ASSESSMENT OF FACTORY CAMPUS DEVELOPMENT IN TURKEY THROUGH AN URBAN DESIGN PERSPECTIVE: THE CASE OF İSKENDERUN IRON AND STEEL FACTORY CAMPUS

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ABSTRACT

ASSESSMENT OF FACTORY CAMPUS DEVELOPMENT IN TURKEY THROUGH AN URBAN DESIGN PERSPECTIVE: THE CASE OF İSKENDERUN IRON AND STEEL FACTORY CAMPUS

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Thesis aims to elaborate the urbanism ideology developed in the early republican period of Turkey and its reflection on the development of factory campuses. In Turkey after the Ottoman Empire, new state with its own ideology has impact on shaping urban space, politics of urban forms development, urban morphology and urban metamorphosis. This thesis examines various factory campuses designed and built after the establishment of the Turkish Republic, and focuses on a later campus development; namely İskenderun Iron and Steel Factory Campus. The study notes the dissolution of factory-housing togetherness, and points to the design values in the case study presented.

Keywords: urban design, industrialization, industrial urban space, typology of industrial space, Factory campus, factory and housing togetherness, İskenderun Iron and Steel Factory Campus

ÖZ

KENTSEL TASARIM PERSPEKTİFİ İLE TÜRKİYE'DEKİ FABRİKA YERLEŞKELERİNİN DEĞERLENDİRİLMESİ: İSKENDERUN DEMİR VE ÇELİK FABRİKA YERLEŞKESİ ÖRNEĞİ

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Bu tez, Türkiye'nin erken cumhuriyet döneminde oluşturulan kentleşme ideolojisini ve onun fabrika yerleşkelerinin geliştirilmesine olan etkisini incelemeyi amaçlamaktadır. Osmanlı İmparatorluğu'nun ardından Türkiye'de yeni kurulmuş olan devlet ve onun ideolojisinin kent mekânını şekillendirme, kentsel biçimler geliştirme, kent morfolojisi ve kentsel başkalaşım üzerinde etkisi olmuştur. Bu tez, Türkiye Cumhuriyeti'nin kuruluşunun ardından tasarlanmış ve inşa edilmiş çeşitli fabrika yerleşkelerini incelemekte; özel olarak İskenderun Demir ve Çelik Fabrika Yerleşkesi'ne odaklanmaktadır. Bu çalışma fabrika-konut birlikteliğinin çözünmesine işaret etmekte ve sunulan örnek alandaki tasarım değerlerine dikkat çekmektedir.

Anahtar kelimeler: kentsel tasarım, sanayileşme, sanayinin kentsel mekânı, sanayi mekânının tipolojisi, fabrika yerleşkesi, fabrika - konut birlikteliği, İskenderun Demir Çelik Fabrika yerleşkesi

To my dear mother

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INTRODUCTION

The industrial revolution can be defined as a rooted diversity of different fields through the development of technology, industrial production and transportation. It is also characterized as a drastic change-inducer. Commonly the transformations have been arisen in various formations tending most likely to be in urban space.

The planning historian Margaret Crawford (1995) calls the industrialization as "total organization of production", since with industrialization the relationship among land, labor and capital has changed. New forms of technology, production, and social organization brought its new order in terms of urban functions. Urban spatial organization has correspondingly adapted to this transformation. Before industrialization, cities were compactly enclosed within walls; greater size was not regarded as a virtue. Industrialization, however, led to certain urban problems, among which insufficient housing and worsening living and health conditions come forefront.

The dynamics of urbanism since the 1800s -namely the Industrial Revolution- have twin factors, acting upon each other in a phenomenal growth. While the emerging industrialization was providing ever more jobs and attracting more people to cities, the increasing population in turn, stimulated more industrialization. The dichotomy of this situation was experienced for the first time and it was disturbing the existing patterns. Urban–rural conflict, housing need, site for industrial production, architecture interchange through new technology, worsening health problems constrained the spatial organization, and forced it to be transformed and renewed.

To overcome the problems mentioned above, some utopias, approaches, models and indicatives were developed as possible solutions for the industrial spatial setting. The main consideration in city planning was no longer limited to the use and arrangements of space, but expanded to include employment, living conditions and public amenities.

Planning approaches have been varied through sustaining the capitalism's welfare and industrial communities' requirements on space. Urban forms have been impacted by the demands of the industrial society. For industrial settlements, geographical location is a very critical issue, which means being close to the existing settlements, transportation network and raw materials. Also, for some, the generated cost of reproducing cities brought up a tendency of suburban development, which is a significant industrial work. Basically, two types of urban reconfiguration / reproduction took place. Providing the requirements of the urbanized–industrial community actually meant providing new forms of housing and other social amenities.

Ideologically, establishment of industrial settlements, namely factory campuses, indicates the maintenance of the welfare of capitalism. It was either the capitalist or the state that provided good living conditions to labor and their families, aiming at reproducing the labor force. From the capitalist point of view, despite its high cost, they controlled their workers in any time, insure the continuity of production and prevented any possible economic crisis, anxiety and struggle among labors. This was an informal contract between employee and employer. On the other hand, from the statist point of view, provision of housing had ideological affairs. State was providing housing; through it, it was enabled to control the economy, which means to construction sector. In the same breath, state gains political power through providing cheap and good qualified housing/sheltering. Although it is the duty of state to secure housing as a human right, it creates a "powerful state" vision in the mind of the society. Hereby, the symbolic image of the state on space is ensured and strengthened by means of the built environment shaped by the state ideology. Spatial aspect of state hegemony is realized by this way.

Furthermore, the betterment of the workers' living conditions is defended by the socialists. In accordance with their ideology, by means of factory campuses built on the public property, good housing and public amenities should be planned and served by the industrialists. Especially, the housing problem, aroused due to industrialization, should be overcome, and hereby reproduction of labor force is realized there.

In this study, the "factory campus", an offspring of industrialization age, is examined regarding the changing design perspectives throughout history. After the theoretical framework of the study, the factory campuses established in Turkey as the purposefully planned and developed living spaces for industrial employment are examined. The analysis will especially focus on the campuses established within the early Republican period, where the entire country was undergone a modernization process. These campuses could be seen as major spatial elements that shaped the morphology of Turkish cities. They can be considered as political and ideological tools for the nation building through modernization movement. For the agricultural production based society, the industrialization as a new economic configuration is settled down with its architecture and symbolic image on urban space properly with the factory campus development. To understand the morphological basement of the factory campuses, five particular factory campus examples are evaluated. After that, a case study analysis is conducted to further elaborate the issue in a more detailed manner. İskenderun Iron and Steel Factory Campus is chosen as a latest example to be examined closely as a case study. The aim is to reveal the design features of this factory campus, and find out whether it has had positive impacts on urban morphology or not. Furthermore, the distinctive characteristics of the case (if there are any) are to be discussed.

Scope of Discussion

The industrial landscape represents the direct translation of the technical and social necessities of a particular method of industrial production into a settlement form. Thus, industrial landscape is produced on the space. It is enhanced with successful buildings and plans, so multiple versions of the same settlement or housing types are produced. Attempts to ease the effects of economic rationale by imposing social and physical planning, spaces are configured by the conceptual order and symbolic form over the demands of industry. In contrast, usually the conjecture of each industrial development and urban space brought its own patterns.

Determination of factory and housing relations in Turkey has typical properties. It is influenced much more from the theoretical studies and models. Thus, it has similar outcomes behold. In addition, it has developed its uniqueness due to the late industrialization, state-based industrial development, ongoing urbanism and impacts of politics, technological innovations, spatial fix, social requirements, local conditions to adopt the new kind of production, existing urban fabric, etc.

Although each space/factory campus has some peculiarities, dominant fact is that industry brings its typical patterns. It has its own style to produce urban space. Whatever the ideology - capitalist, socialist, statist etc. – is not decisive factor so much in design. The industry has settled down with respect to its rational circumstances to function/operate efficiently.

In this study, it first examines how the factory campus is developed and evolved in time. The reasons behind its installation on space whether it is a political necessity or economic necessity are clarified. Subsequently, the social and spatial outcomes are expressed. Afterwards, typology of urban industrial space and factory campus is surveyed to propound the morphological aspect. This forms the base to compare the factory campus instances and the case study. Particularly, in parallel to the conversion of Turkish urbanization and industrialization policies, how these spaces, mainly the housing and factory couple emerged and transformed is the basic problematic issue.

The aim is to reveal the distinctive characteristics of factory campuses, rather than their conceptualization known as the togetherness of factory and housing area. Similarities and differences of these campuses, the Turkish way of designing the factory campuses, the design typologies and campuses' effects on urban planning practices and urban morphology constitute the mainstream of the study.

In this context, I would like to question and assess the changing perspectives in designing factory campuses, formerly established as a factory and housing integration.

CHAPTER 2

URBAN SPACES OF INDUSTRIALIZATION

The Industrial Revolution is defined as radical changes in many areas through technology, the development of industrial production and transportation facilities. Industrial revolution, in many aspects (technology, production, culture, economy, social structure, art and architecture) has led to significant changes and emergence of new approaches.

The configuration of industrial production has direct effects on urban space. As a form of production, the industrial production initially takes place in the existing cities, which attracts population towards cities. According to Benevolo (1967, 2) the most significant of the economic changes concern the organization of labour and methods of production. This is a critical shift that it has further repercussions on organization of urban space, hastening the development and concentration of the new economic system. Thus, the changing pattern of urban space is prompted by initial organizational changes and condensed by technical innovations of industrialization. It also devastates the previous balance between town and country, causing a great tension. The problematic outcome of this development becomes the subject of the urban studies. In this part the place of the industrial production, namely *the factory* and its relationship with the *environs/city* and especially with *housing* are to be discussed to understand the base map of the industrial urban space.

2.1. Factory

Factory, the material manifestation of industrialization, has brought a new order to space. Factory is not just a building which operates on its own. It has various components to work on. Cengizkan (2009, 255) clarifies that factory can be assumed as the public space of societal transformation ranging from class division arisen from the industry to working place relations regarding the modernity. Factory is the space of societal configuration and reforms. Modern factory is the place where the terms of industrialization, new technologies, labour, class divisions, alienation, work and workplace are flourished and new societal relations are determined. Moreover, according to Gallion (1986, 64), the factory resembles a magnet, drawing about it an ever-increasing belt of workers' dwellings, schools and shops. Therefore, while evaluating factory buildings, not only modern architectural standards and forms, but also the entire living environment, societal and cultural transformations should be taken care of.

2.2. The Relationship of Factory and City

In order to understand better what the industrialization brought on urban space, the pre-industrial situation is clarified by Sutcliffe. He stated that *" in the pre-industrial town, the wealth generating institutions namely trade and administration were very prominent, while manufacturing was considerably less. They were all concentrated in the centre, in association with the homes of the population. The poor tended to live on the outskirts. This generated a little peripheral expansion."* (1981, 2)

Throughout the industrialization, this structure was transformed by stimulating manufacturing facilities located in the central areas of towns. Benevolo (1967, 31) asserted that the industrial town was something new and this was a unique phenomenon that shook contemporary habits and concepts. Industry, as a triggering mass production in the production system, has brought its

functional order on space. Actually, the prior physical thing is the factory building. Apart from factory, the spatial configuration of the city has changed widely. Modern city features has occurred and developed at this time completing the industrial spatial organization.

Sutcliffe (1981, 3) described urban conditions such that the numerous rough and poor workers were living in the city center, because they had to be close to the factory. Conversely, the rich and the middle classes moved to the outskirts of the town reasoning the smoke, noise and unhealthy urban

In time, changes in the organization of production, improvements in urban transport and the generation of a suburban environment offered some advantages to live in the countryside. This led an increasing proportion of the urban population to participate in this outward movement. The town's area exploded since high income groups moved onto cheap land and took pleasure in maximizing the areas which their households enjoyed for their personal use. Meanwhile, the competition between productive functions for central land generated a segregation of uses in the inner districts. This was accompanied, in residential areas, by the segregation of socio-economic groups which resulted from their differing economic capacities to compete for desirable land. Thus under the effects of industrialization, the town came to express in spatial form the major components of its economic and social structures, a process which encouraged, and was encouraged by, a much more efficient land market than had existed in the pre-industrial period.

In industrialized world, the transportation network was knotting in the factories. The industrial system was dependent upon the movement of raw materials to the factory and finished products to consumers. Gallion (1986, 67) indicated that *"the steam locomotive extended its rails from the raw products to the factory, and to the cities of consumers all over the land."* It is concrete that every amenity of urban life was sacrificed to the requirements of industrial production. The factory with its limbs of trains and shipping was the heart and nerve center of the city. Railroads and ships joined at the factories, and the waterfronts especially became the industrial core of the city.

The development of industries and their concentration in large factories drew many families from the rural districts to the industrial districts. Dwellings were built near the factories due to easy access to the work. Benevolo pointed out the close connection between the towns and the industry.

> *"Residential quarters naturally tended to be built near the place of work, so that houses and factories were often in close contact, intermingled at random and mutually inconvenient. Factory smoke permeated the houses and factory waste polluted the water, while industrial movement was generally hopelessly impeded by private traffic. This chaos was constantly aggravated by the dynamic nature of factories involved: factories were transformed and expanded, houses were demolished and rebuilt, and the outskirts of the cities crept further into the countryside without ever finding a definite balance"* (1967, 23)

As mentioned above the changing pattern of the housing district both in the core and the periphery of the city caused a problematic issue. This is a critical point, because housing has demands for every urban feature. This completely has rearranged the existing space.

Reproducing the urban space regarding the industrial outcomes and necessities was the major phenomenon in this period. First of all, with certain factors, a rational place for factory building was selected. Then, around the factory, the other urban features/uses were designed and organized to sustain the productivity of the industry. The industrial town was initiated in this way. Üstün (2010, 1250) stated that *"industrial facilities are not buildings containing only machines, but are the means of presentation and dissemination of a new life style and its culture to the society."* The industrial facilities can be considered as the space of the societal transformation from the class structure generated by the modern industry. In this context, the founders of industrial facilities provide the workers more efficient conditions. To accomplish this, housing as a crucial and determinant urban use shaping the industrial town comes to scene.

2.3. Relationship of Factory and Housing

Housing is one of the most important ingredients in an urban setting. It has interlinkages with other urban uses. Among them, its direct relation to the working place designates the dwelling's form. One of the most critical point of industrialization is its demand for the division of working and living spaces. Transition to a new kind of production, i.e. producing in factories rather than home, brought about this phenomenon. Duran (2009) considers this division as a necessary condition developed parallel to the urbanization. Nevertheless, there are also opposite standings of some utopians like Saint-Simon, Fourier and Owen, whose approaches aim at reintegrating the living and working spaces. In modern architectural discourse, production and housing relationship takes place through the utopist aspects, because of its contribution in the reproduction process. Moreover, as Markus (1993) explains, most often the working and living spaces are hardly divided.

In an attempt to the smooth transition for this kind of division, close-range spatial configuration between working and living space is preferred in planning factory towns. This introduces the term "Housing in the Factory". Heidegger positioned the term of the *housing in the factory* on the relationship between the concepts of construction; and sheltering, corporeity and consideration. (quoted in Cengizkan, 2009, 11)

It does not only refer to living close or at the same space where the working places are built, but also emphasizes the levels of inhabiting with living and sheltering.

Consequently, housing is the matter of the industrial urban development. It brings the concept of housing and factory duality. The concept is taken into consideration in terms of integration of working and living spaces, special housing typologies for industry workers, affordability of the housing, socio - spatial and political aspects of housing. Thus, the term "Factory Campus" emerges through the complementary relationship of factory and housing.

2.3.1. Housing Problem

Insufficiency of housing has emerged as a crucial problem of industrialization. This part of the study examines the grounded conditions leading to this problem, ways of dealing with it in the early periods of industrialization, different aspects of housing, its changing forms, relations to modernism and family structure, politics and socio-spatial properties.

Benevolo (1971) described the industrialization period such that there was an intense flow of population from rural to urban areas leading to the irregular and negative development in the unprepared cities. Besides negative view of the city, unhealthy housing of workers next to the factories was criticized.

Also Gallion (1986, 68) stated that "*floods of immigration from rural areas created a need for housing and invited the construction of cheaply built tenements".* In the shadow of the factory, the slums were created. Sutcliffe (1981, 15) indicated some initiatives in the early ages of industrialization held in Britain as a solution to the problem. In the older districts of Britain, many substantial houses of the pre-industrial era were divided into rooms and small apartments. The dwellings were reformed to shelter some of the industrial workers. It was not actually sufficient. The high number of workers living in shanties or slums proceeded more challenges. According to Sutcliffe (1981, 28), the housing question emerged as an important focus of urban concerns. He stated that *"Up to the 1880s it had been regarded largely as a matter of sanitation and public health. In 1890 the new spurt of urban population brought problems of supply, rents and quality of accommodation more strongly to the fore."* Housing was then regarded as more than just a physical matter. It was increasingly involved in the general debate on the social question. The social affair comprehended the considerations of family life, property ownership and community spirit.

"*The definition of the housing question tended to merge into a developing awareness of the total environment as an influence on people's attitudes and behavior as well as on their physical condition."* (Sutcliffe, 1981, 28)

Factory, rail and neglected cities became three key elements of the industrial city. Against the conditions of poor urban living and namely for the housing need, some work must have been performed in order to provide good housing for workers. Industrial facilities and housing have been conceived together since then.

It was possible in the medieval town for a family to own its house and keep the ownership in the family for two or more generations. In most cases then the house was also a work place, and the work of the family did not change or rarely changed from one generation to the next. However, for Anderson (1971, 78), under industrialization the work of a man may change once, twice or more in the course of his active life, and he may have to change his place of residence, later he is forced into a worse one. The married couple needs more room as the family grows and less space when the children depart. The home of the average modern family is one of the impermanent facts of life.

According to Anderson (1971, 82), it has become uneconomical for the average modern family to own its home, unless the home be in a remote suburb, part of the cost of which is continuous commuting to one's job. Owning a home in the city may be practical for those in the high income brackets. Even for them home ownership may become a burden. They find it easier to live in a rented house. In the modern community, building and owning residential buildings and managing residences owned by others has become both a profession and complex industry. The dwelling has become a consumer good, a commodity in a competitive market. Housing comes to be identified with socio-economic class levels.

Then the provision of housing by the industrialists has come along with a component of the industrial spatial organization in industrial towns. Housing and living conditions have been rehabilitated and good housing has become the most pragmatic element of these towns. In order to attract workers to such *"out of the way"* locations, industrial companies have had to offer high quality housing at low rent. Unstraightforwardly, the property relations have changed in the new form of the industry and housing relationships.

Cengizkan (2009, 16) asserts a differentiated dimension that housing for labor is like a contract between the employer and the employee. This is regarded as subjection between the employer and the employee.

Moreover, the physical aspect of the housing design has changed relatively. Industrial revolution gave rise to new building types on one hand, and production of a new kind of space on the other hand. It also led to the emergence of a new movement; namely Modernism. Functionality of the housing was emphasized. The functional spatial organization of factory building repeated itself in housing design. Besides, collective housing production emerged and diffused to overcome the housing need.

Le Corbusier, an important representative of modern architecture, describes residence of modern times as "Housing is a machine for living in" (1923). Furthermore, Gallion (1986, 79) assigned that "*the sad condition of housing developed with the factory system in the 19th century eventually forced the enactment of many laws to curb abuses. Regulations for light, air, and lot coverage, through lax in enforcement, were accepted for residential buildings."* Codes establishing standards of construction and mechanical and electrical installations were adopted to protect the public health and safety.

Cengizkan (2009,37) examines the ideological perspective of housing which constitutes the infrastructure of the worker's housing idea with two aspects: First one is preserving the future and performance of the worker by providing the worker's health and good living conditions accompanied. Services for the health, safety and convenience of the urban population advanced farther in a period of less than one hundred years than in all previous history. The second one is the produced housing typologies in relation to ideological issue of housing. They are place-dependent. The housing typologies are occurred depending on different life origins, class and layer expression status. Spatial segregation in housing has advanced this social conflict, then.

Also, in design, the family institution has been taken into account further. The changing structure of the family has caused it. The emphasis on family is pursued in design. The family and its dwelling were engulfed by the tidal wave of the industrial revolution. It emerged as the primary unit of design in city development. *"The houses families live in form the common denominator of the city; they are the fiber of the city."* says Gallion (1986, 97). The family mould has direct impacts on urban pattern actually. In the industrialized community, shrunken family unit provokes primarily the form of the housing and relatively the ownership pattern, as well.

Nonetheless, city planning was first an urge to improve the aesthetic pattern of the urban environment. Housing has inevitably become the principal instrument to attain the improvement of environment, which is the purpose of city planning. It brings into focus the social, economic and aesthetic aims and needs of the urban population. It consequently becomes a political responsibility.

Socio spatial aspect of the housing and factory couple is an indispensable matter to be investigated. Sense of belonging to space, appropriating the space, subjecting to a space, having symbolic image of the space are prominent of all. Cengizkan (2009, 267) describes them as determinants shaping the individual's own psychic and intellectual world, forming the expectations. It can be said that they are active in the daily basis experiences, constituting and reproducing the daily life and new life style. In workers' housing, when users define their position by selling their labor in working life, they feel themselves subject to this space after the working time. They appropriate this space. In factory campuses with the workers' housing, worker is subjected to a place. Their mobility is limited and decreased there. Besides, diversified power relations in space are monitored there, which is rooted through the factory's spatial arrangement in itself. It is circled towards its environment, then.

2.3.2. Factory Campus Concept

The concept of the "Factory Campus" refers to the housing and factory coupling. It is a kind of a new urban pattern flourished by the industrialization. Togetherness of them is envisioned. Factory and workers' housing constitute this urban fabric. The close relationship of these two is the major topic of the study. Justifications for the emergence of this form of urban space, its evaluation through an urban design perspective, how it has changed in time are basic questions.

Factory campus design is an urgent urban design practice. Below definitions of urban design put forward the main concerns of this field. For instance, Amos Rapoport, in dealing with man-environment relations, defines urban design as;

> *"… The organization of space, time, meaning and communication, one is then more concerned with the relationships among elements and the underlying rules than with the elements themselves. One can argue that physical components of all the cities are the same – houses, streets, gathering places, cult buildings, plants and so on. It is the nature of meaning and the underlying principles of their organization and relationships which differ as well as the associated behaviors and these needs to be analyzed so that generalization and comparisons may be made."* (1980,15)

The framework of Lynch and Rodwin (1958, 209) to theorize urban form is helpful to construct the basement of the analysis. Their examination is held in two parts: First one is regarding the relations of men and objects and has certain purposes to achieve these relations. Biological or technical goals have to do with direct functioning, such as the achievement of an environment which keeps alive and maintains life. Psychological or aesthetic goals have to do with interpersonal relations, such as the creation of an environment which is meaningful to the habitat. Second one is regarding the relations of men and men. Its goals have to do with interpersonal relations, namely sociological and psychological goals, such as constructing surroundings which maximize interpersonal communications. Its goals also have to do with group functioning, i.e. social goals such as survival and continuity of the group.

For Cuthbert (2006, 21) urban design is "*more integrated explanations of urban form",* and it can *"indeed be viewed as the social production of space in its material and symbolic dimensions"* and a

political economy of space. Meanwhile, Castells (1983, 303) defines urban design as *"the symbolic attempt to express an accepted urban meaning in certain urban forms."*

These definitions clarify the context of analyzing the urban spaces of factory campuses. Factory campuses are not merely physical entities. They are considered with the social, political and ideological affairs. The design of urban space and the publicity produced in bring forth the idea of community building - industrial community/ worker community-, the sense of belonging to space, the collective memory, appropriation of space and etc.

The peculiarities of industrial urban space developed in time are represented in the study of Cuthbert. He explores the properties of industrial forms and practices. While modernism and industrialism are qualified as complementary assets, both are investigated. The properties of industrialism and modernism are grouped in four topics, namely, qualities, properties, philosophical attributes, and spatial effects and implications.

Table 2.1 Properties of industrial and cultural forms and practices

	Industrialism	Modernism
Qualities	Regulation Rigidity Fusion Standardization Material base Hierarchies	Order Control Direction Need Product History Function
Properties	State power Class politics Mass production Strategic planning Development Nationalism Economies of scope Welfare Statism Specialisation Unionisation	Construction Society Community Monoculturism Class Culture Permanence Similarity
Philosophical Attributes	Scientific Rationality Keynesianism Taylorism Fordism	Structuralism Realism Romanticism Formalism Narrative Contiguity
Spatial Effects And Implications	Massification Concentration Centralisation Community Base Zonning Suburban Focus	Urban functions State symbols, Arch'styles' Pradigmatic Syntactic Design

(Source: Cuthbert, 2006; revised by author)

Actually, these qualifications of both are the determinants of the shaping the industrialized urban space. Evaluating the spatial characteristics of factory campuses, these constitute the most often used terminology.

Additionally, the economic base of building up the factory campuses can be clarified with regard to Bentley's study. Bentley investigates how built form is involved in the accumulation of capital at two

related levels: first as a commodity which is itself produced directly for profit, and second as a physical setting which affects the profitability of the production, distribution and exchange of other commodities of all sorts. The process of capital accumulation, however, must not be thought of as some abstract economic machine. It depends on human relationships, and is shot through with conflicts and contradictions which continually threaten both the future of the economic system as a whole, and within it the form-production process in particular (1999, 66). Although the built environment is created for a certain economic purpose and time, it does not stand and work in restricted area. Once it is produced, the enchaining outcomes reproduce themselves in variable forms.

With industrialization, the existing urban pattern was forced to change and adopt itself to the organization of the industrial production. Once it was settled, it reproduced space, and following the requirements and causes of industrial urban configuration shape space in different ways.

Restructuring took place in space as well as in time. Geographer David Harvey (2006) pointed out the importance of the term "spatial fix" for successful industrial restructuring. Changing location or reorganizing space created new spatial settings that renew possibilities for industrial growth and expansion. The specific characteristics and histories of these different settings made their own demands on industrial development. As it expanded into new regions, each industrial sector continually generated new settlement typologies. Their changing forms and locations reflected both the temporal instability and the "inconstant geography" of capitalism.

Gallion (1986, 63) described the early industrialized period with the advent of the machines driven by independent power. In 1776 Adam Smith set forth his theories of laissez-faire capitalism in his Wealth of Nations, and his influence has felt until today. The number of employees in proportion to owners increased rapidly, and trade unions of workers, in contrast to the medieval guilds of artisans and proprietors, were formed.

Alanen (2007, 1) explained the political and economic ground that led to the development of the factory campuses. In the early twentieth century, many industrialists and corporate managers were searching for middle ground, often termed "*welfare capitalism*" that could accommodate the mutual needs of the workers and employers. For the welfare capitalism, they provided the living spaces of workers and employers. The aim was to sustain the continuity of production and relatively profit, decrease the risk of workers' knock off through enabling good living conditions to reproduce the labor in the periphery of the factory and control them. Among the industrial betterment programs, "*welfare capitalism*" or "*welfare work*" was defined as *"any service provided for the comfort or improvement of employees which was neither a necessity of industry nor required by law".* (Alanen, 2007, 1) In these programs, employees were provided with home-ownership programs, health care and life insurance plans, stock investment options, limited retirement benefits, workplace safety improvements and even home economics classes for the wives and daughters of workers. According to Crawford, who elaborated the economic and social control term, Marxist historians made a direct link between the evolution industrial urban design and broad transformations in the economy (1995, 4). The factory campus was seen as a mechanism to control the unruly masses, and the designer as a physical agent of social control. She emphasized the design role in determining the social control in the space. Although campuses created a "diffuse" relationship between employers and workers, blurring the boundaries between working and living spheres, and making employees more than usually vulnerable to their employers' control, workers rarely were passive. The housing in the settlements with different prototypes was adjusted to reflect the factory's hierarchy of status and control.

Cengizkan (2009,16) summarizes why factory campuses are flourished with four points:

1. In the occasion of labor demand and the housing shortage created by the factory / industrialization, cheap or free housing provided by the factory makes a particular worker be utterly dependent on space, so it makes the dependent labor. Thus, the risk of the employer to find worker is decreased, and an environment is created towards the worker's

preferences that minimizes the risk to quit work. This satisfies and strengthens the continuity of the industrial production.

2. At the same time, workers are made dependent to factory space from the geographical point of view. It is reducing the risk of workers to choose another factory whether in an urban or non-urban area.

3. Labor loss is minimized and labor efficiency is increased through minimization of time of arrival and departure between worker's house and factory and provision of a safe environment to live.

4. The concerns of worker's family for future is compensated with the education (nursery school), health (health center, a nursery and a private hospital), and socialization spaces (parking, picnic area, casinos, clubs, sports grounds) in the workers' neighborhoods. In doing so, a qualified labor force and healthy working conditions are ensured.

The common properties of factory campuses are explained above. There are some similarities of factory campuses due to designers' utilization of physical space, and social programs that provide a menu of benefits for workers and their families. However, factory campuses do not necessarily display a singular organizational pattern or layout. According to Crawford, (1995, 29) "each industrial district established its own standards for working conditions and community life that shaped a characteristic physical and social order." Each factory campus produces its own specificities in their spatial and industrial production context. Due to the spatial fix, the distinctions between them are probably observed, then.

Nonetheless, similar outcomes of the factory campuses are concentrated on the socio – spatial aspect. While designing factory campuses the resembled industrial spatial configuration causes certain social facts, because this designing practice comprises ideological and symbolic affairs. Christian Norberg – Schulz, a defender of the influences of meaning and symbols on the built environment, approaches the issue from a more idealist point of view and overstates the role of architecture. For him, *"Architecture is a concrete phenomenon; it comprises landscapes and settlements, buildings and characterization articulation. Therefore it is a living reality. Since remote times architecture has helped man in making his extensive meaningful. With the aid of architecture he has gained a foothold in space and time."* (1980, 5) Hence, architecture is interested in something more than practical needs and economy.

Order, regulation, rigidity, standardization, hierarchies, massification, concentration, centralization, community base, zoning, etc. in the factory campus design bring forth strange feelings to industrial community. Ayhan (2010, 69) illustrates this phenomenon with an urban perspective. He states that dwelling in the boundaries of factory settlement provides an opportunity to know each other also out of work in the social life, to influence on each other more, to act with solidarity; consequently involves collective synergy which consolidates with these facts. However, it also involves potentials of 'intrusion of privacy by gossip', social control and breech of privacy. While designing dwelling spaces, discrimination of governing / governed and the married/ single community is cared of not to cause inconvenience each other. In this way, the planning becomes 'emancipating' or 'comforting' rather than being 'restrictive'. Spatial discrimination is a result of rational distinction rather than discriminating approach. The accuracy of this treatise can be consolidated by considering that there is no discrimination in other areas of social life except dwelling.

However, it is obvious that factory campus provides the industrial community making. More specifically, living and working in the same place, sharing same life precedes this inevitably. While the people of a city constitute a society, and also same people in each city comprise a community, factory campuses are also the places of minor communities. Anderson (1971, 2) describes a community as follows:

> *"A territorial base distributed in space of men, institutions and activities, close living together on the basis of kinship and organic interdependence, and a common life based on mutual correspondence of interests tend to characterize a community."*

Factory campuses satisfy the qualifications of community definition. Industrial communities are accommodated there to ensure the continuity of communities' life and work in the shared space. Community life is a cluster of ongoing behaviors, commitments, and expectations.

Planning the living place of an urban community is no mere local matter, since communities are linked together in interdependent networks. For Anderson, planning for the urban community is no longer limited to structures and spatial arrangements with an eye to beauty and order, even though there are increasing numbers of experts who concentrate on special fields such as transportation, parks and open spaces or the "*heart"* of the city (1971, 400). The emphasis, for him, should be on the publicity of the created places.

In fact, new community is built through the organization of industrial relations. *"Community is something we do together. It's not just a container,"* says sociologist David Brain (2004). He calls place-making and community building as a shell in which infrastructure, roads, water, sewer, electricity and housing are provided. "*It is within this shell that people do the things together that allow them to sustain livelihoods. These include but are not limited to education, health care, business, recreation, and spiritual celebration. People working together with shared understandings and expectations are what provide a place of strong community."* [1] Community organized in an urban character is not based on the affinity relations, but its special properties emerge by means of having the common space and resembling manners of their life.

According to Oxford Dictionary, sense of belonging is composed of three meanings: *"first, to be a member of (club, household, grade, society, etc.); second, be resident or connected with; and third, be rightly placed, classified, or fit in a specific environment."* These dimensions emphasize the membership constituent of belonging and its multilayered dimensions. In many cases, belonging is a feeling that consists of both past and present experiences, memories, future ties and aspirations of a place, and it grows with time.

Factory campuses' spatial pattern and order determine the daily life of the community. The sense of belonging and memory which are based on the everyday activities, are expected social consequences. Fenster clarifies the connection between memory, belonging and spatial planning. A sense of belonging, attachment and memorialization are constructed as part of communities' collective historical identities with no direct relations to planning. However, planning can assist in legitimizing sites of memorialization and commemoration and turn them into visible and preserved spaces in which rituals that express belonging can take place. In other words, planning itself does not create belonging. Rather, it makes it visible and legitimate (2005).

What is more, Umberto Eco states that "We are already talking about architecture. Memories are built as a city is built" (1986, 89). Human memory and identity are rooted in bodily experiences of being and moving in material space (Fried, 1963).

Hebbert (2002, 589) asserts that "*human memory is spatial. The shaping of space is an instrument for the shaping of memory. A shared space such as a street can be a locus of collective memory in a double sense. It can express group identity from above, through architectural order, monuments and symbols, commemorative sites, street names, civic spaces, and historic conservation; and it can express the accumulation of memories from below, through the physical and associative traces left by interweaving patterns of everyday life".* In practice the two types are inseparable; national commemoration in street and pub names is woven into the soap operas of everyday life, private lives are played out in the rhetorical spaces of public symbolism.

To sum up, factory campus is emerged as an offspring of industrialism. The above chapter has examined the reasons behind the occurrence of the factory campus, and its direct relation to urban design practice. Association of factory and housing consists of whatever industrial space configuration required. Factory campuses' spatial characteristics are evolved and varied in time.

