"Creating the Creative Block"
Towards a Design Tool for Urban Regeneration

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Publisher: International Forum on Urbanism (IFoU), Delft  

Keywords:  
Apartment Building  
Apartment Type  
Apartment Unit  
Creativity  
City Block  
Urban Decline  
Urban Regeneration  
Urban Fabric

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For my parents, Panayiotis and Ekaterini
ACKNOWLEDGMENTS

This thesis, long and demanding but mostly challenging and creative, would not have been possible without and collaboration of those who offered their support, and to whom I am most grateful:

First and foremost to Professor Alexander Tzonis for believing in me and inspiring me in the roughest moments.

also
to my supervisor, Professor Jurgen Rosemann for his valuable guidance.
to the Members of my Examination Committee for their defining comments.
to the Michelis foundation for their gracious sponsorship
to Professor Nicos Polydoridis, for his consistent support and, to the rest of my colleagues from the University of Patras for their understanding.
to the members of the Design Knowledge Systems Research Centers (DKS) who helped further my insight into the subject.
to my professor Athanasios Aravantinos for introducing me into the world of urban design and continuing to share his insights.
to the Benaki Museum, Athens and particularly to Natalia Boura for offering me access to valuable data.
to those residents of CB 3911 in Kolonaki Athens who responded to my request and provided me with valuable information.
to Jannecke Arkesteijn - Mosterd the administrative and secretarial “Angel”
to Sofia Bobou for her professionalism and the quality of her editorial and translating work.
to architect Katerina Grigoropoulou, for taking care of the arduous work and being a lot more than a collaborator in moments of “crisis”
to my friends Alexandra, Faye, Irene and Paola for “being there”.

And last but certainly not least, gratitude to my Parents, architect and engineer themselves...

It was due to my mother that most of the essential data was collected, and thanks to my father that most technical issues were clarified.
ABSTRACT

"Creating the Creative Block". Towards a Design Tool for the Urban Regeneration, “Creating the Creative Block”

The decline and rebirth of urban centers is a recurring phenomenon in history. What is unique today is the scale, speed, and size of expense of the decline affecting most “hearts of the city” in both the developed and the developing world. The present study addresses this problem by developing a knowledge-based design tool for the regeneration of obsolete urban fabric. Although infrastructure and built fabric are interdependent as well as all blocks are interrelated, this research focused on the decline of the block and on the development of a new design Tool for Creating the Creative Block (CCB) per se, leaving on the side questions of transportation and interrelations between blocks.

As a point of departure the study assumed that:

1. The decline of city centers results from their inadequacy to accommodate new uses and from the adoption of uses for the center which while attractive in the short term in the long term turned out to be obsolete. Consequently, a design tool has to be developed to transform the city center into a sustainable environment enabling innovation and creativity and accommodating a way of life of a new urban population, the “symbolic workers” or “creative classes”.

2. The design tool should carry out this transformation to achieve maximal desirable renewal through minimal physical, social, and cultural disruption of the existing urban fabric, excluding the two extreme alternatives, total demolition and complete conservation.

In terms of methodology, given the complexity of the problem, the research applied the empirical case study approach at the exploratory, early stage of the development of the design tool. The chosen case was a typical apartment-house - “polykatoikia” - block in the city centre of Athens. The spatial organization of the block and the activities it contained were documented and analyzed as well as their function or dysfunction enabling “creativity”, “work” leading to innovation.

Subsequently, the spatial characteristics of the block were modified experimentally to explain their impact on functionalities and disfunctionalities relevant to the objective of “creativity”.

During the next stage of the study, the observations drawn from the above case were generalized into a model. To construct this model:

1. the MOP (Morphology, Operation, Performance) framework was adopted representing the urban situation in terms of three interdependent levels:
   i. Morphology: The spatial organization of the urban fabric
   ii. Operation: The pattern of activities, uses, and processes that take place within it, as constrained by performance
iii. Performance: The beneficial or detrimental output of the urban fabric, as constrained by morphology and operation.

The analysis helped understand obsolescence, renewal, and reinvention at a deeper level leading to a model. It identified conditions of building morphology constraining conditions of operation, in turn constraining performance. The selected performance criteria were (1) diversity of interaction within the block, (2) privacy, (3) security, (4) interactivity and (4) environmental quality.

The model was tested in a second case of an ideal block composed randomly out of typical Athenian apartment units. Design interventions transforming the topology, penetrability, and volume of the block were carried out.

The knowledge-based design tool derived from the above design model consists of design guidelines which can be implemented or interpreted according to the specific conditions of each specific design problem.

The building types employed in this test-case composing the ideal test-block were identified “generically”, that is, in reference to the technological, legal, and socioeconomic context within which they were brought about. The typology out of which the test case was composed resulted from a historical study of the Athenian building types as they emerged and evolved in time.

The study concludes with an evaluation of the limitations and potentials of the developed design tool.
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CHAPTER 1: INTRODUCTION

Background, Problem Statement, Methods, and Expected Outcome of the Research

In recent years city centers all over the world have been showing signs of decline. The concept of “decline” refers to cities that are not as healthy as they used to or should be, in economic, social, and physical terms.

Urban decline is not a new concept; it goes back to antiquity. In each case, urban decline may vary in quantitative and/or qualitative terms. Population decline, economic decline, cultural deficiency or built fabric deterioration may vary among declining urban centers. The causes of decline may vary as well.

In our days, urban decline has gained strong momentum. In some cases, decline comes with the abandonment of the old city center to create new centers elsewhere or suburbs. In other cases, decline can set the scene for further developments. Abandonment may give way to intervention with the aim to regenerate a city center. This depends upon:

a. the prime location of the old city center
b. investments already realized
c. the quality of architecture
d. symbolisms and/or emotional associations with a place and its structure

In urban regeneration efforts, among the data that are re-examined is land use. Old cities that declined as primarily commercial centers, e.g. Venice, New Orleans or Bruges, were regenerated once associated with cultural products that had to offer new types of cultural activity and tourism.

When the option chosen for a declining urban center is regeneration, there are three alternative strategies for its built environment and the uses it serves:

- Old structures are radically replaced by new ones to serve new uses
- Old structures are preserved completely, and new uses are introduced when and where this is possible
- Old structures are partly transformed to support new uses (“in-between”, third strategy)

This research looks into this third strategy. To this effect, current practices and references dictate that regeneration should have long-term viability, i.e., regeneration should be sustainable. Drawing from current urban studies, we have assumed here that the appropriate use for sustainable regeneration is to transform it into a creative city. What does “creative city” designate? A city described by the generation of knowledge.

To regenerate into a creative environment an urban center that is - or is believed to be - showing signs of decline requires an appropriate architecture and urban design device, i.e., a design tool. As far as we are aware of, no such design tool is currently
available. In addition, it is also clear that, if such tool were to be developed today, its nature should be based on well-grounded knowledge.

This research is focused on the very development of such a knowledge-based, specialized, design tool: a tool for Creating the Creative Block (CCB). To develop the tool, we have applied the case study method. In-depth analysis, generalization of case study evidence, current design and planning methods and ideas have led to the design of a model. Then, we have looked into a new, hypothetical case with the aim to: a. apply, b. test, and c. evaluate the model that we have designed.

We then go on to draw critical conclusions, and identify any limitations or extensions of this research and this model.

1.1. Brief Background: Decline and Regeneration Enabling Creativity of Urban Centers

1.1.1. Decline of Urban Centers

The term “urban decline” designates cities that are not as healthy as they used to or should be in economic, social, and physical terms.

According to Bradbury, Downs and Small (1981), urban decline has both descriptive and functional connotations. In its descriptive sense, it refers to any decrease in indices linked to population size or employment, among others. In its functional sense, it refers to changes that somehow impair how cities or other urban agglomerations function. Trends in indices linked to unemployment rate, per capita income, poverty evidence, crime rate, percentage of old housing stock, and tax effort, among others, are relevant to information about the nature of functional distress and decline.

Not all descriptive declines are functional declines as well. Cities may fall into functional, decline whilst growing in population. Relevant examples are identified in urban centers that have suddenly received a large number of refugees, which has resulted in physical destruction, among other consequences. By contrast, in overcrowded areas, a decrease in population may effect an improvement in economic strength and quality of life.

In any case, urban decline is most frequently measured in population loss, which constitutes the index that becomes evident more strongly.¹ This means that more people depart from a place than arrive to it.

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¹ As countries evolve, the concentration of population in their largest cities increases. Once it has reached a maximum level, often it begins to decline. Williamson (1965) and Hansen (1990) suggest that by spatially concentrating industrialization, economy relies on “economic infrastructure” and managerial resources. Concentration enhances knowledge spillovers in stages where the economy is “information-deficient”. According to their models, as countries evolve, de-concentration ensues for two reasons: first, the economy can afford to spread economic infrastructure and knowledge resources to hinterland areas, and; second, cities with initially high concentrations become over-congested and expensive for both producers and consumers.
Greece appears to be the first civilization ever to raise the question of urban planning from the point of view of size. Aristotle and Plato addressed the issue of city size in terms of its population. The former introduced the existence of minimum and maximum size. In Politics, VII, 4, 1326b, 10-25, he states on size treatment: “It is vital that citizens know one another.” He also places emphasis on security as a problem arising in oversized cities: “Foreigners and half-breeds usurp the rights of citizens without difficulty, because it is easy for them to escape notice, due to the size of the population.” In Laws, 74, Plato specifies at 54,000 the number of citizens in an ideal republic.

What we are interested in and will look into later on is the fact that to both philosophers the most important criterion by which to determine the size of cities pertains to the issue of communication: The city must remain sufficiently small to facilitate public meetings with all citizens present.

Decline in cities with large populations became extensive after WWII. In addition to newly established towns, there was an effort to regenerate the old urban fabric by strengthening tourism, cultural and commercial facilities, housing, services, offices, and new infrastructure.

1.1.2. The Importance of Knowledge Innovation and Creativity in Combined-Use Urban Regeneration

Cities are no longer locations for mass-production manufacturing, at least not in the developed world. They are places for state-of-the-art technology, R&D, and prototype production for creative and cultural industries of all kinds, from theatres and museums, to publishing and broadcasting, for tourism, for command and control functions in government and global corporations, and for specialized financial and business services (Hall 1998). Cities still specializing in traditional industries perform less well than cities with a more diverse economic base. They tend to have populations with inferior education, lower quality of life and housing stock, and often generate a poor image.

The question is whether there will be another Schumpeterian burst of innovation, possibly beginning right now, which can give rise to a new, long wave of economic growth based on new industries (Figure 1.1.).

![Figure 1.1. Innovation periods based on Schumpeter's Curves (Julia Lourenço & Tiziana Bardi 2005)](image-url)
Simmie (2002) states that innovative activity in some metropolitan and regional capital cities is highly concentrated. As a consequence, if a state is willing to adopt a policy to foster innovation (which is, in fact, integrally related to creativity), it has to implement it on a large city. Cities that already have such policies in place are called creative. More specifically, a creative city is a city that fulfils the necessary conditions in terms of “hard” and “soft” infrastructure to generate a flow of ideas and inventions. “Hard” infrastructure is the nexus of buildings and institutions, such as research institutes, educational establishments, cultural facilities, and other meeting places, as well as support services, such as transport, health, and amenities. “Soft” infrastructure is the system of associative structures and social networks, connections, and human interactions that underpin and encourages the flow of ideas between individuals and institutions.

According to Hall (2004), creativity is no longer an incidental miracle that happens occasionally in extremely fortunate cities. It has acquired a central role in the business of being a successful city. This is a principle that no city can afford to disregard, given that throughout history successful cities have been leading their policies largely by the standards of their day. This has turned them into magnets for immigration of talent, as well as generators of wealth that could help to employ that talent.

In this respect, cities or areas in cities that require - or will soon require - regeneration can attain it by taking into account the factors of innovation and creativity. Economic growth in knowledge-intensive sectors helps to reduce poverty: it creates new jobs in personal services, hotel and catering industries, and retail. These are sectors that often require human resources with low qualifications. From this perspective, many cities regard economic development policies as increasingly instrumental in reducing poverty and eliminating inequalities.

Having said that, creative cities may show weaknesses that may circumvent their success. On the one hand, they may be unstable, given that business cycles are less predictable, because they carry more uncertainty within their intrinsic novel nature. On the other hand, their direct personal and social interactions may become more flimsy, on account of the use of technological and external connections that challenge the concept of public space. Moreover, social exclusion may also ensue the emerging creative class.

Against this background, researchers may argue that cities could be going through some kind of basic, collective, self-critical state, where people feel uncomfortable.

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2 He reviews the local knowledge spillover hypothesis as an explanation for the geography of innovation, arguing that it offers only a partial explanation. The reasons for this are that: first, there are many city-regions with universities and industrial, R&D facilities, which, however, have yet to join the top-ranking cities as centers of innovation; second, innovation is not just driven by technology-push factors, but also by demand-pulls (often by clients based in other advanced countries).
and where a triangle of feelings, such as instability, discomfort, and tension, may trigger changes and stimulate creativity. Drawing on international experience, though, we have assumed that economic, social, and environmental sustainability lies in diverse uses of land, rather than uses usually offered in urban centers. As Hall and Pfeiffer (2000) suggest: “A city that prospers economically, but fails to distribute the wealth with some degree of equality, runs the clear risk that it will disintegrate into a civil war between the 'have's' and the 'have-not's', a war in which both sides are losers.” The challenge will be not simply to redistribute money from the rich to the poor, but rather to “reinstate them [the socially excluded] into the mainstream social fabric.”

To become stronger in the knowledge economy, cities should:

- Promote the generation of new knowledge. This refers either to scientific or to other types of knowledge.
- Promote the application of knowledge. This refers to transferring scientific/academic knowledge to businesses, and establishing working links between knowledge infrastructure and the business sector, in general.
- Attract knowledge workers. This refers to the cities’ abilities and efforts to attract and retain highly qualified human resources, students, as well as workers in creative industries.
- Develop new growth clusters. This refers to the cities’ abilities and efforts to attract and generate new economic activities, with the aim to broaden the economic base, or to increase the knowledge-intensity of the existing base.

We have focused on the latter two points. In this case, these points are interpreted within the physical environment as a built environment that:

a. appeals to knowledge workers
b. can foster the uses required in the new economic base, or can increase the knowledge-intensity of the existing base

In the face of the requirements that a knowledge-based economy sets out for the physical environment, city blocks, i.e., the cells of the urban fabric, need to be shaped to the new conditions of economy.

1.1.3. The Role of City Blocks in the Urban Regeneration Process

In traditional urban centers, various types of building spaces incorporate diverse functions that make for the combined-use city blocks. These city blocks have been “physical and functional foundations”, where a variety of urban activities take place. Over history, city blocks and their urban fabrics have undergone various physical, evolutionary and functional, transformations, in order to accommodate changing
economic needs, socio-cultural values, and infrastructure conditions. As a result, the current physical forms and function patterns of city blocks are viewed as the product of processes through which individual elements evolve in a way in which they relate with each other as a whole.

In the context of urban fabrics, these elements that relate with each other and as a whole are city blocks. In the context of city blocks, these elements are individual buildings. This research will look into the latter case of relations.

In this respect, we refer to sustainability to indicate those features and abilities of city blocks that provide spaces, i.e., creative milieux with physical adaptability and functional flexibility to accommodate people’s activities, whilst maintaining the wealth of their socio-cultural contexts, and promoting innovation and creativity.

1.2. The Need for a Tool. Towards Creating the Creative Block (CCB)

So far, experience has been lacking a tool that could target the physical environment at the scale of city blocks and their elementary building components, with the aim to transform them into physically adaptable and functionally flexible spaces that could accommodate innovative and creative activities, while acknowledging and preserving their assets.

This study seeks to develop such a knowledge-based design tool to address the problem of regenerating obsolete urban fabrics. This tool is designed to appreciate the need for regeneration in urban centers. It examines city blocks to determine their requirements in physical environment, so that they can meet the needs identified.

In addition, this tool is designed to explain city block regeneration and its physical, behavioral, and social characteristics to the parties involved, e.g., designers and urban planners, developers, institutions, and city authorities. On the basis of this understanding, the tool draws up a set of guidelines, which could be implemented to direct the physical transformation of city blocks into physically adaptable and functionally flexible spaces that could accommodate innovative and creative activities, while acknowledging and preserving their assets.

The design tool is based on the assumptions that:

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4 Creative milieu is a physical setting where a critical mass of entrepreneurs, intellectuals, social activists, artists, administrators, power brokers or students can operate within an open-minded, cosmopolitan context, and where face-to-face interactions create new ideas, artefacts, products, services and institutions, thereby contributing to economic success.
• It is developed to transform city centers into sustainable environments that enable innovation and creativity, and accommodate the way of life of a new urban population: the “symbolic workers” or “creative classes”.
• It carries out this transformation by achieving maximal desirable renewal, through minimal physical, social, and cultural disruption of the existing urban fabric, excluding the two extreme alternatives: total demolition and complete conservation.

Therefore, this research is expected to provide:

a. A better understanding of urban regeneration in city centers. Understanding which intervention method to apply to the physical environment, and how to select appropriate land uses, instead of focusing on idealized models, or models of success from other urban regeneration cases.

b. A model that identifies, in a “generic” way, the conditions of building morphology that constrain the conditions of operation that, in turn, constrain performance.

c. A knowledge-based design tool, which consists of design guidelines that can be implemented and interpreted according to the specific conditions of each specific design problem.

d. A set of knowledge guidelines on design actions, based on heuristics and biases that can be followed from the parties involved in the urban regeneration of city centers.

1.3. Methods Used to Develop the Tool

In view of the newness and complexity of the problem, and since existing models or theories cannot provide an adequate solution, we have applied the empirical “case study” approach in the exploratory, early stages of developing the design tool.

Case study approach is the proffered strategy when “why” and “how” questions are posed; when the investigator has little control over events, and; when the focus is on a contemporary phenomenon within some real life context (Yin 1988). The method of the case study is recognized as the means to identify a class of phenomena through an in-depth examination of particular instances. It can also provide experience or add strength to what is already known through previous research. Jacobs (1961) used the method of case study successfully to generalize theory in urban planning, while analyzing great American cities.

A central area of modern Athens, Kolonaki, is chosen as a case study. It is defined by the proliferation of high-density apartment buildings (poly-katoikia = multi-residence). This building type was a construction-wise simple, cost efficient, and
permanent pragmatic response to the need for both privately owned housing and other diverse uses. Today, it has reached the limit of its development potential, as far as its typology is concerned, and its current physical organization cannot accommodate new value adding uses. Once envisioned as the “hope for modernization” from all parties involved, it has now become the symbol to its own “dead end”, turning the Greek capital city into a “polis-katoikia” (city-residence).

In general, we have selected the area of Kolonaki for a case study on account of its critical condition today, as well as its future potential. More specifically, our choice was informed by:

- the Greek state's plans to foster innovation supported by the European Union
- the tendency of decline regarding the built environment of the area
- the not so satisfactory living conditions in apartment buildings, compared to the modern standards required
- the slowdown in land values, by contrast to other rapidly developing areas in Athens
- the area's deficient in social amenities
- the poor environmental conditions

We selected City Block No. 3911 as the cell to represent the Athens urban fabric on account of its:

- context and content
- typicality
- convenience for the researcher

We collected data on City Block No. 3911 by means of: a questionnaire for and interviews with residents, visitors and people working in the city block, designs and documents from the Town Planning Office, as well as architectural and construction documents. Last but not least, we conducted research to provide additional, original documentation for the purposes of the present study.

The descriptive analysis of City Block No. 3911 is conducted at three levels of scale:

- City block
- Apartment Building
- Apartment Unit

The spatial organization of the block and the activities it contained have been documented and analyzed, as well as their function or dysfunction enabling “creativity”, “work” leading to innovation. This includes:

a. A description of morphological and physical features
b. References to how users use and fill the space
c. A record of users' views and how they evaluate the current situation

In line with the aforementioned three steps, we adopted the MOP (Morphology, Operation, Performance) framework developed by Tzonis (1992) and applied
extensively in the development of the design tool. The framework represents the
urban situation, in terms of three interdependent levels:

a. Morphology: The spatial organization of the urban fabric
b. Operation: The pattern of activities, uses, and processes that take place
   within it, as constrained by performance
c. Performance: The beneficial or detrimental output of the urban fabric, as
   constrained by morphology and operation

To extend the use of the experience drawn by the case study to other cases, it is
necessary to design a generalized model, and then develop a knowledge-based design
tool for sustainable regeneration enabling innovation and creativity. Moving from the
knowledge of a specific city block sample into generalized knowledge on city blocks
is achieved by indicating the generic conditions of each time period that have driven
to a certain type of apartment building.

To identify these generic conditions, we have described the evolution of apartment
buildings and their phases. Descriptions are documented by current references and
backed by our own findings. They are organized into the following three generic
categories:

- Introduction of new technologies
- Introduction of new legislation related to ownership/property and building
  regulations
- Emergence of new socio-cultural and economic realities

Having analyzed and summarized the types of apartment building as generic
developments of city blocks over time, we have developed a new design tool to
regenerate any type of urban fabric into a creative environment by transforming the
city block. Employing the conceptual framework of “Morphology-Operation-
Performance”, we have developed the following chain of inference:

**Step 1:** To examine how the types of apartment building within City Block No.
3911 reflect their operation

**Step 2:** To lay down architectural design guidelines that will set out the
necessary physical conditions to develop creativity

**Step 3:** To estimate the effect that these design guidelines may have on the
way users/residents employ them, when applied to the physical
environment, and also to establish whether the newly created
conditions meet the creativity criteria.

The model is tested in a second case, i.e., that of an ideal block, randomly made up
of typical Athens apartment units. Instead of carrying out this test on a hypothetical
city block, other existing city blocks could have been selected, on which to test the
tool. This option was dismissed, on the basis that what needed to be certified was
whether the production unit of the city block, i.e., the collective apartment unit,
could induce “behaviors” other than those of City Block No. 3911, when operating
appropriately.
We carried out design interventions transforming the topology, penetrability, and volume of the block. Testing the tool on City Block No. 3911 has helped to ascertain potential modifications.

Fig.1.2. - Summary of tool development
1.4. Research Outline

The following table outlines the main sections of the research.

<table>
<thead>
<tr>
<th>Chapter Title</th>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
<td>The decline of urban centers in both the developed and the developing worlds. The need for a knowledge-based design tool for the regeneration of obsolete urban fabric.</td>
</tr>
<tr>
<td>The Decline and Sustainable Regeneration of the Urban Center: Towards a Creative City</td>
<td>2</td>
<td>International experience of regenerated urban centers. Evaluating decisions in terms of intervention on the built environment and land uses. Criteria for the tool that transforms the urban center into a sustainable environment that enables innovation and creativity.</td>
</tr>
<tr>
<td>Case Study: City Block No. 3911 in Kolonaki, Athens, Greece</td>
<td>3</td>
<td>The chosen case is a typical city block with apartment buildings - “polykatoikies” - in the city center of Athens. The spatial organization of the block and the activities contained are documented and analyzed, as well as their function or dysfunction enabling “creativity”, “work” leading to innovation.</td>
</tr>
<tr>
<td>Towards a Model: City Block No. 3911 over Time</td>
<td>4</td>
<td>The building types in the Athens urban fabric are identified “generically”, i.e., with reference to the technological, legal, and socio-economic context within which they were brought about. The MOP (Morphology, Operation, Performance) framework was adopted to represent the urban context, in order to construct a generalized model.</td>
</tr>
<tr>
<td>From a Model to a New Knowledge-Based Tool for the Creative City Block: Creating the Creative Block (CCB)</td>
<td>5</td>
<td>The knowledge-based design tool derives from the design model, and consists of design guidelines that can be implemented as interpreted according to the specific conditions of each specific design problem.</td>
</tr>
<tr>
<td>Testing the Tool</td>
<td>6</td>
<td>Testing the model on a hypothetical city block, randomly made up of typical Athenian apartment units. Performing design interventions to transform the topology, penetrability, and volume of the block.</td>
</tr>
<tr>
<td>Conclusions</td>
<td>7</td>
<td>Discussion on the applicability, limitations and potential of the developed design tool. Further research into the subject in the future.</td>
</tr>
</tbody>
</table>
«CREATING THE CREATIVE BLOCK» TOWARDS A DESIGN TOOL FOR URBAN REGENERATION

2.
In Chapter 1 we identified the problem of inner-city centers; we defined the scope of this research, which is to develop a knowledge-based design tool for Creating the Creative Block (CCB); and we outlined the methodology that has been applied to this effect. This knowledge-based design tool is to be applied to alter the way land is used in inner city urban centers to enable creativity and subsequently regenerate them.

In this chapter, we first define the terms “decline” and “regeneration” and we outline the processes that take place. We then give a brief history and global overview of urban regeneration policies. Following that we discuss from literature the types of urban regeneration interventions and planning strategies attempted recently; and we examine cases where they were implemented. We look into these cases in the light of the objective of achieving regeneration by transforming the declining city into a “creative city”. Extrapolating from these observations, we delineate a method of urban design intervention which can bring about long term, sustainable regeneration.

2.1. Decline and Regeneration in Cities

2.1.1. Definitions

The term “decline” in urban development designates undesirable changes, such as unemployment, social exclusion, physical decay, and poorer living conditions (Medhurst and Lewis 1969). Since the 1960s, many European towns and cities have encountered long-term decline “characterized by population and employment loss with a net out-migration of population, firms, and activities. Linked to these two major factors has been physical and social decline” (Noon 2000). Different reasons inflect urban decline and development, and no single cause can account for all urban problems. However, this research emphasizes the negative demographic and social trends, and the underlying role of economic factors, in particular (Robson 1988; Hay 1989; Roberts 2000; etc).

Policies and strategies designed to deal with urban decline are termed “urban regeneration”. The word “regeneration” itself is understood as reforming something, providing it with new strength or life, restoring its lost qualities and, eventually, leading it back to growth. Urban regeneration can be defined as a “comprehensive and integrated vision and action which leads to the resolution of urban problems, and which seeks to bring about a lasting improvement in the economic, physical, social, and environmental condition of an area that has been subject to change” (Roberts 2000). It is as a conscious, systematized, and planned protection and preservation of certain structures, sections, or towns, in their entirety, with the aim to ensure their future viability.

Urban regeneration is a normative concept implying that all approaches “should be
constructed with a longer-term, more strategic purpose in mind” (Roberts 2000). In this respect, it goes beyond urban renewal (a process of essentially physical change), urban development (general mission), and urban revitalization (no precise method of approach) (Lang 2005).

2.1.2. Issues that Lead to Regeneration and Regeneration Aims

Urban regeneration refers to those sections of the city where the population may be faced with various issues attributed to decline. These issues may concern urban space that is derelict, threatened, physically degraded, damaged, obsolete, or even destroyed from development activities, causing inconsistencies between the services that the urban space and fabric have to offer and contemporary needs. Areas in decline are described by buildings in poor condition, outdated sanitary facilities, insufficient parking spaces, uses (activities) shifting towards other districts of the city, narrow roads, allocation of buildings for other purposes, changes in ownership patterns, changes in social makeup, diminished appeal, extensive incompatibility in uses, increasing vacancy rate, as well as symptoms of deterioration and decay.

Decline is caused by obsolescence. Obsolescence stems from a failure to meet needs, when: a. the means that used to meet these needs no longer exist, and/or b. new needs have emerged. Obsolescence may take the following forms:

A. Physical and Environmental Obsolescence

Physical Obsolescence of the built environment may ensue as the consequence of time, weather, earthquakes, poor design, low quality construction, poor maintenance, etc. This means that buildings may lose their structural and technological capacity and performance, and urban space infrastructure may become deteriorated and outdated. Environmental obsolescence may ensue as the consequence of traffic, noise, smell, and air pollution.

B. Functional Obsolescence

Functional obsolescence of an area or a building could also provide the grounds for intervention. Buildings may be unable to host competitive land uses, or service new densities and functions. The morphology of an area, organic fabrics with narrow streets, building types or urban façades may create unfavorable conditions and decrease the appeal of the area in question.

C. Economic Obsolescence

Economic obsolescence, potentially deriving from the area’s low levels of competitiveness in the market and in the productive sector, may point to other forms of obsolescence, causing an area to degrade, and dictating the need for regeneration.

In view of the aforementioned needs, urban regeneration aims at re-achieving economic growth, through those activities where it has been lost; restoring social functions, where there has been dysfunction; re-warranting social inclusion, where there has been exclusion, and; reclaiming environmental quality or re-establishing ecological balance, where these have been lost (Couch, Fraser, and Percy 2003). It aims at “providing cities with functions required to contribute to the emergence of new images,” and at creating or increasing the appeal of the area in question, in order to stimulate economic revitalization. It seeks to promote social interaction in public spaces and meet people’s social needs, preserve cultural heritage, promote an area’s aesthetic character, maintain its particular visual quality, and establish sustainable and effective uses.

Instead of developing new urbanization, it implements policies in existing areas. It aims at building upon the triangle of sustainability, with its commitment to economic, social, and environmental problems and developments (Lang 2005).

Therefore, in the context of this research, urban regeneration has to address issues that concern the built environment and the uses and functions it serves, enhancing its underlying economic context, while conserving the physical environment and meeting people’s social needs.

2.2. Brief History and Global Overview of Urban Regeneration Policies

Urban regeneration is not a new concept. It has existed ever since humans first built permanent settlements. The regeneration of Paris by Haussmann is thought to be the first large-scale urban regeneration project ever implemented. However, it was not until the late nineteenth and early twentieth centuries that relatively coordinated efforts on the part of local governments, reform groups, and business interests arose with the intent to eliminate the physical manifestation of urban decline (Holcomb and Beauregard 1981).

In the United States major efforts have been made to counteract the decay of urban neighborhoods since the mid-nineteenth century. The first urban regeneration efforts emerged as a response to the environmental degradation, brought about the conjunction of urbanization and industrialization (Holcomb and Beauregard 1981). Emphasis was placed on the transformation of urban centers through the creation of urban parks and the construction of monumental public buildings. In the 1930s attention was shifted to the clearance of slums and blighted areas and the construction of low-income housing in the form of multi-storied apartment complexes (Nelson 1988).

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3 Ibid., 35
4 Reference to source bibliography.
5 American Park Movement and City Beautiful Movement.
The first comprehensive move of the federal government towards urban regeneration was the Housing Act of 1949 (Colborn 1963). It was aimed at eliminating slums and blighted conditions by demolishing old buildings and constructing new ones in their stead (Nelson 1988). It had three main elements (Colborn 1963):

• Slum prevention through neighborhood conservation and housing code enforcement
• Rehabilitation of structure and neighborhoods
• Clearance and redevelopment of structures and neighborhoods

Its application lead to the destruction of the homes and neighborhoods of the poor and immigrants, to the displacement of small businesses, and to the demolition of inhabitable housing; hence, it was strongly criticized.6 In addition, it channeled too many investments to enhance central business districts, and not enough to foster positive actions and social concerns (Holcomb and Beauregard 1981). The program was revised in 1954 to generate profit. The 1949 and 1954 Housing Acts made federal funds available to local redevelopment authorities with the aim to designate areas as “blighted”, acquire and clear land, and then sell the land to private developers (Gotham 2000, 2001a). In the process, however, city governments and federal monies supported private efforts to build new upscale urban housing, thereby allowing a new urban “gentry” to move into areas previously dominated by the poor and the working class.

The 1960s gradually acknowledged that a. spreading suburbanization might exacerbate city, and; b. improving urban conditions required more that physical renewal (Nelson 1988). In 1966 the Model Cities program was launched. It aimed at providing housing through physical rebuilding, and paid greater attention to social renewal (Holcomb and Beauregard 1981).

Urban revitalization emerged in the 1970s as the dominant approach to urban regeneration. It limited displacement and disruption of communities by emphasizing neighborhood preservation and housing rehabilitation (Holcomb and Beauregard 1981). In the 1980s public-private partnerships and market-centered subsidies' financed gentrification (Squires 1989). Two significant features marked this era. The first was the integration of gentrification with new “cultural strategies” of economic redevelopment, including new investments in museums, art galleries, and historical preservation (Zukin 1997, 1995). A second was the increasing enmeshment of gentrification into global systems of real estate and banking finance.

Since the recession in the early 1990s, forming new alliances between private developers and local government, “reinventing” public institutions, and “restructuring” the gentrification process itself have been identified (Wyly and Hammel 1998, 2004; Wyly 2002).

6 It earned the reputation of “bulldozer approach”.
7 Such as tax abatements and tax increment financing (TIFs).
In Europe, according to Grebler, the need to modernize old city centers initiated during the industrial revolution emerged later than in the United States (Grebler 1964). However, unlike in the United States, urban regeneration in European countries sometimes proceeded without the benefit of national programs specifically designed to assist in this process (Grebler 1964).

The most extensive process of urban renewal in history compressed into a single regeneration is the regeneration of war-damaged cities all over Europe in the 1920s (Grebler 1964). Earlier on, the first example of state involvement in urban regeneration was in the mid-nineteenth century in Britain with the clearance of slums to eliminate the unsanitary living conditions of the working classes (Couch 1990).

After World War II, losses sustained during the war triggered an increased consciousness of the historic continuum embodied in the urban scene of previous eras, and growing attention was given to preserving and rehabilitating historic towns and city sections (Grebler 1964). Roberts (2000) describes the emphasis on repairing the damages and eradicating physical problems of the past as Reconstruction (of post-war Britain). As early as 1954, preservation and rehabilitation became fully accepted parts of urban renewal programs in Europe, long before they were in the United States (Grebler 1964). By the end of the 1960s, the revitalization policy continued the old policy, but with a growing influence of private investments, and the introduction of a regional level in activities. Most renewal policies began to totally discard large-scale slum clearance, and programs were reoriented towards rehabilitation and area improvement (Couch 1990).

In the 1970s and 1980s, renewal focused on particular areas, and could not stop developments in the periphery (Parkinson, Foley, and Judd 1988).

The 1990s recognized that the traditional (physical) focus on finance, enterprise, housing, and commercial development were not enough, and that intervention had to be “an integration of the economic, social, and environmental aspects in a comprehensive approach.”

In Asia, countries such as Hong Kong and Singapore also elaborated on regeneration programs, which evolved from large slum clearance schemes to inner city renewal programs, and public housing estate redevelopments managed by public-private partnerships.

The first public intervention into urban renewal in Hong Kong was in 1954, with a large-scale slum clearance scheme following the disastrous fire in North Kowloon that left 53,000 people homeless (Castells et al. 1990). A vast redevelopment program for the resettlement estates built in the 1950s to re-house squatters was introduced in 1972 (Williams 1979). Modern schools and recreation facilities were constructed. A new approach, i.e., redeveloping in-city dilapidated properties in old inner-city districts, was introduced in 1974. A public-private partnership in carrying out comprehensive redevelopment was promoted in 1987. The purpose was (Hong Kong Housing Authority HKHA 1988):

- to speed up private sector redevelopment
- to encourage the participation of land owners
to improve the quality and economic benefit of development by assembling larger cities
• to the ensure equitable treatment of tenants
• to minimize government subsidies

In Singapore, urban renewal programs were initiated in the early 1960s. They consisted of systematic, large-scale slum clearance and urban redevelopment of inner-city areas. The Urban Renewal Program for the Central China Town was launched in 1964, targeting foreign consultants (Lim 1983). The Program resulted in redeveloping all colonial neighborhoods and relocating all original residents and businesses. The policy that no building can be demolished before allocating alternative accommodation to its residents greatly reduced the trauma of resettlement (Siew-Eng 1989). Since then, considerable emphasis has been placed upon upgrading the physical environment of old inner-city neighborhoods (Castells et al. 1990).

In developing countries, the process of urban regeneration is relatively new. Efforts are generally concentrated on solving the problems of urban slums, upon which resides the largest part of the urban population, and which are considered the fastest growing portion of Third World cities (Hardoy and Satterhwaite 1995). Before the 1980s, the main approach to urban regeneration in developing countries had the form of squatter eradication and relocation of the population to low-cost housing projects (Laquian 1984).

In the 1970s, a series of unconventional strategies, such as slum and squatter upgrading of sites and services, began to replace the previous clearance policies (Schmit-Kallert 1990). Community upgrading appeared as a way to improve living conditions in informal settlements (Laquian 1984).

In the 1980s, many developing countries adopted an official policy of slum upgrading, realizing the potential for existing squatter settlements to be viable communities (Van Nostrand 1982). Basic services were introduced at the sites, and house improvement works were undertaken by the residents themselves (Laquian 1984). Today, although clearance is still commonly used, upgrading is still the most sensible approach to resolving the problems of informal settlements in urban areas.

Urban regeneration is currently oriented towards urban governance. For Smith (2002), the impulse behind gentrification is a global and generalized process. As a “global urban strategy”, gentrification is now “densely connected into the circuits of global capital and cultural circulation” (Smith 2002, 80). Whatever the differences in emphasis and interpretation, common to gentrification analyses is a focus on new mechanisms of commercial reinvestment, new public subsidies for private investment, and a greater interconnectedness of local and global forces.

As differentiation to the traditional mode of government, urban governance "refers to the development of governing styles in which boundaries between and within the public and private sectors are blurred" (Stocker 1998). Urban governance can be seen as an "attempt to manage and regulate difference and to be creative in urban arenas which are themselves experiencing considerable change (Kearns and Paddison 2000) policy."
As a conclusion we observe that the evolution of policies regarding urban renewal in both developing and developed countries has followed a similar pattern: from a demolition-reconstruction approach to socially-oriented approach, and recently to an approach to manage and regulate differences, and to be creative in urban areas experiencing change.

Table 2.1. Urban regeneration highlights in developed countries in Europe, the United States, and Asia after WWII Developed by Alkistis Rodi

<table>
<thead>
<tr>
<th>Decade</th>
<th>Europe (UK)</th>
<th>USA</th>
<th>Asia (Hong Kong, Singapore)</th>
<th>Developing countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>Emphasis on repairing the damages of WWII and eradicating the physical problems of the past (Reconstruction)</td>
<td>Slum prevention through neighborhood conservation and housing code enforcement. Rehabilitation of structures and neighborhoods.</td>
<td>Large-scale slum clearance in Hong Kong.</td>
<td>Squatter eradication and relocation of population to low-cost housing projects</td>
</tr>
<tr>
<td>1960</td>
<td>Revitalization policy that continued the old policy, but with the growing influence of private investment and the introduction of a regional level in activities.</td>
<td>Provision of housing through physical rebuilding and greater attention to social renewal.</td>
<td>In Hong Kong a vast redevelopment program of resettlement estates was introduced. Redevelopment of dilapidated properties in old inner-city districts. In Singapore, urban renewal programs consisted of systematic large-scale slum clearance and urban redevelopment of inner-city areas. Urban Renewal Program for the Central China Town.</td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>In the UK, renewal focused on particular areas and could not stop developments at the periphery.</td>
<td>Urban revitalization limited displacement and disruption of communities. Emphasis on neighborhood preservation and housing rehabilitation.</td>
<td>In Singapore emphasis is placed upon upgrading the physical environment of old inner-city neighborhoods.</td>
<td>A series of unconventional strategies began to replace the previous clearance policies</td>
</tr>
<tr>
<td>1980</td>
<td>Relied in private market mechanisms, rather than on public intervention, to revitalize its cities and urban areas</td>
<td>Gentrification financed by public-private partnerships. Integration of gentrification with new &quot;cultural strategies&quot; of economic redevelopment. Enmeshment of gentrification into global systems of real estate and banking finance.</td>
<td></td>
<td>Efforts focused on solving the problems of urban slums. Basic services were introduced at the sites, and residents themselves undertook house improvement works. Clearance is still commonly used</td>
</tr>
<tr>
<td>1990</td>
<td>Acknowledgement that the traditional focus of finance, enterprise, housing, and commercial development were insufficient, and that interventions had to be &quot;an integration of the economic, social, and environmental aspects in a comprehensive approach.&quot;</td>
<td>Formation of new alliances between private developers and local government, a &quot;reinvention&quot; of public institutions, and a &quot;restructuring&quot; of the gentrification process itself</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Focus on new mechanisms of commercial reinvestment, new public subsidies for private investment, and a greater interconnectedness of local and global forces.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.3. Types of Urban Regeneration

According to the above, the regeneration of an area may have diverse goals, aimed at improving or using the built environment, changing its uses, and providing its users with living conditions of high quality. In this respect, each case is defined by different terms. These terms fall into three categories (in French):

- Terms with reference to building envelopes: Rénovation Urbaine, Renouvellement Urbaine, Réaménagement, Remodelage, Reconstitution, Restructuration, Reconstruction, Restauration, Réfection, Ravalement, Sauvegarde, Protection, Anastylose, Curetage, Amélioration, Embellissement
- Terms with reference to redefining uses (the need to create new uses or refine old uses): Réimplantation, Réadaptation, Réutilisation, Réaffectation, Reconversion, Assainissement
- Terms with reference to reusing spaces: Reconquête, Réhabilitation, Revitalisation, Récupération, Réanimation, Rédéveloppement, Modernisation

Depending on the criteria applied in each case, urban intervention falls into different regeneration categories:

Degree of intervention refers to the following options:
- Radical, comprehensive intervention, where old buildings are demolished and new are built. In this case, there is complete contempt.
- Preservation of the existing building shell
- Restricted, combined intervention in part of the building shell, while the rest is preserved and utilized

Scale of intervention refers to the following options:
- Small-scale regeneration. This may refer from buildings to city blocks, with the aim to both regenerate buildings and integrate spaces in the city block and connect them to neighboring open spaces, public or private. As a rule, this case involves no demolitions.
- Medium-scale regeneration. Interventions are extended into public spaces, creating pedestrian areas, parks, parking spaces, etc.
- Large-scale regeneration. In addition to the above, this case includes interventions or land appropriations per city block, or even complete re-allotment of urban land.

Addressing the existing building shell refers to the following options:
- Complete contempt. This case shows complete contempt for the existing character, constructing buildings that are alien to or unaffected by the existing morphology.
- Complete imitation. This case fully imitates traditional forms, using, however, modern materials and techniques. It is mainly used in restoration or regeneration, with the aim to preserve historical centers or traditional settlements.
- Tolerance. This case does not show complete contempt for the character of old buildings, but it is not interested in it either. The attributes of new buildings
(volume, materials, coloring, etc.) are not offensive to their historical milieux.

- **Creative integration.** This case generates new forms, after having identified what generated the historical shells and those emerging from modern data.

Change of land uses refers to the following options:

- Maintaining the original uses
- Selectively extending or restricting the existing uses
- Changing the original uses

Regeneration facility refers to the following options:

- Regeneration by specific facilities with general scopes
- Regeneration by facilities specifically set up for the intervention in question
- Regeneration by public or private sector facilities working together
- Compulsory regeneration on the grounds of administrative decisions and commitments with regard to an area
- Voluntary regeneration prompted solely by individual or private initiatives endorsed by the inhabitants of an area

In urban regeneration projects a choice needs to be made out of the options provided in each case mentioned above. This applies to this research as well.

### 2.4. Urban Regeneration Options for this Research

Along the lines of every regeneration project, we have to make a choice among the available options. As has been established in Chapter 1, the aim is to regenerate a high-density urban tissue in a sustainable manner that enables innovation and creativity, while preserving those attributes of the built environment that are worth preserving. This requires decision-making.

With reference to the intervention facility, historical evidence points to the assumption that both private and public sectors should take part. Furthermore, citizens should take part in the design and, if possible, in the funding.

With reference to the scale of intervention, we have opted for a small-scale intervention that involves the building block and the buildings that it is comprised of. This scale is considered more appropriate for high-density tissues, both in cost-efficiency and social terms.

With reference to addressing the existing built fabric, we have opted for tolerance. Without showing complete contempt for the character of old buildings, we are not restricted by it. The morphology of new or transformed buildings is not offensive to the built environment or the historical consistency of the urban façade.

With reference to the degree of intervention and whether to maintain or not the original uses, we will make no choice at this point. First, we will examine more closely cases where urban regeneration has been applied. Against this background, we will make and justify our choice, as shown further on.
### Table 2.2: Options in Urban Regeneration Attributes for this Research

<table>
<thead>
<tr>
<th>Types of Urban Regeneration</th>
<th>Addressing Building Envelopes</th>
<th>Scale of Intervention</th>
<th>Change of Land Uses</th>
<th>Degree of Intervention</th>
<th>Regeneration Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Regeneration Type Used in This Research</td>
<td>Tolerance</td>
<td>Small-scale: City block and its buildings</td>
<td>?</td>
<td>?</td>
<td>Public and private sector facilities</td>
</tr>
</tbody>
</table>

2.5. Using cases of Urban Regeneration and Existing Theories

To choose the best suitable, urban regeneration approach related to this study, we rely on knowledge derived from consolidated experiences and existing theories. Examples are used in order to:

- appreciate the degree of: a. intervention, and b. preservation of urban uses
- deduce adequacy criteria applicable to the urban regeneration process

#### 2.5.1. The "Use-Intervention" Matrix

Abandoned, derelict, deteriorated, and obsolete parts of urban fabric can be revitalized in two ways: physical revitalization and economic revitalization.

Physical revitalization can take three forms: demolition (in redevelopment), refurbishment (in rehabilitation), and conversion (in integration).

From the point of view of physical revitalization, the potential approaches to neighborhood regeneration can be identified as: redevelopment, wherein a neighborhood is rebuilt anew; rehabilitation, wherein the existing structures are preserved and upgraded; and integration, a combination of the first two approaches. Each approach can involve re-housing the population on the original site, or relocating the population to another part of the city. The three different approaches are presented here in more detail.

**A. Redevelopment:** removing existing buildings and re-using cleared land to implement new projects (Miller 1959). This approach is applicable to areas where a. buildings are seriously deteriorated and have no preservation value; or, b. building arrangements are such that the area cannot provide satisfactory living conditions (Miller 1959). In such cases, demolition and reconstruction, either of whole blocks or of small sections, is often thought to be the only solution to ensure future comfort and safety for the residents.

**B. Rehabilitation:** the opposite of redevelopment, often termed preservation or conservation. It is based on preserving, repairing, and restoring the natural and man-made environment of existing neighborhoods. Rehabilitation is applicable to areas where buildings are generally in structurally sound condition, but have deteriorated on account of neglect (Miller 1959). It takes advantage of the existing housing stock as a valuable resource, and adapts old houses to modern life and acceptable standards by providing modern facilities (Zhu Zixuan 1989).
C. Integration: regards rehabilitation and redevelopment as complementary forces, and combines the best assets of both these approaches. It rehabilitates what can be saved realistically, and also reconstructs new buildings in the place of those beyond feasible rehabilitation (Yu Qingkang 1988).

There is no doubt that a merely physical revitalization cannot provide a sustained, long-lasting change if the area concerned has to compete with the rest of the city of which it is a part. Therefore, economic revitalization is a prerequisite of urban regeneration.

A significant factor for the economic status of an area lies in its uses. In this regard, urban regeneration can take the following forms:

A. Functional restructuring: creating new uses or replacing former uses.

B. Functional diversification: introducing new urban uses while retaining the existing uses to some extent.

C. Functional regeneration: retaining the existing uses, while taking measures to operate them more efficiently or profitably.

All of three types of revitalization are certainly complementary to each other and interdependent.

With the above in mind, we have constructed the following matrix to help this research decide on the “desired” approach to the regeneration of urban areas:

<table>
<thead>
<tr>
<th>Use Intervention</th>
<th>A. Existing uses (Functional regeneration)</th>
<th>B. Existing and new uses (Functional diversification)</th>
<th>C. New uses (Functional restructuring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demolition (Redevelopment)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Conversion (Integration)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Refurbishment (Rehabilitation)</td>
<td></td>
<td></td>
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</table>

2.5.2. Urban Regeneration Projects

To decide in which of the matrix cells our urban regeneration model is classified, first we have to look into the approaches that have already been developed.

Urban history is full of examples of more or less large-scale urban regeneration projects following natural disasters and entropic degradation, or, alternatively, large urban gestures ordained in a quest for prestige or city beautification. In the context of this research, we are only interested in projects related to urban areas with high densities or historic quarters of cities where the lines between private and public realms are not relocated.

In examining each example, we classify it in the matrix with the aim to comprehend which combination(s) are most successful in terms of urban regeneration.
Zup Perseigne, Alençon, France

Description: Zup Perseigne is a mega-residential, moderate-income project constructed using industrialized techniques. Within the first year of completion, however, 15% of constructed units were malfunctioning, and reconstruction was already necessary. Instead of operating on a preconceived plan, the Atelier D’urbanisme, D’architecture et D’informatique Lucien Kroll decided to rehabilitate the project in accordance with what its residents considered to be problematic. They inserted new units, and planted trees, created paths, and added urban furniture to improve the landscape. They changed the layout of the floor plans to expand the unit sizes of the existing buildings.

Evaluation: Overall, this intervention is considered positive; it has respected local, as opposed to generic, constraints; it has restored social life, having taken into account prior patterns of human relations.

Pruitt-Igoe in St Louis, Missouri, USA

Description: Pruitt-Igoe was designed in 1951 by architect Minoru Yamasaki. It consists of 33 eleven-storey buildings with 2,700 apartments in total on a site that covers one-tenth of a square mile.

Prior to the project’s construction, the land was an extremely poor section in St Louis. The project was commissioned as part of the post-WWII federal housing program, in an attempt to attract people back to the city. Although the project was a prototype of government-sponsored, low-income housing construction, residents experienced problems immediately after it opened. Many of the architectural design elements of Pruitt-Igoe, such as its galleries and “skip-stop” elevators, turned out to be inconvenient, at best, and facilitators of crime, at worst. Within five years of operation, occupancy rates declined, despite the project’s subsidized rent status.

Evaluation: Pruitt-Igoe is often used as an example of the failure of American public housing and urban renewal. Along with the failure of Pruitt Igoe came the realization...
that modernist architecture and government intervention in public housing required reexamination.\(^\text{16}\)

This example illustrates how poor design can have the exactly opposite effect of what urban regeneration seeks to achieve. It can instigate obsolescence, in terms of both the physical environment and its uses.

**Plaka, Athens, Greece**

Description: A series of radical reforms to protect and regenerate the historic district of Plaka\(^\text{17}\) led to the complete transformation of the area. In a relatively short period of time, the area's bars were closed; streets were pedestrianized; neon signs were taken down, and; houses began to be restored, initially by the government, and gradually by the new residents who came to populate the area.

Evaluation: The migration of new residents into the area in question classifies this example under the category of urban regeneration through residentiality. Old and new residents have merged to evolve into a new urban fabric. Reforms have helped to address problems, such as crime and noise nuisance, but land prices have risen considerably, leading to social exclusion. This is a critical point in time in the evolution of the district, given that the pressure is rising, and few of the necessary measures are being taken.\(^\text{18}\)

**Historic Cairo, Egypt**

Description: Medieval Cairo has the highest concentration of medieval monuments in the world. Its historic zone remains a key production area to date. Therefore, its monuments alone form only an infinitesimal part of the social fabric of the traditional city. FEDA wanted to upgrade and reactivate the vast derelict inner space of the wekalat,\(^\text{19}\) and use it to ease population pressures and pollution volumes in neighboring zones.\(^\text{20}\) The aim was not to so much improve individual buildings, but rather to enhance the quality of life by introducing environmental control measures and community development services to upgrade public health.\(^\text{21}\) Nevertheless, this

\(^{16}\) Charles Jenks set this date, March 16, 1972, as the time when modernist ideas gave way to the post-modern period. With the failure of Pruitt Igoe came the realization that modernist architecture and government intervention in public housing required reexamination.

\(^{17}\) Antonis Tritsis and Stefanos Manos

\(^{18}\) Plaka has currently reached a critical point in its history: withdrawals, loopholes, and fragmented competencies.

\(^{19}\) Within the FEDA project area are huge non-functional khans or wekalat. These inns for traveling merchants were built round large courtyards, with stables and warehouses on the ground level, and living accommodation above.

\(^{20}\) Back in the 1970s the concept of preserving the heritage of the historic zone with consideration to the rest of Cairo was clearly defined by SPARE. Some ancient mosques, sabilis, madrassas, and ancient churches, were restored in subsequent years, and in 1979 mediaeval Cairo was included in the World Heritage list.

\(^{21}\) "We are making use of buildings, not transforming them into museums. We are not displacing communities of factory workers simply because they are unsightly to our vision of an appropriate "tourist destination". This is a demonstration project towards sustainable development with an integrated approach."
policy to protect the mediaeval core of the city was never implemented. Later on, the focus of interest shifted from long-term planning to cosmetically restoring individual buildings.

Evaluation: The first policy was long-term and sought to integrate social goals. By contrast, the second focused on cosmetic restoration. The second policy, which was eventually implemented, induced radical changes in the social structure of the area, and led toward a tourism-based economy. The overall philosophy with regard to the protection of the medieval city may need to change focus from restoration, preservation, and open-air museums, onto sustainable development.

**Cabrini-Green, Chicago, USA**

Description: Cabrini-Green was home to 20,000 people, living in mid- and high-rise apartment buildings. Built over a twenty-year period, the construction reflected the “urban renewal” approach to the United States city planning in the mid-twentieth century. Over the years, gang violence and neglect created terrible conditions for the residents. At first, housing was integrated and many residents held jobs. This changed in the years after WWII. This caused buildings to be neglected, and residents who could rely on resources or options of any kind to vacate them in masses. Cabrini-Green’s location, however, became increasingly desirable to private developers, since the socioeconomic status of the rest of the area became upgraded. Finally, in May 1995 demolition began, after intense battles between demonstrators and developers over the future of Cabrini-Green.

It came under fire as unprofessional from prominent restoration and conservation experts, largely because Portland cement was used. All work was consequently put on hold, and time took its toll. Attention was again drawn to the disastrous condition of the long-neglected monuments following the earthquake in 1992. The quake provided an opportunity to generate interest and reactivate UNESCO’s support. Unfortunately, the focus of interest had by then shifted from long-term planning onto cosmetic restoration of individual buildings, that is, to their reconstruction, rather than to their preservation. Indeed, many houses, sabil and other Islamic buildings, continue to be rapidly restored, some with the help of foreign finance and expertise, without due consideration either to the city’s infrastructure or to the traditional role played by the people of the district.

Cabrini-Green is a Chicago Housing Authority (CHA) public housing development on Chicago’s North Side. The early residents of the Cabrini row houses were predominantly of Italian ancestry. By 1962, however, a majority of residents in the completed complex were African-American. White flight from the complex escalated over the following decade; by the 1970s, its population was almost entirely black. After WWII the nearby factories that provided the neighborhood’s economic base closed and laid off thousands of workers. At the same time, the cash-strapped city began withdrawing crucial services, such as police patrols, transit services, and routine building maintenance. Only the most marginalized and destitute residents remained. Such a resource-poor population could not effectively exert political pressure on the city, so the city increasingly neglected its obligations to these residents.

While Cabrini-Green was deteriorating during the post-war era, causing industry, investment, and residents to abandon its immediate surroundings, the rest of Chicago’s near north side underwent equally dramatic upward changes in socioeconomic status. Speculators began purchasing property immediately adjacent to Cabrini-Green, with the expectation that the project would eventually be demolished.
1995, the Federal Department of Housing and Urban Development took over the management of the Chicago Housing Authority (CHA), and almost immediately began demolishing vacant "red" buildings in Cabrini Extension, with the aim to make Chicago a showpiece of the new, mixed-income approach to public housing. The demolition of Cabrini-Green continues slowly and is expected to be complete by late 2008. Crime has dramatically decreased as the area's population has shifted.

Evaluation: Within the same project we can discern different needs for urban regeneration in different periods of time. The first approach responds to the call for social housing; the second approach responds to the call for beatification, increase in land value, and crime control. Still, plaintiffs in Wallace and others argue that by hastily removing residents, CHA has exacerbated socioeconomic and racial segregation, homelessness, and other social ills, which the Plan for Transformation aimed to address by forcing residents to less visible, but still impoverished, neighborhoods, in other areas of the city at large.

Bologna, Italy

Description: The main of objective Pier Luigi Cervellati’s plan, in 1973, was to address the housing issue and provide residents with the necessary social amenities. To preserve the urban morphology and appreciate the potential uses of the historical buildings, the team studied closely the building typologies, and came up with the following three types of intervention: a. restoration, b. purification and rehabilitation and c. demolition and reconstruction subject to terms.

