the Tanzimat Charter, had formulated the initial rules as early as 1836¹⁹. He advocated a "scientific" approach to planning and argued that the regularization of the street network should follow mathematical or geometric rules. This meant cutting straight and wide arteries through the traditional maze-like fabric. New building codes to regulate the building materials and street width were drafted, based on Western principles as part of the modernization agenda.

The spirit of modernization found its way to Bursa through Ahmet Vefik Pasa, as described earlier in the general historical survey. Western planning ideas continue to serve as the guiding rule in the urban development of Bursa up to today. The key

¹⁸Wakf entry, *Encyclopedia of Islam*, concise version, p.628.

¹⁹Z. Celik, *The Remaking of Istanbul*, p.49.

building regulation that guides the urban development of Bursa is "height control," which is responsible for the wall-like urban aesthetic along major arteries. However, recent concepts such as the floor area ratio, site coverage, spacing between buildings, setback requirements, and the like, guide the new development along Fevzicakmak Street, introducing the podium and tower block urban aesthetic in the city.

This chapter provides the overall external history that influenced the development of Bursa. Amidst the changing life style and technological innovations, many aspects of the past persist, such as certain economically viable means of production, the use that certain monuments are put to, and the role of the central commercial area in the overall operation of the city. The monuments persist and remind us of the external forces that brought them into being. What forces contribute to the persistence of urban artifacts--monuments, the basic layout and plans of the city, or some others--need further investigation and will be dealt with in the following chapter.

Chapter Three: ANALYSIS

This chapter will apply to the city of Bursa the research methodology outlined in chapter one. Since a site undergoes perpetual transformation, an inquiry into the morphological transformation of a site can, in theory, begin at any point of time by accepting the chosen time as the origin of the morphological investigation. However, the period of time chosen for the origin of inquiry may yield more interesting results if it is marked by some event that had a significant impact on the ensuing development of the city. For Bursa, a significant moment for the origin of such an inquiry could be around the middle of the 19th century for the following reasons:

- 1) This period marked the beginning of the industrialization of Bursa during which the previously established urban network began to transform as a result of the development of new factory areas,
- 2) The first map of Bursa was drawn in 1862. It recorded the traditional urban network as well as the transformation process that took place as a result of the industrialization. This map allows effective cartographic analysis.

Traditional urban network based on the 1862 plan

The urban network registered in the 1862 plan shows a remarkable congruence with the hilly topographic character of Bursa. It is interesting to note that these network patterns are generated out of two modes of movement: movement along and against the contour of the landscape. These modes are particularly crucial for four-legged animals like camels, horses and cattle which are unable to move at an angle on hill slopes. I believe the landscape did at least influence if not dictate the genesis of the traditional network pattern (figure 3.1).

The above analysis reveals the integration of the traditional movement pattern with the landscape. The resultant urban network leads to the subdivision of sites into smaller units of various sizes and geometry. This abstract subdivision provides a differentiated structure for human aspirations and effort. Accordingly, these smaller units are recognized in this research as "plan units," consistent with the definition given in chapter one (figure 3.2).

Each plan unit serves as a morphological frame for the built forms within. As the city evolves, the plan unit accumulates its own history, meaning, and values for its

inhabitants or society. Through the morphogenetic analysis of plan units, this evolution process can be unfolded. Spaces-between-plan-units containing the basic urban network, such as the circulation system, public services and public plaza, are also very much a part of the plan units. These spaces have their own history and can similarly be uncovered by the same morphogenetic process.

Groups of one or more plan units are often recognized socially, for example, as residential neighborhoods, or areas for specific urban activities. From an architectural point of view, the plan units and their contents often can be organized according to building as well as more general artifactual typologies.

Artifactual Typology

"Type" and typology of buildings seen as the geometrical location where space and cultural models, construction and means of production, form and history, all join forces. It is par excellence the mediator of the individual and the collective, the repetitive and the exceptional, in short it is where architecture and the city joined together in a relationship of absolute necessity and reciprocity.

Bernard Huet¹

The city is a composite of "repetitive" and "exceptional" artifactual typologies to satisfy the aspirations of the individual and the collective. Typology is based on the concept that objects can be grouped according to inherent structural similarities. A "type" is a group of objects with the same formal structure.² Following this view, artifactual typology in city form is developed as an analytical tool to categorize urban artifacts.

A careful study of Bursa's city plan shows that the urban network pattern and built forms can be broadly perceived as two basic typologies namely, the urban typology and the building typology. Urban typology refers to the arrangement and configuration of plan units in forming spaces to accommodate the urban network. Building typology is concerned with building types, which can be based on function, form, or construction method, to name a few. For Bursa in particular, the many ways of defining building typology present a research problem which has to be addressed.

¹Bernard Huet, 'Aldo Rossi or the Exaltation of reasons,' in *Three cities: Perugia, Milano, Mantova*, Milan: Electa, 1984.

²Rafael Moneo, 'On Typology,' *Oppositions* 13, 1978.

Urban typology

The traditional settlement pattern in Bursa consists of residential neighborhoods of which six are particularly interesting both in terms of their history and the environmental qualities contributed by the kulliye.³ The integration of the settlement with the topographic character of the site and the strategic placement of kulliye, usually on top of the hills, allow visual links from one neighborhood to another, establishing a strong sense of place and mental mapping of the city. This quality is further enhanced by the unique and coherent design of each kulliye (figures 3.3, 3.4).

The urban typology of the commercial area is characterized by an agglomeration of a large number of public monuments such as mosques, hamams, and hans. These public complexes, especially the hans, establish the positions of specialized trade anchors linked to a main pedestrianized bazaar spine. Small shops develop along the bazaar spine, filling up the interstitial space between public complexes (figure 3.5). Streets branching outward from the bazaar spine leading to various residential neighborhoods are in directions along and against the topographic contour. This reinforces my earlier conviction that the topographic character of the site dictates the evolution of the traditional urban network pattern.

A study of the activities along the boundary of a plan unit indicates that these activities depend on the built forms located near this boundary. For instance, if a plan unit has four sides, it is not uncommon to find four different kinds of activities and therefore four different types of atmosphere surrounding a single plan unit. The traditional urban spatial typology focuses on activities on the streets, or those activities along the edges of the plan unit, rather than plan unit as an area zoned according to land use as proposed by the modern concept of zoning. This traditional urban typology results in a unique variation of plan unit sizes and patterns of sub-division within the historic city.

The commercial area in Bursa is associated with a large number of small plan units which are further subdivided into lots to maximize the land area and street facade for commercial activities. In the residential area, the plan units are larger, and the cul-de-sac street pattern is adopted as a way of subdividing them (figure 3.6). This method of subdivision is analyzed in figure 3.7. Typologically, the residential neighborhoods are organized based on the same principle. Each neighborhood centers around a kulliye with the mosque as the key element. A social meeting place, usually one with a coffee shop, is within the immediate vicinity of the central nucleus (figure 3.8).

³These residential neighborhoods are Yildirim, Emir Sultan, Yesil, Hisar, Muradiye, and Cekirge.

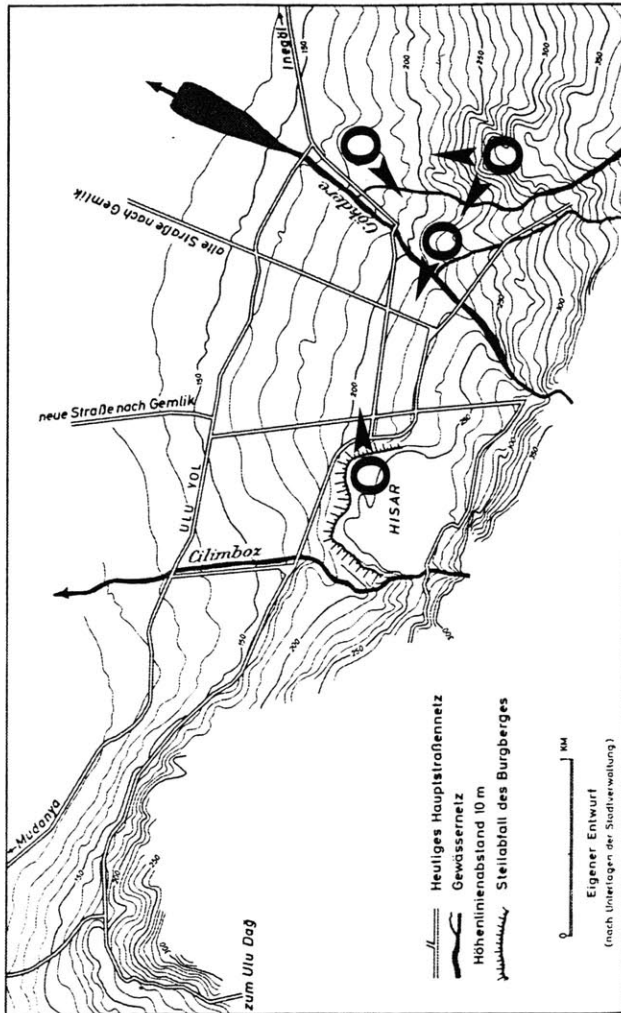


Figure 3.3 Strategic placement of kulliyе to enhance visual links

Figure 3.4 Strategic position of Kulliye Yildrim on top of a hill



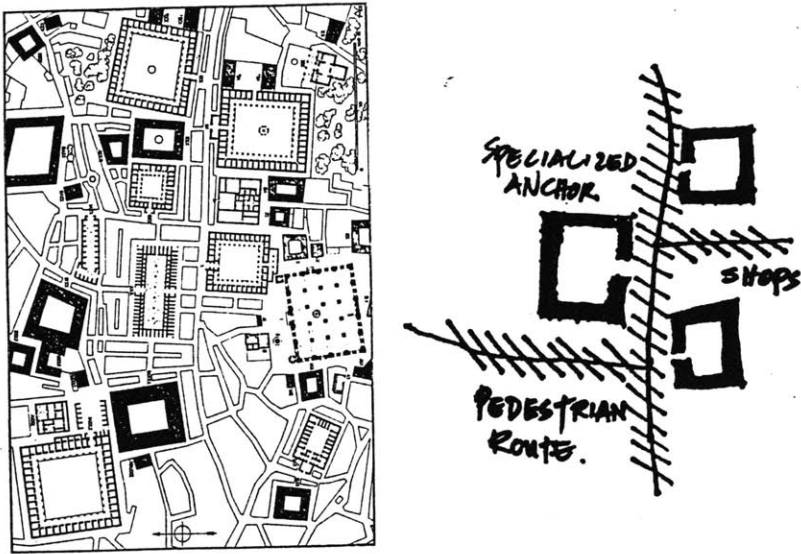


Figure 3.5 Plan analysis of the commercial area showing relationship between bazaar, hans, and other public monuments

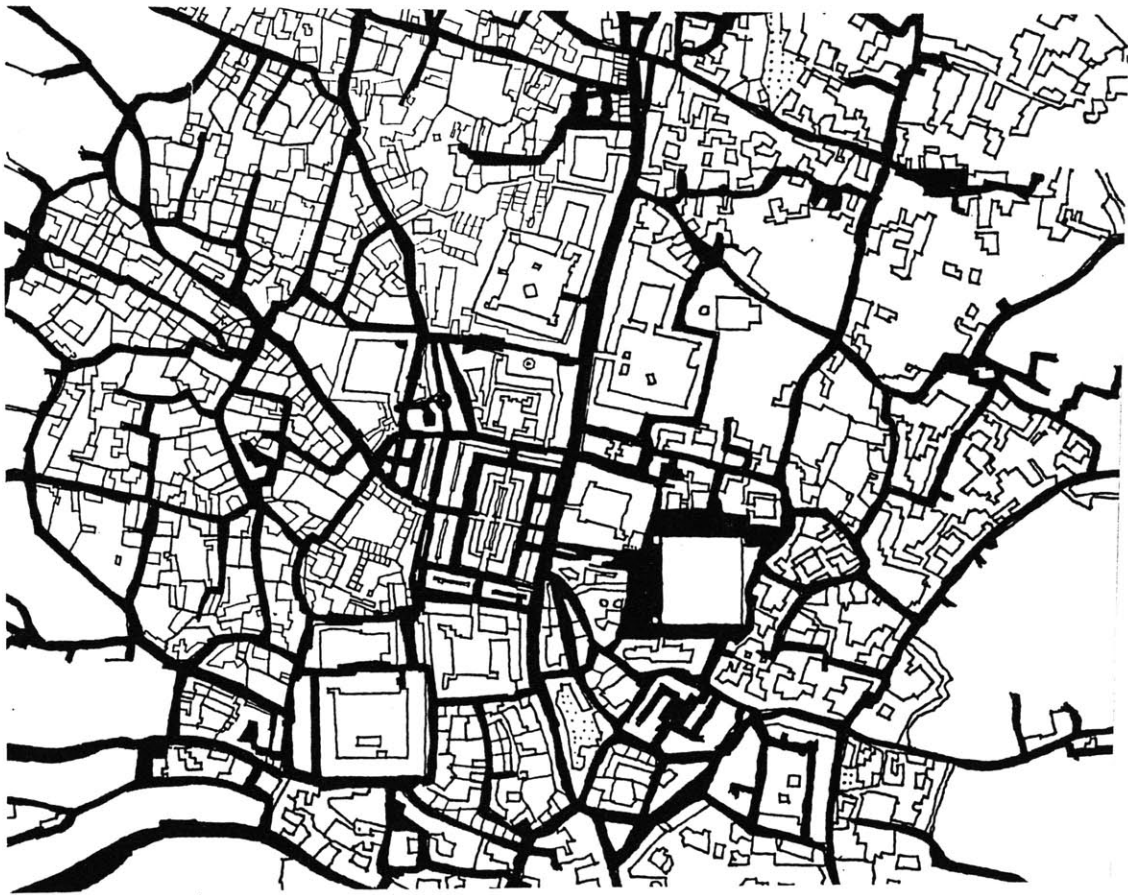


Figure 3.6 Plan units of various sizes in the commercial and residential areas



Figure 3.7 Internal subdivision of plan units with reference to cul-de-sac streets



Figure 3.8 Plan of Yildirim residential neighborhood: relationship between houses and the kulliye.

Building typology

The traditional building typology comprises mainly public buildings and residential houses. The public buildings are conceived to be permanent. They are built of stone, a permanent building material, and supported by vakif, the social-religious system. Further classification of these buildings based on functions, however, poses problems as their forms and images do not necessarily reflect the functions they serve. An alternative and more effective way of defining building typology in Bursa is the construction method and spatial configuration.

Public buildings in Bursa exhibit a structural similarity derived from the use of a common construction method. Specifically, the use of masonry wall construction, employing arches, barrel vaults and domes, in traditional public buildings results in a robust appearance that differentiates them from modern building typologies. Traditional public buildings can in turn be divided according to their physical geometry and spatial arrangement: rectangular, T-shaped, or polygonal; with or without courtyards (figures 3.9, 3.10).

Likewise, residential houses in Bursa use a common construction method and spatial organization distinct from that used in public buildings. The house structures consist basically of wooden frames with mud-brick infills and tiled roofs. Even with proper maintenance, the structure has a life span that rarely exceeds two hundred years, and is thus not considered permanent.⁴

The traditional house typology consists mainly of houses with gardens enclosed in low walls which are often irregular in shape. These walls mark the territory of the house and coincide with property boundaries in the urban area. The house is basically a two-storey building. The lower storey is used for storage and utilities while the upper storey is for living proper. While the lower section of the house is integrated with the irregular low walls, the living section is projected outward to create rooms of proper geometrical shapes. Such an arrangement enhances the view of the street from the rooms on the living section. Each room in the living section is autonomous and opens to a common circulation area. The arrangement of the house is inward looking with a garden space to support traditional cottage silk production.⁵

The traditional urban and building typologies represent a convention, the result of social agreement through time. In Bursa, traditional typologies persisted up to the end of the nineteenth century, when they were superceded by western models.

⁴Onder Kucukerman, *Turkish House; in search of spatial identity*, Istanbul: Apa Ofset Basimevi Sanayi ve Ticaret, p.23.

⁵Ibid.