[1] http://en.wikipedia.org/wiki/Community_building, accessed in 14th August, 2012

However, there are some concrete similarities, too. This kind of built environment leads to similar political or social consequences as well.

CHAPTER 3

THEORETICAL FRAMEWORK

3.1. Impacts of Utopias, Theories, Concepts and Models On Shaping The Urban Spaces of Industrialization

In history, there are a number of approaches, theories and some sort of ideas that have been manifested for ideal spatial urban forms. All of them concentrate on some metaphors of what city is, how it operates and how it would be. For instance, first cities had been originated as ritualistic spaces of religious centers. *"In the process of building the structure of human power, while stabilizing the order of the universe, religious ritual and the physical form of the city had been principal instruments"(*Lynch, 1984, 73). Then, in middle ages, cities were functionally formed in accordance to defense system of the states. Afterwards, through industrialization period, new form of spatial layout emerged.

This part of the study examines how industrialization impacted on the traditional order of preindustrial societies with respect to its spatial form. Blumer asserts that industrialization undermines the traditional order. Industrialization is regarded as displacing existing occupations, shifting production from home and the village, leading to migration and urbanization, fostering social mobility, introducing monetary and contractual relations, arousing new wishes and expectations, and promoting secular and rational perspectives. The impact of such changes is alleged to break down the existing family system, disrupt the prevailing class structure, disintegrate status and role arrangements, undermine paternalistic relations, weaken the established system of authority, transform traditional tastes and erode established values. (1973, 84)

In the age of industrialization, the capitalist economy and the new techniques of factory work shattered the old patterns of living, producing evils and miseries. There is a compulsion of new urban spatial forms and new tools for production of space due to the problems arisen by new means of production. In historical context, Günay explores the three stages of human settlements: Rural settlements emerging with agriculture; urban settlements emerging as centers controlling agricultural surplus where administrative, commercial and small production functions are concentrated; and finally the industrial cities and metropolises. He states that;

> *"The first two phases are subject of pre-industrial city where, though many styles are encountered (greek, roman, medieval, baroque, renaissance, etc.). The size of the pre-industrial city was limited depending mainly on control of agricultural production, and where the main source of production and transportation relied upon organic sources of energy."* (1988, 24)

However, the modern city grew with the later phase, namely with industrialization. It came across with new problems. Industrial growth in the city caused urban expansion, pollution, housing deficit and need for transportation and infrastructure. Respectively, growth of city with high densities and congestion became the issues of urbanization. New technology, new methods, new space understanding, new styles constituting the issues of architecture came into picture as the major points of discussion in this period. Moreover, 19th century industrialization generated new classes. Günay (1988, 25) denotes that "*The magnitude, power and aspirations of the new classes began to shape up the urbanization and architectural theory and practice*." Additionally, Benevolo mentions

"The places where industries concentrated rapidly became fast-developing centres or, if they grew up near existing towns, produced an enormous rise in their population" (1989, 39).

Songülen (2012, 92) affirms that the changes figured on urban space are mainly consequences of urbanization process. This process reproduced the cityscape towards "*a factory oriented compact*

industrial town." Therefore, contingent upon new urbanization process urban-rural dialectic relationships were reformulated with increasing attraction of cities and new cityscape became denser in time.

Urbanization problems such as haphazard growth, insufficient housing, transportation, congestion and sanitary problems had always appeared; nevertheless, industrialization intensified them. So as to overcome these problems, some intellectuals, considered as pioneering people in the planning history, developed models and approaches. Their approaches (or utopias) have influenced the urban spatial configuration of industrialization, therefore are worth elaborating. Although their solutions may have differentiated from one another, what they all desired was to constitute the convenient conditions for industry to operate efficiently, get rid of the negative impacts of industrialization and create brand-new societies.

3.2. Utopias

Utopians are the founders of a new line of thought and action, giving rise to conscious movement for the reforming of the town and countryside. The impressive matter about the utopias is "*the collectivization of property*" in which "*the property is absolute, be it state or private ownership under the domination of an authority"* (Günay, 1999, 127). In relation with the property, the space was also used collectively. For him, *"the hierarchy within public, common and private spaces is replaced with a different space organization where the open spaces were dominant*." (p. 127)

This part, first of all, elaborates the approaches of the 19th Century utopians: Ledoux's, Owen's and Fourier's approaches are chosen due to their context of worker housing and industrial town. Following that it examines the approaches of late 19th Century and early 20th Century utopians, all of which reacted to the then-existing conditions of industrial cities, and developed new spatial schemes.

3.2.1. 19th Century Utopias on Industrial Towns

Claude Nicolas Ledoux

The first utopia, a self-contained housing for workers is developed by Ledoux for Chaux Claude Nicolas Ledoux is a famous French utopian architect of the 18th century. He had modern ideas about industrial production, and urban planning. The project of the Royal Salt Works (1775 - 79) as shown below figure 3.1 is a potential to implement number of creative ideas about organization of production and social life. City was planned class relative attitude. Managers were in the center. On the one side of the oval there were workers and on the other side there were watchmen. (Günay, 2012)

After the French Revolution, Ledoux proposed an *"ideal city"* sustaining his influenceby its revolutionary ideal of the future. For the ideal city of Ledoux, Gruson (2004, 299) states that *"each building has one public façade, center- oriented, and a private façade, hidden from the watchers, where the workers had bathrooms, which was rare for that age, and vegetable gardens. We are therefore dealing more with a communitarian system rather than a totalitarian one, even if history has proved ever since that communitarian ideology has often turned into totalitarian ones…"*

The plan was reviewed and then eventually, it was formed from *"a semi-ellipse with roads radiating into the surrounding countryside"* (Spreiregen, 1965, 30). The main principle of the scheme was a central space that is surrounded by buildings in a homogeneous way with radiating avenues. (See figure 3.2)

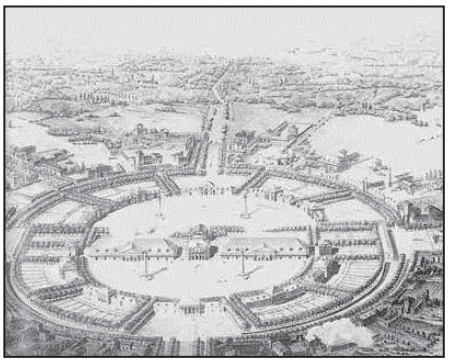


Figure 3.1 The Ideal City of Chaux
(Source:
http://sharkitecture.tumblr.com/page/5,
accessed in 3th November, 2012)

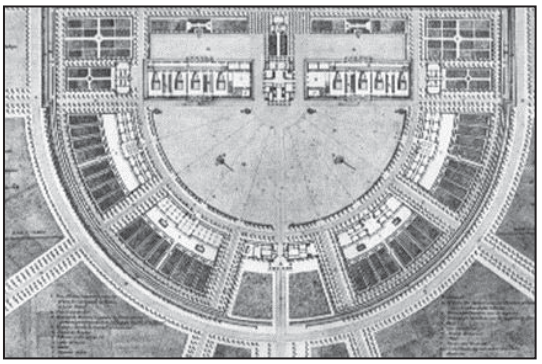


Figure 3.2 The Central space of Chaux
(Source: Claude-Nicolas Ledoux, Royal Saltworks,
http://sharkitecture.tumblr.com/page/5,
accessed in 4th November, 2012)

Robert Owen (1771-1858)

Robert Owen is one of the founders of utopian socialism and the cooperative movement. He made an effort to improve the health conditions and education for the well-being and rights of the working class. In 19th century, Owen worked out a pattern for an ideal settlement, which is a limited community to work collectively on the land and in the factory and be self-sufficient, possessing all necessary basic amenities. Through introducing modern machinery in the production, he developed an idea based upon the reasonable working hours, good wages and good living accommodation, building an elementary school and crèche near factory.

Gallion (1986, 86) states that Owen set forth an unusual plan for a cooperative community that combined industry and agriculture. Plan is designed to hold about 1200 inhabitants. Dwellings are grouped about a large open space in which communal buildings are located. A large garden surrounds the dwellings area. This entire area in turn is encircled by a main roadway. On one side of the compound are factories and workshops. Beyond, on all sides, is the agricultural belt, to range in size from 1000 to 1500 acres. Owen intended his plan for the use of unemployed; he assumed that community would become self-supporting and thereby reduce the heavy cost of public relief.

Owen proceeded to describe his plan as follows:

> *" …any plan for the amelioration of the poor should combine means to prevent their children from acquiring bad habits, and give them good ones – to provide useful training and instruction for them - to provide proper labour for the adults – to direct their labour and expenditure so as to produce the greatest benefit to themselves and to society; and to place them under such circumstances as shall remove them from unnecessary temptations, and closely unite their interest and duty."* (1967, 39)

According to Benevolo, in the plan scheme of Owen, within the squares there are public uses in the form of parallelograms. "*The central building contains a public a kitchen, mess-rooms and all the accommodation necessary to economical and comfortable cooking and eating. To the right of this is a building, of which the ground floor will form the infant school, and the other a lecture-room and a place of worship. The building to the left contains a school for the older children, and a committee room on the ground floor; above, a library and a room for adults. In vacant space between squares are enclosed grounds for exercise and recreation."* (1967, 39) (see figure 3.3)

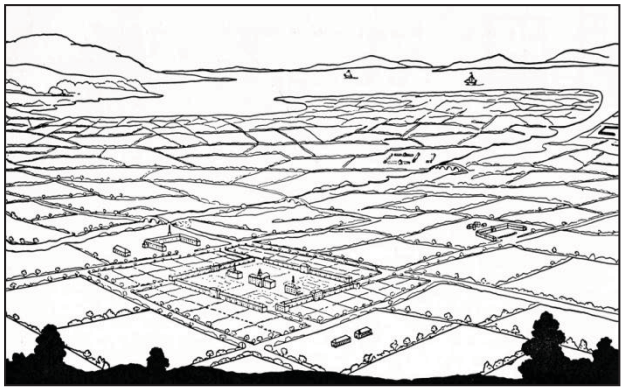


Figure 3.3 New Lanark (Source: Gallion and Eisner, 1963)

Benevolo (1967, 39) states that *"Owen put his idea to test in the mills at New Lanark, Scotland where he introduced a serious of improvements in the treatment of his workers: better pay, shorter working hours, better housing and institution for the formation of character."* This is a kind of settlement affecting the lives of the entire community, complementing work in the factory with study and leisure, and allotting suitable accommodation, and time, to each activity.

Owen can be seen as the initiator of the factory campus idea. Aiming at better working conditions, what the industrial workers require is considered extensively. Provision of housing and other social amenities nearby factory is conceptualized in Owen's idea.

Charles Fourier (1772-1837)

Fourier is a French philosopher and his thought is based on philosophic - psychological theory which derived human actions not from economic gain but from personal attraction.

Benevolo mentions that Fourier proposed a concentric pattern for cities contrary to the shapeless forms of towns when industrialization came forth. In the middle would be the commercial and administrative town, surrounded by the industrial and then by the agricultural ones. In the inmost zone, free space would be equal to that occupied by buildings, in the second it would be double, and in the third triple. The height of the houses would be regulated according to the width of the streets, while walls would be abolished and replaced with hedges; land-owners' rights would have to be reconciled with the rights of others, and the increased value produced by public works would go in part to the community. (1967, 39)

Fourier also brought up a scheme and positioned the industrial establishments between the agricultural site and the central area. It is an intention of integrating countryside and town.

Besides, Fourier considered that when life and property would be completely collectivized, workers would leave the towns and settle in "phalanges" of 1620 individuals and would live in special buildings called "Phalansteries". (See figure 3.4) For the inhabitants of the phalanstery, accommodation would be completely communal. It is like in a big hotel, with old people housed on the ground floor, children on the mezzanine and adults on the upper floors. Benevolo (1967, 40) endorses that Fourier envisaged for the actual building the stately form of Grand French architecture; it would be symmetrical, with three courtyards and numerous entrances, on the axes of the various parts of the building; the central court, known as the place de parade.

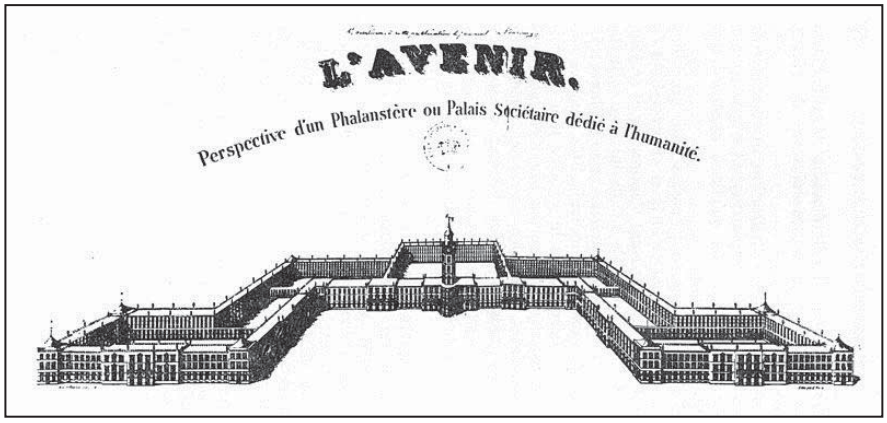


Figure 3.4 Phalanstery

(Source: http://en.wikipedia.org/wiki/File:Phalanst%C3%A8re.jpg, accessed in 8th November, 2012)

"Fourier proposes a different scheme which is more rigid than the other two examples of Ledoux's and Owen's, and composed of *'one large palace-like building*' called Phalanstery."(Spreiregen, 1965, 30)

The focal issue of Phalanstery idea is the collective living. Its form is highly determined, thus limited people living in, but all amenities are easily accessible to benefit. One of the most differentiating aspects of this idea is its location, settling down outside the city.

3.3. Late 19th Century and Early 20th Century Utopias

In the early 20th century, due to the change in production type, and with respect to it the diversified requirements, the problem of industry-centered reproduction of the space began to be discussed in wider area.

The industrial revolution is conceptualized as a turning point that brought about innovations. Birol (2010, 3) states that during industrialization, the innovations accelerated developments in the field of architecture and urban planning. On one hand new building types came into picture in architecture; and on the other hand production of a new kind of space led to the emergence of the concept of modernism. By the way, Günay (1988, 23) defines CIAM (Congres Internationaux d'Architecture Moderne) as an important milestone in the development of the 20th century architecture and town planning theory and practice. Fourier and Owen are regarded as the pioneers of this movement, as examined above. Günay describes their approaches as '*CIAMese way of thinking'* Also he explores the principles of CIAM such that *"the extensive usage of technology in construction, the idea of the minimum dwelling, functional organization of space, abundance of open space in a society where land is publicly owned all favored the application of such thinking"* (1988, 25). The understanding of CIAM reflects main principles of modern planning , which comes to the forefront with the stressing the open spaces and functional organization of urban space.

The critical base of this new kind of spatial organization is rooted from the fact that the use of machines in industrial production brings the concept of mass production and standardization, and this leads to significant changes in the production area. This standardization is definitely experienced in spatial relationships. Standardization mainly comprises of functionality. This is an integral part of the industrial organization. Rationalization and standardization in architecture provides the standardization of building especially in housing production, which means economical advantage and good living conditions at the same time.

Günay (1988, 23) describes the new town planning concepts in this period as independence from roadside, separation of pedestrian-vehicular traffic and architectural concepts of functionalism, geometry, purism, standardization using modern materials. Furthermore, it is obvious that the modern movement practice was the product of 19th century rationalism and the urge for social development. It was essentially a move towards integration: to use the forces of the society, industry and the arts in a coherent and harmonious way. (Lewis, 1976, 6)

The changing pattern of industrial urban space provokes the metamorphosis of dwelling use. Working and living space discrimination has positioned dwelling in a new point. However, there is an obvious intention of the factory and housing duality requirement. Factories where the industrial facilities take place attract dwellings towards themselves. In certain types this coupling was presented then. The concentration and location of dwellings in cities, the form of dwellings' architectural form have modified according to industrial production.

In the Athens Charter, a work of CIAM, it is denoted that *"the house will never again be fused to the street by a sidewalk. It will rise in its own surroundings, in which it will enjoy sunshine, clear air, and silence. Traffic will be separated by means of a network of footpaths for the slow-moving pedestrian and a network of fast roads for automobiles".* (quoted in Kostof, 1992, 235)

Another aspect of the dwelling in the industrialized community reflects the fact that the house is a competitive commodity, relates modernity. It can be explained with respect to the change in production and trade. It is entirely due to supply-demand relations harbinger of a new economic system, namely capitalism. Giddens (1990) defends that cities built through the modernization capitalist impact destroyed the rural areas and built an artificial environment there.

İskender (2009) propounds that innovations that organizes capitalism isolate individual from the societal organization, tradition and environment. In this condition, it causes geography where the individual's positioned, turned into a land piece completely homeless. According to him, it causes individual to feel not belonging to any place. On the contrary, the plurality aspect of modernism on space generates the community being idea. The spatial configuration provides this, and working forms depending on each other in the industrial production strengthen these social relations, which provokes the feeling of belonging.

Right along with the social aspects, the spatial form of industry is much more discussed. Fishman (2002, 42) argues that, the planning approaches which belongs to *"the urban science theoreticians"* like Frank Lloyd Wright, Ebenezer Howard, and Le Corbusier, presumed to *"define the ideal form of industrial society*": Even though every approach belongs to the three planners has some distinctions, for development of the cities, they have introduced three separate models as metropolis, moderate decentralization and extreme decentralization.

Howard propounded the Garden City Movement in the presence of industrialization. His ideas would be deeply examined in the following part. Frank Lloyd Wright also developed an industrial city plan proposal called Broadacre City. It has several commonalities with Howard's idea. He described his Broadacre City (See Figure 3.5) such that;

> *"Imagine spacious landscaped highways …giant roads, themselves great architecture, pass public service stations, no longer eyesores, expanded to include all kinds of service and comfort. They unite and separate — separate and unite the series of diversified units, the farm units, the factory units, the roadside markets, the garden schools, the dwelling places (each on its acre of individually adorned and cultivated ground), the places for pleasure and leisure. All of these units so arranged and so integrated that each citizen of the future will have all forms of production, distribution, self-improvement, enjoyment, within a radius of a hundred and fifty miles of his home now easily and speedily available by means of his car or plane. This integral whole composes the great city that I see embracing all of this country—the Broadacre City of tomorrow."* (Wright, 1932, 85)

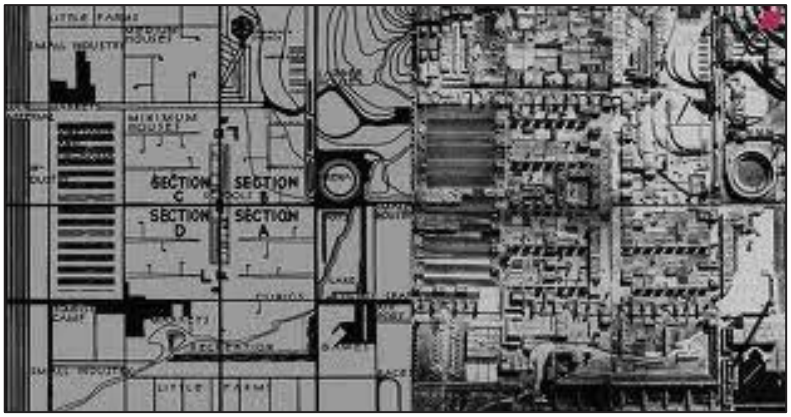


Figure 3.5 Broadacre City

(Source:http://www.mediaarchitecture.at/architekturtheorie/broadacre_city/2011_broadacre_model_en.shtml, accessed in 7th February, 2013)

Corbusier's main desire is to maximize open space, increase density and minimize the travel distances between land use functions as reaction the housing deficit of industry. Le Corbusier proposes that there should be uniform forms for the efficient in the modern and progressive age. These spatial configurations are to be represented in the built environment.

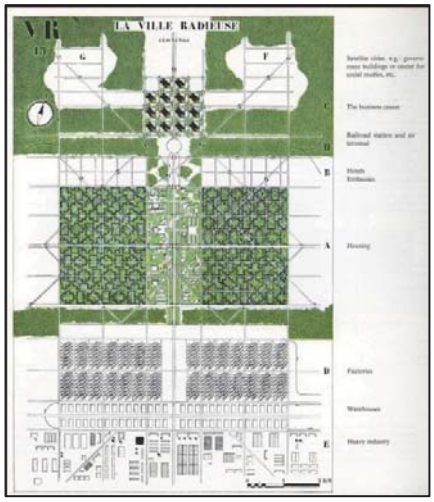


Figure 3.6 Le Corbusier's Radiant City

(Source: http://www.theatlanticcities.com/design/2012/11/evolution-urban-planning-10-diagrams/3851/, accessed in 7th February, 2013)

Generating the Radiant City (See figure 3.6) Le Corbusier aimed to overcome the urban problems arisen due to industrialization. Unlike Howard, he developed an envision building up in, not out. In his plan, there are numerous high-rise buildings and each of them surrounded by green space. Also, he organized housing, business center, factories and warehouses together.

Discriminating urban spatial layout of industry under the effects of modernism approach is discussed in varied formations. There are some theories developed subjecting the factory and housing coupling constitute focus of this part.

3.3.1. Industrial City (Cité Industrielle)

Industrial City (Cité Industrielle), which is a product of architect Tony Garnier, is founded upon the utopist socialist doctrine of Fourier. The industrial city of Garnier is an outcome of the Beaux Arts architecture education. Accordingly, Garnier incorporates the classicist and the utopist socialist approaches of Beaux Arts ecole together in his ideal.

The basic principle of the Industrial City scheme depends on the "*integration of home and garden"*. Garnier proposes simple geometric and symmetric forms in terms of urban design. In his plan, architectural forms are classicist and monumental. The plan layout is set aside two functional parts; former being the housing area, and latter being composed of public buildings. The public buildings are allocated into three parts; 1) administrative buildings, meeting halls and museums; 2) sports areas; and 3) vista points. There are "*green zones*" to separate these areas. (Günay, 1988) As Günay mentions *"functions are attributed into different zones separated by continuous stretches of greenery, with an orthogonal street network. There are no police, barrack, religious building and prison in this city."* (1988, 24)

Benevolo (1967, 321) points out Garnier's description of his town when he completed his study that; *" … concern the organization of a new city, the industrial city, since most cities founded from now on will be based on industrial considerations, so that we have considered the general case."* Garnier determines medium size for city supposing that it has about 35000 inhabitants, and the city carries out studies of a general nature, which would not have been justified by the study of a village or very large city. He imagined and positioned the buildings on partly flat and partly hilly, and crossed by a river.

Garnier explained the spatial organization of industry such that;

> *"The main factory is situated on the plain, at the confluence of the smaller river with the larger. A railway runs between the factory and city, which is somewhat higher up, on a plataeu. Higher up still are the hospitals, protected from cold winds, as is the city itself, and facing south, on terraces with overlook the river. Each of these elements: hospitals, town, factory is isolated so as to permit future development in case of need; this has enabled us to carry out the study from an even more general point of view."* (quoted in Benevolo, 1967, 322)

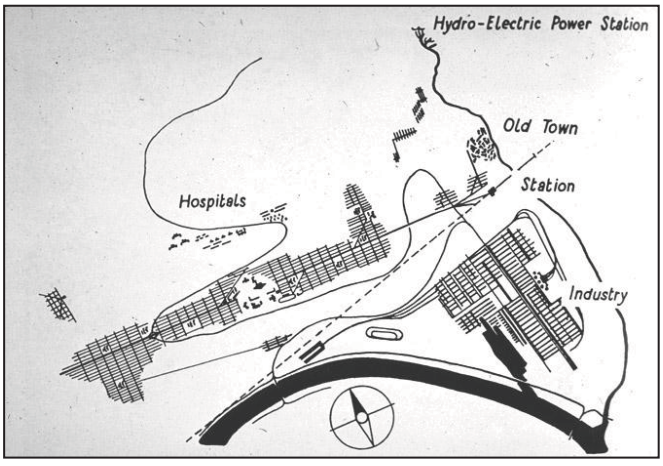


Figure 3.7 Tony Garnier's Plan for Cite Industrial

(Source: http://www.arch.umd.edu/Faculty/GFrancescato/Papers/Edinburgh.html, accessed in 12th August, 2012)

Garnier also set some arrangements to satisfy the material and spiritual needs of individual. He put regulations for each sector: building regulations, sanitary regulations and so on. Thus, he assumed to achieve a certain degree of social progress with these regulations. The public administration has the free use of all land, and that it is responsible for the water supply and that of bread, meat, milk and medicine.

In the town of Garnier, the residential quarters consist of small detached houses, standing along a uniform network of roads; here Garnier's idea of presenting all the plans simultaneously caused a certain stylistic monotony.

Many towns already have certain sanitary regulations, varying according to the geographical and climatic conditions. Thus, Garnier formulated a series of regulations as follows:

> *"1. In the houses bedrooms must have at least one window facing south, large enough to give light to the whole room and to allow the sun's rays to enter.*
>
> *2. Courtyards and cloister, i.e., all spaces enclosed to let in light and air, are forbidden. Every room, however small, must be lit and ventilated directly from the outside.*
>
> *3. Inside the houses the walls, floors etc. are all of smooth material, with rounded corners."* (quoted in Benevolo, 1967, 321)

The housing district layout is configured such that the building land in residential quarters is first divided up into blocks, of 150 meters x 30 meters; these blocks are in their turn divided into lots of 15 x 15 meters, always with one side running along the road. Such divisions allow the land to be better utilized and to implement the building regulations mentioned above, then. (Benevolo, 1967, 321) (See figures 3.8, 3.9 & 3.10)

Figure 3.8 Dwellings in Industrial City
(Source: Benevolo, The origins of modern town planning)

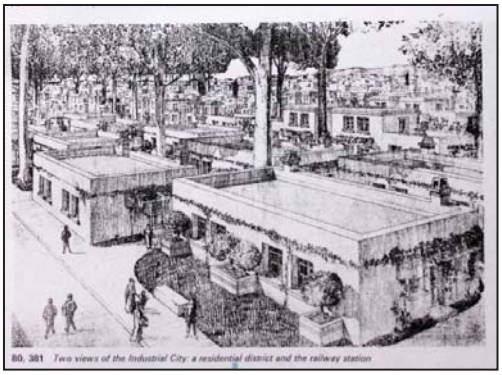


Figure 3.9 Housing of Cite Industrial
(Source: Benevolo, The origins of modern town planning)

Figure 3.10 Housings in the Cite Industrielle (Source: Benevolo, The origins of modern town planning)

The codes of buildings are determined in a way that each building would cover one or more lots, but the built up area must be less than half the total area, while the remainder of the lot must be used as a public garden, open to pedestrians. "*… rulling makes it possible to cross the city in any direction independently of the roads, and the land of the city, taken overall, is like a big park, without any fences to delimit the various sections. And the space between two houses in the direction north-south is at least equal to the height of the building situated to the south."* (Benevolo, 1967, 322)

This model can be characterized as equitable, providing easy access to public amenities. Besides, Tony Garnier's Industrial city scheme gives significance to production – industrial production and realizes this with a good-happy living idea, which is done by integrating with housing, comprised the city all.

3.3.2. Garden city

The Garden City is a reaction to the dreadful living conditions of the industrialized cities of the late 19th and early 20th centuries. Ebenezer Howard proposed and realized the Garden City idea. The figure 3.11 taken from his book "Garden Cities of To-morrow" portrays the basic premise of the idea. This is a crucial attempt or solution to factory and housing coupling.

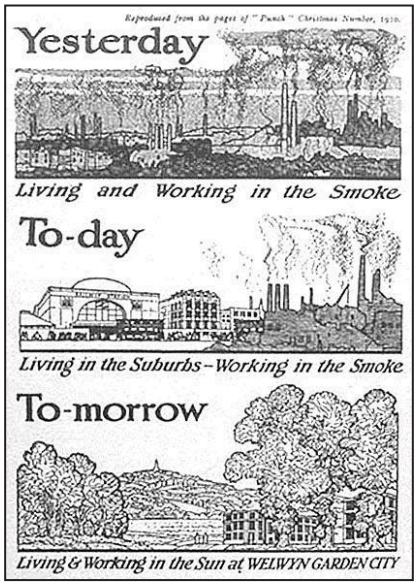


Figure 3.11 Garden city

(Source: "Garden Cities of To-morrow" http://scodpub.wordpress.com/tag/america/, accessed in 10th August, 2012)

Benevolo (1967, 351) asserts that Howard's garden city movement has two sources. One of them is the tradition of the utopias particularly of Owen, which is an understanding of a perfect and self-sufficient community, a synthesis of town and country, with the social implications traditionally connected with it. Howard conceptualized it with the "*The Three Magnets*" metaphor. (See figure 3.12) The other one is the concept of the single family house setting amid greenery, which is in a sense an adaptation of the proceeding ideal with the emphasis on privacy rather than social relations. It is actually an attempt at releasing family life from the crowding and disorder of the metropolis and at making the town as like the country as was reasonably possible.

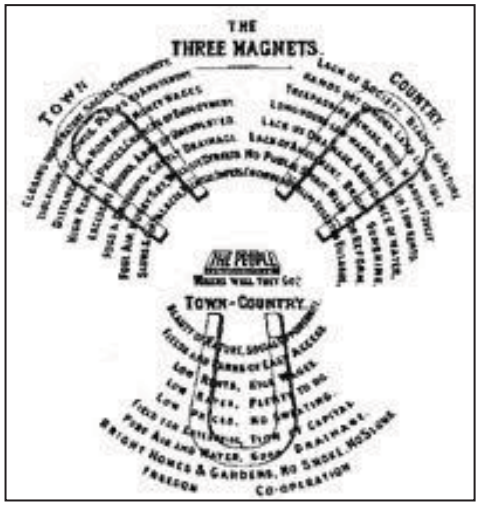


Figure 3.12 Howard scheme of three magnets

(Source: http://architectureandurbanism.blogspot.com/2010/10/ebenezer-howard-garden-cities-of-to.html, accessed in 10th August, 2012)

Furthermore, Sutcliffe (1981, 64) expresses that Howard's model is a combination of two reform ideas which are namely communities and decentralization. The idea of setting up new communities as prototypes of an alternative social and economic system attracts some support from the working and middle classes between the 1820-and 1840s. This kind of conglomeration brings the decentralization as well.

Howard's proposal is small cities with a population of 32.000. Ha also suggests a web of these small settlements or cities. The model of Garden City is composed of a center. Center includes theatre, municipality, park, cinema, etc. There are six grand boulevards expanding and directing the city from the center to periphery. Hence, boulevards divide the city into six equal parts. Garden City has a compact urban center enclosed with a "greenbelt". Open and green space is composed of parks, gardens and farms for agricultural facilities. "*Within the city there would be quiet residential neighborhoods in addition to commercial, industrial, and cultural facilities. There are two kinds of centers in the Garden City: the neighborhood centers and a civic center."* (Karakaya, 2010, 47)

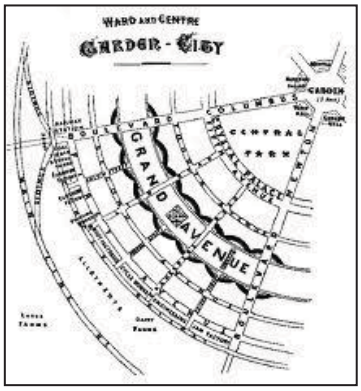


Figure 3.13 Howard's Garden City Plan

(Source: http://www.library.cornell.edu/Reps/DOCS/howard.htm, accessed in 18th August, 2012)

Within the framework of the factory campus concept, the striking factor of garden city movement is that on the outer ring, there are industrial areas on the periphery of housing. It is an attempt to segregate the residential areas and industry means to division of living and working space. However, it is considered that “everyone would be within “walking distance” to the workplace”. Howard plans the factories’ location at the periphery of the city, adjacent to the circular railroad that surrounds the town and connects it to the main line. In the circle, there are agricultural areas. This is supposed to provide urban-rural integration. Significantly, Howard realizes his idea in Letchworth and Welwyn garden cities.

Benevolo (1967, 353) points out another fact that the garden city is to be managed by a company, which would own the land but not the buildings, services or economic activities. Hereby, everyone would be free to run his life and business as he thought best, though he would obey the city’s regulations and in return would profit from the benefits of well-regulated community.

According to Howard, the new city should be self-sufficient and based on a harmonious balance between industry and agriculture. Then, he formulates garden city, with its houses and industries, occupying one sixth of the land available; the rest is to be destined for agriculture. The urban nucleus is to be surrounded by the ring of farms, all under the same central authority.

The garden city idea is like an initiator of the suburban development having the working class leave the city to establish more spacious communities outside. In plan these would not be commuters’ suburbs, but whole communities with factories to provide employment. The idea may have stimulated interest in suburbs. According to Benevolo (1967, 357), the term garden city must be understood with limitations: not a city but a satellite district of a city, with a favorable ratio between buildings and green spaces and subject to certain regulations, to ensure that the character of the district was respected.

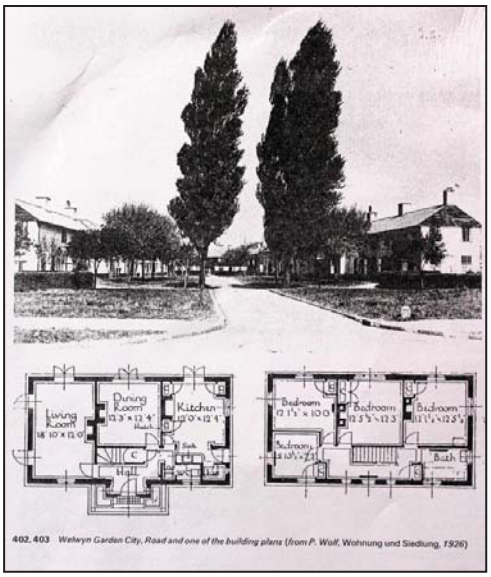


Figure 3.14 Dwellings in Garden City, Welwyn

(Source: Benevolo, The origins of modern town planning)

Garnier adopted the two complementary principles of earlier tradition: one of them is classicism; understanding space in an almost philosophical sense with the spirit of geometry and clarity. The other one is the structural coherence; reinforcing virtues of static continuity and adaptability.