Evaluation: The recuperation method applied to the historical center set the standards for later recuperation designs in other European cities: Space deservedly, the project was awarded a price by the Council of Europe. It provided an exemplary model of social coverage in the housing sector: it granted subsidies for home owners; it provided that owners would retain the same tenance to allow for the continuation of the existing activities and dictated attainment would negotiate the leases with the management. In addition the Municipality allowed for users themselves to contribute to the design process.

The World Trade Towers, New York, USA

Description: The 110-storied twin towers were not built on vacant land. In 1972, the lower Westside corner of Manhattan Island consisted of blighted buildings along with several vibrant neighborhoods, including the Cortland Street Complex of independent and highly competitive small businesses dealing in electronics. The trade-off of small businesses and ethnic neighborhoods for a world-class center of commerce and culture were...
international banking was a successful urban renewal program, but local residents opposed the project right from the beginning. Although the idea belonged to a group of private sector banks, a quasi-public agency, the Port Authority of New York, was determined to construct the project on land cleared by urban renewal.

Evaluation: This example illustrates how special and powerful interests were able to use the ethos of urban renewal to further their own desires. The effect of banking interests or the finance capital faction on channeling public resources to preserve city land values was repeated in many cities. Not only did these urban renewals fail to meet their goals, but also many of their initiatives were controlled by powerful interests to serve their own purposes, while using public authority and tax subsidies (Gottdiener 1994).

Lübeck, Germany

Description: Damage to the building stock, lack of adequate technical equipment of buildings and residences, and malfunctioning infrastructure. The regeneration plan set out to preserve the historical structure of the both the city block and individual buildings; to reduce traffic and increase green, and; to improve existing residences and public spaces, while applying environmental principles.

Evaluation: Intervening mostly at the scale of city blocks asserted the historic and aesthetic continuity buildings and raised the value of land. At the same time, local authority intervention to freeze rental prices ensured the preservation and strengthening of the existing social structures.

New Orleans, USA

Description: Areas of the French Quarter and Central Business District, which were long oriented towards local residential and business uses, switched to largely catering to the tourist industry. Since the 1960s, however, the area has been transformed into an entertainment destination, vigorously marketed by tourism promoters, and redesigned to bring visitors into the city. Median incomes and property values have increased, escalating rents have pushed out lower-income people and African Americans, and tourist attractions and large entertainment clubs now dominate a large part of the neighborhood. It is argued that, combined with the growth of tourism, the changing flows of capital into the real estate market enhance the significance of consumption-oriented activities in residential spaces, and encourage gentrification. Nevertheless, Vieux Carré is one of the 10 most endangered...
Vacancy rates in the 1990s remained high, because the high rental cost of commercial units discouraged property owners from maintaining residential apartments above the first floor.

Evaluation: Vieux Carré is a central component of New Orleans' promotion as a tourist and entertainment city. Analyzing its gentrification offers a unique opportunity to understand the connection between global economic processes and local actions in transforming urban spaces. The phenomenon of tourism gentrification presents a challenge to traditional explanations of gentrification that assume that demand-side or production-side factors drive the process. On the one hand, entertainment and tourism have brought a more upscale and affluent population to the neighborhood; have increased property values for home-owners, and; have attracted national retail chains. On the other hand, entertainment and tourism have priced out working-class residents, and have eroded the bohemian character of Vieux Carré.

East Liberty, Pittsburg, USA

Description: In the late 1950s, by demolishing 1,300 buildings and clearing 95 acres in the Lower Hill District, the USA made the largest attempt in the nation to redevelop a city neighborhood.

Urban redevelopment, the city's dominant public policy tool of the last 50 years, rescued Pittsburgh from the maw of pollution, floods, and decay. In doing so, it swallowed more than 1,000 acres of land, razed more than 3,700 buildings, relocated more than 1,500 businesses, and uprooted more than 5,000 families.

32 In recent years, residents and neighborhood organizations have lamented the increase of hotels, bed and breakfast's, time-shares, condominiums, and large entertainment clubs (Vesey 1999; Kaufman 1999).

33 First, tourism gentrification highlights the twin processes of globalization and localization that define modern urbanization and redevelopment processes. On the one hand, tourism is a “global” industry dominated by large international hotel chains, tour operators, car rental agencies, and financial service companies (American Express, Visa, and so on). For New Orleans and other US cities, major socioeconomic changes over the past few decades have created a new competitive environment in which cities are increasingly forced to develop new tools and subsidies to attract new investment, and, more important, market themselves as tourist destinations. In this new context, more residential and commercial spaces become centers of spectacle and tourist consumption, rather than places of material production, a development noted by Lloyd and Clark (2001) in their discussion of the “City as an Entertainment Machine”. As local elites use tourism as a strategy for economic revitalization, tourism services and facilities are incorporated into redevelopment zones and gentrifying areas. In this new urban landscape, gentrification and tourism amalgamate with other consumption-oriented activities, such as shopping, restaurants, cultural facilities, and entertainment venues. That blurring of entertainment, commercial activity and residential space leads to an altered relationship between culture and economics in the production and consumption of urban space.

34 After URA demolished 1,200 homes, reduced the size of the shopping district by 1 million square feet, and closed the middle of East Liberty to automobiles, the neighborhood lost hundreds of small businesses. In the four decades that followed, it lost more than 4,500 people
Evaluation: Being a pioneer of 1950s-style urban renewal, Pittsburgh was a frequent target of Jane Jacobs'. When the city disregarded the advice not to demolish homes and businesses in the Lower Hill District, it raised new questions about the government’s power to alter a neighborhood's social, racial, and economic fabric. When it replaced old buildings with utilitarian-style shopping complexes and office towers, it raised new questions about the relationship between architecture and people. When it ignored warnings that a pedestrian mall would doom the retail trade in East Liberty, it raised questions about the weakness of conventional wisdom.

What East Liberty illustrates is how sprawling urban renewal projects rarely live up to their promises, and how delicate the line is that separates good intentions from unintended consequences.

The question imposed is, what would Pittsburgh be like today if nothing was done and no effort was made to preserve the Downtown, improve the housing supply and extend the benefits of urban renewal into the neighborhoods.

According to the “Use-Intervention” Matrix of Table 2.3., the above examples fit as follows:

<table>
<thead>
<tr>
<th>Use Intervention</th>
<th>Existing uses (functional regeneration)</th>
<th>Existing and new uses (functional diversification)</th>
<th>New uses (functional restructuring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demolition (redevelopment)</td>
<td>Cabrini Green</td>
<td>East Liberty</td>
<td>The World Trade Centers</td>
</tr>
<tr>
<td>Conversion (integration)</td>
<td>ZUP Perseigne</td>
<td>Urbino (data to be completed)</td>
<td>Lubeck</td>
</tr>
<tr>
<td>Refurbishment (rehabilitation)</td>
<td>Cairo</td>
<td>Plaka</td>
<td>New Orleans</td>
</tr>
</tbody>
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2.5.3. Evaluation of “Use-Intervention” Type

We examined these projects of international experience with the aim to gain insights with regard to the urban fabric (redevelopment, integration and rehabilitation), and with regard to the uses (functional regeneration, functional diversification, functional restructuring). These insights will help us decide which urban regeneration process to adopt in this research.
To evaluate the nine combinations of the matrix, we rely on the criteria obtained by the projects examined, the brief historic description, and the criteria that already exist in literature.

We use criterion as “a means or standard for judging”; it can be seen as a tool constructed for evaluating and comparing potential urban regeneration actions, according to a (as much as possible) well-defined point of view.

The criteria obtained at this point refer to:

**Economic Issues (C1)**

In the case of New Orleans, the rise in property values forced long-time residents to move out of the area. Therefore, economic issues must be taken into account in urban regeneration. First, regeneration should pursue the highest returns at the least risk. Construction costs are weighed against economic profits, both from the intervention’s immediate pay off, and in its long-term performance. Having said that, opting for a low-cost construction in order to minimize financial risks should not be to the detriment of construction quality and design. Otherwise, the intervention might prove unsuccessful, requiring demolition shortly afterwards. This is what happened in the case of Pruitt-Igoe, St. Louis. Second, economic concerns refer to land values, pre- and post-intervention. Although the objective of urban regeneration is to increase the value of land, such projects may backfire.

**Social Issues (C2)**

Among the projects we examined, urban regeneration to build the World Trade Center in Westside Manhattan forced the residents out of the area and replaced what used to be ethnic neighborhoods with offices. Issues pertaining to the physical and psychological well-being of residents and local communities need also to be considered if urban regeneration is to be successful. Urban regeneration can ensure that, once a site is renewed, the original population will either be re-accommodated

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36 Part of the art of solving a decision-making problem is choosing the criteria and ways by and in which to measure it. There are several techniques that address the determination of criteria in a decision-making problem. Since criteria are the main tools in decision-making, it is important to know that they are indeed the main concerns of the decision-maker involved in the process, and that these criteria measure what they are supposed to measure, i.e., that the scales of measurement for these criteria are meaningful to the decision-maker. First, when criteria are too general, the way to clarify them is to find families of sub-criteria that best describe the main criteria. In this way, a hierarchy of criteria can be constructed. A tree-shaped structure is usually used to represent the hierarchy of criteria. Second, if it is very difficult to find an attribute (measurement scale) for one criterion, a potential solution is to choose one that captures most of the idea in that criterion, and that best suits the possibilities at hand; in other words, an attribute that can easily obtain and calculate information. These attributes are usually called “proxy” attributes. In principle, it is impossible to find exact representations of criteria, which is also confirmed by the fact that it is impossible to model “all reality”. Consequently, it is very important to know when to stop developing new levels in the criterion hierarchy, or when to stop searching for “less proxy” attributes. It is also relevant here to mention the work by Kenney. He offers suggestions about how to direct the search and think about values as the main driving force in identifying the true “criteria”.
on site or relocated to another part of the city. It is generally recognized that displacement from familiar locations translates into dramatic changes in lifestyle, and requires long-term readjustment. This may inflict serious psychological trauma, especially for the most vulnerable portion of the population, i.e., young children and the elderly (Holcomb and Beauregard 1981). Losing contact with a familiar environment, which people have developed strong emotional attachments may occur both when residents are displaced and when familiar environments are altered radically by means of revitalizing activities (Holcomb and Beauregard 1981).

Jane Jacobs (1961, 279) explains this attachment as “the security of the home base being, in part, a literal security from physical fear” (Jacobs 1961, 279). High economic, social, and emotional costs that evicted residents are called to pay are generally disregarded as an unavoidable by-product of “progress” and the inevitable consequence of modernization (Kazemian 1991).

**Environmental Issues (C3)**

In the case of Cairo, urban regeneration was guided by the value of preserving sections of the urban fabric. The historic core has become a point of reference for planners and architects. Some even consider it represents the design model that will ultimately be used to transform the remainder of the city (Cervellatti in Hatch 1984). According to Mumford (1956, 156): “No adequate image of the emerging city can be formed without reference to both the most enduring and valuable features of historic cities, and the fresh departure and fresh opportunities that our modern age has opened up with its immense knowledge resources, wealth and power.” However, preservation should be handled with caution, as it requires a deep understanding of the nature of the city. Misinterpreting the process by which cities evolve through time may lead to the creation of sanitized environments, or the reconstruction of an imaginary and more acceptable past (Holcomb and Beauregard 1981). For Lewis Mumford (1961, 3): “If we are to lay new foundations for urban life, we must understand the historic nature of the city, and distinguish between its original functions, those that have emerged from it, and those that may still be called forth.

**Cultural Issues (C4)**

In the case of Plaka, urban regeneration was aimed at retaining its urban culture, which was beginning to fade. The preservation of a unique urban culture is another critical issue in the process of urban renewal. Culture has been defined as the whole

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37 According to Kazemian (1991), relocation generally occurs in large-scale housing projects developed in isolated environments far from the city center, where access to facilities, such as schools and health services, is limited. In general, new social links are not easily formed in large-scale mass-housing projects (Nozick 1992).

38 Preserving the historic core of a city, which is what provides future generations with stimulating ideas from their cultural heritage, is essential in the development of modern cities (Wang 1995). Cervellatti regards the historic core of a city as the “collective memory of the population”, and despite its internal contradictions, as the only truly modern, authentically livable part of the city (Cervellatti in Hatch 1984).
The continuity of a culture is carried in its architecture, urban design, and planning, as well as in its community life (Van der Ryn 1986). It can be said, therefore, that urban culture is closely related to the evolution of the relationship between the urban built environment and its social structure. Changes introduced into the social, natural, and built environment of the city through urban renewal may produce a serious impact on the flourishing of urban culture. Just as preserving the environment and the community can be important to local culture, culture itself is essential in their development. Local culture is often the character that defines what is special and unique about a group of people or a place, establishing their identity and making them last over generations (Nozick 1992). In this respect, it is important to ensure that urban culture is not destroyed in the process of renewal, but rather stimulated and promoted through a conscious transformation of the urban environment.

In view of the above four criteria, we go on to evaluate various types of intervention. The evaluation below relies on the assumption that all criteria (C1, C2, C3, C4) are equivalent. We will consider the best option, without dismissing the fact that the profiles developed here depend largely on the context of intervention.

![Figure 2.1. Evaluation of "Use-Intervention" Type of Urban Regeneration](image-url)
The table above indicates that the most appropriate solution is to introduce new urban uses, while retaining the existing uses to some extent. It points to the third approach to neighborhood regeneration, referred to as integration, which regards rehabilitation and redevelopment as complementary forces, and combines the best assets of both approaches.

In specific contextual conditions, one could opt for any other approach. However, the fact remains that the best position appears highly desirable in many conditions of central urban areas today. Therefore, it will be chosen here as a point of departure for the design tool for urban regeneration that we will develop in this study.

As we pointed out with the Cabrini-Green example, if urban regeneration is to be successful, it should produce the desired outcome, both when it is introduced and in the long-term.

Therefore, these criteria of economic, environmental, social, and cultural issues for urban regeneration should be assessed not only in short-term determinants, but on a long-term basis, with long-term assessment referring to sustainability.  

2.6. Towards a Sustainable Urban Regeneration Enabling Creativity

2.6.1. The Concept of Sustainability

In the history of urban regeneration, and also according to the opinions of experts, we have seen that economic, social, and environmental criteria require sustainability. Gibson and Kocabas have defined urban regeneration as “a holistic, comprehensive and integrated approach that embraces the three aims for city and regional planning of: 1) maintaining economic competitiveness; 2) reducing social exclusion, and; 3) protecting and enhancing the environment.”

The concept of sustainability was originally introduced in relation to environmental concerns, and was associated with “preservation” movements in the USA in the 1930s. This formed an attempt to “really organize resource exploitation and regional economic planning” (O'Riordam 1981). Over the two post-WWII decades of the 1950s and the 1960s, the term “sustainable” was mainly linked to economics, since increasing material flow in the economies that supported economic growth after WWII raised concerns about the constant availability of resources.

In the 1980s the United Nations World Commission on environment and development coined the most widely used definition of sustainable development, associating it with “a development that “meets the needs of the present without endangering the ability of future generations to meet their own needs” (Brundland 1987). Naturally, sustainable development does not signify a return to the pre-industrial era; it calls for ongoing economic growth, acknowledging the responsibility for a consistent image.

39 Sustainability is not a single criterion, but one comprising all other criteria in itself.
40 Mike Gibson and Arzu Kocabas, “London: Sustainable Regeneration-Challenge and Response”, p.1
CHAPTER 2

2.6.2. Urban Sustainability

Sustainable development pursues long-term growth in the economy, from the economic viewpoint, while simultaneously reducing the negative side effects of externalities, by means of a balance seeking adaptation (Jun Wu 2005). As a result, sustainable development efforts are focused on the following two points:

a. how to maintain growth
b. how to adapt to changes in the new environment in the long-term

In a non-sustainable environment, development targets certain growth objectives, but ignores the need for adaptation to change in the long-term. Growth can be maximized in the short term, whereas in the long-term the environment deteriorates and becomes obsolete.

For example, when Athens was being built at a fast rate in the 1960s, to address the housing issue of the time, the government of Konstantinos Karamanlis came up with a solution that entailed limited financial and social costs. Eventually, this solution proved unsustainable. Soon, problems started to arise, not only in the built fabric, but also in the residents’ quality of life.

The new solution we suggest in this research is intended to propose strategies that may lead to a sustainable process of development, whereby the past mistakes will not be repeated.

Therefore, it is important to meet the following three conditions:

• Retain what is best
• Generate something that has future
• Ensure that whatever happens in the future will not generate a negative feedback

As we conclude, adapting to changing conditions and increasing pressures is important in order to produce an environment that is economically and socially stable. There are various ways to achieve adaptation. One of them is to “synthesize”. Being able to re-adapt to new conditions, critically re-defining objectives, and surviving ongoing changes requires a new ability to synthesize. This ability to synthesize can be found wherever there is creativity. “Creativity” involves “synthesis”. Inevitably then, in this process of adaptation, creativity becomes a crucial and effective factor.

2.6.3 The Role of “Innovation and Creativity” in Urban Regeneration

So far our analysis has shown that areas that opted for an “in-between” intervention in their built environment, thereby retaining their character, turned into high-income, tourism, cultural, and market-oriented hubs.

Today, though, the most desirable uses are related to knowledge economy. Development towards knowledge economy is an inevitable trend that affects all cities. Although not new, this trend has grown stronger in the last decade. This
growth in strength becomes evident in the demand for innovation and creativity. A common denominator of successful cities can be identified in their visionary individuals, their creative organizations, and their political cultures that share clarity of purpose. Neil Bradford defines the “dynamic locale of experimentation and innovation, where new ideas flourish and people from all walks of life come together to make their communities better places to live, work and play” as creative city. The population is such that a city is called creative class.

According to Florida, Where previous urban planning sought to impose a physical and functional order over places, leading to separated citizens and compartmentalized problems, creative cities have the power to engage different kinds of people and different kinds of knowledge in developing imaginative and innovative solutions to address complex local issues.

41 Bradford summarizes the benefits of creativity in five areas: governance innovation; civic innovation; economic innovation; social innovation; and artistic and cultural innovation.

42 E.g.: Stuck in old paradigms of economic development, cities like Buffalo, New Orleans and Louisville struggled in the 1980s and 1990s to become the next “Silicon Somewhere” by building generic, high-tech office parks or subsidizing professional sports teams. And yet, they lost members of the creative class, along with their economic dynamism, to places like Austin, Boston, Washington, D.C. and Seattle - places more tolerant, diverse, and open to creativity.

43 The processes is as follows: Locations become physically and technologically obsolete, or uncompetitive in terms of cost, after a period of decline and inactivity; buildings become inhabited by artists in search of urban spaces that are affordable, accommodate their functional requirements for space and light, permit the mixing of residential and working uses, and are favorably located with respect to other fixtures and features of the urban environment. Soon these neighborhoods attract others, who are drawn by their vibrant cultural and street life and their “bohemian chic” appeal. Gallery owners are followed by ever more up-market retailers, who are soon followed by property developers. Land values and rents rise, reflecting the increased productivity and desirability of the neighborhood. Through their actions, artists are leading a process, whereby “surplus” or redundant urban assets are recycled back into productive reuse, breathing new life into once derelict precincts of the city. However, the contradictory nature of this change soon becomes apparent, as the very process of upgrading and renewal that was set in train by artistic regeneration ultimately leads to the geographical displacement of those same artists, who can no longer afford the rents. This raises a crucial issue for creative public policy.

45 Notwithstanding this contradictory outcome, the role that artists play in this process of recycling urban space is overwhelmingly positive. As he argues the key to economic growth lies not just in the ability to attract the creative class, but to translate that underlying advantage into creative economic outcomes in the form of new ideas, new high-tech businesses and regions, growth. To better gauge these capabilities, Florida developed a new measure called the Creativity Index. The Creativity Index is a mix of four equally weighted factors: percentage of creative class, the share of the workforce in high-tech industry measured as patents per capita, diversity, measured by the Gay Index, a proxy for an area's openness to different kinds of people and ideas. This composite indicator is a better measure of a region's underlying creative capabilities than the simple measure of the creative class, because it reflects the joint effects of its concentration and of innovative economic outcomes.
Florida asserts that metropolitan regions with high concentrations of high-tech workers, artists, musicians, gay men, and a group he describes as “high bohemians” correlate with a higher level of economic development.

Florida posits the theory that the creative class fosters an open, dynamic personal and professional environment. This environment, in turn, attracts more creative people, as well as businesses and capital. He suggests that attracting and retaining high-quality talent versus focusing on infrastructure projects, such as sports stadiums, iconic buildings, or shopping centers, would be a better primary use of a city’s regeneration resources for long-term prosperity.

Gertler also notes that creative people have long played a key role as “dynamic agents of positive transformation” in communities. Under-utilized spaces and derelict neighborhoods have become home to artists seeking affordable workspaces. Shortly afterwards, others were drawn to these areas for the vibrant cultural life. This influx of people can result in improved public transportation, municipal services, and consumer spending within the area. Artists and creative neighborhoods can help promote an environment described by tolerance of differences and celebration of non-conformity.

According to Landry (2004) [under “Creativity and the City: Thinking Through the Steps”]: “Creativity is not the answer to all our urban problems, but it creates the pre-conditions within which it is possible to open out opportunities to find solutions. Most importantly, it requires a change in mindset. Urban creativity requires an ethical framework to drive the city forward, but not in a prescriptive sense. At its core, this ethic is about something life-giving, sustaining, opening out, rather than curtailing.”

Creative strategies in urban reinvention, as a typical product of the entrepreneurial age, deliver precedents and paradigms, which ought to be explored further. Landry

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44 Creative class is a fast growing, highly educated, and well-paid segment of the workforce, on whose efforts corporate profits and economic growth depend increasingly. Members of the creative class do a wide variety of work in a wide variety of industries - from technology to entertainment, journalism to finance, high-end manufacturing to the arts. They share a common ethos that values creativity, individuality, difference, and merit. The creative core of this new class includes scientists and engineers, university professors, poets and novelists, artists, entertainers, actors, designers, and architects, as well as the “thought leadership” of modern society: non-fiction writers, editors, cultural figures, think-tank researchers, analysts, and other opinion-makers. Members of this super-creative core produce new forms or designs that are readily transferable and broadly useful. Beyond this core group, the creative class also includes “creative professionals”, who work in a wide range of knowledge-intensive industries, such as high-tech sectors, financial services, the legal and healthcare professions, and business management. The creative class now includes some 38.3 million Americans, roughly 30 percent of the entire U.S. workforce - up from just 10 percent at the turn of the twentieth century and less than 20 percent as recently as in 1980. The creative class has considerable economic power. In 1999, the average salary for a member of the creative class was nearly $50,000 ($48,752), compared to roughly $28,000 for a working-class member and $22,000 for a service-class worker. Not surprisingly, regions that have large numbers of creative class members are also some of the most affluent and growing.
argues (2004): “Creative cities have an ethical purpose that guides and directs the mass of energies present in most places. These ethical goals might be both to generate wealth and to reduce inequalities or to grow economically, but to focus on sustainability or to focus on local distinctiveness [...] This implies bending the market to public good objectives. Places can develop creative initiatives without such a framework, but I would not call places like that ‘creative cities’.” The debate is still open on whether creative strategies in urban reinvention are able to contribute significantly to meeting important goals of long-term economic innovation, social inclusion, democratic engagement, and environmental sustainability. As Cannon argues (2003): “Even well-known livable cities can start to become victims of their own attractiveness. Social polarization, inequalities, and an increasing divide seem often to be the outcome of policies of regeneration.” Cities like Glasgow, which only two decades ago were painted as examples of urban renaissance driven by creativity, are facing once again growing conflicts of social division and increasing crime rates.”

2.6.4. Places that Attract and Promote Creativity

According to Florida, “People that “belong” to the creative class tend to move to places that fulfill the following conditions:

A. “Thick labor markets”. Places with thick labor markets that can fulfill the employment needs of members of the creative class, who, by and large, are not looking just for “a job”, but rather for places that offer many employment opportunities. To be attractive, places need to offer a job market that is conducive to a horizontal career path.

B. “Lifestyle”. The creative class want ready access to recreation on a “just in time” basis. It needs to provide options round the clock. The people of creative class desire a mix of entertainment options, nightlife, cultural attractions, and safe and reliable after hours dining and transport services.

C. “Social Interaction”. “Third places” need to exist. These are neither home nor work, the first “two places”, but venues, such as coffee shops, bookstores, etc., where acquaintances are less formal. Third places are the heart of a community’s social vitality. Since people, nowadays, are more likely to live alone and more likely to change jobs frequently, third places play a key role in making a community attractive.

D. “Diversity”. Cities and areas that attract lots of creative people are also those with greater diversity. Talented people seek an environment that is open to differences, described by diversity of thought and open-mindedness. Diversity also means “excitement” and “energy”. Creative-minded people enjoy a mix of

45 The Power of Place, Florida 2002
46 Ray Oldenburg “A Great Good Place”
influences. They want to listen to different kinds of music, and try different kinds of food. They want to meet and socialize with people unlike themselves, exchange views, and spar over issues.

E. “Authenticity”. Authenticity comes from several aspects of a community: historic buildings, established neighborhoods, unique music scenes, or specific cultural attributes. It comes from the mix - from urban grit alongside renovated buildings, from the combining of young and old, long-time neighborhood characters and yuppies, fashion models and “bag ladies”.

F. “Identity”. Place provides an increasingly important dimension of our identities and an important source of status. Creative people like to move to places that convey high status. At the same time, they desire both to actively establish their own identity in places, and to contribute to actively building places that reflect and validate their identity.

G. “Quality of Place”. Cities and regions that attract lots of creative talent are also those with higher levels of quality of place. The quality of space has three dimensions:

a. An appealing combination of the built environment and the natural environment
b. A place with “low entry barriers”, where newcomers are accepted quickly into all sorts of social and economic arrangements
c. An active, strong and vibrant environment

2.6.5. Can Creativity Be the Factor for Successful Urban Regeneration?

Up to now, we have referred to the environmental, social, and economic criteria that determine whether urban regeneration is successful or not. The next step is to explore and illustrate whether the regeneration of areas with problems arising from social exclusion, industrial decay, environmental degradation, and pollution could be addressed through the development of a creative environment. A way to do this is to examine whether the criteria of a successful urban regeneration meet the conditions that Florida lists for the formation of the creative city.

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<tr>
<th>Conditions for Creative City</th>
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<tr>
<td>Thick Labor Markets</td>
<td>Economic Issues</td>
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<td>Lifestyle</td>
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<td>Social Interaction</td>
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<td>Quality of Place</td>
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2.7. Conclusions

In this chapter we have looked into the decline and regeneration of urban centers. We have examined various options of physical intervention altering the urban fabric, ranging from demolition to preservation. We have drawn to the conclusion that the most acceptable way of regenerating urban centers, in economic, social, and environmental terms, lies in mixed strategies that combine the two extreme strategies (complete demolition versus complete preservation), whilst retaining the best assets of both.

It has been established that urban regeneration that not only permits, but also encourages diverse land uses is more likely to establish sustainable growth.

Within a specific context, any strategy or land use could be chosen. However, what is mostly indicated in the context of many urban centers in our days is:

- the “in-between” strategy as type of intervention
- diversity in land uses in the concept of “creativity”

As a result, this very combination has been selected as a point of reference for the design tool for Creating the Creative Block (CCB) developed in this research.

To gain a better insight into the problem—given its complexity and novelty—we will now introduce a case study, the product of field work by the author. We will examine the case of Kolonaki, an area in the city center of Athens, Greece.
CHAPTER 3: CASE STUDY: City Block No. 3911, Kolonaki, Athens

In Chapter 2 we relied on relevant literature and international experience to appreciate the importance of creativity in achieving sustainable regeneration. Identifying what will enable the regeneration of urban centers into creative cities is a complex issue. To better understand the matter in hand, we have opted for the case study approach, selecting for this purpose City Block No. 3911 in Kolonaki, Athens.

Creativity is closely linked to the history of Athens, not only in antiquity, but also in modern history shortly after Modern Greece was established. The first public buildings to be erected formed the Athens Trilogy: the University, the Academy, and the National Library. In our days, higher education is adequate, and yet in Greece, neither new knowledge is generated, nor existing knowledge is further developed, compared to what happens in other countries of the European Union. This is also established by the fact that, among its European partners, Greece is the largest exporter of currency spent on postgraduate studies, and a very small percentage of these students return in Greece.

Another point that we will examine before getting into the analysis is whether the city center of Athens, in general, and Kolonaki, in particular, need intervention. While this area is amongst the most appealing in the Athens city center and property values are considerably high, it is marked by stagnation compared to other areas of the city center, as well as the surrounding regions. Living conditions in Kolonaki are relatively poor on account of the area's ageing building developments, applicable building standards and specifications, and changes beyond control in the use of land. Despite the fact that those signs which clearly dictate immediate regeneration are not yet evident, should this situation persist without transformation and interventions being discussed, this area, we believe, will be driven to physical, economic, and social decline.

On the other hand, Kolonaki consolidates several conditions required to develop creativity. As an area it is safe, vibrant, offering many cultural and recreational options. Despite its high status, it appeals to people from all social backgrounds, and people of different occupations and ages live there. Additionally, it is marked by strong social interaction, and it is located at a pivotal point for transport. Moreover, even though like the rest of the Athens city center the same urban fabric has low quantity of open or green spaces, it is bordered by two of the most important sources of green and oxygen in the center: Mount Lycabettus and the Hellenic National Garden. Therefore, for all reasons mentioned above, we believe that the urban fabric of Kolonaki needs regeneration, with long-term effect, and the best way to achieve it is through creativity.

To better understand the conditions that facilitate or prevent the development of a creative city, we go on to specify a city block with the aim to perform an in-depth analysis.
City Block No. 3911 has not been selected at random. It is a fitting sample and well known to the researcher; it was among the first to be developed in the heart of Kolonaki, and; it is typical of the area in both quantitative (morphology, population, types of apartment buildings and apartment units, property values) and qualitative terms (functionality, dysfunctionality).

We have collected data on City Block No. 3911 by means of:
- A questionnaire for and interviews with residents, visitors and people working in this city block, specially designed to generate intelligence, i.e., facts and normative (opinions).
- Designs and documents from the Town Planning Office and residents themselves, as well as architectural blueprints and static designs we developed on our own.
- Our own professional experience.

We have conducted a descriptive analysis of City Block No. 3911 at three levels:
- City Block
- Apartment Building
- Apartment Unit

Analysis at each level includes:
- Description of morphological and physical features
- References to how users use and fill the given spaces
- A record of users' views and how they evaluate the current situation

3.1.1. Processes and Formation of the Athens Urban Fabric through “polykatoikia”

Unlike other European and North American cities, Athens is hardly the product of full or even ad hoc urban planning. Integrated into the system developed by Hippodamus, city blocks form the cells of the city’s urban fabric. The core of development lies in apartment buildings, called “polykatoikia” (multi-residences). The entire urban fabric of Athens is the product of a constant and extensive “cloning” of apartment buildings via the “antiparochi” system. Hence, “polykatoikia” (multi-residence) has given form to “polis-katoikia” (city-residence). Abandoned to the initiative of the private sector and interpersonal relationships, Athens urban apartment buildings would provide a direct and satisfactory solution to the most critical problem of that period, i.e., housing, at the minimum time and social cost through processes that could, paradoxically so, refer to a really participatory design.

1 Y. Aesopos and Y. Simeoforidis (2001) [The modern (Greek) town]. Athens: Metapolis Press
Following World War II, pressures to upgrade the quality of life in the capital city and to acquire privately owned housing were lifted thanks to “hundreds of thousands of contracts” entered between landowners- contractors-residents, with citizens bringing virtually no claims for public housing and with hardly any social policies on the part of the state. Athens has become an urban development where decisions at the level of families have had a direct and long-term impact on the shape of the city.

This new apartment building type was adopted and spread widely in the post-war period, mainly on account of its:

- simple building methods
- low cost
- long life expectancy
- flexibility to serve multiple uses

The main reasons underpinning the formation of “polykatoikia” and its production processes lay in restricted capital, and the small dimensions of plots in Athens. Restricted capital yielded the “antiparochi” system. In this system, transactions between landowners and the contractors referred to the final product, rather than to an amount of money. This minimized the principal capital that contracting parties would have otherwise required. Similarly, small plots have led to a new typology of multi-storied housing with the following major attributes:

a. Vertical circulation is incorporated into the core of buildings.

b. On account of their small frontages and long depths, apartment units are spatially organized into three transverse zones: Two zones are located along the front street and on the rear side of the plot to accommodate spaces of primary use (living room on the front, bedroom on the rear) with direct daylight and air circulation; one zone is in the middle to accommodate spaces of secondary use (kitchen, lavatory, hallway).

c. Building structures are organized depending on the particularities of each plot and apartment unit. The grid is rarely used as an organizational element for designing.

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2 The urban growth of Athens has been realized with a complete lack of claims for public housing, unprecedented in Europe. With virtually no public housing, no significant claims for public housing were ever brought to the Greek State, which was the rule in other capitalist states.

3 Capital minimization referred both to transactions between householders and contractors, and to those between contractors and subcontractors to construct apartment buildings. In this way, residences were overall the product of contracting agreements.

4 Small plots resulted from dividing urban land into smaller items, on account of low income and small savings, as well as the conviction that land constituted a secure investment in an unstable economy. Statistical analysis of plot sizes based on “Real Estate Values” by the Greek Tax Office (the “blue” apartment demonstrates that the average size of plots is 180 sqm in Athens, and 146 sqm in Piraeus).

5 The lack of grid contributed also to the lack of industrialized structural elements.
«CREATING THE CREATIVE BLOCK» TOWARDS A DESIGN TOOL FOR URBAN REGENERATION

In the morphology of Athens urban apartment buildings, floor plans appear varied in comparison to European samples. However, the range of types achieved is not wide on account of the desire to achieve maximum exploitation, in order to yield maximum profit. The “antiparochi” system allowed needs to be met in the absence of an integrated housing policy. Soon individual interests would prevail over the common good.

Before long Athens became saturated with buildings. Lack of infrastructure became noticeable a posteriori, when the housing problem ceased to be quantitative and became qualitative. The quality of life and space was reduced functionally, aesthetically, and socially, while the value of real estate, a basic investment for residents, gradually diminished.

Athens apartment buildings were blamed for the poor visual state and pathological living conditions of the city. Their presence, however, was widely accepted and was further enhanced by the fact that they evolved very little as building types. At the same time, they provided the urban fabric with “liveliness” and “authenticity”: both attributes that are missing in many thoughtfully designed urban fabrics. An integral part of the day-to-day life of its residents, these special attributes of Athens, e.g., its sense of robustness, its opportunities to interact, and its specific lifestyle, are threatened with disappearance should the building model of “polykatoikia” be withdrawn or abandoned.

The on-going natural, functional, and social ageing of apartment buildings, though raises doubts as to their future development and sets the need for reinventing this building model. Those built in the post-war era may well exhibit significant alterations, e.g., in their ageing mode and degree, but they are not yet worn out. Their building structures are in good shape, which provides no grounds for their demolition and replacement.

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6 European multi-storied apartment buildings are described by the typical floor, the repeated type of apartment units, and the organization of vertical and horizontal circulation. Unlike this, Athens apartment buildings, the floor is seldom repeated above two times on account of a obligatory floor recession from a certain height up (retire apartment units); b. interventions by apartment owners from the early stages of the construction, and; c. different social statuses of people living in and sharing the apartment building.

7 The “antiparochi” system provided landowners with a dual opportunity: to acquire new residence for personal use, and more new residences for exploitation. On the other hand, it enabled contractors to build apartment buildings, cover their expenses in full, and make large profits, without contributing to the principal capital.

8 From 1.5 individuals/room in 1950 it went down to 0.94 persons/room in 1971. (Mantouvalou, 1982).

9 Differences in the ageing of apartment buildings are attributed to: a. the intentions of householders, engineers and contractors; b. the quality of building materials and techniques, and c. maintenance during their service life.
3.1.2. Is There a Need for Intervention?

In cities, overall building density and city block standards and specifications have acquired particularly high values, which is ascribed to a wider trend for making profit. This has largely reduced the quality of life and the value of land in cities. The remedy is sought in regeneration policies. Once a popular means for building up savings and a secure investment during periods of economic instability, apartment buildings in certain areas of the Athens city center are now seeing their values plummet, e.g., in Omonia, at Vathis Square, etc.

In the area of Athens chosen for the case study, i.e., Kolonaki, the need for regeneration is not as imperative as it is in other areas of Athens. The signs of decline may not yet be strong, but values appear stagnant compared to other parts of the city that are rapidly developing and are considered appealing. Additionally, the environment is severely compromised (air pollution, noise nuisance, congestion, restricted daylight and air circulation).

Apartment buildings are diverse in their ageing modes and degrees. Overall, they are among the most deteriorated buildings in Europe. The service lives of buildings in Greece along with those in Italy have the lowest average values in Europe (with higher average values those in Denmark and Poland). Greek buildings also exhibit the narrowest range of data, with the highest belonging to French buildings.

![Fig. 3.1. Breakdown of deterioration codes for architectural and installation Elements in DK (Denmark), F (France), D (Germany), GR (Hellas), I (Italy), PL (Poland) and CH (Switzerland).](image)

The diagnosis is made through visual inspection and is defined using up to four deterioration codes (a, b, c, or d). Each code describes the condition of the specific Type, which ranges from the best possible condition (code 'a', best condition, no actions/works required), to the worst condition (code 'd', worst condition, deteriorated or obsolete that needs to be replaced). (Constantinos A. Balaras, Kalliopi Droutsa, Elena Dascalaki and Simon Kontoyiannidis)

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10 Apartment buildings deteriorate at diverse degrees, depending on: a. the intentions of owners, engineers, and contractors; b. the quality of building materials and techniques; c. good or poor maintenance during their service life.

On the other hand, inter- and post-war apartment buildings have yet to be deteriorated to a degree that would provide good grounds for their demolition. While their architectural mechanical elements need replacement or repair, their bearing structure, which is made of reinforced concrete, still has a long service life ahead.

Having said that, the pathology of a structure alone does not dictate the need for intervention aimed at regeneration. Functionalities and dysfuncionalities that are the product of spatial configuration and organization also dictate such a need.

In their current form, urban apartment buildings in Athens cannot address problems relevant at the apartment unit and apartment building levels, not to mention at the city block level. Their spatial deficits (e.g., lack of communal use areas in apartment buildings and city blocks) are inconsistent with the fact that some of their building assets, such as deserted roof compartments and empty stories, might be underused or under-utilized, respectively.

Moreover, apartment buildings as building types have not been shaped to the new requirements that modern social circumstances impose, e.g., the nature and structure of modern households that has shifted from traditional nuclear families to single-person families.

Besides, they fail to meet the demands of modern economies, which are based on the generation of knowledge, and on tourism, and require infrastructure for networked cities, e.g., the Internet, wireless connections, optical fibers, etc.

Meanwhile, there is an increasing demand for new standard housing, which is typical of city centers, and Athens is no exception. This is taken as another indicator for intervention on the physical environment aimed at regeneration.

Urban apartment units are the “geographical response” to the spatial distance between home, workplace and leisure, which ensued ongoing population shifts to the suburbs over the past two decades. Returning to city centers has dictated an immediate need to upgrade urban housing and regenerate services in city centers.

However, the “desired” apartment unit is no longer what it used to be. Returning from the suburbs to city centers has not signified a rejection of suburban housing. On the contrary, the typical living standards of the suburbia persist and are looking to become integrated into the main urban corpora of cities. To become appealing Athens urban apartment units need to provide “sunlight and air”, comfort on diverse levels, with large balconies and open spaces surrounded by walls on three sides (semi-open), parking spaces, and close proximity to open public spaces and greenery. In other words, they need to display the attributes of suburban housing.
The demand for such homes is reflected in real estate markets. As types, urban apartment buildings and apartment units fall considerably short of this standard. In addition to their morphological attributes that fail to fulfill modern needs, there has been a shift in how residents use city blocks and apartment buildings. Technological advancements have introduced rapid changes in how people work, with residences often becoming substitute-workplaces in certain cases. Spaces initially designed and built to serve one purpose are now required to serve very different functions. For example, now that the profession of concierge tends to disappear from apartment buildings, concierge compartments become shops or restaurants, or they are even converted into parking spaces.

All the above indicate the necessity of intervention in city blocks and apartment buildings aimed at regeneration.

### 3.1.3. Regeneration Goals

As mentioned above, the problems in Athens have become aggravated, calling for serious decision-making with the aim to regenerating apartment buildings and city blocks alike. Overall, this is a widely acceptable objective. Having said that, intervention processes and mechanisms have yet to be specified and implemented. Widely acceptable regeneration goals include:

a. Improving the physical environment. Upgrading spaces may refer to improving their style (apartment building morphology, hence, visual state of city); utilizing them more adequately and efficiently at apartment unit, apartment building, and city block levels; identifying and making good use of their assets; increasing or at least maintaining their value.

b. Upgrading life. Catering to the needs of a modern lifestyle, improving its quality, living conditions, social interactions, etc.

c. Preventing the emergence of new problems. Interventions may disrupt social consistency, prompting an increase in social costs, expensive designs and applications. This could push up financial costs, with a direct impact on real estate values.

In the Kolonaki case study we have taken into account every goal mentioned above, integrating these goals into a new context. We deem that interventions aimed at regeneration should present long-term viability, i.e., they should be sustainable. As mentioned in Chapter 2, modern economy is knowledge economy, and knowledge economy is very much so an urban economy. In this respect, we deem that creativity as the driving force for knowledge provides the means to achieve sustainable

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14 In large urban centers, a large part of the population is young, single men on a high income. A considerable part of these bring their office work home, while another part accommodate their workplaces at home. (P.S. Morrison and S. McMurray 1999)

15 In France when the program for improving Public Housing Complexes was launched in 1973, it came under the cross-ministerial program “Housing and Social Life” with the aim to improve both housing and the quality of life.
development in Kolonaki. Therefore, any intervention in the city block of Kolonaki should be marked by creativity-based criteria aimed at sustainable regeneration. We now go on to examine whether Kolonaki has or could acquire the attributes of a creative city, after having considered creativity with reference to the country's history.

3.1.4. Creativity and Greece: Not a New Idea, a Neglected One

History has seen cities in Greece be creative in a number of ways: culturally, intellectually, technologically and organizationally. In ancient Greece cities “depended on rapid and radical economic and social transformation, where excess wealth became important in fostering and investing in new ideas and especially artistic creativity. Accepting "outsiders" or radicals was essential, as was the ability to connect to the mainstream establishing order, so as to have access to the wider society.” (Landry 2000)

Democratic government, introduced in ancient Athens by Cleisthenes in 500 BC, was a socio-political innovation that actively shaped the city's vibrancy and success. It enabled larger groups of people to take a stand and exercise their influence. On the other hand, it helped the ancient empire to expand into its periphery, enhancing it with new products, commodities, ideas and inspiration. This additional exposure was also the cause of unrest, with a significant bearing on local philosophers and luminaries within the contemporary cultural context.

Creativity also held a central role in economy - and architectural creativity was no exception. This is what fuelled the extraordinary boom of ancient Corinth in the seventh century BC, which was among the greatest in history. Ancient Corinth was then a global import-export hub. Rather than importing jugs of products, the city began to import pottery know-how, with the aim to set up pottery workshops inside the city and generate economic growth. It did not stop there, though. It merged this newly acquired pottery know-how into construction techniques for roofs which until then were made of thatch, to introduce something unprecedented: roof tiles, i.e., prefabricated pieces that could be used to cover and shield roofs in a manner that continues to be perfectly adequate even in our days. Corinth became the first producer and “global” exporter of prefabricated tiles.

Creativity was significant in Ancient and Modern Greece alike. Unlike other European capital cities (Rome, Brussels, Berlin), when Athens was to become the capital of the New Greek State released from its subjugation to the Ottoman Empire, it had to be fully re-designed. After the palace, the first buildings that this newly established state decided to build were the Hellenic University, the Hellenic University, 1839. Architect: Christian Hansen.

16. Contemporary temples had rudimentary structures made out of wooden sticks and mud bricks, and were covered with thatched roofs. This was neither a waterproof solution nor a suitable specimen for a prospering city such as Corinth.
17. The Turkish Occupation in Greece began in 1456. Greece was declared autonomous on January 22, 1830, by means of the London Protocol.
18. During the War of Independence, Athens was abandoned and destroyed. In 1834, only 73 houses were listed.
19. The construction of the palace started in 1836 and was completed in 1843. Architect: Friedrich von Gaertner.
In addition to the beneficial consequence that this trilogy had in practice, i.e., the generation and delivery of knowledge, there is, as Landry states (2000), historical evidence that "honoring symbolically the idea of creativity advances innovation by generating a frame of mind, an 'official' ideology that encourages and rewards people institutionally to act creatively." In this respect, building this trilogy could also be interpreted as stemming from the city's interest in endorsing an "official ideology" to act creatively.

Reviewing modern education in conjunction with innovation in Greece brings forward certain observations that are of particular interest in the analysis of this case study. More specifically, a paradox seems to emerge: education, with higher education, in particular, is near the average of education in Europe; by contrast, innovation is considerably lower.

The proportion to the total population in Greece of pupils and students, aged 20-24, whose highest qualification is pre-primary to lower secondary education, is almost equal to the average of European countries. The proportion of all students enrolled in the fields of "Science, Mathematics and Computing" and "Engineering, Manufacturing and Construction" in tertiary education is above average. However, Greece is lagging behind in innovation, ranking 29th among 37 countries. This assessment is based on a number of criteria, such as the number of patent registrations, incentives for innovative operations, the promotion of knowledge and entrepreneurship.

21 Academy, 1859-1885. Architect Theophile Hansen
22 Library, 1888-1891. Architect: Theophile Hansen (took into account Ernst Ziller’s basic concept for the Museum project, 1859).
23 The proportion of pupils and students to the total population is between 20 and 25% in the majority of European countries. In Belgium, Estonia, Ireland, Lithuania, Poland, the United Kingdom and the Nordic countries (except Denmark) it is over 25%. Iceland shows a markedly higher proportion at over 30%. By contrast, the proportion of pupils and students in Greece, Italy, Luxembourg and Bulgaria is below 20%.
24 In the European Union, an average of just over a quarter of all students is enrolled in the fields of "Science, Mathematics and Computing" and "Engineering, Manufacturing and Construction". This proportion ranges from 12% in Malta to 37% in Finland. In four countries (the Czech Republic, Spain, Ireland and Finland), the proportion of enrolments in these fields is over 30%, while in eight countries (Cyprus, Latvia, Luxembourg, Hungary, Malta, the Netherlands, Iceland and Norway) the relevant proportions are under 20%. These enrolment rates are also reflected in the medium term in the number of graduates in science and technology for every 1000 inhabitants aged 20-29.
25 Ranking first are Sweden, Switzerland and Finland, whereas ranking last are Turkey, Romania, Latvia and Bulgaria. Source: European Union, Table of Performances, February 2008
Countries are divided from the 2007 European Innovation Scoreboard (EIS)\textsuperscript{27} into four categories in accordance with their performances.\textsuperscript{28} The first category includes countries that are "leaders in innovation", with above average performances. The second category includes countries with average performances lower than those of the "leaders in innovation", but near or above average.\textsuperscript{29} The third category includes countries that are "average innovators"\textsuperscript{30} with below average performances. The fourth category includes countries that have been "covering the lost ground",\textsuperscript{31} Greece being one of them, with below average performances, but gradually getting closer to the average.

\textsuperscript{26}ISCED 5: Tertiary education (first stage). Eligibility for these programs normally requires successful completion of ISCED level 3 or 4. This level includes tertiary programs with academic orientation (type A) which are largely theoretically-based, and tertiary programs with occupation orientation (type B) which are typically shorter than type A programs, and geared for entry into the labor market. ISCED 6: Tertiary education (second stage). This level is reserved for tertiary studies that lead to an advanced research qualification (Ph.D. or Doctorate).

\textsuperscript{27}The 2007 European Innovation Scoreboard (EIS) was published on 14 February 2008. It provides a comparative assessment of innovation performance across EU Member States and with major innovating countries worldwide, together with new analysis on innovation in services, on socio-economic factors influencing innovation, on innovation efficiency, and on non-R&D innovation. Overall innovation performance is calculated on the basis of 25 indicators covering five dimensions of innovation: 1. Innovation drivers measure the structural conditions required for innovation potential; 2. Knowledge creation measures the investments in R&D activities; 3. Innovation & entrepreneurship measures the efforts towards innovation at the firm level; 4. Applications measures the performance expressed in terms of labor and business activities and their value added in innovative sectors; and 5. Intellectual property measures the achieved results in terms of successful know-how.

\textsuperscript{28}Sweden, Switzerland, Finland, Israel, Denmark, Japan, Germany, the UK, and the US are the innovation leaders (9 countries), with scores well above those of the EU27 and most other countries. Sweden is the most innovative country, with the highest score of all countries.

\textsuperscript{29}Luxembourg, Iceland, the Netherlands, Ireland, Austria, France, Belgium, and Canada are the innovation followers (8 countries), with scores below those of the innovation leaders, but equal to or above those of the EU27.

\textsuperscript{30}Australia, Estonia, Slovenia, Norway, Czech Republic, Italy, Cyprus and Spain are the moderate innovators (8 countries) with scores below that of the EU27.

\textsuperscript{31}Malta, Lithuania, Hungary, Greece, Slovakia, Poland, Croatia, Bulgaria, Portugal, Latvia, and Romania are the catching-up countries (12 countries). Although their scores are significantly below the EU average, these scores are increasing towards the EU average over time, with the exception of Croatia, Turkey and performing below the other countries.
Another notable point is that Greece ranks first worldwide in terms of students abroad per million of population, with the proportion of Greek students abroad to the country's population being 5,250 students per million of population. This proportion is considerably higher in relation to the country that ranks second. Greece ranks fourth worldwide in students studying abroad, counting close to 60,000 students, with China ranking first counting over 100,000 students.\(^2\)

The reasons why there is this paradox are not relevant at this point. This is established by the policies that the Greek state is opting for, driven by an effort to encourage students to return to and seek for jobs in Greece after their studies abroad, as well as by the Greek state's efforts, with the support of the European Union, to promote innovative operations, including eco-innovation.\(^3\)

In view of the above, the urban fabric of the Greek capital city needs to be transformed in a way that will foster and sustain these new economic and social changes.

The first chapters established that new knowledge results from an individual frame of mind whose competence is enhanced when it works in parallel in networks of community collaborations. The case of Corinth has also shown that prosperity was introduced by merging dissimilar fields (pottery and constructions), as well as diverse groups of people. It has been demonstrated several times over that the diversity of knowledge resources contributes to knowledge generation. The question raised next is what all this has to do with physical environment and design. Corinth would not have managed to succeed had it not been for its physically accessibility as a location of high centrality, situated at the crossroads of highways and seaways, and its open policies. Athens would not have introduced its socio-political innovation had it not been in contact with other peoples and in a period of peace that established safety and, last but not least, comfort within the natural environment.

Considering all the above, it remains to examine whether modern Athens, and Kolonaki, in particular, being the current case study, has or could acquire specific attributes required to develop creativity.

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\(^3\) The Competitiveness and Innovation Framework Program (CIP) of the European Community aims to encourage competitiveness of European enterprises. With small and medium-sized enterprises (SMEs) as its main target, the program will support innovation activities (including eco-innovation), provide better access to finance and deliver business support services in the regions. It will encourage a better take-up and use of information and communication technologies (ICT), and help to develop the information society. It will also promote the increased use of renewable energies and energy efficiency. The program will run from 2007 to 2013.
3.1.5. Kolonaki as a Potential Creative Milieu

So far we have argued that developing creativity will play an important role in enhancing the dynamism, strength, and overall competitiveness of Greek economy in the future. This is what may enhance the quality of life, opening up opportunities for a broad spectrum of citizens. Public policy as a goal in Athens will add to the formation of socially inclusive creative places.

This twofold objective, i.e. to enhance economic dynamism, and, ii. to improve the quality of life, is strongly linked to the key concept “quality of place”. Quality of place should be understood both as a means to an end (i.e., achieving economic dynamism), and, perhaps most importantly, as an end in itself (i.e., attaining a better life for urban residents).

Florida (2002) in the Rise of the creative Class argues that highly educated labor (“talent”) is drawn to those places that already have a critical mass of creative people and activities. Creative people are drawn to communities of other creative people, both those who are occupationally similar, and those who have different occupational identities. According to him: “In the first instance, a critical mass of occupationally similar colleagues in a particular place signals the presence of a well-developed labor market offering a rich portfolio of employment opportunities and the opportunity to learn from one's peers who are engaged in exciting work at the leading edge of one's discipline. In the second instance, the presence of 'dissimilar creative' signifies the opportunity for cross-disciplinary learning through intended and accidental encounters with creative people in other fields; the presence of rich and stimulating opportunities for the consumption of cultural activities (music, visual and performance arts, theatre, dance, literary events, etc. - arts 'buzz'); and a social environment characterized by the tolerance of difference, the celebration of nonconformity and low 'barriers to entry' - into both social networks and labor markets.”

In this respect, Kolonaki fulfills the criteria set out by Florida (2002). Its inhabitants are people with diverse occupational identities relating to knowledge, such as academics, medical practitioners, lawyers, architects, actors, directors of the theatre. Meanwhile, the area is in close proximity to research centers, academic institutions and embassies. Newcomers are provided with an abundance of job opportunities in the area, which is why many foreign nationals choose to live there. Additionally, spots like Kolonaki Square, cafés, and restaurants are meeting points for people in creative professions. Kolonaki is also a meeting point for social groups that neither live nor work in the area, but go there for shopping or entertainment. This adds to the diverse character of Kolonaki.
Florida also emphasizes that creative, talented people are attracted to cities with strong, vibrant neighborhoods, whose character and street life are often defined in culturally distinctive and novel ways. Equally important is an appealing built environment, described, in part, by its cultural content, e.g., its high-quality and compelling design or its historical character. As he argues: “It is for these reasons that astute analysts of urban economic change have discerned a subtle but important shift in the nature of workers’ primary loyalties, from an older set of loyalties to an industry, towards a new set of loyalties: to an occupational group with which one feels an affinity, and to a place that offers career buzz as well as the desirable social and physical qualities described above.”

Kolonaki definitely has its own “lifestyle”. It is vibrant and provides the venue for many expositions, shows, lectures, etc. Its built environment is comprised of buildings in the Athens neoclassical style, prestigious inter-war apartment buildings, embassies, the Presidential Palace, and the Hellenic Parliament. It has both a historical character and class.

It could be argued that Kolonaki does not fully meet the “low entry barriers” criterion, i.e., that all newcomers are accepted into all sorts of social and economic arrangements, despite the fact that newcomers may be accepted as visitors in Kolonaki, a middle- and high-income area. Among others, this is attributed to the fact that Kolonaki remains an appealing area and land values are among the highest in the Athens city center. Another reason could be that in Greece property is inheritable, which means there are many descendants of early Kolonaki inhabitants that used to belong to the upper class and were the ones to build the inter-war apartment buildings.

In Chapter 2 we made reference to the “Foundations of the Creative City” (Landry and 2000). We will now examine whether Kolonaki and the municipality it belongs to, i.e., Athens, meet these conditions in comparison to other areas of Athens.