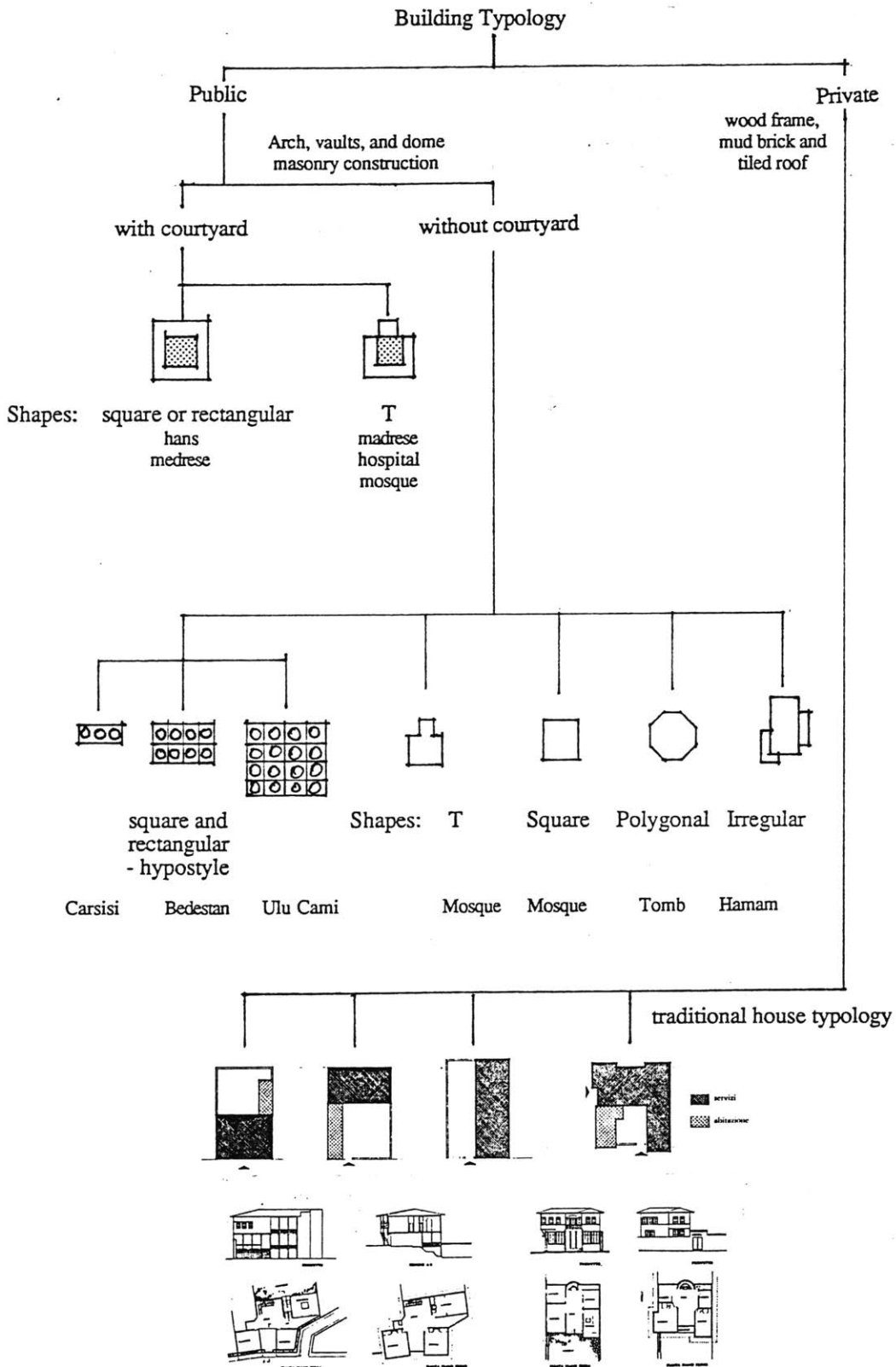
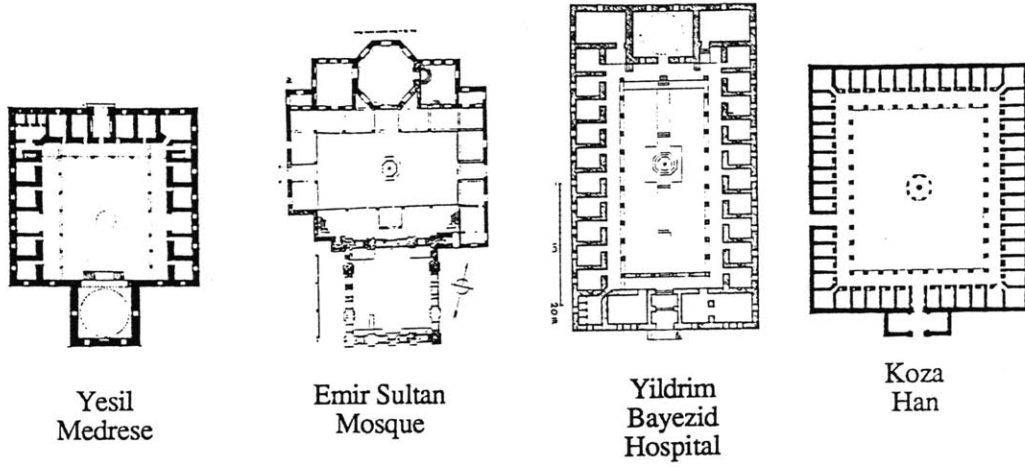


Figure 3.9 Classification of building typologies

PUBLIC BUILDINGS WITH COURTYARD



PUBLIC BUILDINGS WITHOUT COURTYARD

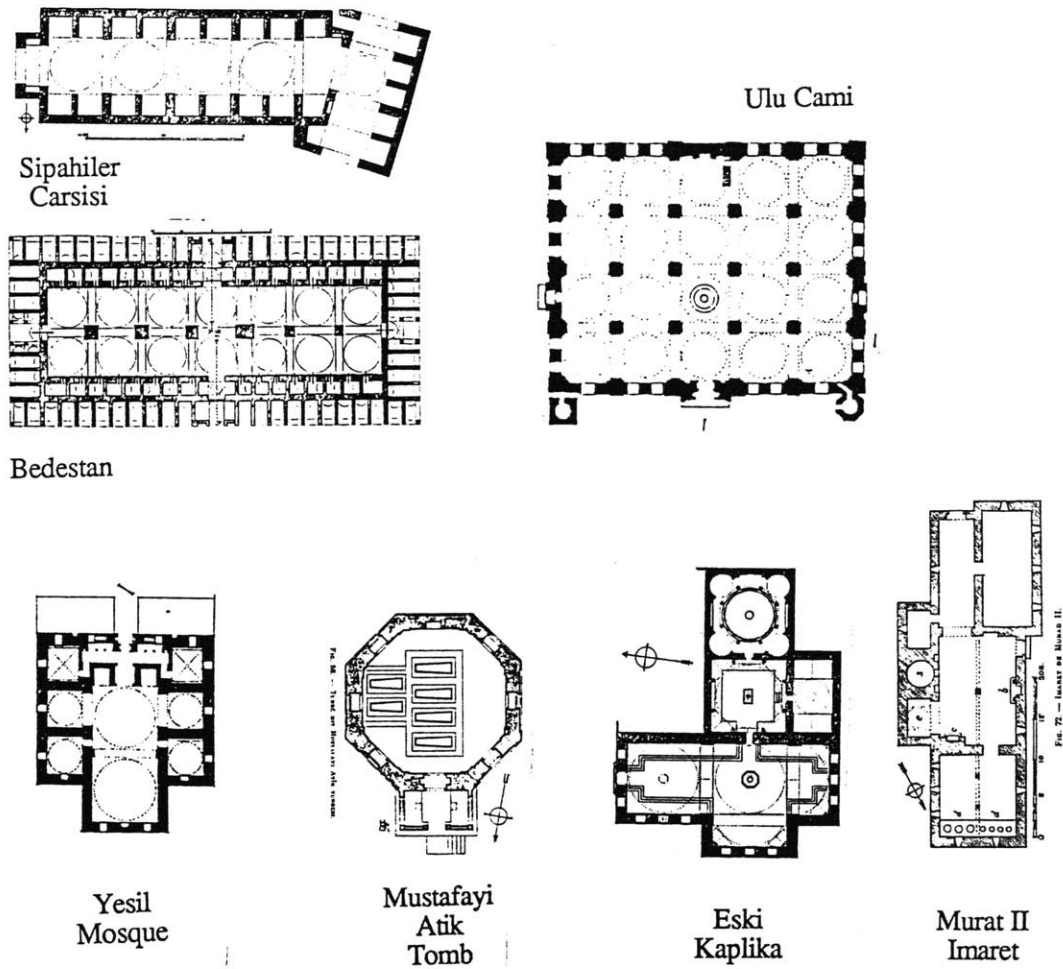


Figure 3.10 Examples of buildings with different typological patterns

Research area

The previous section describes the physical environment which serves as the initial context for morphological analysis. The impact of critical events on the evolution of Bursa is investigated by first studying the morphology of plan units and spaces-between-plan-units. This will be followed by an analysis of the morphology of built forms within selected plan units.

The physical morphology of the city is analyzed based on the 1862 plan and a plan of 1988, focusing on the research area delineated by Ataturk Street, Inonu Street, Hasim Iscan Street, and Fevzi Cakmak Street (figure 3.11). This area is selected for two reasons. Firstly, from a practical point of view, this is the area for which detailed plans are available for cartographic analysis. Secondly, this area is particularly interesting because it constitutes part of the traditional core of the city and at present contains both commercial and residential facilities.

The traditional commercial center in the research area is characterized by the bazaar spine. The commercial area has undergone rapid morphological transformation due to its prime business location. However, certain historical monuments still persist, such as the Ulu Cami, Koza Han, and the Bedestan.

The residential portion developed through a slower process of morphological transformation. It retains part of the traditional cul-de-sac street network pattern although much of this pattern in other parts of Bursa had been destroyed in the 1855 earthquake. The research area is atypical in that the residential fabric is relatively well preserved. Recently, it has come under tremendous pressure for change. This area is at an early stage of rapid morphological transformation in terms of the built forms within plan units. New apartment building types have begun to replace the traditional dwellings through the rebuilding process.

Due to the research area's historical status, it is in the process of being considered for conservation. Studying this area helps to understand the stages of morphological transformation which have taken place elsewhere in the city. The sequence of analysis will follow the structure outlined below.

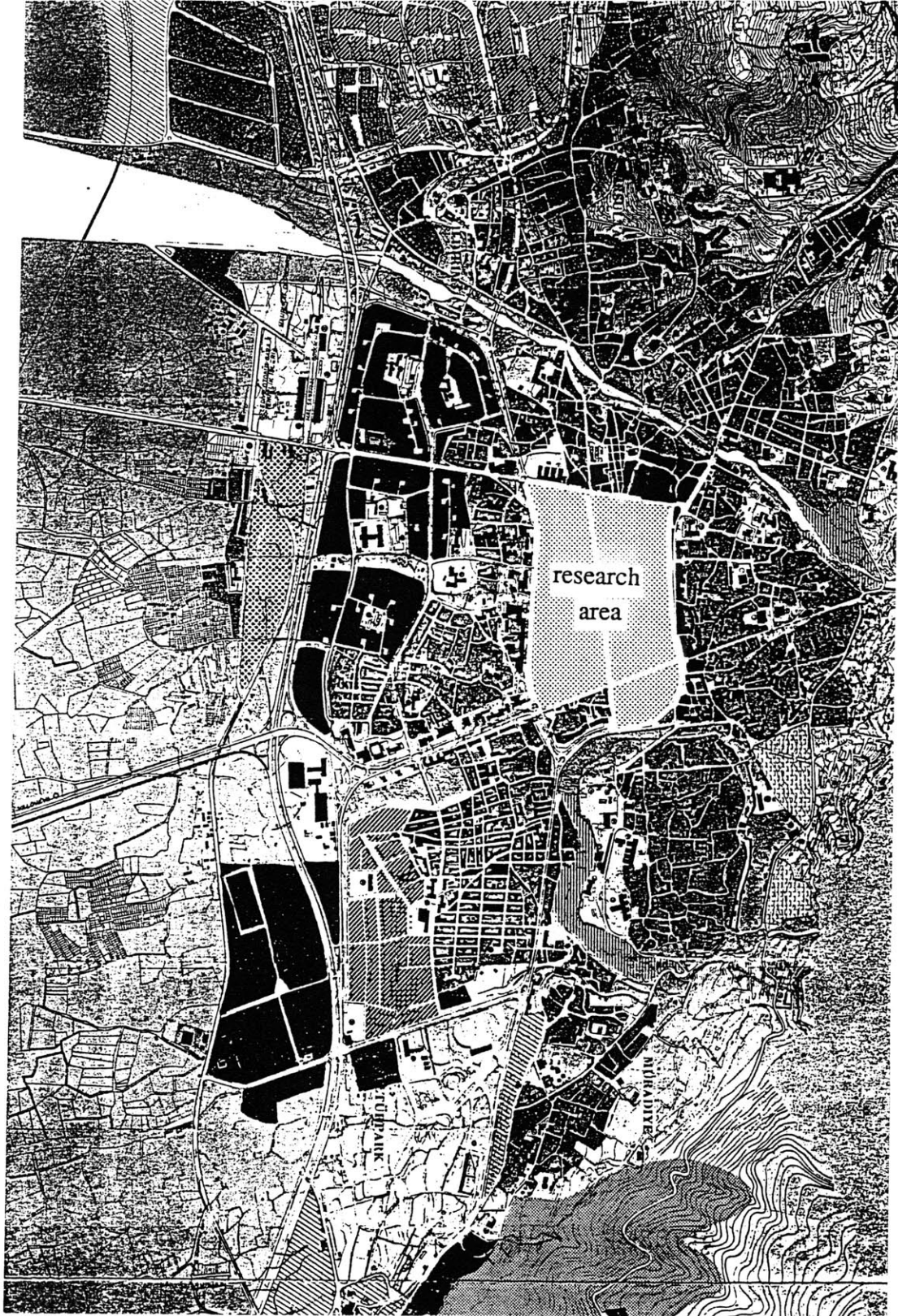


Figure 3.11 Location of research area

Method of morphological analysis

Morphology of plan units

The morphology of plan units can be analyzed by first studying the boundaries of plan units to assess the nature and scope of change over time, and then identifying the morphological patterns using the morphological tree in chapter one. Of interest are the intensity and distribution of changes and urban dynamics, as well as the extent to which they are affected by the geometry or dimension of plan units and the presence of primary elements. By association, this section will also be concerned with spaces between plan units.

Morphology of built forms within plan units

This study entails the morphological analysis of the contents of both unchanged plan units and newly established plan units. The analysis provides a framework for comparing the impact of critical events on the morphology of the contents of newly established plan units, and on the long-established morphology of the unchanged plan units. Issues to be addressed include: What governs the patterns? Are the morphological patterns the same? How does building typology relate to morphological pattern? Factors to be considered include typology, intensification, and site succession.

The above analyses can be applied to the research area by investigating the following issues:

- a) The overall impact of new vehicular streets on the morphological pattern of the city,
- b) Characteristics of site succession before and after the 1960s,
- c) The shift in typology,
- d) Monuments, ownership, and the role of religious institutions,
- e) The concept of place.