Garnier mentioned several concepts which were to become widespread at the beginning of the modern movement: the vital importance of hygienic factors (sun, air, and vegetation), well-spaced buildings, independence of pedestrian routes from those for other traffic, the garden city. Benevolo (1967, 336) states that Garnier's buildings made valid theoretical precedents and in this result, in this bridge between theory and practice, lay his contribution to the modern movement.

Garden city idea pairs up the benefits of the town; the social life, public service and the benefits of the country; quiet, greenery, healthfulness. Howard cared urban - rural development and takes into consideration both the industrial establishment and the residential area drawing a livable, suburban environment scheme. Howard can be assumed as an initiator of the factory campus idea.

3.3.3. Linear City

Arturo Soria Y Mata who was a Spanish engineer, developed an urban plan called *"linear city."* Soria's idea means to develop residential and commercial units together in a linear form. Two main urban components were paired up through along the transport system, namely tramways. By the way, urban development was propelled to the countryside.

The urban transportation is the main affinity of planning idea; "*the logic of linear utility lines should be the basis of all city layout* in which *houses and buildings could be set alongside linear utility systems."* (Spreiregen, 1965, 32)

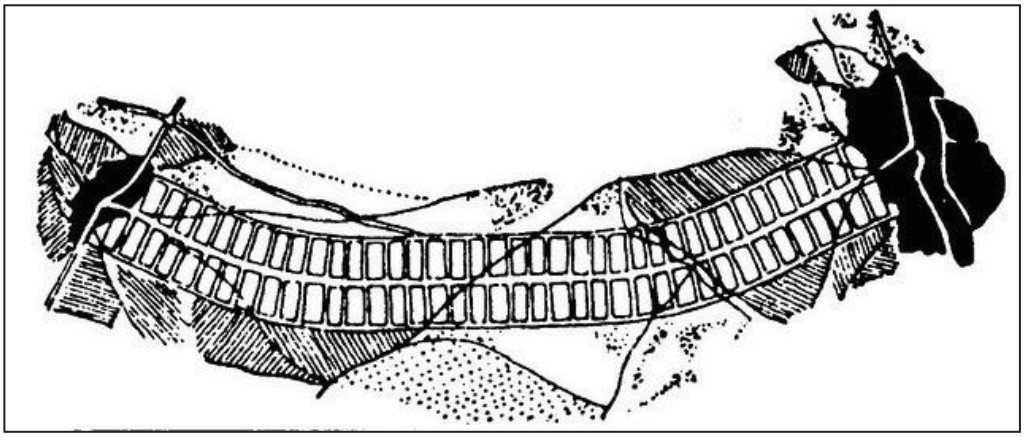


Figure 3.15 Linear City Plan

(Source: http://www.flickr.com/photos/quadralectics/4366866235/, accessed in 7th October, 2012)

In the proposal plan scheme (figure 3.15) of Soria, the city has definite divided zones. These zones are defined through the transportation network, majorly with the railway route. In the scheme, there are production facilities with relevant public scientific, technical and educational organizations, a green belt buffering the residential area from the highway, the residential area comprising several social institutions, a park for agricultural facilities with gardens and state-run farms. Besides, the plan diagram of linear city with respect to residential layout is described such that *"the streets were laid out on the old grid system, but the houses were placed in isolation from each other.*" (Kostof, 1992, 215)

Benevolo (1967, 358) stated that "*Soria proposed a radical alternative: a 'ribbon' of a limited width but with one or more railways running along its axis and of an indefinite length".* About the limits of city was decided as *"the most perfect type of city possible will be that running along a single road, with a width of 500 meters, and which will stretch if necessary."* as Soria stated. This type of city is assumed for which built starting from one or more of the ordinary cities. But this might subsequently

form a network of triangulations between the cities themselves, thus producing a completely novel form of settlement.

Soria's idea was important and productive, even though his practical specifications were over-simplified. He was the first person to sense the close connection between the new means of transport and the new city; he saw that they should act not only as expedients to facilitate the movement of traffic within a traditional fabric, but should they lead to a different fabric, not so much intensive as extensive.

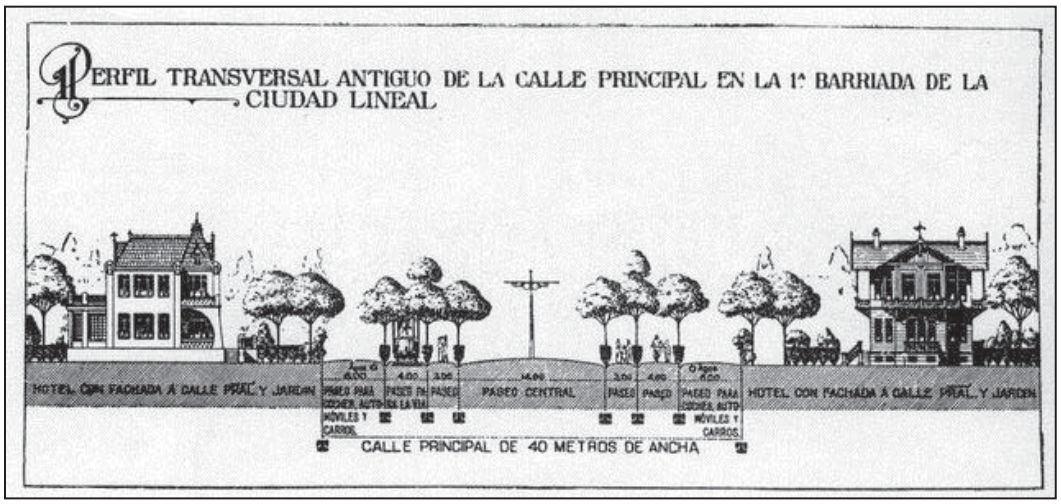


Figure 3.16 The Section of Linear City

(Source: http://11870.com/pro/linear-city/media, accessed in 7th October, 2012)

However, Benevolo criticizes Soria's idea which is setting at naught the industrial organization. Benevolo (1967, 359) stated that *"Even he thought only in terms of traditional functions, i.e., of the place of residence and its amenities, and did not take industry into consideration, while in fact it was only concentration on the relationship between places of residences and the places of work that gave value to his linear model."* According to him, the industrial facilities would be reclassified close to the public transportation system in order to separate from the housing district. Inhabitants' access to public amenities would be improved. He noted that "*No land would be needed for parking. This regrouping in height and on the ground would make it possible for industries to share common services. For instance, they could reduce their sources of pollution by having common filtration systems for smoke stacks and used waters. This proximity between industries would reduce the distance between them and their suppliers. Taking into account current technologies and other relevant factors, some plans would have to be made to bring together those who collaborate with one another."* (1967, 359) Although this planning idea criticized from some perspectives and it is not immediately purposed for the factory campus generation, the context of plan layout influences are presented in the some industrial site.

3.3.4. Soviet Urbanism

In the early years of the Soviet Union (1917-1930), when they faced with rapid industrialization, urbanization and a social revolution, Soviet intellectuals suspended to work imagining what the ideal communist city would look like. Their planning idea is rooted from the Marxian urbanism. *"Marx and Engels Manifesto of 1848 provoked considerable divergence of views as to exact manner in which the Soviet Union was to be physically developed, after the revolution of 1917"* as Frampton (1968, 238) states. The articles numbered 6, 7, 9 and 10 point out the measures for urban spatial configuration. These articles;

"6. centralization of the means of communication and transport to be in the hands of the state.

7. extension of factories and instruments of production owned by the state; the bringing into cultivation of waste lands and the improvement of the soil generally in accordance with a common work plan.

9. combination of agriculture with manufacturing industries; gradual abolition of the distiction between town and country, by a more equable distribution of the population over the country.

10. free education for all children in public schools. Abolition of child factory labour in its present form. Combination of education with industrial production, etc." (Marx & Engels, 1848)

Soviets formulate their urban planning strategies over these articles mentioned above. There is an out of attempt to devise a new land settlement. About this, two major and rival thesis of planning eventually emerge out, the 'urbanists' advocating the construction of *"urban agglomerations",* and the 'disturbanists' on the other recommending the establishment of linear cities. In the ensuing conflict, the urbanist wins and agglomerations become the official planning policy of the central executive. To illustrate, the figure 3.17 is shown below drawn by Boris Sakulin (1918). "*His plan is intended to reduce congestion in Moscow by spreading development to the urban periphery."* (Khan-Magomedov, 1987)

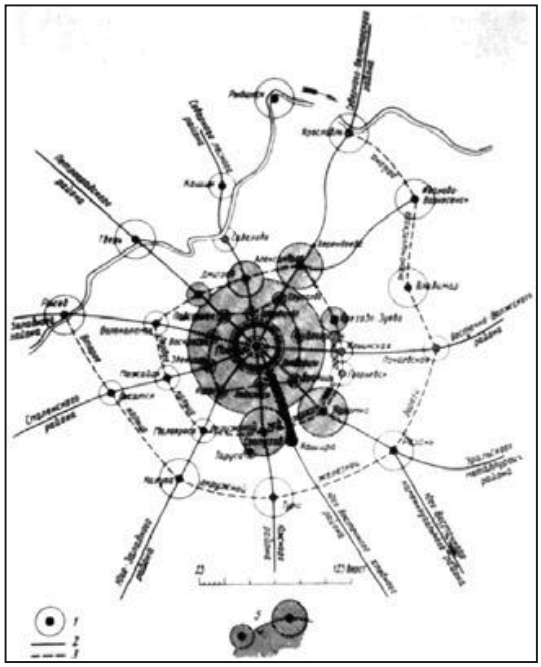


Figure 3.17 Boris Sakulin's Suburbanization diagram for Moscow (Source: Scott, 2009)

The principle of *"agglomeration*" is to be accompanied by enforced collectivization, the people being housed in vast *"communes"* consisting of individual cells and holding up to 4000 persons each; all other domestic facilities being communal and public.

Scott (2009, 59) describes urban development debate of the late 1920s in Russia. Both so-called "Urbanists" and "Disurbanists" advocate suburbanization. *"The Urbanists argue for self-contained supercommunes located in the countryside. The Disurbanists advocate that using an electrical and*

communication grid that would cross the entire nation, and mobile homes; thus, they seek to scatter single-family homes across the countryside."(p.60). Hence, they meet in the same point favoring the countryside.

"Both Urbanists and Disurbanists try to eliminate urban agglomeration in central cities and to create new, self-sufficient settlements containing fewer than 50, 20, or even three residents." (Kopp, 1970, 168) Also, for Frampton (1968, 239), the soviet thesis is like that "*large towns are an expression of the capitalistic regime, they are monstrosities which imprison millions of sufferers. All large towns must be cut up, dispersed and re-assembled in open country, in urban elements of 50000 inhabitants."*

Moreover, most distinctive aspect of the Soviet Planning is the rural and urban integration, as well. According to Tekeli (1980, 28), in Soviet Planning, urban planning has the role of resolving the animosity of urban and rural. There are two major strategic instruments in space. First one is the decentralization of industry from urban to rural areas and the establishment of industrial foci evenly distributed to countryside. The second one is the industrialization of agriculture.

Soviets assign two urban planning ideas to reduce crowding and congestion within the city. They are garden city and linear city. They want to expand urbanity into the countryside. In 1900s, the decentralization of cities and spread of urban development towards the periphery is a common occurrence in the world. Scott (2009, 59) states that the "*Soviets are particularly interested in Howard's idea that the Garden City is to be a small, communal place, where the municipality would collectively own property."* For him, the principal point of the considering the Garden City movement is the opinion that "*urbanity itself was obsolete."*

"*Communist planners believed that urban agglomeration is caused by a capitalist need for producers to be near markets. They think that by abolishing the private property, the agglomeration is no longer necessary*." (Scott, 2009, 60)

Moreover, throughout compelling 'family life into communal space', unprecendent facilities are required. They are namely workers' clubs, dining halls, collective laundromats, and boarding schools. In these collective settlements, all components of daily life be found in the housing unit district nearby the industrial facility, workplace.

The second planning theory that impressed the Soviet urban study is the Linear City. Scott (2009, 60) mentions the Miliutin's proposal. His idea is based upon Soria's linear city by comprising working and living places. *"Miliutin justified placing production enterprises and schools in the same band with Engels's statement that "education and labour will be united". Industrial areas are located along a railway, providing access to the factory and creating a linear assembly line. A greenbelt separates the industry from the residential areas, which include the communal dining halls and workers' clubs as well as housing. Past the residential zone is a park, with wilderness beyond."*(Scott, 2009, 60) The positive aspect of the linear city concept is that requirements daily life—work, transportation, open space, and living areas—are all allocated within walking distance. The vision of 'Deagglomeration' is realized through integrating residential area with industrial facilities.

German architect Ernst May developed a plan as shown below Figure 3.18 for Magnitogorsk Iron and Steel works with respect to Milutin linear city idea.

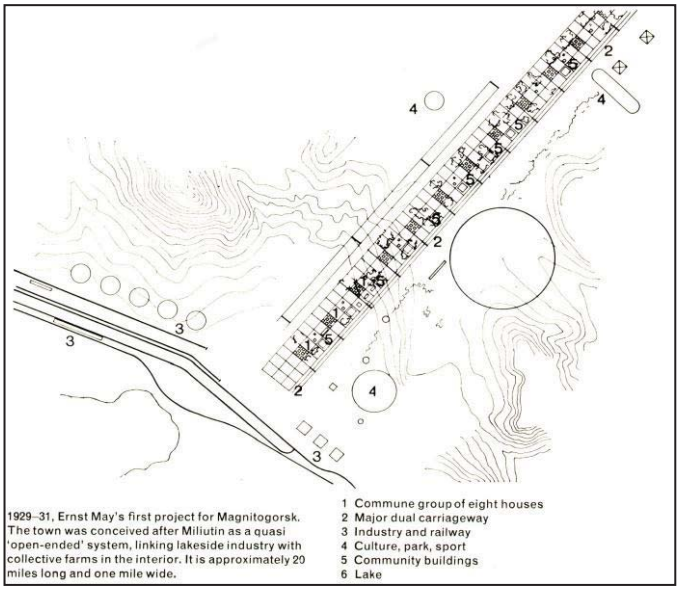


Figure 3.18 Plan for Magnitorgorsk (Source: Frampton, 1968)

Furthermore, under the impact of garden city movement, soviet planners developed some spatial concepts. One of them is namely "The Super – Commune". In this concept, self-sufficient super-communes are created by bringing the city into the country. *"In these large communes, all the functions necessary are provided to be self-sufficient. These communes are the ultimate "social condenser." By minimizing personal space and maximizing communal space, Soviet architects force individuals out of the single-family unit. Units lack personal kitchens, living rooms, and showers. A unit's total area is as small as 27 square meters.* (Kopp, 1970)It resembles a dormitory, the space is used collectively. In the same breath, architecture compels collectivization through breaking down the family structure. Self- sufficient super-communes could be settled down anywhere, encouraging people to leave the city and colonize in the suburb.

In Soviet Union, there are a number of industrial cities built up until the Second World War. "*The organization of cities is composed of satellite towns of single-industry connected to industrial center of 300.000 populations. Within these industrial centers, there is the organization of micro rayon, a neighborhood unit of 6.000-12.000 populations."* (Karakaya, 2010, 75) In this spatial order, the city center is significant space. There are several public facilities, such as *"the state buildings"*, urban squares, cultural functions, and some symbolic units as means of the state hegemony. The center in the Soviet cities has a functional role in coordinating the city, and in especial it definitely operates the urban system.(Tekeli,1980).

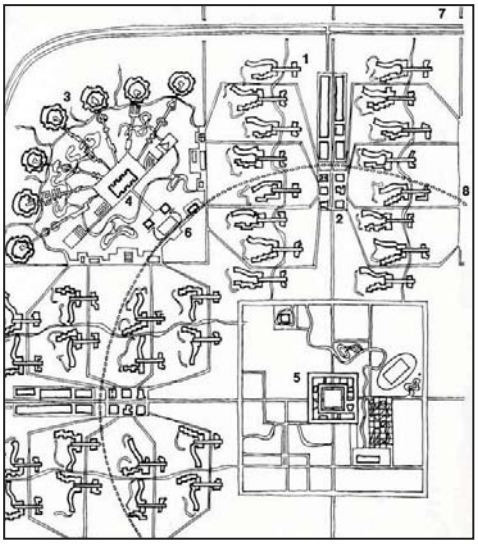


Figure 3.19 Alexei Gutnov's New Urban Settlement plan (Source: Scott,2009)

Alexei Gutnov who wrote a book called *"The Ideal Communist City*", proposed a *'New Urban Settlement'* plan layout as illustrated above figure 3.19 represents that commonly planning powerful pedestrian connections among the public amenities likewise schools, hospitals and community centers and houses. In addition, the design of Soviet suburb is transit-oriented; hence each new settlement is enabled to articulate each other with rail system.

Also, Soviet suburbs are designed regarding the density, concentrating a serious conglomerate of people in a certain small urban area. Soviet urbanism synthesizes the some urban theories through their ideological perspective and composes their urban spatial configuration. For urban economy, the emphasis on the industrial production is concrete. Its strong relationship with housing is deliberately considered. The factory campus minded urban settlements are settled down in great number. It is the implicit of the urbanization policy of Soviets, though.

It is also necessary to notice the constructivism impact remarking the Soviet Urbanism. Constructivism is a way of art and design emerged after the Soviet Revolution. For some, it is the Russian version of Modernism. Technology and engineering with a communist ideal form constructivism. It has artistic architecture style in favor of functionality. Most often, Russian Avant-garde architecture structures are describes as constructivist. This architecture was minimal, modern, geometric and usually brutal.

This style associates straight lines and forms of cylinders, squares, rectangles, cubes. Typical elements of Constructivist architecture are as follows; minimal, geometric, spatial and experimental. Constructivist architecture movement stressed new materials. Steel frames were seen supporting large areas of glass. Joints between various parts of buildings were exposed rather than concealed. Examples of Constructivist Architecture are as following. (See Figure 3.20 and 3.21)

Figure 3.20 Moscow Textile Institute (Source:http://en.wikipedia.org/wiki/File:Moscow_textile_institute.jpg, accessed in 6th February, 2013)

Figure 3.21 Noitrosky (Source:http://www.worldofleveldesign.com/categories/architecture/constructivist_architecture/constructivist_architecture.php, accessed in 6th February, 2013)

High rise buildings were common in Soviet architecture through technological advantages. For instance, while planning Moscow, the buildings were restricted to be at least six stories. Mass housing projects were generated to accommodate the industrial workers. However, shortage of housings has continued towards in the late 1950s. In order to tackle with this problem, a housing typology invented by Soviet architects. This is a well-known housing type of Soviets called "Khrushchevki". *"Khrushchevki: a type of low-cost, paneled or brick three- to five-storied apartment building."*(http://khrushchevki.wordpress.com/research-proposal/)It enabled to re-mass housing development. (See figure 3.22 & 3.23)

Figure 3.22 Photography of Khrushchevki (Source:http://khrushchevki.wordpress.com/, accessed in 6th February, 2013)

Figure 3.23 Photography of Khrushchevki (Source:http://khrushchevki.wordpress.com/, accessed in 6th February, 2013)

3.3.5. Company towns

Company town is regarded as a distinctive urban form. In order to clarify what the company town is, it is portrayed that "*the built environment of the company town not a static physical object but as the product of a dynamic process, shaped by industrial transformation, class struggle and reformers' efforts to control and direct these forces by locating design within the constraints set by social and economic determinants."* (Crawford, 1995, 1)

More specifically, company towns are developed outside of the cities due to the demands of capital owners, and they are composed of residences, social places and working places. They offer

better living conditions due to humanistic reasons and for increasing the productive capacities of workers. The employees of a single company or group of companies initiate such settlements to inhabit its working community. Company towns are conceived an early form of urbanization. According to Crawford (1995, 2), historically, company towns are able to be figured in varied forms. With respect to the natural conditions and industrial requirements, company towns are developed. "The reasons of establishing company towns are summarized as follows: By the places for education (nursery, different school levels), health (health care centers, infirmary, private hospital) and places for socialization (parks, picnic areas, clubs and night-clubs, sport-ground), the capacity of the worker family's self-reproduction reaches at the maximum point, and therefore more fertile production process and healthy working conditions with qualified workforce are all provided. Moreover, the employer, providing these facilities, aims at reducing his risk for finding workers and worker's risk of resignation." (Crawford, 1995, 2)

These initial forms of company towns serve as a model for the formation of the urban fabric. The factory campuses - designed to include spaces for production, socialization, education, accommodation, recreation – form the new living environment of the early 1900s; and further living spaces are developed in the immediate surroundings of these campuses.

3.3.5.1. Some Pioneering Industrial Town Examples

There are some initiatives with the purpose of factory and housing integration developed as model towns. The model towns are concrete demonstrations of a social or physical ideology. Model towns are often incorporated contemporaneous design styles as part of their architecture and planning. In these towns, housing and services that industrialists provided for their workers also inspired some of the model towns and social welfare program. "Model towns were primarily intended to attract skilled and dependable workers who would be contented, efficient and less likely to engage in strikes and labor disorder." as Alanen states (2007, 1). General properties of a model town are following completing with strictly modern homes, beautiful as to architecture and commodious of arrangement, business houses, paved streets, a perfect sewer and lighting system, and halls for public meetings and places of amusement.

Mumford (1938) affirms that capital which is consolidated in the private sector and based upon industry set out creating its space. In this framework, capital depending on industrial production formed the company towns which were developed for the company workers on aggregated lands by industrial companies. Godin in Guise, Salt in Saltaire, Krupp in Essen, Cadbury in Bourneville and Lever in Port Sunlight and such likes were built under the leadership of industrial capital. In this part, some model towns /company towns are tried to be examined shortly.

Familistere of Godin

In 1859 Jean-Baptiste Godin founded Familistere - in Guise (France). Familistere (See Figure 3.24) which was modernist social housing enabled to inhabit two thousand workers nearby the factory, Godin's iron foundation. Under the inspirations of Charles Fourier, he developed this housing structure. For some, utopia came true. It was collective housing, five story and in courtyard form. It was surrounded with gardens and recreational areas. They were adjacent to the factory and workshops led to access the work easily. (Power, 1993, 31)

Figure 3.24 Familistere

(Source:http://utopies.skynetblogs.be/archive/2008/11/23/jean-baptiste-godin-1819-1888-familistere-de-guise.html, accessed in 26th January, 2013)

Figure 3.25 Familistere Photography

(Source: http://ttguise.octetclub.com/spip/spip.php?article32, accessed in 26th January, 2013)

Saltaire of Titus Salt

Saltaire, model town of Titus Salt,. It was built in Yorkshire, England. It is a like an utopia constituting the couple of factory and houses. The major concern of the Titus is building the public buildings within the settlement.

In New England villages and company towns, there are a clear separation between settled areas and surrounding wilderness, a common area for grazing of domestic animals, orthogonal street layouts and small houses of uniform size and dimension.

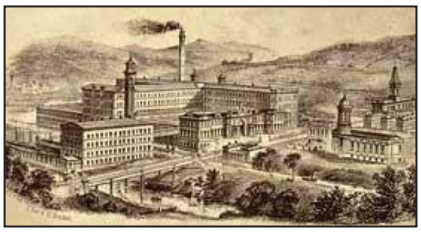


Figure 3.26 Image of Saltaire (Source: http://www.harmoniumnet.nl/museum-saltaire-ENG.html, accessed in 20th October, 2012)

There are public amenities for the community such as workers' institute, hospital, school, and churches. All they are close to the landscaped open area in the settlement. The houses are arranged in the gridiron pattern, which have a strict geometry. Moreover, the design of the town Saltaire as in human scale and small scale and life within the nature constitutes the sense of freedom and social justice.

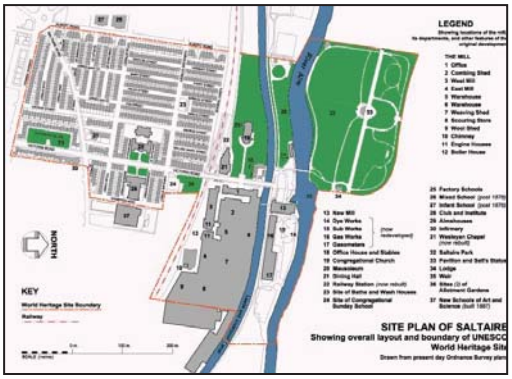


Figure 3.27 Saltaire Site Plan

(Source: http://www.saltairevillage.info/saltaire_history_0000_research_tools.html, , accessed in 20th October, 2012)

The houses are the smaller 'workmen's cottages', simpler and more austere in design than many of the other dwellings. They originally consisted of two bedrooms, a living room, a small scullery and a cellar. They have no front gardens, the front doors opening direct onto the street, but all have small backyards opening on to narrow alleys.

Figure 3.28 Photograph of Saltaire (Source:http://saltairedailyphoto.blogspot.com, accessed in 20th October, 2012)

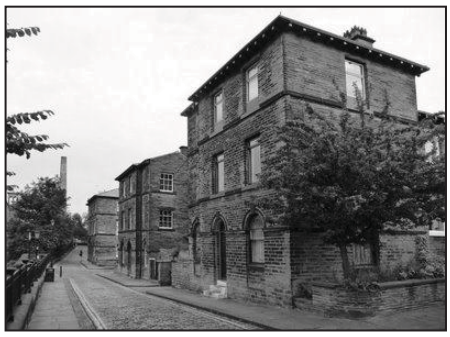


Figure 3.29 Photograph of Saltaire 2 (Source:http://saltairedailyphoto.blogspot.com, accessed in 20th October, 2012)

Figure 3.30 Photograph of Saltaire 3 (Source:http://saltairedailyphoto.blogspot.com, accessed in 20th October, 2012)

Figure 3.31 Photograph of Saltaire 4 (Source:http://saltairedailyphoto.blogspot.com, accessed in 20th October, 2012)

Bournville of Cadbury

John Cadbury who was producing chocolate built a village for his workers. Bournville is one of the nineteenth century British Model Villages and it is the brand of dark chocolate of Cadbury. It was the English garden city. It is a suburb evolved with the development of the Cadbury Factory.

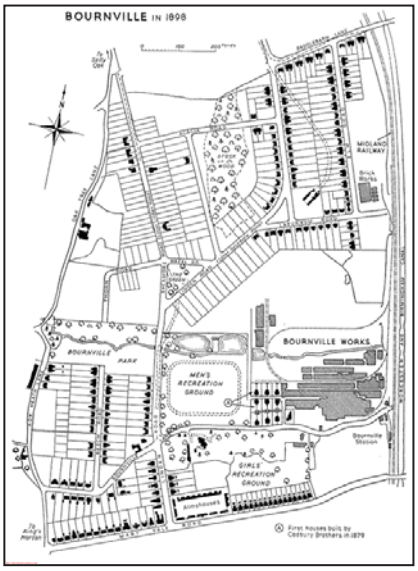


Figure 3.32 Plan of Bourville (Source:http://www.british-history.ac.uk/report.aspx?compid=22961, , accessed in 20th October, 2012)

Figure 3.33 Section of Residential area (Source:http://www.british-history.ac.uk, , accessed in 20th October, 2012)

Port Sunlight of Lever

Port Sunlight is a model village and developed as a suburb in England. The period between 1899 and 1914, William Lever the owner of the industrial facility built a settlement for including his working area and residential area to accommodate his employees in Port Sunlight. There were 800 houses built to house a population of 3,500.

The village had land shares, and public buildings consisting of the hospital, schools, concert hall, Art Gallery, swimming pool, church, and a hotel. The welfare of the settlement of Port Sunlight was originated through the provision of education, entertainment facilities,, recreation and cultural organizations promoted with art, literature, science or music.

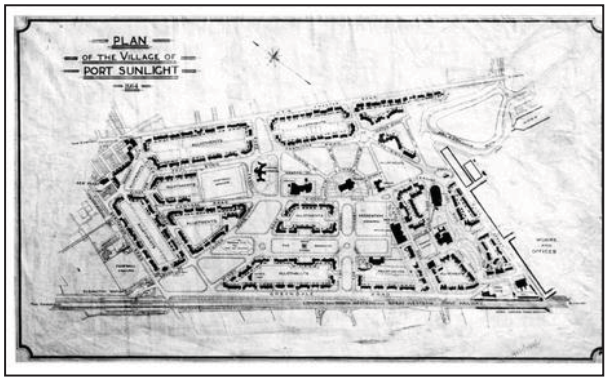


Figure 3.34 Plan of Port Sunlight

(Source: http://www.idealcity.org.au/town_planning-5-modern_metropolis.html, , accessed in 20th October, 2012)

Pullman

In 1880, Car manufacturer George R. Pullman developed a model village on vacant land South of Chicago. Pullman was known as the first planned industrial town in America. *"The community, named for Pullman himself, was envisioned as a place where the industrialists could provide improved living conditions for his workers while simultaneously exerting control over their actions and deportment."* (Alanen, 2007, 3)

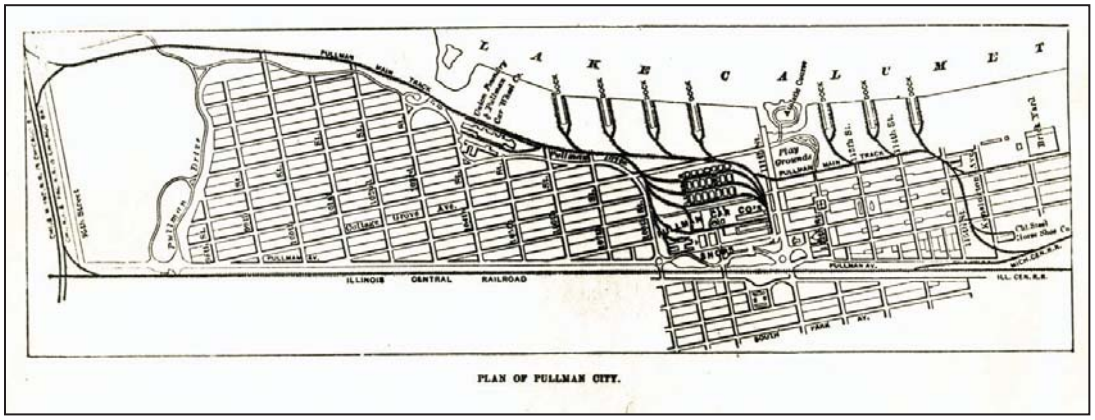


Figure 3.35 Plan of Pullman (Source: Alanen, 2007)

By 1893, Pullman's 12600 residents made it the nation's largest company town. But then in 1894, the Pullman strike aroused. It was linked in no small part to high rents, wage reductions and rigid regulations imposed by the George Pullman. After the strike ended, public and judicial opposition to the heavy-handed paternalism exposed by the 1894 strike contributed to rapid changes in the

organization and management of American company towns. (Alanen, 2007, 17) After Pullman strike, other industrialists quickly questioned the underlying principles and practices.

Crawford (1995, 2) reclaims that Pullman influenced a new generation of model company towns, based on progressive concepts of management and labor relations administered by trained professionals. On order to deter unionization and reduce labor turnover, the new company town attempted to attract workers by providing significantly better working and living conditions. Nonetheless, still the residential and institutional buildings in Pullman remain one of the Chicago's most distinctive neighborhoods.

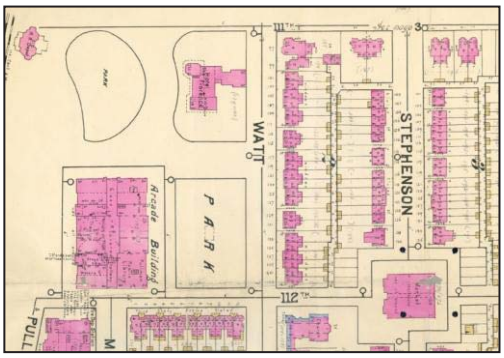


Figure 3.36 Partial Plan of Residential Area (Source: http://www.pullmanil.org/town.htm, accessed in 25th October, 2012)

Figure 3.37 Image from the Pullman site (Source: http://www.pullmanil.org/town.htm, accessed in 25th October, 2012)

Figure 3.38 Image from the Pullman (Source: http://www.pullmanil.org/town.htm, accessed in 25th October, 2012)

Figure 3.39 Image from the Pullman (Source: http://www.pullmanil.org/town.html, accessed in 25th October, 2012)

3.4. Typology of Factory Campuses

Industrialization affected on the forms and processes of the production of space, urbanization process and housing production. The factories which replaced the traditional production forms led to new spatial needs in cities, brought up sheltering and transportation problems to the agenda. On the other hand, depending upon to the raw material needs of the factories, market connections and the relationship with the city centers, transportation problem also became a significant issue.

This section aims at clarifying different formations of factory campuses in time. In order to achieve this, initially the industrial spatial layouts are categorized and afterwards their impact on urban space/morphology with respect to housing is tried to be revealed. Meanwhile, the types of factory campuses are represented.

3.4.1. Typology of Urban Industrial Space

Physically, industrial settlements did not represent a single pattern. The production processes/type and labor force in each region interacted to produce distinct industrial typologies. It can be assumed that, each industrial district established its own standards for working conditions and community life that shaped a characteristic physical and social order. However, some towns continued with similar practices. This part of study is an intention of classifying the industrial facilities and settlements. With respect to their form in urban context and factory and housing coupling, an examination is tried to be set forth.