- Personal qualities: YES
- Will and leadership: DEPENDS
- Human diversity and access to varied talent: YES
- Organizational culture: NO
- Local identity: YES
- Urban spaces and facilities: YES
- Networking dynamics: YES

We will then go on to discuss the assets and liabilities of Kolonaki with reference to developing creativity within its wider context and in relation to the unit that constitutes its nucleus, i.e., apartment buildings. All assets and liabilities are listed in the table below:
Table 3.1. - Assets and Liabilities in Developing Creativity in Kolonaki, Athens, Greece
(values to be completed)

<table>
<thead>
<tr>
<th>SCALE</th>
<th>ASSETS</th>
<th>LIABILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>History, Culture, Climate, Recreation (mountain, sea), Transit hub, Institutions, EU member state, Human capital</td>
<td>Bureaucracy, Earthquakes, Technological delay, Low innovation indices, Poor transport services, No industry, Low income per capita, Low quality of public facilities</td>
</tr>
<tr>
<td>Municipality of Athens</td>
<td>Entertainment and cultural area, Tourism attraction, Capital city, International airport, Diversity of social groups, Infrastructure (after the 2004 Olympic Games), Diversity in age and social status</td>
<td>Air pollution, Lack of parks and greenery, Congestion, Lack of metropolitan parks, High density, Noise nuisance</td>
</tr>
<tr>
<td>Kolonaki</td>
<td>Services, Well connected transport services, Proximity to large parks of Athens, Cultural activities, Low crime rate, Centric, No zoning</td>
<td>Parking spaces, Noise nuisance, High density, Lack of open spaces, Lack of greenery, Narrow streets</td>
</tr>
<tr>
<td>City Block of Kolonaki</td>
<td>Historic buildings, Combination of uses, “Lifestyle”, Social quality, Cultural quality</td>
<td>Street façade morphology, Homogenous built environment, Enclosure, No privacy</td>
</tr>
<tr>
<td>Apartment buildings in Kolonaki</td>
<td>Flexibility - domino structure, High percentage of ownership, Residents know each other, In relatively good condition, Historical apartment buildings</td>
<td>Outdated infrastructure, Physical deterioration, Apartment layouts, Shortage of open or semi-open spaces, Shortage of areas of common use, Building materials</td>
</tr>
</tbody>
</table>
To perform an in-depth analysis requires that creativity be established as the right choice for Kolonaki as opposed to other alternatives. To this effect, other regeneration uses indicated by global practices should be dismissed as inappropriate for Kolonaki.

Other examples of cities in other countries that have opted for the creative city approach are based on the fact that this had been the only option (e.g., Singapore), or that they could afford to embrace it (e.g., the USA). For Athens and Kolonaki, in particular, other regeneration options would be: tourism development, commercial development, development for entertainment, or development of its residential character. Undoubtedly, these options are strongly overlapping, which becomes even more evident over time. We will attempt to assess the alternatives based on our own experience of Kolonaki and on data documented in current literature on such regeneration approaches.

**Kolonaki: Regeneration through Residential Development**

Housing was incorporated into city center regeneration policies partly as a response to the rising projections of housing needs (Allinson 1999; Holmans 2001), associated with an increasing proportion of single-person households. Introducing more housing, hence, more residents, within the city center is defined as a process of residentialization whereby housing replaces other uses. On the other hand, it is also important to appreciate that city center regeneration through residential development embraces some inherent threats to sustainability. The most notable threat relates to the weakening of the commercial and entertainment roles of the city center. If housing expansion in Kolonaki leads to over-replacement of these uses, residentialization will fail to offer an effective sustainability strategy for the local economy, since activities would be displaced and decentralized. However, in the case of Kolonaki regeneration, LOTS housing (Living Over The Shop), which was part of the strategy to encourage city center activity (Coupland 1997; Evans 1997), can be transformed into LOW housing (Living Over Work).

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34 City center residentialization, supported by government policies, has been occurring in response to the new spaces and opportunities created by de-industrialization, decentralization and suburbanization. Although often considered in the past a “last resort” use after commercial operations have rejected spaces within the city center, housing is now seen as an increasingly attractive option for regeneration policy. Residential development is a policy that helps to satisfy the growing demand for small urban dwellings, and one that contributes to sustainability goals. (Rosemary D. F. Bromley, Andrew R. Tallon, and Colin J. Thomas 2005)
Kolonaki: Regeneration through Tourism Development

Kolonaki could be regenerated through tourism. Its close proximity to tourist attractions and to the most prestigious hotels of Athens could upgrade it into an affluent and exclusive enclave, marked by a proliferation of corporate entertainment and tourism venues. This would escalate medium income values and rents pushing away enough residents and tourist attractions and large and noisy entertainment clubs would dominate the neighborhood.

Kolonaki: Regeneration through Commercial Development

Over the last 20 years commercial use in Kolonaki has edged up. Small shops that used to service the needs of a neighborhood, such as local bakeries, grocery stores or creameries have been replaced by stores operating beyond local level. Residences that used to serve the working classes, e.g., concierge compartments, or offices spaces that failed to adjust to the high-price context of commercial property have given way to stores that now occupy the ground levels of buildings. Trading, as a rule, in products that are above average compared to those of the rest of the city center, these stores add largely to the appeal of the area. However, they prohibit any other use of the ground level. Against this background of pressing need for commercial use, such stores are for the first time seen to occupy entire buildings. As a consequence, expanding commercial use beyond measure may prove to be the detriment of other operations that are vital in the sustainable development of cities such as housing (a context where housing gives way to commercial use would create problems in terms of safety, vitality, diversity, etc.).

Kolonaki: Regeneration through Development for Entertainment

Cities suffering from structural decline have applied a “pro-growth” agenda, involving the encouragement of development for entertainment within the core city. However, the use of such policies to achieve broader regeneration goals in Kolonaki presents both assets and liabilities. Current literature show us that the evidence of regeneration in other cities using major cultural projects, and the relevant sustained impacts, including longer-term indices, is limited. To expect that they will produce sustained impacts. There may be a danger that development is encouraged and/or that the cities are turned into zones of entertainment and/or that the strategy of young people in these areas is considered in terms of the potential for entertainment.

In view of the above, the regenerative potential of Kolonaki is limited.

3.1. The City as an Entertainment Machine

The concept of the city as an entertainment machine that has developed on the scale of megacities and large urban forms has emphasized the transformation of cities into a world of consumption and entertainment.
sustained social and distributive economic benefits alone is arguably unreasonable. There may well be arguments that link recreation and consumption concerns to the development of information technologies; nevertheless, mono-use complexes and/or those dominated by one user group at given times could also lead to exclusion and unsafe perceptions by other groups. This becomes evident in cases where strategies promote late-night opening, and club and drinking cultures dominated by young people in city and town centers (Thomas and Bromley 2000). As this research has concluded for Kolonaki, sustainability, in both design quality and integration terms, is fundamental to success. Consequently, regeneration through development for entertainment is not deemed as the most appropriate solution.

In view of all the above, creativity emerges as a stronger option for sustainable regeneration in the urban fabric of Kolonaki.

### 3.1.6. Why to Intervene in City Blocks and Apartment Buildings in Order to Regenerate Kolonaki

The survival of the built environment in Athens is sought in the very mechanisms that have shaped it. As a consequence, apartment buildings constitute the basic scale of intervention. According to Habraken (2000), ongoing changes in historical urban fabrics derive from a fine-grained exercise of power from the lowest level towards the top, balanced by a force of control at the highest level. When integrated into a wider context, this small-scale dynamism can transform the city into a vibrant...
organization. By contrast, the single-handed exercise of power may lead to an inability to induce changes on a small scale. Rigidity in the built fabric is often identified in designed, new areas. Habraken finds examples of urban success in those cases where the two forms of exercising power coexist in an interdependent and balanced manner.

The current urban structure of Athens is the product of ongoing adaptations and changes at the lowest level. Undoubtedly, this impasse can be traced back to the exercise of power almost single-handedly on the part of owners and contractors. To maintain that balance can be achieved by exercising stronger control from the higher level would be simplistic. The exercise of power from the top could be useful more as a catalyst for transformation in the evolutionary process required at the lowest levels, i.e., apartment buildings. In the case of Athens, a significant asset can be identified in the fact that its residents are familiar with the exercise of power at an interpersonal level, on account of the “antiparochi” system. The key to resolve the current problem lies in analyzing and identifying the relevant collective mechanisms. As a result, emphasis is placed in ensuring adaptability, usability, and social dynamism within the very apartment buildings. Such adaptation procedures on a small scale, i.e., at the level of private housing, are not unusual in the global experience. Israel and Singapore are typical such examples. A well-known example of intervention in the city block is the old district of Rome, Tor di Nona. The facades of the apartment buildings were preserved while the interior space was reformed to facilitate contemporary way of living.

37 One of the first examples are the insulae. The classical sources, divided the Roman houses into two different types: domus - private residences for an only family - and insulae - block of flats that occupied a complete block between streets -. The houses in the insulae had windows to the street and, only if they had a large size and they had an interior square court, then they had windows and doors in the interior court. Due to the risk of the height of this kind of buildings, it was necessary a legal regulation of their height and it was forbidden to build insulae higher than 70 feet (=20 metres). The insulae usually occupied a surface between 300 and 400 m², and they used to have scarce hardness in their building, poverty of furniture and deficiencies in lighting, heating and hygiene. (Fig. Reconstruction from CONNOLLY, Peter y DODGE, Hazel: La Ciudad Antigua. La vida en la Atenas y Roma clásicas, Madrid, 1998).


39 N.J. Habraken, “…there must be a state of balance in the relation between two forces, with each of them working towards a different direction, seeking to establish this balance. Throughout the process, both forces should be traceable and identifiable.”

40 In Singapore the state grants loans to owners with the aim to perform interventions in the apartment units in order to improve them in technical and functional terms.
Another reason that justifies intervention at this level lies in the structure of public spaces. Open spaces in Athens are shaped by the location and volume of apartment buildings. In the absence of clear margins to distinguish between private (apartment buildings) and public (roads) spaces, shared borders acquire particular weight. The fabric of the built environment in Athens can be described by the way that apartment buildings become “interwoven” with public spaces. Analyzing in depth the morphology of apartment buildings, and reviewing dynamically their typology can help identify or set out “design guidelines” that could point to potential future changes in the city.

3.1.7. The “In-Between” Intervention in City Blocks

As a type, the “in-between” intervention is considered appropriate for Athens apartment buildings, given that:

- It addresses the same building type that is found repeatedly in urban areas. This makes the development of a theoretical “model” and its generalized application more feasible.
- It deals with an “open” system of load bearing structures (columns, beams, slabs), similar to Le Corbusian Dom-Ino, which enables interventions and changes to be carried out easily.41
- It is a detailed process performed on a small scale, in which buildings marked as outstanding can be preserved and brought to light.
- It is performed in steps, in a process where the “collective” is improved by changes carried out in the “unit”. This is extremely important, considering that the bolder an intervention is, the higher the risk of irreversible errors it runs, particularly in fabrics as complex as the fabric of Athens.

Special emphasis should be placed in selecting apartment buildings for intervention. Until recently, arbitrary demolitions of buildings built in the Athens neoclassical style have driven to extinction specimens of outstanding architecture, subsequently dealing a blow to the urban fabric as well. Some of the apartment buildings in City Block No. 3911 that date back in the inter-war era are significant to the history and architecture of the city.

41 Building apartment units have an advantage over building type examples where interventions have been carried out, such as “Georgian townhouses” in London and “lofts” in New York, in that their walls do not belong to the bearing structure; on the other hand, they are at a disadvantage in terms of story heights and how difficult it is to alter them.
To qualify as the object of intervention, an apartment building should meet, inter alia, the following criteria:

- Its architecture should not be outstanding
- Its spaces should be underused
- It should fail to meet the needs of its users
- Its equipment and/or load bearing structure should be deteriorated
- It should be located in an area where the building co-efficient is high and the density of population has increased
- The market or renting value of its apartment units should have dropped
- Intervention should help to upgrade the wider area as well

Furthermore, this “third solution” does not seek to increase the density of uses of: a. the building, and b. the built fabric. In the density of uses of the building one recognizes a spatial potential; in the density of uses of the built fabric one recognizes architectural quality. The aim of this solution is to increase effectiveness, by enhancing and using space more efficiently. In this type of intervention ownership is also transformed, along with the fabric, relying on architectural knowledge and the appropriate mechanisms that it produces. This can be achieved by means of:

a. analyzing systematically building types and built fabrics
b. evaluating the functionality of architectural types
c. finding a systematic methodology for interventions
d. creating a “model” that would be applicable to existing and future buildings
e. implementing this model within the context of an appropriate institutional and organizational framework

The “in-between” solution does not treat Athens as corpora vilia where dramatic interventions can be carried out. It is a cost efficient and technically feasible intervention that upgrades the quality of housing and its milieu, and helps to increase the value of property. It determines the assets of this “disorderly” complexity of the urban fabric and utilizes them accordingly, to secure social consistency and minimize “social costs”. In essence, it relies on a collective plan, to “compel” residents to become more aware of, and interested in the milieu. In this way, it introduces the concept of preservation and sustainability of the urban fabric. It modernizes the city’s building reserves and equips it with the means to address crucial problems of the twenty-first century, such as expanding green areas and open spaces, securing parking spaces, integrating high technologies into housing, re-inventing human relations, getting obstacles out of the way of the disabled, providing a system to cater to the needs for novel uses, etc. Notably, its success does not depend entirely on the resourcefulness of architects, but also on the collective effort made by all bodies involved, and on the introduction of the appropriate institutional and organizational framework that will allow this process to be carried out smoothly and will act to “convince” the fundamental center for exercising power: citizens.
3.1.8. Reasons for Selecting City Block No. 3911

City Block No. 3911 was not chosen at random. Non-random choices always run the risk of favoring certain cases in the population over others. In other words, data from the sample could be biased. The issues that had to be addressed were:

- Will this sample produce the same results as those from the population?
- Is it safe to assume that the criteria applied in selecting this sample (e.g., personal experience) are irrelevant to the variables recorded from this sample?
- Is there a correlation that indicates that the sample is biased, and dictates that we select a new sample with less correlation?

These issues are addressed by stating our reasons for selecting City Block No. 3911.

Firstly, Context and Content: City Block No. 3911 is located at the center of gravity in Kolonaki, i.e., that part of the area that was the first to be developed and built. It is very close to Kolonaki's central square, and it is bordered by both main avenues and local streets. Owing to its location, it is representative of all land uses: residences, offices, shops, restaurants, nightclubs, parking spaces, etc. Its buildings are built in different periods of time, and serve single or combined uses.

Secondly, Typicality: City Block No. 3911 is typical in terms of quantitative and qualitative data. Without disregarding dispersion, City Block No. 3911 is typical in terms of quantitative data, such as shape, size, height, number of residents and apartment units, date of building constructions, proportion of rentals to properties, etc. It is also typical in terms of qualitative data. It displays typical functionalities and dysfunctionalities of city blocks in the area, such as environmental and living conditions, etc.

Thirdly, Convenient Sample: The residence and the workplace of the researcher are located in one of the apartment buildings of this city block and there is personal experience to be offered.

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42 Non-random (or "non-probability") samples are selected by any procedure that does not give all cases in the population equal chances to fall into the sample.

43 If at least some of the interesting properties of the cases have been measured, a usual procedure is to calculate an average for each variable and then construct the "typical case" from these averages. If the resulting type description seems to be lacking in detail, one can amplify it by copying non-numerical material from an empirical case that is near the averages. In any case, it is advisable to have a look not only into the averages, but also into the dispersion of data: the less dispersion, the more credible the description of the typical case with this method. If there is large dispersion of data, one might consider the alternative of pointing out, not one, but several typical cases, i.e., a typology.

44 When empirical data does not consist of measurements, but of qualitative recordings, one has to construct the type description from those qualities and structures that are most frequent in the material. One can often start by coding and classifying the qualities that seem interesting, then noting which of them are common to most cases, and finally omitting those characteristics that are less frequent.
3.1.9. Data Collection

Empirical research is mostly aimed at gathering information about the object of study. Data are collected and processed, but not utilized to make improvements to the object or its environment. The following methods were applied to collect data:

a. accessing information in existing texts and literature
b. using a questionnaire to interview people who have information
c. relying on our own data and experience

a. Existing Texts and Literature

This method has relied on architectural drawings from urban planning offices, statistical data from the National Statistical Service of Greece and the European Union, research findings and earlier attempts or successful procedures, lines of action, artifacts or their specifications, as discussed in the contemporary point of view of experts and published in professional journals. We have also come in contact with other professionals who have studied the problem, as well as institutes that we work with.

b. Questionnaire

A questionnaire was handed out to residents, using the Post-Occupancy Evaluation (POE) as a prototype. Many actors participated in the use of buildings, including investors, owners, operators, and maintenance staff. We have focused, however, on occupants, their needs and how these are affected by the building's performance, and on their evaluation of the buildings. Questions were aimed at retrieving an informative response, i.e., facts, and; a normative response, i.e., opinions. Facts covered the social and economic status of users, the history of the apartment, the way that it is used, any alterations that have been carried out, the materials used, etc. Opinions covered the current state of things, and how this could be improved.

Data for the description of the object of study can derive from objective knowledge, but also by subjective opinions.

POE is a process to evaluate systematically the performance of buildings, once they have been built and occupied for some time (Preiser et al. 1988). It differs from other evaluations of building performance in that it focuses on the requirements of building occupants, including health, safety, security, functionality and efficiency, psychological comfort, aesthetic quality, and satisfaction. While these evaluations focused primarily on the performance of buildings, the latest step in the evolution of POE towards Building Performance Evaluation (BPE) and Universal Design Evaluation (UDE) is one that emphasizes the holistic, process-oriented approach to evaluation. This means that not only facilities, but also the forces that shape them (political, economic, social, etc.), are taken into account. An example of such process-oriented evaluations was the development of the Activation Process Model and Guidelines for Hospitals of the Veterans Administration (Preiser 1997). In the future, one can expect more process-oriented evaluations to occur, especially in large government and private sector organizations operating in entire countries or globally, respectively.

The term evaluation contains the world “value”; thus, occupant evaluations must state explicitly whose values are referred to in a given case. An evaluation must also state whose values are used as the context within which performance is tested. A meaningful evaluation focuses on the values behind the goals and objectives of those who wish their buildings to be evaluated, in addition to those who carry out the evaluation.
Post-Occupancy Evaluation is based on the idea that better living space can be designed by enquiring users about their needs. The questionnaire included 40 questions, structured around:

- general features of the building (location, type, etc.)
- physical and organizational attributes of accommodation (number and type of rooms, facilities, etc.)
- types of renovation and maintenance work carried out and/or desired
- details of inhabitants
- use of domestic space
- patterns of socialization and community involvement
- degree of satisfaction with the home
- appraisal of the two urban areas under examination and the readiness to move in from outside the walls to the historical center or vice-versa.

C. Own Collection of Data and Experience

Living and working in City Block No. 3911, we have had the opportunity to form our own professional opinion of the morphological attributes of this city block, in addition to being familiar with the identities of its users, how they use it, and their degree of satisfaction or dissatisfaction. We have also performed for ourselves the architectural drawings for several of the buildings in the city block. The details of architectural drawings for each building in the city block (drawing, owner, urban planning office, references) can be found in Tables and the Appendices.

3.2. Analysis of the City Block No. 3911

This section includes a descriptive analysis of City Block No. 3911. The analysis looks at three different scales:

1. City Block
2. Apartment Building
3. Apartment Unit

We have chosen to focus on three different scales, not only for practical reasons or for the sake of clarity, but also because, as Habraken (2000) proposes, “change of scale involves not only a dimensional dilatation but also a simultaneous extension of the interrelationships among urban elements.” These interrelationships are going to be useful in the evaluation of the findings from the following descriptive analysis.

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46 POE efforts in Britain, France, Canada, and the United States in the 1960s and 1970s involved individual case studies focusing on buildings accessible to academic researchers, such as public housing and college dormitories. Information from occupants about their response to buildings was gathered through questionnaires, interviews, site visits, and observation; sometimes information was linked to the physical assessment of a building. The findings from these studies were intended to convey what design elements work well, what works best, and what should not be repeated in future buildings.
At each of the three scales of physical space we asked the following questions:

- How is the city block, apartment building, unit made physically?
- Who are the users and how do they occupy the city block, apartment building, or unit?
- Are the users satisfied from the city block, apartment building, unit, or are they not?

At this point the analysis does not focus on the reasons why any of the above might be so. This is covered in the next chapter.

### 3.2.1. City Block No. 3911

#### 3.2.1.1. How the City Block is Made Physically

The Greek law designates the city block as “any entire (complete) and buildable area which is included in the approved city survey or is located within the territory of a community and is surrounded by public spaces.” City Block No. 3911 is defined by streets Patriarchou Ioakeim, Ploutarchou, Alopekis and Loukianou, and is, therefore, surrounded by public spaces. City Block No. 3911 is generated, according to Habraken’s building fabric types (2000), by the construction of a matrix, a planned and a connecting route.

Its main morphological characteristics, as we have measured them, are the following: the block’s footprint is described as a quadrilateral shape with almost square angles. The proportionate relationship between its short and long sides is approximately 1:2 built to “un-built” area ratio of the city block. Of the available area, 82% has been built. The block consists of 25 building plots, and includes 22 apartment buildings. There are no un-built plots: the block is built to its full permissible extent. The reason why the number of plots exceeds the number of buildings in the block is because some of the buildings were built on unified plots (Alopekis 27-29, Ploutarchou 17-19, Patriarchou Ioakeim 30-32).

<table>
<thead>
<tr>
<th>Area:</th>
<th>5,532.41 sqm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter:</td>
<td>326.78 m</td>
</tr>
<tr>
<td>Built area:</td>
<td>4,556.07 sqm</td>
</tr>
<tr>
<td>Un-built area:</td>
<td>976.34 sqm</td>
</tr>
<tr>
<td>Number of buildings:</td>
<td>22</td>
</tr>
<tr>
<td>Street frontages:</td>
<td>116.25 m (Patriarchou Ioakim St.)</td>
</tr>
<tr>
<td></td>
<td>48.23 m (Loukianou St.)</td>
</tr>
<tr>
<td></td>
<td>114.49 m (Alopekis St.)</td>
</tr>
<tr>
<td></td>
<td>47.81m (Ploutarchou St.)</td>
</tr>
</tbody>
</table>

The city block’s morphology is completely closed around a void core. As we have already established, the ratio of covered to pertinent space is approx. 5:1. The un-built space corresponding to all plots is concentrated in the interior of the block additively forming a space that resembles a courtyard. This leftover courtyard relates to the human scale of the apartment unit by default, through the balconies...
and architectural projections that overlook it. The internal “un-built” space is neither physically nor visually accessible from the street. Access to it is only possible through the private space of the apartment buildings on street or basement levels.

An intrinsic feature of the City Block related to its above-described dense plan is its monolithic elevation, which results from applying the continuous building system. The apartment building works as the elementary cell that constitutes the city block through its repetition. It is composed according to a pre-established spatial hierarchy that guarantees the unity of the city block. According to Habraken (1997) the presence of the cell guarantees the human scale.49

Figure 3.3. - Plan of City Block No. 3911 with the interior spaces of a typical floor of the apartment buildings.

Figure 3.4. - Aerial Photograph of City Block No. 3911(2003)
Source: Hellenic Ministry of Environment, Physical Planning and Public Works

49 Habraken likens this synthesis of cells to the rab or the renaissance palace: “The exceptional spaces of the latter are multiples of the module of the cell the presence of which guarantees the human scale.”
Defining the building plot as “a minimum urban cell formed by a building and its pertinent area” already describes it as the apartment building “tied to its ground”. The average area of the building plot is 221.29 sqm, which is larger than the city's average, i.e., 180 sqm. The layout of the plot is defined by the legislation which sets the ratio of built to un-built areas in conjunction with the building's required distance from the pavement (in this case zero as the two lines coincide). Repeating this “minimum urban cell” whose layout is defined by an effort to exhaust the limits of legislation is what defines the character of the city block as described above.

The buildings comprising the block are all concrete frame structures with reinforced concrete slabs poured in situ. As almost the entire block was built before the revision of the antiseismic legislation in 1981, the majority of the buildings are built under the “column and beam frame” principle. The building on Patriarchou Ioakeim 38, built after legislation was changed in 1989, is the unique example of a different kind of structure on the block, using load bearing concrete walls instead. The columns of most buildings are built on an orthogonal coordinate system which cannot constitute a grid due to the uneven distances on which they occur on a typical floor plan. It is worth noting that the slabs of adjoining apartment buildings almost coincide in height due to the effort to exploit the building regulations to the limit.

The street elevations form a continuous surface only interrupted by the streets that envelop it, to continue on to the neighboring blocks. The interface between City Block No. 3911 and the street is articulated by the following architectural elements as described in Figure:

- Wall with no openings
- wall with opening
- balcony
- architectural projection
- semi-closed space
- retiré
- erker

Figure 3.5. - The building plots that constitute City Block No. 3911.
Figure 3.6. - The bearing structure of City Block No. 3911.

Figure 3.7. - Elevations of Street Facades of City Block No. 3911.
In the Structure of the Ordinary Habraken (2000) refers to the street-house relation. He stresses that in a fully urban environment building and street are “married”: the façade wall parts of a street wall, at the edge of a domestic territory. When territorial boundary and house wall do coincide, a certain tension is lost. “The street becomes an enclosed space devoid of civic expression beyond occasional recessed house gates, with perhaps a small sculpted seat near the doorway.”

This is mainly the case in the façade of the city block. The territorial boundary and the building façade coincide. Legislative reasons that we will examine later in the research caused this phenomenon. The only “sculpted” place is sometimes the entrance of the apartment building.

At the entrance we observe the following cases:

a. Building façade and street line coincide (P5)
b. Entrance recession (L1)
c. Building recession (P2)
d. Extrusion to street (PL2)

In the section-drawings made by the author the relation between the buildings and the enclosed void that is left in the interior space of City Block No. 3911. In some cases the buildings are attached (section 5), dividing the interior void core of the city block. In others (section 8) they are detached, but the space left between them cannot be used by the residents. There are also cases (section 9) where enough space is left in between. In these cases light and air conditions are better than in others and back yards are more likely to be used.
3.2.1.2. Who Occupies the City Block and How

The residents and the number of households of City Block No. 3911, as well as the true population of the Athens Municipality are shown in the following table. The residents/household ratio is 2:1. Many single people live in the city block, elderly people, and families with one child only (own findings). The following tables show the number of users of City Block No. 3911, and how they occupy it during different hours.

<table>
<thead>
<tr>
<th>Athens Municipality</th>
<th>True population</th>
<th>Permanent population</th>
<th>Households (true ns)</th>
<th>Members (true ns)</th>
<th>Households (permanent)</th>
<th>Members (true ns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>745,514</td>
<td>789,166</td>
<td>291,145</td>
<td>684,518</td>
<td>301,566</td>
<td>714,338</td>
<td></td>
</tr>
<tr>
<td>City Block</td>
<td>172</td>
<td>185</td>
<td>86</td>
<td>166</td>
<td>89</td>
<td>171</td>
</tr>
</tbody>
</table>

Table 3.2. Population of City Block No. 3911 and population of the Athens Municipality in 2001

Source: National Statistical Service of Greece

<table>
<thead>
<tr>
<th>Time/People</th>
<th>Residents</th>
<th>Visitors</th>
<th>Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:00-8:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00-14:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:00-17:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17:00-20:00</td>
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<td></td>
<td></td>
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<tr>
<td>20:00-24:00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.3. Time zones when residents, visitors, and workers are found in City Block No. 3911

<table>
<thead>
<tr>
<th>Time/Existing Uses</th>
<th>Residential</th>
<th>Commercial</th>
<th>Entertainment</th>
<th>Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:00-8:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8:00-14:00</td>
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<td>14:00-17:00</td>
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<tr>
<td>17:00-20:00</td>
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<tr>
<td>20:00-24:00</td>
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</tbody>
</table>

Table 3.4. Time zones of uses in City Block No. 3911
The common organization of city blocks places buildings that ring the street perimeter shoulder to shoulder (Habraken 2000). Thus, they form a continuous street wall and an internal space invisible from the street. How this internal "un-built" space is arranged and connected to the street merits scrutiny: to a large extent this is what determines the character of the urban fabric. All differences observed are relevant to how the space inside the block is treated (Habraken 2000).

Habraken (2000) then argues that a communal back yard that is not connected to any larger space is an anomalous territorial variation on the urban block. This is the case in City Block No. 3911: its back yard space is nowhere connected to a more public space. Coming out of the apartment building into the communal space the only option is to go back in the building, not to a more general territory. This violates territorial structure. As Habraken states (2000), "Environmental order, regardless of its particular form, is always a continuous chain of public spaces of increasing territorial size. We either go continuously up in the territorial chain, or we go continuously down. All environmental space, in fact, is one."

The Greek term "akalyptos", i.e., un-built, is indicative of the perplexity in regard to its use. Interior such "un-built" spaces are neglected and disused as common areas by the users of the apartment units (which used to be the case with the back yards of old Athens residences). They are often built without permit into storerooms (19 Alopekis St.) or extensions of ground floor shops (21 Alopekis St.). They house the mechanical installations of ground floor restaurants, causing considerable noise nuisance (24 Loukianou St.), since the apartment units' bedrooms give to these areas.

High walls separate interior "un-built" spaces of adjoining apartment buildings, thereby fragmenting the free spaces. In an effort to make use of these "un-built" spaces, the Greek legislator\(^\text{50}\) has introduced the concept of "active city block" with the aim to rehabilitate city blocks by integrating the "un-built" spaces of its plots and opening up access passages to the integrated "un-built" spaces from communal areas on the ground floors of buildings. Nevertheless, citizens have not embraced this initiative.

Rooftop compartments in apartment buildings, the "horizontal aspect" of city blocks, are communal areas where all users have a share. In certain cases, however, the owners the last floors or plot owners have the exclusive enjoyment (not ownership) of part or all of these compartments. Early apartment buildings provided for spaces where users could wash and line their laundry, and cook; with the advent of modern appliances, though, such spaces were eliminated in inter-war apartment buildings, with the exception of stairwell endings. Apartment building rooftops are disused, often locked spaces used to host aerials, AC units, solar heating panels, chimneys.

\(^{50}\) General Building Regulation 1985, Article 13, par. 1, 2.

\(^{51}\) In April 2008, Athens Mayor Nikitas Kaklamanis presented data provided by the Municipality of Athens and registered in the Green Paper of Athens. According to these data, to each of the 907,540 inhabitants of Athens correspond 6.84 sqm of greenery.
small storage rooms, etc. While users have a share in apartment building rooftops, they do not necessarily feel responsible for them. This can be attributed to the failure to determine their use. To change the image of apartment building rooftops, improve the social life of inhabitants, increase the greenery/inhabitant ratio in Athens (currently at 6.84 sqm*), and save in energy, the Municipality of Athens launched a program entitled "Green Rooftops" in May 2008.\footnote{The Municipality of Athens appreciates that the city has about 400,000 apartment units that could be utilized. To turn an apartment building rooftop into a green rooftop requires that a decision be issued by the building owners. Permanent installations with all necessary waterproofing and other works would require a Permit issued by the Town Planning Office; installations with pots would require no permit. In any case, such projects would require relevant static studies, given the considerable extra weight that would burden the building.}

With reference to the built environment, we distinguish three zones in the city block built volume:

- **Zone A**: The zone adjacent to the street. Zone A houses Social Spaces (living rooms, dinning areas, studies).
- **Zone B**: The in-between zone. Zone B houses Service Spaces (kitchens, bathrooms, WC's, storage rooms, staff quarters), Transitional Spaces (hallways, corridors), and light shafts.
- **Zone C**: The zone adjacent to the internal courtyard (or the “un-built” space). Zone C houses intimate spaces (bedrooms).

We notice that in some areas Zone B disappears leaving only Zone A and C (e.g., lot A8). This happens mainly in the corners of the City Block. In some instances, Zone C increases substantially to accommodate the symmetry of the plan and the “invasion” of the block's yard into the plan of the building.

Another observation is that where the a/b ratio of a plot increases, where a = width of plot and b = depth, the area of Zone B decreases.
3.2.1.3. Are users satisfied or not?
In the interviews that we conducted, owners and tenants in the city block in question named the “un-built” space as that feature that required improvement above all, followed by nuisance-inducing uses such as nightclubs. In reply to the question whether users were satisfied by the city block, users of lower-floor apartment units on Patriarchou Ioakeim St. identified an acute problem in noise nuisance and exhaust fumes from the street.

3.2.2. Apartment Buildings in City Block No. 3911

3.2.2.1. How are apartment buildings made physically
Plot surface areas range between 112.20sqm and 560.30sqm
On average: 261.9sqm
Floor areas range between 115.70sqm and 298.00sqm
On average: 210.25sqm
Apartment unit areas range between 31.60sqm and 240.00sqm
On average: 110.65sqm
Communal space areas range between 8.48sqm and 20.20sqm
On average: 12.11sqm
Light well areas range between 0.50sqm and 12.73sqm

Table 3.5. - Year of construction of the apartment buildings in City Block No. 3911

<table>
<thead>
<tr>
<th>Year of Construction</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
<th>A5</th>
<th>A6</th>
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</tbody>
</table>

Table 3.6. - Number of floors per apartment buildings in City Block No. 3911

<table>
<thead>
<tr>
<th>Floors</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
<th>A5</th>
<th>A6</th>
<th>A7</th>
<th>A8</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>L4</th>
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<th>P3</th>
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<th>P8</th>
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<tbody>
<tr>
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<td>3</td>
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<tr>
<td>Total</td>
<td>7</td>
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<td>7</td>
<td>5</td>
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</tr>
</tbody>
</table>
Light wells are meant to provide the cores through which the light can pass, but they seldom meet this objective. "The light well is used for song sparrow cages, for air circulation in lavatories, for calling on neighboring apartment buildings from building shells, for the laundry to dry, for piling up garbage on its floor, for fostering relations between neighbors, mainly through visual contact, for hanging plants, people, and for suicides." (Antoniadis 1982)

3.2.2.2. Who Occupies the Apartment Building and How

Buildings seem to play an important role in supporting, impeding, and directing behavior (Hillier 1996, 183-5); hence, they empower some people and disempower others. In the spatial analysis of the apartment building, we are primarily concerned with the manner in which the building empowers residents as individuals, and as members of the social group inside the residence, and the social world outside the residence, with the aim to enable creativity.

The Dictionary of Modern Greek Language by G. Bampiniotis designates "retire" as "the last floor and the smallest floor of a building, mainly an apartment building, with large balcony, the front side of which is further behind compared to the façade of the rest of the building." [translated by author]. Nevertheless, Tournikiotis (2006, 113) rightly points out that the retiré is the hellenized term "retrait" that derives from the French term "étage en retrait", i.e., recessed floor.

Apartment building basements are used for storage, for mechanical installations, e.g., as engine rooms, boiler rooms, and oil tank rooms, and for accommodation (earlier concierge compartments). Only two cases (P5, A5) provide underground car

<table>
<thead>
<tr>
<th>Table 3.8. - Type of Vertical Circulation (elevator, stairwell, service )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
</tr>
<tr>
<td>Elevator</td>
</tr>
<tr>
<td>Stairwell</td>
</tr>
<tr>
<td>Service Elevator</td>
</tr>
<tr>
<td>Service Stairwell</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3.9. - Vertical Circulation Core Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
</tr>
<tr>
<td>Building Line</td>
</tr>
<tr>
<td>Party Wall</td>
</tr>
<tr>
<td>Center</td>
</tr>
<tr>
<td>Backyard</td>
</tr>
<tr>
<td>Light Well</td>
</tr>
</tbody>
</table>
Table 3.7. – Area measurements of the apartment buildings of City Block No. 3911.

Building lot, light wells, floors, apartment units, and communal spaces (cells with more than one value indicate that they correspond to more such spaces)

<table>
<thead>
<tr>
<th>Building Plot (sqm)</th>
<th>Floor (sqm)</th>
<th>Apartment Unit (sqm)</th>
<th>Communal Space (sqm)</th>
<th>Light Well (sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>176.40</td>
<td>134.02</td>
<td>121.78</td>
<td>12.24</td>
</tr>
<tr>
<td>A2</td>
<td>224.40</td>
<td>158.45</td>
<td>142.56</td>
<td>15.89</td>
</tr>
<tr>
<td>A3</td>
<td>342.70</td>
<td>298.00</td>
<td>150.11 131.89</td>
<td>16.00</td>
</tr>
<tr>
<td>A4</td>
<td>314.50</td>
<td>254.63</td>
<td>236.65</td>
<td>17.98</td>
</tr>
<tr>
<td>A5</td>
<td>560.30</td>
<td>351.85</td>
<td>154.64 177.01</td>
<td>20.20</td>
</tr>
<tr>
<td>A6</td>
<td>290.74</td>
<td>240.73</td>
<td>118.77 110.26</td>
<td>11.70</td>
</tr>
<tr>
<td>A7</td>
<td>165.12</td>
<td>152.58</td>
<td>143.60</td>
<td>8.98</td>
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<tr>
<td>A8</td>
<td>147.30</td>
<td>130.26</td>
<td>120.36</td>
<td>9.90</td>
</tr>
<tr>
<td>L1</td>
<td>185.60</td>
<td>175.88</td>
<td>84.98 77.10</td>
<td>13.80</td>
</tr>
<tr>
<td>L2</td>
<td>213.63</td>
<td>156.06</td>
<td>94.34 48.97</td>
<td>12.75</td>
</tr>
<tr>
<td>L3</td>
<td>204.30</td>
<td>152.53</td>
<td>144.05</td>
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<td>L4</td>
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<td>158.82</td>
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<tr>
<td>P1</td>
<td>463.80</td>
<td>310.50</td>
<td>142.12 151.58</td>
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</tr>
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<td>P12</td>
<td>112.20</td>
<td>115.70</td>
<td>104.70</td>
<td>11.00</td>
</tr>
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<td>278.00</td>
<td>100.68 76.18 31.60</td>
<td>18.33</td>
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<tr>
<td>P2</td>
<td>307.80</td>
<td>265.40</td>
<td>240.00</td>
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<tr>
<td>P3</td>
<td>291.90</td>
<td>240.50</td>
<td>221.26</td>
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<td>P4</td>
<td>370.70</td>
<td>341.36</td>
<td>303.39 37.97</td>
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<td>P5</td>
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<td>11.80</td>
</tr>
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<td>298.40</td>
<td>231.84</td>
<td>214.69</td>
<td>17.15</td>
</tr>
<tr>
<td>P7</td>
<td>123.30</td>
<td>127.47</td>
<td>112.28</td>
<td>15.19</td>
</tr>
<tr>
<td>%</td>
<td>261.9</td>
<td>210.25</td>
<td>110.65</td>
<td>12.11</td>
</tr>
</tbody>
</table>

relies on the façade of the apartment building, by means of a cours anglais on the sidewalk, and on the back of the apartment building, by means of back yards below street surface, and accessed through doors. Light wells usually end at the slab of the basement ceiling without providing air circulation to the basement.

Vertical circulation of apartment buildings appears “tree-like”. There is only one entrance to the building, and there is only one access to the floors through the vertical core. Inter-war apartment buildings had fire exits that led to the back yard. On the horizontal level there is one access to apartment units with the exception of some inter-war apartment buildings.
parking spaces, which are, in fact, interconnected. Their daylight and air circulation
When the public, private, and intimate spaces are related to architectural domains
that occur in the single household or apartment dwelling, we identify seven such
domains. Each domain is associated with proposed typical population scales to form
a spatial gradient from the intimate to the public domain. This, we have assumed,
constitutes a territorial gradient. In the American society, when the inhabitant or
resident controls the space of an apartment, there is differentiation between:
1. The public civic domain, e.g., main streets with a capacity that can rise to 500 or
more people (the domain of strangers, open to public access, where anyone can
go);
2. The public neighborhood domain, e.g., the set of side- and main streets that make
up a defined subsection of the larger urban, suburban, or rural group ranging from
100 to 500 people (the domain of shared interest, where anyone who appears to
have a reason can go);
3. The semi-public or collective domain, e.g., the street, city block, comprising
approximately 5-30 people (where anyone who appears to have a reason can go,
but where neighbors may feel they can confront someone who appears to be
unsanctioned or acting inappropriately);
4. The semi-private domain, e.g., lawns, porches or entries (areas adjoined to the
private area which are controlled by the occupants, and where anyone who goes
needs a potential sanction from an occupant);
5. The private domain, e.g., living rooms, kitchens or dining rooms occupied by 1-6
residents plus guests who are invited (the communal parts of the private area,
where an occupant has already sanctioned a visitor's presence);
6. The semi-intimate domain, e.g., hallways leading to bedrooms and bathrooms
(areas shared by the household group where a visitor must have permission to be
there);
7. The intimate domain, e.g., bedrooms or bathrooms (domains exclusive to
individuals, where a visitor must be invited in to enter).
In this regard, the domains in the case of City Block No. 3911 are:
The public civic domain, e.g., on Patriarchou Ioakeim St., with a capacity that can
rise to 500 or more people;
The public neighborhood domain, e.g., on Alopekis St., where anyone who has a
reason can go;
The semi-private domain, e.g., in the lobby and on the threshold of the apartment
building;
The private, domain, e.g., living rooms, kitchens or dining rooms of apartment units,
and;
The semi-intimate domain, e.g., hallways, studies, and WC's of the apartment unit
connected to bedrooms and bathrooms;
The intimate domain, e.g., bedrooms or bathrooms. According to Habraken (2000), a gate engages form and territory all at once. It encompasses and connects physically defined spaces. Even when the gate does not constitute an actual entrance into territory, its form conveys protection, separation, conclusion, or the beginning of another space. Exploring the roles a gate can play between form and territory can reveal the multiple interactions between form of enclosure and control of space. Gated space, when covered by a roof, is denoted as “inside”, otherwise as “outside”.

In City Block No. 3911 we observe the following “gates”:

Of the nine possible gates, Types A1 and A2 (Habraken 2000) do not usually occur, because they disturb the environmental balance. City Block No. 3911 in Athens is one of those rare examples where these types do exist.

### 3.2.2.3. Are the Users of the Apartment Building Satisfied or Not

Users are not satisfied from the living conditions and the communal spaces in the apartment buildings. Communal spaces are not taken care of and issues like painting facade or performing minor works may lead to conflicts among users.

### 3.2.3. Apartment Units in City Block No. 3911

#### 3.2.3.1. How the Apartment Unit is Made Physically

<table>
<thead>
<tr>
<th>Hallway areas range between 2.17 sqm and 16.70 sqm</th>
</tr>
</thead>
<tbody>
<tr>
<td>On average hallway area is 11.56sqm</td>
</tr>
<tr>
<td>Living room areas range between 10.36 sqm and 48.00 sqm</td>
</tr>
<tr>
<td>On average living room is 33.08sqm</td>
</tr>
<tr>
<td>Dining room areas range between 7.20 sqm and 27.20 sqm</td>
</tr>
<tr>
<td>On average dining room is 18.32sqm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gates</th>
<th>In/Out (1)</th>
<th>In/Out (2)</th>
<th>Out/Out (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal territorial (A)</td>
<td>- Apartment unit and exit to second stairwell that is usually outdoors</td>
<td>- Between two apartment units owned by parents and child</td>
<td>- Safety bars in apartment building entrance</td>
</tr>
<tr>
<td>Vertical territorial (B)</td>
<td>- Shop-street</td>
<td>- Apartment building-apartment unit</td>
<td>- Side corridor to backyards in neoclassical buildings</td>
</tr>
<tr>
<td>Non territorial (C)</td>
<td>- Balcony doors</td>
<td>- Doors between living room and dining room, especially in the inter-war era</td>
<td>- Doors that give onto terraces dividing private and communal “un-built” spaces</td>
</tr>
</tbody>
</table>

- Apartment building entrance
- Free standing apartment buildings
- Apartment buildings with ground or underground car parking spaces
Study room range between 7.20 sqm and 27.20 sqm
On average study room is 18.32sqm
Kitchen areas range between 7.20 sqm and 27.20 sqm
On average study room is 18.32sqm
Master Bedroom areas range between 20.63 sqm and 10.00 sqm
On average study room is 16.90sqm
Bedroom areas range between 14.90 sqm and 11.70 sqm
On average study room is 13.75sqm
Third bedroom areas, if exist, range between 7.20 sqm and 27.20 sqm
On average study room is 18.32sqm
Service room areas range between 2.38 sqm and 8.64 sqm
On average study room is 4.85 sqm
Bathroom areas range between 1.67 sqm and 6.19 sqm
On average study room is 4.85 sqm

The apartment unit is divided into the following space categories:

**Social Spaces**

Living Room: Its surface area varies. The average area is 33.08 sqm. It is rectangular or in the shape of an inverted L. It is connected to the hallway, the dining room, the study, and the balconies. Always in Zone A.

Dining Room: Its average surface area 18.32sqm. It is rectangular. It is connected to the kitchen, the living room, the study, the corridor, and the balconies. It is located mainly in Zone A, and few times in Zone B.

**Service Space**

The ratio of service spaces to the apartment unit's total surface area is 22.38%:

Kitchen: Its surface area varies. Its ratio to the apartment unit's total surface area is 12.32sqm.

It is located in Zone B. It is rectangular. It is connected to the corridor, the dining room, the living room, and the study. Air and daylight circulation is performed through light wells.

Bathroom: Its average surface area is 3.90sqm.

It is located in Zone B. It is rectangular. It is connected to the bedrooms, the corridor, the dining room, and the light wells.

WC: Bathroom for visitors with a surface area. It is located in Zone B or Zone C. Its shape varies. It is always connected through a corridor, to the hallway, the living room, and the dining room. If air and daylight circulation is not from the light wells, then it is not performed at all.

Service room: Room used either as a bedroom for the domestic help or as an auxiliary
space for housework (washing, ironing etc). Its surface area varies. Its ratio to the
apartment unit's total surface area is 4.85sqm. It is located in Zone B. It is connected
through a corridor to the bedrooms, the kitchen, and the openings to the light wells.
Storage.

Transition Space
The ratio of transition spaces to the apartment unit's total surface area is 20.50%. It
includes:
Hallway. Its surface area varies (figure). Its ratio to the apartment unit's total surface
area is 11.56 (table). It is located in Zone B. It is connected to the living room and
the corridor that leads to the kitchen, the bedrooms, and the dining living room.
There are usually no openings to outdoors except through the main door to the
circulation core.
Corridor. Its width is usually 1.00 m. Its average area is 7.60. It is located in Zone B
and C.

Intimate Domain
Bedrooms. Its surface area varies. It is located in Zone C and in corner buildings in
Zone A as well. It is connected to the corridor, the service areas, the balconies on
the rear side.
Walk in closets. In very few cases.

Balconies and semi-open spaces
Balconies on the front side. The average surface area is 9.59. They are located in
Zone A. Narrow and long. They are connected to the living room, and the dining
room. The height of their railings is 1 m, in post-war apartment buildings, and 0.70
m, in inter-war apartment buildings.
Balconies on the rear side. The average surface area is 4.14. They are located in Zone
A. They are connected to the living room, and the dining room. Table 3.7. Different
kind of spaces in the apartment unit.

3.2.3.2. Who and How occupies the apartment unit
Within apartment units, territory control varies between private and intimate
domains. Whereas shared private domains are controlled by the group in a general
way, and temporarily by individuals, intimate domains are controlled by individuals.
some temporarily (bathrooms), others exclusively (bedrooms).
Applying space syntax methods to the apartment unit, we find that three typical
spatial arrangements that we call linear, connected, and fan-shaped, relate to
specific parts of the territorial gradient, and to three different social purposes.
1. Spaces connected in a linear pattern are relevant to patterns of movement, e.g.
separating public outdoor areas from the dwelling (street-lobby-vertical
circulations-threshold-entrance to the apartment unit)

2. Connected arrangements link the shared private living domains (living room,
dining room, and kitchen).

3. Fan-shaped arrangements link together intimate domains (bedrooms and
bathroom through corridor).

**Hallway**

Special emphasis is placed on this area, not only because it creates the first
impression to new comers in the apartment unit, but also because sometimes this
impression is also the only one visitors gain when they speak to the owner of the
apartment unit without coming in. Almost all apartment buildings in City Block No.
3911 have typically no opening in the hallway, given that it belongs to Zone B. The
use of hallways range from serving the simple transitory function, i.e., they lead to
the corridors and the rooms of the apartment unit, to offering a sitting room when
a visit is very short. Some apartment units also have a preliminary hallway, i.e., a
small space between the hallway and the entrance of the apartment unit. Hallways
usually provide room for the wardrobe and the telephone of the apartment unit.

**Table 3.7. Different kind of spaces in the apartment unit**

<table>
<thead>
<tr>
<th>Transition space (sqm)</th>
<th>Private domain areas (sqm)</th>
<th>Social spaces (sqm)</th>
<th>Service areas (sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>11.15</td>
<td>20.99</td>
<td>46.85</td>
</tr>
<tr>
<td>A2</td>
<td>8.24</td>
<td>31.26</td>
<td>36.25</td>
</tr>
<tr>
<td>A3</td>
<td>29.11</td>
<td>18.12</td>
<td>55.94</td>
</tr>
<tr>
<td>A4</td>
<td>38.46</td>
<td>32.89</td>
<td>70.75</td>
</tr>
<tr>
<td>A5a</td>
<td>17.15</td>
<td>25.74</td>
<td>46.57</td>
</tr>
<tr>
<td>A5b</td>
<td>20.66</td>
<td>28.95</td>
<td>60.48</td>
</tr>
<tr>
<td>A6a</td>
<td>19.02</td>
<td>18.38</td>
<td>37.5</td>
</tr>
<tr>
<td>A6b</td>
<td>20.78</td>
<td>15.53</td>
<td>30.3</td>
</tr>
<tr>
<td>A7</td>
<td>9.80</td>
<td>16.06</td>
<td>60.12</td>
</tr>
<tr>
<td>A8</td>
<td>10.19</td>
<td>15.73</td>
<td>49.29</td>
</tr>
<tr>
<td>L1a</td>
<td>6.77</td>
<td>16.38</td>
<td>46.05</td>
</tr>
<tr>
<td>L1b</td>
<td>7.95</td>
<td>19.44</td>
<td>27.81</td>
</tr>
<tr>
<td>L2a</td>
<td>12.38</td>
<td>21.94</td>
<td>26.67</td>
</tr>
<tr>
<td>L2b</td>
<td>7.84</td>
<td>6.14</td>
<td>17.45</td>
</tr>
<tr>
<td>L3</td>
<td>20.09</td>
<td>23.02</td>
<td>32.30</td>
</tr>
<tr>
<td>L4</td>
<td>21.01</td>
<td>19.16</td>
<td>50.19</td>
</tr>
<tr>
<td>P1a</td>
<td>19.52</td>
<td>25.72</td>
<td>47.15</td>
</tr>
<tr>
<td>P1b</td>
<td>22.65</td>
<td>15.01</td>
<td>64.11</td>
</tr>
<tr>
<td>P2</td>
<td>12.66</td>
<td>14.30</td>
<td>22.95</td>
</tr>
<tr>
<td>P1a</td>
<td>11.28</td>
<td>19.39</td>
<td>31.29</td>
</tr>
<tr>
<td>P1b</td>
<td>8.03</td>
<td>6.35</td>
<td>15.61</td>
</tr>
<tr>
<td>P1c</td>
<td>10.45</td>
<td>18.12</td>
<td>21.21</td>
</tr>
<tr>
<td>P1d</td>
<td>2.17</td>
<td>2.25</td>
<td>9.13</td>
</tr>
<tr>
<td>P2</td>
<td>2.06</td>
<td>37.12</td>
<td>75.20</td>
</tr>
<tr>
<td>P3a</td>
<td>20.67</td>
<td>16.70</td>
<td>22.10</td>
</tr>
<tr>
<td>P3b</td>
<td>16.50</td>
<td>19.61</td>
<td>37.20</td>
</tr>
<tr>
<td>P4</td>
<td>14.07</td>
<td>16.58</td>
<td>45.93</td>
</tr>
<tr>
<td>P5</td>
<td>19.50</td>
<td>35.61</td>
<td>71.48</td>
</tr>
<tr>
<td>F1</td>
<td>15.36</td>
<td>16.54</td>
<td>25.60</td>
</tr>
<tr>
<td>Average</td>
<td>15.66</td>
<td>45.54</td>
<td>40.80</td>
</tr>
<tr>
<td>The % of apart. unit</td>
<td>20.50%</td>
<td>34.40%</td>
<td>31.04%</td>
</tr>
</tbody>
</table>
Bedrooms
The primary use of bedrooms is for sleeping; hence, they are also used for changing clothes and taking care of personal needs. Objects in and other uses of bedrooms include watching television, and, if they are adequate in size, hosting bookshelves, desks, and small sitting area. In most apartment units, the only space that remains free is the corridor, given that dimensions are marginally adequate. Larger bedrooms are for parents, while smaller bedrooms are for children. Because most apartment units in City Block No. 3911 provide for only two bedrooms, children usually share the same bedroom while they are younger; when they get older, another space of the apartment unit, e.g., belonging the dining area or living room, is converted into a bedroom, so that one of the children can move there, particularly if they are of different genders.

Kitchen
In addition to preparing food, kitchens are used for eating. In our days, in families where the mother is a working woman, members have different schedules, which means that getting the family together for a meal happens on rare occasions. Consequently, family members eat something fast on their own in the kitchen, rather than in the dining room. Kitchens also function as casual sitting rooms, where the mother can oversee the children doing their homework, members can have their friends or relatives over, etc. Kitchens also include the washing machine if this is not included in the lavatory.

Lavatory
“The position of the lavatory has been gaining momentum in social consciousness. Most people no longer view it as an auxiliary space with limited use, but as a primary space that alone can tell whether an apartment unit qualifies as luxury or not” (Vlachos).

Living room
Both in qualitative and in quantitative terms, living rooms are the main area of the apartment unit. In the early apartment buildings, living rooms would be individual spaces separated from the entrance and the dining room by means of sliding doors. They would be used only when there were visitors. In post-war apartment buildings, living rooms would be used every day, and would host various uses, e.g., dining area, bookshelves, study, etc.

Placing furniture in the living room is often guided by the position taken up by the television set. Additionally, a television in this room would also come with another use: consuming junk food.

In the apartment units of the upper floors of the apartment building, the living
Dining room

Their primary use of dining rooms is where the family gets together to have a meal. Additionally, mainly on account of the large dining table that can serve as a desk, dining rooms are used as studies, often by children doing their homework. Their primary use is increasingly reduced, on account of modern lifestyle and the new family model. As a result, dining rooms have been losing the self-determinant character they enjoyed in the early years of apartment buildings, and is now reduced to a simple table somewhere in the space of the living room.

Balconies

“Overall 1.80 m is not bad, because you can sit, even if barely so, on a round table and all around it, which is helpful for casual dinner parties, gossiping, and chatting. The trouble starts with smaller [dimensions]. 1.50 m or 1.30 m. That’s where you may spot small-town old ladies, dressed in black [or men in] short khakis, vests, with their stomachs hanging out, gobbling up delicacies that the missus has served from the open-plan dining area. So far, so good if it weren’t for those balconies, and in fact those in compliance with the law, 0.50 m in width and 0.60 m in depth. These are only good for brooms, bins, plastic bags, garbage, and the laundry every once in a while.” (Antoniadis 1982)

Balconies are designed “without the least care taken for their geographical coordinates and orientation, which should be the most compelling factor in deciding about the width of a balcony, for reasons of exposure to sunlight and proper energy in the apartment building.” (Antoniadis 1982)

3.2.3.3. Are the users of the apartment units satisfied or not

The interviews we conducted and the questionnaire we handed out reveal that the users of the apartment units are not satisfied with the general living conditions. Users of lower floors are more displeased with their apartment units, on account of poor exposure to sunlight. They complained that spaces where there was no direct daylight circulation were dark, and that the number of rooms that the apartment unit provided was inadequate. The layout and use of the rooms, particularly in inter-war apartment buildings, failed to meet the needs of modern users, who were not even born in that era.

The current users are not pleased in general. Among the reasons they state were: poor environmental conditions, physical deterioration of the apartment buildings,

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53 Installing fireplaces on the lower floors is avoided so that the surface area of upper floors will not be reduced on account of the chimney from lower floors, and also because usually the use of these apartment units (e.g., professional) and the affordability of their buyers do not require or allow for such facilities.
Table 3.9. Type of room and potential use of space

<table>
<thead>
<tr>
<th>Room</th>
<th>Potential use of space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master bedroom</td>
<td>Sleeping, storing clothes, watching, storing clothes, listening to music, reading</td>
</tr>
<tr>
<td>Children's bedroom</td>
<td>Sleeping, storing clothes, playing, studying (doing homework)</td>
</tr>
<tr>
<td>Living room</td>
<td>Sitting, receiving visitors, watching television, eating finger food, accommodating visitors</td>
</tr>
<tr>
<td>Dining room</td>
<td>Eating, watching television, studying (doing homework)</td>
</tr>
<tr>
<td>Kitchen</td>
<td>Cooking, eating, washing clothes, doing homework</td>
</tr>
<tr>
<td>Bathroom</td>
<td>Bathing and personal care, washing clothes</td>
</tr>
<tr>
<td>Hallway (entrance)</td>
<td>Receiving casual visitors, calling (telephone)</td>
</tr>
<tr>
<td>Front balcony</td>
<td>Checking what's on the street, interacting with neighbors, sitting and eating (in retires)</td>
</tr>
<tr>
<td>Back balcony</td>
<td>Storing, hanging out clothes to dry, peeking out</td>
</tr>
</tbody>
</table>

Fig. 3.9. «Exploded» floor plan of apartment unit
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noise nuisance from adjoining apartment units, as well as from other land uses.