Application of methodology

Morphology of plan units: analysis of the edges of plan units

The plan units in the central commercial area changed drastically, as is apparent when one compares figure 3.12 and figure 3.13. This was due to the construction of the new traffic system passing through this area, and competition for prime land in the central location by new business establishments. Rebuilding activities were intense, and existing

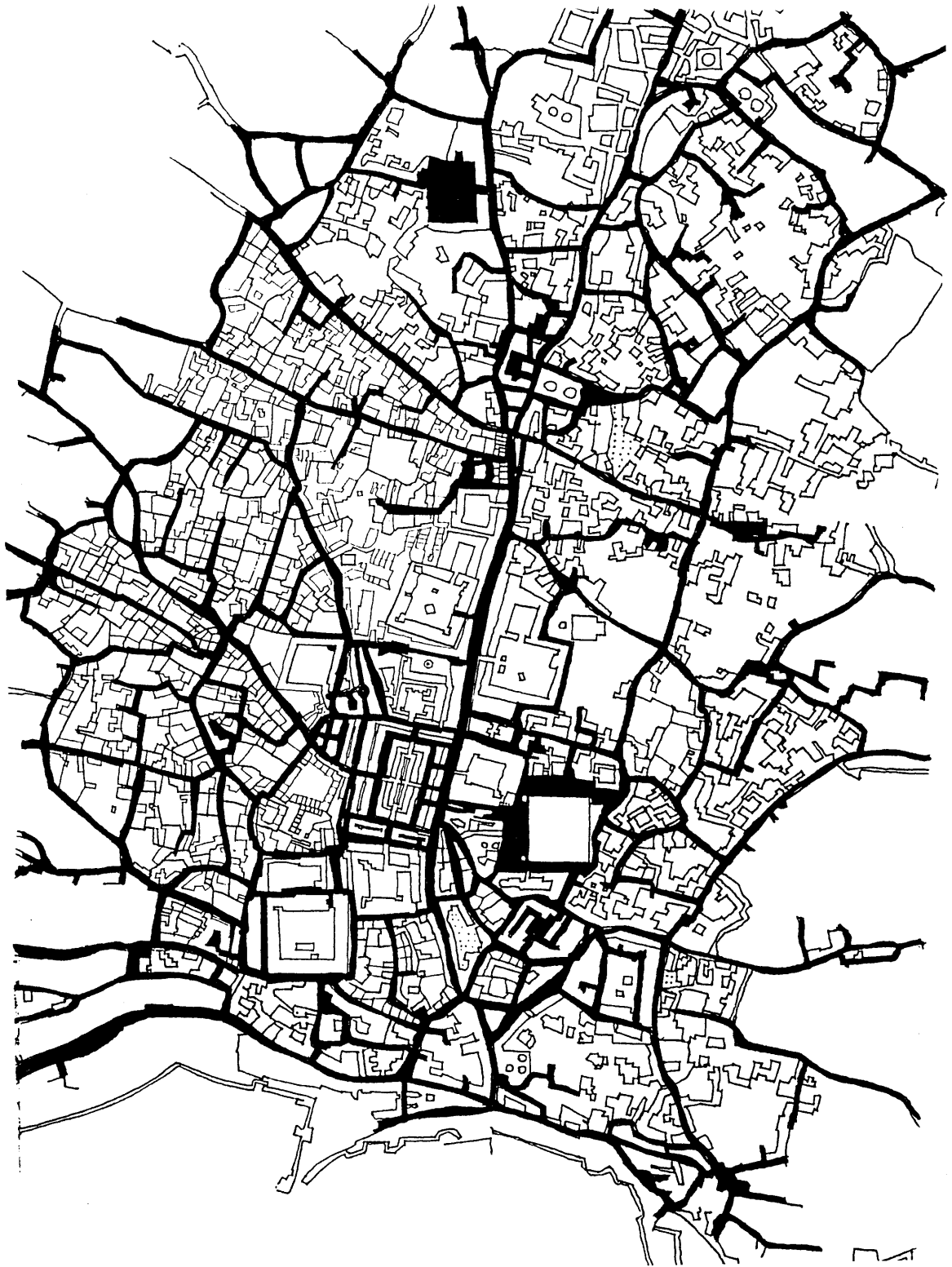


Figure 3.12 Street system from the 1862 plan

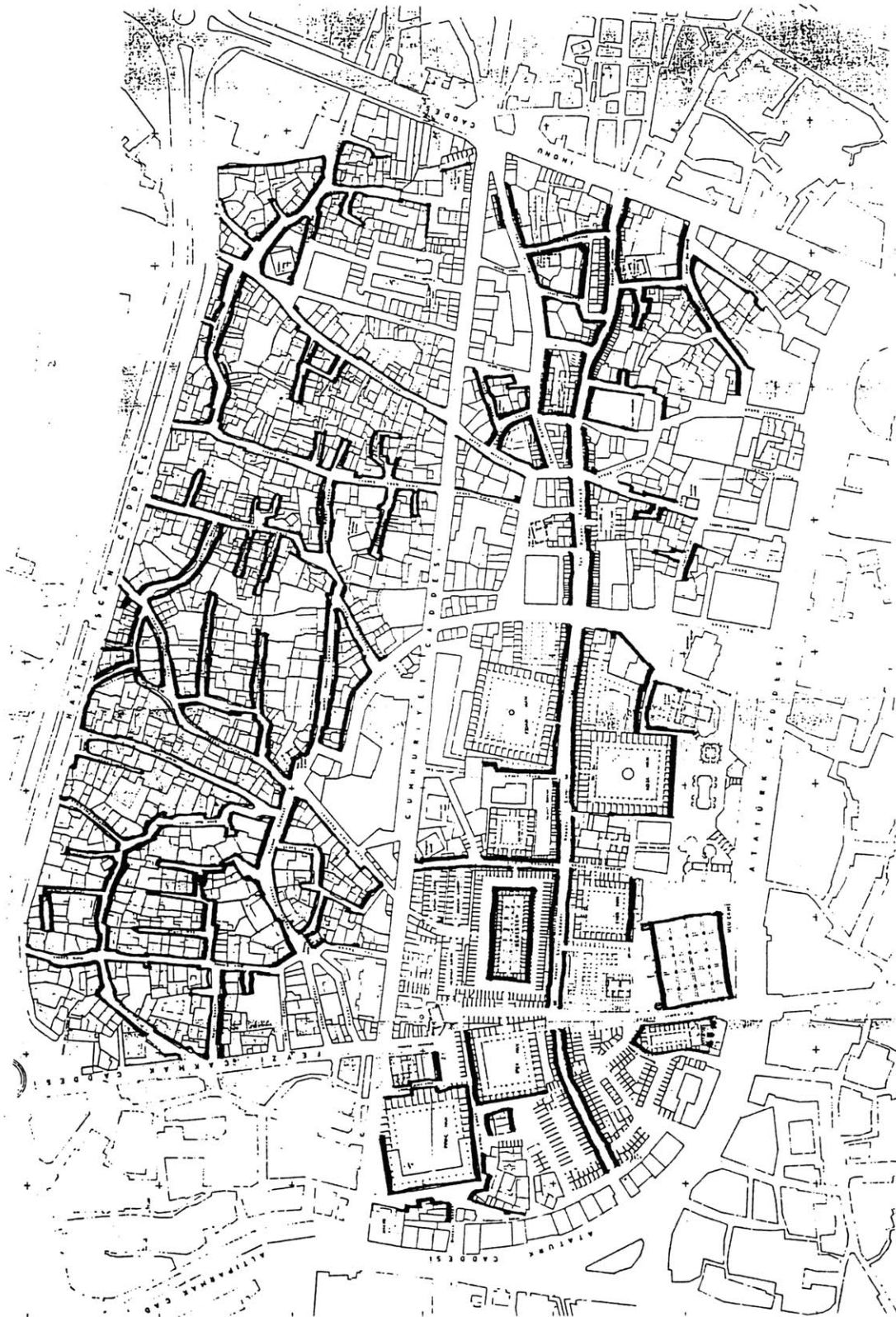


Figure 3.13 Plan of 1988; note the edges of unchanged plan units

traditional buildings were replaced with modern multi-storey buildings. One exception is the pedestrianized bazaar spine which remains unchanged in spite of the numerous changes in its surroundings.

On the other hand, the edges of the plan units in the residential area remained relatively unchanged except at the ruptured portions along Cumhuriyet Street. In part, this is because the dimension of the spaces-between-plan-units in the residential area is small by modern standards. The irregular geometry of the plan units, and the cul-de-sac street pattern within units present an urban network system that inhibits change, or has low latent potential for change.⁶

The above analysis allows us to single out newly established plan units and plan units which remain unchanged. The morphology of built forms within unchanged plan units is discussed next. This is followed by specific references to morphological changes brought about by critical events in Bursa.

Morphology of built forms within unchanged plan units

A number of plan units remain unchanged through time, serving as the morphological frame for the built forms within. A comparison of the 1862 plan and the 1988 plan shows tremendous intensification within these plan units (figures 3.14, 3.15). Some lots were subdivided while others were amalgamated. The typology of new buildings followed the traditional ones until recently when modern apartments began to dominate the morphological pattern. Since there are no detailed plans between 1862 and 1988 suitable for intermediate morphological analysis, it is difficult to identify the exact time period when this typological shift became apparent. However, based on the available photographic records, it can be safely assumed that the 1960s marked the period when modern typologies became the norm.

This change in typology coincided with the industrialization of Bursa. In general therefore, site succession in Bursa can be divided into two periods, site succession before and after the 1960s. Prior to the 1960s, lots were subdivided into smaller ones, and the traditional building typology was utilized in the rebuilding process (figure 3.16). After the 1960s, site succession from the traditional typology to large apartment blocks is made possible by rebuilding on the same lot, if the lot size is large enough for an economically viable building, or through the amalgamation of smaller lots to form a suitable lot size (figure 3.17). Rebuilding activities are carried out by private developers who convince a group of land-owners to give up their land for development in return for a share of the

⁶For example, vehicular access is made difficult by the narrow streets.

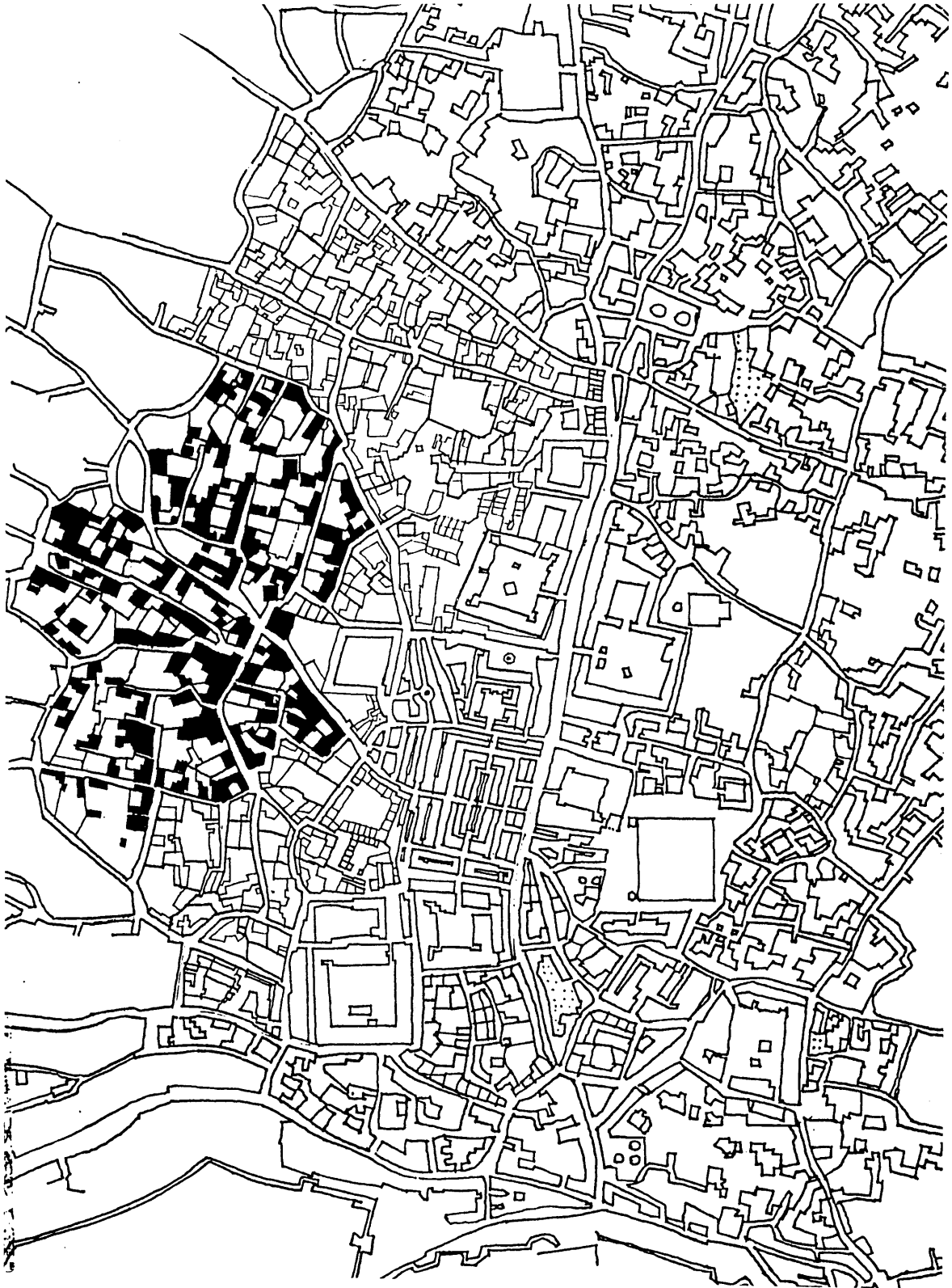


Figure 3.14 Density of buildings in the 1862 plan

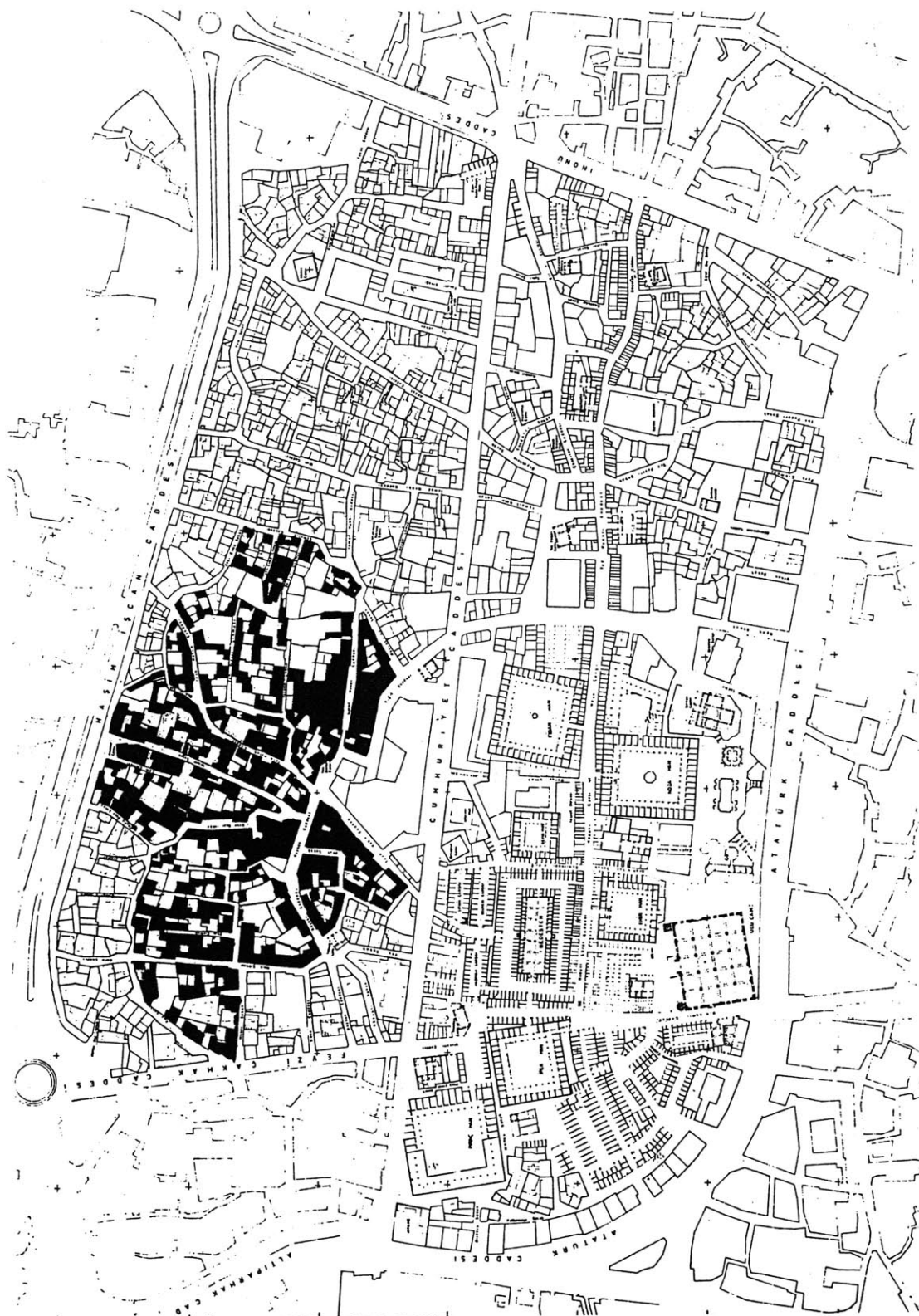


Figure 3.15 Density of buildings in the 1988 plan

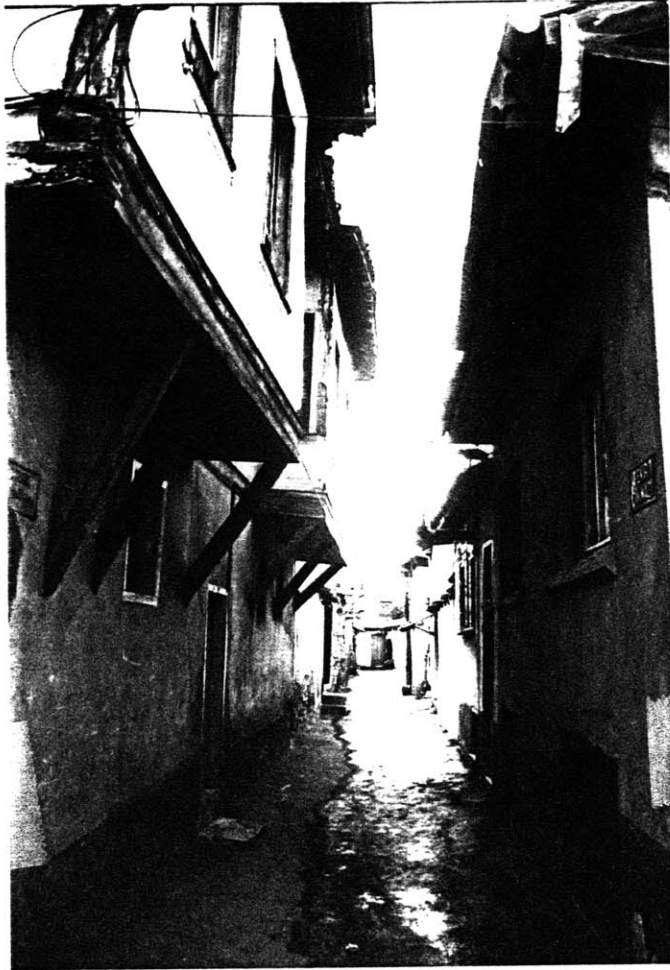


Figure 3.16
View of a cul-de-sac street with garden walls on both sides; lots are subdivided and the traditional building typology is utilized

Figure 3.17
A medium-rise apartment block within the traditional fabric



venture profit. With the exception of regulations on height, there is very little control by the authority over this process of rebuilding, which explains the sporadic nature of development and the proliferation of land speculation activities. Site succession through expropriation by government authorities to provide public facilities such as schools, playgrounds, and the like, is another phenomenon.