According to Özdeş (1994), industrial structures are classified in terms of production agent, product goods, and the form of establishment, rural development, urban settlement and functions. For urban aspect, there are two forms of industrial facilities, heavy and light industry. However, Ersoy asserts that it is not actually possible to differentiate industrial structures in a clear cut manner (all facilities in the scope of industry). Nonetheless, he classifies industrial facilities in three basic groups. The first one is related with coal mining, petrol, salt, lime and similar natural formations. This kind of facilities' place is not easily changed and they are usually out of the settlements. The second one is related with the facilities which process the raw material and manufacture it. These facilities take place in the urban settlements. The third one is related with facilities which produce and distribute water, electricity, gas and etc. as a service to settlements. They are exactly established for the existence of settlement. They are either located in the city or nearby the city, but it is not necessary to be positioned in the residential area or other urban land-uses. (2012, 375-376)

Properties of these industrial types bring forth its specific determinants to settle down. With reference to each determinant, the location of industry is varied with certain factors (transportation network, raw materials - agricultural based or not - , infrastructure, ownership pattern, somehow political preference, proximity to the other industries and consuming centers, availability of workers and etc.). It would be located in city center (in the core or fringe, but especially fringe) or at the periphery of the city, or it would lead to suburban development. Hence, it creates different spatial patterns, as well. In the course of time, changing economic, environmental and political concerns means to industry sector have attract these planning decisions in time.

As Benevolo (2006), emphasizes the intermingling of the housing areas and the factories in the first half of the 19th century, when the industrialization process began. Housing as a compulsory component of the industrial settings is put in consideration. The configuration of urban space has changed since then. In fact, decreasing/unhealthy housing conditions also have reasoned some new patterns come along as well. *"At the inner-city, the fringe development also has led to the generation of new understandings and utopias in a spatial manner around two dominant principles; creation of new towns (utopist schemes, company towns) and partial (suburbs, garden city) developments in the fringe."* (Günay, 1988, 24)

Günay affirms that *"the models developed in the industrial society searching for new forms of urbanization are classified by Françoise Choay under the headings of progressist and culturalist having a dialectical relation (1988, 24). On the one side, progressist models focused on self-sufficient settlement units for workers whereas culturalist models concentrated on the space characteristics of pre-industrial cities and try to adapt its space understanding to that of the pre-industrial society.* (25-26)

Within this framework, the industrial typology is composed with four basic urban forms: Compact, Scattered, Suburban, and Industrial clusters in the periphery (suburban).

The first three of them are derived from the book named "Soviet Town Planning Principles" written by the state committee of civil engineering and architecture in Soviet Union, the latest one is developed by the author as an addition. In the book, there is not concrete typology study but it comprises basic morphology of industrial establishments.

a. Compact industrial district in city

These types of cities are either originally settled down in purpose of industrial town constitution, or heavily transformed its urban economy to industrial facilities and locates industry into the central area. These industrial facilities are highly organized.

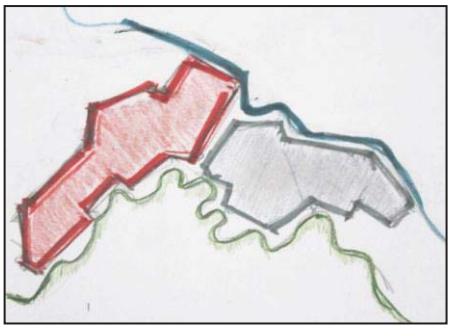


Figure 3.40 Compact Industrial District in City (Source: State committee of civil engineering and architecture in Soviet Union, 1967; revised and re-drawn by the author)

For these integrated and specialized areas as nucleation, Mayer points out the rivalry for space within areas or between areas, he sees as rivalry for proximity, each competitor faced with the need of being near the urban center. For some purposes, depending on cost, transportation can be substituted for proximity and transfer costs for rent. The choice will differ for each type of establishment. The same choice must be made whether the establishment is at the center or in some other area. (Anderson, 1971)

Kostof clarifies this urban process regarding the increasing restraint on urban lands in order to insure housing for industrial workers. He exemplifies such that the remedy for increasing housing need in England, was formed as *"thin blocks of row houses on the cheap land at the city edge which skewed patchwork of grid patterns"*; houses were allocated with double back-to-back such as row houses "*with no intermediate space*" in vacant land or agricultural lands surrounding the industrial towns (1991, 149).

Once industry is settled down densely in city center, due to sheltering need it causes *"regular lots and irregular blocks started to appear with respect to ownership pattern."*(Eren, 1995, 102) The urban morphology has changed towards it.

Moreover, in order to control the housing problem, urbanization process and housing production with regards to development by building industrial plants peripheries of the city center is proposed and realized. Encouragement of housing around the factories is supported by the local authorities.

b. Scattered Industrial District In City

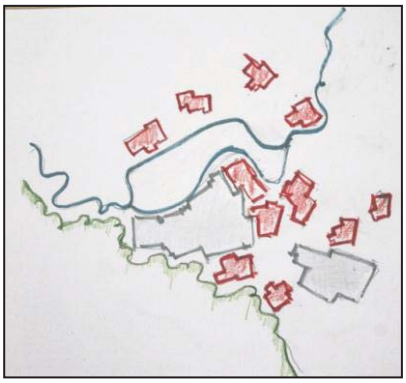


Figure 3.41 Scattered Industrial District in City (Source: State committee of civil engineering and architecture in Soviet Union, 1967 and revised drawing by author)

Varied industrial facilities with discriminating means of manufacture/production select different places to settle down in the city. Light industrial production would often figure such that in scattered form. As not depending to complex production system and not necessary to other industries, these facilities do not prefer to be in the same place at first. This form of layout is observed where early industrialization process takes place.

Due to this course, with a comprehensive planning approach, the scattered industrial districts are subject to urban redevelopment progress namely the reconstruction. The purpose of reconstruction is obvious, organizing all the industrial facilities and common necessities (worker housing, infrastructure, transportation, proximity to market or consuming centers and etc.) and benefits are shared in a definite place.

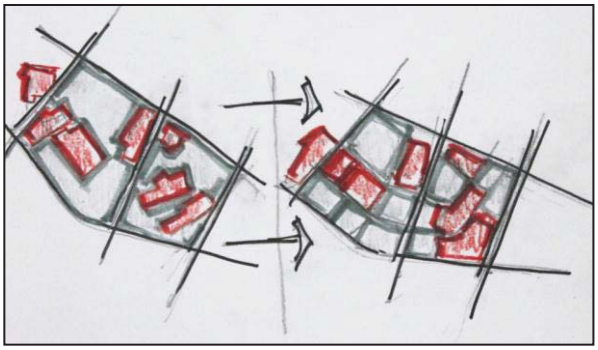


Figure 3.42 Variant of reconstruction of the city industrial district located in the residential area

(Source: State committee of civil engineering and architecture in Soviet Union, , 1967 and revised drawing by author)

Pre-formations in the early industrialization period in city center in terms of redevelopment process can be explained as follows *"The industrial era also introduced new development pattern in the fringe besides the redevelopment projects in the inner-city or new regulations of town-planning. Whilst the city became denser and compact, land developers chose vacant lands at the fringe of cities to develop for new housing areas for workers."* (Songülen, 2012, 95)

In years of 1848, 1858 and 1866, Public Health Acts were put forth as arrangements for the housing. These acts "…proposed '*by-law street' that defines street width as 12 meters consisting of long stretches of terraces cut through by infrequent cross-streets with a long and narrow alley in between the double row houses (back-to-backs).*"(Kostof, 1992, 205-206)Afterwards, new urban codes and design basis was configured to shape urban space of the towns.

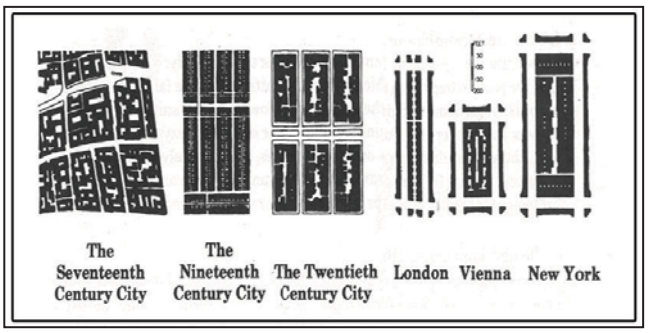


Figure 3.43 By-law blocks of industrial era (Source: Gallion and Eisner, quoted in Baş 2010, 91)

The emerged urban problems as a result of industrialization caused to the origination of several attitudes, regulations and spatial surveys. In Europe, for instance in Germany, it is supported that housing settlements to be constructed around the factories. By laws and regulations, around the factories, housing production for workers is made obligatory. (Brooch, 2005) Spreiregen summarized these attempts such that, *"all these ideas are leaning toward one objective which is the design of cities as a place to live for all, with particular emphasis on the needs of the working classes."* (1965, 29)

c. Suburban Industrial Establishment

Some planners encourage more concentration in the central city, others defend decentralization. This challenge is widely discussed since the 19th century. In the progressist approach, as a reaction the urban problems arouse as a consequence of industrialization, the suburban industrial development as self-sufficient settlement is proposed as theorized with Cite Industrielle, Garden City. One after another, the Soviet urbanism has favored this type of industrialization and urbanization as well.

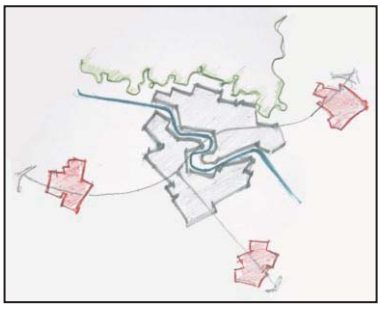


Figure 3.44 Suburban Industrial District (Source: State committee of civil engineering and architecture in Soviet Union, 1967 and revised drawing by author)

Reflection to the existing urban problems with high urban rents, there is a tendency occurred in suburban industrial development. Usually heavy and large industrial production facilities are located in suburban areas. They are decentralizing ever faster as low-cost rapid transportation becomes available. Central cities are losing population to the industrial suburban communities. These self-sufficient suburban industrial districts are segregated from the city. The İskenderun Iron and Steel Factory Campus, which is elaborated in Chapter 5, is an example of this type of industrial settlements.

d. Industrial Clusters In The Periphery

Aiming to provide an opportunity for collaboration among industries, clustering of them produces this type of industrial spatial setting. To further be organized and use the common facilities (infrastructure, transport, etc.), and decrease certain expenditures are basic reasons for it. Varied manufacturing facilities come together, depending on each other's sources. Organized industrial districts can be given as an example of this type. Moreover, their conglomeration with other industrial enterprises actually constitutes industrial clusters – like an industrial corridor - , as well.

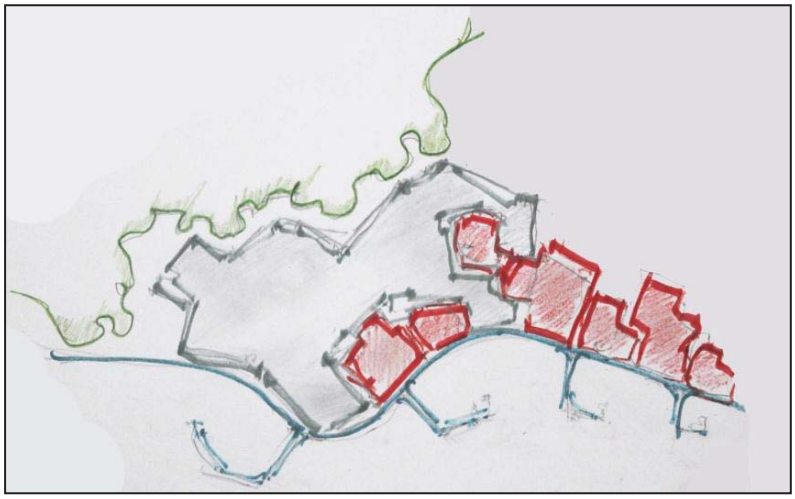


Figure 3.45 Industrial Clusters (Source: drawn by author)

3.4.2. Typology/Forms of Factory Campuses

Housing is a compulsory phenomenon accompanying industrialization as expressed before. Hereby, particularly, the forms of togetherness of "the housing and factory" configurations are examined. Correlation of industrial and residential area is tried to be represented.

In the formation of these settlements, first of all transportation network is considered. A deliberate process is followed in settling infrastructure services, housing and social facilities. In addition to these, the spatial construction, location and the comfort conditions of the house became a current issue and started to be discussed. It is questioned that how urban space is formed in response to the close relationship among working and sheltering space.

Basically, paying attention to the negative environmental consequences of the industrial production, the distance of the factory and residential area is determined. Also, type of industrial production, urban development decisions, availability of certain industrial infrastructures, sufficient housing area for workers', who are to be urgent in the factory site are all taken into consideration constituting the form of factory campus.

Forms of Industrial and residential area togetherness

Apart from the factory campuses' spatial context, the main determinants of the factory campus forms are how harmful industrial facilities are and on the freight turnover. Thus, three main types of togetherness are represented here due to their properties of which labeled as "Joint" and "Segregated".

Joint Forms (A): Industrial enterprises with no environmental pollution, small freight turnover and requiring railway siding; such factories can be located within residential areas;

Segregated Forms (B) Industrial districts with minor or major environmental pollution, but having heavy freight turnover requiring railway siding; such factories should not be located within residential areas. In addition, some industrial districts are compulsorily to be remote from residential areas owing to its extensive environmental pollution.

Joint Forms

A. There are three main schemes of factory campuses of the certain industrial enterprises which enable to settle down them whether in city center or periphery having opportunities to close relationship, as shown in the figures below.

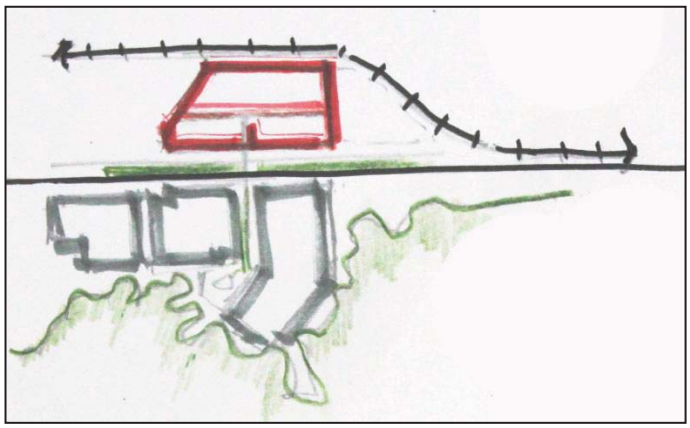


Figure 3.46 Scheme of Joint form A1 (Source: State committee of civil engineering and architecture in Soviet Union, 1967 and revised drawing by author)

Figure represents the light industry enterprises location in the city industrial area. The district has convenient transport communication with other parts of the city.

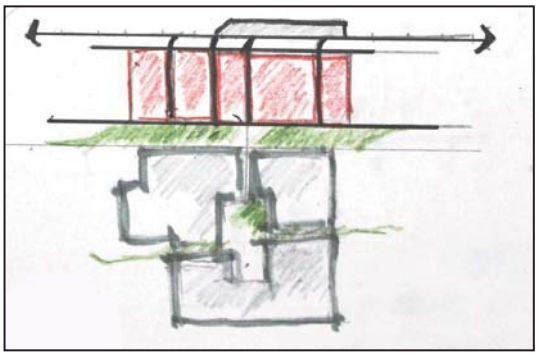


Figure 3.47 Scheme of Joint form A2 (Source: State committee of civil engineering and architecture in Soviet Union, 1967 and revised drawing by author)

Diagram shows the location of industrial area parallel to residential area will allow sideways development of the industrial district.

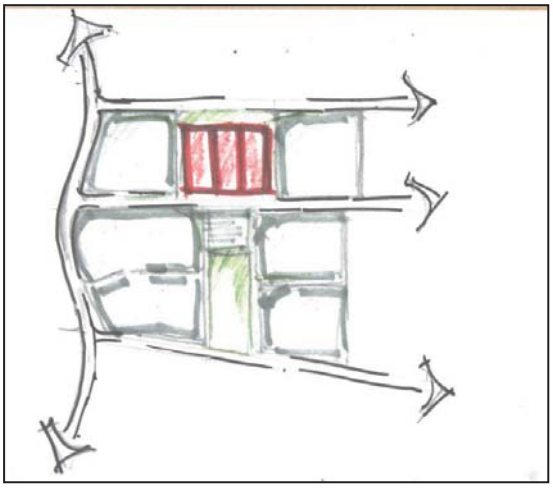


Figure 3.48 Scheme of Joint form A3 (Source: State committee of civil engineering and architecture in Soviet Union, 1967 and revised drawing by author)

The above scheme presents a joint model of industrial and residential area. Places of employment are located within walking distances, the engineering structures and cultural and welfare service establishments are centralized. There is a single community center for industrial and residential zones. Also, there is a park surrounding the community center.

Segregated Forms

B. Second type of factory campuses has two basic types as follows;

An illustration of factory campus organized with a short distance between factory and housing area is shown below in Figure 3.49.

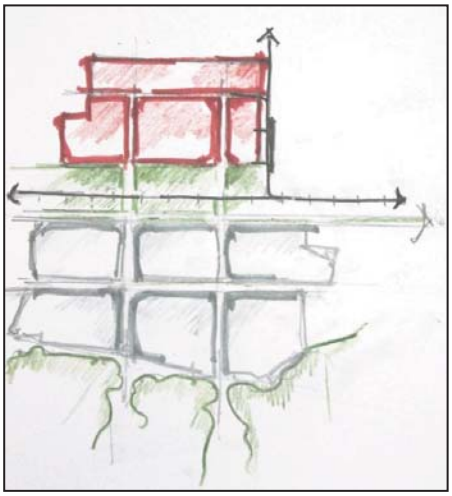


Figure 3.49 Scheme of Joint form B1 (Source: State committee of civil engineering and architecture in Soviet Union, 1967 and revised drawing by author)

The scheme shows the location of chemical industry enterprises in the city's industrial territory allocated for this purpose. The railway is the common line between housing and factory used for industrial and public transportation.

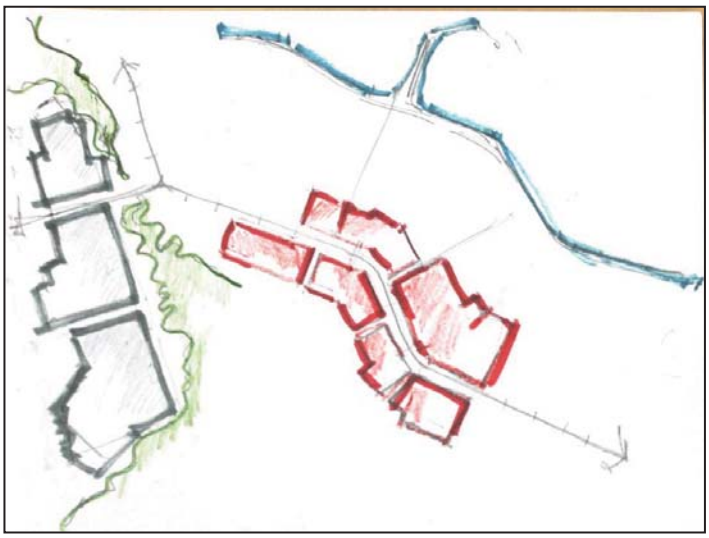


Figure3.50 Scheme of Joint form B2 (Source: drawn by author)

Layout of an industrial area is remote from the residential area is shown in the figure above. Due to highly environmental pollution of the factory, the residential area is planned far away the production site, but in rational space for easy access.

Composed forms of factory and housing togetherness would be produced and designed. An illustration is shown below.

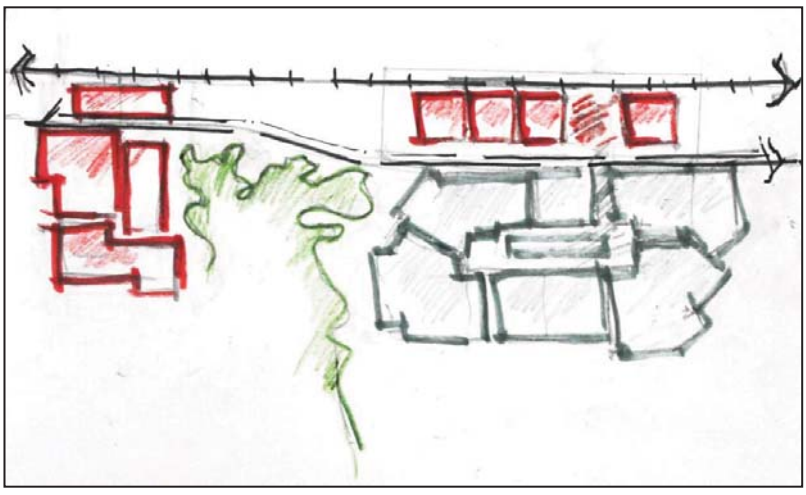


Figure3.51. Scheme of Joint form B1 (Source: State committee of civil engineering and architecture in Soviet Union, 1967 and revised drawing by author)

The composition of two different forms is shown in the figure 3.51 above. The residential area serves to two different industrial facilities. Actually, it would be multiplied in different forms.

CHAPTER 4

SPATIAL IMPLICATION OF INDUSTRIALIZATION IN TURKEY

In this part of the study, the industrialization experience concerning the urban spatial pattern developed in Turkey is presented. Industrialization and urbanization policies should be taken into consideration together. They have strong internal relationship, completing each other and producing typical spatial configuration in the early urbanization period of Turkey. Within this context, especially the evolution of housing & factory couple in Turkey since the Republican period is examined in the present chapter. The urban design perspective in this evolution is particularly elaborated.

The factory campuses which can be characterized as the prior experience of the capitalist city bring a new urban spatial pattern with respect to the organization of industrial production. Aims (political, economic and ideological) to build up factory campuses as mentioned widely in Chapter 2 are also valid for Turkish cases; however, there are some peculiarities of Turkish way of design. The impact of factory campuses on urban development and urban morphology, and design qualities of the public spaces, the produced publicness, the achievements of these -factory campuses- urban fabrics, the idea of community building, the socio-spatial outcomes (sense of belonging to space and commemoration of space) are discussed and illustrated with some Factory Campus cases.

Initially, to draw the framework of the factory campus development context in Turkey, the housing and industrialization policies are historically evaluated. This relationship of industry and housing is strongly emerged and planned in the early period of Turkish Republic. But gradually, it has been dissolved or devalued due to changing conditions and policies. The urbanization and industrialization policies of Turkey can be examined in three different periods (period from 1923 to 1950s, 1950s to 1980, and 1980s to today), which overlap with the changing pattern of the factory campuses. Afterwards, some factory campuses with distinctive qualities -namely Maltepe Gas Factory Campus, Karabük Iron and Steel Factory Campus, Kayseri Sümerbank Textile Factory Campus, Eskişehir Sugar Factory Campus and Seydişehir Aluminum Factory Campus- are shortly expressed. Finally, remarks of these cases are pointed out.

4.1. Changing Planning Approaches to Factory Campuses in Three Periods of Turkey with Respect To Industrialization and Housing Policies

4.1.1. The Period between 1923 and 1950: Early Republican Period

"*With the beginning of Industrial Revolution, pre-industrial cities started to be replaced with new industrial cities and metropolises; eventually, the roots of modern cities began to be established*" as Songülen states (2012, 90). An intentional urbanization of Turkey literally started within this period, known as the Early Republican Period. Turkey's industrialization can be called as late industrialization compared to Europe, where industrial revolution had already blown up. Turkey had lack of enough capital accumulation for industrialization. Therefore it remarks the pioneering role of the state in industrialization. Şengül (2001) names the period between 1923 and 1950 as the *"urbanization of state".* State handled the urbanization and industrialization processes jointly. Hence, in Turkey urban spatial configuration was reproduced with regard to a parallel industrialization process.

All relationships between land, labor and capital are reshaped in terms of industrial relations. In other words, new urban forms are developed out of the necessities of industry. Urban forms are the subject of urban design field. Urban design, despite mainly dealing with the physical planning, also has political dimensions. No design and planning concept is independent from the political

problematic; no physical form is independent from political power and authority; and political power is something to keep the control of space. Therefore, the political authority is not distinct from the spatial form. The relation between production of space and authority manifests itself in the determination of urban forms. Lefebvre claims that;

> *"Space is a social product. The space, thus, serves as a tool of thought and of action; that in addition to being a means of production, it is also a means of control, and hence of domination, of power."* (1991,26)

In this respect, in the early years of Republic of Turkey, the state was the decisive body for urban forms. Urban life or civic life had always been the center and in the center of economics and economic power. As the new economic arrangements - industrial enterprises - were initiated and built up in this period; they changed the existing urban patterns and led to a new planning approach strengthening the republican political ideology.

Soja (1989, 83) argues that the space is related with political approaches and ideologies: The space can be defined as "*both transparent and opaque"*. It is the concrete form of the space which gives it "*the opaqueness image*" and makes it *"nonliving and non-dialectic*". Constituting the opacity of the space, production and representation of it is directly related with *"the policies, political approaches and ideologies"*. The transparency of space is an abstraction that the living *"constitutes in his/her mind with his/her own intellectuality"*, a fact of reality that the living presumes in the concrete.

Undoubtedly, new economic structure, administrative system, legal systems bring new patterns in urban forms. Consequently, there are significant changes in both urban and rural lives. For instance, the division of working and living spaces in accordance with the shifting from agricultural society to industrial society is a critical phenomenon to be admitted in the community. The means to achieve it is provision of housing, infrastructure, health and education services, etc. Managing this urban transformation, the rational comprehensive planning was used strictly.

> *"Change life! Change Society! These ideas would lose completely their meaning without producing an appropriate space. A lesson to be learned from Soviet Constructivists of 1920s and 1930s, and of their failure is that, new social relations demand a new space and, vice-versa. "* (Lefebvre, 1991, 59)

In the Early Republican period of Turkey, development of new cultural and moral values was essential for changing the society. Throughout urbanization in this time, idea of nationalism was put forward to be achieved with the help of new economic structure, namely the industrialism. In this era, state agents were industrial investments of the state, railway investments, and most remarkably, the urban plans. This placement provided the formation of a new civic life, new daily uses, new values and a new national identity. This is the way of organizing consent via spatial hegemony and its agents.

In order to examine the ideology of the period and how it is reflected in the architecture and urban planning, it is necessary to detect and define the main ideological lines in this period. As Tekeli states that *"There are two main ideological lines. The first one is adopting the positivist way of thinking which actually is a continuation of the westernization process that started in the Ottoman Empire and the second is the establishment of the nation state".*(2009, 74)

Adopting the positivist way of thinking and the modernist development as a state ideology, the Republican government gave important roles to spatial strategies. The ideology gained strength with the choice of the location of the new capital city, and the design of important public buildings and squares.

Asiliskender (2008, 40) points out the role of industrialization *"… as a development that accelerates the modernization process, affecting social structure and the space."* Throughout, early Republican Turkish planning practices, *"there are urban planning concepts developed in respect to European urbanism emerged related to industrialization."* (Karakaya, 2010, 32) In constitution of the western

identity and industrial community, the form and the function of housing and urbanization were considered as the most important issues of the era.

Impact of Modernism on Urban Planning Policies of Turkey

The collaboration of the Republican political ideology and modernism can be seen in many forms. As Çalışkan (2003, 15) says:

> *"Modernism movement, standing out with the societal and intellectual transformation of 17th century Europe, which would later influence the world, has a multi-layered structure. This movement is a process formed by these layers. These layers are its characteristics of being philosophic in terms of its enlightenment, planning and rationalist abstract; institutional with its nation-state based democratic structure; economic with its massive production and consumption pattern and; societal with its fiction of citizens that have the right of private ownership."*

Asiliskender (2008, 1) describes the modernization process in Turkey after the proclamation of the Republic through three significant developments in spatial terms: First, depending on the cause and effects of the War of Independence, national land/space: providing the integrity of country; second, urbanization -or in another word reconstruction - of the Anatolian settlements; third, the changes in the form, production and use of the housing.

In order to assure the continuity of development, state unified the industrialization and social and spatial modernization goals. With this aim, industrial enterprises were established together with social infrastructures such as public housing, school, market, sports and cultural facilities.

Asiliskender (2008, 43) denotes that industrialization which is one the most important founder elements of modern Turkey. It transformed and differentiated the social environment and space. Meanwhile, it was also used as a means *"to organize the society and intervene in interior dynamics*."

The industrialization accompanied with the modernization process directly affected on the urban space, and its ideals were achieved through urban space. In this regard, it can be thought that industrialization was adopted as the factor to start the change in reconstruction of Anatolian cities in the first years of the Republic. Therefore, this period is worth examining profoundly.

The Role of Housing in the Modernism and Industrialism

> *"Housing was considered important for not only as an expression of changing form and the demand of sheltering, but also as a fact that directly affects the living habits and the change of the identity of every single individual."* Asiliskender (2008, 2)

The modernity is a phenomenon which creates discontent to every habitual thing and aims to defeat the habit. So it has a revolutionary aspect. Instead of obeying the rules, it is the adoption of the pursuit of editing by renewing the rules and statuses constantly. In this respect, the identity problematic revealed by the modernization process caused to reject the traditional order and to form an institutional and economical social structure bound to personal abilities. In this new order, the values contacting with the society like ethnic roots, language, and religion are not classifier. Asiliskender (2008, 2) asserts that new social order arises from an economic network of relations which is defined with equal rights. These discussions evoked a break/disengagement against the static characteristics of the rural life and traditional structure. Socially, this situation is the acceptance of the distinctiveness and multitude. Spatially, it is the disorganization of every kind of order which is tied to the traditional and rural life. In this manner, modernization process mostly affected housing production in spatial and social terms.

Housing is always in the agenda of the modernization process because of its relation with the individual. "*In the pursuit of progress and innovation, the innovation of the identity of individual, also affects the house he/she lives in. The traditional order and the production of the housing is rejected and it is formed according to the rules of urbanized life."* Asiliskender (2008, 3)

Forms of urbanization and housing constituted well known patterns that were spatially transformed by the effects of modernization. Industrialization was the most effective factor on this change by its economic and social dynamics. For Asiliskender (2008, 3), on account of this approach, modernization experience of the young Republic could be comprehended as a shifting process on spatial and social identity, rather than a political reconstruction. It is aimed to renovate whole life styles and stereotypes by revolutions of Early Republic. Thus, the identity of space, urban form and social order were modified by the industrial settlements in Anatolian cities, founded under the ideology based on creating change and providing the development, with their economic effects, and their very new spatial context.

The industrial worker housing configured around or within factory constitutes such as a "Community/Communal Environment". Ayhan (2010, 69) denotes that "*Establishing a factory settlement with an area of social facilities in addition to its industrial facilities would be create not only an enterprise which would be a symbol of the pioneer role of state in formation of the industrialization but also a community/communal environment. Spaces of dwelling like houses and singles' pavilions as well as the spaces of assembly and entertainment like dining halls, cinema and the areas spared for sports and recreation played a crucial role in designing urban space."*

The differentiation of the areas spared for social activities from the areas in which industrial facilities has taken place, and determination of the zones for residential units, education and socialization, administration, sports and recreation have brought the new values. Asiliskender (2008) affirms that these values should be considered to have fairly crucial effects on understanding and meaning of the 'modern' and on the dissemination of the 'modernization discourse'.

Furthermore, for Ayhan (2010, 90) the discourse which is disseminated by the new values that would make the building and the environment healthy such as usage of concrete, steel and glass in the construction, usage of material that is easy to clean in the wet spaces, indoor usage of toilet, washbasin and bath, entering of running water into houses, usage of central heating system should also be considered to be instrumental in meaning the 'modern'.

Urban Planning Approach

Urban planning experience of Turkey in the 1930s constitutes a set of consistent policies and strategies. Keskinok (2010, 178) states that *"Establishment of a national economy and arrangement of the space of the nation-state were the main policies determining the major lines of policy-oriented urban planning experience in this period."* For him, determinants of the political framework were the building up a new capital and the establishment of industrial cities. They definitely dealt with regional development and interregional integration. Dichotomy of urban and rural was the major planning phenomenon at this period. Keskinok denotes that;

"Industrialization was also seen as a means to liberate the rural labor as well. It was thought as the basis of social development and urban-rural integration. Then, the state factories appeared as the major agents of integration of industry with the city and the redefinition and the provision of public services." (2010, 176)

Navruz, (2010, 8) states that the industrialization movement in Turkey started in the period of First Five-Year Industrial Plan (1934-1938). Also, she denotes that the first industrialization attempt was realized through an industrialization plan. In this plan, the zones where the factories would settle were determined. By this plan, an even distribution of industrial plants would help urban development. Hence, industrialization was regarded as a promoting factor for urban and economic development. (Ayan, 1982)

First Five-Year Industrial Plan proposed the distribution of industrial enterprises in different cities. Industrial development depending on raw materials was suggested to achieve a balanced economic development. Therefore, heavy industrial enterprises were built in small settlements where raw materials were abundant. For the implementation of this plan, the Soviet Union credits and technical support were exploited (Navruz, 2010, 8).

The First (1933) and Second Industrial (1936) Plans were based on the question '*what the development should be'* instead of the idea of 'projecting and estimating the possible development' in the future. These plans prioritized the location selection of industrial estates rather than the economic feasibility at firm level (i.e. economies of scale). The spatial dimensions and the development objectives of these plans were comprehensive and formulated around the idea of industrial development. Both of these plans tried to create free labor. They had comprehensive objectives on rural development, and they aimed at increasing the positive effects of industry over agriculture. (Keskinok 2010, 178)

The first plan proposed 20 new factories across the country (shown in the Table 4.1). These factories were aimed to be integrated with a transportation system of railroads, harbors and highways, based on the needs of the industries. Meanwhile, a regional highway system that would connect to railroads was also proposed in the plan. Proximity to raw materials and to labor force, security, transportation and freight opportunities, housing opportunities, energy sources and adjacency to interrelated industrial establishments were among the location selection criteria for industrial facilities (Keskinok, 2010, 179).