3.3. Three-Level Interrelation Analysis

Relying on the above findings, we now discuss the beneficial or detrimental attributes of apartment buildings and apartment units, as constrained by morphology and operation.

Whether users are satisfied or not with their living conditions in City Block No. 391, as analyzed at three physical levels (city block, apartment building, and apartment unit), depends on how each unit performs (Performance). Good or poor performance depends on who occupies the apartment unit and how (Operation).

<table>
<thead>
<tr>
<th>City Block</th>
<th>Performance</th>
<th>Operation</th>
<th>Morphology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment Building</td>
<td>Is the user satisfied or not (relevant to)</td>
<td>Who and how occupies it (relevant to)</td>
<td>How it looks physically (relevant to)</td>
</tr>
<tr>
<td>Apartment Unit</td>
<td>Performance</td>
<td>Operation</td>
<td>Morphology</td>
</tr>
</tbody>
</table>

Whether users are satisfied or not with their living conditions in City Block No. 391, as analyzed at three physical levels (city block, apartment building, and apartment unit), depends on how each unit performs (Performance). Good or poor performance depends on who occupies the apartment unit and how (Operation). For example, we appreciate that a room is dark; this means that daylight circulation in the room is poor.

Table 3.10 Interrelation between Performance, Operation and Morphology

<table>
<thead>
<tr>
<th>Performance</th>
<th>Operation</th>
<th>Morphology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor quality of daylight and air circulation in Zone B</td>
<td>Air and light circulates only through light wells</td>
<td>Small floor area of light wells, large height</td>
</tr>
<tr>
<td>Safety issues in apartment units</td>
<td>Easy access for burglars</td>
<td>Continuous balconies on adjoining apartment buildings</td>
</tr>
<tr>
<td>Social quality</td>
<td>Frequency of encounters.</td>
<td>Small distance between entrances of apartment buildings</td>
</tr>
<tr>
<td>Limited privacy between city block residents</td>
<td>Watching people</td>
<td>Small distance across windows</td>
</tr>
<tr>
<td>No access to the interior of the city block</td>
<td>People do not circulate at ground level between street and the “un-built” spaces</td>
<td>“Un-built” space enclosed by apartment buildings</td>
</tr>
<tr>
<td>Limited Interaction between users of the city block</td>
<td>People do not gather</td>
<td>Lack of communal spaces</td>
</tr>
<tr>
<td>Poor environmental quality</td>
<td>Light permeability</td>
<td>Large height in relation to street width on account of high FAR</td>
</tr>
<tr>
<td>Fun/recreation</td>
<td>Lack of outdoor activities</td>
<td>Small “un-built” spaces on account of high FAR</td>
</tr>
<tr>
<td>Lack of entertainment options for children</td>
<td>Children cannot meet and play</td>
<td>No open spaces for children</td>
</tr>
<tr>
<td><strong>CH A P T E R 3</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Children

<table>
<thead>
<tr>
<th>Low noise comfort</th>
<th>Residents sleep poorly during nighttime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restricted sociability</td>
<td>Shared outdoor activities with residents of other apartment buildings</td>
</tr>
<tr>
<td>No interaction between residents of different buildings</td>
<td>Limited opportunity to meet users of apartment buildings</td>
</tr>
<tr>
<td>No interaction between users of adjoining apartment buildings</td>
<td>Inability to get together with residents of adjoining apartment buildings</td>
</tr>
<tr>
<td>Sense of belonging in the same group</td>
<td>Living in similar conditions</td>
</tr>
</tbody>
</table>

### Apartment Building

<table>
<thead>
<tr>
<th>Noise nuisance between apartment units</th>
<th>Noise travels from the light wells</th>
</tr>
</thead>
<tbody>
<tr>
<td>High flexibility</td>
<td>Users can easily remove walls</td>
</tr>
<tr>
<td>Safety issues</td>
<td>No alternative routes for users</td>
</tr>
<tr>
<td>Poor environmental quality in ground floor apartments</td>
<td>Not enough sun lighting</td>
</tr>
<tr>
<td>Limited accessibility from all groups of people</td>
<td>Disabled user can not enter the building</td>
</tr>
<tr>
<td>Limited interaction between residents</td>
<td>Can not get together with other residents</td>
</tr>
<tr>
<td>Face to face interaction</td>
<td>Chance meetings on thresholds and in the elevator</td>
</tr>
<tr>
<td>Difficult moving around and relevant discrimination</td>
<td>Users spend time and money to find parking spaces for their cars</td>
</tr>
<tr>
<td>Lack of freedom of movement for children</td>
<td>Children unable to go up and down unattended</td>
</tr>
<tr>
<td>Limited relations with neighbors</td>
<td>No sitting area at the entrance of the apartment building</td>
</tr>
<tr>
<td>Poor environmental quality on rooftop terraces</td>
<td>Residents do not visit it</td>
</tr>
<tr>
<td>Social interaction</td>
<td>Exchange news</td>
</tr>
<tr>
<td>Good environmental quality in garden</td>
<td>Daylight and air circulation</td>
</tr>
</tbody>
</table>

### Apartment Unit

<table>
<thead>
<tr>
<th>Limited privacy</th>
<th>Overhearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited privacy</td>
<td>Shared lavatory facilities</td>
</tr>
<tr>
<td>Outdoor recreation</td>
<td>Users cannot use outdoors spaces</td>
</tr>
<tr>
<td>Limited privacy between family members</td>
<td>Children share the same room</td>
</tr>
<tr>
<td>Public/private interaction</td>
<td>Users watch and comment on pedestrians and residents across the street</td>
</tr>
<tr>
<td>Efficiency in space</td>
<td>Flexibility in ways of using the rooms</td>
</tr>
<tr>
<td>Flexibility in furniture arrangement</td>
<td>Users changing around their furniture</td>
</tr>
<tr>
<td>Limited comfort</td>
<td>Living in bad conditions</td>
</tr>
<tr>
<td>Easy to control</td>
<td>Access from visitors</td>
</tr>
<tr>
<td>Privacy from the street</td>
<td>Sleeping without street noise</td>
</tr>
</tbody>
</table>

| **APARTMENT BUILDING** |

- All apartment units give onto the light well
- Domino-type structure
- Single core circulation
- Low building height/"un-built" space ratio
- Stairwells without ramps at entrances
- Small landing on each floor
- Single vertical circulation core
- No parking space areas in the apartment building
- Dangerous communal spaces in apartment buildings (building materials, standards)
- Small entrance to apartment building
- Access through a single door
- Many apartment units and diverse uses
- Retirees are lifted and in recession from the building line

| **APARTMENT UNIT** |

- Thin walls
- No ensuite bathrooms
- Narrow balconies
- Limited number of rooms per apartment unit
- Living rooms give onto the street
- Rectangular rooms
- No fitted furniture
- Small sized rooms and small room heights
- Single central entrance
- Bedrooms located on the rear side
3.4. Recording Unlawful Interventions to Help Identify Current Needs

Another useful tool for identifying the needs of users can be found in recording the unlawful interventions that they tend to carry out on apartment buildings, beyond governmental control or without professional support. There are two different processes that govern the genesis of morphology in the built environment. First, a set of normative rules acting as design tools expresses ideas on how morphology, space organization, and space use should be. Regulations and conventions represent the knowledge of how morphology, space organization, and space use has been constructed.

Domestic space organization seems to be part of the bifaceted morphology generation process, established between very precise and harmonic taxonomies, part of the professional knowledge, and the residents’ needs and expectations, constantly reified by day-to-day life.

At the urban level, public space is systematically privatized with the introduction of physical boundaries that redefine public and private domains by creating direct access from the street to some flats.

The unlawful interventions we have recorded in City Block No. 3911 are as follows:

- Creating new accesses from the street, disregarding the main entrance of the original apartment building (shops, restaurants etc.).
- Arbitrarily occupying the sidewalk with various ephemeral structures (19, Alopekis St.)
- Causing air pollution and odor nuisance from restaurants etc. and slowing down air circulation (“Oikeio”, Ploutarchou St.)
- Arbitrarily adding steps on sidewalk, e.g., leveling the sidewalk and creating space for tables and chairs (“Kafeneio”, Loukianou St.).
- Creating more than one entrance for parking spaces, thereby disturbing the continuity of circulation on the sidewalk (Alopekis St.)

![Fig. 3.10. Balconies overlooking the back yard are used as storage spaces (left). Building elements are arbitrarily built in the backyard to be used for storage (right). This marks a need for more storage space in apartment units.](image-url)
• Covering the cours-anglais that provides daylight and air circulation to the basement.
• Parking cars and motorbikes on the sidewalk and in front of the entrances.
• Converting rear side balcony into storage spaces.
• Converting balconies into indoor spaces.
• Introducing architectural elements on newly built indoor spaces on the ground level (back yard), e.g., windows, doors and railings, giving a lively, but sometimes disordered, appearance to these buildings.
• Using diverse shapes, colors, materials, and finishing on the façade, according to the preferences of each apartment unit user.

The above conversions mark the following needs and attitudes:
A. Need for more physical indoor space.
B. Need for better (more convenient) re-arrangement of space.
C. Need for flexibility in layout.
D. Disrespect for public space.

3.5. Adequacy Criteria for Creating a Creative Block

The foregoing analysis and conclusions with regard to the performance of City Block No. 3911, confirmed and complemented by the criteria we have identified in current literature point us to the following adequacy criteria for the development of the design tool.

Diversity

The design tool for Creating the Creative Block (CCB), must embrace diversity, both cultural and economic, and functional, spatial and aesthetic.

In The Death and Life of Great American Cities, Jacobs (1961) emphasizes the importance of diversity in urban space, and the necessary physical conditions to create diversity in urban space. In this study we have embraced Jacobs' suggestion. Therefore, the targeted city block

54 In "The death and life of Great American Cities" Jacobs suggests four basic conditions to promote diversity. Condition 1: The district, and indeed as many of its internal parts as possible, must serve more than one primary function, preferably more than two. These must ensure the presence of people who go outdoors on different schedules and are in place for different purposes, but who are able to use many facilities in common.
Condition 2: Most blocks must be small, that is the occurrence of different streets and the opportunities to turn corners must be frequent.
Condition 3: The district must include a mix of buildings that vary in age and condition, including a good proportion of old ones.
Condition 4: The district must have a sufficiently dense concentration of people, for whatever purpose they may be there. This includes people because of residence.
should serve different functions and land uses; should offer facilities it offers should be used by people with and for diverse schedules purposes; should be accessible for (i.e., lived and visited by) people with diverse backgrounds in terms of generation, social status, gender, race, etc.; should provide for land uses allow living 24/7, and should promote the interaction of users (e.g. “Oikeio”, “Starbucks”).

The distance between the entrances of the apartment building should be short enough to allow users to connect and communicate with each other when they step out or are at front entrance. The frequency of "thresholds" between private, semi-private, semi-public, and public spaces should give people the opportunity to meet and interact.

Buildings dating from diverse periods, with diverse morphology and functions should be preserved or built in the city block. Buildings from historic periods should be preserved, because they maintain the historic continuity, and enhance the urban façade and experience.

The urban fabric must have a dense concentration of individuals who live there and people who promote creativity.

**Interactivity**

The most important finding from the analysis is that entrances public of apartment buildings are seen as the most promising spaces for interaction in the city block. They act as “social catalysts” for urban residents and members of neighborhood communities who meet to forge and maintain social ties and friendships, and engage in discussions and debates. They are instrumental in establishing the identity and culture of a city and a sense of continuity and belonging. As Foth and Sanders stress (2005), one of the significant common denominators in well functioning residential architecture is the provision of social spaces, interstitial places that offer opportunities for interaction, and exchange.55 Today, the need is to optimize the return on real estate investment focuses the attention of developers of apartment buildings on the apartment units themselves.56 Public space may add value, but also increases body corporate fees and maintenance requirements. It is thus not surprising that public space in residential apartment buildings appears all too often to be an afterthought and a way to fill up gaps. Public spaces offer three distinct types of use:

55 In the mass housing solutions of the twentieth century, the street was replaced by the access corridor in high-rise developments, mostly void of places to dwell, providing mere circulation. As these corridors became devices of internalised access, the mounting disfunctionsally increased in the face of developers’ slim profit margins.

56 The modernist residential tower blocks mostly failed to recognise the model established in Le Corbusier’s Unité d’Habitation in Marseilles, France, completed in 1952, that of an elevated podium (allowing the landscaping to flow beneath the structure), the allocation of public amenities on mid block floors (shops, laundry, etc.), and recreation facilities (pool, playground, crèches) on the roof.
The number and size of public spaces also depend on the size and layout of the apartment units themselves. The smaller an apartment is, the less social space it offers for entertainment and other purposes, especially in shared accommodation. Public spaces can make up for this lack by offering breakout areas.

Collective ownership of public spaces enables residents to access and use facilities which would be too large, too expensive, or too inconvenient to maintain on their own such as pools, gyms or tennis courts.

However, collective ownership does not mean collective use. Most public spaces are meant to be "public" in relation to access, but "private" in relation to use. Yet most of them do not offer the adequate level of privacy that residents desire. The lack of privacy in these panoptic spaces can make many residents feel uncomfortable and awkward.

Policies and rules may need to be in place to govern access and to allow residents to book a space for private use. Foth and Sander have also analyzed how the use of digital information and communication technologies, and the resulting social behavior impacts on the purpose of public space, and how it is used and seen by the residents.

Public space also gives residents the opportunity to invite a number of friends and visitors over who cannot be accommodated in the private space of an apartment.

The design of public space needs to acknowledge and accommodate the preferences of urban tribes for private spaces (someone’s home) or private places in public spaces (cafés, bars, Internet). Although the choice between private spaces and public spaces in apartment buildings are in any case regarded as less desirable meeting places for residents to meet and socialize with their friends and peers.

While it is easier, more than ever before, to communicate and interact with others, forms of urban alienation persist. Physical proximity does not ensure neighborliness (Arnold et al. 2003; Foth 2006). Hence, approaches to encourage and support interaction amongst residents should be based on voluntary action and choice to cater for different lifestyles and social needs.

Foth and Sanders suggest three pathways on how residential architecture and design...
of public space stimulate, encourage, and support social interaction and networking between residents:

- Serendipity: “Bumping into someone” has been reported as the most common form of interaction between residents.\(^6\) Depending on individual personalities and social preferences, such concurrences may remain without consequence unless people already know each other. The design of public space in residential apartment buildings substantially influences the likelihood, frequency, and intensity of serendipitous encounters.

- Socio-cultural animation: Residents that attend organized events (e.g., public barbecue) welcome the opportunity to acquire better knowledge of who lives in the complex, meet old friends, and make new acquaintances. These and other acts of socio-cultural animation (Foth 2005) allow residents to take the initiative to organize collective actions. The location and facilitation of such activities requires appropriate public spaces - both physical and virtual - that cater for combined-uses, and offer a heterogeneous fit-out to suit a variety of technical and social needs. Audience sizes change; hence, it is essential that these spaces can be re-appropriated and re-purposed for different contexts and circumstances.

- Digital augmentation. Theories of networked individualism and social networks do not only have an impact on the residential architecture and physical public space, but also on the architecture of systems in the virtual public space. These systems provide a range of opportunities for digital augmentation, which affords a cross-integration of virtual and physical public space.\(^7\)

In this regard, in the context of the city block we should consider the following opportunities:

*Opportunities for incidental exchange.* Design gestures and innovations in the infrastructure of social space beyond the functional minimum (e.g., seatings on enlarged stairway landings, etc.). Flexible, permeable, and informal public spaces.

*Opportunities for city dwellers to meet online.* Online participation can facilitate new connections to work, education, civic participation, and a healthy social fabric.

**Adaptability**

Adaptability can be designated as the capacity of apartment units, apartment buildings, and city blocks to adapt to changing needs. Shehayeb (1997) maintains that the adaptable space is used "by more people in more diverse ways over a longer period of time, as part of a broader sustainability design approach."

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\(^6\) Serendipity is the occurrence of favorable results from conditions which were unintended, unplanned, or from which nothing beneficial was expected.

\(^7\) Digital augmentation refers to the integration of digital technologies into physical spaces, enabling new forms of interaction and engagement.

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period of time (day and night, as well as enduring time), than spaces designed for specified (limited) functions." Spaces that are flexible are shown to be more sustainable, since the cost of changing them to adapt to new uses, new users, new technology, or new trends can be high, particularly when they have not been designed to be changed.

In the case of City Block No. 3911 we noted, indicatively, that the new apartment unit owners convert their space when they take over from former owners; when there is a shortage of storage space, they convert balconies into storage rooms. This is feasible because the space itself is flexible, to a certain extent. If City Block No. 3911 could address the issue of adaptability, it would offer an additional asset. More specifically, it would:

- extend the useful economic life of apartment units and apartment buildings
- increase the diversity of uses in apartment units and communal spaces
- increase the diversity of users and would appeal to the creative class
- ensure its operation in future

Efficiency

In a central, middle-class area, high population density and fierce exploitation of land are not necessarily consistent with an effective use of the area. In City Block 3911 we noted that:

- internal "un-built" spaces were neglected (at city block level)
- rooftop compartments were disused (at apartment building level)
- spaces were wasted for corridors and preliminary hallways (at apartment unit level)

Seeking to improve the environmental performance of building projects, Andy van den Dobbelsteen and Sebastiaan de Wilde (2004) discuss the factor of space. They maintain that there are two main solutions for improving the use of space: intensive use of space, and multiple use of space. In the first case, floor or land surface is used more intensively (by more people) than in a reference situation. In the second case, urban functions are combined. Both these principles can be applied in the second (surface), third (volume), or fourth dimensions (time). Design options for intensive and multiple use of space include:

Increase occupancy: intensive use of surface

Stack: intensive use of land

3.6. Conclusions

Introducing City Block No. 3911 into this research and conducting this descriptive analysis has enabled us to better understand the dysfunctionality of the urban fabric in question. Current experiences in similar urban cases worldwide indicate that such dysfunctionality can lead to decline. We have also focused on evidence of those functionalities and dysfunctionalities that are relevant to the development and promotion of creativity.

Note that, examining the city block in question has brought to light a large number of changes and arbitrary interventions that were incompliant with the designs initially submitted to get the relevant building permits approved, in addition to other illegalities, performed both by contractors in the building stages and/or later on by owners who made use of the relevant spaces. These observations have afforded us the opportunity to appreciate the general trends and needs, and have therefore been taken into account. Analyzing City Block No. 3911 has helped us to identify the types of performance that take place within the city block, as these emerge beyond operational constraints that, in turn, result from morphological constraints. We have also identified relevant adequacy criteria, e.g., interactivity, diversity, adaptability, efficiency, and we have appreciated their effect upon the inner city center. Clearly, we are now in a position to help regenerate the urban fabric through architectural recommendations.

To generalize this knowledge, though, it is imperative to establish that what we have learned so far is applicable to all cases. In other words, it is necessary to find out that the knowledge extracted is indeed generalizable. To this effect, the apartment building units found in the case study are identified as instances generated by types that emerged in the historical evolution of Greek architecture (building regulations, technologies, social programs, architects’ pursuits, etc.). One option would be to rely on statistical deduction. Instead, we have opted for the generic option, as a path that a. can better explain why this Athens city block has acquired its particular character, and b. may forecast its evolution in future. The following chapter will try to draw links between individual units and generic conditions.
CHAPTER 4: TOWARDS A MODEL: 
THE EVOLUTION OF BUILDING APARTMENT TYPES

In the previous chapter we examined data collected out of the case study and analyzed the performance of City Block No. 3911 within its operational constraints that, in turn, result from its morphological constraints. Within this city block, performance was weighed against creativity-related criteria.

To generalize this evidence-based experience, it is necessary to turn it into knowledge in the form of generalized model. Moving from the knowledge of a specific city block sample into generalized knowledge on city blocks can be achieved either in the abstract or in a way that indicates the generic conditions of each time period that have driven to a certain type of apartment building, rather than elaborating on these types. We have chosen to apply this second and more specific method.

To identify the evolution of apartment buildings we show how each new building type is associated with specific generic factors, the work draws from current investigations in the history of Athens modern architecture backed by our own observations and analysis:

Here are the generic factors taken into account
- The introduction of new technology
- The introduction of new legislation: a. Building regulations, b. Legislation related to ownership/property, and c. City plan regulations
- The introduction of new socio-cultural and economic NEW realities

4.1. Concise Historical Context for the City of Athens

The history of Athens in Modern Greece began in 1832, when Otto, the Prince of Bavaria, was crowned King of Greece, and made once again Athens its capital city. Athens was chosen as the Greek capital city for historical and sentimental reasons, not because it was a large city (4,000-5,000 people at the time). Its few buildings dated back from the period of Byzantine Empire and the 18th century. Once established as the capital city, Athens required a modern city plan. This was laid out and public buildings erected.

Athens experienced its first period of explosive growth after the disastrous war with Turkey in 1921 ending with more than one million Greek refugees from Asia Minor.
being resettled in Greece. Following that, both World War II and the Greek Civil War left the country in ruins. This was not for long. Seeing that building activity was so limited, the state introduced laws in an effort to encourage it. This soon caused an overwhelming explosion of the sector; so then new laws had to be introduced to control building activity. Athens began to diverge from Third World Model urbanization models, in socio-economic terms. Living conditions were improved, and the role of marginality and urban poverty declined (Leontidou 1997).

Housing construction was controlled by small entrepreneurial capital and landowners. Urban land was exploited to the maximum, with the system of “antiparochi” dominating, if not alone, relevant building practices.

By 1970, multi-storied apartment buildings made up for 10.36% of the greater Athens building stock, while they formed only 1.73% of the total stock in the rest of Greece (NSSG). Tower apartment buildings were introduced in 1973, thereby creating a completely new model in the Athens urban environment.

It is interesting that, although the concentration of new buildings were declining towards the end of the 1940-1984 period, new houses were built at a higher rate than population increase rates. Although these calculations should be qualified by the fact that the old building stock (neo-classical buildings) were being destroyed in the process, what is immensely important is that “Athens was subject to an aggressive invasion of capitalism, and was changed into a reinforced concrete agglomeration, where building space was commercially exploited to the maximum degree possible” (Leontidou 1990).

The accession of Greece into the European Union in 1981 brought a flood of new investment capital to the city, but also increased the social and environmental problems. Athens was faced some of the worst traffic congestion and air pollution in the world. This posed a new threat to its ancient monuments, given that traffic vibrations weakened their foundations and air pollution corroded their marble material. In this regard, both the city of Athens and the Greek administration, aided by European Union funds, undertook major infrastructure projects, including the Athens International Airport and a new metro system. The city also tackled air pollution by restricting the use of cars in the city center. As a result, Athens was awarded and hosted successfully the 2004 Olympic Games.

Throughout its long history, Athens has had highly diverse population levels. The table below shows the historical population of Athens in modern history.

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4 The General Building Regulation is issued in 1955, at a time when building is considered a top priority activity, since the country has just come out of World War II and the Greek Civil War. Around that time, the gap between public and private activities widens dramatically.

5 The rapid rise in housing supply is evident in the following rates: in 1951-1961, comparing the net population increase in greater Athens with new residences built indicates that there appeared one new house per 2.6 inhabitants in 1961-1971; by 1971-1981, this rose to one house per 0.8 new inhabitants. There were only two periods of overproduction (1971-73 and 1976-79) that led to overproduction.

6 The main reason why Athens was not awarded the 1996 Olympic Games was the city’s environmental and infrastructure problems.
Fig. 4.1. Number of buildings constructed from 1919-2000 in Athens (National Statistical Service of Greece)

4.2. Period 1828-1914

4.2.1. The Introduction of New Technology

While Monier had reinforced concrete patented since 1867, and the first house made of reinforced concrete was built in Port Chester, NY, USA, back in 1875, for fire protection, as maintained its developer, up until 1917 multi-storied buildings in Greece were built using a combined system that had as bearing structures stonework, in the vertical sense, and iron beams, in the horizontal sense. This old building technology would allow a limited potential static adequacy, fire protection, and functional space configuration. In addition, the costs it would entail were high, given that the primary building elements, i.e., iron beams, had to be inserted.

4.2.2. The Introduction of New Legislation

Once established as an independent sovereign state, Greece made its first attempts to create “City Plans”. These plans were carried out without being subject to legal rules or a legislative framework for urban planning. The state’s intervention was based on police ordinances with respect to every building individually, not to the city as an entirety.
As the capital of Greece, Athens was in need for a City Plan that would not only enable the further expansion of the city, whose population at the time was a mere 12,000 inhabitants, but would also be based on the European concept of that particular era, which was imperative for a new “European city” with such a remarkable historical background. According to building authorities, German or European, in general, this concept dictated that: a. the old city should remain untouched. Interventions could occur only provided they were related to the expansion; b. new regions would include new cities, and planning were to be in the simple Hippodamus system; c. plans would be related to a strictly geometric neoclassical composition, i.e., symmetrical and monumental.

The first decree after the establishment of the Greek State to specify the rules for the structures in the country was issued in 1835. Its articles stipulated the safety standards, sanitary conditions, aesthetic structures, and heights of buildings. It held a general power over the state. It defined the city planning decrees, as well as the first structural rules of the country. It established, for the first time in the new state, the principle that the height of a building should be no more than two floors, especially in the earthquake-stricken regions.

In 1836 another decree was published, pertaining exclusively to the city of Athens, with the aim to settle disputes between landlords of adjoining properties. The state also set a minimum surface area for land plots that were to be built, and dictated that all residences along main streets were to be two-storied buildings, and were to form an attached façade (this was an early form of the “attached” building system that would shape the visual image of Athens). Shortly afterwards, the state would intervene to preserve entire parts of the city.

12 Article 14 prohibits the use of oil-mixed paints and varnishes on the grounds of health reasons; similarly, it prohibits the use of shiny colors, such as red, bright yellow, and white, on the outside of houses, on the grounds of aesthetic reasons.
13 Decree dated April 9, 1836 “On the extension of the City Plan of Athens”, Article 13.
15 This is the reason why it mainly included decrees that settled differences in reference to the borders of adjoining building lots.
16 Article 3 stipulated that whoever wished to built along one of the three main streets of the old city or along any street of the new city should have a land plot of at least two hundred square meters.
17 Two significant statutes were issued to this effect: The first was the Decree dated June 5, 1942 in reference to Athens and Ermoupolis; and, the second was the Law 858: “On Performing the City and Town Plans of the Realm” which held a general power over the state. It included only articles, in exclusive reference to city planning regulations.
4.2.3. The Introduction of New Socio-Cultural and Economic Realities

When Athens became the capital of the new kingdom, several architects were employed to design the new City Plan that would pay homage to the past and would reinforce the ties with Western Europe. Hundreds of people moved to Athens in their quest for housing. Old Athenian families would be thrown out into the street to make way for the rich and powerful, the bureaucrats and office holders, and the powers that be (Bastea 1999).

Until then, most residences in Athens were comprised of the necessary number of rooms and the existence of sketchy public areas. Whenever the appropriate amount of money was available, renovations, accessions and new rebuilding would take place. While none of the buildings that were constructed during that period still exists to be included in our case study of City Block No. 3911, we will still make reference to the relevant apartment building types, both before and after the impact of Neoclassical style as a generic precedent for Athens apartment buildings.

In Athens houses of this era, there were two types of ground plans: the “open” and the “closed” types of ground plan. “Open” ground plans, dominant at the time, were dictated by the early royal decrees. In the shape of an inverted L, such ground plans would be easily adjusted to the shape of Athens plots with narrow faces and large depths that would allow for rooms to be lighted. “Closed” ground plans would be simple, cubic houses with one floor and a basement. Unlike “open” ground plans, these ground plans could not be divided into many independent residences.

Conforming to the grand vision set out in various master plans, townhouses adorned with neoclassical façades soon made their appearance, and Athens quickly became a cosmopolitan city. Under the impact of Bavarians, ground plans became more symmetrical and room layouts became more rational, which seriously altered the initial shape. The new morphological element was intended to create a more official façades facing the street. When the first samples of European architecture started to become more frequent in the new capital, changes were more evident. A new kind of

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14 A typical example is the manor on 96, Andrianou St. Rooms are in a row, both on the ground floor and on the first floor, and they are all linked by means of an open, covered wide corridor on the side of the yard. The first floor is accessed through an external stairwell. On Adrianou St., the spaces between the corridor’s supports are later closed using glass panes, thereby turning the semi-un-built space into a room.

15 A typical example is the residence General Richard Church, dated back in the late period of the Turkish Occupation. The entrance is through an exterior stairwell; if there is a second floor, it is accessed from an interior stairwell. The residence housed one or two families, and could not be divided to house more people.

16 The main part is two floors and it is placed lengthwise the building plot along the building line. The interior rooms are symmetrically ordered in relation to the central axis; the exterior openings are rhythmically placed at equal distances. The stairwell is located inside the house, and the interior layout is organized around the main connected axis. A typical example of such a house is the dwelling on 13 Thoukididou St.
building was introduced in Athens: the urban mansion. Such projects were mainly assigned by wealthy owners to foreign architects or Greeks who had studied abroad. These urban mansions are in no way representative of the natural evolution of local architectural; they did incorporate, however, the governing lines for the maturity of Athens houses, completed in the era of King George I, when the urban residences of the capital city were rapidly built (Biris 1987).

The Neoclassical model impacted the traditional building trends at the time. Athenians accepted and assimilated that model, provided that the organization and look of Urban Mansions did not affect their daily needs or traditional habits. The social framework dictated, therefore, that this foreign model be transformed.

In the mid nineteenth century, some types of residences in Athens and the suburbs became crystallized. Their complex organization underlined the convergence of local architecture and classicism elements. “un-built” spaces were considerably reduced, whereas interior corridors and lobbies that communicated with the rooms started to develop. The following two trends were dominant:

- A pattern, which is close to the traditional room layout around a yard, is based on the traditional shape of an inverted L, and rarely on that of Π.
- Two-storied apartment buildings with independent entrances and internal stairwell for each apartment. During the period that the settlement was developed, this is considered to be the most typical type of Athenian house.

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21 The urban mansion, introduced from Germany. The layout of the ground plan is tripartite, simple symmetrical, with the main corridor at the ground floor (Vestibule), and the main stairwell along the axis. Similar to the ground plan, the building front side is divided into three parts. The main part is slightly projecting from the rest of the building, and it is highlighted by a balcony or a “loggia”. Its composition is also divided, in the horizontal sense, into the “base”, “middle of main part”, and the “projection”, and it is monumental. The volume has a cubic, massive character. The morphology of the building’s front side is done with a distinctive axis system.

22 Introducing the symmetrical ground plan model with the main hall did not eliminate the traditional layout of spaces around the yard. On the contrary, the innovatory model transformed urban residences in a more advanced way. The connection of the apartment units with communal areas, the right placement of stairwells, the street-entrance-yard relationship, the symmetrical layout of façades (of the building) acquired a new practice unrelated to urban architectural elements or to the overused traditional potentialities (Biris 1987).

23 A system that is widely used at the time in the capital's peripheral regions is the “detached house” (e.g., the residence at 16, Tinou St., Kypseli). The entrance, an oblong corridor, divides the house in two parts. On the left and on the right there are two large rooms; at the back there is a door that leads to the yard. A large door or even a free opening connects the two rooms of the one side to create an integrated lobby. The ground plan is like a square. It allows for little exploitation of the building plot and few alternative changes. The floor extension in this type of residence is relatively simple. A lobby is used to place the stairwell. The stairwell is accessed either from the main entrance with a T-shaped axis system or through a sideways access from outside. Georgopoulos Residence, 16, Ipeirou St. 1880.

24 An early example of apartment building with a single entrance is the Skouze Apartment Building. This model will not be followed for many decades.
4.3. Period 1914-1940

4.3.1. The Introduction of New Technology

The advent of reinforced concrete in Greece marked the development of multi-storied buildings. This new material provided the solution to serious building impediments, while it reduced the cost and delivery time of building constructions. According to Aggelopoulos (1902), the cost for a building using reinforced concrete was down by 20-40% compared to earlier methods, and the volume of bearing structures was down to 1/3. Introducing reinforced concrete to building constructions (in the construction industry) also brought about changes in building materials and methods. Another advantages of this new technology was that it enabled designers to make a comprehensive, static calculation of a building, which was not feasible earlier on, given that a building would depend largely on domestic resources for the supply of building materials. Another innovation is the use of the "artificielle", i.e., slush grout processed with various materials and colors, used instead of plaster on the external masonry of the front side of buildings; it is even more resilient than coatings that were used post-war. Bearing structures and walls were no longer dependant. This allowed for larger openings, where wooden shutters would be used, a typical feature of Greek architecture since 1920 (Philippidis 1984).

The apartment buildings in City Block No. 3911 built during that period are as follows: [Table 4.2. Apartment buildings of City Block No. 3911 constructed in the period 1914-1940 (by author)]

<table>
<thead>
<tr>
<th>Code</th>
<th>Year</th>
<th>Address</th>
<th>Code</th>
<th>Year</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>L3</td>
<td>1933</td>
<td>26, Loukianou St.</td>
<td>P6</td>
<td>1936</td>
<td>42, Patriarchou Ioakeim St.</td>
</tr>
<tr>
<td>L4</td>
<td>1934</td>
<td>28, Loukianou St.</td>
<td>P7</td>
<td>1937-1938</td>
<td>44, Patriarchou Ioakeim St.</td>
</tr>
<tr>
<td>P2</td>
<td>1938</td>
<td>34, Patriarchou Ioakeim St.</td>
<td>PL2</td>
<td>1934</td>
<td>21, Ploutarchou St.</td>
</tr>
</tbody>
</table>
4.3.2. The Introduction of New Legislation

During this era, the completion and decoding concerning the city planning and the legislative reconstruction was achieved. Over the period 1920-1930, Athens evolved in three directions:

a. Areas outside the City Plan were annexed and legalized.
b. Illegal residences were developed within the zone, without a building plan.
c. The Caring of Refugee Fund (CRF), the Committee of Reestablishment of Refugees (CRR), and the Ministry of Welfare organized refugee residences.

Comparing the city's borders between 1927-1940 can establish that, with the exception of refugee residences, expansions would take place without planning or hierarchy, and in areas of illegal construction. In 1923, the first Greek law on systematic urban planning, with amendments was issued, and remains in effect today. It had a significant bearing on the development of urban planning, but did not introduce important innovations as far as building regulations were concerned, except for setting limits on real estate property, stipulating regulations on structural works, and providing for building plot arrangements before the construction.

Amendments, deviations, and alterations in implementing the aforementioned legislative decree account for the following effect: settlements were created that failed to meet modern living standards (e.g., lack of communal or utility spaces, improper densities, lack of infrastructure, etc.), despite having been developed.

In 1914 the ministry of Transport introduces Law 276 and inherits all city-planning competences that ad belonged to the Ministry of Internal Affairs since 1863. This transfer has positive effects in the institutional framework. Two active characters shall influence the first years of its function: A. Papanastassiou and A. Politis.

Two categories can be clearly identified: private settlements, and city plan extensions within the zone. Private settlements exploited the legislative decree on city planning, dated July 17, 1923, and sometimes were carried out by architects.

These are created in pockets that are “accidentally” left out of plan, bordering with new or older regions.

Using the following phrase, B. Tsagris in “Athens as a city” succeeds in condensing all the urban planning interventions of that period: “We are not going to find out who is at fault and who is not.” The fact is that new Athens has been and is being built with the mercy of God and without the mercy of humans.

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31 The entire Greek territory is legislatively structured under three categories:

a. Areas within the City Plan, i.e., areas with an approved city plan, regulated by Legislative Decree dated July 17, 1923.

b. Residences existing before 1923, without an approved city plan, but under the legislative regulations.

c. Areas “outside city plans”, i.e., areas outside building planning designs, and outside settlements. These areas are regulated by decrees, but, in fact, constructions within these areas are uncontrolled.
according to approved designs. Meanwhile, unstructured building allowed for illegal settlements to be developed, which settlements the state would later legalize and integrate into the urban fabric (Christofilopoulos 1976).

In reference to building codes, the state was obliged to respond immediately, and set restrictions, deriving from the use of the new material, i.e., reinforced concrete, which restrictions allowed for the development of multi-storied buildings. Law 858 in 1917 marks the starting point for determining building heights. The law was further specified later on, in the systematic determination of building heights on every street of city plan. Greatest building heights were defined based on the width of the street, and internal floor heights were set at 3.30 m. In 1919, the concept of "retiré" (i.e., recessed top floor) was introduced. Marmaras (1991) calculated that allowable heights corresponded to an FAR (Floor Area Ratio) ranging between 3.5 and 6.7. At this point no restrictions were yet provided in relation to the coverage of building plots. The directives for such restrictive measures were possibly based on models that had been already in place in Paris (Marmaras 1991).

In 1922 strong pressures from parties with vested interests led to the introduction of an even more propitious new decree (Royal Decree, dated August 24, 1922) which...
increased the maximum building heights in the central area from 22 m to 26 m\(^2\) and reduced the net interior floor heights to 3.00 m. This decree also introduced for the first time a minimum, compulsory "un-built" space per building plot (at a mere 10 sqm). Another first was that it defined the ideal 3-D envelope within which architects or engineers were obliged to inscribe their buildings.\(^{41}\)

Despite all the compromises on the part of the Greek state, even stronger pressures were exerted. This resulted in the Athens land being exploited\(^{42}\) even further, which today would correspond to an FAR ranging between 4.1 and 8.0.\(^{43}\)

In 1923, erkers, architectural elements that would highlight the architecture of the inter-war era and impact the morphology of apartment buildings drastically,\(^{44}\) having been erkers to the sun, and "sun-facing" were also "un-built" spaces.

The apertures on the facades of the apartments were limited to 0.25 of the building height (Zepeda, 1934).

In Zone A, the equivalent floor area ratio ranges between 4.1 and 8.0; in Zone B the equivalent floor area ratio ranges between 3.5 to 7.4. (Marmaras 1991)\(^{45}\)

K. Kitsikis argues that erkers were introduced in Greece by E. Hebrand. (Kitsikis 1940, 202-203)\(^{46}\)
been adopted to almost 50% of apartment buildings, are introduced by law. An erker is defined as the architectural projection that is extruded from the vertical surface of the property line, that is permitted at a height no less than 3.00 m from the street, and whose length is up to 1.40 m. Some scholars view erkers as a modern option of a loggia in traditional architecture. However, erkers reduced the width of streets, which was the cause of their elimination in 1937.

The most significant introduction to Greek law that will enforce the development of apartment buildings and will change the built environment drastically is Law 3741 “On Ownership per Floor” otherwise known as “On horizontal property” that came into effect on January 9, 1929. Unlike the rule of Roman Law that until then applied “superficies solo cedit” (whatever is attached to the land forms a part of it), horizontal property implied that “the subjects belong to the subjects”, i.e., the ownership of a building from different persons, each of them having in its fully ownership only one floor or an apartment of the floor (Zepos 1931).

This law was initially applicable only to refugee settlements, in the aftermath of the Asia Minor Destruction. Bournias (1980) maintains that this law promoted the institution of horizontal property on an international level, because it introduced special regulations that had not been proposed in earlier applications. According to Zepos (1931) “Under Roman Law, buildings on the ground do not constitute self-subsistent objects. Hence, despite the fact that in Ancient Rome multi-storied buildings were developed for housing purposes, i.e., insulae, there is no evidence in current literature to suggest that Roman Law acknowledged the distinction of buildings in the horizontal sense.”

Up until 1926, the existence of this decree was unknown to people, but later it was fully adopted. According to records of Maramaras (1991), between 1925-1940 in 50.22% of apartment buildings, 69.86% have erkers. Marmaras wrote that the relevant decree about erkers existed before in Berlin’s legislation (1991).

They were also several others, such as K. Kitsikis and K. Biris, who were opposed to this institution. They believed that far-fetched innovations and some outside or foreign models were not needed. “Exterior façade architecture” was enough to define the interior body, and the constructive way to achieve a good result.

At the beginning, this institution was to be introduced via Legislative Decree “On Ownership per Floor or Apartment”, dated March 19, 1927, applicable only to refugee settlements after the Asia Minor Destruction, and was to be applied to those buildings that were built either by the State or by a Committee for the Re-establishment of Refugees, or by individuals in refugee settlements. This was a clear indication that the Asia Minor Destruction affected justice and, consequently later on, the development of the built environment.

As Ap. 1. Bournias states, the relevant Belgian Law regulated mainly the generality of the co-ownership institution, leaving many special issues of the horizontal property institution inadequately processed, at least not until the publication of the Greek Law.
In that same year, 1929, the Greek State introduced the first General Building Regulation,\(^{52}\) which repealed all prior legislation, either general or localized, with the aim to build all aspects referring to building constructions on a new basis.\(^{53}\) Instead of adopting a purely restrictive and corrective approach, the 1929 General Building Regulation attempted to apply, for the first time, thoughtful planning, and to anticipate future evolutions. The coinciding timing of these two significant laws reveals the State's intention to restructure property and building regulations, and modernize them in accordance with European standards.\(^{54}\)

The preambles to the General Building Regulation and the Parliament debates\(^{55}\) reveal the objectives of the Greek administration at the time, i.e.:

- To maintain effective control over the built environment.
- To introduce and promote multi-storied residences, with the aim to address the housing issue through private initiative.
- To increase the density of the sparsely built center of the otherwise spreading capital city.\(^{56}\)
- To modernize by European standards the capital city and other Greek cities.
- To create a new investment industry, such as the building industry, and housing, in particular.

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\(^{52}\) Law 3741 “General Building Regulation of the State”, dated April 3, 1929, Hellenic National Government Gazette 155, April 22, 1929.

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- To modernize by European standards the capital city and other Greek cities.
- To create a new investment industry, such as the building industry, and housing, in particular.

\(^{54}\) The administration of Eleftherios Venizelos (1928-1932) reinforced the promotion of economy via the organization and control of the built environment, as well as via the commercialization of residences.

\(^{55}\) Parliament Gazette (18.12.28).

\(^{56}\) While the City Plan of Athens would already cover an extensive area of the city, in the city center there used to be many plots that remained un-built. In the debates about horizontal ownership, efforts were made to pass the amendment on compulsory building of all un-built lots in the city. While this was never accepted, at the time it was welcomed warmly.
CHAPTER

The articles of the first General Building Regulation deal with the multiplying the building volume. This is the result of replacing detached houses with apartment buildings. The new code introduced direct measures, specifying technical and architectural standards for the new type of building, as new requirements on health, statics, and aesthetic regulations emerged.

The 1929 General Building Regulation governed the building system, which was the first basic means to carry out the City Plan. For the first time, it dealt with building rules and organization rules in a systematic way. It determined the location of buildings on the building plot, the shapes of city blocks, and the total surface area that that one were allowed to build. It introduced values for minimum compulsory distances between adjoining land plots in relation to the width of the plot and the width of the building, and it specified in detail new heights for each floor. It included provisions regulating building heights, retirés, and open and closed erkers, which determined the morphology of buildings.

This had been the next step to an effort to locate the most crucial provisions on the configuration and expansion of the inter-war apartment buildings.

Contains 142 articles, which are mentioned later on with the aim to offer useful insights into the issues that concerned the legislator at the time in relation to the built environment. More specifically:

- Articles 18-22: These articles deal with the way surveyor maps are drawn and the design of the building plan.
- Articles 23-28: These articles deal with the obligations of municipal authorities and landowners in defining the common use projects.
- Articles 29-44: These articles deal with restrictions relevant to the position of buildings within building plots, the structure of city blocks, and the total allowable exploitation of surface area.
- Articles 45-48: These articles deal with defining the allowable uses and structures in "un-built" spaces.
- Articles 49-54: These articles deal with defining aspects of daylight and are circulation.
- Articles 55-57: These articles deal with defining the areas of basement and ground floors and their uses.
- Articles 58-63: These articles deal with the specifications of the water supply and the sewage systems.
- Articles 64-68: These articles deal with special installations for home-bred animals.
- Articles 69-81: These articles deal with defining fire safety measures.
- Articles 82-87: These articles introduce compulsory measures for the static and structural safety.
- Articles 88-93: These articles deal with allowable building heights for each sector.
- Articles 94-103: These articles regulate ledges, balconies, and "un-built" light wells.
- Article 104-111: These articles deal with provisions related to the aesthetic of the buildings.
- Articles 112-118: These articles deal with fences.
- Articles 119-131: These articles deal with aspects related to the shared boundary walls with reference to neighbors and communal areas.
- Articles 136-142: These articles deal with general provisions.
In reference to the Location and Area of Buildings, one of the most important innovations was the introduction of building systems. The “attached” building system applied to the Athens city center, hence, to City Block No. 3911 as well. Clearly, our research is interested in those regulations that dealt with the “attached” system.

In reference to the Location of Facades, the vertical surface of the facade on the street had to be located across the property line. This created a consistent front made of buildings facing the street, a decisive factor in urban facades.

In reference to the Minimum Dimensions of Building Plots, the 1929 General Building Regulation did not introduce particularly strict measures, turning the responsibility about this aspect over to the city. By chance or on purpose, this decision allowed for apartment buildings to be erected on very small plots.

In the 1929 General Building Regulation the concepts of “floor area ratio” and “gross floor area ratio” were not yet introduced. Restrictions applied only to heights and compulsory “un-built” spaces on building plots.

According to Marmaras (1991), in the indicative case of a building plot measuring 300 sqm, the “attached” building system, in which we are interested, specified that the following would apply:

- When height = 23 m, FAR = 5.8
- When height = 16.5 m, FAR = 4.6
- When height = 9 m, FAR = 2.9

Without the concept of floor area ratio, the area that buildings would occupy on the plot was estimated practically from the provisions in relation to Daylight and Air Circulation in apartment units, which specified the minimum “un-built” space and light well areas.

58 These building systems were as follows: "attached", "detached", "semi-detached", and "freestanding".
59 The city should define by itself the minimum limits depending on local conditions and the particularities. The legislator recommended that these limits should be as extensive as possible. At the same time, however until these minimum limits were set, the minimum area limits and dimensions of the building plot were set to 30 sqm with a minimum facade and depth the 4.00 m. This applied to specific cases of apartment buildings, and favored once again their construction; it allowed for one to deviate from the above allowable limits under particular conditions.
60 The corresponding structural indices, always according to Marmaras, for the Royal Decree dated August 24, 1922, ranged from 27.5% (Zone A) to 17.1% (Zone B). The highest possible floor area ratio of the building plot was aimed at.
61 The new regulation provided for a distinction between Areas for Primary Uses (living room, bedrooms, kitchen, dining room) and Areas for Auxiliary Uses (lavatories, corridors, WC's, storage rooms). The former should be lighted and ventilated only from the streets, squares, communal areas of building plans, and compulsory “un-built” spaces of building plots. Daylight circulating exclusively from the closed yards of buildings (light wells) was prohibited. In the case of building plots where the provisions were not applicable, daylight in primary areas circulating from light wells measuring more than 10 sqm and the surrounding walls of the yards measuring more than 7.00 m was permitted under deviation. For every 3 m increase in height, the area of the light well should increase by 5 sqm. In case of weaknesses of the building plot and after agreement of the owners, it was possible to have a communal (light wells) built between different buildings. Daylight and air circulation in auxiliary areas could come from light wells measuring no less than 7.00 sqm. With the exception of lavatories, daylight circulation in auxiliary areas could also be indirect, provided that these areas were in direct communication with an apartment unit of a daily or overnight stay.
The 1929 General Building Regulation introduced measures in relation to daylight and air circulation that were considered innovative. More specifically, it stipulated that:

- The primary spaces of apartment units would give to communal spaces, not to back yards or light wells.
- The distance between these spaces and the closest obstacle would be specified in relation to the height of the building.
- The minimum dimensions of openings would be defined in relation to the use of the space; minimum opening areas were specified.

As a result, this period saw the highest floor area exploitation in Athens, and "un-built" spaces were completely fragmented. Large multi-storied buildings that covered entire city blocks were, however, the exception to this rule. In corner apartment buildings "un-built" spaces were significantly smaller, whilst in many cases there were no light wells. The Minimum Dimensions of Buildings were also specified.

![Fig. 4.5. Representation of the volume of the apartment building as constrained by the 1929 General Building Regulation (by author)]](image)

62 Interior "un-built" spaces should be located towards the interior of the building plot, and should form a continuous yard. On building plots measuring less than 18 m in width, "un-built" spaces towards the sides of the building plot should measure 2.50 m in width, whereas on building plots measuring less than 12 m, it was not obligatory that the "un-built" spaces were abided. Article 33, §5-6

63 The length of the façade of a building should be no less than 6.00 m; the depth of the building should be no less than 7.00 m.
With the legislation allowing for extensive floor area exploitation of building plots and excessive building heights, residential surroundings were aggravated.

Building Heights are reduced from what stipulated the Royal Decree, dated August 24, 1922.64 Maximum building heights in cities should in no case exceed 23 m (down from 26 m). With the exception of retires which were at a 3.00-4.00-m indent (height 4.00 m, angle 50°) from the vertical surface of the façade,65 in city centers alone it would be allowed, under applicable conditions, to build more floors on top, either scalable or not.

Building heights determined the distance between the external façade of buildings and the closest obstacle (direct view).66 Room surface areas determined the area of the openings by building system.67 Floor heights are defined with precision68 depending on their levels; they too are reduced from what stipulated the Royal Decree dated August 24, 1922 (down from 3.00 m, applicable to all floors).

64 In central commercial streets maximum building heights were set at 16.50/10 of the streets width (down from 17.5/10); in other streets maximum building heights were set at 12/10 of the street's width (it down from 15/10). (Article 88, §1.) In any case, buildings higher than 9 m were allowed as far as the façade is concerned. (Article 88, §2.)

65 Article 88, §3.

66 Provided that the following terms were valid: Article 88, §4.
1. The communal surroundings of "un-built" spaces should be at least equal to the 2/3 of the height of the building.
2. Daylight and air circulation in the surrounding buildings should not be reduced.
In the central points of the buildings the deviation from the maximum threshold of 23 m was permitted. Article 88, §5.

67 Apartments that were used for accommodation should have a direct view of the following dimensions, Article 50:
1. For buildings 4.50 m in total height (one-storied), the façade in question should be no less than 2.00 m away from the closest obstacle.
2. For buildings 4.50 m to 7.80 m in total height (2-storied), the façade in question should be no less than 2.50 m away from the closest obstacle.
3. For buildings 7.81 m to 10.50 m in total height (3-storied) the façade in question should be no less than 3.50 m away from the closest obstacle.
4. For buildings 10.50 m to 14.00 m in total height (4-storied) the façade in question should be no less than 5.00 m away from the closest obstacle.
5. For buildings 14.00 m to 17.00 m in total height (5-storied) the façade in question should be no less than 6.00 m away from the closest obstacle. For every additional 3 m, another 1.50 m is added to distance from the closest obstacle.

68 In the areas of daily and overnight stay corresponds 0.12 m² opening / m² area of the room. Moreover, the minimum dimensions of an opening are defined. Minimum width of an opening 0.30m and minimum height 0.50m.

69 More specifically, minimum required floor heights in buildings are as follows (Article 93, §1): Basements = 2.40 m. Basements encompassed all utility areas, corridors, etc. Ground floor = 3.50 m. Ground floor with commercial use = 4.80 m. If a ground floor with commercial use included a mezzanine measuring no more than 1/6 of the area, then the height of the ground floor could be reduced to 4.00 m. Floor B = 3.00 m. This floor could have the height of the basement if not used for an overnight stay. Floor C = 3.00 m. Floor D = 2.80 m. Floor E = 2.60 m. The minimum height of the area under an inclined roof was 1.50 m.
The same applies to the External Façades of Buildings. Architectural projections, enkers, entrances, corners, are all features that become central, because inter-war architects discovered they were free to express the principles of Modern Movement mainly on façades, rather than on ground plans.

Stipulating new lower heights, the 1929 General Building Regulation restricted exploitation of urban building plots. Further pressures from building plot owners of urban land and building sector professionals led to amendments. As a consequence, the Ministry of Transport changed building heights once more, by means of 29265, dated April 9, 1932.

Table 4.1. shows how interior floor heights are reduced, which increases density in apartment buildings.

The architectural recessions could be recessed to a depth of 4.00 m, but no more than 1/3 of the total length of the façade.

N. Kalogeris “Genealogy of the corner in the architecture of the apartment buildings of Athens during the inter-war”. Matters if Space and Arts 11/1980, 69

This raised a series of protests and constant pressures to change this regime were exerted. Immediately after the General Building Regulation was issued, the Decree “On Complementing Provisions of the General Building Regulation of the State” was issued as a complement, dated November 15, 1929. It provided for lower building heights in those streets where there was at least one building with height in excess of the maximum allowable.

The Technical Chamber of Greece requested that the provisions of the General Building Regulation be amended, and also that building heights increase; the Municipality submitted a study that demanded of the Ministry of Transport to extend the commercial center. A City Planning Committee was appointed and the Ministry also requested the opinion of the Department of Architects.

Building heights and utility area heights could be limited into the following measures, provided that the three conditions set in 29265/9.4.1932 by the Ministry of Transport were met:

- Basement = 2.20 m
- Ground floor = 3.00 m
- Ground floor for use of a small shop, not for a public accumulation use = 3.30 m
- Ground floor for use of a small shop, for public accumulation use = 4.00 m
- Floors B and C = 2.80 m
Pressures became crystallized with the last state intervention to adjust building heights in the inter-war period, by means of the Decree dated May 14, 1934. This determined building heights in a complex dividing Athens into eight geographic sectors. In practice, the city was divided into two basic sectors, in reference to building heights. In the more central sector (Sectors A, D, and E) building heights increased significantly, allowing buildings to have seven or eight stories. In both sectors, building plots with façades in wide streets were favored, in contrast to those with facades in narrow streets.

Fig. 4.7. The Decree dated May 14, 1934 divided Athens into 7 sectors. Here are the representations of apartment building volumes as constrained by the Decree (by author)

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76 These are as follows:
- Sector A: height of building 20/10 of the street; maximum height 18 m, minimum 11 m.
- Sector B: height of building 14/10 of the street; maximum height 14 m, minimum 8 m.
- Sector C: height of building 12/10 of the street; maximum height 8 m, minimum 6 m.
- Sector D: height of building 20/10 of the street; maximum height 23 m, minimum 14 m.
- Sector E: height of building 14/10 of the street; maximum height 17 m, minimum 9 m.
- Sector F: height of building 12/10 of the street; maximum height 14 m, minimum 7 m.
- Sector G: maximum height 9 m, minimum height 9 m.
- Sector H: maximum height 6 m, minimum height 6 m.

Of these eight sectors, three (Sectors A, D, and E) make up for the structure of Athens; the remaining five are remote regions or secondary in terms of demand for building construction.

Sectors A, D, and E that make up for the structure of Athens had their height ratios increased due to the 1929 General Building Regulation, (ranging between 12-20/10 of the street’s width, up from between 12-16.5/10 of the street’s width). However, although the absolute values of maximum building heights decrease (6-23 m in the 1934 Decree, down from 9-23 m in the 1929 General Building Regulation), these values in fact concern only the remote areas, not the city center.
Statistics on multi-storied buildings erected in Athens once the 1929 General Building Regulation had been introduced mark a decline outside the central structure of the city, in contrast to the city center. This establishes that this adjustment had taken into consideration spatial allocation tensions within the city planning fabric, which had already evolved for the erection of multi-storied buildings, and had increased height ratios in regions where there was greater demand for erecting high buildings. This Decree caused large-scale zoning of the town, which in fact was equivalent to a kind of direct state intervention in determining urban land values (Marmaras 1991).