The shape of the new building is constrained by the shape and geometry of the lot although the facades of the building facing the streets tend to be regular. In most cases, the entire lot is built up leaving behind no garden space. This, coupled with the massive scale of the buildings and the change in the spatial quality of the spaces-between-plan-units, causes the plan unit to lose its previous human scale and incidental quality. The morphological transformation of the contents of plan unit occurs in spite of the fact that the shell of the plan unit itself remains unchanged.

Critical events in Bursa

A critical event is associated with active morphological transformation. During the period under investigation, there were basically three critical events in the urban history of Bursa. They were, in chronological order, the intervention by Ahmet Vefik Pasa, the fire in the central commercial area, and the introduction of the organized industrial district. Each of these events had its own impact on the urban evolution of Bursa.

Intervention by Ahmet Vefik Pasa

The morphological transformation effected by Ahmet Vefik Pasa is summarized in figures 3.18 to 3.20, based on the morphological tree of chapter one. Although the Cumhuriyet Street in the research area was originally constructed in response to the modernization of the Ottoman empire and the need for a new means of transportation, the intervention served to redirect the morphological pattern and operation of the city in the long run. The choice of the location fits into the central location theory according to which everything competes for the central location of the city. The modernization of the Ottoman period coincided with the establishment of new public buildings such as municipal buildings and schools which competed for the central location. This led to an agglomeration of modern public facilities within this area, further accentuating the primacy of the central location.

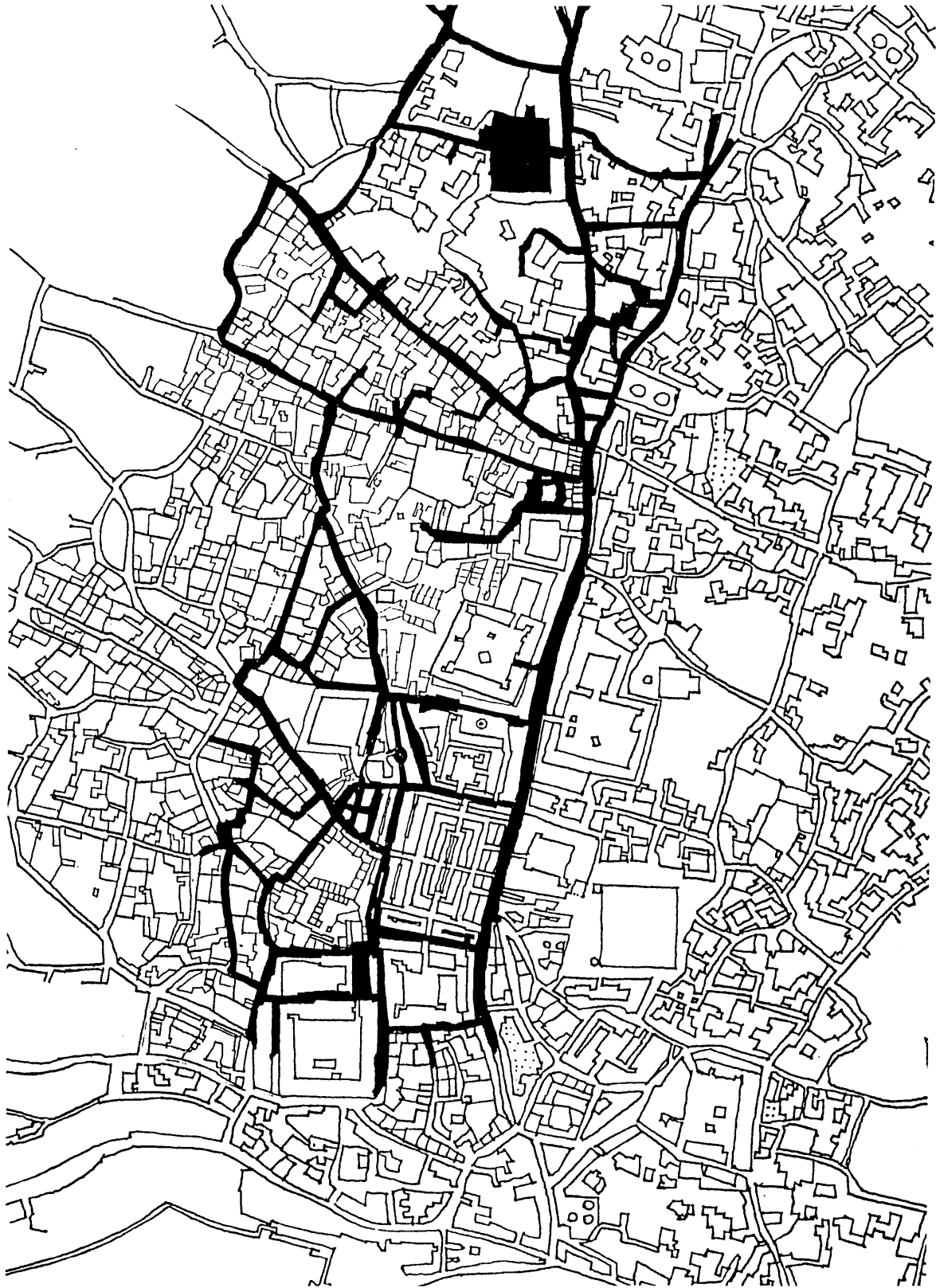


Figure 3.18 Before Ahmet Vafik Pasa's intervention:
selected plan units in 1862 for analysis



Figure 3.19 After Ahmet Vafik Pasa's intervention:
plan units derived from the morphology of ruptured plan units

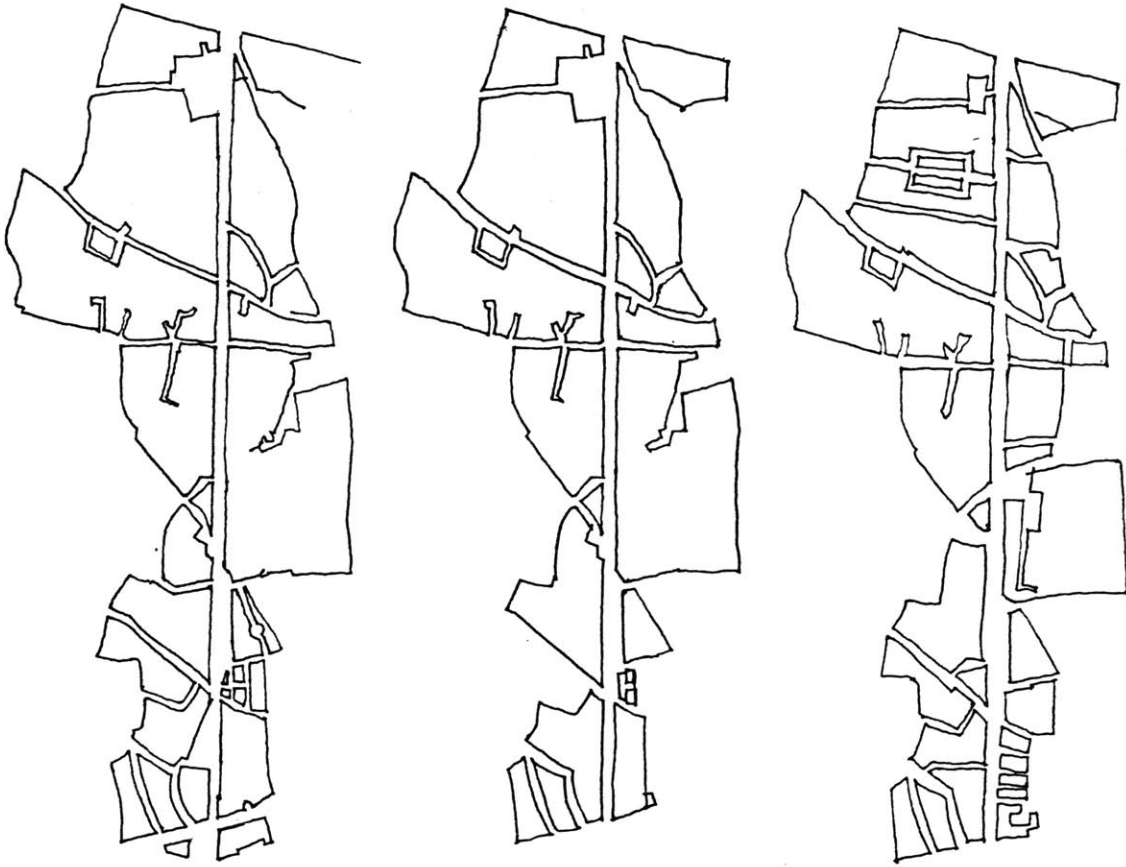


Figure 3.20 After Ahmet Vafik Pasa's intervention:
analysis of morphology of plan units

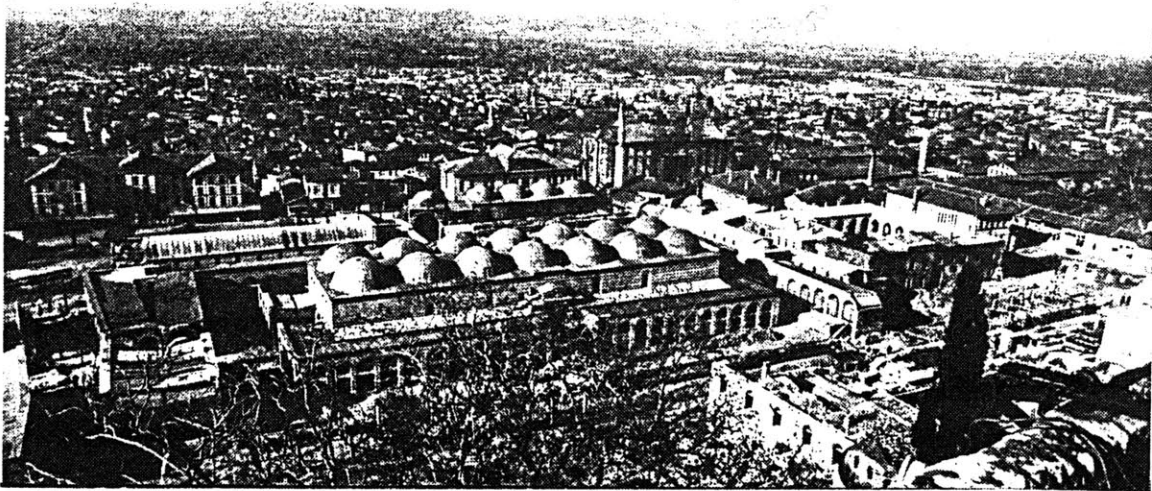


Figure 3.21 View of Cumhuriyet Street from minaret of Ulu Cami taken after 1956 fire

In the micro-area indicated, the Cumhuriyet Street fragmented the large plan units and subsequently reorganized the smaller fragments with reference to the street. The Ottoman expropriation law facilitated the active morphological transformation of the plan units although some existing monuments, especially the mosques, constrained the position of the street. The concern of expropriation was with the creation of the street and not with the overall urban character of the city. This street in turn introduced a new morphological pattern for the contents of the newly formed plan units (figure 3.21).

Ahmet Vefik Pasa's intervention created a large number of small and odd-shaped plan units. This intervention increased the capacity of the central area by providing easy access and linkages, thus paving the way for future commercial development, very often for speculative purposes. Private initiative with no coherent guidelines took over subsequent development of this area.

The morphology of the built forms within plan units was the result of two types of intervention, intervention initiated by the state and that by private interest. State intervention was characterized by site succession to provide new facilities in the central area. Private intervention took the form of two processes occurring at different times. Prior to industrialization, lots were subdivided to create smaller lots that house smaller buildings, leading to a more equitable share in the central area. In some cases, fragments of previous buildings were left to evolve separately. Subsequent to the introduction of the automobile industry, small lots were amalgamated to create larger lots, and thus larger and higher buildings. This second process was indicative of the changing economic and social structure of the society, and changes in the construction technology. Intensification of this area reflects maximum exploitation of the central location.

The shapes of the new building blocks revealed regularities not seen in the previous built environment. Although some of the monuments were displaced, closer examination of the 1988 plan shows that most were replaced in the immediate vicinities. This phenomenon reflects the locational primacy of Ahmet Vefik Pasa's intervention--a critical event which resulted in the creation of new streets--over the monuments. However, this observation suggests the persistence of monuments per se, even though their locations may change. Further inquiry into this subject reveals a link with the land-ownership pattern within the Islamic context to which I shall return later.

Rebuilding after 1956 fire

A major portion of the central commercial area was burned down in 1956 (figure 3.22). This critical event was an accident, although one may rationalize its inevitability by arguing that the maze-like street pattern and the non-permanent building material used

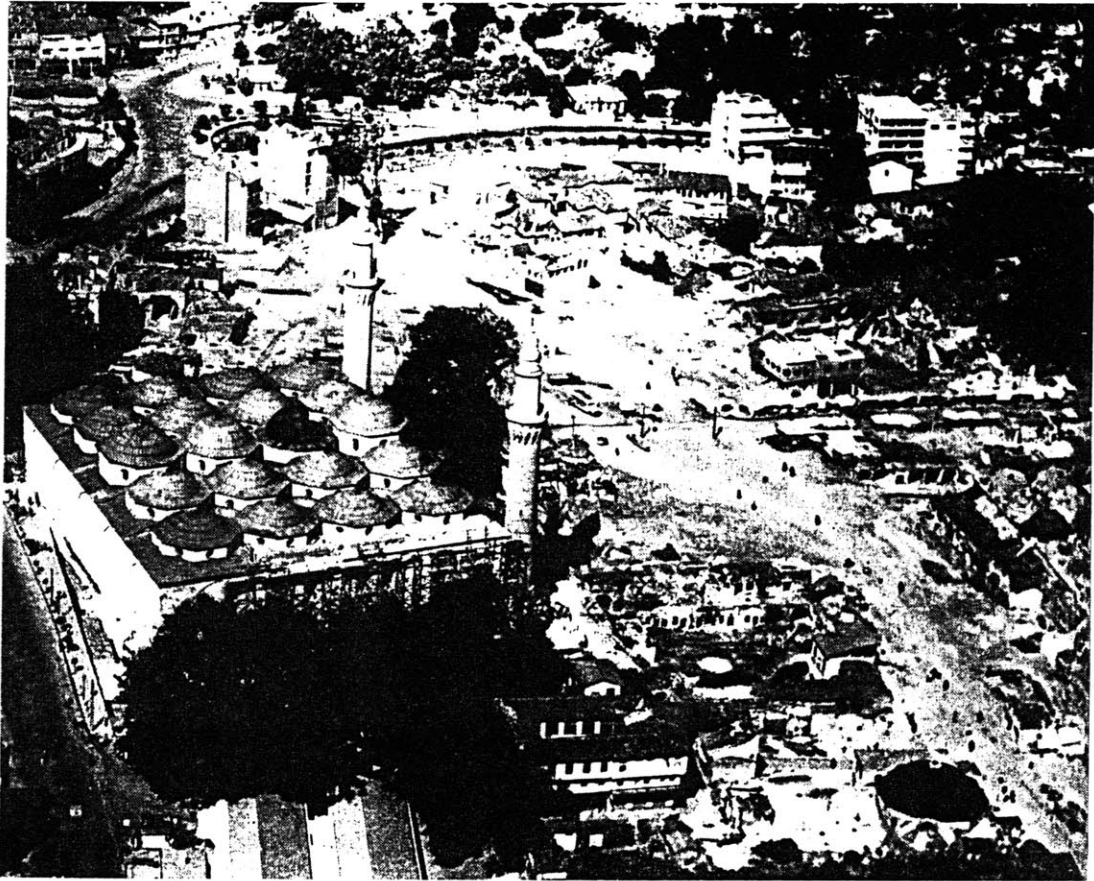


Figure 3.22 View of the central commercial area showing destruction after the fire: note the medium-rise office buildings along the road