Table 4.1 Industrial Facilities Established in the First Five-Year Industrial Planning Period (1934-1938)

Type of Industrial Production	**Name of The Factory**
Textile Industry	Isparta Carpet Factory Kayseri Textile Factory Nazilli Textile Factory Ereğli Textile Factory Bursa Textile Factory Malatya Textile Factory
Chemical Industry	Isparta attar of roses Factory Bursa Gemlik Artifical Silk Factory Zonguldak Semicoke Factory İzmit Sulphuric Acid Factory İzmit superphosphate Factory İzmit Chlorine and Escharotic sodium Cabonate Factory
Ceramic, Glass, Cement Industry	Kütahya Ceramic Factory İstanbul Glass and Bottle Factory İstanbul Cement Factory
Paper and Cellulose Indusrty	İzmit Paper Factory
Sulphur Industry	Keçiborlu (Isparta) Factory
Ketene Industry	Kastamonu Ketene Factory

(Source: quoted in Navruz, 2010)

Industrial production, while leading to the rise of factory buildings, also brought about small settlements or communities of workers attached to factories. These settlements were like a small model of the city including hospital, cafeteria, school, sports fields and recreation areas. (Navruz, 2010, 1)

The second industrial plan had a more comprehensive content and including detailed spatial arrangements. Keskinok mentions that "*The production and consumption potentials were mobilized in a comprehensive and railroad-based multimodal transportation system. The Plan included goals towards increasing the positive effects of industrial development over agriculture. Each establishment would be developed not only with production and distribution functions but also with transportation and educational facilities."* (2010, 180) According to the Plan, mining, coal mines, regional electric stations, domestic heating industry, soil industry, food industry, chemical industry, mechanical industry, marine industry were determined to be developed (See Table 4.2).

Table 4.2 Industrial Facilities Established in the Second Five-Year Industrial Planning Period (1938)

Type of Industrial Production	**Name of The Factory**
Textile Industry	Erzurum Yarn Factory
Cement Industry	Sivas Cement Factory
Mining Industry	Zonguldak Karabük Iron and Steel Factory Aliminium Factory
Chemical Industry	Kütahya Synthetic Oil Factory
Food Industry	Sugar Factory Meat and Conserve Factory Bursa Meat, Conserve and Packing Factory

(Source: quoted in Navruz, 2010)

State factories

In the Early Republican period, all industrial facilities were established by the state. American professionals prepared a survey about the economy of Turkey. Soviet professionals made an examination for the industrial establishment desired to be built by the state. (Navruz, 2010, 12) For the context of the state factories which were established in the 1930s, Ayhan (2008, 90) asserts that *"the social and industrial fields of modernist transformation were not two separate issues but were directly related. The industrial tasks necessitated a definite change in the social structure because of both the lack of the worker class and the new occupational roles. Therefore the issue of state factories and workers' health with the social and industrial transformations needed and intended was examined in reference to the general political and economic context of the Republic."* There was a debate about the workers; here the main idea was to form the worker class. Meanwhile, the social tasks attributed to the designs could also be understood within an industrial rationality, which would approach the workers' life in factory settlements in terms of long-term production efficiency. Therefore, various cautions were taken by the state in order to provide workers' continuous presence in the state factories. Ayhan (2008, 91) claims that "*the state tried to get workers committed by providing them some opportunities."* Likewise, these opportunities were the clean, healthy, modern housing with electricity, tap water and heating; the possibility of eating free at the dining halls; the health units and canteens in which necessary consumer items were sold under the market prices. All these opportunities were commitments of state to the workers even if they were unwritten. Therefore, "*both the workers and the state were meeting their expectations by this 'social contract' in between."* (Ayhan, 2008, 91)

Factory settlement in the Early Republican period, brings together the physical environments and the social living conditions, is an architectural product performing certain important tasks of the Republican modernization; i.e. social, political, economic and industrial transformation together with the transformation in the built environment.

"*All the mutual relations between the architectural, economic-political and social-industrial sides of the Republican modernization seems to be functioned together to produce the architectural result."* (Ayhan, 2008, 92)

State's immediate impact on the factory campuses is presented above. In 1938, a law was enacted and state economic enterprises' general conditions were detected and called Economic State Institution. These institutions became semi-autonomous. This is an innovation in industrialization field. (Navruz, 2010, 13) In the following period, the industrial initiatives were often in the power of this institution.

4.1.2. The Period between 1950 and 1980: Rapid Urbanization

Şengül (2001) names the period between the years 1950 and 1980 as the '*urbanization of labor*'. It is also known as the rapid urbanization period. Once labor settled in urban areas, it got densely organized in urban space. Together with the state, labor became a determinant factor on urban

space. Increasing "Increasing slum -the settlements called gecekondu in Turkish- formations took place in this period" formations took place in this period.

In 1960, State Planning Organization was established. This organization prepared five-year development plans encouraging industrial development together. Since the 1960s, the most active conglomeration for economic development was industrial sector and especially heavy industrial facilities. In this period, the distinct aspect is that the private sector was built up the industrial facilities.

Industrialization policies were also more systematic, and two further Industrialization Plans were prepared. The first plan of the period (1963-1967), apart from other industrial types, put the emphasis on the heavy integrated industrial facilities. Ereğli Iron and Steel Factory is one of them (Table 4.3). Second plan (1967-1972), meanwhile, identified significant industrial investment of the triplet consists of İskenderun Iron and Steel Factory, Seydişehir Aluminum Factory and Aliağa Iron and Steel Factory (See Table 4.4).

Table 4.3 Industrial Facilities Established in the 1963-1967 Industrial Planning Period

Type of Industrial Production	**Name of the Factory**
Food Industry	Ordu Soybean Oil Factory
Mining	Ereğli Iron and Steel Factory
Textile Industry	Bergama Yarn and Textile Factory Antalya Textile Factory Maraş Textile Factory
Forest Product Industry	Bolu Artificial Woof Factory
Glass Industry	İzmit Çayırova Glass Factory
Nitrogen Industry	Kütahya Nitrogen Factory

(Source: quoted in Navruz, 2010)

Table 4.4 Industrial Facilities Established in the 1967-1972 Industrial Planning Period

Type of Industrial Production	**Industrial Structures**
Textile Industry	Adıyaman Yarn Factory Karaman Yarn and Textile Factory
Mining	Konya Seydişehir Aliminium Factory İskenderun Iron and Steel Factory Blacksea Copper Factory
Chemical Industry	Samsun Soil Factory Mersin Soil Factory İzmit Petro-Chemical Factory Aliağa PetroChemical Factory İzmit Ammonia Factory
Paper Industry	Aksu –Dalaman – Çaycuma Paper Facilities Antalya Integrated Paper and Timber Facility

(Source: quoted in Navruz, 2010)

4.1.3. The Period of post-1980: Neo-liberal Policies and Their Urban Impact

The period between 1980s and 2000 is called as the capital urbanization. The dominant economy has changed; the neo-liberal economy has taken place. 'Neo-liberal' process has created social and spatial transformations. In this process, spatial organization and its impact on capital movements has come to the fore. Many state enterprises have been privatized in this period. In parallel the

industrialization policies have changed; some regional industrial facilities continue production, while some of them have been closed down. The post-industrial urban space is formed quietly. The site selection and spatial mobility has become the industry's most important topics.

Bostan, Erdoğanaras and Görer (2010, 82) point out that in parallel with the implementation of neo-liberal policies in the 1980s to compete with other companies and industry restructuring on the one hand, on the other hand the central and local authorities in urban regeneration and renewal projects, the relocation of industrial facilities affects the external dynamics of the processes leading to reshape the geography of the industry at the present time. The behavior of the spatial displacement factors which are formed in interaction and in the process of planning role is the critical issue to be examined. Industrial firms in the center of the city whether located in the city center or around move towards out of periphery of the city with the changing planning trend/concerns. According to the determinations for spatial mobility of industry, firms do not displace mainly with internal dynamics, it is widely affected by the urban planning decisions. Urban planning decisions are mostly pushing the industry out of the city.

Industrial restructuring after 1980, 'neo-liberal' policies by increasing competition between firms in the central and local authorities to support the process of change and renewal projects of urban transformation, displacement processes has been the main determinant factors.

Some privatized state industrial establishments are following; Çaycuma Factory Aksu paper facilites, Dalaman factory, Petkim, İzmir Aliağa Petrochemical Facilities, Kayseri Sugar factory, Malatya textile factory, Kayseri Textile factory, Ereğli textile factory, Karabük Iron and Steel factory, Ereğli Iron and Steel Factory, Seydişehir Aluminum Factory and İskdenderun Iron and Steel factory.

After the economic crisis at the 1970s, the primary factor that affects the process of industrial relocation in the world is important transformations in the structure of production experience and industry referred to as the structuring of change, production and labor processes converting leads to the organization of new production. "*The main feature in the forefront of the new global relations of production in this period the organization is 'flexibility', which was created to compete with the conditions. One of the consequences of the spatial organization of flexible production is moving away of industry from the central areas, in other words, it is causes the displacement of industry."(*Peck, 1996; Scott, 1988)

The second factor affecting the process of relocation companies is the 'neo-liberal' policies increasing the competition between firms and restructuring strategies. These strategies also include the process of relocation sparked. In the post-1980 period, decentralization and redistribution of public resources strategy are on the agenda. Both have results in production processes, as well as on urban areas. There are coercive changes required to create new sources of competitive environment for industry.

Out of the changing relations of production, especially urban renewal and renovation projects proposed by the central and local authorities have a significant effect in the process of change. Lately, urban regeneration and renewal, urban restructuring and competition between cities are used as an important planning tool. (Smith, 2000; Hall and Hubbard, 1998)

With this approach, urban regeneration is monitored as one of the physical space reconstruction formations of the economy. In this context, removal of old factories in urban centers in the selection of new urban development areas of routing is the decisive factor in terms of the mobility of industry.

In 1980, this period is reasoned Decisions of 24 January flourished through the economic depression, inflation, political stir, and decrease in production and increase in number of personnel in state economic enterprises. (Ertin, 1995) After the 1980s, foreign products became available in local market. The competition among them causes provision credits and finance to private sector. State economic enterprises' privatization policies, build- operate-transfer model, building new facilities, establishment of small industrial sites assign the private sector promotion. (Ertin, 1995) Selling and privatization of the "state-owned enterprises" is still a contemporary issue.

The most important outcome is the loosening relationship of the factory and housing in this period. While industrialization has facing with de-industrialization, relocation or degrowth, the housing of the industrial community has scattered. The factory campus building has lost its fascinating aspects. Furthermore, the reproduction of these spaces has become a problematic issue.

As contemporarily, especially due to the private sector initiatives in industry sector, and the fact that disappearance of the problem to find workers in the industrial facility, the industrial capitalist do not intend to build up such factory campus and they do not make workers be subject to space. The idea which aims to provide qualified labor force and relatively creating factory campus lose weight in urban planning. (Navruz, 2010, 32)

4.2. Examples of Factory Campuses in Turkey

There are some factory campuses chosen to be analyzed in order to prepare the roadmap for the case study. This analysis intends to reveal the similarities and peculiarities of design perspectives in each of these campuses. The changing and maintained design principles and socio - spatial outcomes are aimed to be represented. The five examples below create different forms of factory campuses. They are elaborated with respect to the type of production, scale, urban impacts, private or state initiative, and contemporary use.

4.2.1. Maltepe Gas Factory Campus

Maltepe gas factory is *"responsible for all whatever happened in the factory"* as Cengizkan calls. (2009, 12) Housing / living near the factory or in the same area submit such a life style. Also, due to the fact that limited number of workers living in this factory campus housing district, this metaphor is used for this campus. Saner and Severcan (2009, 45) represent the Maltepe gas factory as the determinant of the urban development scheme of Ankara city.

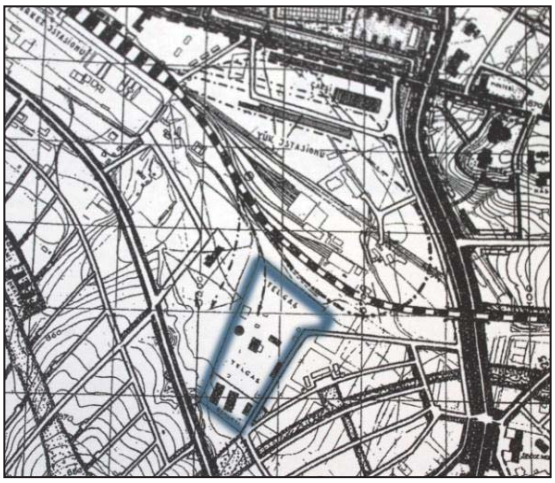


Figure 4.1 Map showing the location of the Factory Campus in Jansen Plan for Ankara
(Source: Cengizkan, 2009, 57; and campus area is indicated by the author)

Figure 4.2 Ariel Photography indicating the factory campus area 1- House of General director, 2-Duty house, 3- Ego houses (lojman), 4- Tek Houses (lojman)
(Source: Cengizkan, 2009, 54)

It is located between Ulus and Kızılay/Yenişehir, framed by Toros Street, Tok Street, Celal Bayar Boulevard and Gazi Mustafa Kemal Boulevard. It covers an area of 58.270 square meters with its

operating structures, administrative, social facilities and housing. Its location was preferred regarding the relationship of Industry and station and rail system connections. The aim was the development of the construction sector in Ankara, and due to the need for energy for the new city building. Later, in the Yucel-Uybadin plan, the industry was positioned elsewhere which made the factory and its spatial configuration inefficient. An industrial site selection criterion has changed reasoning the negative environmental impacts of industry in urban areas. Therefore in time, this place has become a vacant industrial area and how to use these places as an industrial archaeological heritage stands as an eventual problem.

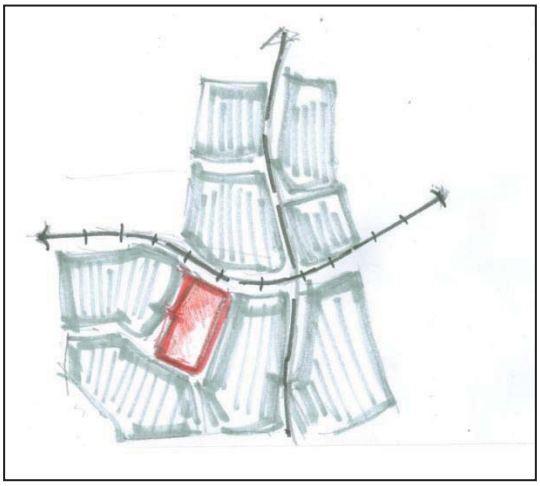


Figure 4.3 Sketch of Maltepe Gas Factory Campus in Urban Context (Source: drawn by author)

Maltepe Gas Factory was one of the earlier industrial establishments of Ankara. When the city was planned in this period, it was not estimated to grow so much. To acquire the energy for constructing the Capital city, this factory was built up in the central area of the city. The environmental hazard of this kind of production was insignificant. Thus, its locational preference in the city center was rational with respect to its proximity to transportation system. Besides, the city center was attracting at this time and factory campus site was chosen under the compulsory conditions of urban space.

Subsequent industrial establishments were developed in different parts of the city in the following periods. They had own certain reasons to site selection and urban planning process was effective to this outcome. Although the development of Ostim and İvedik Organized Industrial Districts were developed highly compact industrial site, Ankara city industrial macroform presents “scattered urban industrial district form” considering Siteler, Sincan Organized industrial district and some small production facilities in the Atatürk Forest Farm. As the scale of industrial production of Maltepe gas factory was small enough, it can be figured as part of “scattered urban industrial district form”.

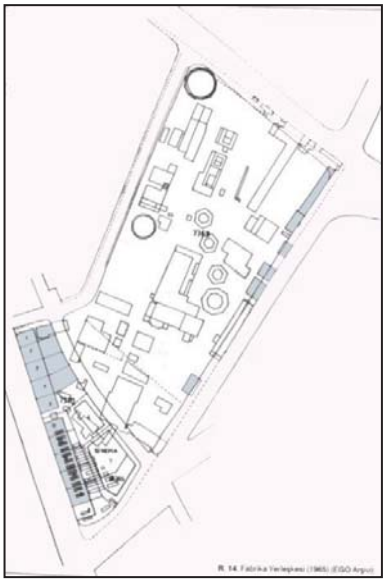


Figure 4.4 Plan of the Factory Campus in 1965

(Source: Ego archive, Cengizkan, 2009,63; revised by the author to indicate houses)

Figure 4.5 Factory campus in developing urban space in the end of 1970s

(Source: VEKAM archive, Cengizkan, 2009, 63)

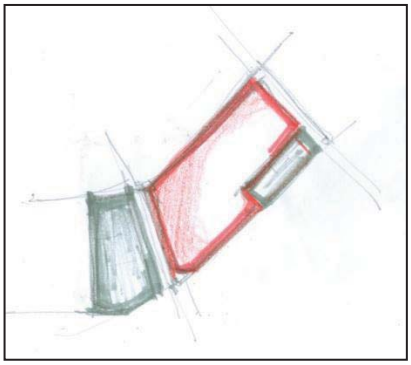


Figure 4.6 Sketch of Factory and Housing Relationship (Source: drawn by author)

Aggregation of factory and housing belongs to the A3 Joint type of factory campus. (See Appendix B) They are highly integrated form. Factory area and housing are adjacent to each other. (See Figure 4.6) Type of Factory campus can be characterized as highly detached form of factory campus in the

central area. In the factory campus, the rational functional design concept is perceived. Workers housing is less, the general director housing- lojman is there – architectural relations are important. "*Housing for a few people*" approach is adopted. Factory is built in an urbanized area at the center of attraction. Housing is not provided so as not to activate the labor force for the housing demand. Factory's location is close to the old city settlements, thus, the housing need of labor is meet in this space.

Figure 4.7 Ego Lojman (Source: Cengizkan, 2009, 72)

In this case labor housing is not sustaining the production efficiency or economically. Technical responsible workers- technicians, director's housing provides the continuity of the production. The relationship of labor and housing is explained with the compulsory responsible position. (see figure 4.8) There are some other features of factory campus. For instance, labor housing limits the mobility of them makes their subjection to a place increase. There are common spaces, the cafeteria, religious facility, social facility.

Figure 4.8 Duty House located in the Factory Campus (Source: Cengizkan, 2009, 70)

Out of the working time, campus is relating the factory and the labor. All requirements are provided in the campus. When Factory and the city relationship is evaluated from the aspect of labor' housing, it is understood that factory's contact spaces with the city are the housing areas. The housing area in the campus is isolated with the walls and fences, but it becomes a part of the city, district of the city with neighboring the close environment. (Saner and Severcan, 2009, 45-76)

Main factory building was destroyed in 2006; there are some ruins of industrial facilities. However, it had to be conserved as an urban archaeology. Because it signifies labor and urban space relationship. Also it has been an industrial urban image, with its commemorative impact on citizens.

4.2.2. Karabük Iron and Steel Factory Campus

City of Karabük is a workers town settlement created out of nothing. Öktem (2009, 157) clarifies the properties of the Karabük Iron and Steel Factory. It is Turkey's first heavy industrial establishment. Karabük has existed through settling down the Iron and steel factory witnessing the industrialized urban history. It is an urban space qualified as documents in which the form of the social, economic and cultural life of a society's certain part is reflected and the appreciation to people and relationship between people and space is represented.

Figure4.9 Karabük Iron and Steel Factory (Source: retrieved Cengizkan, 2009, 156)

For Öktem, it is a good urban design reference for future with regards to density, structure and open space land-use in the settlement. It has significant influence on the urban silhouette, positive contribution to the urban image going through modernity with utilizing the modern architecture. It is a good example of the togetherness of the modern society and modern architecture. (2009, 157) The question of accommodation in Iron and Steel Factories in Karabük was solved through the living spaces of factories.

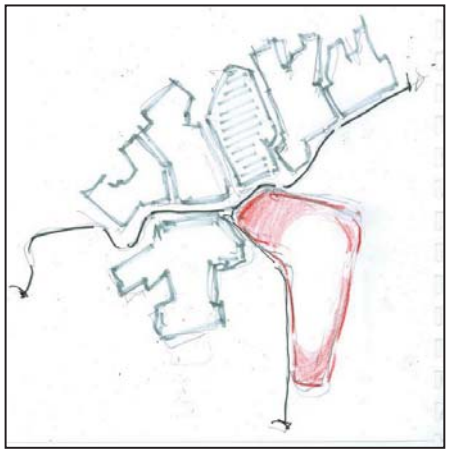


Figure 4.10 Sketch of Karabük Iron and Steel Factory Campus in Urban Context

(Source: Drawn by author)

Tony Garnier's Cite Industrielle model has been applied in Karabük. Due to the fact that iron and steel industry was utmost integrated facility, its spatial layout is generally in compact form. Karabük was entirely built in purpose of this industrial facility. One main industrial production takes place in this kind of urban settlements.

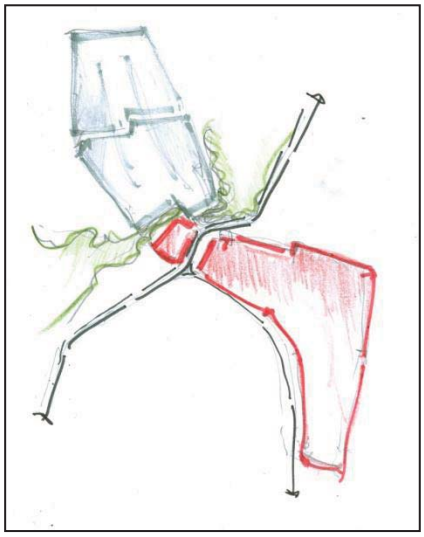


Figure 4.11 Skecth of Factory and Housing Relationship (Source: Drawn by author)

Togetherness of factory and housing was in joint relationship. It belongs to the A2 type of factory campus plan layout. (See Appendix B) There is a sideway between the production and living district. They are very close to each other, in walking distance.

According to Öktem (2009, 160), the residential area of the factory campus is composed of two districts, namely Ergenekon and Yenişehir districts. Ergenekon district was planned for the workers in the low-level; there were basic and small houses. Yenişehir district was planned for the high-level workers, engineers and officers. In the campus, general directorate and guesthouses were located in the entrance of the district, on the terrace having a prevailing visual of the area. Nearby this district, there were houses for the manager, engineers, foreman and workers settled with this hierarchical order.

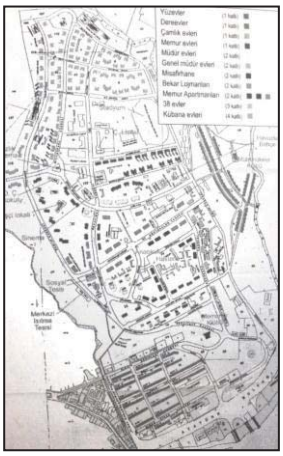


Figure 4.12 Plan of the residential area in Karabük factory campus (Source: Cengizkan, 2009, 161)

Housing for single workers was located close to the social facilities and cafeteria. In the campus, all amenities and comforts required for the modern life were decided.

Figure 4.13 Workers Pavilion
(Source: Cengizkan, 2009, 163)

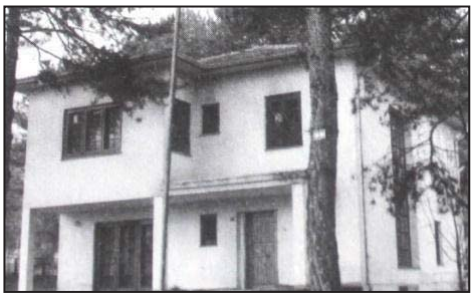


Figure 4.14 Guesthouse
(Source: Cengizkan, 2009, 165)

The accommodation was organized in accordance with the status of employees. Öktem states that Housing for the General Director and the guesthouse were located on the terrace by the slope of a hill overlooking the view. In their vicinities, there existed housing for directors, engineers, foremen, and workers respectively. There were shops in the districts where residents could afford their needs at cheap prices. Every amenity of the modern life was provided in the living area. There were hospitals, movie theatres for summer and winter, separate clubs for engineers and workers, a public house, kindergartens, and primary and high schools. Next to the facilities such as sewerage and clean water, most of the districts were heated through a central heating system built in the 1950s. There were playgrounds, tennis court, basketball, volleyball, and football grounds, and a swimming pool. Houses, designed for minimum needs, were for nucleus families. They are built in the direction of north to south, receiving a lot of sun exposure. (2009, 159)

Figure 4.15 House of the General Director (Source: Cengizkan, 2009, 165)

A house with more than one bedroom, a bathroom and a separate kitchen, clean water and central heating not only presented many opportunities for a modern life, but also played a role in the emergence of modern life routines. Worker families in those houses [were] living as healthy individuals in a clean and comfortable environment thanks to the health facilities to meet all the needs. One of the important segments of the social life evolved around the factories was the clubs. The club life in the 1960s in Karabük was important. Through the facilities and activities, while it is

aimed at fostering the labor productivity and maintaining their presence in the factory, it further targets the adoption of modern types of entertainment and free-time activities. (Öktem, 2009, 171)

In this early period, it was difficult to use the term 'industrial worker' for most of the people who worked in industry in terms of their work experience, working habits, and social behavioral habits. These people, who did not completely separate themselves from the agricultural life, were working as labor only in certain periods of time for extra cash. They neither had the required educational background and work experience, nor had the same behavioral patterns in social terms. (Öktem, 2009, 172)

The life style --with facilities offering of accommodation, education, culture, sport, entertainment, and summer and winter resorts-- that was created within the Iron and Steel Factories of Karabük could be considered as a template for a modern life despite the differentiations and discrepancies experienced in social life.

Karabük Iron and Steel Factory was privatized in 1995 and then it is called KARDEMİR. The residential area of the campus has been still used for the workers' housing. Some of part of them was assigned to other public institutions. Decreasing number of workers reasoned this transposition.

In 1996, the Yenişehir neighborhood of was declared as "an urban and natural site with 3th extent". Justification of this decision was depending on these factors;

- Its symbolic value witnessing the first heavy industrial facility in Turkey,
- Its representation of social, economic and cultural living style and its spatial relationship [certain period of Turkey],
- Its qualified urban space design regarding its density and land-use of building and open spaces,
- Its positive contribution to urban silhouette and urban image with its landscape,
- Its priority of being a good settlement example of Anatolia. (Öktem, 2009, 174)

4.2.3. Kayseri Sümerbank Textile Factory Campus

In the 1930s, the state built up the Sümerbank Campus having new content, which was independent from the urban social life. In the modernism's fictional city, the tradition of the citizen is rejected; new rules were constituted towards universal goals. On the contrary, in Kayseri Sümerbank Factory Campus provided a defined and liveable place.

The Kayseri Textile Factory was one of the Sümerbank Factories. İskender (2009, 111) examined the Kayseri Textile Factory and addresses the Sümerbank factories that have created a modern life in Anatolia. The aim of building Sümerbank Kayseri Textile Factory was directly related with the Turkish Republic's nationalization efforts rather than economic and social function. Institutional structure of the Sümerbank could be identified as the reflection of the Rebuplican ideas. It was an organization collecting workers and their families under the one roof of self-identity. Although Kayseri Textile Factory and its housings were built for the purpose of industrialization, it was actually inducing the modernization movement in the urban scale arrangement.

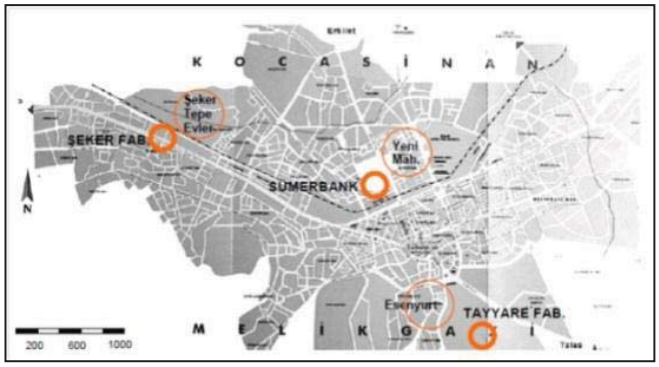


Figure 4.16 shows the state industrial establishments of the Early Republican period, Preliminary of them was the Kayseri Textile Factory (Source: Asiliskender, 2008)

In the Early Republican period, state industrial establishment were shown above figure 4.16. Preliminary of them was the Kayseri Textile Factory.

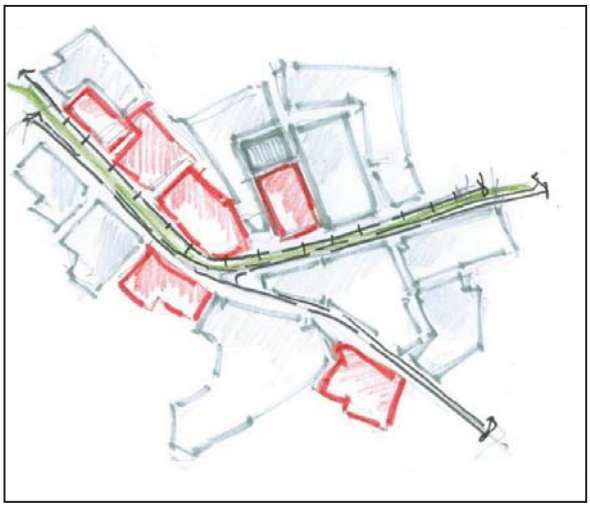


Figure 4.17 Sketch of Industrial Facilities in Urban Context of Kayseri (Source: Drawn by author)

Urban macro-form of industrial facilities was in scattered form. Their scale and little environmental impact made them settle down in different part of the city. They become crucial part of the inner city. Thus, industrial emphasis was prevailing in Kayseri. Kayseri Textile factory campus formed a piece of this scattered urban industrial form.

Factory campus populated approximately 1094 is located on the North-west side of the city center, close to the station. The city center was developed afterwards through this direction.

It was designed by the planning group called Turkstroj partnering with the Soviet Union. Factory campus is composed of factory, social facilities and housing area (Nikolaev, 1975). The construction-building completed within 16 months. In 1935, the factory campus started to operate. Sümerbank Kayseri Textile Factory is one of the pioneers of textile industry both in the city and country producing folksy, cheap and cotton cloth. (Asiliskender, 2008, 94)

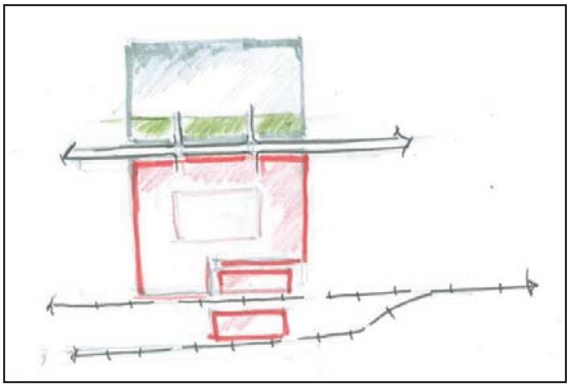


Figure 4.18 Sketch of Factory and Housing Relationship (Source: Drawn by author)

Factory and housing composition in this campus can be classified as a joint type A1. (See Appendix B) They are separated with a road. Easy access to work and living place was enabled. It is directly connected to other neighborhoods. Thus, its urban morphological impact is much more observed.

In the early Republican period of Turkey, Sümerbank Kayseri Textile Factory Campus was qualified as an urban model with its housing and social amenities, rather than only as an industrial production plant. Spatial configurations and forms in the campus are innovative contrary to the traditional forms. Especially in the housing district, a distinctive spatial configuration and settlement layout is provided that affects the urban space and societal structure. Besides, cooperatives and housing for the workers built upon the land owned by the industrial establishment has contributed to the urban modernization process. These facilities reproduce the urban economy and social life around an industrial-centered form (Asiliskender, 2008, 77).

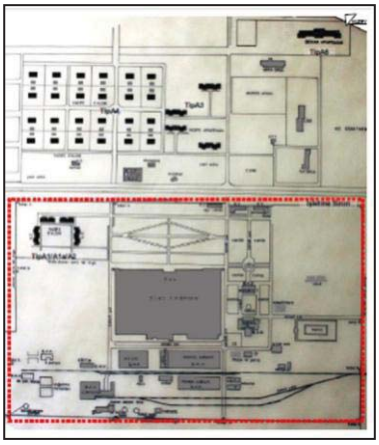


Figure 4.19 Plan of the Factory Campus (Source: Asiliskender, 2008)

Through the İstasyon Street, the campus area was divided into two parts as the residential and production areas. (See Figure 4.19) In the production area, there are factory and its support units, education center, administration, social center, cultural spaces (workers' cafeteria, workers' club, and guesthouse), various recreational areas (swimming pool, stadium, sports areas) and officers' dwellings. In the residential area, there are workers' dwellings, single workers' dwellings, kindergarten, hospital, Sümer Primary School and sale cooperative (Arıtan, 2004). This spatial configuration transformed the daily life habits into a modern one.

Design of urban fabric, location and variety of social spaces, and dwellings' architectural forms are three scales of interest of the factory campus design. The buildings in the factory campuses reflect this era's international "Modern" architectural approaches, ordinary, simple geometries and functional planning approaches. The overlaying of the operation building's wide spaces, elegant structural entities or wide transparent surfaces of the workshops' facades or easiness of the building use all represent the modern architectural aesthetic understanding. On the facades, it was remarkable through its openness and proportions. Rectangular and square forms were arranged as an outcome of the machine age visuality (Asiliskender, 2008, 94).

Figure 4.20 Type 1 Duty House
(Source: Cengizkan, 2009, 110)

Figure 4.21 Type 2 Duty House
(Source: Cengizkan, 2009, 123)

Residential units of the Sümerbank Kayseri Textile Factory Campus were built with 6 types in ten years between 1935 and 1945. TypeA1/A1a and TypeA2 were used by operation managers and built on the land owned by the industrial establishment. TypeA3, TypeA4 and TypeA5 are used by officials and workers and built outside of the establishment area. Consequently, the housing having innovative aspects for the urban architectural memory and these spaces were able to articulate to the city. Social spaces like schools and market units built around this district strengthened the connection with city. It can be stated that campus's spatial and social configuration transfers the state's modernization pursuit to society in urban space. (Asiliskender, 2008, 96)

Regarding social spaces in the factory campus, housings were more than for sheltering need, they were reclaimed as the first practices of collective housing in Turkey. Apart from dwelling TypeA4, all the other types were designed with the factory buildings and constructed in certain time range. TypeA1 and TypeA1a were built as the first 8 dwellings. They were duplex, having five rooms and reinforced concrete. TypeA1's size was 153 m2 and TypeA1a's size was 252m2. TypeA2 was two-storey buildings, 16 dwellings and they had three rooms. Each dwelling size was 97m2. Outside of the factory's own land, TypeA3 was built as two-storey building having two rooms. They were 64 dwellings in number. Each dwelling size was 67m2. In 1937, the single-worker pavilion was built with 350 people capacity. In time due to the insufficiency of the housing, TypeA4 was built with 24 blocks. They were 96 dwellings in number and each one's size was 62 m2 (Asiliskender, 2008, 96).