4.3.3. The Introduction of New Socio-Cultural and Economic Realities

Apartment buildings in City Block No. 3911 built during that period are as follows:

Table 4.1. Apartment buildings of City Block No. 3911 constructed in the period 1914-1940 (by author)

<table>
<thead>
<tr>
<th>Code</th>
<th>Year</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4</td>
<td>1930-1933</td>
<td>25, Alopekis St.</td>
</tr>
<tr>
<td>L3</td>
<td>1933</td>
<td>25, Loukianou St.</td>
</tr>
<tr>
<td>L4</td>
<td>1934</td>
<td>28, Loukianou St.</td>
</tr>
<tr>
<td>P2</td>
<td>1938</td>
<td>34, Patriarchou Ioakeim St.</td>
</tr>
<tr>
<td>P3</td>
<td>1935-1936</td>
<td>36, Patriarchou Ioakeim St.</td>
</tr>
<tr>
<td>P7</td>
<td>1937-1938</td>
<td>44, Patriarchou Ioakeim St.</td>
</tr>
<tr>
<td>PI2</td>
<td>1934</td>
<td>21, Ploutarchou St.</td>
</tr>
</tbody>
</table>

In 1930 the area of Athens measured 29,083 acres (i.e., 10 times larger than the corresponding area in the Kleanthis Plan). The volume of refugees from Asia Minor and Eastern Thrace, nearly 1.5 million people, generated an immense and urgent social and economic problem. “Tin towns” and tent villages sprang up around Athens (Gallant 2001). The Greek fiscal situation was already dire. With no funds to deal with the situation, the state adapted two strategies: a. they established settlements on farms in the countryside, and b. they created urban labor force. In the city, refugee neighborhoods evolved around Athens. The living conditions of urban immigrants remained harsh, particularly after the Refugee Settlement Commission started to allocate them considerably fewer resources. Many of those who settled in Athens, however, had been professionals or entrepreneurs before the exchange; this enabled them to invigorate the industrial sector of Greece, which is
one of the reasons why the Greek economy saw its highest level of industrialization between 1924 and 1930 (Gallant 2001).

We hold the view that the sudden and sharp rise in population data shaped the legal status quo to a large extent; this had a direct impact on built volume, and, consequently, on the morphology of the city. The law on horizontal ownership, mentioned earlier, triggered an unprecedented development of apartment building constructions. Although apartment buildings began to replace two-storied buildings, while older types of residences kept being erected, in effect, a new market was emerging.

According to Marmaras (1991), underpinning the introduction of “horizontal ownership” law were the following three social economic reasons:

- **City Planning**: Housing and city planning issues called for the increase of density in the built environment, by means of promoting multi-storied buildings. The new institutions diminished the cost of residences in central regions, and enhanced the density of the city by its development in height.
- **Ownership**: General legislation, as well as measures ensuing the Balkan Wars, had led property-related issues led to a dead end. The new institution would resolve urban land inertia by means of a systematic implementation of renting, and would offer a more flexible solution in an ownership system that favored the reconstruction of older buildings.
- **General Economic conditions**: The Greek economy could not channel capital resources from the homogenous of colonies into other sectors. This led to safe, profitable investments in urban property. While building activity strengthened commercial activity and employment in the working classes, it modernized the institutional framework that would determine ownership relationships.

---

78 Two types of apartment buildings appeared during that period:

- **a. Low-income apartment buildings or “Refugee Apartment Buildings”**. Built by the State under the system of deregulated construction, their purpose was to house refugees from Asia Minor. They were situated in several regions of Athens and Piraeus (Erythros Stavros, Stegi Patridos, Nea Kokkinia, Douroupolis, Drapetsona, Agioi Anargyroi, Agios Ioannis Rentis, Kaisariani, Palaia Fagela, Alexandras Avenue). They were beyond the scope of this study, but their distinctive features merit a brief reference at the end of this Chapter, if only as a measure of comparison with private apartment buildings.

- **b. High-income apartment buildings or “Urban Apartment Buildings”**. Built using private funds, they are within the object of interest of this study. The following data concern this particular type of apartment building.

79 In a Parliament debate, the instructor maintained that the institution would facilitate: (Hellenic National Government Gazette, Parliament debates, “Meeting 41, December 12, 1928.” Rapporteur: A. Markus):

1. The economic needs of inhabitants
2. The distribution of property to members of the same family
3. The prevention from selling all property of those who wanted to exploit part of it
4. The elimination of existing causes for renting
5. The possibility that would be offered by the development of the city by height, and not by its total area, in municipalities and in the state, to meet their obligation referring to the provision of complete structural works.
6. Jobs offered to the unemployed and the reinforcement of structural materials by the construction of an orgasm that was about to come.
7. The ownership of apartment units or floors in the city by minor owners, wealthy refugees, public servants, and spiritual people.
The institution of horizontal ownership brought about several reforms in apartment building layouts, in communal areas, in particular. Such spaces would belong to all residents, not to one and only owner. Entrances made this change obvious.

As for property and financing, most multi-storied buildings (84.03%) belonged to single owners, whereas considerably fewer (15.97%) belonged to many owners each. The owner was also the main bankroller of the construction of the building (76.56%). Building mortgages were limited (7.03%). There was also the joint action between several low-income fund holders, but only in a small percentage (7.03%), and for the purpose of self-housing, as well as for contractors aiming to sell the apartments (9.38%) (Marmaras 1991). With the owner being the main bankroller, aesthetic demands were high, and there was a preference for architects as designers, instead of civil engineers who were dominant in the post-war era.

Users were part of the upper (industrialists, ship-owners, politicians, bankers) and middle (physicians, engineers, lawyers, merchants, public officers) social classes, and up until the inter-war era there were no low-bourgeois users. In the lead were upper-middle-class incomes, followed by the middle-bourgeois class. By the end of this era, when most apartment buildings were built, the majority of their residents belonged to the middle social classes.

4.4. Period 1940-1972

4.4.1. The Introduction of New Technology

Loyer (1968) notes that, as in other Mediterranean countries, architecture in Greece has its own distinctive quality attributed to its building materials. He goes on

<table>
<thead>
<tr>
<th>Year</th>
<th>Code</th>
<th>Address</th>
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</thead>
<tbody>
<tr>
<td>1972</td>
<td>A1</td>
<td>19, Alopekis St.</td>
</tr>
<tr>
<td>1964</td>
<td>A3</td>
<td>23, Alopekis St.</td>
</tr>
<tr>
<td>1970</td>
<td>A5</td>
<td>27-29, Alopekis St.</td>
</tr>
<tr>
<td>1955</td>
<td>A6</td>
<td>31, Alopekis St.</td>
</tr>
<tr>
<td>1956</td>
<td>A7</td>
<td>33, Alopekis St.</td>
</tr>
<tr>
<td>1967</td>
<td>A8</td>
<td>35, Alopekis St.</td>
</tr>
<tr>
<td>1959</td>
<td>L1</td>
<td>22, Loukianou St.</td>
</tr>
<tr>
<td>1971</td>
<td>P1</td>
<td>30-32, Patr. Ioakeim St.</td>
</tr>
<tr>
<td>1961</td>
<td>Pl1</td>
<td>17-19, Ploutarchou St.</td>
</tr>
</tbody>
</table>
to add that, far from being a typical Mediterranean, Greek architecture is overwhelmed with concrete, relying on obsolete know-how, using “small-shop building methods and traditional materials.” Since early in the post-war era, reinforced concrete had been the established material for load bearing structures and brickwork for masonry. In 1954 the first Greek building regulation on the design and performance of building projects made of reinforced concrete is applied. With concrete always hidden under plastering, load bearing structures and partitions would be poorly built and in haste. New processing methods to achieve better quality concrete were used in only a limited number of high-budget buildings, where concrete remained exposed for aesthetic reasons. On the other hand, the first metal constructions were also impressing applications, and, along with the development of aluminum industry, they enabled the construction of wall panels and windows. Post-war apartment buildings, however, did not embrace these innovations, for practical and financial reasons alike (Philippidis 1984).

4.4.2. The Introduction of New Legislation

Although going through a period of reconstruction that would establish the social and economic standards and regional correlations of the country and would see considerable growth in the capital city, the Greek state did not have a long-term regulatory plan for the capital city. The writing style in most decrees issued in the post-war era had changed; and yet, instead of specifying, determining, regulating or providing for, provisions would restrict, impose or prohibit. This is indicative of an endeavor to impose strict measure and to prevent infringements, which had been common practice. To this effect, a set of institutional measures was introduced, e.g. setting greater building heights in 1948; introducing the General Building Regulation in 1955; and putting forward numerous city plans for Athens and the wider area.

Before looking closer into the urban planning and building standards of the time, we have to elaborate on a statute (KH', dated August 23, 1947), telling evidence of the state's agenda for reconstruction of the urban fabric. Failing to offer financial support to citizens, the state introduced this statute, choosing to offer tax relief that would underpin private initiative in building, thereby reducing the need for state intervention. This offers a quick and easy solution to the housing issue. Building height regulation in Athens in 1934

85 Tradesmen were unskilled at this new know-how, and contractors were more interested in profit than in quality.

86 The Ministry of Rebuilding coordinated the reconstruction, and by 1951 they had planned 350 settlements and 200,000 houses. Attempts were made to attract foreign capital, establish integrated bodies for technical infrastructure works [Hellenic Public Power Corporation (EED), Telecommunications Organization (OTE)], improve the national road network, and construct the national highway Athens-Thessaloniki.
changed by means of Royal Decree dated July 13, 1948, with the aim to increase the building front of buildings by an additional floor. 67

In September 1955, a new General Building Regulation was published (the 1995 General Building Regulation), as the product of an overall review on the formation of the structured environment, and not of an individual statute.

Clearly, introducing a building coverage ratio, per surface area and per volume to be exploited, was one of the most significant new provisions. The descriptive approach to buildings was also significantly different from the one provided for in the 1929 General Building Regulation, given that buildings are not viewed within an ideal 3-D envelope, but as a set of ratios (%) between building and un-built spaces. The ideal 3-D envelope is replaced, in essence, by the concept of ratio of exploitation. No longer restricted by the geometrical elements of communal areas around them, these new volumes were left, we believe, subject to however they would be interpreted in administrative and political assessments. This would become evident in the years that followed.

67 This decree increases the building heights in all sectors in Athens. In addition, it increases by 5% the building heights of all building fronts and changes the building front/street width ratio (No.4 M). When 5% proves not to be enough to add an entire floor, leeway is provided to complete the remaining height. In fact, the decree allows for the construction on an entire primary floor 2.60 m in internal height, in addition to the 5% increase and a de facto modification of the ideal 3D envelope of 50% provided for in the 1929 General Building Regulation, increasing the heights within the ideal 3D envelope by 10%.

68 Hellenic National Government Gazette 266 _-30/9/1955

It is shorter than the 1929 General Building Regulation, without providing for regulations on city planning, as these are resolved by means of Legislative Decree 690/48. The 1995 General Building Regulation consists of the following 81 articles:

Articles 1-14: Definitions. Earlier concepts are described in a different way, while new concepts are introduced.

Articles 15-24: The position and the size of buildings within the plots. They concern building systems, building coverage ratios and position of the building facades, internal buildings, minimum distances, completeness of the building plot, and permission to build on the plots.

Articles 25-27: Installations in the compulsory yards are defined.

Articles 28-31: Heights of the building and the facade as well as number of floors and free heights of the floors are defined.

Articles 32-33: Daylight and air circulation of apartments as well and dimensions of yards to be lighted and ventilated are defined.

Articles 34-41: Projections of buildings, balconies and eaves are resolved.

Articles 42-47: Clauses on the economy of the settlement and building aesthetics.

Articles 48-52: Compulsory measures on the durability of buildings and economy of materials.

Articles 53-57: Fire safety regulations.

Articles 58-61: Special measures on weather changes and humidity.

Articles 62-66: Requirements for water supply and drainage system.

Articles 67-69: Separating enclosures, the way they are manufactured and their heights.

Articles 70-77: Obligations of builders to neighbors and common areas as well as obligations of municipalities.

Articles 78-81: Implementation of the regulation.
In reference to the Location and Area of Buildings in the “attached” building system, “un-built” spaces would be concentrated at the back of plots, and building would be restricted to the front and side boundaries of plots. Surface area coverage was set at 50 sqm minimum and could increase at 100 sqm, provided it was no more than 80% of the plot. Building depth was set at 8.00 m down from 12.00 m. The location of the main façade would coincide with the property line. Interestingly enough, “un-built” spaces in corner plots up to 400 sqm in the “attached” building system could be reduced to 50%, i.e., coverage could increase up to 85%.

Buildings at the back yard are permitted as long as there is a distance of 5.00 m from the main building and the requirements for daylight and air circulation in internal spaces are met.

1929 General Building Regulation, Article 33 §5.

The Royal Decree dated September 26, 1955 was issued in the same month with respect to Athens only; it provided for different coverage ratios, which ranged between 70% and 80%, depending on the different height sectors. The “un-built” space in the “attached” building system should be concentrated at the back of plots, whereas buildings should be restricted to the façade and the side boundaries of plots. Similarly, the back side of buildings could be crooked, since the part closer to the back boundary was smaller or equal to one half of the building and within 2.00 m maximum from the rest of the back side of the building. Minimum coverage was set at 50 sqm, which could increase up to 100 sqm, as long as it did not exceed 80% of the plot. The allowable depth of buildings was reduced to 8.00 m down from 12.00 m. It is the first time that basements could extend over the entire plot, even beneath “un-built” spaces. Because no basement was allowed under communal areas in case of arcades, basements were allowed to extend until the street plan line, but still within at least 3.00 m from the ground. The overall main front surface should be on the building line. The “attached” building system allowed leeway:

- For serious functional or architectural reasons, according to the Authorities
- For special buildings

Moreover, in corner plots the corner should be severed for aesthetic reasons, in case of an acute angle.

Internal buildings were permitted as long as there was a distance of 5.00 m from the main building, and the requirements for daylight and air circulation in internal spaces are met. Plots could be developed when their area, front side and depth were no less than defined in the general or special clauses in effect. In cases of plots of the “detached”, “semi-detached”, or “freestanding” systems, buildings should be no less than 40 sqm, while their fronts and depths should be no less than 5 m. In the 1929 General Building Regulation, the area was 30 sqm, the front side 6.00 m, and the depth 7.00 m.

Article 16 §3.
Soon it became obvious that the floor area coverage of earlier apartment buildings on corner plots was larger than that of those on middle plots. This practice acquired its legal framework by virtue of the 1955 General Building Regulation. Issued in that same month, Royal Decree dated September 26, 1955 referred only to Athens; it provided different building coverage ratios, ranging between 70% and 80%, depending on the different sectors of heights.  

The most significant changes that the 1955 General Building Regulation brought to the 1929 General Building Regulation were, we believe, eliminating the ideal 3-D envelope of 50% as the definition of building heights, and replacing the Number of Floors with a new system. This innovation is directly connected with the building's efficiency. The building is not just a bulk but also a number of floors.

Fig. 4.8. Diagram comparing the 3D-envelope of 50° (GOK 1929) and the floors in recession of 2.50m (GOK 1955)

Internal floor heights and sector building heights in the 1955 General Building Regulation also defined the final building heights at the same levels with inter-war regulations. An important difference, however, can be found in the shifts in how building volumes were defined; while earlier on there would be a correlation between buildings and communal areas, this would later be abandoned to amending provisions.

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In Sectors A, D, and J it was 80%; in Sectors B, C, E, G, I, and K it was 75%; in Sector L it was 70%.

Internal open balconies inside high halls were not considered floors, as long as they did not exceed on half of the hall's area, and their construction and configuration met the needs of the hall.

Ground floors are included in the number of floors. As long as there was no apartment unit of primary use on the basement, these were not included in the number of floors. Auxiliary spaces counting in favor of the final floor were not considered separate floors, as long as they did not exceed the allowable floor area ratio and building heights.
While the 1955 General Building Regulation defined the maximum height of buildings in relation to the width of streets,\textsuperscript{100} it defined the height of the facades in relation to the street width as follows (Article 29 §1):

1. The construction of two floors was always allowed, regardless of the width of the street (1.66xW).
2. In order to build three floors on the front side, the width of the street should be no less than 8.00 m (1.50xW).
3. In order to build three floors on the front side, the width of the street should be no less than 8.00 m (1.50xW).
4. In order to build four floors on the front side, the width of the street should be no less than 10.80 m (1.40xW).
5. In order to build five floors on the front side, the width of the street should be no less than 13.50 m (1.30xW).
6. In order to build six floors on the front side, the width of the street should be no less than 16.00 m (1.50xW).
7. In order to build any additional floor above the six ones, the width of the street should be over 16.50 m, while it increased by 2.50 m per additional floor.

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\textsuperscript{100} The maximum building heights were set as follows (Article 29 §1):
to the height of buildings, not to the width of streets to which they were directly linked. In city centers, as long as the width of a street was no less than 8.00 m, recessed floors, "retire", were permitted above the three floors. In cases of more than four floors, additional floors were built on successive recesses at 2.50 m from each underlying floor. Above the height of the allowable number of floors, leeway was provided to allow some auxiliary constructions.

Internal floor heights in primary use spaces should be no less than 3 m in height. Nevertheless, this was then set at 2.70 m, depending on the use of spaces. Auxiliary space heights should be no less than 2 m in height, while the free height of ground floors that were to be used as shops should be no less than 4.00 m. Shops smaller than 20 sqm were restricted to 3 m in height, while lofts were restricted to 5 m in height.

In reference to Daylight and Air Circulation of internal spaces, primary use spaces should be directly lighted either by communal areas (e.g., streets) or yards. Moreover, primary spaces could also be lighted by means of light wells, as long as the relevant requirements were met. This offered more opportunities to exploit large plots, where relatively large light wells could be made to light the primary spaces.

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101 Thus, in cases when the maximum allowable number of floors was two, the front side should not exceed 8.50 m; when the maximum permissible number is three the front side should not exceed 12 m, while for buildings with more than three floors 3.20 m are required for any additional floor from Article 29 §2.

102 Abolished through Decree 6.3.1962 Hellenic National Government Gazette 31D.

103 Modified by Decree 25.8.1958 Hellenic National Government Gazette 137 A/1958, which defines that any additional floors are constructed on successive recesses of 2.50 m from each underlying floor.

104 These are the following constructions (Article 29 §5):
1. Roofs, under which no spaces of any use were constructed.
2. Light banisters on the front side up to 1.10 m high.
3. Light separating banisters up to 2.00 m high between different areas or properties on the rooftop (belvedere) used by tenants.
4. Chimneys and air vents only at the required functional height.
5. Special constructions used for garden and farming arrangements, after they had been defined by the authorities as the case would be, were allowed (repealed by virtue of Decree dated June 14, 1961, Hellenic National Government Gazette 98A /1961).
6. Elevator chambers at their absolutely functional height (By virtue of Decree Dated August 14, 1961, Hellenic National Government Gazette 98A /1961 the height was set at 3.00 m).
7. Stairwell endings and other small auxiliary spaces that facilitated the use of the belvedere. The maximum allowable area may be up to 10.00 sqm, and the maximum height 2.50 m.

105 Article 31 §1
106 Article 31 §2
107 Article 31 §4
108 The loft should not cover more than 2/3 of the space, and its free height should be less than 3.00 m.
Opening areas should be 1 sqm per 7 sqm of light area. In reference to auxiliary spaces or kitchens smaller than 7.00 sqm, the dimensions of yards (light wells) should be no less than 0.70 m each.

In reference to Architectural Projections, we note that the new General Building Regulation did not link them to the width of streets. This showed that the role of architectural aesthetics became weaker in comparison with inter-war regulations. The new guidelines brought about considerable morphological differences in Athens between 1920 and 1940, depending on the sectors of the city and the width of the streets. An indicative example can be found in open balconies, which should be within no less than 1.00 m from adjoining properties. Although this was introduced for reasons of safety, it spoiled the uniformity of the front side.

The openings of primary spaces were within no less than 2.00 m from any barrier, while the height of the barrier should be no more than 4.00 m above the floor of the lighted area. In case of barriers higher than 4.00 m, the anticipated distance was increased by 0.15 m for every additional 1.00 m of height. The distance measured was between the external surface of the wall bearing the opening and the respective barrier surface; however, a free zone ≥3.00 m in width was necessary, in proportion to the opening or even to the one side. The important difference from the 1929 General Building Regulation was that the 1955 General Building Regulation set the distance of openings from an obstacle in relation to the height of openings, not to building footprints, which was the case in the 1929 General Building Regulation.

Openings had to be made so that they would face a side “un-built” space, whose width could be 3.00 m, as long as its depth was no more than 5.00 m.

The 1955 General Building Regulation allowed projections measuring 0.30 m, as long as they were no less than 2.00 m above the ground, and projections measuring 0.15 m, as long as they were no more than 2.00 m above the ground. Article 32 A1 The projections could extend up to the top of the front side, while the 1929 General Building Regulation did not allow for them to be higher than the 2/3 of the front. The new General Building Regulation did not link architectural projections to the width of streets, which showed that the role of architectural aesthetics became weaker in comparison with pre-war regulations. Earlier regulations brought about considerable morphological differences in Athens between 1920 and 1940, depending on the sectors of the city and the width of streets. By virtue of Clause No. 55, projections were allowed at a height over 3.00 m above the ground, Article 34 A1. Projections were allowed to stick out of the building line up to 1/10 of the width of the street, and should by no means stick out by more than 1.20 m. When the pavement was less than 4.00 m in width, open balconies should be recessed by 0.50 m from the kerb. Erkers were allowed, provided that they would be at a height no less than 3 m, they would stick out up to 0.40 m of the building (when the street was less than 8.00 m in width, closed balconies were not allowed at all) and, finally, would be no more than 1/4 of the front side.

Light permanent eaves were allowed only above shops and apartment building entrances, and when their lowest point was no less than 3.00 m above the pavement and the projection of the eaves was within no less than 0.50 m from the kerb.
Internal floor heights and sector building heights in the 1955 General Building Regulation defined the final building heights at the same levels with inter-war regulations. An important difference, however, can be found in the shifts in how building volumes were defined: while earlier on there would be a correlation between buildings and communal areas, now they were abandoned to amending provisions. From 1950-1960 onward all Greek apartment buildings have been identical. Their most important elements are their areas, heights and locations in the city. Having said that, there have also been several architects who have come up with more sophisticated versions. They aimed at the maximum possible flexibility with respect to the separation of all floors into apartments. Thus, auxiliary spaces have been arranged along the central axis of communal areas, while primary spaces have been arranged on the front sides.

Summing up our description and review of legislation during the period in question, we can draw the following conclusions:

For the first time legislation determines the maximum building coverage ratio: a maximum ratio per surface of plot to be exploited, and; a maximum ratio per volume of plot to be exploited.

Building floors and heights are described as individual building parts; building floors are described as individual building volumes.

Primary and auxiliary spaces in the interior of buildings are redefined. Primary spaces are those that are intended for all-day use, overnight use, etc., with a surface area no less than 7.00 sqm, and volume no less than 15 cum, down from 9.00 sqm and 25 cum, respectively, which used to be the case in the 1929 General Building Regulation.

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112 Article 12, §3.
113 The 1929 General Building Regulation, Article 52.
• The use of retires is extended.
• Internal yards are eliminated, and “un-built” spaces are concentrated at the back of plots.
• Light wells.
• Architectural Projections of 40 cm.
• Basement apartments and apartment at rooftop compartments.

4.4.3. The Introduction of New Socio-Cultural and Economic Realities

This period sees major changes in the Greek society. After the war, Greece had the highest rate of building stock destruction. Damaged buildings in the Athens area corresponded in total to 7% of its inter-war building stock. The Municipality of Athens was among the areas with the least damaged building stock at 4%. In addition, high expectations for a better life somewhere else led to internal migration and urbanization.

Therefore, the housing issue in Athens posed a major problem that had to be addressed in this period of reconstruction. The city could be compared to a “huge constructions site.” (Gallant 2001) After 1950 the building stock was renewed by 90% and Athens practically became a new city. The building industry offered the only investment opportunity for lower- and middle-classes in urban areas. The process of apartment building construction through the "antiparochi" system shaped the image and life in the city: small-sized plots with high floor area ratios and high building coverage ratios; land exploited in full; maximal profit. This has led to the current lack of social infrastructure and communal spaces.

Apartment buildings were built through the "antiparochi" system. This system dictated that:

• The surface area that corresponded to the owner of the plot would provide collateral for the purpose of the deed, to the effect of offering him good accommodation and additional spaces for exploitation.
• The surface area that corresponded to the entrepreneur-contractor would provide, by means of its sale, the resources that would all building expenses (for materials, design, labor, taxes) plus profit.

The strong rise in land values and the fragmentation of land into small properties have allowed those who immigrated to Athens from other parts of Greece to benefit from the growth of the city. In this way, the growth of Athens has contributed towards the assimilation of popular strata into the established order of things, and the maintenance of social peace (Mantouvalou 1985).

114 Of the total building stock, 23% was recorded to have been destroyed in 1946 (Doxiadis 1947).
115 This could be as much as 100% in certain areas, such as Sourmena; in Piraeus it was 14%.
4.5. Period 1973-1984

4.5.1. The Introduction of New Technology

Having studied residential housing in Greece, Kalogeras (1974) identifies a hindrance to the development of the building industry and the upgrading of building projects in the lack of standardization in building materials. To support this, he states that the know-how and expertise of engineers have been to little avail. The Greek building sector is lagging some 20-30 years behind. This is more likely attributed to socio-economic circumstances, rather than to the choices that architects, engineers, or contractors make. Greek raw materials are used in cement and aluminum manufacturing, but not in the wall panels of certain buildings. On top of that, the Greek marketplace is restricted. As a result, while Greece has been offered many opportunities to use pre-cast constructions on account of the catastrophic earthquakes that have hit the country, no relevant know-how has been acquired, which is a common practice in other countries (Angelidis 1969).

4.5.2. The Introduction of New Legislation

The Greek military dictatorship imposed measures that disregarded any regulatory plans, thereby triggering dramatic, long-term devastating effects. These measures were supposed to boost building operations. At the same time, though, they sanctioned the development numerous holiday homes, hotel facilities and building partnerships that ravaged the coasts and forests of the country. In 1958, in an effort to create incentives to encourage building exploitation, Law 355/68 increased FAR by 20-40%, and allowed the construction of the first tower blocks in Athens. Three years later, Legislative Decree 1024/71 instituted the concept of joint vertical ownership of independent buildings on the same property. This meant that all owners were to be responsible for the communal areas or common elements. The joint vertical ownership helped:

- small joint owners to acquire their own property.
- large enterprises to construct building complexes
- the state and public utility organizations to create cultural centers, settlement prototypes, public housing projects, etc.

Typical examples of such buildings can be found in Appendix 4.3. The apartment buildings in City Block No. 3911 that were built during that period are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Code</th>
<th>Address</th>
<th>Year</th>
<th>Code</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td>A2</td>
<td>21, Alopekis St.</td>
<td>1975</td>
<td>P5</td>
<td>40 Patriarchou Ioakeim St.</td>
</tr>
</tbody>
</table>

These interventions were associated with the increased heights, the establishment of free building, the opportunity for fragmenting urban and suburban land into very small plots, as well as the implementation of Law 1003/71 “On Active Urban Planning”.


On Building Heights and the ‘Freestanding’ Building System”

On Divided Ownership of Buildings Erected on Uniform Property”
The 1973 General Building Regulation was introduced in that period. Without being as notably innovative as the two earlier building regulations, it established the framework for developing more apartment buildings in the rest of the Athens center and the suburbs.

The 1973 General Building Regulation relied on the following key principles:

- Standardizing by means of building systems and number of stories per sector
- Correlating buildings with their plots, i.e., correlating the shape of buildings with the random shape of the plots they were on within the city block.
- Establishing plot usability in terms of dimensions.

In reference to the Location and Area of Buildings, earlier building systems remain in effect as a concept, without being relevant to the use of buildings. As a result, they are applicable to all land uses. In the “attached” building system, FAR is equal to 70%. Minimum

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121 The 1973 General Building Regulation (Legislative Decree 8/1973). The 1973 General Building Regulation included six parts. The first referred to definitions: the second referred to building systems (two new building systems were introduced): the third and the fourth referred to building elements: the fifth referred to compulsory measures, and: the sixth referred to provisions. It was comprised of the following 102 articles:

Articles 1-14: Definitions. The “freestanding” building system are introduced.
Articles 15-26: The “attached” building system
Articles 27-31: The “detached” building system
Articles 32-39: The “freestanding” building system
Articles 40-58: The “freestanding” building system
Article 60: The “free composition” building system
Articles 61-67: The “semi-detached” building system
Articles 68-72: The “building system of wings”
Articles 73-101: Provisions applicable to all building systems
Article 102: Deviations

122 Fig. The building systems (Aravantinos 1986)
area limits and dimensions in the building plots of the “attached” building system are set at 200 sqm, with minimum front side set at 10 m, and minimum depth set at 15 m.\textsuperscript{123}

The 1973 General Building Regulation introduces the innovative concept of distance $\Delta$, i.e., the distance between the building and the back border. Distance $\Delta$ is set at: $2.50 \ m + 0.5 \ H$, where $H$ is the max allowable height of the building.\textsuperscript{125} FAR is 70%. In corner plots with a surface area no more than 200 sqm, the building coverage ratio is 80%.\textsuperscript{126}

The Maximum Number of Floors in total and at the front side is relevant to the width of the street.\textsuperscript{127}

The Maximum Building Heights\textsuperscript{128} at the front side or in total is defined as follows: $H = \nu \times 3.30 + C$

Where $H = \text{the height of the front side or the max permissible one}; \nu = \text{the number of floors at the front side or in total}; 3.30 \ m = \text{the height of the floor, slab inclusive, and}; C = 1 \text{ when the ground floor has residential use, and } C = 2 \text{ when the ground floor is a shop)}.$

\textsuperscript{123} In the context of this study we are interested only in the “attached” building system. The building can adjoin the abutting properties at the side of the plot, but not at the back. The building line coincides with the lot line, and the “un-built” space is concentrated at the back of the plot or the back corner in a corner plot. Typical features of this system are the compact building volume and the overall front façade. \textsuperscript{124}

\textsuperscript{125} Article 16, §1.

\textsuperscript{126} By exception, if the depth of the plot is no more than 12.00 m, the following apply (Article 18, §2):

<table>
<thead>
<tr>
<th>Plot depth</th>
<th>Maximum height</th>
<th>Minimum distance $D$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Dp \leq 8.00 \ m$</td>
<td>$H \leq 21.00 \ m$</td>
<td>$1.00 \ m$</td>
</tr>
<tr>
<td>$8.00 \leq Dp \leq 12.00 \ m$</td>
<td>$21.00 \ m \leq H$</td>
<td>$1.00+(Dp-8.00 \ m) \times 0.5 \ m$</td>
</tr>
<tr>
<td>$12.00 \leq Dp$</td>
<td></td>
<td>$1.00+(Dp-8.00 \ m) \times 0.5 \ m + 0.5 \ m \times (H-21.00 \ m)$</td>
</tr>
</tbody>
</table>

Wherever arcades are designated, they are defined in relation to the width of the street.

<table>
<thead>
<tr>
<th>Width of the street</th>
<th>Depth of the arcade</th>
</tr>
</thead>
<tbody>
<tr>
<td>$&lt;7.30 \ m$</td>
<td>$2.50 \ m$</td>
</tr>
<tr>
<td>$7.30-10.30 \ m$</td>
<td>$3.00 \ m$</td>
</tr>
<tr>
<td>$10.30-14.30 \ m$</td>
<td>$3.50 \ m$</td>
</tr>
<tr>
<td>$14.30-19.30 \ m$</td>
<td>$4.00 \ m$</td>
</tr>
<tr>
<td>$19.30 \ m \leq$</td>
<td>$4.50 \ m$</td>
</tr>
</tbody>
</table>

\textsuperscript{127} For inner plots measuring less than 100 sqm, the building coverage ratio is 80%; for corner plots the building coverage ratio is 85%. (Article 17)

The number of floors at the front side, and the number of remaining floors are as follows:

<table>
<thead>
<tr>
<th>Width of the street</th>
<th>Number of floors at the front side</th>
<th>Remaining floors</th>
<th>Total number of floors</th>
</tr>
</thead>
<tbody>
<tr>
<td>$&lt;7.50 \ m$</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>$7.50-10.00 \ m$</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>$10.00-12.50 \ m$</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>$12.50 \ m \leq$</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>
In reference to Internal Floor Heights, they decrease to 2.70m.\(^\text{129}\)

In reference to Daylight and Air Circulation in every building system, the area of openings should be no less than 1 sqm for every 9 sqm of lighted area.\(^\text{130}\)

In reference to Architectural Projections and Building Balconies, the 1955 General Building Regulation includes a number of detailed provisions that merely subject architects to constraints with the aim to make façades more consistent in form.\(^\text{131}\)

The free floor height in apartments of main use should be no less than 2.70 m. The free height of the ground floor to be used as a shop should be no less than 3.00 m. If it includes interior balconies, then the free height up to the balcony should be no less than 2.70 m and the height should be no less than 2.20 m.

The free height of the basement should be no less than 2.20 m. The free height of the parking space should be no less than 2.20 m.

The area of the entrance and the area of the ground or underground car parking space are not included in FAR.

More specifically:

The minimum dimensions of “un-built” spaces intended for light and air circulation in primary spaces vertically to the opening are: \(A=2.50+0.20(H-Y)\), where \(H\) is the maximum height of the building, and \(Y\) is the height of the windowsill and parallel to the opening 3.00 m.

The distance between two buildings on the same plot should be no less than twice the distance specified above.

In reference to auxiliary spaces or kitchens less than 4.00 sqm, the dimensions of the light well shall be no less than 1.20x1.20.

For stairwells the area of the light well should be no less than 3 sqm for a three-floor building, and 4 sqm for buildings with more floors.

The 1973 General Building Regulation allows for projections of 0.30 m at the front side, provided they are higher than 3.00 m above the ground, and projections of 0.15 m, provided they are less than 3.00 m above the ground (Article 83). Floors on recess can have projections up to 0.90m.

Open balconies are permitted at a height no less than 3.00 m above the ground, and should be recessed by 0.50 m from the kerb up until the height of 5.00 m. If there is an arcade, the projections have to be at a height no less than 5.00 m. Projections can stick out of the building line up to 1/10 of the width of the street, and should be within no less than 1.00 m from the adjoining property. Open projections in yards should be no more than 1/5 of the distance between the bearing wall and the adjoining property, and should be no more than 1.00 m in total.

Balconies can exceed 1.80 m if the façade is set back from the building line. (Article 84). Any excess area of the balcony is included in the building coverage ratio; but not in FAR.

To calculate the balconies of internal buildings, their in-between distance is taken into account instead of the street width.

Interior open balconies in ground floors are allowed, provided their area is no more than one half of the space.

Eaves are allowed only on the ground floor, and cannot be more than 3.00 m when there is a front yard. Light not permanent eaves are allowed in front of shops and at a height no less than 2.50 m recessed by 0.50 m from the kerb.

Closed Balconies are allowed at a height no less than 3.00 m above the ground, and are always included in FAR. They are allowed to stick out of the building line up to 0.40 m, regardless of the street width. If the width of the street is less than 8.00 m, then closed projections are not allowed at all. At the front façade, the total length of closed projections should be no more than 1/4 of the façade.

In case that arcades exist the construction of the closed projections should not be within the height of 5.00m.

Underneath the urban spaces or front yards the foundation can stick out up to 0.30 m. If the basement is used exclusively for parking, it can extend underneath the “un-built” space (not the front yard) provided that it is no more than 70% of the plot and no less than 1.00 m below ground level.
While inter-war erkers used to provide buildings with a number of morphological options, by specifying the width of erkers (0.30 m), the new building regulation “sentences” these features to extinction (Varelidis 1984).

The General Building Regulation provides clear and detailed guidelines in reference to Interior Buildings, Installations in “Un-Built” Spaces, and Party Walls, with the aim to fight over-exploitation.

What would preclude a correlation between the street and “un-built” spaces in the interior of city blocks in a very useful way, both in social terms and in terms of fire safety, is attaching the special status of “commercial street” to internal arcades. Moreover, while it allows the construction of ground or underground spaces, another opportunity is lost: the specified height for these spaces is very small (2.40 m), hence, they can be hardly appealing as entertainment areas; plus, they are by definition restricted to car parking.

In conclusion, compared to the earlier regulations, the 1973 General Building Regulation achieved the following objectives:

• To better regulate light wells, where kitchens and stairwells give.
• To have compulsory “un-built” spaces measure no less than 30% of the plot.
• To introduce ground or underground car parking spaces and shared areas.
• To eliminate the correlation between building systems and the use of buildings, which meant that building systems would be applicable to all land uses.

As a building system for interior buildings is considered the “freestanding” except for interior buildings in the “attached” building system, which is considered the same. The distance between buildings is 0.6xH, where H is the height of the lowest building.

Buildings should be no more than 25% of the “un-built” space excluding the front yard. Their heights as well as the heights of their party walls should be no more than 2.50 m.

For heights in excess of 2.70m, leeway is allowed for the following constructions:

1. Light banisters 0.90-1.10 m in height.
2. Light division up to 1.80 m in height.
3. Elevator chambers.
4. Room of any use up to 5% of the building area. The area of this room should be no less than 12.00 sqm and no more than 50 sqm.

The above constructions should be attached. They should be no more than 2.70m in height, with the exception of elevator chambers, which can be 4.50 m in height.

Party walls should be no higher than 2.50 m. (Article 88)

• Building systems are no longer relevant to the use of buildings; hence, they are applicable to all land uses.
• Coverage ratios in “attached” building systems are very high.
• Not only planting is not required in the “un-built” spaces, but also the construction of low buildings is allowed.
• Over-exploitation of spaces like ground or underground car parking spaces, arcades, and meeting rooms.
• There is an effort to better arrange kitchen, stairwells, and light wells.

The “un-built” space of the plot can no longer be less than 30% of the plot.
After 1974 when democratic freedom was restored in Greece, strong concerns were expressed in relation to urban planning. Among the issues that had to be addressed were modernizing the institutional framework and meeting the need for an alternative intervention into the urban space. A number of legislative deeds sought to correct changes that take place in Athens and the wider area and its building operations. Meanwhile, the state endeavored to collect revenue from the large profit deriving from integrating plots into the town plan. The next step was to reduce the maximum FAR to 2.4, applicable to all Greek territory, and to make car parking spaces compulsory in all new buildings.

4.5.3. The Introduction of New Socio-Cultural and Economic Realities

By the end of this period Athens had become a megalopolis. In a country counting approximately 10.2 million inhabitants (1991), the wider area of Athens alone would account for 3.1 million. Population growth rates in Athens and its suburbs had slowed down considerably since the 1960s; having said that, though, standing at 27% in the 1970s, and at 21% in the 1980s, population growth rates were still not without consequence.

One of the effects of the new building regulations in Athens was that, although in 1970 the concentration of building stock (new and old) accounted for 15.92% of residential buildings in Greece, the largest buildings in the country concentrated in Athens accounted for 71.50% of Greek buildings with over five stories. Neighborhoods in Athens became increasingly segregated by social class, which marked an important development in the social context of the city (Maloutas 1993). Over time, the “urban village” phenomenon faded away as second- and third-generation urbanites would establish neighborhoods more centered on social class than on regional identity (Gallant 2001). The Greek society took more and more after other societies, in terms of social structure, gender relations, and educational background.

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135 Article 24 of the Greek Constitution, 1975, sets the obligations and competences of the State on issues related to urban development and the preservation of both the natural and the cultural environment on new grounds, and draws up guidelines on physical and urban planning policies. In this new emerging approach, physical planning seeks to comply with certain provisions of the Greek Constitution.

136 Law 947/79 “On Residential Areas” introduced the concept of “contribution in land and monies” as pertinent to all land that was to become integrated into the city plan. Owners were to pay in to the public state 30% on the value of their land for property within “active urban planning” or “urban redistribution of land”, and 40% on the value of other newly integrated land. This Law was considered onerous, and remained inoperative up until it was replaced by Residential Law 1337/83. This would provide for a new approach to urban planning through the financial management of space to the benefit of the public interest.

137 Article 1 in Law 880/79 “On the Highest Floor Area Ratio” stipulated new regulations and set the highest floor area rate at 2.4 for the entire Greek territory. Article 2 pertained to the institution of floor area ratio transfer. Such transfer could be performed to meet requirements of the city, and to meet a. architectural and urban planning standards; b. equipment standards in settlements, and; c. the need to preserve certain areas on account of their quality of setting.

138 Law 960/1979 “On the Obligation to Create Car Parking Spaces”. This Law stipulates that whoever applies for a building permit is obligated to provide for car parking spaces.
4.6. Period 1985-2005

4.6.1. The Introduction of New Technology

The building industry started to use metal as a load bearing structure in apartment buildings. Pre-cast elements were largely introduced in architecture, and even in apartment buildings. The use of reinforced concrete mono-block began to replace brickwork and plastering. Technical infrastructure was significantly upgraded in an effort to meet newly emerging needs (air-conditioning, Internet, etc.).

4.6.2. The Introduction of New Legislation

The 1985 General Building Regulation defined “communal space” in a way that set it apart from the 1955 General Building Regulation. In addition to being meant “not for building on”, communal spaces had to be specified “for common use”.

In the same respect, the 1985 General Building Regulation described a new way of constructing buildings that again set it apart from the 1955 General Building Regulation. It sought to establish an urban environment improving on the earlier versions. It allowed for the development of buildings without constraints in terms of volume-plasticity or position on the plot, and opened up the option for merging “un-built” spaces. It abolished building systems and allowed for buildings to be located invariably on the plot. For building detached from the adjoining property, it specified a distance of \( \Delta = 3.00 + 0.1H \).

To improve the urban environment, it made a distinction between high (multi-storied) and low (up to two-storied) buildings. High buildings would cause more problems to the environment. In this regard, the 1985 General Building Regulation provided for more constraints and controls over high buildings. These regulated high buildings in terms of their building method, their position on the plot and relevant to the city block, and their relation to their surroundings in general. Conversely, the

<table>
<thead>
<tr>
<th>Year</th>
<th>Code</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>P4</td>
<td>38, Patriarchou Ioakeim St.</td>
</tr>
</tbody>
</table>

139 In City Block No. 3911, only one plot was left un-built; therefore, one only building was built in that period.

140 Minimum areas and dimensions of building plots are set according to the district they belong to. The plot front side should be no less than 5.00 m. A building with minimum area and dimensions should be able to fit there (Article 6,§1.), i.e., 50 sqm and 5.00 m side (Article 6,§2.). The percentage of coverage should be no less than 70% of the plot (Article 8). The “un-built” space has to be accessible and concentrated at the back side of the plot (Article 8,§1).

141 If the building of the adjoining property was built earlier and the distance from the boundary is more than 1.00 m, then the distance of the new building from the boundary should be \( \Delta = 3.00 + 0.1H \) (Article 9,§3.). If more than two buildings are built on the same plot, their in between distance should be \( \Delta = 3.00 + 0.1H \), where \( H \) is the height of the taller building (Article 9,§4.). Within this distance \( \Delta \), only architectural projections, eaves and special installations are allowed (Article 9,§5).
1985 General Building Regulation adopted a simpler approach in regulating low buildings, offering incentives for the construction of such buildings. FAR became a key factor in plot exploitation. For the first time, maximum building heights were correlated to FAR.\footnote{142}

Maximum building heights by FAR increased, in the spirit of freedom and free architecture of buildings, backed by the fact that building heights were also controlled indirectly within the ideal 3D envelope.\footnote{143} The 1985 General Building Regulation also stipulated that new buildings should fit in a theoretical geometrical 3D model defined as follows:\footnote{144}:

a. From the vertical surface of the building line whose height is no more than 1.5W above the pavement of the sidewalk (where W is the width of the street, as stipulate in Article 10)

b. From an inclined surface that starts from the highest points of the vertical surface defined above and forms an acute angle with it at a tangent of 1:15.

c. From the vertical surfaces of the boundary lines.

In reference to the Architectural Projections and Balconies the objectives of the new regulation were to deregulate the construction of balconies and improve living standards in apartment units; to put an end to corridor-like balconies attached around buildings to no avail; to encourage the construction of balconies and semi-open spaces where the lives of residents should be harmonized with the weather conditions.\footnote{145}

Another innovation, extremely important and directly relevant to our research, was that this new regulation introduced the concept of the “city block”, i.e., the smallest urban planning unit, and a point of reference for urban planning regulation in future. Besides that, it allowed for back yards in the interior of city blocks to merge. While the 1985

\footnote{142} Article 9, §7.
1. For FAR ≤0.4 , H=11.00 m.
2. For FAR ≤0.8, H=15.00 m.
3. For FAR ≤1.2, H=18.00 m.
4. For FAR ≤1.6, H=21.00 m.
5. For FAR ≤2.0, H=24.00 m.
6. For FAR ≤2.4, H=27.00 m.
7. For FAR >2.4, H=24.00 then H=12xFAR<32.00 m.

\footnote{143} The co-efficient volume is described by the following mathematical formula: \((VR)=4x(FAR)+2x(FAR)/n\), where \(n\) is the number of floors. Pilotis or underground car parking spaces, arcades, and rooftop compartments are not included.

\footnote{144} Article 9, §6.

\footnote{145} The 1985 General Building Regulation allows for architectural projections and semi-closed spaces up to 40% of the total floor area. Semi-closed spaces should be no less than 2.50 m length, and their depth should be less than or equal to their length. Article 11.82. Projections are allowed to stick out of the building line up to 1/10 of the width of the street, and should by no means stick out by more than 2.00 m. They are only allowed at a height no less than 3.00 m above the ground. If projections are at a height less than 5.00 m above the ground, they should reach at least 0.50 m from the kerb. Architectural elements up to 0.40m wide, at least 3.00 m above the pavement, are allowed to stick out from the building facades. Light permanent eaves are permitted only above shops and entrances of apartment buildings.
General Building Regulation aspired towards merging "un-built" spaces both with one another and with communal spaces of the city, it left the right to act on that to the people if convinced and when they decided so. Till that point, it specified the construction of the fences, which in special cases comprised a large solid element.

In a commentary of the institutional and legal framework for urban planning, Romanos (2004) criticizes the manner in which this framework is implemented, identifying, inter alia, the following susceptibilities:

- Hyper-legislation leading to lawlessness
- Extensive number of design levels
- Abject failure of application and control mechanisms to put into effect the applicable regulatory framework, on account of "un-official relations" specific to the Mediterranean South.
- Confusion as to the allocation of competences, the required procedures, the interpretation of relevant provisions, etc.
- Lack of strategically important intervention and regeneration mechanisms

Philippides argues that, "a law, not always innocently, repeals or contradicts earlier ones. For example, the structure of the General Building Regulation is based, apparently, on simple and comprehensible rules; and yet every rule comes with a set of deviations and exceptions for countless, detailed cases."

4.6.3. The Introduction of New Socio-Cultural and Economic Realities

The 1990s saw Greece adopt a different approach from that of the 1980s. In a city decisively shaped by the over-exploitation of land, the General Building Regulations, and the lack of urban planning, inhabitants experience the adverse effects of their urban environment on their daily lives (Romanos 2004). And yet, as Geotz (2002) puts it, "Athens is a city that knows how to flaunt itself magnificently. From there arise the continual variations that affect at the same time both the urban landscape and that which the specialists call 'user space'."

While the European Community (1981) proved unable to provide a remedy for every problem, the benefits it offered were real (Gallant 2001). Infrastructure projects that had been conceived decades earlier were finally carried out in the view of the Olympic Games. The Greek community was faced with the same problems that troubled all modern countries in the twenty-first century; meanwhile, it experiences a period of prosperity, unprecedented in the history of Modern Greece: new infrastructure, resources from the European Union, profit from the tourism, shipping, light, and telecommunications industries offered the Greek people high living standards. Immigrants (from Albania, Eastern European countries, Pakistan, etc.) offered cheap labor and heightened building operations.

New needs emerged, on account of the new population makeup, but also due to changes in tradition family values. Apartment units would now have to serve single-parent families or single people. The size and lay out of existing apartment units no longer appealed to these new types of household. At the same time, apartment units had to adapt to the changes induced by the invasion of "work" into "home".
Fig. 4.12. Growth of Athens
Fig. 4.13. Growth of Kolonaki
(Ministry of Environment, Physical Planning and Public Works)
4.7. The Types of Apartment Buildings Identified in the Analysis

Having elaborated on the relevant historical background, we can identify certain distinct apartment building types. The elements that can set one type apart another are traced back to: changes in building techniques and materials, amendments in legislation, and newly emerged social conditions and economic circumstances.

With the advent of early inter-war apartment buildings, reinforced concrete was introduced into the building industry. Against this background, the 1929 General Building Regulation aimed to regulate the features of apartment buildings. This was how the first type of apartment building emerged (Type A). The dimensions and area of inter-war apartment units had higher values than before, on account of their upper-middle-class character. Apartment units would be in excess of 100 sqm; there would be one or two apartment units per floor, and; they were addressed to the upper middle-classes. Medium-sized apartment units were rare, and there were no small-sized apartment units. The space of apartment units would be divided into three areas: living areas, intimate areas, and service areas. Inter-war apartment buildings allocated a large part of their space to drawing rooms. They also allocated some space for the domestic help, which was discontinued in later types. In addition, spaces were divided into smaller compartments that communicated with each other through sliding doors. There was a room for every activity.
Inter-war apartment buildings had two stairwells: one for owners and tenants, and one for the domestic help. In some there was no elevator. In this period, plot coverage ratios acquired their highest values, and "un-built" spaces were fragmented into small yards and light wells within the body of the building or inside part walls. In terms of ownership and financing, an inter-war apartment building would have a single owner on a high income, who also bankrolled the construction. Proprietors would retain ownership of the apartment building, live in one apartment, and lease the rest of them. The choice for architects as designers raised the aesthetic standards.

The first major change in apartment building typology was introduced while moving from the inter- to the post-war period (Type B). By contrast, standards began to fall later on when commercialization ensued in the context of the "antiparochi" system, i.e., arranged land-for-apartment agreements between landowners and contractors. As a result, post-war apartment buildings were generally of a poor quality. Of the professionals who were responsible for their design, the majority were civil engineers, which had a bearing on their morphology.

In the early decades after WWII, users and residents of apartment buildings were on medium income. Disparities in the social makeup of apartment building residents between the inter- and post-war periods would reflect on the size and layout of apartments. There were shifts in the surface area of apartment units. On lower floors, apartment units were small- and medium-sized (35 sqm, 75 sqm); on higher floors, apartment units were larger (120 sqm, 150 sqm). In this context, the dominant type was the 3-bedroom apartment unit measuring 70-80 sqm in surface area. Post-war apartment buildings had usually more than one apartment per floor, since these would be comparatively reduced in size. Larger apartment units were situated on the front side of the plot, whereas smaller ones were on lower floors at the back.

Vertical circulation was reduced to one stairwell. All apartment buildings had elevators, often with two chambers: one for the owners and tenants, and one for the domestic help - remnant of the two-stairwell precedent in middle-class apartment buildings in the earlier period. "Retirés" were regarded as the privileged floors. Internal floor heights were considerably reduced compared to the earlier period. The 1955 General Building Regulation stipulated that the "un-built" spaces of plots should merge and be located at the back of the plot, rather than be fragmented into internal yards. Back yards gave way to light wells, 1.20x1.20 m in minimum dimensions.

After the political reform, apartment buildings continued to evolve, producing further variations in typology (Type C). This was partly due to amendments introduced in the 1973 General Building Regulation; primarily, though, it was attributed to changes in the socio-cultural context and economic circumstances. Building coverage ratios were cemented at 30%, and the distance of buildings from their boundaries was expressed in a specific formula (Δ). In apartment buildings, spaces such as ground or underground car parking spaces, arcades, and meeting rooms were over-exploited. Open-plan spaces were favored for providing greater flexibility. Hence, partitions that
used to divide apartments into smaller compartments were eliminated (e.g., partitions no longer separated kitchens from dining areas, or dining areas from living rooms). The apartment building was the basic building type, and was indicated for any use required (e.g., offices, schools, etc.).

The next development in the typology of apartment buildings (Type D) ensued with the introduction of the 1985 General Building Regulation. This marked an effort to improve social and environmental conditions by means of an active city block that allowed for backyard spaces to merge. This newly emerging type also incorporated the concept of “semi-open space” in an attempt to incorporate elements from the Greek traditional lifestyle and architecture. In reference to the construction of post-war apartment buildings, significant changes were effected in that period. This was due to the new anti-seismic regulations following the devastating earthquakes that had occurred earlier on. These regulations introduced the concept of “anti-seismic gap” (compulsory opening between two adjoining apartment buildings) with the aim to contain the risk of collapse. These regulations restricted the integration of spaces that belonged to adjoining apartment buildings.

With the above four apartment building types in mind, we now go on to develop a generalized, knowledge-based model.

4.8. Developing the Knowledge-Based Model

To develop this generalized model, we will use the “Morphology-Operation-Performance” system (Tzonis 1987). The system of Morphology (the physical aspects of a building or urban fabric), Operation (the processes, activities, uses of a building or urban fabric), and Performance (the conditions a building or city block brings about) has been used by DKS (Design Knowledge Systems) to structure design thinking in various situations or contexts. In the next chapter we elaborate on the kernel of this system. We apply the MOP system to the four types of apartment building and we discuss the prescriptive statements of the generalized model.