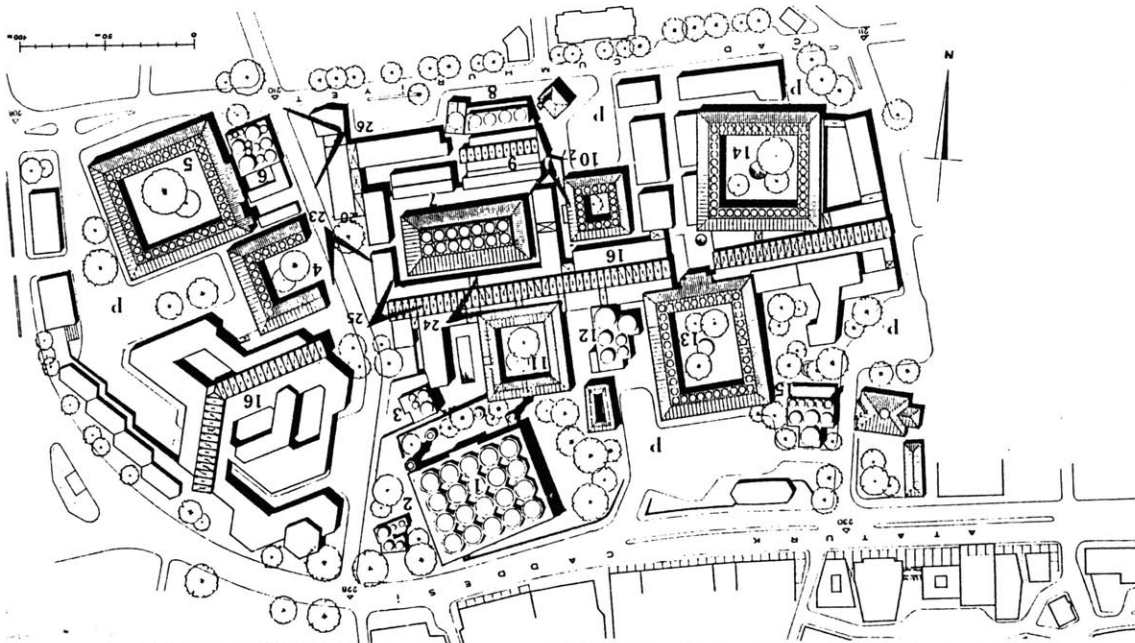


Figure 3.23 Plan of central commercial area with rebuilding proposal by Picinato

by the traditional building typology, other than monuments, fueled the spread of the fire. In any case, the fire facilitated morphological transformation. This section analyzes the reorganization of the plan units, and the interaction of the new plan units with their contents. The role of monuments during the rebuilding activities and in the morphology of plan units will be dwelt upon.

The 1956 fire led to the destruction of plan units in the western side of the central commercial area, resulting in an urban fallow awaiting the right moment for future intervention and potential morphological change. The subsequent rebuilding activities fell under two processes--a planned process, and an anarchic process. Picinato worked out a rebuilding proposal, but only part of the proposed covered bazaar was built (figure 3.23). Rebuilding activities basically followed an anarchic path. The morphology of plan units in this area can be analyzed by comparing the 1862 plan and the 1988 plan (figures 3.24, 3.25).

A comparison of photographs taken before and after the fire indicates that most of the shops were burned down while the partially destroyed, free standing structures of the monuments remained. It was once said by Louis Kahn that ruins remind us of the beginning. In this case, the ruins in the city not only remind us of the beginning, they are the fixed points for the structuring of a new beginning. This suggests a concept of multiple beginnings inherent in monuments, or the ability to initiate new beginnings. This concept contributes to the timeless vision of the structure of a place or city in its evolving history (figures 3.26, 3.27).

The concept of multiple beginnings throws a new perspective on the role of monuments in the morphology of the plan units in a city. A careful analysis of the micro-area shows that all the new plan units were created with monuments as fixed points, at the same time maintaining the position of the bazaar spine. The plan units were fluid and adjustable during the process of rebuilding, and the new plan units were very different from the ones that prevailed before the fire. This is in fact a peculiar case in the morphology of plan units in a city. For instance, Anderson argues that streets, which occupy spaces between plan units, tend to persist through time.⁷

Anderson's observation is of course valid in the course of a city's natural morphology with plan units as morphological frames for built forms. However, critical events can result in an irrational adjustment of plan units, revealing instead an inner

⁷Stanford Anderson, 'Studies towards an ecological model of the urban environment,' *On Streets*, Cambridge: MIT Press, 1978, pp.267-307.

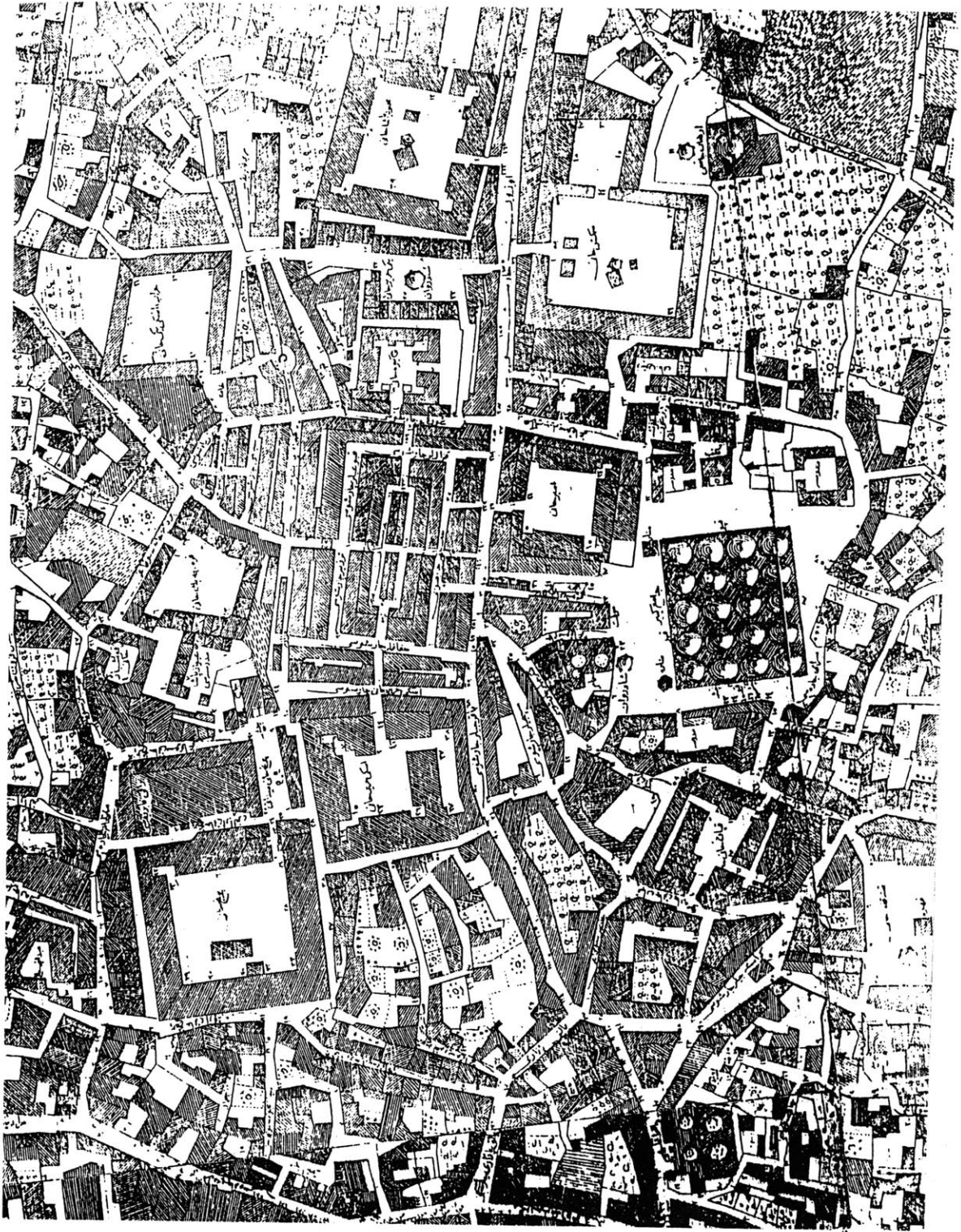


Figure 3.24 Plan of central commercial area in 1862

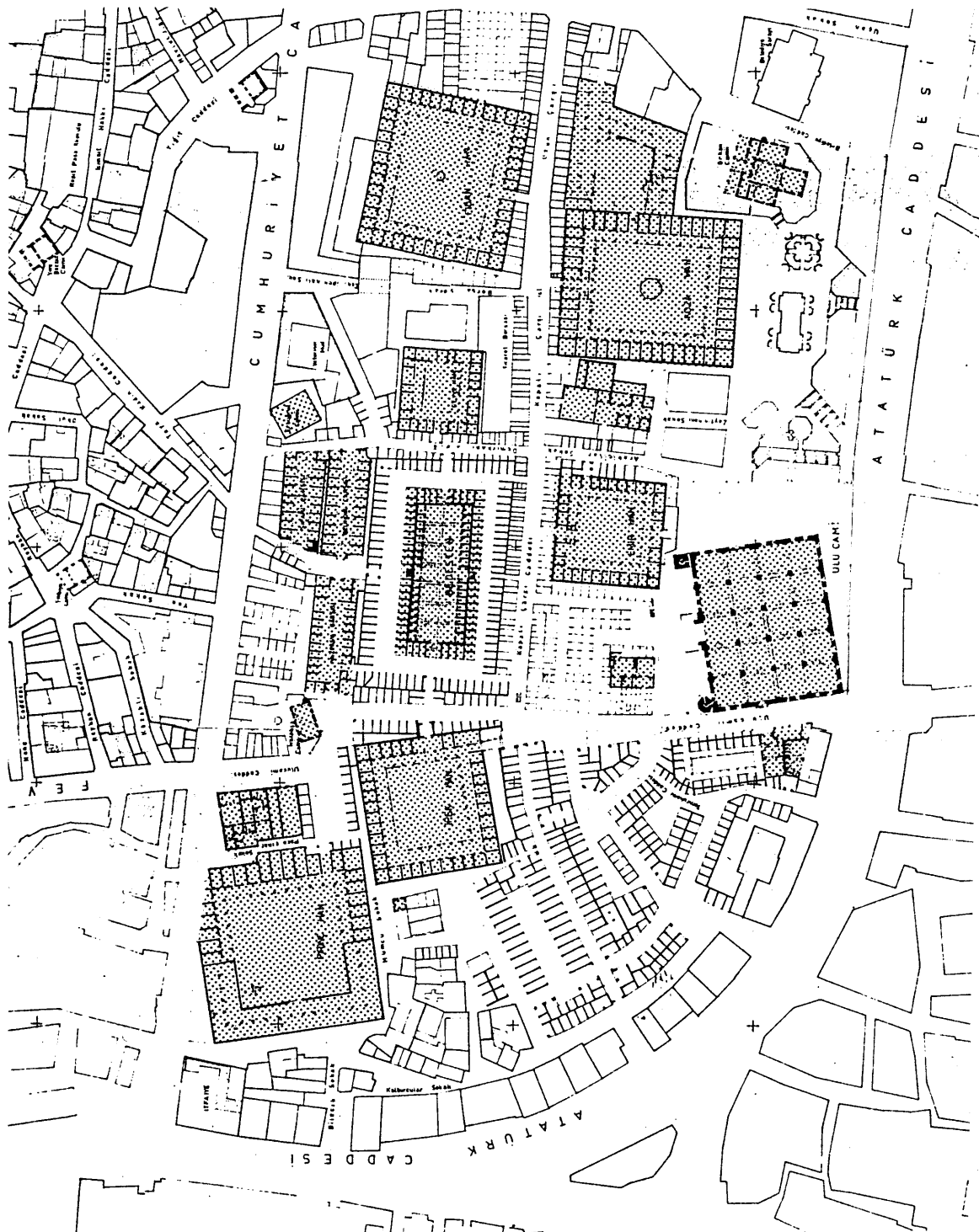


Figure 3.25 Plan of central commercial area in 1988; note the unchanged position of the bazaar spine

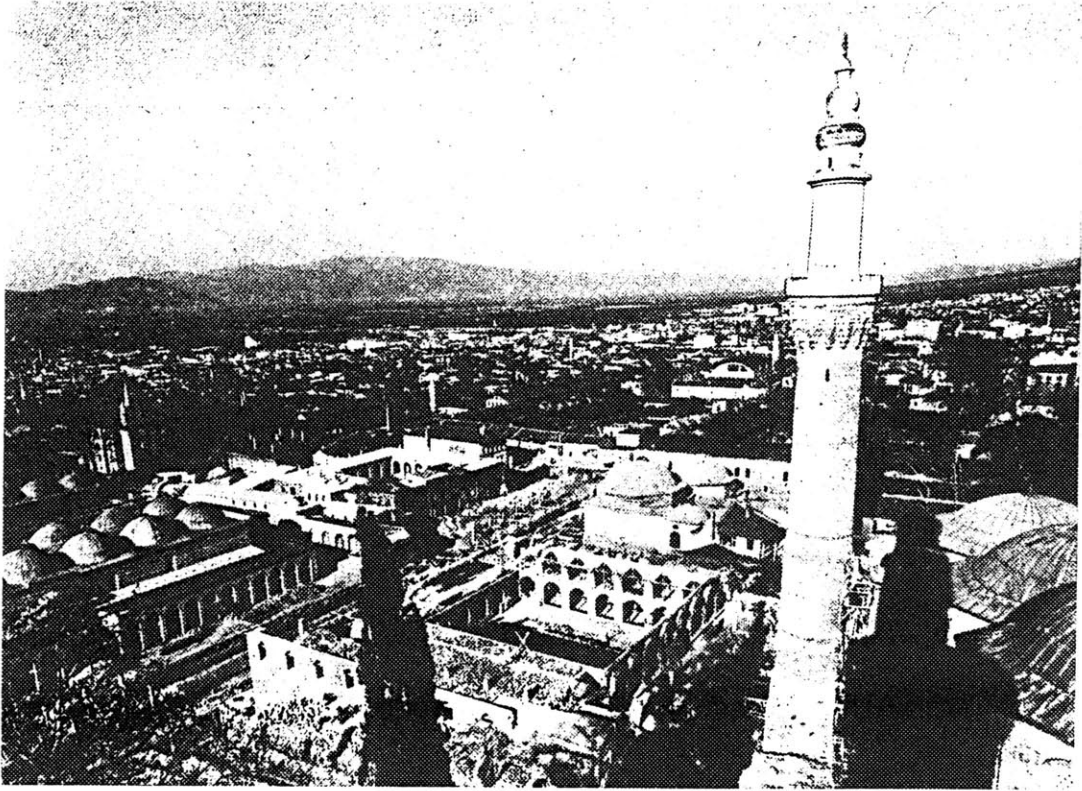


Figure 3.26 View of monuments in the central commercial area after the 1956 fire



Figure 3.27 View of the same area today

persistence in monuments not apparent in the normal transformation of a city. This reinforces the role of monuments as primary elements in the city structure.

The morphology of individual monuments is of interest since they are permanent features in the evolution of the city. Ahmet Vefik Pasa's intervention had transformed the centralized courtyard typology of the Ipek Han into a U-shaped complex (figure 3.28). In the rebuilding process after the fire, it regained its original courtyard typology (figure 3.29). The second transformation also discontinued the vehicular circulation through this portion of the central commercial area, resulting in a pedestrianized environment.

The morphology of the new plan units, the majority of which are very small, reestablishes the previous order. The plan units are subdivided extensively to maximize land utilization in the central location, creating an agglomeration of small single-storey shop units. Moving away from the core along the bazaar spine towards the east however, the morphological pattern changes progressively, with large blocks of multi-storey buildings replacing the traditional single-storey typology.

The desire to exploit to the fullest the economic potential of a prime location should result in the most obvious morphological pattern being bigger and higher buildings through site clearance and the amalgamation of lots. The above observation regarding the two different morphological patterns within the same area is difficult to reconcile with the central location theory which suggests that the morphological pattern should be uniform. Furthermore, new plan units should allow for new intervention possibilities unconstrained by previous typology.

One possible resolution to the above enigma is that the building typology utilized for the rebuilding activities is dictated by the presence of monuments. The inertia of a large number of monuments in close proximity to each other in the western area makes small dense units the only possible typology, while the relative absence of monuments in the east makes room for the most obvious typology.