Factory campus comprises of social facilities required for the industrial establishment in the early 20th century. There were exchange units, swimming pool, tennis court, sports area, cinema and schools for the workers. These spaces were provided primarily for the workers and their families, then for the Kayseri citizens. Production and housing districts were very close to each other. Walking to work was a primary criterion decided in the planning process.

In 1999, the factory was closed down. The factory campus area is expropriated to University of Erciyes rather than privatized. (Asiliskender, 2008, 95)

4.2.4. Eskişehir Sugar Factory Campus

Eskişehir Sugar Factory is considered as the spaces of workers' health and healthy working. (Cengizkan, 2009) In this factory campus throughout sheltering in the factory, public health have contributed to the consciousness of being citizen, modern life order. Ayhan (2008, 81) states that "*the Eskisehir Sugar Factory which has been one of the first industrial enterprises with the nationalization of sugar industry is a symbol of the pioneer role of state in formation of the industrialization and the working class in Turkey.*"

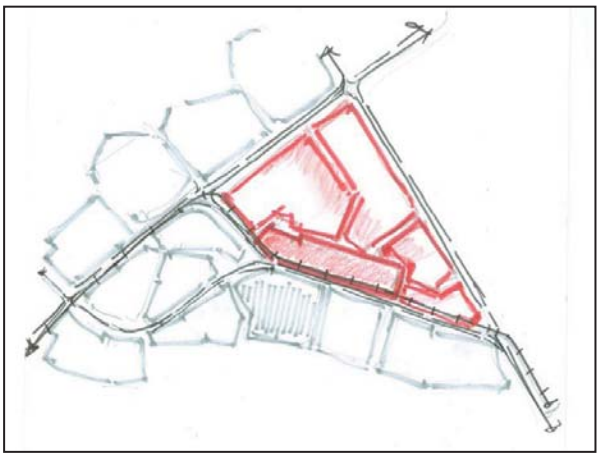


Figure 4.22 Sketch of Factory Campus in Urban Context (Source: Drawn by author)

Eskişehir urban economy was based upon the industry sector. The industrial facilities were established through mainly railway behalf industry. Also, the agriculture grounded industry has played significant role in industry. In the early republican period, they were built up on with a collaborative perspective; thus they were presenting compact industrial form in the city center. Their environmental hazard was lacking. So, small scaled industrial production facilities were located in the central area. Sugar factory was one of them, comprising the compact industrial district of Eskişehir. It was also the interface of them, close relationship with urban centre.

Eskişehir Sugar factory campus was built and opened in 1933. It was located on the two- sides of Eskişehir-Ankara main road. Factory campus was composed of two parts; production and residential districts. They are settled down each side of the road. In the production district, there is factory. In the residential area apart from the housing, there are administrative buildings, sports areas, school and hospital in the dense green open space (Zeybekoğlu 2002, 38).

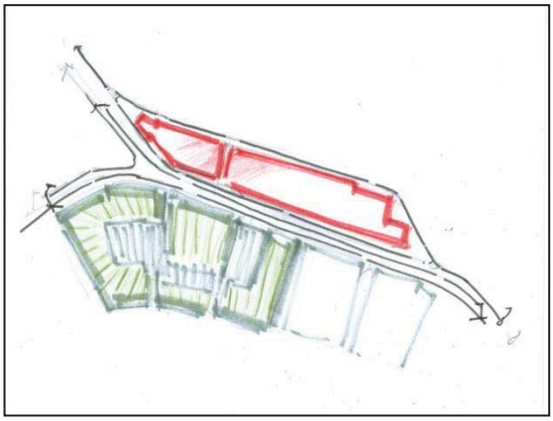


Figure 4.23 Sketch of Factory and Housing Relationship (Source: Drawn by author)

The couple of factory and housing figures a joint type A2. (See Appendix B) They were separated with main road and railway. Open and green space isolated the residential area so much. The small scale of the industrial facility and the necessity to labor is rather less; therefore, the residential area was limited.

Figure 4.24 Ariel Photography of Factory Campus (Source: Revised by the author)

Eskisehir Sugar Factory Settlement is established on an area that was between the railroad and Porsuk River. The highway named Sivrihisar is dividing the settlement into two. The part between the railroad and the highway is planned for the industrial facilities. Social facilities are collected on the south side of the highway. Therefore, the compulsory boundaries of the settlement are the railroad on the north and the river on the south. The section in which the social facilities are collected seems to be divided into three territories. The site is not divided into territories by fence or walls, but the territories are formed by the organizations of spaces. The houses and the park are forming the territory that is more for the married employees rather than the singles. It is close to Eskisehir city center. However, the territory consisting of singles' pavilions, bath and a dining hall is rather for the singles. It is designed closer to the factory site. The territory in between is the common area. The dining hall which serves also to public, the cinema and the stadium are collected in this territory.

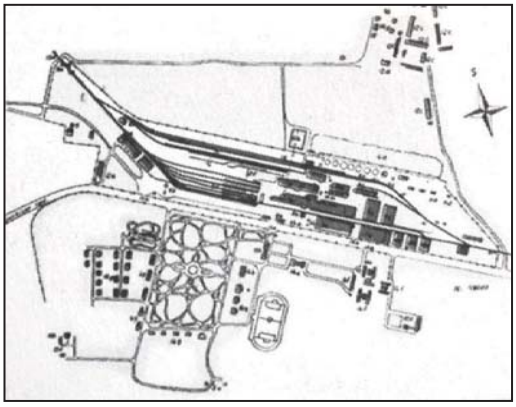


Figure 4.25 Plan of Factory Campus (Source: Ayhan, 2008)

*"In the report dated 1940, there are also several articles related with social services. Things that are to be done for improving social life of workers, things that are to be done for increasing interests of new workers for their jobs, things that are to be done for determining and compensating for the spiritual and material needs constitute the context of these articles. Articles which are related with the qualities and conditions regarding housing had been partly realized at the Eskisehir Sugar Factory. Pavilions are built for singles whereas houses with gardens were designed for married workers." (*Ayhan, 2008, 84)

The social services section – including the dwellings for singles and married couples, health facilities, nutrition, education, recreation- of the settlement was placed at the south side of the highway (Sivrihisar Street), where the industrial facilities were collected at the north side. In this way houses were kept away from the pollution, noise smell coming from the industrial production. However they were still close enough to go to the work on foot. This was important for the workers if we consider that there was no public service vehicle except train until 1946.

The houses on the east and south side of the park were used by director, director assistants and chiefs whereas the houses on the west side of the park were used by the married employees. The houses of the married employees were constructed parallel to each other in four rows so that their gardens were looking one another. Two identical pavilions were constructed for singles on the east of the social facilities site. (Ayhan, 2008, 69)

For Ayhan (2008, 76), pavilions were as communal space in which workers were learning collective life. It was crucial when we think that most of these workers had not been out of their village before they began to work in the factory. Socialization spaces were namely sports area (stadium), park, cinema and dining hall building.

The presence of such spaces in Eskisehir Sugar Factory Settlement is revolutionary in the spatial organization of contemporary social life in Turkey.

4.2.5. Seydişehir Aluminum Factory Campus

Seydişehir Aluminum Factory Campus is one the campuses established by the state after the 1950s. This factory campus was built up in 1969, the third quarter of the twentieth century, to meet housing and social needs of the community working at the aluminum plants.

Figure 4.26 Photography of Seydişehir Aluminium Factory (Source: Navruz, 2011)

Seydisehir Etibank Aluminum Factories settlement has contributed to employees in an effective manner. Aluminum Factory settlement has become both production and social, cultural centers and contributed to the development of Seydisehir.

In 1962, the survey for the aluminum industry was done by the Institute of Mineral Research and Exploration (MTA) on Mortaş and Doğankuzu settlements of Seydişehir. It was detected that there was enough raw material and then the Etibank Seydişehir Aluminum Factory was constructed on the reserve in 1969. It was built by Soviet Union's support and Construction Company of Çarmıklı and Tokan. (Navruz, 2011)

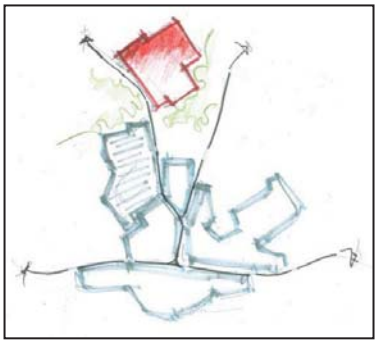


Figure 4.27 Sketch of Factory Campus in Urban Context (Source: Drawn by author)

Urban industrial macro-form of Seydişehir belongs to suburban form. (see figure 4.27) The main industrial facility was the aluminium. It was highly integrated facility; thus, it formed its self-sufficient settlement. In accordance to the planning approach of the period and the Soviet urban planning impact, the suburban industrial urban configuration took place in Seydişehir.

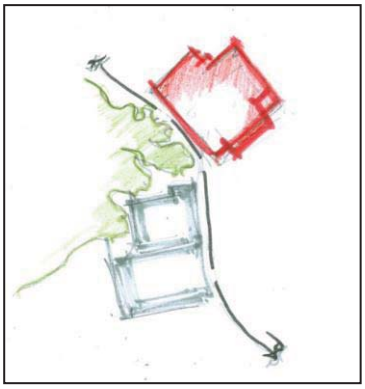


Figure 4.28 Sketch of Factory and Housing Relationship (Source: Drawn by author)

Togetherness of factory and housing formed a segregated form corresponding to the B1 type. (See Appendix B) They were planned slightly remote to each other. Great open space isolated these districts. However, they were close within a walking distance.

Seydişehir Etibank Aluminum Plant and its campus have efficiently served the workers with a variety of services and activities and became not only a production plant but a social and cultural centre, as well. (Navruz & Uysal, 2011)

Figure 4.29 Plan of the Residential Area of Seydişehir Factory campus (Source: Navruz, 2011)

Factory and housing district for the accommodation of workers were constructed at the same time. Housing district was located 1 km away from the factory area. The closeness was the primary concern.

This factory campus was a self-sufficient settlement; it comprised social housing, education center, cinemas, sport facilities, clubhouse, guesthouse, mosque, recreational spaces and open spaces.

The purpose of establishing this housing district was to provide the proximity of the workers to the factory and make them live in a healthy environment to strengthen the labor force. Thus, there were 428 dwellings for families, one block for officers and engineers, 4 blocks constituting workers site for single-workers, guesthouse, a stadium, and a clubhouse for potter out of working hours and an education center. (Navruz, 2011)

In the housing part of the campus, there were also playgrounds, swimming pool, tennis courts, basketball, volleyball and football field, vegetable glasshouse and tea garden. The landscape of the site was cared with green spaces, parks, picnic areas for the workers rest.

The factory campus of Seydişehir was designed in a dense green space, which draws attention, the basic form of social housing plan and the landscape produced was differentiated from the urban characteristic of Seydişehir which was traditional in contrast. (Navruz, 2011)

The site area was 397.187 square meters. %4.6 of the site floor was figured as social housing, %1.18 as social facilities, %54 as green/open spaces, %0.13 as education facilities, %0.27 as sport facilities, % 0.03 as religious and % 1.87 as allocated for technical units. (Navruz, 2011)

Navruz (2011) described the housing typology such that social housing area was built up on 46.216 square meters. There are 428 dwellings and they were resided with 5 different type plan schemas. Type1 is comprised of 3 floors, 12 block and 144 dwellings named as Type1/A and. Type1/B was comprised of 4 floors, 2 blocks and 32 dwellings. The population was 2600. The density of the area was rather low. The standard of social housing with respect to its size was as much as the Turkish Standard. The social housing' dwelling size was determined as 100 square meters in Turkey. The dwellings in the site Type 1 was 107 square meters, Type 2 was 110 square meters, Type 3 is 103 square meters, type 4 is square meters and Type 5 was 132 square meters. They sustained the standards. She revealed a design perspective of the spatial configuration in the housing district. For her observations, there was a modular system developed for the dwelling units and housing formation. One module was developed and it was repeated on space. The social housing design was based upon a modular system.

Social housings' functional configuration was developed towards the living and sleeping actions centerline. Both linear and central spatial organization was used.

Seydişehir factory campus with its built environment, provided social and cultural opportunities, housing types, spaces allocated for use and rest out of working hours is highly qualified urban fabric by years of its construction with respect to physical, social and cultural contributions. (Navruz, 2011)

Today, Seydişehir aluminum factory campus is integrated with city, although it was marked as an independent from city. Factory campus becomes integrated to city and citizens rather than being a small scale closed urban model. This reveals a requirement for a new urban plan preparation. Still, the planning studies are continued.

Figure 4.30 Plan red line indicating remained housing part of the campus after privatization

(Source: Navruz, 2011)

Firstly, in 1999 Seydişehir aluminum factory campus is taken in the privatization extent. Today, campus is divided into two parts with wire fence as shown in the figure above with a red line. Some part of the campus, partially the site allocated for club house, market, mosque and primary school is

sold in 2005. The remains one-floor social housings, guesthouse, single-worker housing unit, single engineers' and officers' housing unit, sport facilities were distinguished for the Factory. The citizens of the Seydişehir are enabled to use the campus's social opportunities easily. In 2006, the construction company called CE-KA has requested to create commercial facilities in the Factory campus, but it is refused by the council of the state. However, the privatization discussion is still holding on.

4.3. Remarks for Factory Campuses in Turkey

This chapter has examined the Turkish way of designing factory campuses. The prominent aspect of the design approach is the pursuit of a combination of capitalist and socialist planning exercises. (Arıtan, 2009) The design approach in these cases resembles the earlier design forms practiced in Europe and America in order to control labor through controlling the urban space. It also takes some copies of pattern which are done for bettering the labor living space in order to reproduce its labor force. However, Turkish way of designing factory campuses has its own properties basically due to time and space change. Factory campuses produced in different terms is presented to compare the planning approaches. Twosome of factory and housing design is to be revealed in diversified forms produced in Turkey. The factory campus examples correspond to the each spatial pattern type put forth in Chapter 3.4 Typology of Factory Campus. (See Appendix A)

Factory campuses are the means of spatial elements of the metaphor of "Root to the Century". This conceptualized term was brought forward by Cengizkan. (2009, 7)

Arıtan (2009, 177-214) claims that hybrid of dual structure (west centered capitalist modernization and soviet centered socialist modernization) brought both opportunities and tensions to urban space, which enriches it.

"The modernization is taken into consideration with a conceptual integrity of being as rational, homogenous, progressive, critical and noticing the surplus value of industrialization's economic base. In capitalist version of it, there is private property, class society and capital centrality based approaches, and in socialist version of it, there is widespread use of surplus value, classlessness, labor centrality, state determinism and collective life based approaches accepted." (Arıtan, 2009)

Besides Arıtan (2004) denotes that the industrial campuses built by the state effectively reflect the concepts like "overflowing the religion, rationality, industrialization, adoption of plus value economy, progressivism, universality, homogeneity and critical thinking", underlie modernism. Consequently, it can be argued that, presenting "a secular structure", industrial campuses of early republican period, "display a reasonable attitude that reflects rational logic of production". Campuses initiated "their employees and the citizens the models of Republican modernization", contributed "to the progress of collective life with both women and men"... Majority of factory campuses were constructed in the early period of Turkey, discretely to the existing urban patterns. As preliminary campuses were as an urban fabric settled down, the emphasis on the early republican period is rather more.

Moreover, Tekeli (1999) points out urban planning approach in the early republican period. He states that "the urban image of the Republic is an urban fabric composed of low density houses with gardens". It can be argued that the low density urbanization approach has been preferred as a reflection of "the utopia evolved as a reaction to the industrial city" in the West, even though a similar industrialization experience had never been existed in Turkey those years. In the period of 1923-1950, these kind of urban configurations figure.

Building up factory campuses is main urban phenomenon of this period. In Turkey this issue is realized quite unlike. The authority cares industrialization more on behalf of the ideals of 'modern' thinking, and tries to orientate the social and the political structure of the country. In this respect, the factories established by the state as models of the 'modern' cities, by means of the housing units and cultural facilities built within their body, present spatial and social environments that allow rebuilding the identities of their employees, families of them and the citizens living in the cities they

exist. Housing for industry is provided by the state as a state housing. This is reasoned by the industrial development is based on the state initiatives and control. It has political and ideological assets. The welfare of the state is represented through it and the hegemony of the new state is internalized. The public amenities take importance in this manner to socialize the community.

The change in the space has been focused on especially urbanization and housing regarding the industry. The form, use and the production of the house have been the most regarded matters of debate. Depending upon the changing social structure and life, use and regeneration of the form of the house were taken in the agenda.

In the meanwhile, the urbanization experience of Anatolian settlements concentrates on organizing national transportation network, attaching the service buildings like schools, hospitals and administration to the cities in a definite order, planning green areas and building wide streets among old centers and the public buildings. These regulations and additions to the existing city centers, involved the cities to spread spatially. In this way, the urban space and the houses assumed to be regenerated -reconstructed- morphologically and functionally.

Establishing factory campus is the way of increasing the production and the profit. Convenient social and physical environment is created for efficiency of the labor and by the time it is revealed the management ideology which is preventing any political anxiety with providing the housing units, sport and cultural facilities and other amenities. According to Ayhan (2008, 82), there is a common pattern that employees of the factories were encouraged to participate to the sport activities in order to increase the productivity of the work place. Swimming pools, tennis court, basketball and volleyball grounds, and the stadium should be seen within those facilities provided to the workers within their living spaces.

Moreover, these state factories and their built environments are the crucial element of the urban memory. Their role is being an initiator of alteration of the society.

The changing urbanization and industrialization policies have immediate effects on the factory campuses and their survival on space. It is acknowledged that since 1980s under the neoliberal economy stress the privatization of industrial establishment and led to every provision of housing to private sector. State has been retreated in the building factory and its environs, housing as well. Hence, the dissolution of factory and housing relationship is gradually realized.

The chosen factory campuses' history and today uses reflect and strengthen this assumption. Devaluation/trivialization of factory campus idea is a critical urban planning problem. How to interfere in this process and prevent/conserve these spaces has been a discussion in urban studies. All of them face with reproduction process. This was an indispensable urban phenomenon. They were either privatized and operate in low capacity or reused with different purposes or demolished.

The properties mentioned above are all valid for campuses. However, they discriminate each other in terms of their spatial configuration. Namely, their urban context, industrial production type, scale, location, transportation relations, the need for workers (perpetual or not), rate of production's environmental impact are determinant factors to categorize them. These enable to define their morphology.

According to the typology survey for urban context of industrial spaces (Appendix A), for instance, Maltepe Gas Factory Campus is classified as a part a scattered industrial district in city; Karabük Iron and Steel Factory Campus is compact industrial district; Kayseri Sümerbank Textile Factory Campus is scattered industrial district; Eskişehir Sugar Factory Campus is a Part of compact industrial district; Seydişehir Aluminum Factory Campus is suburban industrial district.

Further, the form of factory campuses which examines basically the housing and factory relationship differentiates with reference to the Appendix C such that; Maltepe Gas Factory Campus is classified as a joint form in A3 type; Karabük Iron and Steel Factory Campus is as a joint form in A2 type; Kayseri Sümerbank Textile Factory Campus is as a joint form in A1 type; Eskişehir Sugar Factory

Campus is as a joint form in A2 type; Seydişehir Aluminum Factory Campus is as a segregated form in B1 type.

In sum, it is obvious that urbanization, industrialization policies and ongoing planning approaches have shaped industrial urban space. Urban context of them is also an influential factor. However, industry has determined its own conditions and formulated the factory campuses with respect to them. Factory and its housing have been designed in varied forms.

CHAPTER 5

CASE STUDY: İSKENDERUN IRON AND STEEL FACTORY CAMPUS

5.1. Methodology

A case study research is used as a research strategy of this thesis. Then, the research questions are defined to construct the search. In accordance to the problematic identified as revealing basically the forms of factory and housing relationship, the survey is incorporated in this context to enrich the field.

To constitute a coherence and purposeful basis for thesis, and present the relevance of the case study, the mainstream is structured as follows;

In the first chapter, the problematic issue is shortly defined and the aim of the study is intimated. Here, it is pointed out that the case study is done to elaborate widely the discussion of factory and housing togetherness.

In the second chapter, broadly the evolution of the industrial urban space is presented focusing on the factory and its environs. Then, the significant role of housing in this spatial context is figured. Authentically, factory campus concept is clarified.

In the third chapter, the theoretical framework is drawn and some famous factory campus examples are exemplified. Subsequent to this, the typology survey with respect to industrial spaces in urban area and specific to factory campuses.

In the fourth chapter, the industrialization experience of Turkey is roughly described with urbanization policies. The planning and design approaches to factory campuses, built in different periods, are composed. To illustrate five distinctive factory campuses with reference to the typology survey are chosen and searched.

In addition to them, İskenderun Iron and Steel Factory Campus which has particular spatial and design properties is selected to research widely. It belongs to a different type in the typology study; therefore, studying this place as a case would be a contribution to develop this field.

In the fifth chapter, İskenderun Iron and Steel Factory Campus is examined in terms of its urban context and factory campus (neighborhood context). Initially, its impact on urban macro-form and typical industrial settlement form is figured. Then, principally, evaluation of housing district of factory campus is analyzed in detail. The peculiarities and similarities of this factory campus are deduced.

In the conclusion part, the decaying value of factory and housing togetherness is pointed out while paying attention to this relationship. Factory campuses as built environment of industry on urban space, the configuration and design of these spaces should be marked. Overall assessment of factory campus design is done in this study.

5.1.1. Case Study Analysis

Throughout a case study method, a real-life phenomenon is enabled to be examined in depth. Therefore, this method is chosen as it corresponds to the research aim which is to reveal the spatial properties of İskenderun Iron and Steel Factory Campus. Its design features within the urban industrial space context is examined to contribute urban planning studies.

Single case is the representative or typical case. Likewise, Yin states that *"The case study may represent a typical "Project" among many different projects, a manufacturing firm believed to be typical of many other manufacturing firms in the same industry, a typical urban neighborhood, or a representative school, as examples."*(2009, 48) Thus, it is aimed to analyze İskenderun Iron and Steel Factory Campus with its distinct characteristics. Among the factory campuses examined in previous chapter (Chapter 4), case study area is an additional and specific urban fabric to be revealed. In the same breath, the context of Turkish way of designing such spaces is figured. Hence, the particular aspects of the case study among them are shown rather easier.

An operational definition is needed and some caution must be exercised to ensure that the case in fact is relevant to the issues and questions of interest.

Right this point, İskenderun Iron and Steel Factory Campus meets the mentioned fact. It is designed with purpose of factory and housing couple, as well.

In this chapter, Iskenderun Iron and Steel Factory Campus is analyzed as a case study. It is chosen as being one of the latest factory campus implementations. Although it has peculiar spatial characteristics, it has not been a subject of any urban design studies yet.

The form of the factory and housing association is principally examined; then, apart from the factory side, the residential part of the factory campus is tried to be understood deeply. As it is described as qualified with outdoors, transportation, green areas, and social housing; a spatial analysis is done to reveal all them. The assessment of the case study compared to pre-factory campuses is aimed to put forth the particularities and similarities of this space own.

According to Yin (1994) the case study design must have five components: the research question(s), its propositions, its unit(s) of analysis, a determination of how the data are linked to the propositions and criteria to interpret the findings. These constituents are made public herein.

5.1.2. Research Design

Evolution of "Togetherness of Housing and Factory" is determined a problematic phenomenon. İskenderun Iron and Steel Factory Campus stands as a particular instance of this industrial urban space. Thus, its spatial configuration is aimed to be represented.

In the context of the thesis towards surveying the case, the main research questions are as follows:

1. What kind of spatial relationship is there between the factory campus and the city center of İskenderun?

   The morphological impacts of the campus and the city on one another
   The positioning of the campus within the urban setting

2. What are the peculiarities of the design approach assumed in the İskenderun Iron and Steel Factory Campus?

   Principles of urban design and specifically the design of the housing district: Types of dwellings, their clusters public spaces and publicity, within the site, relations between the land-uses,

3. What are the achievements of the "spatial togetherness" of factory and housing?
   Working and living together, sense of belonging to space and community, design values of the Campus(es)

In order to clarify issues above, after developing the theoretical and historical framework, the experience of Turkey is examined through factory campuses establishments. To contribute, a

qualitative and quantitative case study based on a field survey is conducted about İskenderun Iron and Steel Factory campus.

In order to acquire the data about the case study area, some sources of evidence manners are used; namely documentation, archival records, direct observations, physical artifact and interviews. Especially in-depth interview, which is one of the most important sources of case study information, is conducted to collect the spatial perceives and description of people who are currently living and used to live in the case study area.

Twelve in-depth interviews are executed. People having different working status in the factory are the first concern to make interview with. In the interviewer group, there are engineers, a chief engineer, officers, workers, a worker union official and an architect. It is a critical issue, because working status formed in the factory relatively realized in the housing area living different types of housing/dwelling and clustering distinct part of the site. Absolutely, the condition of living in the factory campus is sought. In the interviews, their perception of space is originally looked for and then the factory campus life and spatial organization of it. Notably, in the housing district whether the design role on space has any impact on their life/(social impacts) or not and whether the users maintain the similar urban morphology served/provided in the campus or not are questioned and tried to be understood.

Interview Inferences

The results of the interviews are complementary facts to test the thesis. Comments and feelings of the place users, namely factory workers are necessary to understand the space in detail. Their descriptions and perceptions carry significance, as well.

Interview group consists of people who were working in the factory with different status and living in the housing district averagely 20-25 years. This was a great time in their life.

All acknowledged that factory and housing area is to be together conceptualized and designed. Since iron and steel industry is an uninterrupted, heavy facility and it is labor intensive. For Aykıroğlu (2012), housing and factory togetherness is compulsory for integrated industrial establishment. The need for labor is concrete. On the way, the reproduction of labor is a critical issue. Efficiency of labor and cost of reproducing themselves are sustained though housing provision's opportunities likewise other factory campuses.

Factory campus is a closed settlement far away from the city, like a suburban development. For the interviewers, it has both advantages and disadvantages. Within the campus, all social amenities are served, while they are not available utterly in the city. Qualified housing (large enough and with good scenery) and infrastructure (heating system, services, etc.) were great opportunities. Also it was very economic. For instance, the cost of housing rent was approximately %10 of their income. Bilir (2012) stated that "As compared to complicated life of İskenderun, the campus life is very quiet and calm".

Moreover, social and educational services, and built environment were appropriate to raise children. As the settlement was safe and everybody was familiar to each other, children comfortably grew on the open/public space. 90% of them were pleased to live there. Sharing both living and working space made them a community; in time commonality realized among them was appreciated.

Bulgur (2012) pointed out a different aspect. Living in the factory campus means to a new life style for workers. For him, at first people did not know how to live in this place. They were unfamiliar to the apartment type of living as they had come from rural areas or been living in single-detached dwellings or squatters.

On the contrary, it is highly segregated from urban. Living in an isolated and secured /safe (gated community) settlement brought some adaptation problems in urban life after leaving the campus. 80% of them described themselves with the statement *"we were like a fish out of water"*. Altun (2012) complained the fact that "*there is a weak relationship with other social layers/stratifications*

of the society" 65% of them was confirmed that they have faced with socialization trouble. Their youth and adult period passed there (20-25 years), social environment is already installed for them. Working friends and neighborhoods were same for a long time. They do not know how to create friendships so much then. This reasoned the collective living in the periphery of the city. They tried to continue their togetherness searching for similar urban morphology. Only 15% of them favored to live in the city, they want to be city center and feel further publicity there.

Well- qualified dwelling, safe viable environment/neighborhood and good social services became their primary concerns to live after the campus life. However, they had some disappointment. Çepni (2012) stated that "*Once we leave the campus, we have difficulty to sustain similar living conditions."* Nonetheless, 65% of them did not prefer to live in the apartments, because they fed up apartment life. Katkat (2012) presented that in the factory campus, there was an imperative neighboring but now, after the campus it is willingly neighboring.

According to Bulgur (2012), being closed / gated has procured safe and social environment, on the other side people felt themselves imprisoned in the site. The social relationship with the city has splinted. Also this limited social environment reasoned similar/resembled outlook or ideas about life.

As taking into consideration that 95% of the interviewers were male, they delineated their daily life facility after the working hours passed in the clubhouse. They were socializing by playing cards, drinking and by the way they let off steam. Ahisha stated that *"Clubhouse is very intensely used place out of working hours in the campus. Playing cards provides vitality for mind, prolongs life."*(2012)

Although several social utilities were provided, some complained about the monotony of life. Life in a limited place, working and living defined/determined with certain circumstances.

They know that housing was provided due to supporting the continuity of the production. In any case, the housing was called "housing assigned to work" rather than "lojman". Bilir (2012) denoted that *"in any time we were asked to go work",* thus housing was a duty house. Some workers, who were asked to factory in case of any problem in the production, felt themselves subjected to space much more. Şakiroğlu said that *"In order to repair a breakdown we were going to factory at night. The housings were built up for this purpose, however in time this perspective has gone out of its order."* (2012)

Single and married workers' housings were separated. Also, in the beach there was a division between single and married workers. Bilir (2012) said that *"Before privatization, the administration did not give house to the single workers, there was single –workers pavilion apart from the center of the campus. Now, they are enabling to have house anywhere in the campus. Being single or married is not so much cared of."*

Moreover, the hierarchy among the workers was regarded also in the housing district. In accordance to the working status, different housing type is awarded. 70% of the interviewers accepted that this created some problems in the community. However, this situation was not a critical issue. After the privatization, such division according to the working status has been removed.

In sum, although there were some limitations and complaints, people who were living there pleased to live there. They told their life in the factory campus longingly.

5.2. Analysis of the İskenderun Iron and Steel Factory Campus

Brief Information about İskenderun Urban Development

İskenderun is a coastal city in the province of Hatay and located at the south of Anatolia and east of Mediterranean. Originally city is named Alexandretta in honor of Alexander the Great, a name which it retained during the Roman period. İskenderun is one of the settlements founded by the orders of Alexander the Great in 333 BC. It is located on the spice road as very closed to the city of Antioch

which is today called Antakya a crucial center in the history, especially in Roman period. The importance of the city Iskenderun ever since has derived from its geographical condition on the edge of the İskenderun Gulf shown in the historic maps below figure 5.1 and figure 5.2.

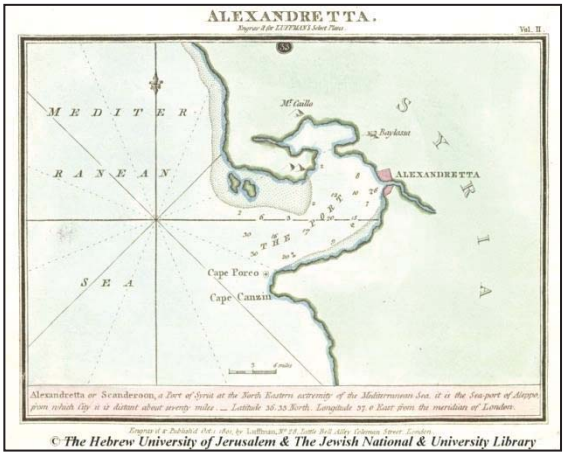


Figure 5.1 Alexandretta Gulf 1801, John Luffman (Source:http://historic-cities.huji.ac.il/turkey/iskenderun/maps/luffman_1801_iskenderun.html, accessed in 14th January, 2013)

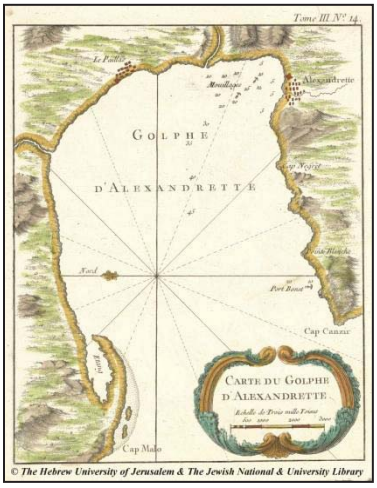


Figure 5.2 Carte du Golphe d'Alexandrette (Source:http://historic-cities.huji.ac.il/turkey/iskenderun/maps/bellin_1764_III_14.html, accessed in 14th January, 2013)

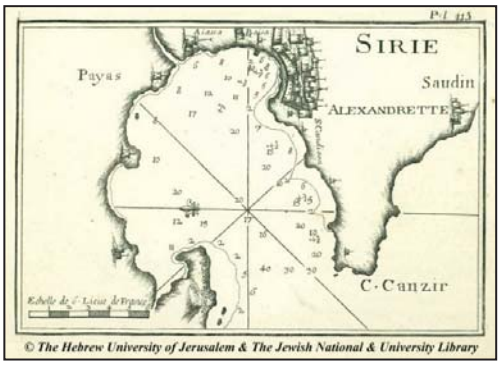


Figure 5.3 Map of İskenderun 1764, Joseph Roux, Receuil des principaux plans, pl. 115 (Source:http://www.lastinghobbies.com/2011/10/alexandretta.html, accessed in 12th December, 2012)

Figure5.4 Image of İskenderun city 1794 Joseph Roux, Receuil des principaux plans, pl. 115 (Source:http://www.lastinghobbies.com/2011/10/alexandretta.html, accessed in 12th December, 2012)

Growth and urbanization of İskenderun mostly occurs due to its location and strong transportation opportunities. İskenderun developed mainly because of its port, and development of the city always gained momentum in active times of its port. İskenderun port has been used for trade since the 1600s. (Doygun and Alphan, 2006)

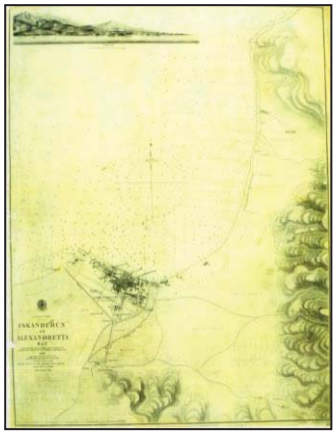


Figure 5.5 Map of İskenderun in 1858 (Source: Ercüment Kimyon's personal archive, 2012)

As shown in the figure that the city of İskenderun or Alexandretta in 1858, is a coastal town with its harbor. The geography of the settlement verifies being a historical settlement with a junction point of sea transport network of the region. Today, İskenderun still maintains its importance in such a way that the natural gas and petrol pipe line of the Middle East passes through there. Besides, it is a junction point in transportation network of the region.