To use the MOP system, we have placed the morphological attributes of apartment buildings into categories determined by apartment building type, as we have identified these types in the previous analysis. The following table demonstrates the results of this process:

The last type of apartment building did not emerge with the introduction of the 2000 General Building Regulation, which was merely an attempt to “pull the plug” on arbitrary activities without introducing any significant innovations.
Table 4.2: Morphological attributes by type of apartment building for Kolonaki

<table>
<thead>
<tr>
<th>GENERAL ATTRIBUTES</th>
<th>SPECIFIC ATTRIBUTES</th>
<th>TYPE A</th>
<th>TYPE B</th>
<th>TYPE C</th>
<th>TYPE D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building plot and placement of building</td>
<td>Area coverage ratio max (87%)</td>
<td>70%</td>
<td>70%</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>Floor Area Ratio max (FAR)</td>
<td>Non existent (5.8%)</td>
<td>As a concept only</td>
<td>As a concept only</td>
<td>3.60</td>
<td>3.60</td>
</tr>
<tr>
<td>Location of the façade</td>
<td>Property line</td>
<td>Property line</td>
<td>Property line</td>
<td>No limitation</td>
<td>No limitation</td>
</tr>
<tr>
<td>Dimensions of plot (min)</td>
<td>30 sqm</td>
<td>6x7.5-112.50 sqm</td>
<td>10x15-200 sqm</td>
<td>10x15-200 sqm</td>
<td></td>
</tr>
<tr>
<td>Building</td>
<td>Number of floors (max)</td>
<td>5+1</td>
<td>7</td>
<td>W*7.50 : 4</td>
<td>7.50-W=12.50 : 5</td>
</tr>
<tr>
<td></td>
<td>Floor height (min)</td>
<td>2.40 m</td>
<td>2.00m</td>
<td>2.40m</td>
<td>2.40m</td>
</tr>
<tr>
<td></td>
<td>Basement</td>
<td>3.50-4.80m</td>
<td>2.70-5.00m</td>
<td>3.00-5.00m</td>
<td>2.70m</td>
</tr>
<tr>
<td></td>
<td>Typical floor</td>
<td>3.00 m</td>
<td>3.00m</td>
<td>2.70m</td>
<td>2.70m</td>
</tr>
<tr>
<td></td>
<td>Retire</td>
<td>2.60 m</td>
<td>3.00m</td>
<td>2.70m</td>
<td>2.70m</td>
</tr>
<tr>
<td></td>
<td>Building height (max)</td>
<td>23 m</td>
<td>24.00m</td>
<td>H=W×3.30+c</td>
<td>32m</td>
</tr>
<tr>
<td></td>
<td>Height of façade(max)</td>
<td>23 m</td>
<td>11.00m</td>
<td>W×7.50 : 2</td>
<td>1.50×W</td>
</tr>
<tr>
<td>Building</td>
<td>Dimensions of light wall</td>
<td>7.00 sqm</td>
<td>1.20x1.20</td>
<td>1.20x1.20</td>
<td>1.20x1.20</td>
</tr>
<tr>
<td></td>
<td>Distance from obstacle</td>
<td>2.50m</td>
<td>2.50m</td>
<td>Δ=2.50+0.5H</td>
<td>Δ=3.00+0.1H</td>
</tr>
<tr>
<td>Apartment</td>
<td>Area and dimensions of opening</td>
<td>Min: 0.30 m x 0.50 m</td>
<td>1sqm/7sqm of room area</td>
<td>1sqm/9sqm of room area</td>
<td>Area of opening: 10% of room area (1sqm/10sqm of room area)</td>
</tr>
<tr>
<td></td>
<td>Distance from obstacle</td>
<td></td>
<td></td>
<td>Δ=2.50+0.5(H-Y)</td>
<td>Δ=3.00+0.1(H-Y)</td>
</tr>
<tr>
<td>Balcony</td>
<td>Width: 1.10m</td>
<td>3/4 elevation length</td>
<td>Width: 1/10 W and one meter away from adjoining building</td>
<td>Width: 1/10 W and one meter away from adjoining building</td>
<td>Width: 1/10 W and Width: 2.00m</td>
</tr>
<tr>
<td></td>
<td>Length:</td>
<td></td>
<td>Total area of balconies &lt; 40% of building area (20% of building area if semi-open spaces 20%)</td>
<td>Total area of balconies &lt; 20% of building area</td>
<td>Total area of balconies &lt; 20% of building area</td>
</tr>
<tr>
<td>Closed balconies or semi-open</td>
<td>Width: 1.40m</td>
<td>Width: 0.30m</td>
<td>Width: 0.40m</td>
<td>Width: 0.30m</td>
<td></td>
</tr>
<tr>
<td>Architectural projection</td>
<td>Width: 0.30m</td>
<td>Width: 0.30m</td>
<td>Width: 0.30m</td>
<td>Width: 0.40m</td>
<td></td>
</tr>
<tr>
<td>Projections at ground floor</td>
<td>Width: 0.15m</td>
<td>Width: 0.15m</td>
<td>Width: (width of pavement)-1.5m</td>
<td>Width: (width of pavement)-1.5m</td>
<td></td>
</tr>
</tbody>
</table>

*Where W is the width of street and H the height of the building.*
We then examine the interrelation between Morphology-Operation-Performance for the four types, according to Privacy, Safety, Interaction, Diversity, and Environmental Quality criteria, also considering any relevant implications. For example,

Table 4.3: MOP in Type A

<table>
<thead>
<tr>
<th>e.g.</th>
<th>Morphology</th>
<th>Operation</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>Entrance stairs on the sidewalk of the street</td>
<td>Obstacle in User Circulation: Pedestrian circulation on the sidewalk is interrupted</td>
<td>Decrease in environmental quality: Discomfort for pedestrians using the sidewalk. <strong>BUT</strong> Increased interaction: While e.g. locking/unlocking the front door</td>
</tr>
</tbody>
</table>

Table 4.4: MOP in Type B

<table>
<thead>
<tr>
<th>e.g.</th>
<th>Morphology</th>
<th>Operation</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type B</td>
<td>Second elevator</td>
<td>Options in circulation: Users follow different routes</td>
<td>Decreased interaction: Users do not meet often to interact <strong>BUT</strong> Increased safety: Users do not share the same elevator with persons unknown to them</td>
</tr>
</tbody>
</table>

Table 4.5: MOP in Type C

<table>
<thead>
<tr>
<th>e.g.</th>
<th>Morphology</th>
<th>Operation</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type C</td>
<td>Ground or underground car parking spaces</td>
<td>Users circulation: Connection between street and back yard</td>
<td>Decrease of interaction: Residents do not meet often to interact <strong>BUT</strong></td>
</tr>
</tbody>
</table>

Table 4.6: MOP in Type D

<table>
<thead>
<tr>
<th>e.g.</th>
<th>Morphology</th>
<th>Operation</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type D</td>
<td>Semi-open spaces</td>
<td>Transition from indoor areas (private) to outdoor areas (public): Residents follow different routes</td>
<td>Sense of privacy: A new type of space that increases privacy while outdoors <strong>BUT</strong> Decreased environmental quality (air and light): When users are inside the room</td>
</tr>
</tbody>
</table>

Considering the formula “IF Morphology THEN Operation THEREFORE Performance to be a “forward chaining antecedent system”, one could argue that backward chaining could lead to a prescriptive statement. In this case, the formula of the prescriptive statement would be:

“IF Performance THEN Operation THEREFORE Morphology”
Having said that, we should also state that, inevitably, between the descriptive-explanatory and the prescriptive model there comes a normative component: the highest Performance of the city block by creative criteria. In the prescriptive model “IF - THEN”, conditional statements chaining Performance, Operation, and Morphology could be viewed as design actions. Using these design guidelines to intervene on the Morphology of the city block would produce an improvement in its Operation, hence, in its Performance by creative criteria.

4.9. Conclusions

In this chapter we took the first step towards the development of a design tool by identifying the key types of apartment buildings that constitute the urban fabric of the center of Athens. This was carried out by following the emergence of new kinds of apartment buildings in time and associating them with the emergence of new constraining factors, such as introduction of new know-how, statutory frameworks, social circumstances, affordability, and cultural shifts.

Reviewing the historical background of apartment buildings helped to identify the apartment building types generically that have appeared across different periods of time. The MOP system of architectural knowledge (Tzonis 1986) offered the framework to organize and interpret using the data. The inquiry established four distinct apartment building types developed over time which will be employed in the next chapter in the construction of an urban block. To be used as a test case.
CHAPTER 5: FROM THE URBAN MODEL TO A NEW KNOWLEDGE-BASED DESIGN TOOL FOR CREATING THE CREATIVE BLOCK (CCB)

Having analyzed the Athenian city blocks and summarized the types of Athenian apartment buildings as generic developments of city blocks over time, we now proceed with the development of a new design tool intended to regenerate any type of urban fabric into a creative environment by means of transforming its spatial organization.

We examine how changes in the spatial organization of these four apartment building types can affect the processes that take place within their fabric, and, in turn, can generate costs and benefits for their uses and society.

We introduce the Morphology-Operation-Performance (MOP) system, and we use it to construct a model to represent the way the spatial arrangement of the city block constraints the way it works and, subsequently, constraints the quality of life of its users and of society at large.

Following that, we lay down architectural guidelines applicable at the level of city block, apartment building and apartment unit, producing necessary physical conditions which enable “creativity”. Given the fact that the global objective of “creativity”, as mentioned before, involves multiple sub-objectives - interactivity, diversity, safety, privacy, and micro-environmental quality - the tool incorporates a multi-criteria method of decision-making.

5.1. Introducing the MOP System

In the previous chapter we made a brief reference to the MOP system, with the aim to establish the interrelation between the physical aspects of Type A, B, C, D, the pattern of activities and functions that take place, and their beneficial or detrimental output.

The MOP system deals with the problem of representing architectural knowledge, i.e., the basic concepts and structures that capture information contained in precedents, principles, and rules of architecture (Tzonis 1992). It was initially developed in GSD to represent and capture knowledge related to how buildings were made, how they worked, and what benefits or costs these buildings created for people.

First, Tzonis transformed this knowledge into a reasoning mechanism that departed from a program of architectural needs, exploited knowledge, and lead to design products; then he translated this reasoning into a system, which aimed to represent design explanation as well as design generation.

As Tzonis wrote: “A core of an intelligent design system should represent significant aspects of how artifacts are made out, how they work, what they do in respect to what has to be done, how they fit into the environment and how all these aspects relate to
each other” (1992, 147). Developed to address those aspects, the MOP system relies on four main concepts: “performance”, “operation”, “morphology”, and “context”.

Performance (P) refers to the conditions a prospective building is intended to bring about, or the degree to which a scheme of building brings these conditions about (Tzonis and Heintz 1995).

Operation (O) refers to the process that comprises the use of a building, and the role of form in this process (Tzonis and Heintz 1995; Jeng 1995). It refers to how the morphology “controls, holds or channels people, objects and equipment associated with the activities planned for the building, i.e., in this sense, buildings contain information” (Tzonis 1992, 147).

Morphology (M) refers to the formal aspects of a building or an urban area. It refers to the artifact’s attributes, its spatial composition, and its material structure (Tzonis 1992, 147).

Another concept that has not been further developed is “context”, which generally refers to the state in the external world. Context is the whole situation, background, or environment relevant to a particular event (Jeng 1995, 188). According to Tzonis (1992), it acts in a way that “if a corridor has specific Shape X (morphology), then people can safely evacuate the building (operation-performance), unless the lighting conditions are of Type Y (context).”

Tzonis (1992, 147) first demonstrated this MOP system of representing knowledge while studying a case example of Unité d’Habitation, where Le Corbusier mapped by analogy the relationship and structure of the various precedent entities and properties of “hut”, “ship” and “bottle-rack” into the new apartment complex design. Since then, MOP has been used to investigate architectural thinking in different contexts and situations (Zandi-Nia 1992; Fang 1993; Li 1993; Yu 1994; Bay 2001), as well as architectural education (Tzonis and Heintz 1995). Furthermore it has been employed as a tool for representing normative descriptions (Jeng 1995, 180), and as a structure and production knowledge (Zarzar 2003, 153; Bay 2001; Wu 2005).

We will use the kernel of this system (MOP) to represent knowledge related to the types of performances relevant to creativity, the types of operations that control these performances and the types of morphological characteristics that control these operations. The contextual conditions (e.g., social issues, new technology, etc.) are beyond our field of interest in this study.

For example, in our case, performance may be the “physical comfort of the user in terms of fresh air”, operation may be the “circulation of air through the light-well”, and morphology “the form and dimensions of the light well”.

We will use the MOP system in all four types of apartment building, with the intention of discussing the prescriptive statements of the generalized model.

In our study, using the MOP system helps us understand the performance of an apartment building and a city block, as in whether they are “good or bad” in terms of interactivity, diversity, privacy, safety, and environmental quality.
5.2. Using the MOP System and Design Guidelines for Creating the Creative Block

The knowledge-based design tool for Creating the Creative Block concerns the provision of guidelines, i.e., a set of discretionary statements to guide architectural interventions and designs of city blocks, in order to be regenerated to promote creativity. To control this “appropriation potential” (Vyzoviti 2005) of city blocks, we manipulate the “necessary physical conditions”, the morphological aspects of public and private spaces within, by constraining activities and functions related to the emergence of innovation and creativity, which contribute to the city block’s capacity to be regenerated in a sustainable way.

We elaborate on the design guidelines for the creative block by adopting the chains of interrelations between Morphology, Operation, and Performance of the knowledge-based model. Vyzoviti (2005, 220) writes: “Conditional statements make explicit the chains of inference between MOP. Backward and forward chaining of ‘if-then’ conditional statements from description to prescription provides the mechanism for the generation of design guidelines.”

In our study, the forward chain is the knowledge-based model (descriptive-explanatory). It starts from the user’s satisfaction, unlike the Vyzoviti model, which starts from what the space looks like to conclude on its physical characteristics. Afterwards, prescription follows the backward chain, which starts from how a space should be in order to achieve the desired performance. “Forward-Backward” chaining between Morphology, Operation, and Performance leading to prescription is as follows:

Knowledge-Based Model (Forward chaining):
“IF” Performance “THEN” Operation “THEREFORE” Morphology

Prescriptive Model (Backward chaining):
“IF” Morphology “THEN” Operation “THEREFORE” Performance

This chain can be represented in the following figure:

![Backward and Forward Chain between Morphology, Operation, and Performance](image-url)

Fig. 5.1. Backward and Forward Chain between Morphology, Operation, and Performance
5.3. Evaluating Precedents and Identifying Conditions

5.3.1. Evaluating the Performance of the Four Apartment Building Types

As we mentioned in the previous chapter, all apartment buildings built in Athens according to the attached building system fall under four types. We then went on to list the specific attributes identified in these four apartment building types, and the interrelation between Morphology-Operation-Performance, based on privacy, safety, interaction, diversity, and environmental quality.

To evaluate the operation of these four types, we employ a method developed by Tzonis (1975) in collaboration with Salama, based on the multi-criteria approach of projects. This method suggests that evaluating involves objects as alternative design solutions, different plans by the same designer, individual decisions, steps in the design process, etc. The points of view can be any kind of electors, e.g., qualities (positive or negative) that a project must either seek or avoid, namely construction cost, safety, environmental quality, economic returns, good orientation, good view, etc. Each point of view can either be considered equivalent in importance or more/less important than others, and can be assigned a value.

In our case, the object of the evaluation problem is the Performance of the four types of apartment buildings, and the points of view are the creativity-related criteria: privacy, safety, interaction, diversity, and environmental quality. We have assumed that all these criteria are equivalent in importance, and therefore are valued the same.

We go on to evaluate the performance of these five creativity-related criteria of apartment building types A, B, C, and D, and we list the physical conditions that account for their good or bad rates.

**Interaction**

**Type A**

At the level of City Block: Extensive coverage and overly fragmented back yards that prohibit interaction. Distinguished into principal and secondary circulation allows for alternative routes (main and service stairwells).

At the level of Apartment Building: There is a communal area at the rooftop compartment for common housework. Large corridors and entrances with amenities allow for interaction.

At the level of Apartment Unit: Every function is provided with its own space with transition space linking them (as is established by the space syntax of Type A apartment units in Appendix 3.1.). This limits interaction. Erkers generate interaction between residents and the street.

**Type B**

At the level of City Block: More than one entrance from the street, given that the ground floor is no longer just for residencies, but also for commercial use.
At the level of Apartment Building: Common use is eliminated in rooftop compartments, where residents can meet.

At the level of Apartment Unit: Transition spaces are limited, along with the opportunity for residents to bump into each other.

**Type C**

At the level of City Block: Greek law provides for the integration of back yards into a single, communal space belonging to all residents in the city block. This measure is introduced with the aim to encourage interaction between residents; in practice, though, it is never applied.

At the level of Apartment Building: Greek law provides for a closed communal space that is not factored into the apartment building; this is later eliminated in Type D apartment buildings.

At the level of Apartment Unit: Only one entrance to each apartment unit.

**Type D**

At the level of City Block: Ground floor allocated to shops and shop windows, which increases interaction opportunities.

At the level of Apartment Building: Only one stairwell and only one elevator. Communal areas are minimized.

At the level of Apartment Unit: Integrated spaces, hence, less thresholds.

**Conclusions:** Type A value > Type C value > Type B value > Type D value

---

**Diversity**

**Type A:**

At the level of City Block: Erkers, balconies and retirés offer greater diversity.

At the level of Apartment Building: Compared to the other apartment building types, diversity is limited in what concerns the size of apartment units, and therefore the functions they can perform.

At the level of Apartment Unit: Only large apartment units. No two-bedroom or studio apartment units.

**Type B:**

At the level of City Block: Building regulations restrict the diversity of façades.

At the level of Apartment Building: New functions are introduced.

At the level of Apartment Unit: Different size of the apartment units; diverse financial and social status among users.
Type C
At the level of City Block: Building regulations restrict the diversity of façades.
At the level of Apartment Building: Duplex-type apartment buildings are introduced in retirés.
At the level of Apartment Unit: Small-sized apartment units are introduced.

Type D
At the level of City Block: Buildings hosting diverse uses, such as offices, are introduced.
At the level of Apartment Building: Diversity is higher on account of technology that allows for a larger distance from columns, hence, further flexibility in uses and layout.
At the level of Apartment Unit: Open plan spaces allow for diverse functions and meet the needs of diverse users. Semi-open spaces offer space diversity, in terms of type and quality.

Conclusions: Type D value > Type C value > Type B value > Type A value

Safety
Type A
At the level of City Block: There is no joining material between apartment buildings, which increases risk in case of earthquakes. Service stairwells from and to back yards provide access to intruders without them being seen, but are extremely important as fire escapes.
At the level of Apartment Building: There used to be a concierge compartment by the entrance of the apartment building. In the other apartment building types, such compartments are eliminated or minimized. Hardly any concierges exist nowadays.
At the level of Apartment Unit: The second entrance to the apartment unit generates problems, in terms of safety (as can be established in the circulation diagrams of Type A apartment units in Appendix 3.1.).

Type B
At the level of City Block: Access to open balconies is allowed only from spaces in the interior, which increases safety and crime protection for the entire city block.
At the level of Apartment Building: The second entrance to apartment buildings is eliminated.
At the level of Apartment Unit: The second entrance to apartment units is eliminated.

Type C
At the level of City Block: Less safe, on account of underground or ground level car parks integrated into apartment buildings.
At the level of Apartment Building: Safe in terms of statics, on account of the quality of concrete.
At the level of Apartment Unit: Less safe, given the large size and number of openings that are feasible now on account of the quality of concrete and its reinforcement.

Type D
At the level of City Block: Anti-seismic gaps between adjoining buildings makes city blocks safer in case of earthquakes.
At the level of Apartment Building: Safer, on account of the new regulation on bearing structures. Concierge compartments are eliminated.
At the level of Apartment Unit: Less safe, on account of the large size and number of openings, as in Type C.

Conclusions: Type B value > Type D value > Type C value > Type A value

Privacy

Type A
At the level of City Block: There are no restrictions as to facing openings in the back yards.
At the level of Apartment Building: Two vertical circulations, one for principal uses and visitors; another for the domestic help and for housework. Circulation spaces are reduced in area, which generates problems in terms of privacy. There is an additional central, glass door entrance between the main entrance from the street and the stairwell.
At the level of Apartment Unit: There is a clear distinction among social, private and service spaces. In Type A apartment buildings each function is allocated to its own space and becomes separate by means of doors (e.g., the living room is separate from the dining room). In addition, there is a transition space linking these functions. This gives users privacy.

Type B
At the level of City Block: Erecting internal buildings in yards is allowed. Thus, privacy is reduced.
At the level of Apartment Building: Two elevators, but without the additional glass-door entrance between the main entrance from the street and the stairwell.
At the level of Apartment Unit: There is no clear distinction between private, social and service spaces; transition spaces are reduced.

Type C
At the level of City Block: The integrated “un-built” space generates problems in terms of privacy, as the private rooms of the apartment units give to this area.
At the level of Apartment Building: Reduced circulation areas generate problems in terms of privacy.
At the level of Apartment Unit: Spaces become integrated or are used to perform diverse functions.

**Type D**

At the level of City Block: The diverse uses that apartment buildings host generate problems in terms of privacy.
At the level of Apartment Building: Reduced circulation areas generate problems in terms of privacy, as is the case with Type C apartment buildings.
At the level of Apartment Unit: Introducing semi-open spaces brings rooms further in, but also creates spaces that are exposed to public areas. Apartment units with open plan configuration do not allow for privacy.

Conclusions: Type B value > Type B value > Type B value > Type B value

*Environmental Quality*

**Type A**

At the level of City Block: The introduction of a gallery improves environmental conditions on the sidewalk. Small light wells, small yards and higher coverage ratio.
At the level of Apartment Building: Improved aesthetics at the entrance, better quality of architecture, given that everything is designed by architects.
At the level of Apartment Unit: Greater internal height, hence better environmental conditions. This is attributed to the fact that apartment units are designed and built using special materials due to higher-income owners.

**Type B**

At the level of City Block: For the first time, the “un-built” area of the plot is integrated and its mandatory position is at the back of the plot.
At the level of Apartment Building: The height of an apartment building depends on the width of the street, which allows for better light and air circulation conditions.
At the level of Apartment Unit: Internal height of floors is reduced compared to earlier cases.

**Type C**

At the level of City Block: Smaller scale coverage, better light and air circulation than before.
At the level of Apartment Building: Larger light wells. No restriction as to the height, but conformity to the ideal standard, namely the 3D envelope.
At the level of Apartment Unit: Semi-open spaces. Large openings.

**Type D**
At the level of City Block: Larger distances between apartment buildings in the back yard.
At the level of Apartment Building: Larger light wells. No restriction as to the height, but conformity to the ideal standard, namely the 3D envelope.
At the level of Apartment Unit: Semi-open spaces.

Conclusions: Type D value > Type C value > Type A value > Type B value

We go on to compare the apartment building types on the basis of the aforementioned data, taking into consideration criteria that encourage innovation and creativity in the urban fabric.

### Table 5.1. Performance-Related Values by Type of Apartment Building

<table>
<thead>
<tr>
<th>INTERACTIVITY</th>
<th>DIVERSITY</th>
<th>SAFETY</th>
<th>PRIVACY</th>
<th>ENVIRONMENTAL QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE A</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>TYPE B</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>TYPE C</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TYPE D</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

### 5.3.2. Directives for Design Guidelines Drawn by Desired (Highest) Performance

Desired Performance can generate a directive for Desired Morphology by transferring the related operation that depends on the fact referred to or recalled in this deontic link (Bay 2001, 124). Earlier on, we compared and evaluated the performance in terms of interactivity, diversity, privacy, safety, and environmental quality as far as apartment buildings of Types A, B, C, and D are concerned (let us mention that all apartment buildings in Kolonaki belong to either one of these four types). For example:

- **Type A** scores higher in privacy “p”.

The plot is based on the desired performance ratio. It is better if the height of the plot is compared to the height of the building.
Having examined in Chapter 4 how Morphology-Operation-Performance (MOP) are related to these four types of apartment building, we now go on to highlight the physical conditions that have lead certain types to score higher in Performance, thereby bypassing Operation. For example:

Type A scores higher than Type D in privacy “p”, given that every function is allocated a different room (e.g., gathering in the living room; eating in the dining room), whereas in Type D two functions are often allocated the same space (e.g., living room and dining room combined in one).

This paves the way to setting out a directive for desired morphology, generated by achieving a better performance. The operation of “not being together” is an outcome of beliefs or an expression of desires, rather than a command or “ought to”. For example:

The “high sense of privacy for family members in a room of an apartment unit” generates a directive dictating to allocate different rooms for different functions.

Comparing the four types of apartment building we have observed that if a type scores higher in Performance than the others, it does not necessarily score higher in its overall performance than the other types. For example:

For the same reason that Type A apartment buildings score higher in privacy “p” than Type D apartment buildings (i.e., different functions in different rooms), Type D apartment buildings score higher in interactivity “i” than Type A apartment buildings (i.e., family members meet or have the opportunity to meet more frequently in Type D than in Type A).

This leads us to a directive that contradicts the previous one, i.e.:

To achieve “high interaction among family members in the apartment unit”, different functions DO NOT require different rooms, (i.e., different functions could be performed in the same room).

From the above we conclude that the necessary physical condition to promote interactivity “i” between the family members is the integrated rooms (“i”-design guideline), while on the other hand, the necessary physical condition to promote privacy “p” in the family is to have partitions and thresholds (“p”-design guideline), so as to separate different activities.

A more complex and higher level guideline would consider both aforementioned conclusions, and would combine them as follows: between function-related spaces there are movable partitions (“ip”-design guideline). This, however, is not part of this study; it offers, though, fertile ground for further investigation.

5.4. Design Guidelines

5.4.1. Specific Design Actions to Achieve New Morphology

To achieve a new morphology, we need to carry out a number of design actions. These actions are shaped according to the conclusions we have drawn upon findings.
based on the analysis of City Block No. 3911, on the desires of the users as recorded in their interviews and questionnaires, and on current literature on urban regeneration and apartment building alterations.

To better understand these design actions, we are using City Block No. 3911, which we developed in the previous chapter, as an example for schematic interventions.

5.4.1.1. Design Guidelines for City Blocks

The design actions to achieve a new morphology at the level of city blocks are as follows:

Reconfiguring Apartment Buildings (Design Guideline CB1)

An attached building system, which is the case in hand, allows for two apartment buildings to become integrated. This action would enable a city block to host uses that would otherwise require more area than that available in an apartment building as a unit, namely universities, embassies, multinational corporations, large malls, etc.

On the other hand, two adjoining buildings can become integrated only in part. Two or more floors of the same level could become integrated (e.g., the ground floors of adjoining apartment buildings), with the aim to host uses that would otherwise require more area than that available in existing floors (e.g., restaurants).

Removing Apartment Buildings (Design Guideline CB2)

Removing an entire apartment building, especially a small, deteriorated building, would create free space in favor of neighboring apartment buildings and the entire city block. Hence, this would also benefit the city center as well, given that among its most significant problems is the lack of "un-built" and green spaces. This would also offer accessibility from the sidewalk to the interior of the city block. The residents of the city block would be able to buy or the state could appropriate a deteriorating apartment building whose repair and maintenance is not cost-effective. This action would improve considerably the environmental quality of the city block.

Having said that, one has to consider that this solution is drastic and could only be applied in the exceptional case of significantly degraded environments.

Retaining Buildings of Historic and Architectural Importance (Design Guideline CB3)

Entire apartment buildings could be preserved if it is deemed that they are of a special architectural and historical significance. In such cases no modification or intervention should take place. The only permissible option would be to preserve them and upgrade their installation elements. Their elements should be replaced using materials of the same quality and in the same proportions.¹

¹ Elevation on Alopekis St., City Block No. 3911, if historic buildings are retained and a section or floor from other buildings is removed.
Adding Elements between Buildings (Design Guideline CB4)
If in an attached building system the façades of apartment buildings are continuous, then the external masonry of the boundary walls that adjoining apartment buildings share could be adjoined, but not all along their lengths. The reason for this lies in the configuration of respective layouts, diverse depths of the plots, etc. The footprints of such adjoining apartment buildings create awkward spaces, and this indent in the third dimension creates spaces with poor light circulation. These spaces between apartment buildings could be built along all the heights of the lower floors, thereby creating intermediate compartments; alternatively, vertical circulation cores of fire escapes could be built for safety reasons.

Integrating Back Yards (Design Guideline CB5)
The “un-built” space of a city block is made up of the back yards of apartment buildings that are separated from one another by high boundary walls. Removing these boundary walls would create an integrated “un-built” space that could be used as playground, garden, open-air space for entertaining, etc.

Building on the “Un-Built” Area of the Plot (Design Guideline CB6)
Low-height apartment buildings for uses that could service the entire city block could be built on the “un-built” area of the plot. Intended for all users, this “un-built” space could include a low-height kitchen for cooking and dining, as well as storage or sanitary areas for common use.

Integrating Rooms (Design Guideline CB7)
When top-floor apartment units do not make use of rooftop compartments, then these remain unexploited. Offering the best view from city block apartment buildings, rooftop compartments could become integrated and used to host communal uses, e.g., meeting areas, swimming pools, open-air theaters, etc. In addition, accessing one apartment building from another through the integrated rooftop compartments would enable city block users to interact and take part in common and diverse activities.

Reconfiguring Circulation (Design Guideline CB8)
Two or more apartment buildings could be serviced by one stairwell and one elevator, thereby saving in energy. This could be achieved by eliminating one stairwell; by integrating two stairwells if they are located close to one another and this is feasible; or by building a new vertical circulation core somewhere else.
Now

AFTER

Fig. 5.2. Vertical Circulation network of CB No. 3911. Before and after.
5.4.1.2. Design Guidelines for Apartment Buildings

The design actions to achieve a new morphology at the level of apartment buildings are as follows:

Adding Extensions to Buildings (Design Guideline AB1)

Adding an extension is defined as bringing about the physical enlargement of a building structure. It is conducted in two forms: extending the existing building structure, and adding a new structural unit onto the existing structure, e.g., a balcony and room unit. In recent remodeling projects, we have discovered that adding new structural units was more frequently adopted than extending the existing structure. Adding a balcony would usually accompany the conversion of an existing balcony into interior space, which is one of the most commonly adopted means for extension of late. These design actions provide more area to spaces; on the other hand, though, in environments where the building coefficient is particularly high, as in the case study in hand, such actions could be performed only if space has been taken from elsewhere.

Reconfiguring Apartment Units (Design Guideline AB2)

Combining apartment units is a method for extending small-sized apartment units. It is achieved by removing the partition walls between the two apartment units, and reconstructing entirely the interior space. Combining units could be in the form of:

a. Horizontal reconfiguring of units: spaces in one apartment unit are integrated into the adjacent apartment unit; two adjacent apartment units merge to form a larger apartment unit; three apartments merge into one, and then split to form two new, larger apartment units, etc.

b. Vertical reconfiguring of units: two vertically adjoining apartment units are combined into one duplex apartment unit, with a new stairwell built within the newly incorporated upper and lower units.

Removing Sections (Design Guideline AB3)

Removing, in the horizontal sense, floors or spaces in the middle section of apartment buildings can help to create semi-open spaces and extend balconies inwards. Re-configuring the middle section of apartment buildings could also signal that uses within the apartment building itself are changing, e.g., residences in the upper section, offices and commercial uses in the lower section.

Removing entire floors at higher floor levels could contribute to reducing the height of buildings, thereby providing lower floors and streets with better air and light circulation. Architectural organization at higher floor levels (rooms, compartments, upper floors) could enable new spaces to be created and shared by the residents of the apartment building, e.g., meeting areas, gardens, etc.

On the other hand, removing or re-configuring the lowest floor levels of apartment buildings (lower ground floors, basements, ground floors, mezzanine floors) could foster street vigor, and make the transition from public to private spaces smoother.
At the same time, it could provide for urgently needed spaces, e.g., parking spaces. In recent remodeling projects, introducing parking space areas integrated on the ground or underground levels of apartment buildings is frequent, to improve the environment for pedestrians. Introducing parking space areas integrated on the ground or underground levels of apartment buildings reduces the number of apartment units, which usually results in adding top floors to apartment buildings to compensate for the loss in ground level apartment units. Adding underground floors is introduced mainly with the aim to extend parking space areas or other needed facilities. In the past, extending underground parking space areas was rarely introduced, on account of technical inefficiencies.2

Slabs are restrictive to the penetrability of spaces across floors. Integrating spaces in the vertical sense is allowed only on multiples of the height H of floors (e.g., to create maisonnette-type homes, two-storied voids in the outer shell of an apartment building for aesthetic or functional purposes). Removing in the vertical sense the same compartment all across the height of apartment buildings could create light wells for light and air circulation or vertical circulation cores.

“Greening” Existing Apartment Buildings (Design Guideline AB4)

“Greening” existing apartment buildings requires different approaches and technologies from those of new building structures. In most cases, the building structure and systems must remain as they are, and sustainability options must fit within these constraints. On the other hand, existing buildings offer opportunities to improve apartment building operations and user behavior, minimizing environmental impact. Often, the most cost-effective option is to re-commission a building system. As buildings age and maintenance staff change, building systems no longer function according to their original specifications. This can result in high-energy use, poor air quality, and increased maintenance costs. Building renovations allow for more comprehensive measures. Improvements to the building envelope, and to the installation elements of apartment buildings can be easily and cost-effectively introduced as part of a renovation. Upgrading materials could enhance significantly indoor air quality, durability, and maintenance.

Re-Designing Circulation (Design Guideline AB5)

Creating underground spaces and adding new floors in apartment buildings could extend existing vertical cores or add new ones if there were none beforehand (e.g., when elevators do not reach rooftop compartments). Vertical cores could also be extended in order to meet the needs of users or to comply with new building standards (e.g., in reference to the size of elevator cabins).

2 In the recent projects, though, this has become increasingly the case.
Retaining Façades and Entrances of Pre-War Era Apartment Buildings (design guideline AB6)
The façades of Type A apartment buildings should not be modified; neither should be the entrances to such apartment buildings and their stairwells to the first floor. This would ensure the historical continuity in the urban façades and semi-public spaces.

5.4.1.3. Design Guidelines for Apartment Units

The design actions to achieve a new morphology at the level of apartment units are as follows:

Reconfiguring Space in Apartment Units (Design Guideline AU1)
Reconfiguring the space of apartment units becomes imperative when changes occur in the needs and aesthetics of, property ownership, family members, social circumstances, etc. The remodeling market is very strong, especially in inner city areas, where the building stock is old. To create an apartment unit that fosters innovation and creativity, all rooms must be accessible for and usable by disabled people, spaces must have a high degree of flexibility in rearranging furniture and also flexibility in the plan.

Adding Extensions to Apartment Units (Design Guideline AU2)
Reconstructing the interior space for extension can be achieved by: converting balconies into interior spaces; converting public corridors into interior spaces, and; removing unnecessary stairwells to convert them into interior spaces.
Adding new balconies should compensate for converting balconies into interior spaces. Converting corridors is an option when other users do not make use of those parts integrated into interior spaces. Removing or adapting stairwells usually occurs in upper floor apartment units and in disused service stairwells. While these extensions are common practice, our design tool will use them as design actions only when spaces require intensification, not just extension (e.g., disused communal spaces on account of a poor design).

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3 According to the US Census Bureau (1999), improvements, which include additions and alterations, accounted for 70 percent of total remodeling expenditures last year, with the remaining 30 percent going toward maintenance and repairs.
Increasing Room Area by Rotating Walls (Design Guideline AU3)

One way to increase the size of a room is by rotating the walls that surround it. Apartment buildings have bearing structures with square grids, and rooms are usually defined by walls connecting two columns. Another configuration would be with columns on the sides of the square grid instead of on its corners. This would increase the room area of the enclosed space.² (If the room area $A$ in the first case is $A = a^2$, where $a$ is the distance between the two columns, the room area $A'$ in the second case is $A' = 2a^2$)

![Diagram of current columns and potential re-arrangement]

Fig. 5.3. Current columns - walls and potential re-arrangement

² Design guideline AU3 if applied to the whole city block.
Increasing and Transforming Apartment Balconies (Design Guideline AU4)

Unlike Types A and B, Types C and D have wider and longer balconies. The current demand in the real estate market of apartment units is for large percentage area of balconies. On account of building regulation restrictions and the need to maximize profit, however, balconies in Athens apartment buildings are narrow and long. This might be the reason why they are underused, but the same phenomenon of occupying balconies is widely encountered. When balconies are larger, the price of the whole apartment unit is increased, despite the fact they are not factored into the selling price and are not sold per surface area. Therefore, although not used or sold as interior spaces, balconies affect the selling price more than other areas of the apartment unit. Thus, we conclude that the desire for larger balconies maximize the effective area, not because of their use value, but because of their exchange value. Apartment units with large balconies attract a larger number of users, which is the object of the design tool, while at the same time they improve living conditions.

5.4.2. Constraints and Directions to Design Guidelines

Having developed the aforementioned design guidelines, we now go on to examine if, when applied to the physical environment, these guidelines have an effect on the way users/residents employ them, and also to establish whether the newly created conditions meet the creativity criteria.

To achieve the desired effect, this study has to set some directions and/or constraints in applying these guidelines.

Potential Constraint

Case: Removing part of the slab to create a duplex apartment unit for a large family.
Constraint: The slab to be removed should not be close to beams.

Potential Direction

Case: Creating a new opening in a poorly ventilated room.
Direction: We should suggest the determinants of the opening: surface area of the space in question; area of the opening; distance from an obstacle in front of the opening.
### Table 5.2. Constraints and Directions of Design Actions

<table>
<thead>
<tr>
<th>Scale</th>
<th>Design Actions</th>
<th>Constraints (C) and/or Directions (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Block</td>
<td>Combining two or more buildings</td>
<td>The anti-seismic gap material should remain. (D)</td>
</tr>
<tr>
<td></td>
<td>Integrating floors of adjoining apartment buildings</td>
<td>There should be a ramp in addition to the stairwell (D)</td>
</tr>
<tr>
<td></td>
<td>Integrating apartment units of adjoining buildings</td>
<td>With the anti-seismic gap material eliminated, there should be a static reinforcement. (C)</td>
</tr>
<tr>
<td></td>
<td>Removing apartment buildings</td>
<td>The apartment buildings in question should not be listed. (C)</td>
</tr>
<tr>
<td></td>
<td>Adding elements between apartment buildings</td>
<td>No blind spaces for principal use should be created. (C)</td>
</tr>
<tr>
<td></td>
<td>Integrating back yards in “un-built” area</td>
<td>Each apartment unit should retain ownership of its own yard. (C)</td>
</tr>
<tr>
<td></td>
<td>Building on the «un-built» area</td>
<td>The right to use the integrated «un-built» spaces should belong to the residents of all apartment buildings that have taken part in the integration. (D)</td>
</tr>
<tr>
<td></td>
<td>Integrating rooftop compartments</td>
<td>This should not exceed the permissible FAR. (C)</td>
</tr>
<tr>
<td></td>
<td>Combining vertical circulation</td>
<td>Each apartment unit should retain ownership of its own rooftop terrace. (C)</td>
</tr>
<tr>
<td>Apartment Building</td>
<td>Adding top floors</td>
<td>The right to use the integrated rooftop compartments should belong to the residents of all apartment buildings that have taken part in the integration. (D)</td>
</tr>
<tr>
<td></td>
<td>Adding underground floors</td>
<td>New circulation should offer higher user capacity. (D)</td>
</tr>
<tr>
<td></td>
<td>Extending circulation cores</td>
<td>The bearing structure of building apartments should be reinforced to allow for the additional weight. (C)</td>
</tr>
<tr>
<td></td>
<td>Combining units vertically</td>
<td>The difference in height in adjoining apartment buildings should be no more than two floors. (C)</td>
</tr>
<tr>
<td></td>
<td>Combining units horizontally</td>
<td>The added floor should be (C)</td>
</tr>
<tr>
<td></td>
<td>Extending units to corridors</td>
<td>Basements should not be below the foundations of adjoining apartment buildings. (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>They should not extend into private spaces. (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No beams should be removed. (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No columns should be removed. (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Circulation of other apartment units and communal spaces should not be impeded. (C)</td>
</tr>
</tbody>
</table>
Table 5.2. Constraints and Directions of Design Actions

<table>
<thead>
<tr>
<th>Apartment Unit</th>
<th>Design Actions</th>
<th>Constraints and Directions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing size and location of light wells</td>
<td>When the size of a light well on a floor is change, so should be the size of the light well in all floors above it. (C)</td>
<td></td>
</tr>
<tr>
<td>Removing intermediate floors</td>
<td>The stairwell on the floor to be removed should remain an interior space with a new entrance. (D)</td>
<td></td>
</tr>
<tr>
<td>Transforming ground floor to parking space areas</td>
<td>There should be a back yard. (C)</td>
<td></td>
</tr>
<tr>
<td>Removing top floors</td>
<td>Restricted to fifth or higher floors. (C)</td>
<td></td>
</tr>
<tr>
<td>Relocating vertical circulation cores</td>
<td>The hole of the former circulation core should be retained as a light well. (D)</td>
<td></td>
</tr>
<tr>
<td>Changing size and location of entrances</td>
<td>Not applicable to entrances of Type A apartment buildings. (C) There should ramps for disable people. (D)</td>
<td></td>
</tr>
<tr>
<td>“Greening” rooftop terraces</td>
<td>The bearing structure should allow for the weight of the plants. (C) The technical standards for insulation should be met. (D)</td>
<td></td>
</tr>
<tr>
<td>Changing size and location of rooms</td>
<td>The walls involved should not be bearing structures. (C)</td>
<td></td>
</tr>
<tr>
<td>Changing size and location of corridors</td>
<td>The width of the corridors should be no less than 90 cm. (C)</td>
<td></td>
</tr>
<tr>
<td>Changing size and location of balconies</td>
<td>Openings in the façade should not agree with the rest of the floors. (C)</td>
<td></td>
</tr>
<tr>
<td>Combining/Splitting rooms</td>
<td>When is split into two rooms, spaces should meet the light and air circulation standards. (C)</td>
<td></td>
</tr>
<tr>
<td>Changing size and location of balconies</td>
<td>The daylight factor for rooms in lower floor apartments should be taken into account. (C)</td>
<td></td>
</tr>
<tr>
<td>Adding balconies to interior spaces</td>
<td>There should be no principal space behind additions without direct light. (C)</td>
<td></td>
</tr>
<tr>
<td>Adding interior spaces to balconies</td>
<td>Principal spaces that are left behind should have direct light. (C) The lengths of balconies added to interior spaces should measure more than their widths. (D)</td>
<td></td>
</tr>
</tbody>
</table>
5.5. Structure of Prescriptive Model

To develop the design tool for Creating the Creative Block (CCB), one must take the following steps:

Step 1: From Architectural Design Actions to New Morphology
Step 2: From New Morphology to New Operation
Step 3: From New Operation to New Performance

The result is an improved city block that enables creativity.

5.5.1. From Architectural Design Actions to New Morphology

When implemented in a city block, the design actions discussed above have an effect on its morphological features. For example, integrating back yards in “un-built” areas (Design Guideline CB5) creates a large, unified “un-built” space. The table below shows the effect of each design action to the physical environment.

Table 5.3. Design Actions at the level of City Block, Apartment Building and Apartment Unit, and the New Morphology they create

<table>
<thead>
<tr>
<th>City Block</th>
<th>Architectural Design Actions</th>
<th>New Morphology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Combining two or more apartment buildings</td>
<td>Larger apartment units</td>
</tr>
<tr>
<td></td>
<td>Combining empty lot with apartment building</td>
<td>Semi-public “un-built” spaces</td>
</tr>
<tr>
<td></td>
<td>Integrating apartment units of adjoining buildings</td>
<td>Larger apartment units</td>
</tr>
<tr>
<td></td>
<td>Removing apartment building</td>
<td>New buildings or “un-built” spaces/parking spaces</td>
</tr>
<tr>
<td></td>
<td>Preserving historic buildings</td>
<td>Urban façades that ensure historical continuity</td>
</tr>
<tr>
<td></td>
<td>Adding elements between apartment buildings</td>
<td>Additional areas</td>
</tr>
<tr>
<td></td>
<td>Integrating “un-built” areas</td>
<td>Open public spaces/parking space areas</td>
</tr>
<tr>
<td></td>
<td>Building on “un-built” areas</td>
<td>Additional areas</td>
</tr>
<tr>
<td></td>
<td>Integrating rooftop terraces</td>
<td>Communal spaces</td>
</tr>
<tr>
<td></td>
<td>Integrating circulation</td>
<td>Efficient circulation</td>
</tr>
<tr>
<td></td>
<td>Combining circulation</td>
<td>Efficient circulation</td>
</tr>
<tr>
<td></td>
<td>Adding top floors</td>
<td>Additional areas</td>
</tr>
<tr>
<td></td>
<td>Adding underground floors</td>
<td>Parking space areas</td>
</tr>
<tr>
<td></td>
<td>Combining apartment units vertically</td>
<td>Duplex apartment units</td>
</tr>
<tr>
<td></td>
<td>Combining apartment units horizontally</td>
<td>Bigger apartment area</td>
</tr>
<tr>
<td></td>
<td>Changing size and location of light wells</td>
<td>Larger light wells</td>
</tr>
<tr>
<td></td>
<td>Removing intermediate floors</td>
<td>Increased interior heights</td>
</tr>
<tr>
<td></td>
<td>Removing ground floors</td>
<td>Introduction of ground or underground parking space areas</td>
</tr>
<tr>
<td></td>
<td>Removing top floors</td>
<td>Decreased building heights</td>
</tr>
<tr>
<td></td>
<td>Relocating cores</td>
<td>Efficient circulation</td>
</tr>
<tr>
<td></td>
<td>Extending cores</td>
<td>Spaces for meeting, sitting, etc.</td>
</tr>
<tr>
<td></td>
<td>Changing size and location entrances</td>
<td>Spaces for meeting, sitting, etc.</td>
</tr>
<tr>
<td></td>
<td>“Greening” rooftop terraces</td>
<td>Green spaces</td>
</tr>
<tr>
<td></td>
<td>Connecting floor levels</td>
<td>Ramps</td>
</tr>
<tr>
<td></td>
<td>Changing size and location of rooms</td>
<td>Convenient room sizes</td>
</tr>
<tr>
<td></td>
<td>Extending apartment units to corridors</td>
<td>Increased apartment unit area</td>
</tr>
<tr>
<td></td>
<td>Changing size and location of openings in the façade</td>
<td>Larger or better positioned openings on street</td>
</tr>
<tr>
<td></td>
<td>Changing size and location of openings</td>
<td>Larger or better positioned openings of rooms</td>
</tr>
<tr>
<td></td>
<td>Combining/Splitting rooms</td>
<td>Convenient room sizes</td>
</tr>
<tr>
<td></td>
<td>Changing size and location of balconies</td>
<td>Larger or better positioned openings of rooms</td>
</tr>
<tr>
<td></td>
<td>Adding balconies to interior spaces</td>
<td>Spacier apartment unit</td>
</tr>
<tr>
<td></td>
<td>Add interior spaces to balconies</td>
<td>Outdoor space</td>
</tr>
</tbody>
</table>
5.5.2. From New Morphology to New Operation

The newly acquired morphological features of the city block create, in turn, a number of new operations. For example, the integrated "un-built" space (new morphology) created by integrating the back yards of apartment buildings in a city block (Design Guideline CB5) offers users the opportunity to meet in a communal "un-built" space (new operation).

Table 5.4. New Morphology at the level of City Block, Apartment Building and Apartment Unit and the New Operations it creates

<table>
<thead>
<tr>
<th>New Morphology</th>
<th>New Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larger apartment buildings</td>
<td>User circulation</td>
</tr>
<tr>
<td>Semi-public &quot;un-built&quot; spaces</td>
<td>Light permeability</td>
</tr>
<tr>
<td>Additional indoor areas</td>
<td>Air circulation</td>
</tr>
<tr>
<td>Public &quot;un-built&quot; spaces</td>
<td>Diverse uses</td>
</tr>
<tr>
<td>Communal spaces</td>
<td>Accessibility</td>
</tr>
<tr>
<td>Efficient circulation</td>
<td>Spatial diversity</td>
</tr>
<tr>
<td>Larger lightwell</td>
<td>Efficient circulation</td>
</tr>
<tr>
<td>New building</td>
<td>User gathering</td>
</tr>
<tr>
<td>Parking</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional area</td>
<td></td>
</tr>
<tr>
<td>Parking</td>
<td></td>
</tr>
<tr>
<td>Spaces for meeting</td>
<td></td>
</tr>
<tr>
<td>Duplex units</td>
<td></td>
</tr>
<tr>
<td>Increased unit area</td>
<td></td>
</tr>
<tr>
<td>Larger light wells</td>
<td></td>
</tr>
<tr>
<td>Increased interior heights</td>
<td></td>
</tr>
<tr>
<td>Introduction of ground or underground parking space areas</td>
<td></td>
</tr>
<tr>
<td>Green spaces</td>
<td></td>
</tr>
<tr>
<td>Spaces for meeting, sitting, etc.</td>
<td></td>
</tr>
<tr>
<td>Ramps</td>
<td></td>
</tr>
<tr>
<td>Larger or better positioned openings</td>
<td></td>
</tr>
<tr>
<td>Convenient room sizes</td>
<td></td>
</tr>
</tbody>
</table>
5.5.3. From New Operation to New (Desired) Performance

These new operations will lead to the desired performance according to the criteria required for a creative city block. For example, users gathering in the integrated "un-built" space (new operation), which was created by integrating the back yards of the city block (Design Guideline CB5) will increase the interpersonal communication and will achieve interactivity (new performance).

Table 5.5. New operation at the level of City Block and the New Performance that enables creativity

<table>
<thead>
<tr>
<th>New Operation</th>
<th>New Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>User circulation</td>
<td>Privacy</td>
</tr>
<tr>
<td>Light permeability</td>
<td>Safety</td>
</tr>
<tr>
<td>Air circulation</td>
<td>Environmental Quality</td>
</tr>
<tr>
<td>Scale</td>
<td>Diversity</td>
</tr>
<tr>
<td>Functions/Uses</td>
<td>Accessibility</td>
</tr>
<tr>
<td>User gathering</td>
<td>Interactivity</td>
</tr>
</tbody>
</table>

5.5.4. From New Performance to Sustainability

In these last steps, we have used design guidelines to intervene in the Morphology that constrained the Operation required to create the desired performance by the criteria that enable innovation and creativity. In Chapter 2 we examined the role of innovation and creativity in urban regeneration. We also established that urban regeneration requires that certain social, environmental, and economic criteria are met. To be successful, though, in addition to producing the required outcome, urban regeneration must also be able to sustain this outcome in the long-term. For example, a city block that allows diversity, enables interactivity and provides for safety creates those social circumstances that are required for sustainable urban regeneration.
Table 5.6. New Performance and how it is related to sustainable urban regeneration

Privacy

Safety

Environmental Quality

Diversity

Interactivity

Social Issues

Environmental Issues

Economic Issues

SUSTAINABILITY

5.6. Conclusions

This chapter developed a new design tool intended to regenerate city center urban fabric based on the empirical research drawn from the case study of an Athenian city block and the Morphology-Operation-Performance (MOP) system.

The tool - constructed in the form of guidelines - transforms the spatial arrangement of the city block affecting the way it works and in turn changing the quality of life of its users and of society at large, in a manner that enables "creativity".

The next step involves testing the tool. Once more, given the complexity of the problem, the test is carried out by applying the tool-guidelines to a case. Special steps are taken to guarantee the validity of the test.
So far, we have dealt with the development of a design tool for reinventing the city block with the aim to achieve sustainable regeneration in city center areas. We will now proceed with testing this tool. Given the results of the test we will try to draw a second set of conclusions that could point to potential modifications and/or improvements of the tool.

We will test the tool on a hypothetical city block, referred to here as City Block No. 3911'. This hypothetical city block shares certain contextual characteristics with City Block No. 3911, but it does not include the same individual buildings. More specifically, it is found at the same location with City Block No. 3911; it has the same dimensions as City Block No. 3911; it is built in the same, attached building system, and includes all four representative types of apartment buildings - apartment buildings selected, as landmark examples out of the history of Athenian apartment building architecture. We will establish the configuration of this hypothetical City Block No. 3911' by inserting the first carefully chosen apartment building in the corner, and then, by the dynamics that emerge in the block, by inserting the second carefully chosen apartment building, then the third, etc.

Having considered alternative ways for testing the new design tool we decided to apply it on a specially constructed "hypothetical" building block employing selected samples of Athenian apartment houses. The reason for that was to obtain a test case which is at the same time representative and unbiased.

As we will see, the test applied on the City Block No. 3911' has helped us to ascertain potential modifications of the tool.

6.1. Introducing the Case Study of Hypothetical City Block No. 3911'

Instead of using another, already existing city block, we decided to use the same one, but "modified". To this effect, we have made the assumptions that the city block:

- Is vacant.
- Is comprised of outstanding examples of Greek architecture apartment buildings.

We have created this hypothetical City Block No. 3911' at the same location and with the same dimensions that apply to City Block No. 3911. Although the shapes, perimeters, and urban contexts of these two city blocks are identical, we have removed the buildings of City Block No. 3911, and we have inserted new ones onto City Block No. 3911'. The configuration of City Block No. 3911' occurs when we insert the first carefully chosen apartment building in the corner, and then, by the dynamics emerging in the block, when we insert the second carefully chosen apartment building, then the third, etc.

To the question why we have created a hypothetical city block, rather than use an
existing one, we present two arguments: Convenience and practicality. Collecting and developing all over again data on all the buildings on another, already existing city block within the urban fabric of Athens would be, in practice, a time-consuming and taxing task; conversely, the case study in hand covers the historical backgrounds and layouts of the apartment buildings in question, using data located in relevant literature (or developed by author).

6.2. Description of the Inserted Apartment Buildings

We inserted 13 apartment buildings onto City Block No. 3911'. Their key features are described below:

Fig. 1 Typical floor plan of hypothetical City Block No. 3911'

6.2.1. Multi-Storied Car Park (H13)

The car park was designed by Architect Rennos Koutsouris and was developed in 1936-1938. It occupies a plot with large depth and small front side. This presents difficulties in resolving its design concept. The building is comprised of a ground floor and seven stories, with a parking capacity of 100 cars. What is highly interesting in its design is the way cars move in the interior. They enter the building on the ground floor, which also includes the car wash and petrol pump facilities. To go up to the parking floors, cars use a double elevator system. Once they have reached the intended floor, they move onto a round platform on the center of the ground plan, which moves along special tracks and transfers them to the right parking space. Large horizontal, round windows, offering the building façade special character, provide for adequate light and air circulation in the interior. Altering filled and void spaces throughout the width of the façade are characteristic of the building typology of this building. In recent years, inadmissible modifications were carried out on the main façade of the building. Our interest in this example stems from the fact that the typology of inter-war
apartment buildings would adopt a new use, deviant from the use as a residence for the middle-classes, which was by far the prevalent use of the time. This new use, i.e., car parking, is both original and beyond compromise for an apartment building in such early stages.

6.2.2. Antonopoulou Apartment Building (H5)

The Antonopoulou Apartment Building was a milestone of the inter-war era. Otherwise known as the “Blue Apartment Building” (1932-1933), it was designed by Kyriakos Panagiotakos in collaboration with Spyros Papaloukas, who is also credited with the name of the apartment building, taken after the blue color of its façade. This apartment building is located on Exarhia Square, at the corner of Arahovis St. (No. 61) and Themistokleous St. (No. 80). It is a six-storied residential complex, comprised of 36 apartment units (16 types), and four shops on the ground floor overlooking the Exarhia Square. It was a groundbreaking specimen of apartment building that included communal areas for activities aimed at generating the conditions for living in community. To this effect, rooftop compartments were designed to host a laundry, a lounge measuring 500 sqm, and a swimming pool. While the swimming pool was never built, the lounge was used successfully.

The typical floor includes six apartment units: two apartment units give only onto the compulsory “un-built” spaces and are lighted exclusively from there and the light wells. The “un-built” spaces are fragmented, which is typical of that era. The apartment building also has three compulsory “un-built” spaces (measuring 24.00 sqm, 41.00 sqm, and 54.00 sqm), and three light wells (measuring 3.50 sqm, 8.00 sqm, and 13.50 sqm). The building coverage ratio of the plot stands at 86%. (The plot measures around 1,040 sqm, and the “un-built” spaces and light wells 144 sqm).

Vertical circulation is performed through two central stairwells and main elevators by the two entrances of the apartment building (one on each street), respectively. Additionally, there are three stairwells and an equivalent number of elevators for the domestic help. Either primary or auxiliary, these vertical circulation axes are always lighted through the compulsory “un-built” space.

In the layout of the interior, bedrooms and kitchens form a compound that has its own corridor. This corridor is linked to reception and entrance spaces. A particularly interesting element can be identified in the fitted furniture that the architect has designed in spaces, such as underneath windows and over interior doors (bookshelves, shelves), as well as in the fitted cupboards, which were newly introduced elements at the time.

Balconies and erkers conform to the rules set out in the 1929 General Building Regulation. Between erkers there is a balcony equivalent in width (0.90 m), i.e., erkers alternate with balconies. The surface of erkers that is parallel to the street includes a large glass pane, which creates an extremely appealing space in the interior. All balconies and erkers occupy 1/3 of the length along the façade. The grid of balconies and erkers extends up to 1 m from the neighboring properties, in
compliance with the General Building Regulation. The angle is corrected with an erker at a 45° angle with the street. Alternating “built” with “un-built” spaces, and balconies with erkers add plasticity to the volumes of the apartment buildings, and conform strictly to the principles of the modern movement.

Special emphasis has been placed on the façades of the apartment building, in terms of their color processing. Influenced by Byzantine hagiography, Spyros Papaloukas dared to suggest a deep blue color for its vertical surfaces, with warm sienna tones.

6.2.3. Mihailidis Bros. Apartment Building (H1)

Another typical example of modern architecture in the inter-war era in Greece, and equivalent in importance with the “Blue Apartment Building”, the Mihailidis Bros. Apartment Building (1933-1934) at the corner of Stournara St. and Zaimi St was designed by Thoukydidis Valentis and Polyvios Mihailidis. Built on a corner plot, this Type A apartment building is comprised of a ground floor, four floors, and a retiré. The building coverage ratio of the plot stands at 92% approximately. There is one “un-built” space and one central light well. The typical floor includes two apartment units. On the fifth floor there is a recession that forms the retiré. The retiré is comprised of two apartment units with a smaller surface area. The ground floor includes shops and a corridor leading directly to the “un-built” space.

Vertical circulation is performed through an ample central stairwell with two landings; one central elevator, and; a stairwell for the domestic help. The “un-built” space provides for daylight and air circulation in both stairwells and the kitchens of the apartment units; along its length there is a corridor-like balcony. Besides this space, there is only one large light well; the lavatories of all apartment units are correctly placed around and give onto this light well.

Particular emphasis has been placed on the façades of the apartment building: the typical floor establishes a repetitive pattern through the horizontal arrangement of the windows, more evident on the façade on Zaimi St., where there is only one small balcony near the boundary with the adjoining plot. The façade on Stournara St combines balcony windows and balconies.

This apartment building is among the few groundbreaking contemporary constructions to use large sliding windows with metal panels; these would later become typical of post-war apartment buildings. On the other hand, it has a complete lack of erkers, typical features at the time. “Artificiel” is used instead of plastering and commercial steel frames are used for window bars.