Industrialization

The third critical event is the creation of an organized industrial zone in 1962. This district was created outside the city, to its west, with the intention of reviving the economic status of Bursa. Within a period of ten years the acute demand for industrial land had led to an unplanned industrial zone located in the middle of the valley along the highway linking Bursa to Istanbul. The presence of these two industrial zones, though located outside the city, not only revived the economy, it resulted in the urbanization of Bursa at a scale unmatched during any of the previous critical events. Thus, these industrial zones can be considered primary elements of Bursa.

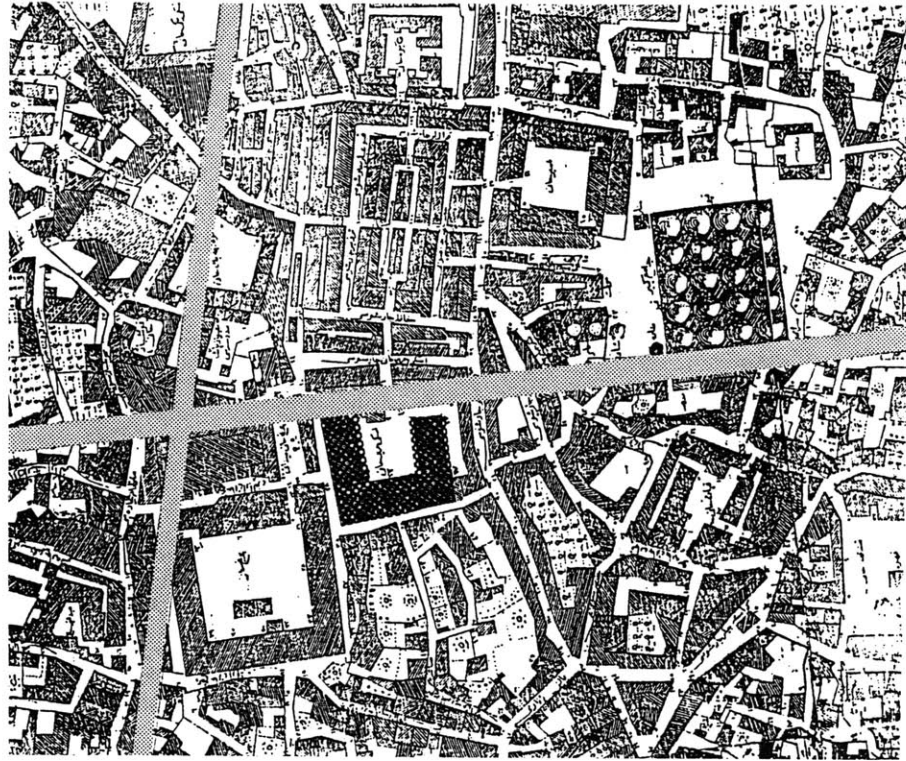


Figure 3.28 Ahmed Vafik Pasa's intervention on 1862 map; the Ipek Han was transformed into a U-shaped building

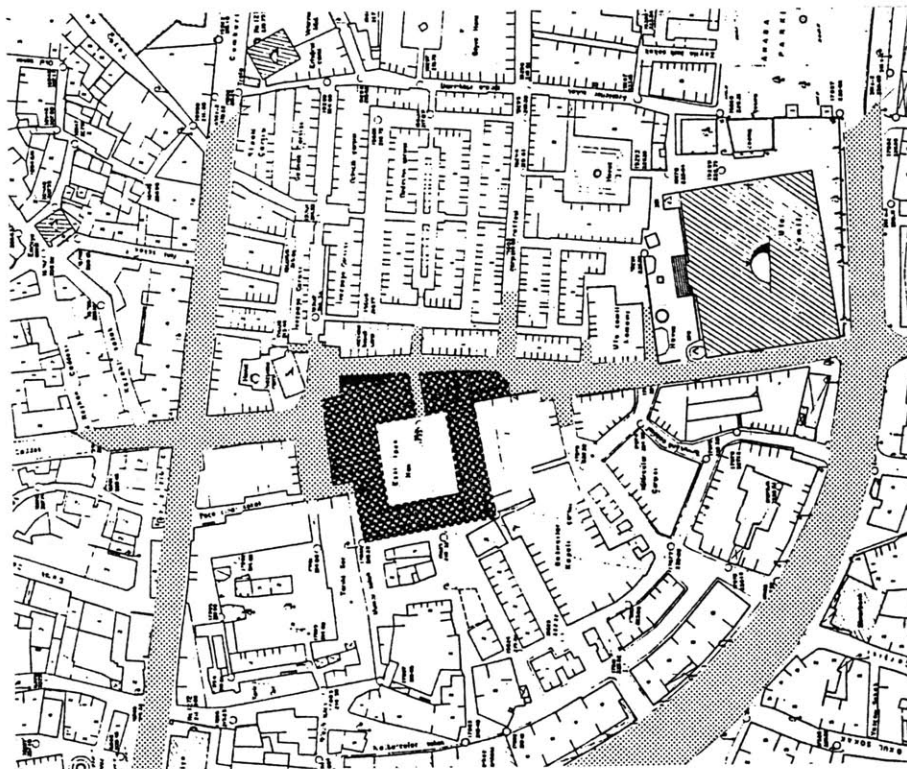


Figure 3.29 Morphology of Ipek Han showing its regained courtyard typology

The real momentum to accelerate the rate of urbanization came with the establishment of two automobile plants in Bursa by the early 1970s. This sparked off citywide development within the urban framework established previously, utilizing the capacity inherent in the urban structure. Morphological change at a rate unparalleled in the history of Bursa followed. However, unlike the two previous critical events, industrialization in the research area did not result in ruptures of plan units. Instead, there was a change in the building typology used in rebuilding. In the case of Bursa, the new building typology was the "modern building" type, either in its origin intent or in its degraded form, and industrialization was characterized by intense morphological transformation of built forms within plan units (figures 3.30, 3.31). The introduction of large building blocks transformed the "grain" of the city (figure 3.32).

Within this framework, the city is a dynamic object, continually building upon previously established order, conditioning and influencing the future of the city. The morphological analysis is significant, if not critical, in revealing the anti-deterministic, interactive dynamics in the urban evolution of the city.

At this juncture, it is interesting to point out the difference between the industrial revolution in Europe and the industrialization of Bursa. In Britain, the process of industrialization culminated in the ruptures of plan units to accommodate new urban network at the same time that new building typologies were created to meet the demands of rapid urbanization. In contrast, industrialization came to Bursa after the urban network pattern was already well established. The urban morphology in the research area was marked by site succession and the amalgamation of lots. Hence, while urbanization in the British industrial city was characterized by the morphology of both plan units and the contents of plan units, the entire process of urbanization in Bursa utilized the latent potential of previous artifacts, and was characterized only by morphology within plan units.

The impact of new streets

The morphogenetic analysis of Cumhuriyet Street with the help of photographic records reveals that Ahmet Vefik Pasa's intervention increased the capacity of the research area. This is because the rupture of plan units resulted in wider streets which allowed more efficient vehicular circulation. The increase in capacity was only exploited much later during the industrialization of Bursa. It was responsible for the increased concentration of built forms near the newly created ruptured edges beside the street



Figure 3.30 Present day view from the Hisar



Figure 3.31 Present day view of Ataturk Street

(figures 3.33-3.35). New buildings emerged along the street to house new commercial establishments, banks, offices, and the like, in an attempt to supplement existing facilities in the traditional center, or provide new services which the traditional center was unable to support. This increase in facilities was essential to support the operation of the city, and to cater to rapid industrialization and the changing demands of a growing population.

The traditional commercial center, comprising the bazaar spine and associated monuments, persists to the present, but is unable to support the growing demands of the city. Inevitably, the city center has expanded outward along vehicular streets adjacent to it. The influence of the street on the morphology of the contents of the plan units has resulted in an urban typological pattern which is different from the traditional one. This will be elaborated in a later section. The expansion of the city center reduces the role of the traditional center from being the core of the traditional urban structure to a mere historical center in the present city structure. Urban expansion thus creates new places with new meanings and atmosphere, and in the process, the city acquires a new layer of history.

The present city structure can be perceived as a superimposition of two structures, the traditional and the new. The site succession pattern in the micro-area analysis suggests that traditional activities which are no longer economically viable have been phased out. New urban structure results in new urban dynamics, and low-rise built forms which are functionally and economically incompatible are demolished and rebuilt according to new typologies. All this indicates the supremacy of the new urban structure, supported by the new circulation system, over the old.

The above analysis suggests that the most important consideration when introducing an urban artifact into a city is not its immediate functional possibilities. Instead, since artifacts do not always serve the functions that they were initially intended for, the capacity of an artifact and its potential role in influencing long term urban morphology should be a more important criterion.

Characteristics of site succession

Site succession is a perpetual aspect in the evolution of a city. Rebuilding through growth, changes in built form, and new construction on the same or new lot is an ongoing and incremental process. For a more effective study, this process can be categorized as follows:

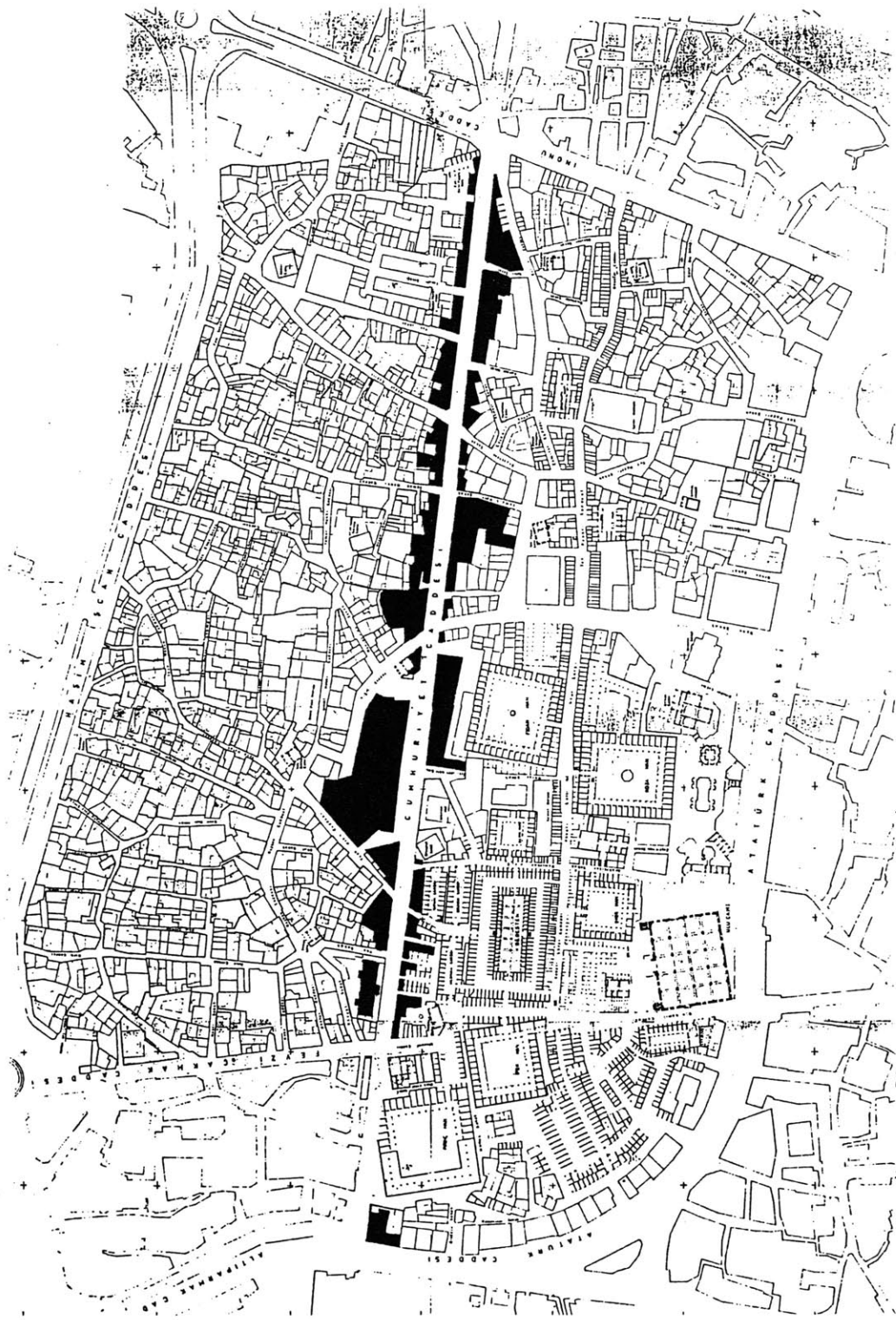


Figure 3.33 Buildings along streets adjacent to the ruptured plan units



Figure 3.34 Present day view of Cumhuriyet Street



Figure 3.35 A large building block along Cumhuriyet Street

- 1) vertical and horizontal transformation within the same artifact, with the built form as the morphological frame; this includes addition, subtraction, and alteration of the artifact on the same lot of land;
- 2) site succession through rebuilding on the same lot of land, or building new artifact(s) on land previously unoccupied. This transformation is constrained by the existing plot size and geometry;
- 3) site succession through rebuilding on land obtained through subdivision of existing lot or amalgamation of several lots of land,

The above represent different ways in which site succession can take place. Locational decisions are initiated by what we have termed external history, but the morphology of sites and buildings also guides site succession.

In a number of historical cities, the morphology of the city is controlled by preservation acts. As a result, in order to bring about a comfortable fit between human aspirations and environment form, the capacity of existing artifacts and the flexibility of man in the use of space have to be fully exploited, with the occasional modifications to increase the capacity of artifacts. In Bursa, however, there is no active government control on morphology. Hence, active site succession can take place at the historic core, not only through rebuilding but also through changes in urban network, infrastructure, and urban spaces.

Within the period of investigation, there are basically two trends of site succession in Bursa. They are:

- 1) Site succession initiated by the state (state as the provider of infra-structure and public facilities),
- 2) Site succession initiated by individuals or private organizations.

Each of the above has its own characteristics and impact on the structure and qualitative aspect of the city. Depending on the use that urban artifacts are put to, site succession can compete for the center or take place at the urban fringe.

Site succession by the state

When the state assumes the responsibility of providing public facilities, site succession occurs to make way for a new scale of transportation network and western-oriented facilities. The mid-nineteenth century marked the beginning of westernization in the Ottoman Empire. In Bursa, Ahmet Vefik Pasa's intervention at the end of the nineteenth century sparked its modernization. As analyzed earlier, the introduction of the

urban network had a lasting impact in the operation of the city. Public buildings constructed in this period under the patronage of Ahmet Vefik Pasa include theaters, hospitals and schools. Site succession through state intervention has been going on in Bursa till the present.

The resultant built form is often characterized by its regular geometric shape and stylistic appearance rather than the height. The shape is unconstrained by the profile of the available site since the necessary site can be obtained through expropriation acts. The building is usually large, and constructed in a single process. The stylistic expressions of the buildings are identified by periods in the Turkish architecture history which correspond to the external history of the city (figures 3.36, 3.37). For example, during the modernization of the Ottoman empire, the buildings imitated the French style; during the Young Turk movement, the buildings adopted a reinterpretation of the traditional typology. Other more recent facilities include public parks and landscape projects. The urban landscaping projects are particularly prominent in the last few years as a result of concerns with conservation.

There are basically two ways for the state to acquire land for site succession. The unbuilt land in the city center and its immediate surroundings are utilized first. Subsequently, existing sites in the city center are cleared for new construction. Following Ahmet Vefik Pasa's intervention, new plan units for site succession emerged. A number of public buildings were located adjacent to the street on the new plan units. Site clearance is usually carried out to provide neighborhood facilities like neighborhood schools and playgrounds.

The locational aspect of site succession is integrated with the functions of the buildings. The municipal building is located within the immediate vicinity of the historical core. Other public buildings such as new commercial establishments are located along the street. Large and medium-scale factories are located at the city fringe, in contrast to former silk factories which were situated next to Armenian and Greek residential neighborhoods adjacent to the rivers.