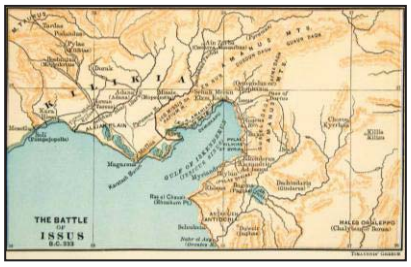


Figure 5.6 Historical Map of İskenderun Gulf Region (Source: http://www.amazon.com/Battle-Iskenderun-Kilikia-Amanus-Taurus/dp/B0082367WC, accessed in12th December, 2012)

İskenderun edging the Mediterranean Sea is highly separated from Antakya with a different urban character. It is much more associated with the İskenderun gulf as shown in figure 5.6. However, its closeness to Antakya should be still paid attention to.

Figure 5.7 Map of Hatay province signifying the İskenderun city

(Source: http://www.maxihayat.net/maxiforum/hatay/164242-iskenderun-ilce-haritasi.html, accessed in 7th November, 2012)

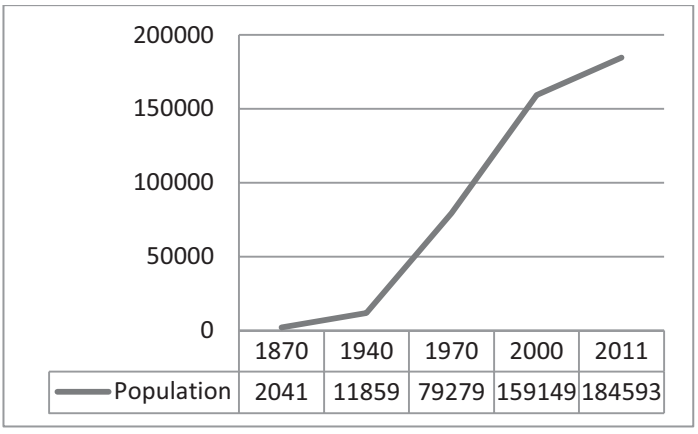
The city has one of Turkey's largest ports on Mediterranean. Its economy is based upon the commerce due to the intensive port facilities and industrial facilities, especially the iron and steel industry. İskenderun Iron and Steel Factory, which is now called as İSDEMİR, is the core of industrial production. Moreover, it is also a significant urban facility shaping the urban development and it is the focus area of this study.

Modern port was established in 1922 and renewed in 1972 as the second important marine transportation and trade center of Turkey in the Mediterranean region. It serves to Middle East transit traffic (Doygun and Alphan, 2006). İskenderun railway was opened in 1912 as a collateral part of the Baghdad railway, and the connection of the city with Anatolia had gained energy.

Since 1950, there has been a rapid urbanization in the İskenderun gulf. The level of urbanization in the coastal settlements increased from 36, 6 % in 1960 to 47, 2 % in 1990 (UNEP, 1994a). Çakır (2010, 164) states that "*all of the development process is the result of 1) the development of Iskenderun Port and its environs, 2) combination of different types of transportation lines, and 3) the establishment of Iron and Steel Factory. The trivet has made the development and expansion of the settlement easier for years; in terms of economic development, sectorel variation, urban expansion, and population increase.*"

Doygun and Alphan (2006) denote that establishment of the İskenderun Iron and Steel Factory encouraged the growth of the city, and the region largely. They claim that *"İskenderun is one of the most rapidly industrializing regions of Turkey. A quite rapid industrialization process took place in this region during the period between 1950 and 1980. The first chemical fertilizer factory (1953) in Turkey, the third largest integrated steel factory of the country – Iron and Steel Factory - (1975), and the cement factory (1977) are among the most important industrial investments in the region."* (quoted in Çakır, 2010, 167)

The construction of the railway (1904) and modern port (1922) are the breaking points in terms of urban expansion, population growth, and industrialization of İskenderun city. Population of the city increased six times and coverage of urban area expanded three times between the years 1858 and 1942. After this point, urban area expanded more than five times and the population increased eight times till 1972 with the impact of migration started in 1950s, and the impact of decisions about national investments. The renewal of the port facilities, the pipeline constructions, and the development of the transportation network attracted industrialization in the region and caused an increase in urbanization due to population increase (Doygun and Alphan, 2006).



	1870	1940	1970	2000	2011
Population	2041	11859	79279	159149	184593

Figure 5.8 The graph showing Population of Iskenderun period of 1870-2011

(Source: prepared by author)

Settled population of İskenderun is 177.294 in 2007 and it is expected to reach at 234.000 in 2025 (former Ministry of Public Works, 2007). The population is 184.593 in 2011. Between the period of 2000 and 2011 the increase in population was slowed down.

In 2009, İskenderun Gulf Coastal Areas Integrated Planning and Management Project was done by the Ministry of Public Works and Settlement. It is a strategic plan comprising the İskenderun Gulf coastal area.

According to the İskenderun Gulf Coastal Areas Integrated Planning and Management Project Report[2] in 2025, the population projection is about 320.770, the effect of investment is 2500, second home and tourism effect is 27200, as total population is estimated 350.470. (2009)

İskenderun with 63.7% of the settled area is a highly urban characterized city. The port and crucial industrial facilities are the factors fostering urban development. In the settled areas, dominant uses are industry (16%), housing areas (13.2%), military areas (12.8%) and dockland and marine structures (5.6%) respectively. Today, the north of the city is utilized for military, port and industry activities generally, while the south part is utilized for housing and recreation.

As Doygun and Alphan (quoted in Çakır, 2010, 166) assert *"The population density shows a significant decrease between 1970s and 2002 during which the population and urban area almost is doubled. This may be considered as evidence to low dwelling density that occurred during this period. In this process, the urban area grew outwards from the intensively urbanized city core".* They clarify the condition of the current urban macroform in this respect.

The macroform development of İskenderun

From 1948 to 2006, İskenderun city-center gets a denser and compact form, while the southern part of the city is very scattered and the northern part getting close to the coastal side. The small settlements get close to each other and partially integrated. (Çakır, 2010, 170)

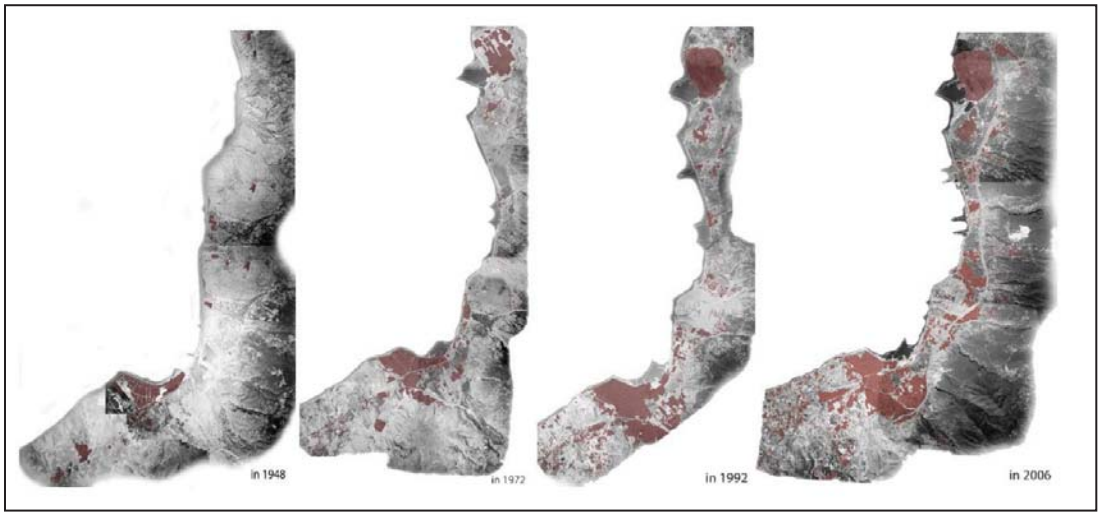


Figure 5.9 Aerial photos illustrating the constructed areas in 1948 – 1972 - 1992 – 2006
(Source: quoted in Çakır, 2010, 171-174)

Existence of İskenderun Port and significant industrial establishments which are crucial not only in regional scale but also national scale are the main dynamics which have speeded up the urban development within the region. Besides industrial, housing and military areas, there are also marine structures such as ports and piers, and storage units located on the coast.

[2] İskenderun Körfezi Kıyı Alanları Bütünsel Planlama ve Yönetim Projesi, Bayındırlık ve İskan Bakanlığı Teknik Araştırma ve Uygulama Genel Müdürlüğü, 2009

Figure: 5.10 Photography of İskenderun Harbour

(Source: http://www.demircelik.com.tr/-1-3552-kibar-holdingden-iskenderuna-150-milyon-dolarlik-liman.html, accessed in 12th January, 2013)

Landing decks on the İskenderun gulf are İskenderun, İsdemir, Botaş, Toros gübre, Botaş Dörtyol, Yazıcılar, Ekinciler, Sarıseki.

İskenderun Iron and Steel factory is located on a 680 ha land on the coast of İskenderun. It highly preconditions the northern coast of the city. İskenderun Iron and Steel factory was constructed at the beginning of the 1970s. The highway of the region gains strength and importance; some types of industrial activities develop on the coast due to the establishment of factory.

Accordingly, the Karayılan settlement gets closer to the coast (to the highway at the same time) and expands a little. The reason behind the limited growth of the settlement would be the environmental concerns reasoned by the heavy industrial production. While out of the factory campus's hinterland, the close settlement namely Karayılan does not expand much more, the industrial establishments (behalf industries, organized industry regions and big scaled private industrial production sites) are aligned on the coast towards İskenderun Iron and Steel Factory. Iron and steel factory's transportation policy related to services would probably have caused this limited development of Karayılan. Because there was bus services with 100km distance radius from the factory. There was not a press to urban developing through a demand of housing in Karayılan.

However, in Payas the other neighboring settlement of the factory has developed in time. Some industrial facilities were taken place and operate there. Actually, its urban dynamics were different then Karayılan.

Figure 5.11 Photography of İskenderun gulf (Source: Ercüment Kimyon's personal archive, 2012)

The determinant economic sector of İskenderun Coastal area is obviously the industry, which generates enormous capital. Obviously, the industrial spatial organization effects on urban development and respectively the design of urban space. İskenderun Gulf Coastal Areas Integrated Planning and Management Project Group (IGCAIPMP) clarified the existing urban pattern in their plan report. Accordingly, they examined the expected sectors to be developed and investment tendencies as follow in three defined zones of İskenderun part.

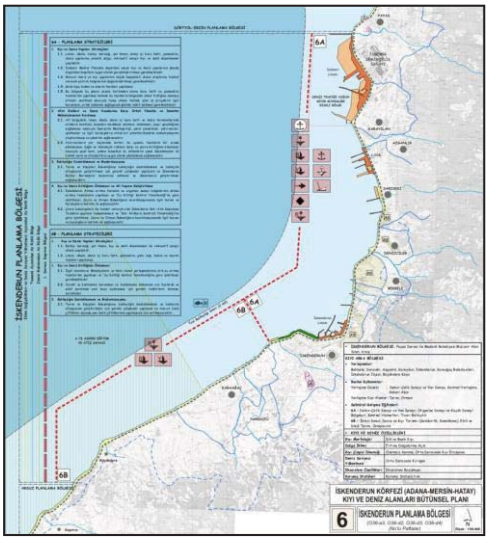


Figure 5.12 İskenderun Zone Plan of İskenderun Gulf Coastal Areas Integrated Planning and Management Project (2009)

The first zone is called North of İskenderun, including the area between Payas and Denizciler municipalities. In this zone, for industry sector, Iron and Steel Industry (technological renovation and diversifying products), Iron and steel behalf industry (based upon Rolling plant and flat product behalf industry), Organized Industrial Regions are proposed as industrial uses compliant to environment. For marine sector, sea transportation, ship overhaul and renovation facilities are proposed as marine-related uses compliant to environment. For fishery industry sector, coastal fishery (limited) facility is proposed depending to the tendencies and potentials of the development and military facilities are proposed.

The second zone covers the city center of İskenderun, therefore mostly the urban facilities are proposed in this zone. All land-use proposals are said to comply with the natural environment. For marine industry, dock facilities and freight/passenger transportation facilities are proposed. For tourism sector, tourism facilities and recreational areas are planned. For fishery industry, a new coastal fishery facility is proposed depending on the tendencies and development potential.

The third zone, south of İskenderun, falls into the area between Karaağaç and Kepirge. For tourism sector, tourism accommodation, excursion and sea tourism facilities are proposed. And second housing is proposed with respect to tourism development tendency. For agriculture sector, cultivated and planted agriculture is proposed depending on the tendencies and potentials of the development. (2009)

In sum, İskenderun planning zone is a zone figured for big-scaled industrial investments, organized industrial regions and marine structures like dock-landing decks. Dock facilities and investments oriented to iron and steel industry are densely proposed.

İskenderun becomes a sea transport and industry center of East Mediterranean and Turkey with the dock of İskenderun, lending decks, İskenderun Iron and Steel Factory, more than 35 big industrial foundations and approximately 100 small industrial establishments of organized industrial regions in Payas and Sarıseki.

Privatization of İskenderun Iron and Steel Factory with the name of İSDEMİR strengthens the potential of being a significant center of metal industry. The technological renovation and transition to the flat production, and capacity increasing investments are expected to cause transformation in the behalf industrial facilities and new investment.

To create spatially, environmentally and economically sustainable development, the existing potentials, geological and topographical thresholds on the coastal areas, natural resources, and infrastructure and settlement patterns have to be considered together. Strategies for development in industrial and energy sector determined by IGCAIPMP group are as follows: The north side of the Iskenderun Dockland, the zone towards the Payas - Dörtyol borderline is declared as an industrial zone through İSDEMİR effects. In order to provide the integrity/coherence of the zone, the administrative and planning integrity is to be promoted. The İSDEMİR's product diversification and capacity increasing investments according to the environmental-friendly technologies is to be encouraged. As set forth in the İSDEMİR dockland Master Plan, the approved coastal and marine structures according to provided conditions are to be realized. The behalf industrial investments are to be oriented to the Iskenderun Organized Industrial region, development area and Payas Organized Industrial region. The existing behalf industrial facilities and technological and complementary economic life rolling plant are to be transformed to the fertile, product diversified technology and recent environment-friendly technologies. Investments preventing the existing behalf industries' environmental pollution are to be encouraged. The green area between İSDEMİR and Organized Industrial Region is to be preserved. The industrial development on the north of the Dörtyol and Small Industrial Site and sprawling industrial facilities on the south of İskenderun city is to be prohibited. (2009)

As understood, there are not any housing policies in the north coast of İskenderun, dense industrial cluster is desired and planned with a broad industrial organizational approach. Indifference to housing obviously shows the changing planning approach of coupling factory and housing districts. Hence, this relationship is devalued or dissolved and soon the conceptualization of factory campus as illustrated with İskenderun Iron and Steel Factory Campus case would be disappeared. Restraint of industrial facilities on space further externalizes the housing site of the factory. Then, relocation of workers' housing would be on the agenda. It can be accepted that usually the privatization of the state industrial facilities brings forth this situation.

More precisely, of İskenderun Iron and Steel Factory campus building up process is clarified and afterwards the spatial analysis is done.

5.3. Establishment of the İskenderun Iron and Steel Factory Campus

İskenderun Iron and Steel industrial settlement, now called İSDEMİR (İskenderun Iron-Steel Co.), is located at the northern part of İskenderun, on the coast of İskenderun gulf. (See figure 5.13) It is approximately 20km. far away from the city center.

Figure 5.13 Ariel Photograph showing the Factory location (Source: prepared by author)

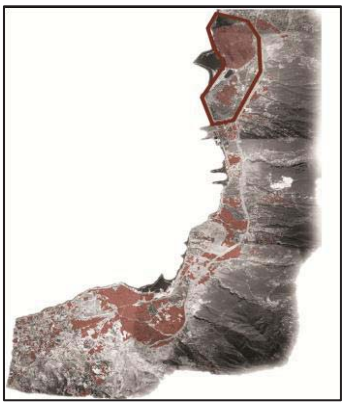


Figure 5.14 Suburban settlement of Factory campus on the coast of İskenderun (Source: prepared by author)

Establishment work of İskenderun Iron and Steel Factory has started in 1966. The projects are made by a firm called Tiajpromexprot in the range of Technical and Economic Collaboration Agreement done on the date of 25 March 1967 with the Soviet Union. The factory campus is designed by this firm.

There is another agreement realized on the date of 10 October 1969 with the same firm for establishing the factory. On 3rd October 1970, the planned factory plant's laid the foundation. In 1975, factory starts operating.

When it was established, it was bounded to the Turkey Iron and Steel Management with the İskenderun Iron and Steel Foundation Headship title. Then, on the date of 14 October 1994 through Prime Ministry High Planning Board's decision, it become İskenderun Iron and Steel A.Ş. (İSDEMİR) by name and transformed a bound partnership of Turkey Iron and Steel Foundation General Headship. On 2 March 1998, it has taken into the range of privatization program and bounded to the Directorate of Privatization Administration. All share of İSDEMİR was assigned to the ERDEMIR with a share transferred agreement by the Directorate of Privatization Administration on 31 January 2002. Share commercial papers of ERDEMİR and High Board of Privatization's High Board of Privatization's entire share were assigned to ATAER Holding Company which is owned by OYAK by the share sell agreement on 27 February 2006.

State-Economic-Institutions established since republican era towards 1980s, have contributed not only to the employment and the development of industrialization but also to the field of urbanism and planning significantly. This period in the realized industrial establishments, housing and all kinds of social amenities as requirements of labor are provided. This is a crucial urban policy pointing out the consideration of housing and industrial operations together. İSDEMİR Iron and Steel Factory Campus is the later example of these settlements.

The factory campus is located on the boundary of the two townships, namely İskenderun and Dörtyol. The housing district of the factory campus is on the İskenderun side, whereas the factory district is on the Dörtyol side. (See figure 5.15)

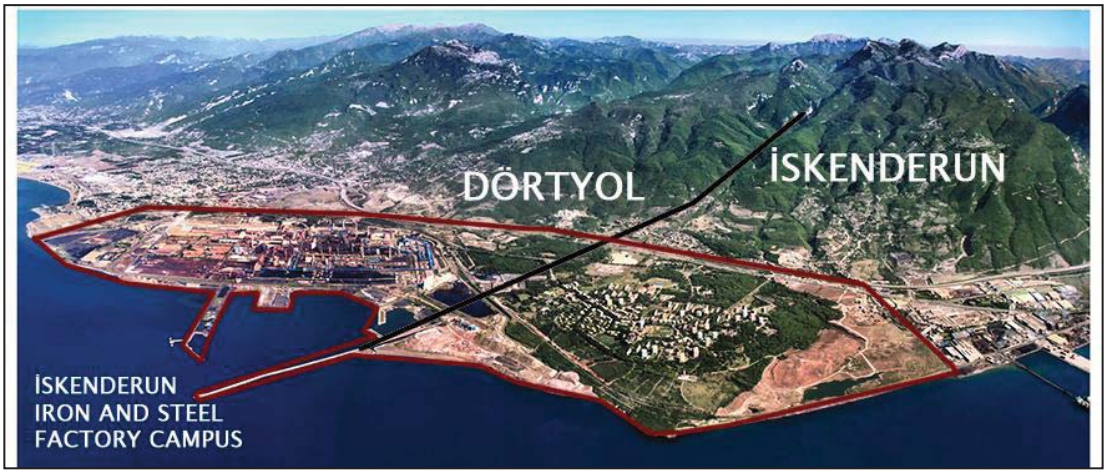


Figure 5.15 Ariel Photography showing borderline of factory campus and administrative bodies

(Source: İSDEMİR archive, 2012 and revised by author)

Besides, the location of the factory campus carries a political asset. More precisely, the northern borderline of the former State of Hatay (founded in 1938, transformed into a province and joined to Turkey in 1939) coincide the mean line of the factory. (Shown in figure 5.16) Factory is directly constructed on the borderline. Most of the factory area stands on the Turkish Republic land, the remains is on the other. Basically, this represents some political concerns in the site selection procedure.

Figure 5.16 Map of Hatay State showing İskenderun Iron and Steel Factory Campus location

(Source: Ercüment Kimyon's personal archive, 2012 and revised by author)

Furthermore, for an industrial settlement, a heavy industry, there are also some other requirements to be settled down. Site selection of the factory is based upon the transportation network, raw material, opportunity of place for the behalf industry, topography, labor force and etc. As Okur

(2012) states that the Soviet planning team has a feasibility study for the rational site of the İskenderun Iron and Steel factory. The property/ownership of land (the treasury land is searched for), transportation network, and direction of wind, topography, geological relevance and proposed industrial areas in the urban development plan of İskenderun in the 1960s in order to sustain the collaboration of industries are the main factors to determine the location. According to these criteria and political concerns as well, in the end, they concluded to build the factory campus on the north coast of İskenderun, 20 km far away the city center, with highly interlinked transportation systems (railway, harbor, and motorway).

The relevancy of the local administrative system for the spatial planning authority is concrete. Therefore the authority that has duty for controlling urban space is to be defined. In time, the local administrative structure has changed, where the campus is settled down. Once the factory is established, housing part is bounded to the İskenderun municipality. Then, in associated with the local government reform it is taken under the Karayılan municipality and the factory side is taken into in the Payas municipality till 2012.

In 2012 a new law numbered 6360 is enacted about the metropolitan municipalities; hence, the province of Hatay becomes one of the metropolitan municipalities. Then, the local administrative order has changed. The older condition comes up on scene again that the housing district of the campus is taken into the control of İskenderun municipality.

Figure 5.17 Photograph of Factory site from the sea (Source: İSDEMİR Archive, 2012)

Beyond question, the reason behind the settlement of the factory campus carries same concerns with others. Çepni (2012) denotes that the togetherness of housing and factory is compulsory for the integrated facilities, like iron and steel industry, which is a 24-hour uninterrupted working /producing facility. Moreover, Bulgur (2012) points out the major factor building up this factory campus with housing provision, that it is aimed to sustain the continuity of the production. People are living to intervene any malfunction in the factory anytime.

Figure 5.18 Photography of factory site (Source: İSDEMİR archive, 2012)

Concurrently, through setting/designing or realizing the factory campus, they achieved the minimization of the relationship between working and housing/living places and the provision of enough social amenities for living people. Furthermore, social interdependent and sharing between workers has increased. Spatial organization procuring these relations is significant issue of planning.

According to Evren, Mısır and Şengezer, factory campuses are typical/unique instances of implementing all principles of urbanism and planning. İskenderun Iron and steel (İSDEMİR) factory campus is one of these urban fabrics. This neighborhood is completed with kindergarten, primary school, high school, social facility, sport facilities and open spaces. Betterment of living conditions is the main aim of all these campuses. Although housing areas settled down with the State-Economic-Institutions/factories are neglect and low in quality, the standards of the environmental conditions are qualified enough for living. This campus is such an instance for implementation of planning theories. (2008)

In sum, this factory campus has cultural meaning and historical quality due to its spatial configuration shaped by urbanism approaches depending on creating living standards. Aimed living standards are regarded as the reflex of this period policy upon economy and sociology. Conserving and preventing the continuity of these spaces with unique character is critical issue in planning. Therefore, it is analyzed in-depth to represent the spatial properties of this place.

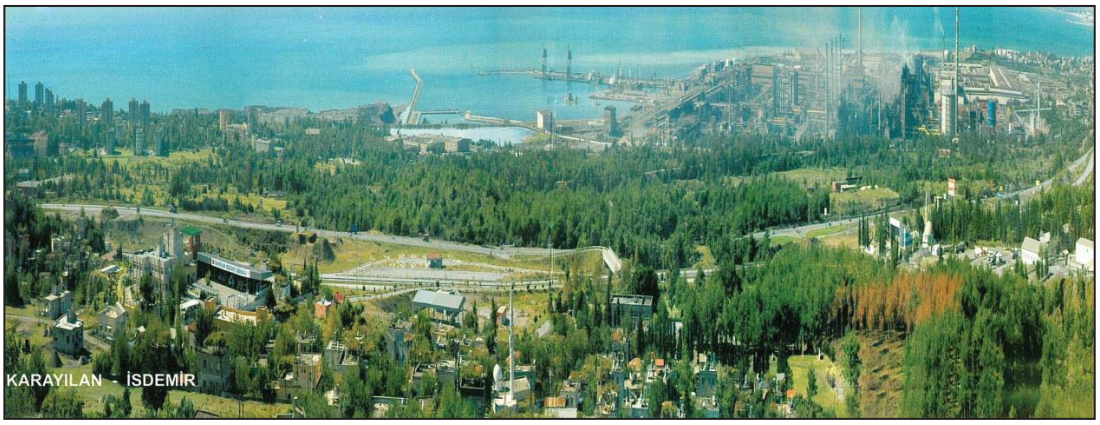


Figure 5.19 Photography of İSDEMİR from the Karayılan Hilltop (Source: Karayılan Municipality, 2012)

5.4. Analysis of The İskenderun Iron and Steel Factory campus

In this part, what kind of factory campus it is presented in terms of urban context; factory and housing coupling. Afterwards more specifically, the housing district is analyzed and concluded with remarks of the factory campus retained.

Urban context of İskenderun Iron and Steel Factory campus

İskenderun Iron and Steel Factory campus was settled down as a suburban industrial establishment. In accordance to the classification shown in the Typology of Urban Industrial Space study, it belongs to suburban type. It is a self-sufficient settlement and far away from the city. (See Figure5.20)

Figure.5.20 Sketch of Suburban factory campus (Source: drawn by author)

As it is built by the Soviet Union in the early 1970s, urbanism impact of Soviets is observed. In order to eliminate urban agglomeration in central cities, creating new, self-contained settlements on suburb is developed as an urban planning policy. This case study area is an illustration of this urban development strategy. Decentralization of industrial facilities from urban to rural has been ongoing urban development policy for a long time.

Moreover, Iron and steel industry is a heavy industrial facility. Considering its environmental hazards, it is decided to settle down in the countryside. The promoter aspects of creating such an urban development are mentioned above defining site selection process.

İskenderun Iron and steel factory campus was settled down on a coastal area. It is also differentiated with location properties. Waterfront industrial settlements are to be instead of parallel to the coast, vertical to the coast in form. Because, throughout this way, varied canals are created, which is preferred with aspect of land-use and organization of space. (Ersoy, 2012, 377)

Figure 5.21 Sketch of factory campus (Source: prepared by author)

Factory campus of İskenderun Iron and Steel factory is similarly consists of both factory and housing district. For the continuity of the production, industrialists tend to ensure of constant workers; thus they provided housing district nearby the factory. Furthermore, as iron and steel industry is labor-intense work, qualified housing areas are essential for reproduction of labor force.

It is principally built for the workers who are compulsorily attended close to the factory. However, it is interesting that the capacity of housing district is over than this urgent requirement. It is resulted from both its highly-integrated huge industrial facility and the socialist design approach emphasizing the provision of housing for workers.

According to Ersoy, planning the workers housing district around the industrial facility/factory, it is required to discriminate these spaces as naturally. This discrimination would be perpetrated by forestry, a little hill or woodland. (2012, 376) In accordance to Ersoy's notes, this factory campus is designed as exactly separated. There is a forest area between the factory and housing area. Throughout this planning decision, forest area leads to positive impact on the urban climate, recreation opportunities for all citizens, living space for nonhuman creations, positive impact on urban silhouette. Among the dense industrial facilities on the coast of İskenderun, the forest land provides a discrete place. The site selection criteria is not coincidental, its underlying principal is planting the hill and hillside. Moreover, river passing through between the industries and housing leads to distinguishing the open area around the river in case of any flood and generating natural conditions for river to reach sea.

Provision of the social and recreational facilities in the industrial spaces has positive impact on the workers' sociology and psychology. (Ersoy, 2012, 376)Several public utilities were provided in this campus likewise others. Medical services, social facilities, educational facilities, kindergartens, markets, clubhouses, recreational facilities and religious places supported the socialization of workers and their families.

Factory campus Layout

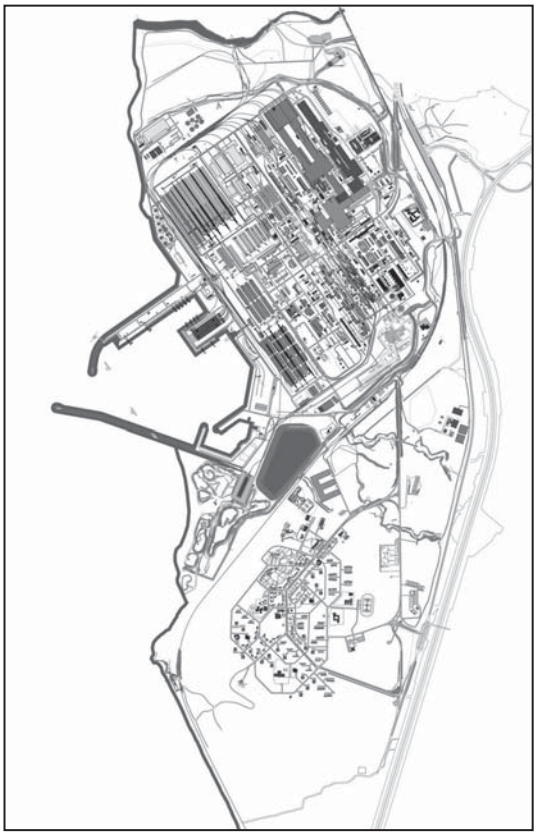


Figure 5.22 Factory campus Plan layout (Source: İSDEMİR archive 2012 and revised by author)

5.4.1. Factory Campus Spatial Analysis

5.4.1.1. Factory District

The integrated industrial facility had 18200 workers in 1990. In 2002 when the factory was privatized, in term of ERDEMİR, there was 7500 number of workers and 5500 subcontractor workers additionally. In 2012, in the İSDEMİR period, there are 5450 workers (together with the subcontractors). (Okur, 2012)

Iron and Steel factory is a heavy industrial facility and integrated production place. In the iron and steel industry sector there are two forms of production. One of them is the steel plant production which is depending on scrap and it exposes iron dust in the end of the production. The other one is the integrated production which is depending on raw materials. Factories of İSDEMİR, ERDEMİR, KARDEMİR are classified as integrated facilities. (Altun, 2012)

Figure 5.23 Photography of Factory area (Source: İSDEMİR archive, 2012)

In the factory site, there are four main units operating. They are respectively coke, workshops, high furnace and rolling plant as shown in the schema. (Figure 5.24) The manufactures have two ways to exit from the factory site; sale gate and port of the factory. (Okur, 2012)

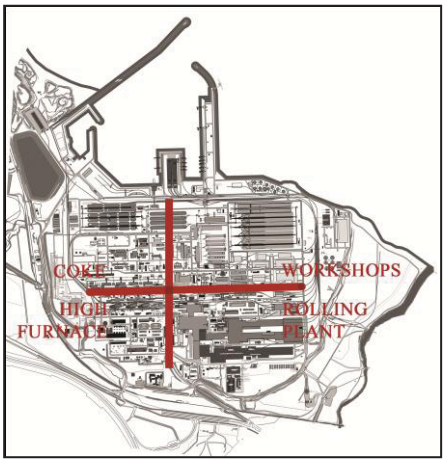


Figure 5.24 Scheme showing Factory's Four Main Operating Units (Source: prepared by author)

The structures in the factory is mainly designed, constructed and also technically supervised by the Russian firm. Besides, there are a few buildings such as administrative and rest buildings supplemented to original. Their architectural designs are done by Eryıldız, Akdamar and Bekiroğlu. (Eryıldız, 2012) Since 2002, in privatization period, the change in production style to laminated section bears some additional structures in the site and the project unit of the factory is designing them. (Okur, 2012)

Figure 5.25 Panoramic photography of the factory site (Source: İSDEMİR Archive, 2012)

Factory headship building (see figure 5.26) construction is made of exposed concrete and it is spared by timbered board. (Tan, 2012) The old headship building is today used as an acceptance warehouse located on the north of the today used one.

Figure 5.26 Photography of factory Administration Building (Source: author personal archive)

5.4.1.2. Residential District

Residential area of the campus resembles a micro-rayon settlement of Soviet urbanism. Micro-rayon means a neighborhood unit with a population between 6000 and 12000. In order to create specified industrial area and prevent urban congestion, this planning approach is adopted. Ideologically, the collective living space is created for the industrialized community.