The vertical surface of the building façades and the building plan surfaces overlap and are built up to the roof of the retiré. This creates a frame incorporating the pergolas.

The net volume of the building is clearly rectangular, with elements, long openings and round columns that are evident in the apartment units on the last floor. The entrance is a simple metal structure without special adornment.
6.2.4. Mavromatis Apartment Building (H12)

In 1933 Constantine Kyriakidis builds the Mavromatis Apartment Building (Type A) on the corner of Ploutarhou St. and Ypsilantou St. This five-storied, corner apartment building is a distinguished example of the architect’s “abstractive eclecticism” in the 1930s.

The apartment building is built on the principle of base, body, and roof. Its base on the façades is shaped in a kind of recess. Four floors of apartments make for the body of the building, and encompass its most interesting element: the corner, where the particular originality of the building lies. A pair of eaves highlights the roof of the apartment building, protruding more strongly from the corner of the building.

The building coverage ratio of the plot is high enough, standing at 91% approximately. While there are three very small light wells, the “un-built” space is integrated and shaped as an inverted L in the blind corner of the plot, which is also its most unprivileged spot.

The axial layout of the apartment building is typical both of how its façades are arranged, and of how its interior spaces are configured. Its entrance is symmetrical within the ground plan, thereby dividing every floor of the apartment building in two parts: one part includes two apartment units; the other part includes the third apartment unit.

The typical floor includes three apartment units, all of them giving to the street. The lay out of their interior is telling of the architect’s efficiency in coming up with a clean, functional solution.

Vertical circulation is performed through the primary stairwell, indirectly lighted, and the primary elevator. A spiral stairwell in direct contact with the “un-built” space holds an auxiliary role.

6.2.5. Louros Apartment Building (H7)

The Louros Apartment Building on 5 Semitelou St, (1951-1953) by Nikos Valsamakis is the first project to have played such a decisive role in renewing the morphological features and building practices that describe the apartment buildings of Athens. A typical Type B apartment building, it is largely considered the cleanest expression of this building type, and one that would have a strong impact on the future evolution of this type, with numerous variations on this basic specimen.

The apartment building is comprised of the ground floor, four floors, and a retiré. The façade is divided into base, body, and roof.

The building coverage ratio stands at 91% approximately. Daylight and air circulation in the lavatories, kitchens and service rooms is performed through light wells measuring 2.00 m x 2.80 m. The central and only stairwell is lighted through a light well measuring 1.00 m x 1.50 m.

\(^{1}\) Civil Engineer Stamatiades
Interesting elements on the ground plan are the clean, rectangular, rationalist grid, and the standardized, organized layout of the vertical cores, encompassing the auxiliary spaces and the vertical circulation.

The load bearing structure on the ground floor of the apartment building relies on round columns that protrude from the stonewall which is in a recess behind them.

The typical floor is comprised of two apartment units, symmetrical to the stairwell. Each apartment unit includes a hallway, a living room, a dining area, a kitchen, two bedrooms, a servicee room, a lavatory, and a WC.

Typical floors form two elevation surfaces. This innovation would be largely adopted later on in post-war apartment buildings. The main façade of the apartment building is in the background.

Dark-colored balcony windows, among the earliest sliding windows to appear, and the dark-colored walls highlight more strongly the background. The foreground generates a white effect organized on a grid defined by the cantilevers, columns, railing made of wood and metal, and sunshades. Vertical and horizontal elements of the grid are fully aligned with the load bearing structure of the apartment building.

Deep balconies and the second elevation address the problem of exposure to sunlight, which seems to have troubled Valsamakis.

An original approach to the morphology of the façade is reflected on the organic use of many elements and vivid colors.

This apartment building combines colors in a manner that would strongly contradict the classicism of middle-class architects.

The Semitelou apartment building incorporates something that had been lacking up till then: a refreshing approach to building, typology, variety, asymmetry, and the use of diverse materials.

### 6.2.6. Apartment Building on 10 Neophytou St. (H13)

Early on in his professional career, Alexandros Kalligas built the Apartment Building on Neophytou St. (1960-1962). This Type B apartment building is comprised of a ground floor, four typical floors, and one retire. The ground floor is slightly recessed, with protruding columns. The typical floor is comprised of two apartment units unequal in surface areas: one provides for two bedrooms; the other provides for three bedrooms.

Balconies are by one half recessed, and by the other on a cantilever, within 1 m from the party wall, in compliance with the building regulation. The beams that support the balconies are extending, however, which makes for a unified façade level. Windows in a row and the very level of the lintel beams, the glass panes of the balconies provide the apartment building with a clean and clear aspect.
6.2.7. The “Green” Apartment Building (H4)

The “Green” Apartment Building (1955-1957) by Nikos Valsamakis on 129, Vasilisis Sofias Ave. is a Type B apartment building. In terms of its two-leveled façade it conforms to the same principles with those of the Louros Apartment Building on Semitelou St. Four typical floors make for a new façade, and the fifth makes for its own. Alternating void with filled, and open with enclosed spaces offer this apartment building its individual character, which is all at once original and consistent to the tradition of Athens.

The apartment building is “attached” to the rear boundary of the plot, probably on account of the greenery on the front side. This creates three large “un-built” spaces, which light the primary spaces. Two smaller “un-built” spaces light the stairwell and lavatories of one apartment unit.

The typical floor is divided into three apartment units: the first two apartment units give onto both the front and the rear of the apartment building; the third apartment unit gives only onto the avenue.

6.3. Testing the Design Tool on Hypothetical City Block No. 3911'

Earlier on we established that, by addressing design guidelines, we could convert descriptive-explanatory statements about the city block into prescriptive statements. Design guidelines for a "creative block" were presented in "IF" - "THEN" conditional statements to highlight the constraints between the Morphology of the Operations in the city block and the Performance of the city block.

The rules, as applied in the case study of City Block No. 3911 and then generalized, were chained in the following order:

<table>
<thead>
<tr>
<th>IF</th>
<th>(Performance)</th>
<th>Interactivity in the city block</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEN</td>
<td>(Operation)</td>
<td>People &quot;bumping&quot; into each other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IF</th>
<th>(Operation)</th>
<th>People &quot;bumping&quot; in to each other</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEN</td>
<td>(Operation)</td>
<td>Frequency of encounters</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IF</th>
<th>(Operation)</th>
<th>Frequency of encounters</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEN</td>
<td>(Morphology)</td>
<td>Small distance between the entrances of buildings (10 m)</td>
</tr>
</tbody>
</table>

From the above chain we can conclude that the necessary physical condition for interactivity is the small distance between building entrances.

The next step examines how the designer who will use the design tool can implement these design guidelines.

To produce the condition "small distance" the designer has to execute a design (normative) action. In this case, the design action would be CB8 (reconfiguring circulation), and the direction: 10 m. In those cases where the distance between the
entances of apartment buildings is more than 10 m, we will reconfigure the entry-exit points by using the design action CB8.

This should follow the backward chain of the “IF” - “THEN” conditional statements in order to facilitate the operation that contributes to the satisfaction of city block’s norm of “interactivity”.

<table>
<thead>
<tr>
<th>IF:</th>
<th>THEN:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Morphology)</td>
<td>New entry-exit point in the distance between these entrances</td>
</tr>
<tr>
<td>(Operation)</td>
<td>More points for someone walking on the sidewalk to meet someone exiting the apartment building</td>
</tr>
</tbody>
</table>

To make sure that a design guideline will work/function even better; or it will not generate problems in future; or it will not interfere adversely with another guideline for desired performance, it is sometimes advisable to control its operation, i.e., to apply it within constraints.

Constraint: That it should not create a new entry-exit point directly into/out of intimate spaces of an apartment unit.

We now go on to test the design tool for Creating the Creative Block (CCB) on the hypothetical City Block No. 3911'. To this effect, we apply the design actions with the aim to achieve the desired performance.

To improve “environmental quality”, we apply design action AB3,\(^2\) enlarging the light wells that are attached to apartment buildings H5 and H6.

IF: Increased dimensions of light wells by removing sections of those apartment buildings that are adjoined to the light wells, so that each dimension should be no less than \(\Delta = a+\beta x H\), where \(H\) is the height of the building, and \(a, \beta\) are constants.

THEN: Light permeability and natural air circulation in light well.

IF: Light permeability and natural air circulation in light well.
THEN: Daylight and air circulation reaches the interior of apartment units, particularly on the lower floors.

IF: Daylight and air circulation reaches the interior of apartment units, particularly on the lower floors.
THEN: Better environmental quality.

\(^2\) Removing sections
Constraint: Sections should not be removed on Floor X, unless they have been removed on Floor X+1.

To improve “environmental quality”, we apply design action AB1 to a retire of apartment building H5.

IF: Increased floor area in apartment units.
THEN: Increased useful space for users.

IF: Increased useful space for users.
THEN: The activities and needs of users are better served.

IF: The activities and needs of users are better served.
THEN: Better environmental quality as a residence.

Constraint A: The space in front of the added element should have a window.

Constraint B: The footprint of the added element should not impede or cancel the use of the “un-built” space.

To improve “environmental quality”, we apply design action CB3 to apartment building H5 and the façades and entrances of apartment buildings H2, H6, and H12 up to the level of the first floor.

IF: Apartment buildings or façades and entrances of apartment buildings of historic and architectural value.
THEN: Apartment buildings dating from diverse eras in the city block.

IF: Apartment buildings dating from diverse eras in the city block.
THEN: The urban façade maintains historic continuity.

IF: The urban façade maintains historic continuity.
THEN: Environmental quality

Constraint: If the apartment building does not exhaust the allowable FAR max, then owners should be granted the right to transfer the remaining FAR to another plot in the city.

To increase “diversity”, we apply design action CB1 to integrate the first two floors of adjoining apartment buildings H10 and H11.

IF: Spaces measuring more in surface area than those prevalent in the city block.
THEN: Spaces can host commercial, cultural or recreational uses that require more surface area than that provided in the current apartment units.
IF: Spaces can host commercial, cultural or recreational uses that require more surface area than that provided in the current apartment units.
THEN: Diversity of activities.

IF: Diversity of activities.
THEN: More diversity.

Constraint: New uses should be compatible with residential uses; hence, uses such as for large nightclubs should be excluded.

To increase “interactivity”, we apply design guideline CB5.¹

IF: Integrated space in the interior of the city block, occupying the current “un-built” space.
THEN: Residents use this integrated space.

IF: Residents use this integrated space.
THEN: Residents can meet each other or arrange gatherings at the integrated space.

IF: Residents can meet each other or arrange gatherings at the integrated space.
THEN: More interactivity.

Constraint: The newly integrated space should be used by everyone, but should belong to those who own the individual sections of the “un-built” space before it became integrated.

To improve “safety”, we apply design action CB8⁷ to apartment building H13 using the service stairwell of apartment building H12 as fire escape.

IF: Corridor that connects apartment building H with the service stairwell of apartment building H.
THEN: Residents can access a second stairwell.

IF: Residents can access a second stairwell.
THEN: Residents can escape in case of fire.

IF: Residents can escape in case of fire.
THEN: More safety.

Constraint: The corridor should be no less than 25 m in length.

¹ Integrating back yards
⁷ Reconfiguring circulation
To increase "interactivity", we apply design guideline CB8* to apartment buildings H2 and H3.

If: Single vertical circulation core servicing both apartment buildings.
Then: Residents from both apartment buildings bump into each other at the elevator and the stairwell.

If: Residents from both apartment buildings bump into each other at the elevator and the stairwell.
Then: More people can talk to each other.

If: More people can talk to each other.
Then: More interactivity.

Constraint: The capacity of the vertical circulation core that is to remain should be adequate for residents of both apartment buildings.

To increase "diversity", we apply design action AB2* to divide into two apartment units an apartment unit in apartment building H10.

If: Two smaller apartment units instead of a large one.
Then: Increased variety of apartment units in the building.

If: Increased variety of apartment units in the building.
Then: Appeal to a wider range of buyers-tenants.

If: Appeal to a wider range of buyers-tenants.
Then: More diversity.

Constraint: Every newly created apartment unit should give onto either the street or the "un-built" space.

To increase "diversity", we apply design action AB2° to add interior space to apartment unit of apartment building H10 by reducing the floor area of the adjoining apartment unit of apartment building H9.
IF: Large apartment building.
THEN: Increased variety of apartment units in the apartment building.

IF: Increased variety of apartment units in the apartment building.
THEN: Appeal to a wider range of buyers-tenants.

IF: Appeal to a wider range of buyers-tenants.
THEN: More diversity.

Constraint A: The reduced apartment unit should give onto either the street or the "un-built" space.

Constraint B: The difference in height between the slabs of the adjoining buildings should be no more than 0.60 m, so that the passage connecting the two apartment buildings should be no less than 2.20 m in height.

To increase "diversity", we apply design action AB2 to combine, in the vertical sense, apartment units and provide duplex apartment units in apartment building H11.

IF: Duplex apartment units.
THEN: Increased variety of apartment units in the building.

IF: Increased variety of apartment units in the building.
THEN: Appeal to a wider range of buyers-tenants.

IF: Appeal to a wider range of buyers-tenants.
THEN: More diversity.

Constraint A: Slabs should remain intact for 0.70 m on either side of the relevant beams.

To increase "interactivity", we apply design guideline AB3 to apartment buildings H4 and H7.

IF: Passages from the street to the interior of the city block and the ground and underground car.
THEN: Option for passing through.

IF: Option for passing through.
THEN: Interaction between city block residents and residents from the neighborhood or visitors.

11 Reconfiguring apartment units
12 Removing, in the horizontal sense, ground floors or spaces
If: Interaction between city block residents and residents from the neighborhood or visitors.
Then: Increased interactivity

Constraint: Passing through should be prohibited during the night.

To improve “environmental quality”, we apply design action AB4 to create gardens on apartment building rooftops.

If: Green roofs.
Then: More greeneries in the city block.

If: More greeneries in the city block.
Then: Generation of more oxygen, cooler summers in apartment units of upper floors, and less loss of heat in the winter.

If: Generation of more oxygen, cooler summers in apartment units of upper floors, and less loss of heat in the winter.
Then: Better environmental quality.

Constraint A: Good insulation on the rooftop.
Constraint B: Added weight by plants and earth should be no more than 200 kg per sqm of the rooftop.

To increase “interactivity”, we apply design guideline AB5 to enlarge communal corridors (landings) that connect the entrances of the units with stairwells.

If: Wider landing.
Then: Neighbors stand or sit and talk.

If: Neighbors stand or sit and talk.
Then: Neighbors exchange information.

If: Neighbors exchange information.
Then: Increased interactivity.

Constraint A: Landing width should be no less than 1.70 m.

To increase “diversity”, we apply design action AU1 to transform interior spaces to semi-open spaces in apartment unit of apartment building H5.

---

13 “Greening” existent apartment buildings.
14 Re-designing circulation.
15 Reconfiguring space apartment unit.
IF: Semi-open spaces.
THEN: Variety of spaces in the apartment unit.

IF: Variety of spaces in the apartment unit.
THEN: Diverse activities and experiences.

IF: Diverse activities and experiences.
THEN: More diversity.

Constraint: If the dimensions of the new semi-open space is axb where a is the length, and b is the depth, then a should be no less than or equal to b (a≥b).

To increase "privacy", we apply design action AB3\textsuperscript{16} to increase the distance between bedroom windows and opposite walls in apartment buildings H5 and H8.

IF: Large distance between windows across bedrooms.
THEN: No visual contact.

IF: No visual contact.
THEN: People cannot watch each other.

IF: People cannot watch each other.
THEN: More privacy.

Constraint: Distance between windows across bedrooms to be no less than or equal to Δ=a+8xH, where Δ is the height of the apartment building, and a, 8 are constants.

To increase "diversity", we apply design action AU5\textsuperscript{17} to add an elevator chamber in a light well next to the stairwell in apartment building H11.

IF: Elevator in addition to stairwell.
THEN: Apartment building accessible to disabled users.

IF: Apartment building accessible to disabled users.
THEN: Diverse population groups use the apartment building.

IF: Diverse population groups use the apartment building.
THEN: More diversity.

Constraint A: The elevator chamber should measure 1.70 m in depth, and 1.20 m in width.
Constraint B: The landing outside the elevator should measure 1.50 m in width.

\textsuperscript{16} Removing sections
\textsuperscript{17} Re-design circulation
6.4. Test Results

In this chapter we developed a hypothetical built environment, i.e., City Block No. 3911', in the place of the city block we examined in the case study elaborated in Chapter 3. We chose carefully the apartment buildings that would comprise it, rating them by their historical and architectural values. The results of the test we performed applying the design guidelines on the apartment units, and apartment buildings in the context of City Block No. 3911' are as follows:

- By applying the appropriate design actions to modify the morphological elements related to safety, we have managed to achieve the desired performance.
- By applying the appropriate design actions to modify the morphological elements related to privacy, we have managed to achieve the desired performance.
- By applying the appropriate design actions to modify the morphological elements related to environmental quality, we have managed to achieve the desired performance.
- By applying the appropriate design actions to modify the morphological elements related to diversity, we have managed to achieve the desired performance.
- By applying the appropriate design actions to modify the morphological elements related to interactivity, we have managed to achieve the desired performance.

While, as generating units of the city block, the apartment buildings we had carefully chosen for the hypothetical City Block No. 3911' were well designed, at both apartment unit and apartment building levels, we ascertained that this alone was not enough to have an effect on overall performance, in general, at the level of city block.

At the level of apartment unit, we noted that:

- The performance in all interactivity, safety, privacy, and environmental quality criteria was better in City Block No. 3911' than it was in City Block No. 3911.
- The performance in the diversity criterion was comparable in City Block No. 3911' and City Block No. 3911.

At the levels of city block and urban fabric, we noted that:

- The performance in interactivity, safety, privacy, and diversity criteria was equivalent in both City Block No. 3911' and City Block No. 3911.
- The performance in the environmental quality criterion was better in City Block No. 3911' and City Block No. 3911.
6.5. The Proposed Tool: Criteria for Evaluation

Generalization

Has the design tool for "Creating the Creative Block" (CCB) the potential to be applied in diverse city blocks? While the proposed tool has sought to attain generalization by organizing all Athens apartment buildings into specific types, possible shortcomings can be identified in the following aspects:

• It should have been tested on an existing city block, rather than only on the hypothetical City Block No. 3911.
• It should have been tested on a different urban fabric, rather than only on the urban fabric of Athens.

Effectiveness

Can the proposed tool provide help to architects, urban designers, planners, politicians, and decision-makers into the urban regeneration process? We believe that this tool demonstrates a certain amount of effectiveness, because it introduces the concept of intervention in the basic production unit, i.e., city blocks, and enables the aforementioned professionals to appreciate the minimum environmental conditions for the development of a creative environment.

Efficiency

Is the proposed model an efficient device? We believe that the tool is highly efficient, provided that it is well understood, particularly its “IF” - “THEN” structure, and the constraints linked to these conditional statements. Establishing an algorithm to represent these concepts would make the use of the tool even more efficient.

Validity

Is the proposed tool instrumental in the quest for sustainable urban regeneration? We believe that the tool manages to transform the declining urban fabric, and regenerate it through design interventions that change its spatial organization, enabling new “creative uses” to appear in the city center.

Reliability

Is the proposed model reliable? This tool was applied to a case study with success. Having said that, to claim that it is completely reliable, first we need to have it tested many times over. This has not been done, given that it was beyond the purposes of the present study.
6.6. Potential Modifications and Conclusions

In this chapter we have tested the knowledge-based design tool for Creating the Creative Block (CCB) by trying it on a hypothetical city block that we had specially developed for the purposes of this study. Following this, it is necessary to assess the extent to which this knowledge-based model can produce the expected effect. We have established that applying the architectural design guidelines developed in Chapter 5 to the built environment can improve environmental conditions, increase interactivity between users, protect privacy, ensure safety, and allow for diversity of use. The apartment unit is well designed and adequately operating. Still, this has not been deliberated enough to point to those improvements that would be welcome in the entire city block, with the aim to acquire a creative environment.

Having said that, in this study we carried out tests based on a mental “experiment”, not on an empirical, real-life application, or a computer-based simulation. We also conducted tests on a single case, the “hypothetical block”. Tests would have more validity if a larger number of such “hypothetical block” cases were used, and could be more precise if enough examples of city blocks were collected and tested experimentally. Furthermore, we have set guidelines in accordance with the conclusions drawn from the four distinct historical types of apartment buildings. In another city block in the same or another city, there are other types of apartment buildings. It would have been better to have operation factors, such as air and daylight circulation tested and assessed using quantitative calculations or computer simulations, followed by comparisons between normative calculated rating with and experimental rating.

In view of these creative criteria, there are issues that need to be revised. There are factors that have been omitted or that the knowledge-based design tool for Creating the Creative Block (CCB) has not taken into account. Such a factor is the rise in the evaluation weight of criteria. Increasing the value of a criterion could produce an effect opposite to the estimated. For example, increasing considerably the likelihood of interactivity in a building block could make users reluctant to meet; hence, they would avoid it.

Interdependencies and conflicts between performances, operations, morphological attributes, and interest groups of users that cannot be resolved may also arise; in the present study such cases have not been taken into account. Increasing the value of a criterion should always be seen in relation to its effect on the value of another. For example, increasing the sense of privacy restricts the potential of interaction, hence, the value of interactivity.

In the context of the present study we have focused on the city block as a generative unit for the creative city. Interrelations and interactions between city blocks were not taken into account.

The relative importance (weight) of the selected performances that contribute to the creative block were not taken into account either.
Fig. 2 Floor plan and elevation drawings showing the preserved buildings and preserved facades (EB3)
Fig. 3 Ground floor plan showing the integrated “un-built” space, before (individual backyards) and after (CB5).

Fig. 4 Ground floor plan showing the connection between street and the newly integrated “un-built” spaces from ground floor apartment units (CB8).
Fig. 5 Plan showing enlarged light well that improves daylight and air circulation. (CB9)

Fig. 6 Section showing enlarged light well that improves daylight and air circulation. (CB9)
Fig. 7 Floor plan showing the enlarged distance between bedroom openings (AB3)

Fig. 8 Section showing the enlarged distance between bedroom openings (AB3)
Fig. 9 Section showing removed upper floor to improve environmental quality (AB3)

Fig. 18 Floor plan showing the inserted elevator, before (light well) and after (AB5)
Fig. 11 Floor plan showing the service stairwell that is now used as fire escape for two apartment buildings (CB8)

Fig. 12 Plan showing the floor area extended into the "un-built" space (AB1)
Fig. 13 Plan showing a large apartment unit divided into two small ones (AB2)

Fig. 14 Floor plan showing balcony converted into interior space and newly added balcony (AU4)
Fig. 15 Floor plan showing space added from one apartment unit to the other (AB2)

Fig. 16 Plan showing enlarged light well and intensification of interior space, before and after (AB7)
Fig. 17 Load bearing structure of hypothetical City Block No 3911'

Fig. 18 Potential horizontal circulation in hypothetical City Block 3911'
CHAPTER 7: CONCLUSIONS

Having developed the knowledge-based design tool, we provide here a summary and evaluation of the findings of the research; we suggest possible professional applications; we refer to possible implications of the proposed design tool, and; we propose further research directions.

7.1. Summary of the Research

Having identified the current crisis of urban centers and the need for their renewal, the present study set as its objective the development of a design tool for their regeneration. As a point of departure, the inquiry towards this objective relied on certain assumptions:

1. Any strategy for regeneration of the city should be directed towards long-term viability of the city, sustainable solutions, and avoiding of short-term rescue plans.

2. The most satisfactory, long-term use for the city center has to provide for “creative” uses, i.e., activities that generate new knowledge fusing existing facilities such as the university, the research laboratory, and the “information-processing” and “knowledge-generating” workplace, the place where people work creatively.

3. The strategy chosen to transform the current city center into one that enables “creative” uses was one that could achieve maximal desirable change through minimal physical, social, and cultural disruption of the existing urban fabric. Excluding the two extreme alternatives, total demolition and complete preservation, this type of “in-between” intervention does not destroy the existing built structures, nor does it preserve them.

4. Drawing from research in urban design, we have assumed that the characteristics that enable a creative milieu are: high degree of human interaction, diversity of interacting agents, safety, privacy of individuals and special groups, accessibility to human resources, and environmental quality enabling person to person communication.

5. Given the complexity of the problem, we have applied the field-study, case-study approach in the exploratory, early stages of developing the design tool as well as for testing the developed tool.

6. According to criteria of validity, reliability, effectiveness, and efficiency of the research, the case chosen was City Block No. 3911, a typical city block of apartment buildings “polykatoikies”, in the Athens city center.

7. Following the above criteria, the case chosen to test the developed tool was produced artificially by composing the city block out of characteristic residential types of Athens identified through historical research.
8. To analyze the data collected out of the exploratory study and generalize them into a model, we adopted the MOP (Morphology, Operation, Performance) framework, which represents the urban situation in terms of three interdependent levels:
   b. Operation: The pattern of activities, uses, and processes that take place within it, as constrained by performance.
   c. Performance: The beneficial or detrimental output of the urban fabric, as constrained by morphology and operation.

The main phases of the inquiry were as follows:
1. Problem identification. Definition of sustainable city center regeneration solution, city center for “creative” uses.
2. Selection of “in-between” strategy for the transformation of the current city center, into one that enables “creative” uses.
3. Selection of the objectives a characteristic “creative” urban environment should meet: high degree of human interaction, diversity of interacting agents, safety, privacy of individuals and special groups, accessibility to human resources, and environmental quality enabling person to person communication.

9. Application of the field-study, case-study approach in the exploratory, early stages of developing the design tool. Selection of the case: City Block No. 3911, a typical city block of apartment buildings “polykatoikies”, in the Athens city center.

10. Analysis of the data collected out of the exploratory study and generalization into a model adopting the MOP (Morphology, Operation, Performance) framework, which represents the urban situation in terms of three interdependent levels: Morphology, Operation, and Performance.

11. Development of design tool in the form of design guidelines.
12. Testing the model in a second case: Development of test case as an ‘ideal city block made up out of randomly selected ‘typical’ Athenian apartment units.
13. Identification of the ‘typical’ apartment units carried out through historical typological study of Athenian apartment buildings. Building types are defined “generically” with reference to the technological, legal, and socioeconomic forces within which they were generated.

7.2. Evaluation of the Research

According to the aims of the research as set in the introduction, we tried to provide an evidence based design tool for the regeneration of declining city centers. The research has succeeded in identifying specific physical morphological environmental conditions that enable uses of the urban fabric that lead to creativity, and, subsequently, in developing a knowledge-based model, having managed to

7.3. Literature Review
resolve effectively how and why the creativity-related beneficial and detrimental performance of city blocks emerges out of the pattern of uses, activities and processes that take place in its spatial envelope.

Employing the above model, we have succeeded in developing a knowledge-based design tool for Creating the Creative Block (CCB), transforming typical declining city center, and regenerating it through design interventions that change its spatial organization enabling new “creative uses” to come about in the city center.

CCB is a knowledge-based tool, grounded on an evidence-based Model, derived from a case study/field study carried out empirically by means of observations and discussions.

This research is innovative in the following key points:

- It proposes a tool that combines the concept of creativity with city blocks, i.e., “building at a local level, where networks are the strongest and the possibility of aligning interests is the greatest”. As the new city block evolves, it enables creativity, in other words, it creates those potential conditions that are conducive to the generation of new knowledge.
- It introduces the concept of intervention in the basic production unit of the urban fabric, i.e., city blocks, with the aim to achieve urban regeneration.
- It redefines the city block as a single system, rather than a composite of different apartment buildings.
- It redefines the existing built fabric of the urban fabric as a “building fabric capital”, i.e., a potential resource to be exploited in future in order to contribute to economic development.
- It lays down creativity-related criteria for the regeneration of city blocks.

7.3. Limitations of the Research

As mentioned above, the research has relied on certain assumptions drawn from the current literature. These assumptions are generally considered well grounded, correct, and adequate.

Obviously these assumptions constitute limitations on the validity of the conclusions of the present research. Should they be proved wrong, the conclusions of this research are shaken.

The research was partially based on evidence drawn by the use of cases. Its conclusions, therefore, are bounded by the selection of these cases.

Similar reservations should be expressed about the regeneration model and the CCB design tool that has been developed with reference to it.

Their development did not include a real life test and subsequent calibration or modification of the design tool. Neither was a computerized simulation test employed. Testing was limited to a mental experiment.

Another limitation of the tool derives from the manner in which the problem of decline-regeneration was circumscribed. We have only taken into account inter-block
relations, while we have disregarded intra-block relations. This restricting choice was made in order to delve deeper into the private realm rather than the public one. A comprehensive tool for urban regeneration would have to take into account the public realm as well, in addition to relations among city blocks.

This research has gone into only one aspect of regeneration, i.e., built environment. In addition to the deterioration of built environment, many other factors contribute to decline, e.g., poor transport services combined with the use of cars and the absence of parking provisions. Clearly, intelligent pedestrianization of the neighborhood and enhanced public transport services may help to improve and regenerate the quality of the environment of the city center.

7.4. Applicability of the Research

The tool can be applied to high density city centers that are showing, or are expected to show, signs of decline.

It can be applied by the state and city authorities in synergy with urban designers/architects, developers, owners and users.

In urban design, this tool can be applied to:

- assess whether specific city blocks meet the minimum physical environmental conditions to develop a creative environment;
- reinvent existing city blocks, with the aim to meet the minimum environmental conditions to develop a creative environment;
- create future city blocks that will meet the minimum physical environmental conditions to develop a creative environment;
- analyze critically current regeneration approaches.

In architectural design, this tool can be used to:

- evaluate the performance of apartment buildings and apartment units with respect to the accommodation of creative people;
- facilitate the generation of knowledge/creativity by creating the physical conditions required.

7.5. Necessary and Enabling Conditions for Model Applicability

The present design tool has been developed to provide necessary physical-spatial conditions towards the objective of transforming the old declining city center into a regenerated, creative hub. However, it is not sufficient to guarantee the appropriate organizational, legislative, social and economic factors which literature indicates are also necessary for effective urban regeneration.

7.6. CCB Application Implications

It is clear that to use the design tool for Creating the Creative Block (CCB), special conditions, beyond architectural design and construction, have to be met.
CHAPTER I

Legal Conditions and New Legislation

An appropriate legal framework is a prerequisite to carrying out changes on built environment. Similar to the ones that were adopted in the past in the case of Athens: “horizontal ownership” in apartment buildings (1929); “plot integration” (1950), and; “common back yard integration” (1985).

Economic Incentives

Getting participants involved requires economic incentives. This involves manifold initiatives at state and local levels; subsidies and tax incentives for businesses and individuals engaged in the production of creative environments.

Organizational Conditions

The involvement and collaboration of public and private sectors is imperative (urban governance).

Finally, given the large-scale application of the suggested design tool one might object that it discourages small scale individual initiatives which traditionally have been conducive to creativity in the history of urbanism. However, one can see small-scale “incubators” facilitated into the larger structure of the regenerated city block provided the planners are conscious of this danger and provide within the larger scale for the emergence of small scale enterprises.

7.7. Further Research

Given the results of the present research as a point of departure, one could now define further research directions towards:

a. overcoming the limitations of this research that resulted from pragmatic accommodations to time, economic, and other resource constraints
b. extending the inquiry into directions beyond the limits of this research

For example, in order to broaden the number of cases taken into consideration a new project could undertake investigations covering a considerably larger number of city block case studies, or chose cases in different locations, in addition to Athens. Such investigations would strengthen the conclusions of the study and the validity of the proposed design tool. The empirical data from these cases could also be expanded to account for other environmental as well as social criteria. One could also see the importance of performing real life tests, so as to test, calibrate, and modify the design tool and rendering the Creating the Creative Block (CCB) more robust.

Computerized simulations could also be highly productive in improving the tool, and facilitating its application.

Both design model and design tool could be improved and enhanced by taking into account inter-block and intra-block relations, as well as aspects of transportation services and infrastructure. This could also extend the tool’s application into the public realm.

Finally, the economic and legal implications to the implementation of the design tool point towards another highly specialized research direction.
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"CREATING THE CREATIVE BLOCK" TOWARDS A DESIGN TOOL FOR URBAN REGENERATION


APPENDIX 3.1:

Apartment Buildings of City Block No. 3911
Plan lay-out, connection network of rooms and access graphs.

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3.1 Plans, Connection Networks, Access Graphs of Apartment Buildings, City Block No. 3911
### 3.1 Plans, Connection Networks, Access Graphs of Apartment Buildings, City Block No. 3911

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3.1 Plans, Connection Networks, Access Graphs of Apartment Buildings, City Block No. 3911

Plan | Connection Network | Access Graph
--- | --- | ---
L1a | | |
L1b | | |
L2a | | |
3.1 Plans, Connection Networks, Access Graphs of Apparment Buildings, City Block No. 3911
APPENDIX 3.1

Connection Network

Access Graph

Plan

p1d

p2

p3a

231
3.1 Plans, Connection Networks, Access Graphs of Apparment Buildings, City Block No. 3911
3.1 Plans, Connection Networks, Access Graphs of Apartment Buildings, City Block No. 3911
APPENDIX 3.2: Longitudinal and transversal section of City Block No. 3911
3.2 Longitudinal and transversal section of City Block No. 3911
APPENDIX 3.3: Sections of entrances of apartment buildings. City Block No. 3711.
APPENDIX 3.3: Sections of entrances of apartment buildings. City Block No. 3911

We observe the following cases:

- Building facade and street line coincide
- Entrance recession
- Building in recession
- Extrusion to street
Sections of entrances of apartment buildings, City Block No. 3911
Questionnaire

Questionnaire

(general characteristics of the building.)

Question 1: Address

Question 2: Property type

Question 3: Area of apartment

Question 4: Date of construction

Question 5: Floors
How many floors does the building containing the address have?

Question 6: Residential/business
Address consists of

- Residential use
- Non-residential use (type?)

Question 7: Location of the building in the building block

Question 8: Number of flats

Question 10: Materials
Main building materials

Question 11: Roofing
Type of roof

(Characteristics of Inhabitants)

Question 12: Number in household
How many people including yourself live in the household?

Question 13: Children and older people in household

- Under 18
- Adults 18-65
- Aged 65 or over

Question 14: Composition of household
Which of the following best describes the composition of this household

- Couple with no children living with you
- Single person household
- Two parent family with one or more children living with you
- One parent family with one or more children living with you
- Other (please specify)

(Ownership)

Question 15: Tenure
Do you own the apartment or do you rent it?

- Own
- Rent

Question 16: Length of residence
How long have you been living here?

- Under 1 year
- 1 year-under 3 years
- 3 years-under 5 years
- 5 years-under 10 years
- 10 years-under 20 years
- 20+ years
- Refused/Don’t know

Question 17: Main/second home (permanent resident)
Questionnaire

Is this your main home, second home?

Question 18: Changes in ownership
Has the ownership of the property changed or not since it was constructed? If yes how many times?

(Physical and Organizational characteristics of the accommodation)

Question 19: Lay out
Are you satisfied with number and type of rooms and space organization?

Question 20: Improvements
What would you like to improve or change?

Question 21: Condition
In your opinion what is the general condition of

<table>
<thead>
<tr>
<th></th>
<th>Best</th>
<th></th>
<th>Average</th>
<th></th>
<th>Worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhood</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Building</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Apartment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Question 22: Past improvements
Since you moved into this house/flat, have any major improvements or modernisation been done?

Yes
No
(Can't say)

Question 23:
How satisfied are you with the way the hallways, stairs and other common parts of this block are maintained?

Very satisfied
Fairly satisfied
Not very satisfied
Not at all satisfied
(Can't say)

Question 24: Future value
How do you think that the value of this property will change compared to inflation in the next five years?

Will go up faster than inflation
Will go up at the same rate as inflation
Will go up, but less than inflation
Will stay the same
Will fall
(Can't say)

Question 25: Parking
Which best describes your car parking arrangement?

Shared basement parking
Leased parking off site
Own garage
No car parking
Other (Please specify)

Question 26: Outdoor space
Which best describes how your outdoor space is provided?

Balcony
Back yard
Roof-top
No private outdoor space
Other

Question 27:
How satisfied or dissatisfied are you with the following aspect of the inner city?
APPENDIX 3

Question 28:
Would you be willing to pay more for any of the following features?

<table>
<thead>
<tr>
<th>Feature</th>
<th>Very satisfied</th>
<th>Satisfied</th>
<th>Neither satisfied nor dissatisfied</th>
<th>Dissatisfied</th>
<th>Very dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car parking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater access to private outdoor space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater access to public outdoor space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater personal safety in and around your residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More interior space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less noise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Question 29: Reasons for living in the inner city
Please list the main reasons why you have chosen to live in the inner city
1. ...........................................................................................................
2. ...........................................................................................................
3. ...........................................................................................................

Question 30: Reasons for leaving the inner city
Please list the main reasons why you have chosen to live in the inner city
1. ...........................................................................................................
2. ...........................................................................................................
3. ...........................................................................................................

Question 31: Future
If you had a choice what would you prefer? To stay or leave?

(Patterns of socialization and community involvement)

Question 32:
Do you know the residents of your apartment building? Do you have any social interaction with them?

Question 33:
How many residents of the building block do you know?

Question 34:
Do you frequent in the restaurants and the cafes of the building block?

Question 35:
How would you describe your social life?

<table>
<thead>
<tr>
<th>Category</th>
<th>Very satisfied</th>
<th>Satisfied</th>
<th>Neither satisfied nor dissatisfied</th>
<th>Dissatisfied</th>
<th>Very dissatisfied</th>
<th>Does not exist</th>
</tr>
</thead>
<tbody>
<tr>
<td>With family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With apartment building residents and users</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With building block users</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With Athenians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With other ethnic groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Question 36:
Please make some proposals of what you would like to change in your built environment.
## APPENDIX 4.1: History

### 1. THE PERIOD 1828-1914

<table>
<thead>
<tr>
<th>Event</th>
<th>YEAR</th>
<th>Yearly Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>March: The Greek War of Independence begins in the Peloponnese.</td>
<td>1821</td>
<td></td>
</tr>
<tr>
<td>The First Constitution of Independent Greece.</td>
<td>1822</td>
<td></td>
</tr>
<tr>
<td>April: Ioannis Kapodistrias is elected new President of Greece.</td>
<td>1827</td>
<td></td>
</tr>
<tr>
<td>July: Great Britain, the Russian Empire, and France sign the Treaty of London.</td>
<td>1827</td>
<td></td>
</tr>
<tr>
<td>October: The Great Powers defeat the Ottoman Fleet in the Battle of Navarino.</td>
<td>1827</td>
<td></td>
</tr>
<tr>
<td>October: Kapodistrias is assassinated.</td>
<td>1831</td>
<td></td>
</tr>
<tr>
<td>Modern Greece comes into being.</td>
<td>1832</td>
<td></td>
</tr>
<tr>
<td>February: King Otto I becomes the first sovereign of the Independent Greek State.</td>
<td>1833</td>
<td></td>
</tr>
<tr>
<td>Athens becomes the capital of Greece.</td>
<td>1834</td>
<td>Athens Plan is modified by Leo Von Klenze.</td>
</tr>
<tr>
<td>The Bavarian regency is dismissed.</td>
<td>1835</td>
<td>April: King Otto's Decree &quot;On Purified Construction of Cities and Towns&quot;, April 3, 1835; it is the first decree to be issued after the establishment of the Greek State; it specifies building regulations.</td>
</tr>
<tr>
<td></td>
<td>1836</td>
<td>April: Decree &quot;On Extending the City Plan of Athens&quot;, April 9, 1836.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>April: Decree &quot;On Performing the City Plan of Athens&quot;, April 9, 1836; intended for the city of Athens exclusively, with the objective to settle disputes between neighboring property owners.</td>
</tr>
<tr>
<td></td>
<td>1842</td>
<td>June: Decree for Athens and Ermoupolis, June 5, 1842.</td>
</tr>
<tr>
<td>March: A new constitution is promulgated.</td>
<td>1844</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1846</td>
<td>The City Plan of Athens, prepared by the Committee of Greek Engineers and Architects.</td>
</tr>
<tr>
<td>King George I ascends the throne.</td>
<td>1860</td>
<td>The &quot;Stavridis Committee&quot; Plan for Athens.</td>
</tr>
<tr>
<td>March: A new constitution is promulgated.</td>
<td>1863</td>
<td></td>
</tr>
<tr>
<td>October: A new constitution is promulgated.</td>
<td>1864</td>
<td></td>
</tr>
<tr>
<td>Revolt on the island of Crete.</td>
<td>1866</td>
<td></td>
</tr>
<tr>
<td>The Ottomans cede Thessaly and Epirus to Greece.</td>
<td>1881</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1906</td>
<td>A committee chaired by Prince Constantine is assigned to study Athens. Of their decisions, the only one to be carried out is the proposed layout of an avenue going round the Acropolis, i.e., Pavlou Avenue, as an extension of Dionysiou Aeropagitou St.</td>
</tr>
<tr>
<td></td>
<td>1908</td>
<td>City Plan of Athens, prepared by Ludwig Hoffman. Proposal for urban planning modifications in</td>
</tr>
</tbody>
</table>
### 4.1 History

<table>
<thead>
<tr>
<th>Event</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eleftherios Venizelos becomes Prime Minister.</td>
<td>1910</td>
</tr>
<tr>
<td>New constitutional amendments are introduced.</td>
<td>1911</td>
</tr>
<tr>
<td>October: The First Balkan War begins.</td>
<td>1912</td>
</tr>
<tr>
<td>November: Thessaloniki is liberated.</td>
<td>1913</td>
</tr>
<tr>
<td>March: King George is assassinated. His son Constantine succeeds him.</td>
<td></td>
</tr>
<tr>
<td>June-July: The Second Balkan War begins.</td>
<td></td>
</tr>
</tbody>
</table>

#### 2. THE PERIOD 1914-1940

<table>
<thead>
<tr>
<th>Event</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>...of politics</td>
<td></td>
</tr>
<tr>
<td>Eleftherios Venizelos becomes Prime Minister.</td>
<td>1914</td>
</tr>
<tr>
<td>New constitutional amendments are introduced.</td>
<td>1915</td>
</tr>
<tr>
<td>October: The First Balkan War begins.</td>
<td>1916</td>
</tr>
<tr>
<td>November: Thessaloniki is liberated.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas Manson Exhibition at the Zappeion Megaron Hall, February 17, 1919</td>
<td></td>
</tr>
<tr>
<td>Law 276 establishes the Ministry of Transport, which is allocated full competence in the City Plan</td>
<td></td>
</tr>
<tr>
<td>Design of the City Plan of Athens, prepared by Aristides Balanos (Kolonos-Sepolia-Kolokynthou-Iera Odos). Experiencing life in the municipality at a totally different level than foreigners would. Engineer and Town Councilor Aristides Balanos puts forward a different proposal. Unlike the Hippodamus System, i.e., the rule in urban design, his proposal is to extend the city plan in the form of a garden town in the area marked by Sepolia, Iera Odos, Kolokynthous and Kolonos. Its scope is not to remodel the center, but to provide for new settlements. Balanos believes that this would be feasible, given that the extremely low values of land in these areas favor the land expropriations.</td>
<td>1917</td>
</tr>
<tr>
<td>Athens-Piraeus, Design of the New City Plan of Athens, the Epinion and other parts of the city, prepared by Stylianos Leloudas. A plan prepared by the English Urban Designer Thomas Mawson, the “wonder plan” as it was known, is demonstrated in 1918. Thomas Mawson, Athens of the Future and Thessalonica of Tomorrow, Athens, Hellenic National Printing Office, 1918.</td>
<td>1918</td>
</tr>
<tr>
<td>May: Greek troops land in Smyrna.</td>
<td>1919</td>
</tr>
<tr>
<td>November: Royal Decree &quot;On the Maximum Allowable</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>August:</td>
<td>The Treaty of Sèvres is signed.</td>
</tr>
<tr>
<td>August-September:</td>
<td>Greek troops are withdrawn from Asia Minor. Smyrna is destroyed.</td>
</tr>
<tr>
<td>January:</td>
<td>Populations are exchanged.</td>
</tr>
<tr>
<td>March:</td>
<td>Greece is declared a republic.</td>
</tr>
<tr>
<td>August:</td>
<td>General Ioannis Metaxas sets up a regime.</td>
</tr>
<tr>
<td>1920</td>
<td>Height of Buildings&quot;, November 27, 1919.</td>
</tr>
<tr>
<td>1922</td>
<td>August: Royal Decree: &quot;On Amending Law 858 issued by means of a Royal Decree on November 11, 1919, and Regulating Buildings within the City Plan of Athens&quot;, August 24, 1922.</td>
</tr>
<tr>
<td>1923</td>
<td>Law &quot;On Building Protrusions&quot; (ekerd)</td>
</tr>
<tr>
<td>1924</td>
<td>City Plan of Athens, prepared by the Committee of the New City Plan of Athens, Kallithea, Faliro and Piraeus, otherwise known as the Kalliga Committee. In 1924, the “Committee of the New City Plan for Athens, Kallithea, Faliro and Piraeus” or the “Kalliga Committee” (see DRAWING), that had been formed in 1919, concluded its proposal for Athens.</td>
</tr>
<tr>
<td>1927</td>
<td>Legislative Decree &quot;On Ownership per Floor&quot;, March 19, 1927; pertinent only to refugee quarters.</td>
</tr>
<tr>
<td>1928</td>
<td>&quot;The City in 1928&quot;, by Spelios Agapitos.</td>
</tr>
<tr>
<td>1929</td>
<td>Law 3741/1929 &quot;On Ownership per Floor or Apartment&quot;.</td>
</tr>
<tr>
<td>1933</td>
<td>The fourth CIAM (Congrès International d'Architecture Moderne) meeting is held in Athens; it produces the Athens Charter.</td>
</tr>
<tr>
<td>1935</td>
<td>City Plan of Athens, prepared by the General Directorate, Technical Division, Municipality of Athens, under Mayor Costas Kotzias.</td>
</tr>
<tr>
<td>August:</td>
<td>General Ioannis Metaxas sets up a regime.</td>
</tr>
<tr>
<td>1936</td>
<td>Decree, May 14, 1936. Regulating for the first time the heights of buildings in the capital city of Athens.</td>
</tr>
<tr>
<td>1937</td>
<td>Decree &quot;On Amending and Complementing Provisions on Height Issued in the General Building Regulation of the State&quot;, August 8, 1937.</td>
</tr>
</tbody>
</table>
History

3. THE PERIOD 1940-1972

<table>
<thead>
<tr>
<th>YEAR</th>
<th>...of politics</th>
<th>YEAR</th>
<th>...of urban planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940</td>
<td>Emergency Law 2344/1940 “On Seashores and Coasts”; It includes provisions with reference to the concept and definition of seashores and coasts. It is passed in 1940.</td>
<td>1941</td>
<td>Athens is occupied by German ground forces.</td>
</tr>
<tr>
<td>1941</td>
<td>City Plan of Athens, prepared by Karantinos.</td>
<td>1942</td>
<td>Civil war breaks out among resistance groups.</td>
</tr>
<tr>
<td>1942</td>
<td>The Organization for the Administration of the Capital City elaborates on the “Capital City Plan”, which is also published as the Proposal of Patroklos Karantinos, who is at that time Director of the Organization.</td>
<td>1943</td>
<td>The City Plan of Athens “Plan on the Reconstruction of the Capital”, prepared by K. Biris, Manager of the City Plan, is presented.</td>
</tr>
<tr>
<td>1943</td>
<td>The Hellenic Ministry of Rebuilding works out a new City Plan of Athens. It follows the plans of Kalligas (1924) and Karantinos (1940), and it is an extension of the state plan of Athens. Without being significantly innovative, and with private cars dominating the city, the plan places emphasis on road networks against public transport. This is the first time that a highway that connects the areas of Stavros and Elefsina appears on a city plan.</td>
<td>1944</td>
<td>[..]</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1948</td>
<td>Legislative Decree 690/1948 “On complementing the Provisions on City Plans”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1951</td>
<td>Royal Decree, April 24, 1951; supplementary decree on building heights in the area of Athens, the increase of building heights on a plot are limited to 1/4 of the total permissible building height.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1954</td>
<td>Another City Plan of Athens, prepared by the Department of City-Planning Studies, Hellenic Ministry of Public Works, under Prokopis Vassileiadis. The new plan is similar to that of 1947, but it is more carefully designed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1962</td>
<td>Second Conference on Architecture: “Social Housing – Urban Planning”. Thessaloniki, December 1962. The Ministry of Public Works assigns the private firm of the American Transport Consultant W. Smith the study of the traffic congestion in Athens in the context of a project entitled “Research and Study of Traffic in the Wider Area of Athens”. The study of private vehicle traffic is complete in 1963, although the regulatory plan of Athens was not yet complete; the study of public transport, assigned to the firm in 1963, was submitted in 1965.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 4.1 History

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>Georgios Papandreou and his Center Union Party win the elections.</td>
</tr>
<tr>
<td>March</td>
<td>King Paul dies. His son Constantine succeeds him.</td>
</tr>
<tr>
<td>July</td>
<td>George Papandreou resigns after he confronts the King.</td>
</tr>
<tr>
<td>April</td>
<td>The Government of Greece fell into the hands of the junta of Colonels.</td>
</tr>
<tr>
<td>September</td>
<td>The military junta ratifies a new Constitution in a ragged plebiscite.</td>
</tr>
<tr>
<td>January</td>
<td>University students challenge the authority of the dictators.</td>
</tr>
<tr>
<td>November</td>
<td>Students occupy the National Technical University of Athens and rise up</td>
</tr>
<tr>
<td></td>
<td>against tyranny. Dictator Papadopoulos is toppled from power by the</td>
</tr>
<tr>
<td></td>
<td>former head of the secret police, Dimitris Ioannidis.</td>
</tr>
<tr>
<td>July</td>
<td>Turkey invades Cyprus following an assassination attempt upon</td>
</tr>
<tr>
<td></td>
<td>Archbishop Makarios, President of Cyprus, ordered by Ioannidis.</td>
</tr>
<tr>
<td></td>
<td>The military junta collapses and Karamanlis is called upon to restore</td>
</tr>
<tr>
<td></td>
<td>democracy.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>The New Constitution is introduced: Article 24</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>The Pan-Hellenic Socialist Movement of Andreas Papandreou takes up the role of main opposition.</td>
</tr>
<tr>
<td>1977</td>
<td>First serious effort for state-controlled overall planning and development. Neoclassical Athens areas, notably Plaka, start being preserved and beautified, especially by means of precluding any vehicular traffic.</td>
</tr>
<tr>
<td>1978</td>
<td>“Plan-Framework-Capital City 2000” from the Directorate of Housing, Ministry of Public Works, with the responsibility of Minister Stefanos Manos.</td>
</tr>
<tr>
<td>1979</td>
<td>Law 880/1979 refers to the institution of “building coefficient transfer”.</td>
</tr>
<tr>
<td></td>
<td>Law 960/1979 “On the Obligation to Create Car Parking Spaces to Service Buildings and on Regulating Relevant Issues and Other Related Provisions”.</td>
</tr>
<tr>
<td></td>
<td>Law 880/1979 “On the Highest Building Coefficient”. Article 1 stipulates in new regulations that the highest building coefficient throughout the state stands at 2.4. Article 2 refers to the institution of building coefficient transfer. Such transfer can be performed to meet requirements of the city, and to meet a. architectural and urban planning standards; b. equipment standards in settlements, and; c. the need to preserve certain areas on account of their quality of setting.</td>
</tr>
<tr>
<td></td>
<td>Law 960/1979 “On the Obligation to Create Car Parking Spaces”. This Law stipulates that whoever applies for a building permit is obligated to provide for car parking spaces.</td>
</tr>
<tr>
<td></td>
<td>Law 973/1979 “On Establishing a Land Office of the State”</td>
</tr>
<tr>
<td></td>
<td>Law 998/1979 “On the Protection of Forests and Woodlands in General of the State”</td>
</tr>
</tbody>
</table>

This law is issued to implement articles 24 and 117 of the Hellenic Constitution. It provides the legal framework on the protection of forests. Article 49 specifies the requirements for integrating forests of woodlands into residential areas. Law 947/1979 “On Residential Areas” is a milestone in urban planning. It provides the means by which the state endeavors to raise funds out of the immense profits from integrating plots into the town plan.
### 4.1 History

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>Karamanlis is elected President. The Ministry of Planning, Communities and Environment (YHOP) is set up.</td>
</tr>
<tr>
<td>1981</td>
<td>Greece becomes the 10th Member State of the European Economic Community. PASOK forms first socialist administration.</td>
</tr>
<tr>
<td>1983</td>
<td>“Regulatory Plan of Athens” under Minister Antonios Tritsis.</td>
</tr>
<tr>
<td></td>
<td>Housing Law 1337/83 introduced levies scaled to the size of the property.</td>
</tr>
</tbody>
</table>

#### 5. THE PERIOD 1985-2005

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>PASOK is elected for a second time. Consumerism grows rapidly. Household structure shifts away from the large family type towards the small “nuclear” family type. Because of this, the Athens area continues to expand rapidly, even though its population remains constant.</td>
</tr>
<tr>
<td>1986</td>
<td>Law 1577/85 “General Building Regulation”</td>
</tr>
<tr>
<td></td>
<td>Urban planning in areas of second- or summer residences is regulated under Presidential Decree 16-8/30-8-1985</td>
</tr>
<tr>
<td>1989</td>
<td>The Aegean incident brings Greece and Turkey to the brink of an armed conflict.</td>
</tr>
<tr>
<td>1989</td>
<td>The Davos agreement holds promise for a Greek-Turkish rapprochement. To no avail.</td>
</tr>
<tr>
<td>1990</td>
<td>PASOK loses the elections amidst major scandals. A conservative-communist coalition administration is set up.</td>
</tr>
<tr>
<td>1992</td>
<td>New elections take place. The Conservative Liberal New Democracy party of Constantine Mitsotakis forms an administration. New Metro lines are under construction.</td>
</tr>
<tr>
<td>1993</td>
<td>Papandreou’s PASOK returns to power.</td>
</tr>
<tr>
<td>1995</td>
<td>The Athens traditional commercial center closes to traffic.</td>
</tr>
<tr>
<td>1996</td>
<td>After the prolonged illness of Papandreou, Kostas Simitis takes the lead of the new PASOK administration.</td>
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</tbody>
</table>
| 1999     | Tenth Conference on Architecture: “Architecture and
The Olympic Games are hosted in Athens. The New Democracy Party of Kostas Karamanlis forms a new administration.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>2000</td>
<td>The 2000 General Building Regulation</td>
</tr>
<tr>
<td>2004</td>
<td></td>
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</tbody>
</table>
### 4.1 History

<table>
<thead>
<tr>
<th>Year</th>
<th>Event/Act/Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>Law 66 of 1954 on the Establishment of the Egyptian Housing and Urban Development Corporation (EHUDC)</td>
</tr>
</tbody>
</table>

#### V. THE PERIOD 1965-2003

APPENDIX 4.2: City Plans and Legislation

1. PERIOD 1828-1914

Once established as an independent sovereign state, Greece made its first attempts to create “City Plans”. During this period, the building planning designs of Patras (1828), Pylos (1829), Athens (1830), Naples (1834), Monemvasia (1836), Nafpaktos (1838), Thiva (1850), Kalamata (1869), etc. were carried out. Many new cities were planned by military engineers according to the Hippodamus system. These plans were carried out without being subject to legal rules or a legislative framework for urban planning. The state’s intervention was based on police ordinances with respect to every building individually, not to the city as an entirety.

As the capital of Greece, Athens was in need for a City Plan that would not only enable the further expansion of the city, whose population at the time was a mere 12,000 habitants, but would also be based on the European concept of that particular era, which was imperative for a new “European city” with such a remarkable historical background. According to building authorities, German or European, in general, this concept dictated that: a. the old city should remain untouched. Interventions could occur only provided they were related to the expansion; b. new regions would include new cities, and planning were to be in the simple Hippodamus system; c. plans would be related to a strictly geometric neoclassical composition, i.e., symmetrical and monumental.

It was then that the Viceroyalty assigned the task of drawing the City Plan of Athens to the architect Stamatios Kleanthes and to his friend and colleague Eduard Schaubert. The result was a symmetrical plan using a triangular grid and a central axis, on either side of which lay the various ministries. Two principles were central to this plan: a. placing emphasis on the imaginary axis of the Panathenaic Stadium by building Stadiou St., and; b. drawing the symmetrical axis of Pireos St.