Site succession by the state established a new layer of public facilities dispersed around the city through both competition for the city center, and development at the city fringe. When the traditional city first began its transformation, the modern artifacts stood out from the rest of the traditional fabric and became the symbols of modernization. However, as the city evolved to the present day, the density of the modern fabric began to dominate the traditional, and the old buildings find themselves scattered amongst the new. Thus, while new public artifacts used to serve as landmarks, their status is rather more

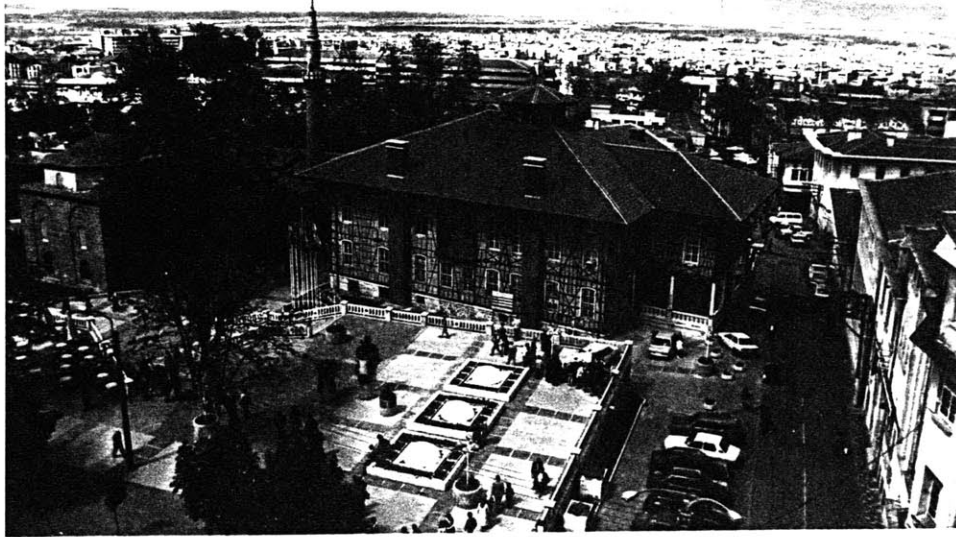


Figure 3.36 Present day view of the Municipal Council built in 1879



Figure 3.37 Present day view of a government office built in 1925; note the design style which is different from that in figure 3.36

ambiguous now. In contrast, the role of traditional artifacts as landmarks has come stronger.

Recent concerns regarding the touristic potential of the kulliye result in intensive building activities to upgrade tourist-related facilities in these areas, such as gift shops, cafeterias, and the like. Such intervention is coordinated with the preservation of the historic monuments.

Site succession by private initiative

As mentioned earlier in the section on artifactual typology, the traditional house type in Bursa was not conceived as a permanent structure. Rebuilding over time is part of the evolution process in the city. In addition, new functional requirements not fulfilled by traditional artifacts necessitate intervention. The latter case explains the construction of large factory structures different from the traditional typology during the process of industrialization.

Site succession by private initiative is a slow and incremental process characterized by vertical and horizontal transformation within the same artifact, rebuilding on the same lot, or rebuilding on an enlarged or reduced lot (figure 3.38). The existing structure serves as the morphological frame over a long period of time, until a critical event in the history of the particular lot triggers the rebuilding of a new artifact for reasons of structural safety or compatibility with use, or both. Existing lots may then be subdivided or amalgamated. These critical events, other than natural disasters, have a direct relationship with the economic situation of the city, the construction method, the succession of generations, and other external factors.

The buildings that result from this process of intervention are often constrained by the profile and geometry of the plots. In addition, there is a gradual change in building typology. Initially, the traditional typology is adapted and modified to suit new requirements, but it is eventually superseded by modern building typologies. Similarly, the traditional construction craft is unconsciously phased out, due to the cultural bias in favor of modern building typology as a symbol of progress, and the general perception that it is more economical. In fact, the two construction materials used extensively in modern buildings, steel and concrete, are heavily subsidized by the government. Hence, the social cost of the modern building typology is actually much higher than its private cost.

In contrast to site succession by the state, the built form typical of private initiative after the 1960s is characterized by its height and uneven block geometry. In order to fully exploit the lot, the edge of the building follows the shape of the lot, whatever its profile,

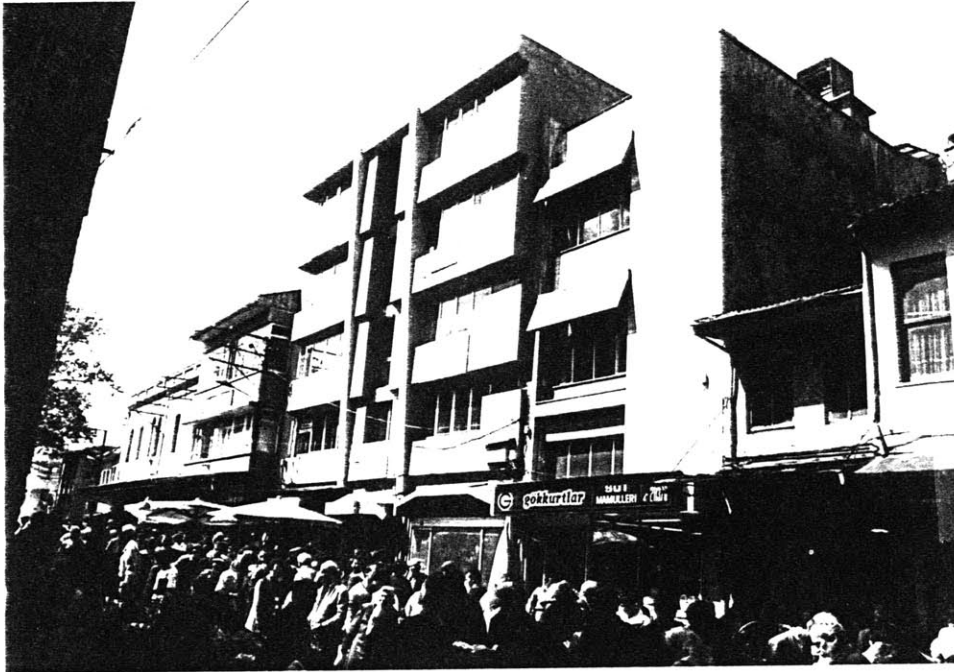


Figure 3.38
The incremental rebuilding process resulting in uncoordinated urban aesthetic



Figure 3.39
View of buildings along Cancilar Street; note the regular facades of individual buildings

resulting in an irregular-shaped building. However, each side of the building taken individually, especially the side that faces the street front, does possess a certain degree of regularity (figure 3.39). The height of buildings along major streets is related to the land value and its speculative potential. Although the building height is controlled by the authority, it is often allowed to increase in proportion to the strength of interested lobbyists. The current building height along Ataturk Street is nine storeys, and the land is designated for commercial uses such as shops, banks, and offices. The building height along Altiparmak Street is twelve storeys. Presently, the ground level is for retail shopping while the rest is used for residential purposes, but the commercial usage is slowly expanding upwards.

The above mode of site succession takes place sporadically throughout the city, especially along the streets. Competition for the appropriate location within the city structure by a particular category of activities (in certain cases, the location is predetermined by the state), followed by micro-area site succession among related activities, result in patterns of activities or Rossi's "characteristic areas." For example, modern textile merchants in Bursa are concentrated in the Bakircilar covered bazaar while fashion boutiques are mainly found on Ataturk Street. This observation leads to the concept of a place as being the result of an incremental process of competition and site succession. Heterogeneous land use pattern evolves over time through urban dynamics and morphological laws, in contrast to the zoning principle, where activities within a given area are homogeneous and predetermined. However, in both cases, the "characteristic area" attracts specialization in land use pattern, and the concentration of supporting infrastructure. The increase in sunken costs within an area leads to the agglomeration of related activities and contributes to the persistence of a place.

The shift in typology

Artifactual typology is the product of the synthesis of the internal and external history, brought forth by a change or deliberate innovation, or the occurrence of a critical event. However, due to changes in both the internal and external history over time, these new urban artifacts acquire identities distinct from the artifacts of previous history. Different stylistic appearances emerge or old ones are reinterpreted.

There is always a time lag between the motivation from external history and the actual production of artifacts. The time lag and uncertain relationship between external history and internal history explain the quasi-autonomous nature of internal history.

Prior to the mechanization of the silk industry in Bursa, the artifactual typology evolved within a conventional system inherent in the internal history, without the external history playing an active role. Due perhaps to cultural inertia, only subtle differences in artifactual typology were apparent in this period. A more detailed study into this is beyond the scope of this thesis.

From the mechanization of the silk industry onwards, the evolution of the urban environment proceeded at a faster pace, and in a new direction. Events in the external history had a direct and lasting impact on the internal history of the city. For example, the shift in technology resulted in a different method of construction, changes in the economic structure led to a more intense economic exploitation of land as reflected in the building size and shape and the pattern of land amalgamation, and new modes of transportation altered the urban network system.

The time lag involved and the quasi-autonomous nature of internal history notwithstanding, the rapid pace of development in the external history calls for the creation or reinterpretation of typology in the production of artifacts. The reinforced concrete frame construction system was introduced in Bursa during the early twentieth century, and is currently the most prevalent building type. This building type has its precedent in the West and is made possible through innovations in the construction technology. However, while it satisfies the need for rapid development by cutting down construction time, it has no apparent link with the traditional typology in Bursa.

This problem of disjointedness is obvious not only at the built-form level, but is true at all levels of urban artifacts. The urban typology has transformed from one that is centered around the *kulliye* to one that develops along major vehicular streets. Traditional urban typologies are superimposed on or truncated to conform to the new typology. The fragmentation of the old, and the contortion of the new in catering to existing inertia, result in a collaged physical environment. The pace of development is so rapid that there is a lack of synthesis in the production of urban artifacts. This problem is the result of a continual process rather than a rupture in the urban environment. The history of a city is an ongoing affair, and the collaged physical environment is the consequence of the shift in typology (figures 3.40, 3.41).

The images of previous typologies always remind us of the past, even if the physical images have disappeared. This concept of mental persistence reinforces artifactual persistence and can result in the revival of previous typologies. Persisting images of the garden of paradise, utopia, the perfect city, and other idealized visions, are extremely powerful in guiding the aspirations of man. It also underlines the mismatch



Figure 3.40 View of a mosque dwarfed by a medium-rise building along Cumhuriyet Street



Figure 3.41 View of a multi-storey car park with a mosque adjacent to it

between physical reality and human aspirations as reflected in the collaged built forms and aesthetic in the city.

Monuments, ownership, and the role of religious institutions

In the micro-area analysis, the persistence of monuments is not only supported by the firmness of the physical structure, it is further reinforced by the religious institution. The ownership of the monuments is entrusted to the vakif institution.⁸ This entails endowing the property for religious or charitable purposes, and transferring the property rights of the donor to God. There are religious rules governing vakif property, in addition to those rules established by the founder, which disallow selling. To change the nature of the property within permissible limits, legal opinion or fatwa is required.

The survey of monuments and religious structures in Bursa indicates that while there is an obvious concentration of monuments in the traditional commercial center, religious buildings are more evenly distributed in the city though still somewhat concentrated near to the Ulu Cami (figures 3.42, 3.43). Ahmet Vefik Pasa's intervention was dictated by the positions of the mosques since mosques cannot be shifted. The locations of commercial and public monuments, on the other hand, can be moved. In Bursa, within the Islamic context, both the mosques and public monuments persist through the support of the religious institution, but the mosque commands a permanent locational primacy over any other urban interventions.

The endowment system was closely tied to the centralized administrative system of the Ottoman States and served as the genesis of the traditional urban structure. In the process of modernization, some monuments, especially the small mosques, present conflicts. There are islands of urban space occupied by free standing mosques. The presence of mosques poses problems in the amalgamation of plan units to achieve a coherent urban intervention. At the junction of Hasim Iscan Street and Fevzicakmak Street, for example, there is a mosque located on one side of the highway, thereby reducing its efficiency (figure 3.44).

The above analysis reveals the persistence of public monuments and religious buildings in the changing urban structure of Bursa. They serve as an anchor for Bursa's heritage. Occasionally, they constrain development, both at the traditional commercial center and at the city fringe.

⁸See also chapter two.

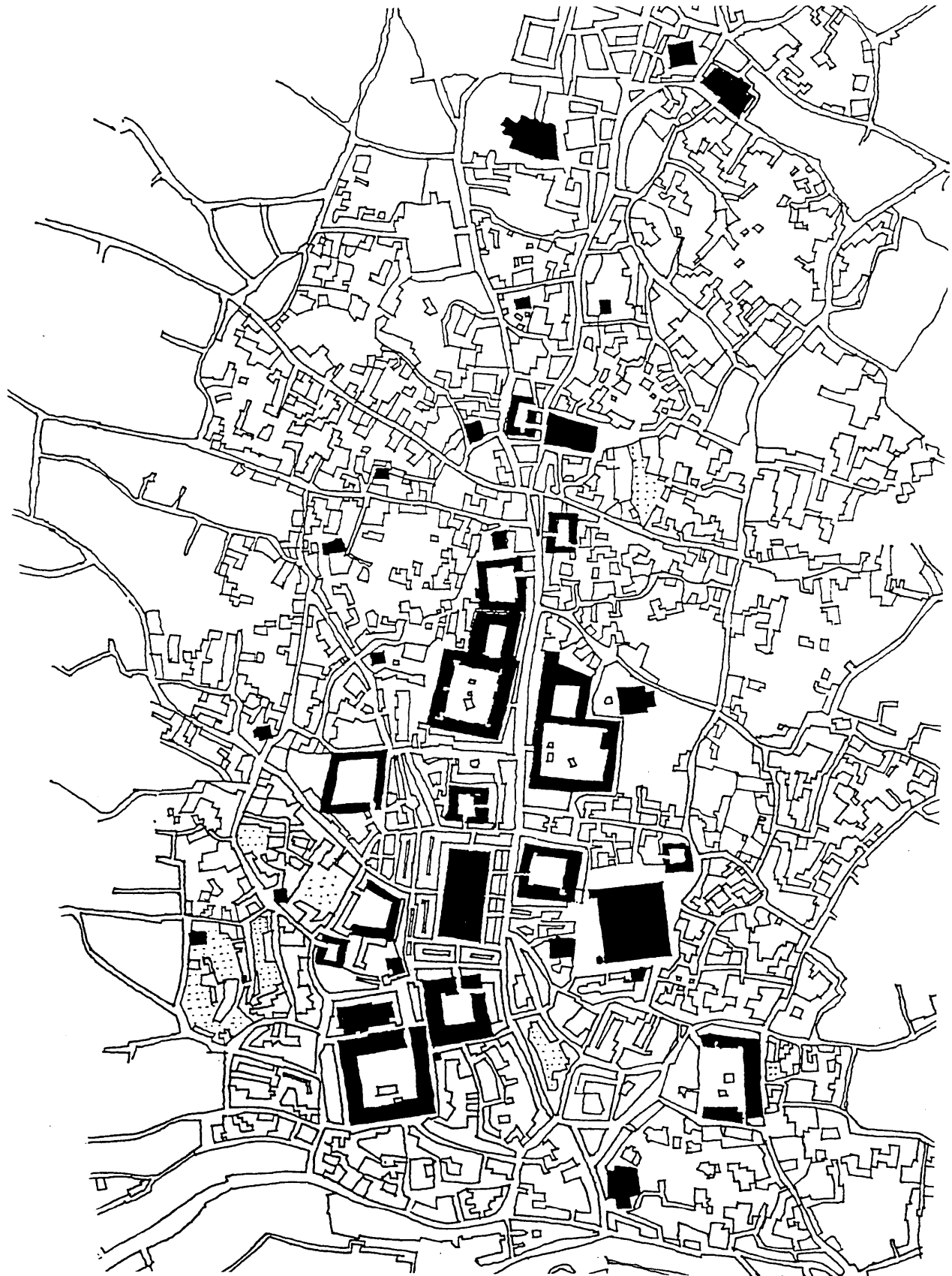


Figure 3.42 1862 plan showing public monuments and religious buildings



Figure 3.43 1988 plan showing traditional public monuments and religious buildings; note the persistence of most monuments from the 1862 map

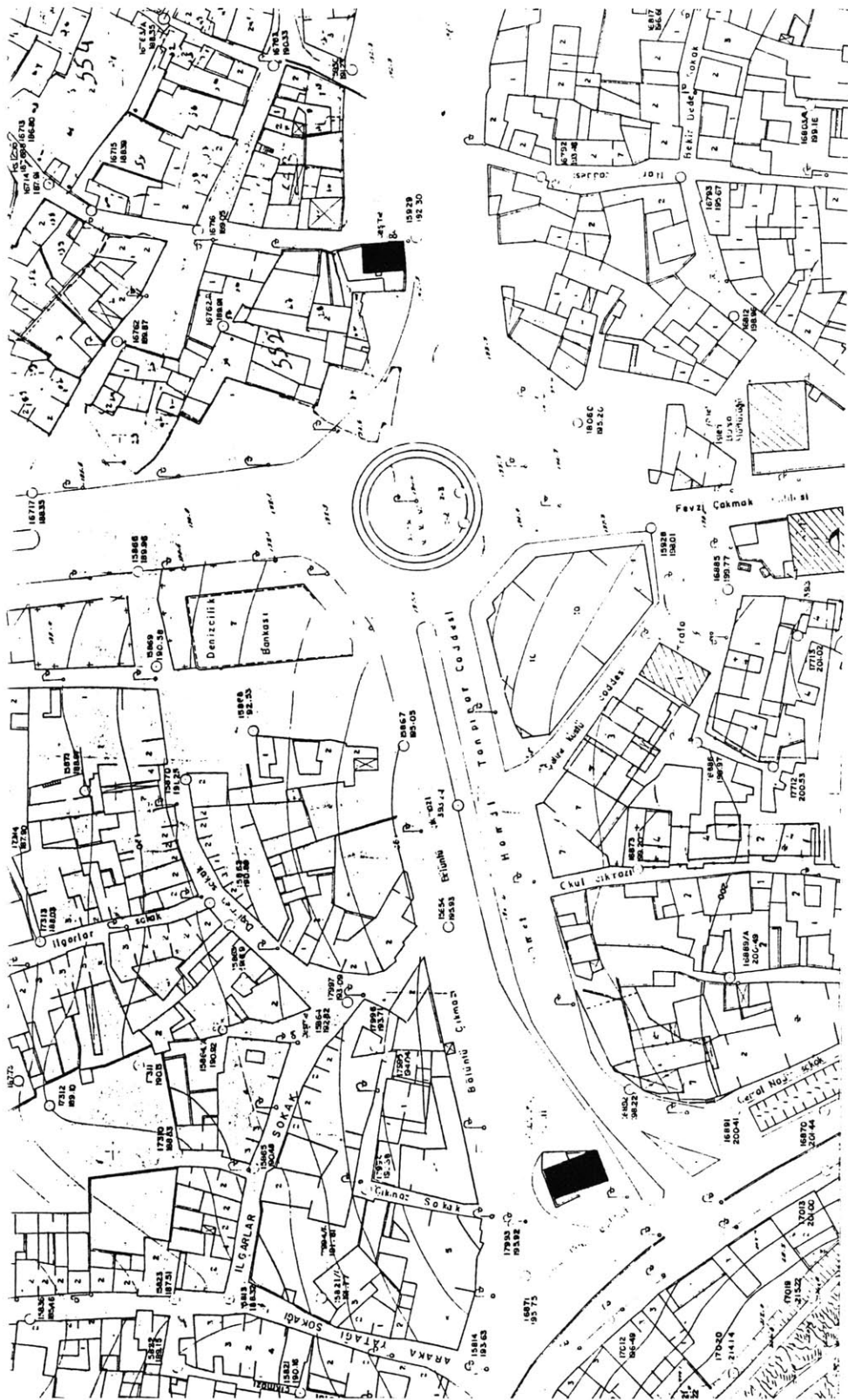


Figure 3.44 A free-standing mosque in the middle of Altıparmak Street and another mosque adjacent to Hasım İscan Street that reduces its efficiency

Concept of place

The site, though divided into abstract plan units and spaces between plan units, when acted upon by differentiated human endeavor through time, acquires its own meaning, values and layers of history. Over time, a place is created which has its own unique structural quality. The concept of place in Bursa can be viewed in two ways: the idea of the "sacred and the profane," and site succession. This concept allows one to understand the role of landscape in the making of a place, the qualitative attributes of these places, their role as primary elements and, most important of all, the persisting characteristic.

The sacred and the profane

In *The Sacred and the Profane*, Eliade argues that space is not homogeneous for a religious man; he experiences interruptions and breaks within it.⁹ The nonhomogeneous space can be perceived as that which is sacred, and the formless space around it. The creation of a sacred space or cosmos is an act of territorial claim for habitation. The act of consecrating a place is often repeated to create habitable territory.

The above idea is helpful in explaining the early settlement pattern initiated by the kulliye; centers are "concretized" for permanent settlement to distinguish them from the undifferentiated wilderness of nomadic life. In addition, the kulliye's sacred quality is reaffirmed by periodic calls for prayers.

The concept of the sacred and the profane contributes to the structuring of places in the process of urbanization. Religious complexes are distributed relatively uniformly in the research area, and act as fixed structures in the process of evolution. The "profane" then adjusts itself around these fixed points to accommodate the changing aspirations of the inhabitants. These religious complexes thus serve as primary elements in the early urbanization process, while tending to constrain subsequent development of the city (figure 3.45).

Site succession

The structure of a place established through site succession can be understood through two related and complementary processes:

- 1) the integration of site and artifact,
- 2) the agglomeration of artifact and activities.

⁹Mircea Eliade, *The Sacred and the Profane*, New York: Harcourt, Brace & World, 1959, p.20.

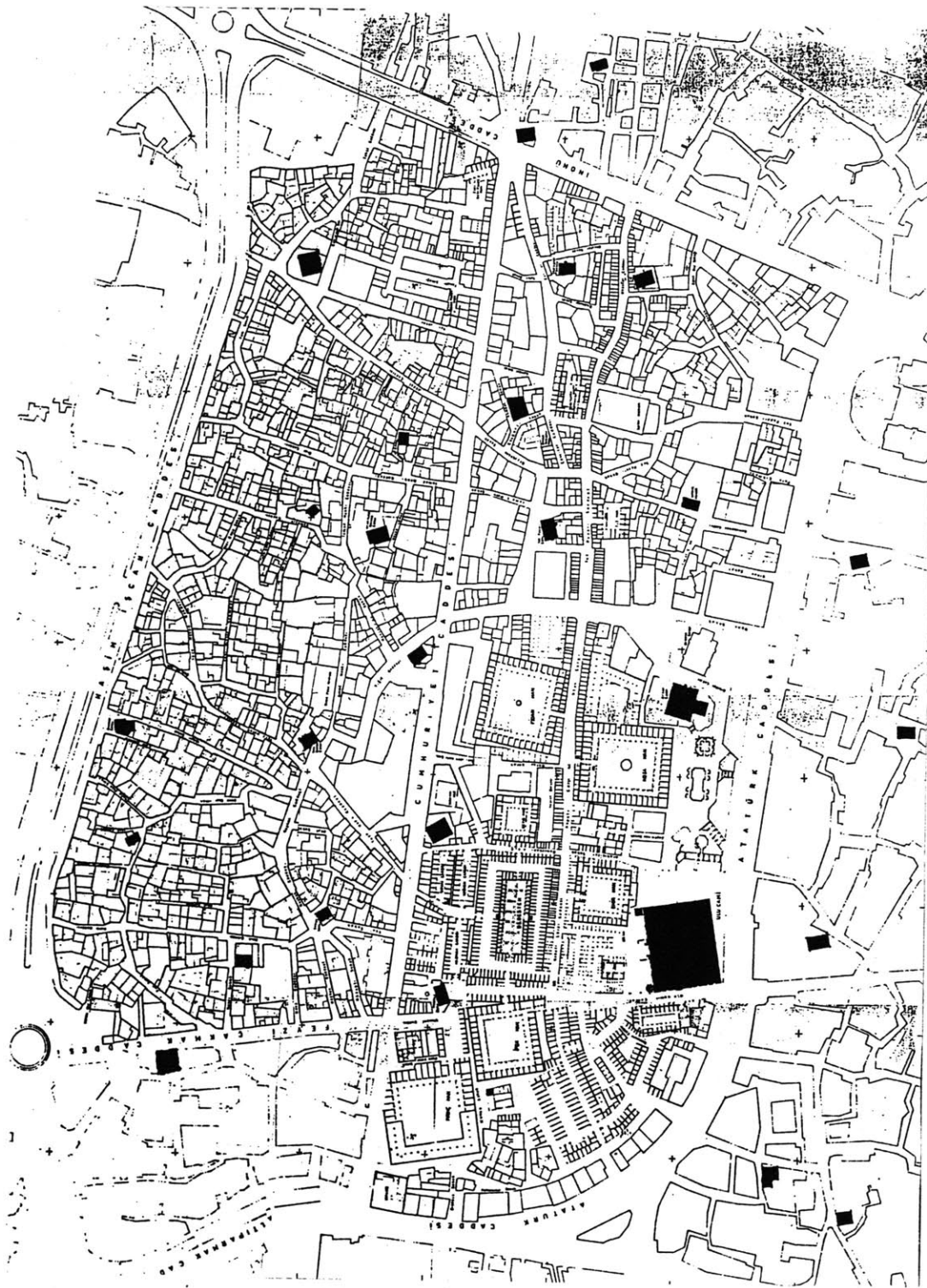


Figure 3.45 Location of mosque serving as fixed point, structuring and constraining the development of the city

The subdivision of the landscape of Bursa by hills and rivers established the natural hierarchy of the choice of places. Based on the 1862 plan, there are basically six geographical regions of historical value. These historical sites are the Yildirim neighborhood, Emir Sultan neighborhood, Yesil neighborhood, Central Commercial Area, Hisar, Muradiye neighborhood, and Cekirge neighborhood.

Each of these regions derives its name from sitings of historical significance. Historical events in these places were immortalized by the appropriate kulliye. The aspirations that brought the kulliye into being were obviously diverse and complex; further inquiry into this external history will not advance our understanding of these places in the physical sense. The best approach is to understand the structure of these places.

The two modes of site succession outlined above could operate independently or simultaneously, and characterized most historical places. The contribution of landscape to the qualitative aspect of a place is more significant in the Yildirim, Yesil, Emir Sultan, Hisar, and Cekirge as compared to the Central Commercial Area and Muradiye where site succession plays a more major role in their genesis.

The integration of site with the quality of an urban artifact, thereby liberating the inner beauty of a place, is the phenomenological approach to the understanding a place. This process of creating a place is at once singular and special. The landscape and the aesthetic beauty ensure continual existence by discouraging changes and modifications. For example, the Yesil kulliye, with its visual primacy on top of a small hill, still maintains its aesthetic beauty even though surrounding buildings have transformed vertically. This reinforces the role of landscapes in persistence.

The agglomeration of similar artifacts through site succession leads to the creation of a characteristic area. The creation of such a place increases its sunken cost and capacity, thereby contributing to the persistence of the characteristic area. For example, the central commercial area which is located on a relatively flat plane persists due to the availability of centralized facilities and the activities it supports. However, perpetual site succession has affected the qualitative nature of this place. Monuments are commonly found in the middle of medium-rise buildings.

SUMMARY AND CONCLUSIONS

This thesis develops a research methodology to investigate persistence in cities. This methodology is applied to Bursa, focusing on its urban evolution from the mid-nineteenth century to the present. Bursa makes an interesting case study because of its rich cultural, political, and economic history, and the preponderance of monuments that have, nonetheless, survived.

In the following, a summary and appraisal of the general research methodology as well as its application to Bursa are discussed. I then conclude with suggestions for future research in this area.

Summary and appraisal of theory

The research methodology structures the inquiry into the "external " and "internal" history of a city. External history encompasses all political and economic events incidental to the city, while internal history describes architectural conventions and artifactual typologies. The two disciplines are governed by separate rules, except when a critical event in the external history occurs to spark some reaction in internal history. Even then, the link is erratic and can have a long gestation period.

Key to the theoretical framework is the quasi-autonomous nature of urban artifacts. This is because the intention behind the genesis of an urban artifact and the actual evolution of that artifact may not match perfectly. The deterministic role of external history is thus rejected. Instead, the life of an urban artifact is influenced by its latent potential or capacity, defined as the ability to absorb changes and adapt to different functions without drastic changes in its configuration.

The research methodology then proceeds with the morphogenetic approach, which traces the genesis, evolution, and site succession of artifacts. Conzen's "plan units" is developed as a tool to analyze the morphology of plan units and their built forms. A structural hierarchy among urban artifacts can be established in terms of their persistence. This hierarchy is by no means static, although some general observations can be made. For example, plan units are higher on the hierarchy compared to their contents. However, instead of putting plan units at the top of the hierarchy as Conzen did, I focus also on the role of monuments in the morphological process. In the absence of critical events, plan units serve as the morphological frames for the built forms within.

However, critical events can reveal the primacy of monuments over plan units, leading to erratic ruptures of plan units, and reconfigurations around monuments as fixed points. The relative persistence of monuments implies that monuments can be a constraint during the process of urban restructuring.

Site succession occurs through both rebuilding for the reasons of structural safety, and in response to urban dynamics. The former is an ongoing process in the evolution of the city, and retains the previous scale and geometry of the building although rebuilding allows new typologies to be adopted. However, when existing artifacts are no longer able to cater to new activities, due to fundamental changes in human aspirations or modes of production, the existing stable structure is replaced, or the new activities are located elsewhere in the city. The process of competing for the central location has been described by urban ecologists, but their theories suffer from an incomplete conceptualization of the environment and an over emphasis on economic explanations. The morphogenetic approach has the advantage of being able to allow simultaneous consideration of the built and the unbuilt areas, typological characteristics of built forms, and ownership patterns.

One potential flaw of the research methodology developed in this thesis is that it is time consuming and requires very detailed records over a long period of time. To enable one to conduct cartographic analysis, the city plans should contain information like plot sizes, shapes of building blocks, building height, materials, construction methods, ownership, and other relevant details.

Application to Bursa

Three critical events in Bursa during the period under investigation can be singled out. At the turn of the twentieth century, Ahmet Vefik Pasa's intervention in creating of a new street pattern led to a reorganization of plan units within the central commercial area. The fire in 1956 destroyed a major portion of this commercial area, resulting in a need for redevelopment. Finally, the introduction of the automobile industry around 1970 led to unprecedented growth and industrialization.

Detailed morphological study is conducted for a research area in the traditional center delineated by Ataturk Street, Inonu Street, Hasim Iscan Street, and Fevzi Cakmak Street. Prior to industrialization, site succession in this area was characterized by subdivision of lots and the traditional typology was used in rebuilding. After the 1960s, however, the modern building typology took over, and lots were amalgamated to house

the larger buildings. The first two critical events saw substantial ruptures and reorganizations of plan units, as in the widening of streets during Ahmet Vefik Pasa's intervention, which successfully increased the capacity of urban artifacts. Thus, when industrialization gripped the city, the resultant morphological pattern was characterized by morphological transformation of built forms within plan units rather than the morphology of plan units.

There are basically two types of monuments in Bursa: religious monuments, and traditional public facilities. Historically, these monuments were maintained by vakif foundations, but were later acquired and managed by the state. These monuments exhibited persistence through all three critical events. Public monuments, as symbols of progress, were primary elements which accelerated urbanization during the traditional period. However, this role has now been taken over by the two industrial districts housing the automobile and textile factories, while monuments tend to constrain overall development in the city center.

Among monuments, mosques demonstrate locational primacy over all urban intervention. Non-religious monuments can be uprooted although they are often replaced in the immediate vicinity. For example, the street introduced by Ahmet Vefik Pasa could not cut through existing mosques. In the aftermath of the 1956 fire, remains of monuments became the basis for new beginnings in Bursa. In the present context, the mosques persist due to the supremacy of Islam in Bursa, while public complexes were preserved because of the cultural heritage embodied.

The juxtaposition of the old and the new in Bursa today results in a sense of disjointedness in the urban aesthetic. The problem lies in the shift in artifactual typologies and the incompatibility of modern typologies with the traditional ones, resulting in a collaged appearance.

Suggestions for future research

In my analysis of the morphological transformation of Bursa, I have not placed a lot of emphasis on the role of building regulations. Except for the more obvious laws pertaining to building height, my conversations with city planners and local architects have led me to believe that government control is less pervasive in Bursa than in many other cities. However, legal and regulatory factors are certainly important aspects to be considered in the evolution of a city, and can in future be incorporated into a more general theory of persistence in city form.

Another aspect hinted at but not really explored in the thesis is the use of plan units as a conceptual tool in preservation efforts. This means paying attention to plan units as a whole, the built forms within plan units, and all the edges of plan units, in contrast to the preservation of certain streets corresponding to selected edges of plan units. Control on building typology and the density of built forms is a more dynamic way of preserving the city for it respects growth possibilities within non-saturated plan units. Using plan units as a preservation tool allows simultaneous consideration of built forms, streets, and the inherent capacity of plan units.

The thesis stresses the relationship between the morphological change of a city and the capacity inherent in urban artifacts. This understand is crucial in the management of a city. The implications of any intervention should be carefully considered, not only for its immediate impact on the built environment, but also its long-run effects on the capacity of a city. For example, a wide street will induce growth more than a narrow one. Further research into how intervention modifies the distribution of capacity in a city will enable one to predict or guide the future morphology of a city.

This thesis has focused only on the morphological pattern of a research area within the city of Bursa. The morphological pattern of a city is like the thumb print of that city; nowhere else is there a city with the same pattern. For instance, one interesting issue is how plan units are subdivided. In Bursa, the cul-de-sac street pattern which contributed to the internal subdivision of plan units is different from the burgage-series identified by Conzen in Britain. The morphogenetic analysis developed in this thesis can serve as an important tool for a comparative study of different cities. This latent potential has not been explored in my thesis, but should make a promising research exercise in the future.

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