Athinas St. would bisect the angle formed by Pireos and Stadiou streets, whereas Ermou St. would define the third side of the triangle. A rectangular formed by four adjoining boulevards 38 m wide was added to this triangular shape.

The palace would face an impressive market at the core of which the Public Garden would be located, indicative of a monarch-people relationship which never actually existed.¹

The City Plan was approved and published on October 1833 with the Decree 7/1919. This immediately led to fierce protests by property owners, both Athenians as well as Europeans, who subsequently withdrew their land offers meant to facilitate the execution of the plan for the new capital.² So intense were the reactions that the plans were sent to King Ludwig in Munich so as to “take the matter into his own hands, aided by his skilful counselors.” Planning was entrusted to the palace architect Leo Von Klenze (1834). Von Klenze reduced the size of the city to 2,136 acres, omitted the boulevards and eliminated the public space, which in the

¹ Dimitris Philippidis, Modern Greek Architecture, Melissa publications, Athens 1984.
² Warlord Kriezotis had threatened that he and his men (palikars) would invade Athens in order to save a land plot of his that would be destroyed by street planning.
Kleanthes-Schaubert Plan made for 20% of the city. The Metropolis Cathedral was put in the place of the palace, which, along with the governmental buildings, was transferred to the western end of the city, close to the archaeological sites. Von Klenze aimed to cut down on the refunds due for expropriations. Thus, he modified the plan to meet the requirements of those exerting pressures, though he didn't manage to match Kleanthes's principles and inspiration. The City Plan that was finally implemented was a syncretical version of the aforementioned plans prepared by the “Construction Committee” where Kleanthes also participated. This plan, having undergone multiple modifications, was the one followed up to 1843, when the Bavarians left.

In 1846, a second plan was carried out by the Committee of Greek Engineers and Architects, which legalized all modifications that had occurred until then as well as the more recent ones, without, however, expanding the existing plan. The palace didn't approve of this plan as it greatly reduced the size of the palace plaza.

In 1860, a newly-established committee by the Municipality of Athens drew the “Stavridis Committee” Plan for Athens, which was based on Von Klenze's plan, although it was significantly modified, mainly in what the construction of squares was concerned. The plan was not approved but it was partly implemented due to the pressures exerted by some.

Let us mention here that along with the aforementioned plans, and amendments were already being issued; actually, only these were corresponding to reality. The amendment of 1837 specified the location where the palace was eventually built; the one of 1851 almost eliminated the Public Garden; and by the amendment of 1964 three out of four parts of the City Plan were approved. Athens kept on expanding by partial and unregulated annexations, which were not adequately connected to its pre-existing parts.

In 1898, Pavlos Vakas, an architect, aspired to bestow Athens “the aura of a big European city”. He noticed that the main streets of Athens formed an octagon, at the center of which Monastiraki area was placed, which reminded him of the Vitruvian composition. Vakas professed that normality constituted the “perfect solution”. Based on the above “pleasant coincidence” as he called it, from 1896 to 1898 he ventured to create a City Plan for Athens, by which he suggested that the octagon shape be completed and that Monastiraki Square be built.

Yet another committee chaired by Prince Constantine was assigned to study Athens in 1906. Of their decisions, the only one to be carried out was the proposed layout of an opening avenue going round the Acropolis, i.e., Pavlou Avenue, as an extension of Dionysiou Areopagitou St.

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3 Biris.
4 The committee was comprised of Lieutenant Colonel Smolenskis, Major Manitakis, Lieutenant Komninos, Director of the Polytechnic School Kaftantzoglou, and Hansen, an architect.
5 In which Colonel Stavridis, Major Petmezas, the Mayor of Athens Skoufos, Director of Health Care Vouros, the architects Kalkos and Boulange and the chief engineer Daniel were involved.
6 Pavlos Vakas, Studies and drawings for transportation, beautification, purification of Athens, Athens 1898.
In 1908, the architect Athanassios Georgiades proposed to construct a monumental avenue through expanding Korai St. up to the foot of the Acropolis, as well as to build new streets within the city. His argument was that the existing streets were inadequate to accommodate "the new means of transportation", i.e., the car.

From 1830 until the Balkan Wars, the population of Athens had become 20 times bigger, while the legal City Plan had grew 10 times its initial size. The business of selling plots which were not included in the City Plan was becoming increasingly popular, and the owners who were buying them through backstairs influence, were legalizing them. The interventions the state made as far as urban planning was concerned were either of expansions of the City Plan or occasional modifications. In the period between 1836 and 1920, Aggelopoulos counted 565 amendments, most of which served private interests (in the eve of the elections) or entailed other kinds of benefits, all at the expense of public interest.

At a time when the accomplishment of the "Great Idea" was imminent, an attempt was made to deal with the plan of Athens in an integrated and efficient way. Within this context, in 1908 the Mayor of Athens Spyros Merkouris assigned the task of carrying out a plan to Ludwig Hoffman. Hoffman, a representative of "Wilhelminism", which was an expression of Academic Eclecticism in urban design, having visited Athens for a week, came up with a late neoclassical composition including impressive avenues and obelisk-bearing squares. The plan evolved around the following main points:

- Construct peripheral avenues, contrary to the radiating street system
- Unify railway stations
- Bring back the issues of Korai St. and the radical reform of the old city, as well as making a road network which required that the old city be almost totally demolished
- Construct both Omonia Square, where a 30 m tall obelisk would be placed, and Syntagma Square in successive levels and
- Expand the city up to Patisia and Faliero.

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7 Athanassios Georgiades, Study of a new avenue in the city, Perikleous and Aspassias, namely expansion of the Korai street up to the railway station of Monastiraki and then up to the Supreme Court (Areios Pagos). With preliminary measurement and budgeting of the new avenue and plan, Athens 1908.
8 Georgiades supported by detailed calculations that the cost of the project would be depreciated within a decade by the surplus value of the adjoining land plots.
10 He admitted that "Until then, I had no experience on urban planning... This assignment, however, was very tempting... sparing the remnants of ancient art a disturbing proximity seemed to be a holy commandment."
12 Ludwig Hoffman, Bebauungsplane fur die Stadt Athen, Berlin 1910.
Even though Hoffman was himself a really good and sensitive designer, his idea to get rid of the annoying view the telephone and electrical wires were imposing implied that he remained a typical representative of the architectural expression dominating the second half of the nineteenth century, which dealt solely with the ground plan of the city.\(^{13}\)

2. PERIOD 1914-1940

In 1914, the Ministry of Transport\(^{14}\) was established by Law 276, and inherited all city-planning competences that had belonged to the Ministry of Internal Affairs since 1863. This transfer had positive effects in the institutional framework. During this era, the completion and decoding concerning the city planning and the legislative reconstruction was achieved.

The fundamental laws resulting from this addressed the following issues:

- The reconstruction of Thessaloniki (1917-1918)
- The Cadastre
- Urban planning (Legislative Decree “On Plans of Cities, Towns and Settlements of the State and Building”, dated July 17, 1923) and
- A general building regulation (Law 3741 “General Building Regulation of the State”, dated April 3, 1929)

Another City Plan was carried out for Athens by Thomas Mawson. Once again, like it happened with Hoffman, the task was assigned to him by Merkouris, following Queen Sofia’s recommendations in 1914. The City Plan\(^{15}\) the English Urban Designer Mawson prepared, the “wonder plan” as it was known, was demonstrated in 1918.\(^{16}\) He attempted to reconstruct and consolidate the city functions in Athens, and at the same time grant the capital what it deserved, namely “space and gentleness”.

The main points his proposal elaborated on were:

- Grouping similar functions into distinct centers, i.e., Governmental Center, Political Center, and Academic Center
- Seeing to it that workplaces would be located in the vicinity of the railway stations, close to the workers’ houses
- Expanding Korai St. up to Monastiraki Square

Mawson’s plan was fit for a developed Western-world capital city rather than for a small provincial capital town in Greece, where there was no chance that it would be implemented for both institutional as well as financial reasons.\(^{17}\)

\(^{13}\) Yannis Polyzos “Reformative dreams and urban design adjustments” Athens in 20th century, Ministry of Culture 1986.

\(^{14}\) Two active characters would influence the first years of its function: Papanastassiou and Politis.

\(^{15}\) Thomas Mawson, Athens of the future and Thessalonica of tomorrow, Athens, national Printery, 1918.

\(^{16}\) In fact, this was not a plan. Rather, it was a series of proposals he was working on since 1914.

\(^{17}\) Dimitris Philippidis, Modern Greek Architecture, Melissa publications, Athens 1984.
Experiencing life in the municipality at a totally different level than foreigners would, in 1917 Engineer and Town Councilor Aristides Balanos\textsuperscript{18} put forward a different proposal. Unlike the Hippodamus system, i.e., the rule in urban design, his proposal was to extend the City Plan in the form of a garden town in the area marked by Sepolia, Iera Odos, Kolokynthous and Kolonos. Its scope was not to remodel the center, but to provide for new settlements. Balanos believed that this would be feasible, given that the extremely low values of land in these areas favored the land expropriations.

Another proposal for the city of Athens appeared in 1918, that of the Lawyer and self-taught Urban Designer, Stylianos Leloudas\textsuperscript{19} who, according to Biris, was the first to understand the need of an overall plan for a city, irrespective of its morphology. This was the first time someone raised the issue of the capital’s buildings on such a large scale, namely the entire Attica basin. In a second survey, where he left out the principles delineated in his earlier work, he made some improvements and additions. The Attica basin was organized into six peripheries: a. the City which covered a 30,000 sqm area with a ratio of 60 sqm per inhabitant; b. the seaport which developed around the new port of Keratsini; c. the agricultural periphery which formed a 3 km wide axis extending from Athens to Piraeus; d. the shores which served for recreation and exercise; e. the mountainous area of Tourkovounia, and; f. the military area which lied between Piraeus and Elefsina.

Whilst the issue of urban planning in Athens was well under way, in 1917 a fire destroyed a great part of the city of Thessaloniki, hence offering an unexpected opportunity for urban planning in Greece. An International Planning Committee was appointed, bringing together Hebrard, Mawson, Zachos, Kitsikis, Pleyber, Ginis, and Aggelakis.\textsuperscript{20} The Ministry of Transport under Papanastassiou managed to address the issue of the Thessaloniki City Plan. Even though it was not implemented to the extent that it was expected, the City Plan that was carried out was of special value because it constituted an innovation for Greece, namely the appearance of the first urban planning group, and the State acting as its administrator.\textsuperscript{21}

In 1919, the Minister of Transport Papanastassiou set up the “Higher Technical Council of the State”.\textsuperscript{22} Rapporteurs on the City Plan of Athens were Kalligas,\textsuperscript{23} Hebrard, Kitsikis, Orlandos, Breud, and Axelos.

\textsuperscript{18} Aristides Balanos, Study of the Athens City plan. Department of Kolonos-Seplia-Kolokynthou-Iera Odos quarters, Athens 1917.

\textsuperscript{19} Stylianos Leloudas, Athens-Piraeus. Study of the new plan for the city of Athens, the Epinion and the other components of the city, Athens 1918.

\textsuperscript{20} Dimitris Philippidis, Modern Greek Architecture, Melissa publications, Athens 1984.

\textsuperscript{21} Dimitris Philippidis, Modern Greek Architecture, Melissa publications, Athens 1984.

\textsuperscript{22} Ministry of Transportation, Higher Technical Council of the State, Reports on the Athens city plan, by the rapporteurs P. Kalligas, E. Hebrard, C. Kitsikis, Orlandos, Breud, Axelos, Athens 1920.

\textsuperscript{23} Kalligas had already published a work on the problems the city of Athens was facing (Petros Kalligas, \textit{Plan of Athens}, Athens 1919).
4.2 City Plans and Legislation

Once the Treaty of Lausanne was signed (1923) the Greek and Turkish populations were exchanged. One million refugees entered Greece, of which 579,000 settled in rural and 653,000 in urban areas. In order to house those settlers, 120 new housing developments would be created for which 27,500 residences would need to be confiscated, whilst 66,048 newly-built and 63,886 repaired Turkish or Bulgarian residences would offer shelter to the rural refugees. In the period between 1920 and 1928, Kavala expanded by 118%, Piraeus by 85%, Athens by 54%, while Thessaloniki and Volos by 39%.

In 1923, the Legislative Decree "On Plans of Cities, Towns and Settlements of the State and Building", dated July 17, 1923 was issued." This was the first Greek law on systematic urban planning with amendments and remains in effect today. It had a significant bearing on the development of urban planning, but it did not introduce important innovations as far as building regulations were concerned, except for setting limits on real estate property, stipulating regulations on structural works, and providing for building plot arrangements before the construction.

The entire Greek territory has been legislatively structured under three categories:

a. Areas within the City Plan, i.e., areas with an approved city plan, regulated by Legislative Decree dated July 17, 1923.

b. Residences existing before 1923, without an approved city plan, but under the legislative regulations.

c. Areas “outside city plans”, i.e., areas outside building planning designs, and outside settlements. These areas have been regulated by decrees, but, in fact, constructions within these have been uncontrolled.

Amendments, deviations, and alterations in implementing the aforementioned legislative decree accounted for the following effect: settlements were created that failed to meet modern living standards (e.g., lack of communal or utility spaces, improper densities, lack of infrastructure, etc.), despite having been developed according to approved designs. Meanwhile, unstructured building allowed for illegal settlements to be developed, which settlements the state would later legalize and integrate into the urban fabric.

In 1930 the area of Athens measured 29,083 acres (i.e., 10 times larger than the corresponding area in the Kleanthes Plan). Over the period 1920-1930, Athens evolved in three directions:

a. Areas outside the City Plan were annexed and legalized. Two categories could be clearly identified: private settlements (Kypriadou, Psyhiko, Ilioupoli, Holargos, Vrilisia, Nea Alexandria), and city plan extensions within the zone (Analipsi, Brahami, Erythros Stavros, Alysidia, Sepolia, Votanikos, Nea Petralona, Ag. Giannis, Ano Kypseli). Private settlements exploited the legislative decree on city planning, dated July 17, 1923, and sometimes were carried out by architects (Nikoloudis: Psyhiko 1923, Valvis: Ilioupoli, Agapitos: Ekali 1922).

b. Illegal residences were developed within the zone, without a building plan. These were created in pockets that were “accidentally” left out of plan, bordering with new or older regions.

c. The Caring of Refugee Fund (CRF), the Committee of Reestablishment of Refugees (CRR), and the Ministry of Welfare organized refugee residences (Kesariani, Vyronas, Nea Smyrni, Ymitos, Peristeri, Kokkinia, Nikea, Tavros, Philadelphia, Halkidona, Nea Ionia).

In 1924, the “Committee of the New City Plan for Athens, Kallithea, Faliro and Piraeus” or the “Kalliga Committee”, that had been formed in 1919, concluded its proposal for Athens. The implementation of the plan in 1925 generated intense criticism, which was directed to it as a whole, due to the pressure exerted mainly by the Patisia region landowners, whose interests were against both the continuation of 3rd Septemvriou St. and the establishment of an administrative centre in the area, as well as by residents of the old city, which was being demolished in order to conduct archaeological excavations.

The Kalliga Plan was the first “management plan” of the area, and it “succeeded the plans which aimed to portray the region’s character.” It was the first time that a city plan made public was actually formulated by a technical committee in which anyone who was “interested, meaning individuals that can contribute a clear opinion as well as organizations” could participate. It was also the first plan that was actually implemented after 1834. The Kalliga Committee proposed the division of the capital’s center into six distinct zones: a. the commercial zone; b. the investment zone; c. the administrative zone; d. the judicial zone; e. the academic zone, and; f. the zone where the hospitals would be located. It also divided the residential areas into categories based on population density, and unified Peloponnisou and Larissis train stations. The industrial zone and the barracks were scattered outside the City Plan. The Pagalos Dictatorship in 1926 recalled the Kalliga Plan due to the fierce pressures it had generated.

The breaking up of the Kalliga Committee was followed by the emergence of a diarchy: on the one side there was the Ministry of Transport, which maintained authority in what public works were concerned, along with the Polytechnic and the Technical Chamber of Greece; on the other side there was the Municipality of Athens, which was trying to hang on to the power it had

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25 In compliance with Law 1709/1919.
26 The committee was comprised of Balanos (civil engineer and the owner of Parthenon restaurant), Dmitrikopouloa (civil engineer and a member of the Thessaloniki reconstruction team), Labadarios (civil engineer and professor at the National Metsovion Polytechnic), Paraskevopoulos, (civil engineer and professor at the National Metsovion Polytechnic), Tsipouras (architect and professor at the School of Fine Arts), Axelos (architect), Tsagris (civil engineer), Kitsikis (architect and a member of the Thessaloniki reconstruction team) and Kalligas (mechanical engineer and later Minister of Agriculture and Minister of Transportation). Architect Hebrard, a professor at the National Metsovion Polytechnic, was also one of the original participants.
27 In Europe such plans were already a common practice, while in Greece, Leloudas and Balanos had expressed views in support of this kind of planning.
28 When the Kalliga Plan was aborted, according to Biris, Athens missed on “the opportunity of even modest reformation of its plan”.

acquired regarding urban planning since Athens had become a capital. The Ministry of Transport proceeded to allocate plots from public areas such as Skouze Hill, which was subsequently transformed into seven city blocks, without the consent of the Municipality of Athens. It was a period of aggressive interventions on urban planning on the basis of private or public interests. In 1927, the refugees rushed to vote a legislation according to which they were the only ones allowed to build by making use of the pre-existing decrees, while in 1931 permission was given for reconstruction works in common areas even if the owner had not been reimbursed.

In 1934, when Petros Rallis was Minister of Transport, the Supreme Urban Design Committee was introduced. The committee advised the government to “preserve the aesthetics of public spaces in Athens”, and was the reason why the Pedio Aresos park was created (1934).

In 1935, the urban planning sector directed by Biris, advocated the creation of a “green wall”, which would form a natural obstacle to the expansion of the city. This same year, the Mayor of Athens Costas Kotzias invited the German Urban Designer Martin Wagner, who after examining the existing situation, suggested that a new institution be formed in Athens. The Dictatorship of Metaxas approved of it, so in 1936 the Ministry of the Capital’s Administration was founded. It was a collective organization responsible for many activities throughout the Attica area. Mayor Kotzias became the head Minister of the new agency and Biris was the director.

The Supreme Urban Design Organization of the Capital City was set up in 1937. It had two committees: an architectural committee and an urban planning committee. Constantinos Doxiades was appointed Head of the Office of Urban Design Studies.

In 1940, the Organization for the Administration of the Capital City elaborated on the “Capital City Plan”, which was also published as the Proposal of Patroklos Karantinos, who was at that time Director of the Organization. This plan presented mainly the pre-existing condition, while it concluded by proposing just traffic interventions. Whilst it pointed out some problems such as the lack of public areas and the issue of the land profit, no major conclusions were reached, only principles were stated. The institution was dissolved in 1931 having achieved nothing remarkable.

29 The committee was comprised of Kalligas, Metaxas, Kriezis, Zachos, Parthenis, Papantoniou, Dimitrakopoulos, etc.
30 This proposal was influenced by Western European urban planning.
31 The president of the “Superior Urban Design Council”, namely the urban planning committee, was the Prime Minister Metaxas himself, while Dimitrakopoulos, Karantinos and Biris were among its members.
32 In 1939, Doxiades was appointed to the Ministry of Transport, and the place he had occupied place was taken by Karantinos.
33 Sarriyannis: “The famous Organization for the Administration of the Capital City has been pretty passive, and it dissolved having carried out no remarkable work, apart perhaps from preparing Doxiades to take up the Ministry of Rebuilding after the war, destroying Ilissos by transforming it into sewers under a highway, desecrating Kili area on Filopappou Hill by building an open theater (later “Dora Stratou” Theater), and demolishing Athens Public Theater.
Comparing the city's borders between 1927-1940 can establish that, with the exception of refugee residences, expansions would take place without planning or hierarchy, and in areas of illegal construction. Tsagris in “Athens as a city” succeeded in condensing the fate of all the urban planning interventions of that period: “We are not going to find out who is at fault and who is not.” The fact was that new Athens had been and was being built with the mercy of God and without the mercy of humans.

3. PERIOD 1940-1972

Although going through a period of reconstruction that would establish the social and economic standards and regional correlations of the country and would see considerable growth in the capital city, the Greek state did not have a long-term regulatory plan for the capital city. The Ministry of Rebuilding coordinated the reconstruction, and by 1951 they had planned 150 settlements and 200,000 houses. Attempts were made to attract foreign capital, establish integrated bodies for technical infrastructure works (Hellenic Public Power Corporation (DEI), Telecommunications Organization (OTE)), improve the national road network, and construct the national highway Athens-Thessaloniki. A set of institutional measures was introduced, e.g., setting greater building heights in 1948, and introducing the General Building Regulation in 1955. The Emergency Law 2344/1940 “On Seashores and Coasts” was passed in 1940. It included provisions with reference to the concept and definition of seashores and coasts.

The Legislative Decree 690/1948 “On Complementing the Provisions on City Plans” was issued in 1948. Provisions in this Decree prohibited assigning plots deriving from the partition of larger areas when such an assignment rendered either the plot or the rest of the land unsuitable for building.

Another City Plan of Athens, the “Plan on the Reconstruction of the Capital” prepared by Biris, Manager of the City Plan, was presented in 1946. He proposed to expand the wider Athens area by creating a satellite city of 100,000-200,000 people at Thriassio, in the Megarida settlement. The city would host an airport which would operate in parallel with Elliniko, while there would also be a railway and road connection with Central and Northern Greece. As far as the centre of Athens was concerned, a series of traffic interventions as well as widening of streets were included in the plan. The state did not approve of this plan, and the construction of arcades ended up being the only proposed measure that was implemented.

The Ministry of Rebuilding

worked out a new City Plan of Athens in 1947. It followed the plans of Kalligas (1924) and Karantinos (1940), and it was an extension of the state plan of Athens. Without being significantly innovative, and with private cars dominating the city, the plan placed emphasis on road networks against public transport. This was the first time that a highway connecting Stavros with Elefsina had appeared on any city plan.

In 1954, another City Plan of Athens was prepared by the Department of City-Planning Studies of the Ministry of Public Works, under Vassileiadis. The new plan was similar to that of 1947, but it was more carefully designed.

34 Meanwhile, the urban planning department of the Ministry of Public Works, which was previously part of the Ministry of Transport, had been transferred to the Ministry of Rebuilding.
The period after 1962 was marked by an attempt of a different approach as far as space planning was concerned, both in a regional level as well as for the cities. Meanwhile, there was a change of viewpoint within the Greek administration. The various authorities were reorganized and in 1960 the Center for Economic Research was established, which was later headed by Andreas Papandreou. A number of regional departments which belonged to the Ministry of Coordination were founded, aiming at regional development. They were staffed by carefully selected executives, most of which were trained in Great Britain and the USA, and headed by the Deputy Minister of Coordination, Ioannis Boutos. Those departments ventured to carry out development programs and modern city plans, in collaboration with Universities and private firms.

The Center for Economic Research was renamed Center for Planning and Economic Research in 1961, and began employing economists and urban designers. It carried out some quite pioneering urban planning projects. However, those projects were not binding for the governments, and therefore almost none of their propositions was applied, nor their conclusions were practically taken into account.

The Ministry of Public Works assigned the private firm of the American Transport Consultant Smith the study of the traffic congestion in Athens in the context of a project entitled “Research and Study of Traffic in the Wider Area of Athens”. The study of private vehicle traffic was complete in 1963, although the regulatory plan of Athens was not yet complete; the study of public transport, assigned to the firm in 1963, was submitted in 1965. The drawback in Smith’s proposition was that it gave priority to private vehicles over public transport, unlike what a European Transport Consultant might have done. The regulatory plans were based on that very study, and the construction of roads in the wider Athens area has been following those guidelines ever since.

In the period between 1963 and 1966, the Ministry of Coordination carried out urban planning projects for Thessaly, the Peloponnese, and Crete, produced regulatory plans for certain cities in Epirus and Crete, and prepared ten development plans.

As far as the capital was concerned, three parties were mainly dealing with the issue and putting forward propositions at the time. The first one was the Ministry of Public Works. In 1963 it established a special administration under Vassileiadis, which dealt with the Regulatory Plan of Athens and belonged to the Department of Settlements. The second one was Doxiades Firm, the head of which was Doxiades. Doxiades raised some issues which were presented in his study entitled “Our Capital and its Future”. And the third party was the Union of Architects. Members of the Union Despotopoulos and Provelengios expressed their concerns during the works of the First Conference on Architecture, entitled “Urban Planning: A National Problem” and held at Delphi.

35 Such were the Departments for the Regional Development of Thessaly, the Peloponnese, Epirus, Crete, etc.
37 He was a close friend of the then Prime Minister Karamanlis.
During the Fifth National Conference on Architecture entitled “Problems in the Wider Area of Athens” and held in Athens in 1966, the conflict among the three aforementioned parties escalated as Vassileiades, Doxiades and Diamantopoulos of the Consulting Company for Economic and Social Development (KEPE) presented three diverse propositions.

The proposition Vassileiades made was supported by an extensive and detailed analysis and advocated the formation of hubs in the outskirts, which would decongest the centre of Athens. Doxiades’ proposition focused on a new center at Tatoi, a suggestion informed by his vision of the Ecumenopolis, and an airport at Tanagra. The road network he proposed was similar to that of Vassileiades, although its form was much more rectangular. KEPE theorized on decentralization towards six hubs in the outskirts, while it envisaged a residential pattern of high-rise buildings, apparently influenced by Le Corbusier and the city blocks of Eastern Europe.

Zenetos’ published researches were quite interesting at the time; they first came out in 1963 and were completed between the years of 1969 and 1973, the last of them being “Electronic Orban Planning”. In 1965, Doxiades Firm started planning a settlement for 15,000 inhabitants at Aspra Spitia, intended to house the employees of “Hellenic Aluminium SA”.

The Law 625 “On Amending the General Regulations on City Plans” was issued in 1968. It enabled the administration to set the conditions and restrictions as far as building on plots outside the City Plan was concerned. Actually, this law was one of the first to address organized building in Greece.

Between 1970 and 1972, during the military junta in Greece, 600 scientists under KEPE performed a number of studies entitled “15-Year Plan on Long-Term Prospects”. While the regulatory plan of Athens was well under way, the Doxiades Firm was assigned by the Ministry of Coordination the task of drawing the National City Plan entitled “Capital City Plan and Program”. Moreover in 1973, the Ministry of Public Works assigned Smith a number of studies, including the new study of public transport traffic. Professor Zivas started preparing the “Study on the Old City of Athens”, which was put into effect quite successfully. However, although at the time a strong tendency towards planning prevailed neither joined attempts were made nor coordination between state authorities or an integrated regulatory scheme existed.

The Legislative Decree 1003 “On Active Urban Planning” was issued in 1971. This was just a theoretical approach with almost no applications. A year later, a legal framework for the regulatory plans was established for the first time through Law 1262/1972 “On Regulatory Plans”. That law, which also aimed to legalize all regulatory plans carried out so far, was never implemented.


4. PERIOD 1973-1984

The dictatorship introduced institutional measures and resolutions that boosted, although temporarily, building activity. At the same time, those measures permitted the emergence of a great number of holiday houses, hotels and building partnerships that ravaged the coasts and forests of the country. Thus the aforementioned boost soon subsided under the escalating crisis on the one hand and the constant contradictions of the regime on the other.

After 1974, a vivid discussion arose regarding the modernization of the institutional framework. Such a policy was all the more important in the case of Athens, given that the rate of development was not indicative of a positive future.

In 1976, by Law 416/1976, the Public Urban Planning and Housing Corporation (DEPOS) was established, acting as the public body for research and implementation of housing interventions.

Three years later, in 1979, following wide discussions in which many entities had participated, the Directorate of Housing of the Ministry of Public Works put forth a proposition with the responsibility of Minister Stefanos Manos, namely the “Plan-Framework-Capital City 2000”. This was a really important year as in an effort to modernize the country’s manner of production and in view of its imminent accession into the European Union, a series of very significant institutional and implementation measures were taken, regarding both the manner of production as well as the modernization of the urban planning mechanisms. The following laws were passed then:

- Law 880/1979, which referred to the institution of “floor area ratio”
- Law 960/1979 “On the Obligation to Create Car Parking Spaces to Service Buildings and on Regulating Relevant Issues and Other Related Provisions”
- Law 880/1979 “On the Highest Floor Area Ratio”. Article 1 stipulated in new regulations that the highest floor area ratio throughout the state would stand at 2.4. Article 2 referred to the institution of floor area ratio transfer. Such transfer could be performed to meet requirements of the city, and to meet a. architectural and urban planning standards; b. equipment standards in settlements, and; c. the need to preserve certain areas on account of their quality of setting
- Law 947/1979 “On Residential Areas”
- Law 960/1979 “On the Obligation to Create Car Parking Spaces”. This Law stipulated that whoever applied for a building permit was obligated to provide for car parking spaces, and

In 1980, by Law 1032/1980, the Ministry of the Environment, Physical Planning and Public Works, was established.

In 1883, the Housing Law 1337/1983 “Extension of Urban Plans, Residential Development and Related Provisions” introduced levies scaled to the size of the property. This effort, in spite of the weaknesses inherent in its conception, included some important points as it promoted an overall planning, a hierarchical organization of space, an attempt to extend the issue so as to address wider social strata, a mobilization of resources, etc. This year the “Regulatory Plan of Athens” was submitted and Minister Antonios Tritsis was in charge.
During this period, urban regeneration projects were taking place in Athens, and Voukourestiou St. was the first to undergo such a process. This was followed by extensive paving and improvement of technical infrastructure in Plaka and other areas.

5. PERIOD 1985-2005

As far as Athens was concerned, the first phase of this period extended from 1983 to 1996. In 1984, the Eighth Conference on Architecture, entitled “The Problem of Housing” was held in Athens.

A year later, a new “General Building Regulation” was passed by Law 1577/85. That same year Law 1515/1985 “Regulatory Framework and Program for the Protection of the Environment in the Wider Area of Athens”, i.e., the Regulatory Plan of Athens was voted.

Inconsistency of goals and political action was such that two of the most critical projects for the capital, namely the new airport and the metro, although they were decided, they were not included in the regulatory plan. Urban planning in areas of second- or summer residences was regulated under Presidential Decree 16-8/30-8-1985. Law 1647/1986 established the Cadastre and Mapping Organization of Greece (OKKE).

In 1988, the Ninth Conference on Architecture, entitled “Using Architecture and Urban Planning” took place.

Based on the Greek Government’s intention to pursue the organization of the Olympic Games initially in 1996, a number of studies were initiated in 1991 -one such study being the legislation for private urban planning (Law 1947/1991)- which annulled the regulatory plan, whereas in the period after 1997 the plan was utterly overturned.

The Tenth Conference on Architecture, entitled “Architecture and the Greek City” was organized in 1999.

The Law 2742/1999 “On the General Physical Planning Framework” was issued in 1999, while in 2000, a new “General Building Regulation” was voted, improving, in effect, that of 1985.
Apartment buildings of «attached» building system
(CB 3911, Hypothetical CB 3911’, outstanding examples)

4.3 Apartment Buildings from 1824-1914

A single star (*) indicates the apartment buildings of city block No 3911.
Two stars (**) indicate the apartment buildings of Hypothetical block No 3911’.

KOUTSOGIANNIS APARTMENT HOUSE
* Deligorgi and Agisilaou Str.
* Panagiotis Kalkos
* end of 1860's

A three storey corner building that houses two apartments with separate entrances on the two different streets. All main uses on both floors/apartments are situated toward the Didotou street façade and access is through the main corridor that acts as entrance hallway. One of the first recorded instances where utilities are moved from the courtyard to be included in the floor plan.
4.3 Apartments Buildings from 1824-1914

TWO-STOREY RESIDENCE
- Ippokratous and Didotou Str.
- Not found
- Beginning of 1870

A three-storey corner building that houses two apartments with separate entrances on the two different streets. All main uses on both floors/apartments are situated toward the Didotou street facade and access is through the main corridor that acts as entrance hallway. One of the first recorded instances where utilities are moved from the courtyard to be included in the floor plan.

SKOUZE APARTMENT HOUSE
(THE «FIRST» APARTMENT HOUSE)
- 18, Nikodimou Str.
- Stamatis Kleanthis
- 19th century

A three-storey building built with a strictly axial layout. It houses two mirrored three-storey apartments divided symmetrically along the centre of the front facade. It is one of the first recorded instances where the design is centred on the use of a single common entrance, and is therefore considered an example of the early apartment house.
APARTMENT HOUSE

A three storey building (with a basement), that houses one large apartment on each floor. The building uses one common entrance and starts to investigate the flat apartment as a typology. It introduces the use of an individual entrance hallway to each apartment - an element that became central to subsequent layouts.

APARTMENT HOUSE AT ASKLIPIOU STREET

A three storey building that houses one large apartment on each floor. Three separate entrances are used onto the same street - the single common entrance has not yet become common practice. Despite the separate entrances, the use of an individual entrance hall in the centre of each apartment as a room replacing the main corridor, is solidified as a prototype.
4.3 Apartments Buildings from 1914-1940

BAKOPOULOS APARTMENT**
- 56, Patriarhou Ioaikim Str.
- Kalligari Office
- 1929

A three storey building that houses one large apartment per floor, with a common entrance onto the street. The use of the individual entrance hallway that gives access to most of the main rooms has minimised the need for corridors. The building makes use of large light shafts to light the bedrooms that face into the interior of the block.

IERA MONI PETRAKI BUILDING**
- 46, Alopekis Str.
- Konstantinidis and Posis
- 1929

A four storey building that uses a typical floor plan on the three upper floors. The building has a single common entrance on the ground floor. Each typical floor houses one apartment with an intricate system of light shafts on all three sides of the building - on the party walls and back facade into the interior of the block.
SMALL APARTMENT BUILDING
• 17, Dionisiou Aeropagitou Str.
• Vassilios Kouremenos
• ca 1930

A four storey building that uses a typical floor plan on the three upper floors. The main entrance is axially placed at the centre of a very symmetrically facade, while the layout is dealt with in an entirely different way. The shaft-lit staircase is situated in the depth of the plan and the entrance hallway gives access to different clusters of uses, each with their own corridor and light shaft.

LOGOTHETOPoulos APARTMENT BUILDING
• 2-6, Kountouriotou Str., Zaimi and Boumboulinas • Kiprianos Mpiris
• 1930

A four storey building, that acts as a block itself. It has three street facades. Two main entrances lead to two pairs of staircases, each leading to two apartments per typical floor. The architect argues this is the first systematic approach toward an apartment building typology locally. The use of three large interior light shafts imitates the use of the block’s interior for lighting.
4.3 Apartments Buildings from 1914-1940

TETENE PALACE*
- 25, Alopekis Str.
- Kostas Kitsikis
- 1930-1933

A five storey building that retains the vernacular of the townhouse. It houses one apartment per floor using a single common entrance. Slight variations in the interior layout are made to accommodate the tripartite facade organization according to the classic standards of base, body and projection. The ceremonious entrance is the only departure from symmetry.

KON. P. KOUROPOULOS**
APARTMENT BUILDING
- 45, Patriarhou. Ioakim Str.
- K. Kouroupolos
- 1932-1933

The building consists of ground floor, five typical storeys, recessed floor. The systematic approach toward the typology is evident as is the use of the interior of the block for lighting. Two mirrored apartments per typical floor are drastically differentiated by facade conditions/location: street corner vs narrow street facade.
THE «BLUE» APARTMENT BUILDING**
- 61, Arachovis and Themistokleous Str.
- K. Panagiotakos, S. Papaloukas
- 1932-1933

A landmark for the interwar period, it's a six-storey apartment building with 38 apartments (16 types) and shops on the ground floor. The building includes communal spaces for the residents on the rooftop. It has two main entrances on different streets. The contrasting colour scheme for the facades gives the building its name.

KONTOLEON__ANTONOPOULOU APARTMENT BUILDING
- 86, Vasilisis Sofias Avenue
- Georgios Kontoleon
- 1932-1934

A five story building, on a long narrow site, that works with typical floors of one apartment each. It was an innovative approach for its time, taking the challenge to place the main entrance, linear staircase and elevator on the narrow facade of the building. A long corridor serves a spine that divides utilities - toward the interior of the block - and main uses toward the long facade.
4.3 Apartments Buildings from 1914-1940

**GEORGIADIES BUILDING**
- 26, Loukianou Str.
- Renos Koutsouris
- 1933

It consists of ground floor, three floors and penthouse. The typical floors consist of one apartment. The light shafts are positioned opposite each other on the party walls dividing the building into the sleeping sector toward the interior of the block, the «living» sector toward the facade and the «supporting» spaces in the «neck» formed by the separation. The building also includes a restaurant.

**APARTMENT BUILDING**
- Athens
- Aggelos Siagas
- 1933?

The building occupies half a block with facades on three streets. It is organised around a central yard with two main and two service staircases positioned opposite each other in pairs. The courtyard is covered at ground level uniting the two entrances in one lit space. It is used as the main interior light source leaving only a long narrow light shaft toward the interior of the block.
A five-storey corner apartment house developed according to the tripartite principle of base, body and projection. It is interesting how the architect chose to carve into corner of the facades, in the main body of the building and cantilevering out into it in the projection. The typical floor consists of three apartments of almost equal accommodation.

A corner building that consists of ground floor, four typical storeys, and a recessed floor. This has become a most an established building type in postwar Athens. The typical floor has two apartments. The rationalization of the floor plan and its repetition to create the typical plan are emphasized in the horizontal zoning of the facades.
APARTMENT BUILDING*
• 28, Loukianou and Patriarchou Ioakim Str.
• Th. Kokkisidis
• 1934

A six storey building with one apartment per floor, three floors are typical while two floors are slightly varied to support the treatment of the facades. The ground floor houses a commercial store. The corner of the building is designed to look recessed by being framed between two protrusions. The street facades the main sources for natural lighting, and all main uses are placed along them.

APARTMENT BUILDING*
• 21, Ploutarchou and Patriarchou Ioakim Str.
• Em. Lazaridis
• 1934

A five story building that consists of one apartment per typical floor. The square plan allows for the minimisation of corridors, all rooms/room-clusters have access through the main hallway. The main staircase is positioned in the centre left side of the building, while the service staircase works as a light shaft from the interior of the block.
APPENDIX 4.3

MARGARITI BUILDING**
* 20, Patriarhou Ioakim Str.
* Panagiotis Manouilidis
* 1935

A five storey building consisting of four typical floors, with one apartment per floor. The light shafts are positioned opposite each other on the party walls dividing the building into the sleeping sector toward the interior of the block, the «living» sector toward the facade and the «supporting» spaces in the «neck» formed by the separation.

MATSAS BUILDING**
* 16, Kanari Str.
* Spiros Bonanos
* 1935

A six storey building that consists of four typical floors, with one apartment per floor a recessed floor and the ground floor. The light shafts are positioned opposite each other dividing the building into two parts: the sleeping part and the living part. The entrance stairway -and individual entrances- are positioned on the division zone minimising the corridor space needed.
4.3 Apartments Buildings from 1914-1940

**LORETZATOS BUILDING**
- 36, Patriarhou Ioakim Str.
- Emm. Lazaridis
- 1935-1936

A five story building that consists of four typical floors, a recessed top floor and the ground floor. Each typical floor consists of two apartments. The facade is divided in three parts, two of which belong to the one apartment and tone to the other thus creating two differing types/sizes of apartments. The ground floor houses a commercial store and the entrance to the apartments.

APARTMENT BUILDING
- 42, Patriarhou Ioakim Str.
- Ioannis Antoniadis
- 1936

A six storey building that consists of four typical floors, with one apartment per floor a recessed top floor and the ground floor. The light shafts are positioned opposite each other on the party walls dividing the building into 2 parts: the sleeping and the living part. The entrance stairway are positioned on the division zone minimising the corridor space needed.
APARTMENT BUILDING AT HEYDEN STR**

• 27, Heyden Str.
• N. Mitsakis and D. Pikionis
• 1936

It is a four-storey building with basement, and has been characterised as a piece of architectural «folclore». Two different architects worked separately on the plans and facades. There is an open shaft-like space in the interior corner of the plot and a large light shaft adjacent to the staircase. In the facade treatment an effort was made to use traditional wood architecture vernacular.

TSIMPOUKIS APARTMENT BUILDING

• Mavromihali and Navarinou Str.
• Vasilios Douras
• 1936

A six storey corner building that consists of five typical floors with one apartment per floor. A large rectangular light shaft on the interior of the building block is used to naturally light the main staircase, the bathrooms and smaller bedrooms. The deep balconies both penetrate into the building and protrude to shade the ones underneath.
4.3 Apartments Buildings from 1914-1940

MULTISTOREY PARKING LOT**
- 3, Kanari Str.
- Rennos Koutsouris
- 1936-1938

The building was designed on a deep and narrow plot. It consists of the ground floor and seven storeys with a parking capacity of 100 cars. The movement of the cars is aided by a double elevator. The round and horizontal fenestration gives the facades their character and departs from the residential building prototype.

GEORGANTAS BUILDING**
- 4, Ploutarhou Str.
- A. Dragoumis
- 1937

A five storey building that consists of four typical floors and the ground floor. The main rooms are divided between the street facade for living areas and the interior facade for the bedrooms. The main stairway and the service stairway are positioned in the center of the floor plan and the second is combined with a light shaft that provides natural light to the utilities.
A seven story building that consists of five typical floors. The main stairway and entrances are positioned in the center of the floor plan minimizing the need for corridor spaces, and accessing all main rooms through the entrance hall. The service stairway is positioned in the corner of the building providing natural light for the main stairway and a bathroom.

A six storey building consisting of four typical floors, with one apartment per floor, two recessed floors. The light shafts and stairways are positioned opposite each other on the party walls dividing the building into the sleeping sector toward the interior of the block, the «living» sector toward the facade and the «supporting» spaces in the «neck» formed by the separation.
APARTMENT BUILDING OF LOUROS**
- 5, Semitelou Str.
- N. Valsamakis, P. Stamatiades
- 1951-1953

The building consists of the ground floor, four floors and a recessed floor. On the ground floor the bearing system of the building has circular columns, distanced from the retreating stonewall behind them. The typical floor consists of two apartments, symmetrically arranged on either side of the staircase. The building works on the principle of a double skin, where the exterior layer is left unclad.

APARTMENT BUILDING
- 31, Alopekis Str.
- Ch. Kouroupolos
- 1955

A six storey building consisting of four typical floors, with one apartment per floor, 2 recessed floors and the ground floor. The light shafts and stairways are positioned opposite each other dividing the building into the sleeping sector toward the interior of the block, the «living» sector toward the facade and the «supporting» spaces in the «neck» formed by the separation.
THE «GREEN» APARTMENT HOUSE**
- 129, Vasilissis Sofias
- Nikos Valsamakis
- 1955-1957

It is a six storey building organised with typical floor plans where each consists of three apartments. The two end apartments have street facades and back facades onto the interior of the block, while the third apartment faces the street. Stairway and elevator shafts are positioned in the centre. The building adopts the principle of a double skin, where the exterior layer is left unclad.

APARTMENT BUILDING*
- 33, Alopekis Str.
- An. Politakis, Ch. Anastasopoulos
- 1956

A six storey building consisting of four typical floors, with one apartment per floor, two recessed floors and the ground floor which houses a commercial store. The light shafts and stairways are positioned opposite each other on the party walls dividing the building into the sleeping sector toward the interior of the block.
4.3 Apartments Buildings from 1940-1972

APARTMENT BUILDING

- 24, Loukianou Str.
- Stavros I. Vasilou
- 1956 (1990)

A seven storey building that consists of five typical floors, a recessed top floor and the ground floor which houses a commercial store. The apartments on each typical floor are two types: the bigger one which occupies two thirds of the street facade length, and the smaller one which occupies one third. Entrance and stairways are positioned centrally on the floor plan and lit via light shaft.

APARTMENT BUILDING

- 22, Loukianou and Alopekis Str.
- Stavros I. Vasilou
- 1959

A six storey building that consists of five typical floors with two apartments each, and the ground floor. Two apartments on each typical floor. The difference in the types is recorded on the street facade where the size of the balconies in proportion to the size of the apartment.
APARTMENT BUILDING
• 334, Amalias avenue and Daidalou Str.
• Takis Ch. Zenetos, M. Apostolidis
• 1959-1960

A six storey building organised around a three dimensional grid that allows for flexibility in plan layout and elevation. It is arranged with single apartment typical floors. A curtain wall system was used - for the first time locally- in front of the balconies for shading.

HARA APARTMENT COMPLEX
• 337, Patission, Skra, Anninou,
Ziller Streets
• Papailiopoulos, A. Spanos
• 1959-1961

It is a complex that consists of four independent buildings, unified under the morphology the building block. The entire complex consists of 116 typical units of 1-6 rooms and 9 commercial stores. Each apartment is lit and ventilated bilaterally. The apartments of the ground floor have courtyards and separate entrances. The garden at the centre has a swimming pool and a playground.
4.3 Apartments Buildings from 1940-1972

APARTMENT BUILDING ON DINOKRATOU
• Loukianou and Kleomenous Str.
• Konstantinos Dekavallas and Thales Argyropoulos • 1960-1962
Due to the morphology of the site the building is eight storeys high on Dinocratous str and four on Kleomenous. Utility spaces are arranged around the main circulation axis and living quarters are placed toward the facades. The variety of apartment types is expressed on the facade through the treatment of the double skin.

APARTMENT BUILDING
• 10 Neophitou Str.
• Alexandros Kalligas
• 1960-1962
The building consists of a (recessed) ground floor, 4 typical floors and one recessed top floor. The typical floor consists of two apartments types (2-bedroom, 3-bedroom). Half of the balconies are recessed, while the other half are cantilevered out. The staircase and elevators are positioned in the centre of the floor plan demarcating a service zone where all of the utilities are positioned.
APARTMENT BUILDING
• 17-19, Ploutarhou Str.
• Anastasiadis
• 1961

A seven storey building that consists of five typical floors, a recessed top floor and the ground floor which houses a commercial store. The apartments on each typical floor are fairly equal in size and layout, and as we come closer to the street facade the layouts are almost mirrored.

APARTMENT BUILDING
• 23, Alopekis Str.
• Not found
• 1964

A four storey building that consists of three typical floors and the ground floor which houses a commercial store. The apartments on each typical floor are exactly mirrored with one of the apartments gaining extra facade length in each floor. A long light shaft slices the narrow building in two lengthwise.
APARTMENT BUILDING*
• 35, Alopekis and Ploutarchou Str.
• Ap. Molindris
• 1967

A seven storey building that consists of six typical floors with one apartment per floor and the ground floor which is designed to be used as a restaurant. The top left corner of a square plot bordering the interior of the block is used as the main light shaft. The plan is arranged so as to entirely avoid the creation of corridors.

APARTMENT BUILDING*
• 27–29, Alopekis Str.
• Venieris, Tsvirenis
• 1970

A six storey building that consists of six typical floors with one recessed floor and the ground floor. Each typical floor houses 2 apartments that are mirrored with very slight variations to accommodate the morphology of the plot. The balcony on the street facade is continuous and doesn’t differentiate the apartments, whereas the facade onto the interior of the block is broken in two by the light shaft.
A six storey building that consists of five typical floors and the ground floor. Due to its location, it had to meet certain aesthetic requirements for simplicity and austerity. This was achieved by putting the emphasis on continuous projected horizontal zones of the balconies. The irregular shape of the plot is counterbalanced by the simplicity of the façade.

A seven storey building consisting of five typical floors, one recessed floor, and the ground floor which houses a commercial store. Three of the apartments on the typical floor share the street façade, and the other faces the interior of the block. Most of the apartments on the lower floors have been converted to offices.
Apartments Buildings from 1973-1984

**PANAYOTIS RODIS BUILDING**
- 19, Alopekis Str.
- Panayotis Rodis
- 1972

A seven storey building that consists of six typical floors, and the ground floor. The main staircase and light shaft are positioned deep into the floor plan in the corner of the building where it reaches the interior of the block, and yet still centrally within the individual floor plans so as to avoid corridor spaces.

**SIGALAS BUILDING**
- 40, Patriarchou Ioakim Str.
- I. Dandelis
- 1973

A seven storey building that consists of six typical floors, and the ground floor which houses a commercial store. There is one apartment on each typical floor. The living areas in each typical apartment are concentrates towards the street façade, while the bedrooms on the quieter interior of the block. Light shafts, elevators, stairways and service-utility areas are concentrated in the middle zone.
APARTMENT BUILDING
• 21, Alopekis Str.
• Ioannis Maliaris
• 1973

It is a five storey building with typical floors that house one apartment each and the ground floor which houses a restaurant.

APARTMENT BUILDING
• 118, Emm. Benaki Str.
• D. Antonakakis, S. Antonakaki
• 1973-1975

A six storey building that houses one apartment on each floor. Each apartment is adapted to specific requirements. All apartments have both north and south exposure and interaction between the interior and exterior. Bedrooms and work rooms are grouped around an open living area. The main stairway is open and the entrance is designed as an extension of the sidewalk.
4.3 Apartments Buildings from 1985-2008

APARTMENT BUILDING
• 63, Archimidous and Domboli Str., Mets
• George Theodosopoulos
• 1981-1983

This is a multi-level building that adopts a sculptural attitude toward the positioning of its volumes, so as to blend with the different height of buildings that surround it. The architect makes a point in connecting the building's yard with the street, and creating separate entrances for most of the apartments, in order to establish the feeling of a village.

APARTMENT BUILDING
• Didotou Str.
• Alexandros Patsouris
• 1987-1991

The main concept behind this building is to take seven dwellings and weave their uses in space to defy the modernist notion of organizing each dwelling in a typical way, and very often on the same floor. All the potential interesting views and conditions of the location are exploited to the fullest in an effort to translate the site specific into a smaller scale.
APARTMENT BUILDING

- 38, Patriarhou Ioakim Str.
- Liaskos
- 1989

A seven storey building consisting of six typical floors that house one apartment each, and the ground floor which houses a commercial store. As the city becomes more urbanised the apartments start to lose their connection to the exterior and balconies start to give their place to floor to ceiling glazing. Many of the spaces are used as offices.

FASSIANOS MUSEUM AND APARTMENT BUILDING

- N. Metaxa and Chios Str.
- Kiriakos Krokos
- 1990-1995

This is a refurbishment of an existing 70's apartment building. The double-height ground floor was converted into a museum and the typical floors into apartments. The most noteworthy of the interventions was the creation of a full height light shaft that lights all the apartments and allows for the ground floor gallery to be indirectly lit.
4.3 Apartments Buildings from 1985-2008

APARTMENT BUILDING

- Pagrati
- Panos Dragonas
- 2002

A nine storey building on a corner plot. It houses commercial and residential spaces. 3 dimension treatment of balconies makes this apartment building unique.
Longitudinal and transversal section of Hypothetical City Block No. 3911'}
6.1 Longitudinal and transversal section of Hypothetical City Block No. 3911'
SAMENVATTING

'Getting the Creative Block'. De ontwikkeling van een ontwerpfase voor een stedelijke regeneratie; de creatie van creatieve blokken in de stad.

De ontwikkeling van het idee van creatieve blokken (aanzienlijke bouwvolume, gevestigd in een zogenaamde "staples") biedt een oplossing voor het probleem van verbreding in de stad. De creatie van verouderde stadsweerstand en de mogelijke benutting van elkaars aanwezigheid en elkaar. Dit blokkagesysteem kan een initiële stappen zijn, op dat dit onderzoek de invloed op de stadswijk neemt.
'Creating the Creative Block'. De ontwikkeling van een ontwerphulpmiddel voor stedelijke regeneratie: de creatie van creatieve blokken

De aftakeling en wedergeboorte van stadscenra is in de geschiedenis een steeds terugkerend fenomeen. Wat de situatie van vandaag uniek maakt is de omvang, snelheid en kosten van de aftakeling waarmee de meeste 'stadsharten', zowel in ontwikkelde landen als in ontwikkelingslanden, te kampen krijgen. In dit onderzoek wordt gepoogd een oplossing voor dit probleem aan te dragen in de vorm van een ontwerphulpmiddel op kennisbasis voor de regeneratie van verouderd stadsweefsel. Hoewel infrastructuur en gebouwen afhankelijk van elkaar zijn en ook blokken onderlinge relaties met elkaar hebben, ligt bij dit onderzoek de nadruk op de aftakeling van individuele blokken en de ontwikkeling van een nieuw ontwerphulpmiddel voor het creëren van creatieve blokken (CCB), zonder oog voor transportaspecten en onderlinge relaties tussen blokken.

Het onderzoek ging uit van twee aannames:

1. De aftakeling van stadscentra is het gevolg van het onvermogen om nieuw gebruik te accommoderen dan wel vormen van gebruik die weliswaar op korte termijn aantrekkelijk zijn, maar ook snel weer verouderen. Daarom moet er een ontwerphulpmiddel worden ontwikkeld waarmee stadscentra kunnen worden getransformeerd in duurzame omgevingen waarin innovatie en creativiteit mogelijk zijn en ruimte wordt geboden aan de levenswijze van een nieuwe stadsbevolking, de 'symbolische arbeiders' of 'creatieve klasse'.

2. Het ontwerphulpmiddel moet een transformatie mogelijk maken die is gericht op een zo groot mogelijke positieve vernieuwing door middel van een zo klein mogelijke fysieke, sociale en culturele ingreep in het bestaande stadsweefsel, waarbij wordt afgezien van de twee meest extreme opties - totale sloop en volledig behoud.

Wat methodologie betreft: gezien de complexiteit van het systeem is voor het onderzoek gebruik gemaakt van een empirische benadering op basis van casestudy's tijdens de oriënterende eerste fase van de ontwikkeling van het ontwerphulpmiddel. Als casus werd een typisch blok met appartementen - een zogenaamde 'polykatoikia' - in het stadscentrum van Athene uitgekozen. De ruimtelijke indeling van het blok en de activiteiten die erin plaatsvonden zijn gedocumenteerd en geanalyseerd, evenals de mogelijkheid of onmogelijkheid van 'creativiteit' - 'werk' dat leidt tot innovatie.

Daarna werden de ruimtelijke kenmerken van het blok in het kader van een experiment gewijzigd, om de gevolgen hiervan te demonstreren voor de mogelijkheden en onmogelijkheden op het gebied van 'creativiteit'.

Tijdens de volgende fase van het onderzoek zijn de met betrekking tot deze casus verworven inzichten gegeneraliseerd tot een model. De constructie van dit model verlief als volgt:
1. het MOP-kader (MOP = morfologie, operationele kenmerken, prestaties) is toegepast om de stedelijke situatie weer te geven op drie onafhankelijke niveaus:
   i. Morfologie: de ruimtelijke indeling van het stadsweefsel
   ii. Operationele kenmerken: het patroon van activiteiten, gebruik en processen die zich erin afspelen
   iii. Prestaties: de positieve of negatieve opbrengst van het stadsweefsel, zoals beperkt door de morfologie en de operationele kenmerken

De tijdens de analyse verworven diepere inzichten in veroudering, vernieuwing en heruitvinding leidden tot een model dat inzichtelijk maakt hoe de morfologie van gebouwen de operationele kenmerken hiervan beperkt, wat op zijn beurt een beperking van de prestaties oplevert. De prestatiecriteria waarnaar is gekeken zijn: (1) diversiteit van de interactie binnen het blok, (2) privacy, (3) veiligheid, (4) interactiviteit en (5) milieukwaliteit.

Het model is getest tijdens een tweede casus: een ideaal blok, willekeurig samengesteld uit typisch Atheense appartementen. Dit ontwerp is vervolgens aangepast om de topologie, doordringbaarheid en omvang van het blok te transformeren.

Het ontwerphulpmiddel op kennisbasis dat het hierboven beschreven model heeft opgeleverd bestaat uit ontwerprichtlijnen die kunnen worden geïmplementeerd conform de specifieke omstandigheden van elk specifiek ontwerpprobleem.

Sleutelwoorden:
Appartementencomplex
Appartementtype
Appartement
Creativiteit
Stadsblok
Stedelijke aftakeling
Stedelijke regeneratie
Stadsweefsel