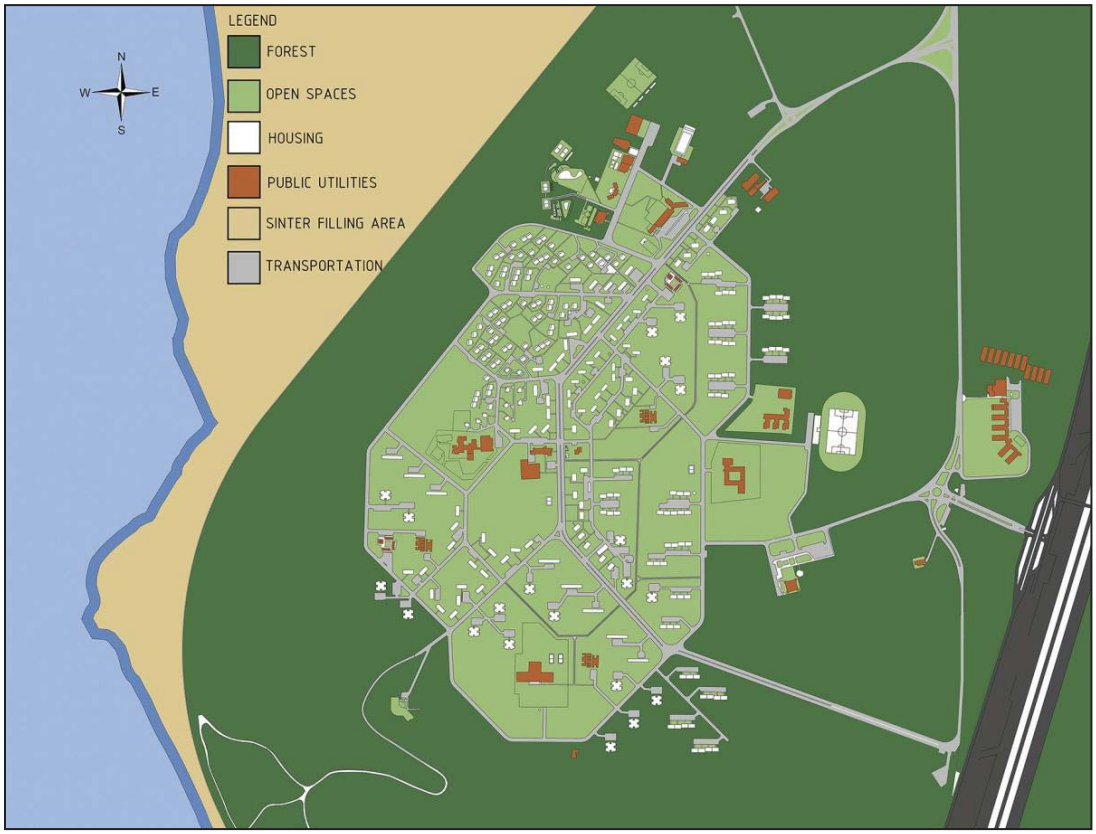


Figure 5.27 Land-use plan of Residential Area 1 (Source: prepared by author)

In the housing area, there are 2554 dwelling units with varied forms. Approximately 10000 people are living there. It is a neighborhood scale, completed of primary school, nursery, high school, medical care, sport facilities, social facilities and commercial facilities. Besides, there are parking areas, pedestrian and bike routes designed in the housing area. Dwelling units are constructed in different phases but all completed in the early 1990s. Revised plan has done in 1990s because of some necessities occurred in time. A planning group comprised of Eryıldız, Akdamar and Bekiroğlu prepared some works related to settlement layout and transportation network. (Eryıldız, 2012) This plan did not intervene in the original plan so much.

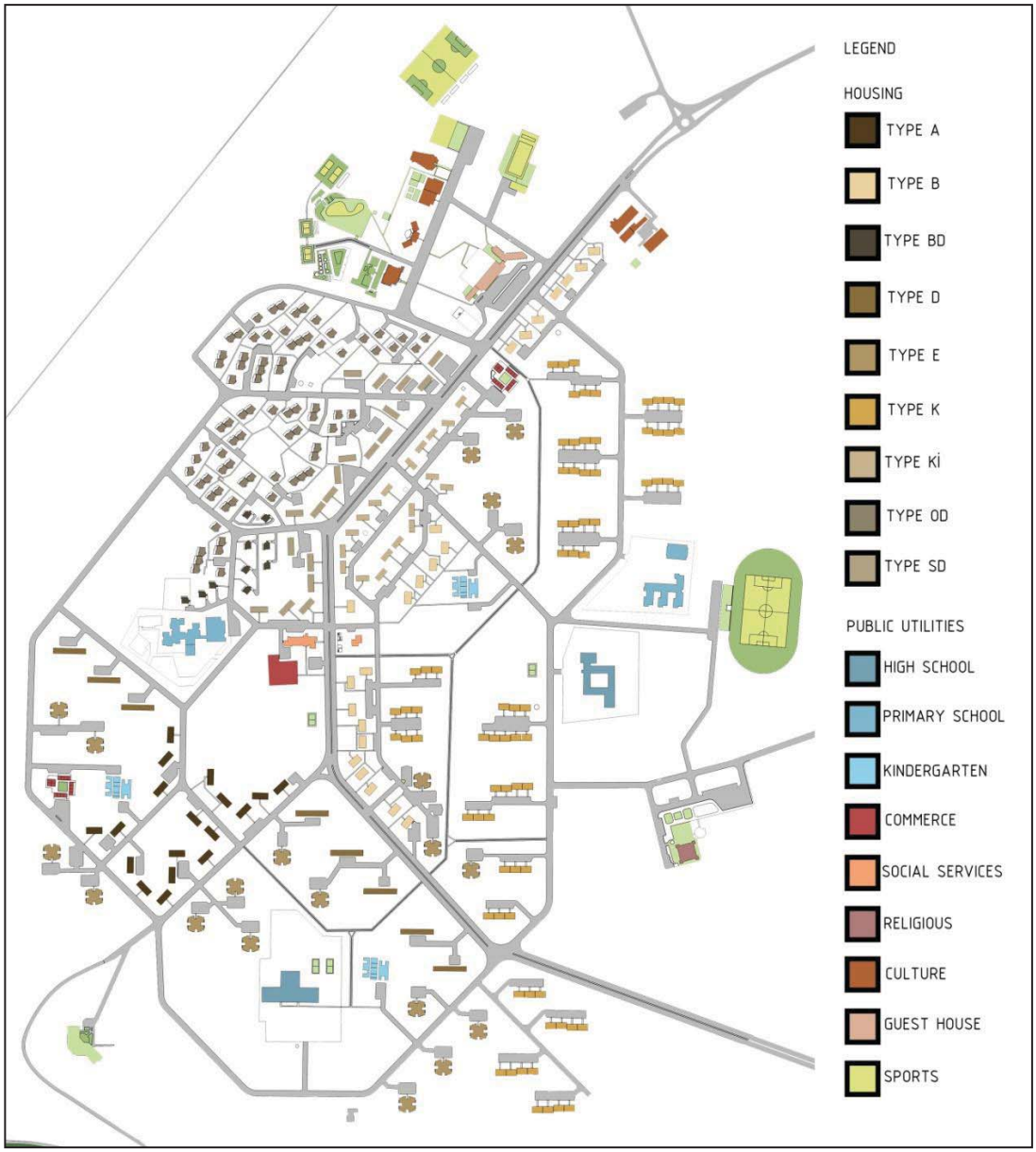


Figure 5.28 Land-use plan of the residential area 2 (Source: prepared by author)

Okur (2012) points out that since the privatization; the renovation of housing was a prior work and the management put this into their program. Their approach about renewal of the site is not intervening in the spatial order of the site. They prevents the architectural form, renew. For some buildings, they re-function such that heating center is now used as a cultural center.

Figure 5.29 Plan of Residential District of factory campus

(Source: İSDEMİR Archive, 2012 and revised by author)

Figure 5.30 Development plan of residential area prepared in 2007 by Karayılan Municipality

(Source: Çakır's Archive, 2012)

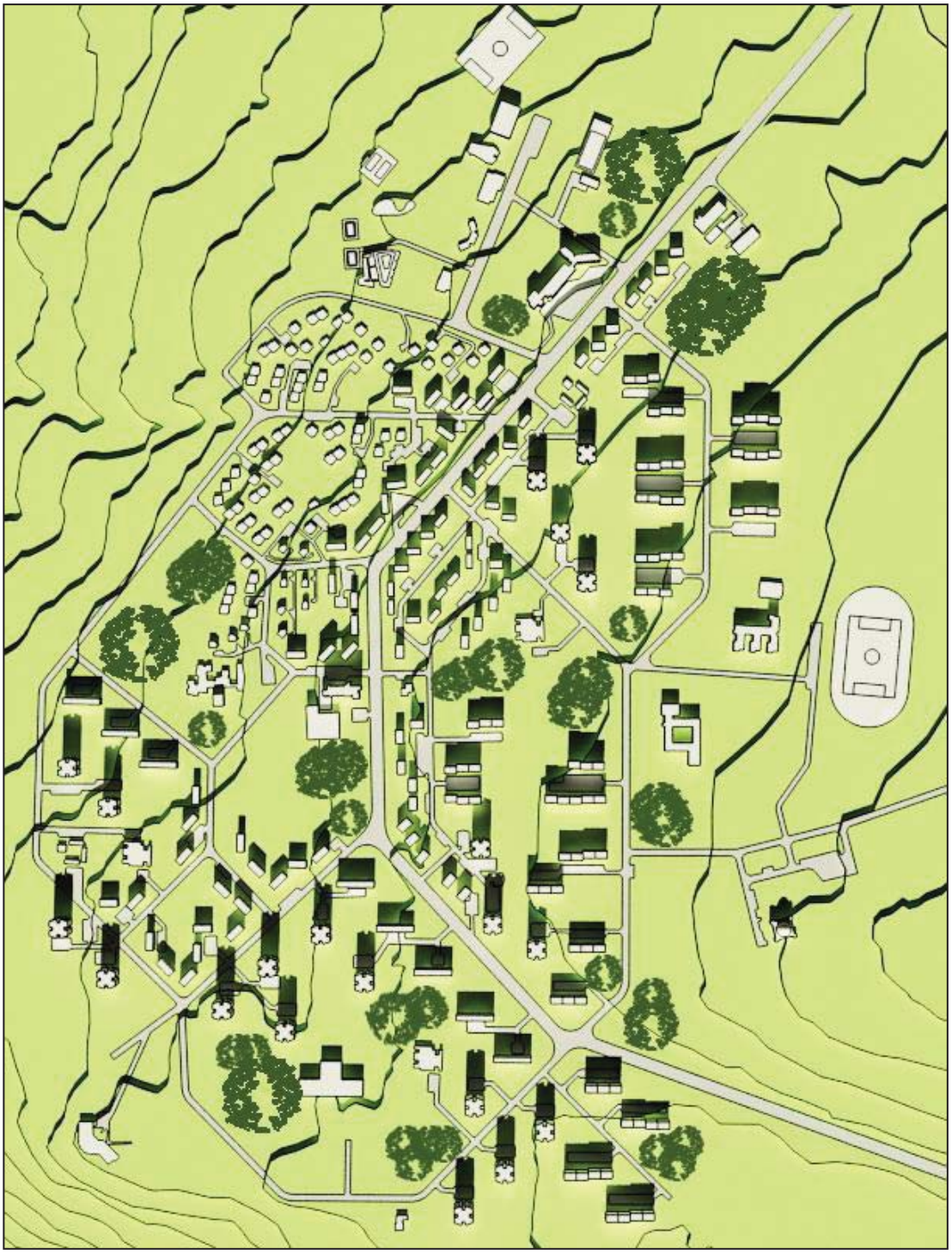


Figure 5.31 Model of the residential area (Source: prepared by author)

5.4.1.2.1. Housing Typology

Nine types of housing have constructed in the site. They are namely as follows BD, OD, SD, A, B, D, E, K and Kİ. Also there is a single-workers pavilion in the site. These types are specified for the use of different factory workers' status. In fact, BD is for general manager or members of administrative body. OD is for manager or deputy director general, SD is for engineers and chief engineers, A is for engineers, executive personnel or technical personnel, B is for workers, D is for foreman or ganger, E

is for engineers, K is for workers and Kİ is for technicians or qualified workers or officers. These types are generally grouped and clustered in certain areas.

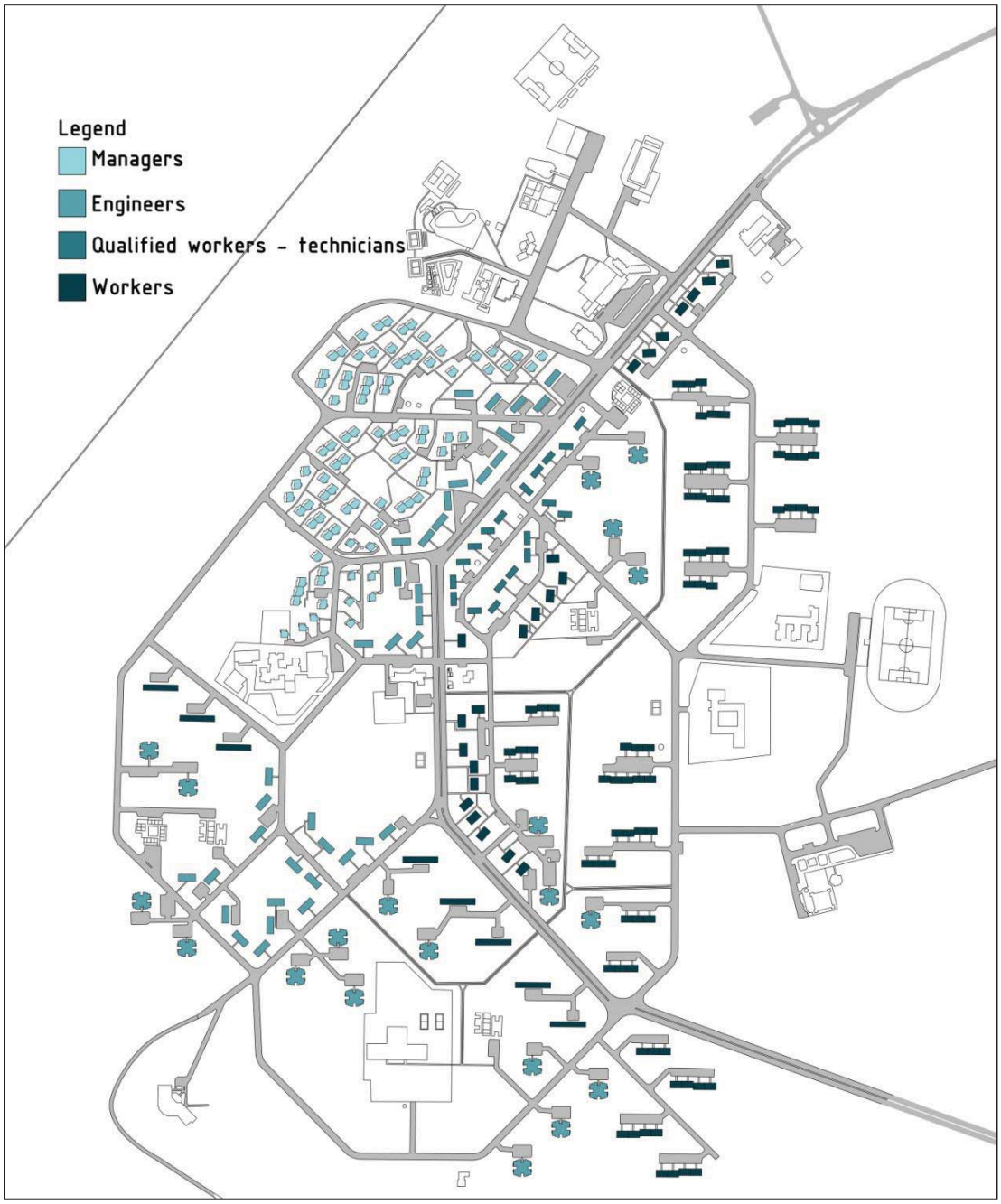


Figure 5.32 Plan scheme indicating housing blocks assigned to hierarchy in factory

(Source: prepared by author)

Bulgur (2012) declares how the housings are distributed in the site such that "*there is scoring system to organize the accommodation in the site. The working status, period of service, hardship of the work, marriage, number of children are the factors in scoring system".* Therefore, it is obvious that the hierarchical housing likewise a social class based living is also implemented in this case.

Chronologically, in 1971 while building up the first phase of the campus, SD and Kİ types are initially constructed. In the second phase A, B, OD and BD housing types are constructed. Finally the K and E types are built up. (Tan, 2012) Eight housing plans belong to firm from the Soviet Union. Eryıldız who is an architect prepares some project with his team both on factory and housing district in 1990s. Though the interview, Eryıldız states that he has designed the D block types. They are repeated in various numbers in the area. He also denotes that it has copied in the city center later on. (2012)

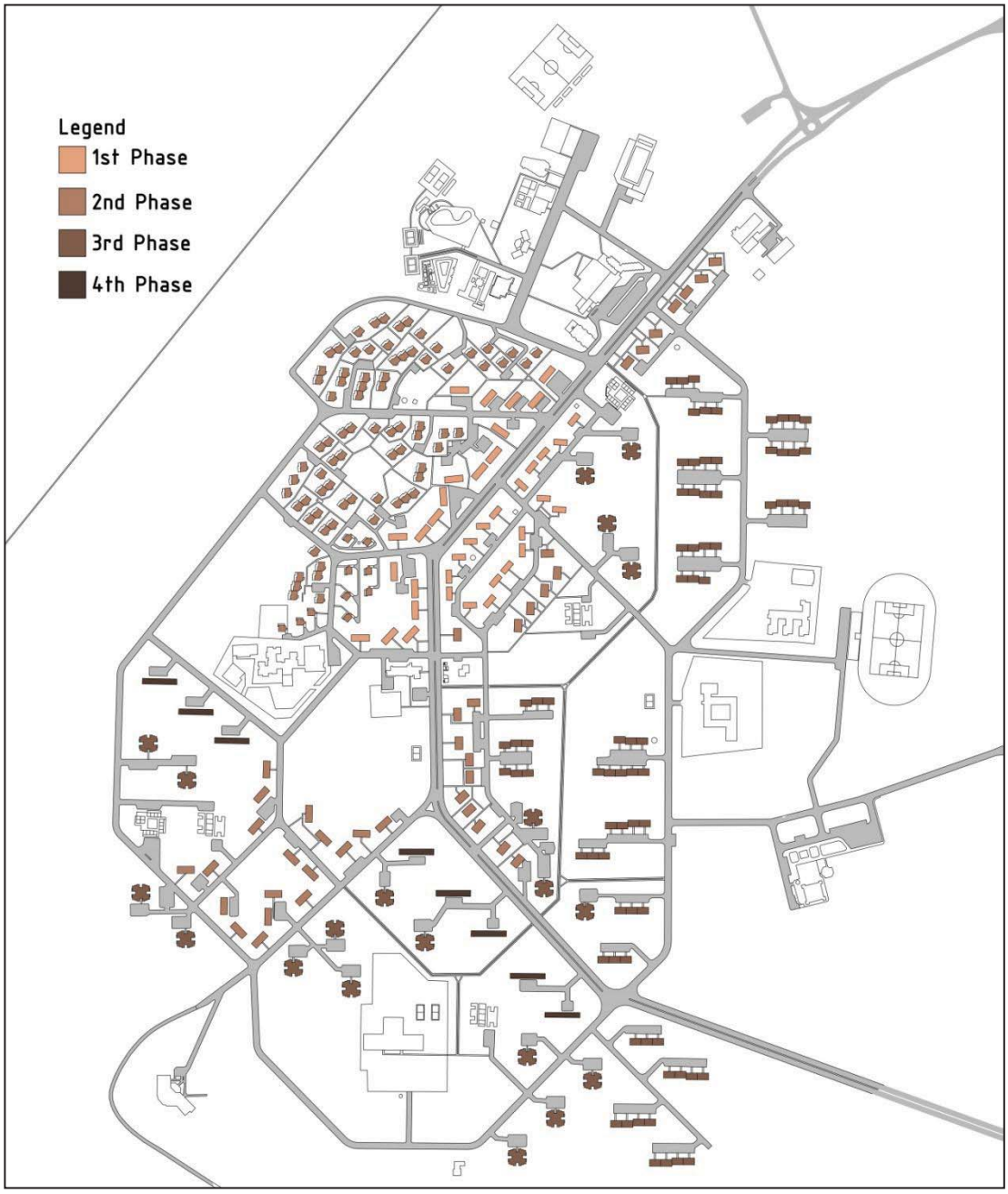


Figure 5.33 Plan scheme indicating the phases of construction of blocks (Source: prepared by author)

In further, for each type of the dwelling the physical spatial size, dwelling plan layout, some architectural detail, floor space of the building structure, entrance and relationship with environs,

numbers distributed in the residential area, clustering pattern and population accommodated in are identified.

Type A

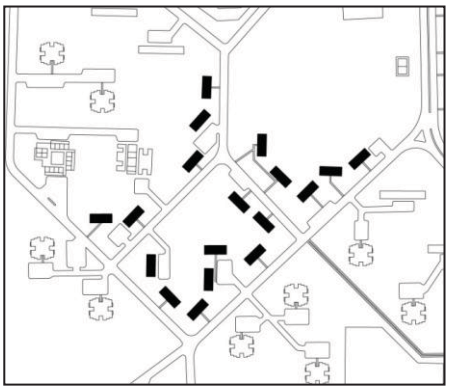


Figure 5.34 A blocks arrangement in the site
(Source: İSDEMİR Archive, 2012 and revised by author)

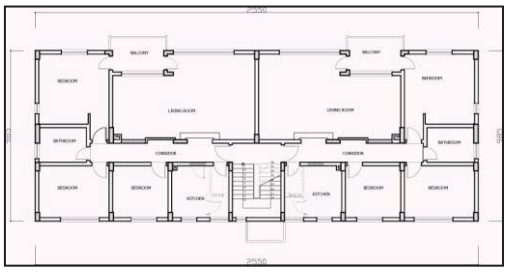


Figure 5.35 Floor plan layout of A
(Source: İSDEMİR Archive, 2012 and revised by author)

This type of housing has 4 floors and on each floor there are two dwellings. Each dwelling size is 123 square meters. Dwelling has three bedrooms and a living room presented in the figure 5.35. The entrance door of flat opens directly to the corridor which connects all spaces of the flat. The living room and the kitchen are close to the entrance to provide easy access. The bedrooms and the bathroom are at the end of the corridor because of the privacy. (Tekin, 2013) In the residential area, there is 18 numbers of blocks, covering 18439, 20 square meters. Approximately 576 people living in A blocks. A blocks are built for the use of usually engineers, executive personnel or technical personnel.

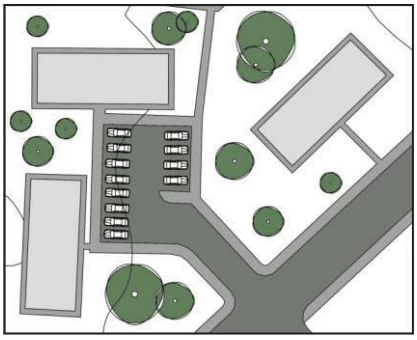


Figure 5.36 Layout of A blocks
(Source: prepared by author)

Figure 5.37 Photography of A block
(Source: İSDEMİR Archive, 2012)

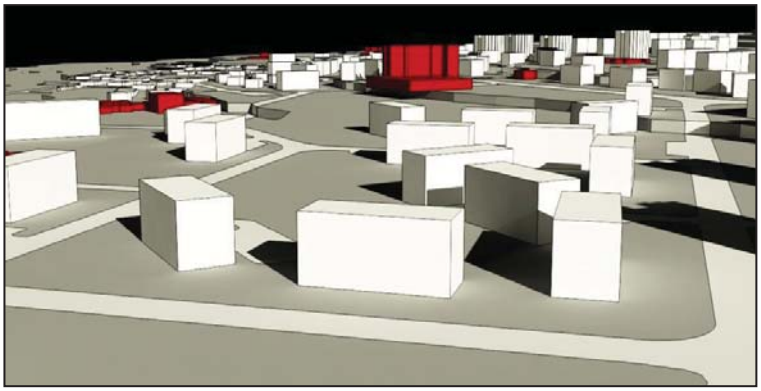


Figure 5.38 3d view of A blocks in the site (Source: prepared by author)

Type B

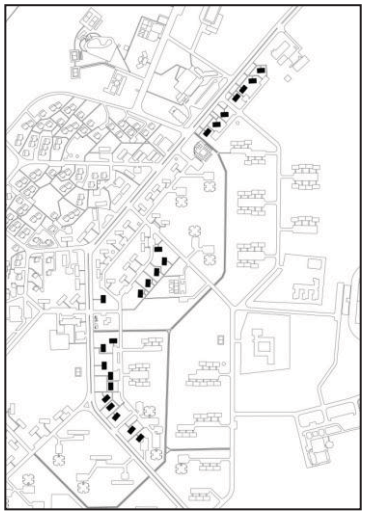


Figure 5.39 B blocks arrangement in the site (Source: İSDEMİR Archive, 2012 and revised by author)

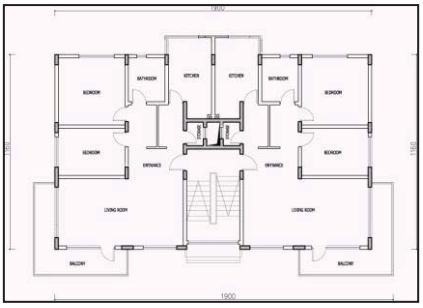


Figure 5.40 Floor plan layout of B (Source: İSDEMİR Archive, 2012 and revised by author)

This type of housing has 4 floors. On each floor there are two dwellings and each dwelling area is 118 square meters. As shown in the dwelling plan layout (figure 5.40) two bedrooms and a living room. The entrance hall is not separated from living room space. A partition wall is placed to entrance area to provide privacy for two bedrooms and bathroom. The partition also provides a hall for kitchen and storage area. (Tekin, 2013) In the residential area, there is 23 numbers of blocks, covering 23524, 40 square meters. Approximately 736 people living in B blocks. This type designed for workers is especially defined and called as *housing assigned to work.* (Çepni, 2012) Thus, people living in these blocks are much more feeling subject to the space. In any time, they are called to go factory for intervening the malfunction.

On the north group of block, the Russian workers are accommodated. (Tan, 2012) They are a little separated from the remains of the site and very close to the public utilities. Until 1986, the Russian workers are living in the site, and then they leave there when the operating the factory is thought to Turkish workers.

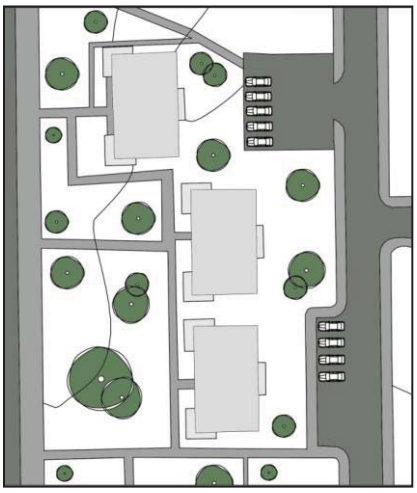


Figure 5.41 Layout of B blocks
(Source: prepared by author)

Figure 5.42 Photography of B block
(Source: İSDEMİR Archive, 2012)

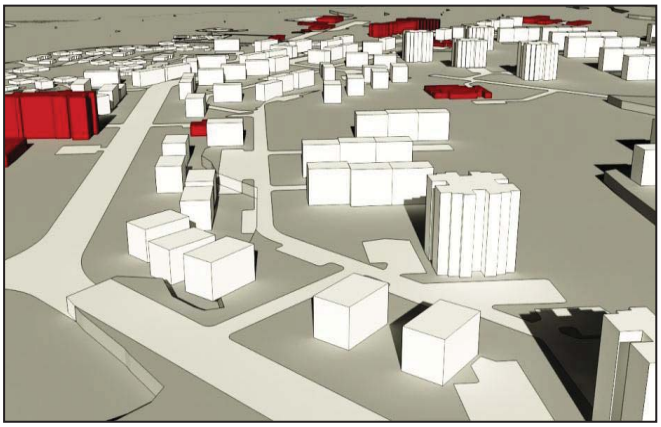


Figure 5.43 3d view of B blocks in the site (Source: prepared by author)

Type BD

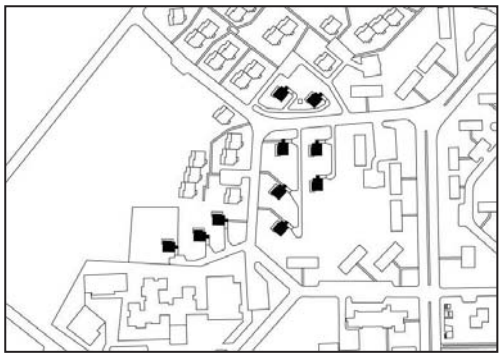


Figure 5.44 BD blocks arrangement in the site
(Source: İSDEMİR Archive, 2012 and revised by author)

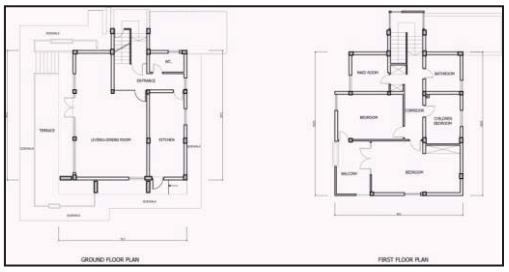


Figure 5.45 Floor plan layout of BD
(Source: İSDEMİR Archive, 2012 and revised by author)

Detached form BD type of housing has 2 floors. On each floor there is one dwelling and the dwelling area is (108 + 98)206 square meters. In the dwelling plan layout (figure 4.45) there is two bedrooms and a living room shown. Due to the fact that it is a two-storey flat which has an elevated entrance terrace. The first storey includes common use areas such as living and dining room, kitchen and

toilet, whereas bedrooms and bathroom are placed to the second storey.(Tekin, 2013) In the residential area, there is 10 numbers of blocks, covering 2173, 60 square meters. As BD is used by the general manager or members of administrative body, the people living there is more or less 40 in BD blocks. After privatization, instead this block, a new housing is desired to be designed in the site. (Okur, 2012) The group of the blocks is organized form and creates 3 different insulars complementary to other types. They are located on the periphery of the central public utilities.

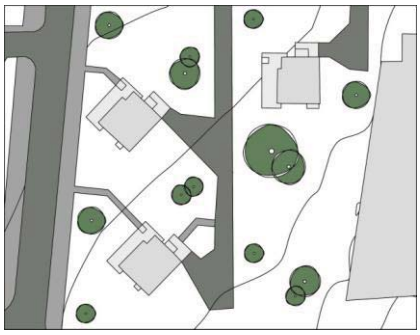


Figure 5.46 Layout of BD blocks
(Source: prepared by author)

Figure 5.47 Photography of BD block
(Source: İSDEMİR Archive, 2012)

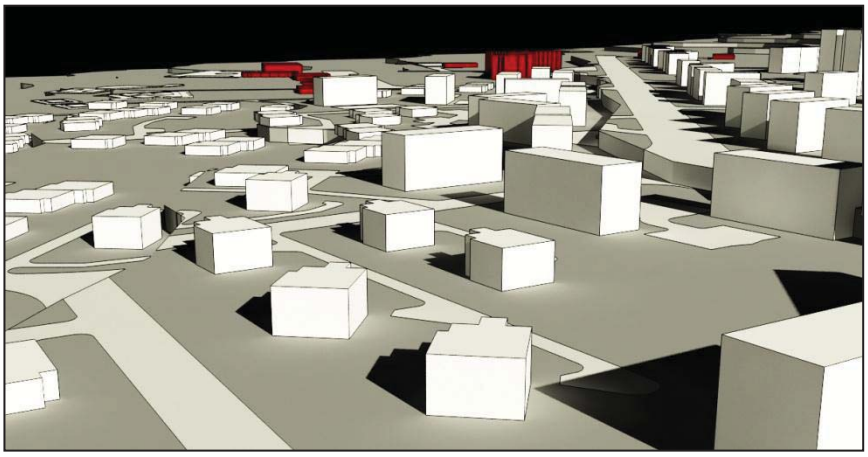


Figure 5.48 3d view of BD blocks in the site (Source: prepared by author)

Type D

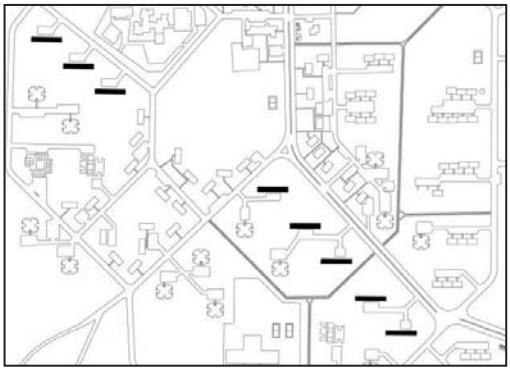


Figure 5.49 D blocks arrangement in the site (Source: İSDEMİR Archive, 2012 and revised by author)

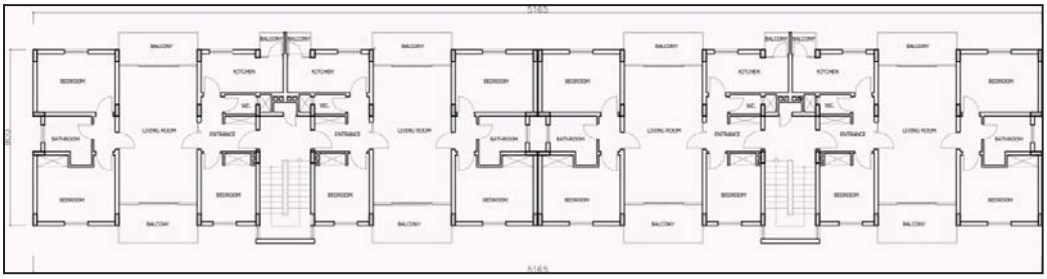


Figure 5.50 Floor plan layout of D (Source: İSDEMİR Archive, 2012 and revised by author)

The number of floor in D type housing is 5. On each floor there are four dwellings and the dwelling area is 116 square meters. In the dwelling plan layout (figure 5.50), there are two bedrooms and a living room shown. The block consists of two identical dwellings which have two flats at one floor. Each flat has three sections. The first section contains kitchen and one bedroom attached to an entrance hall. The second section is living room which acts like a 'sofa' by attaching the other sections each other. The third section contains two bedrooms and bathroom. (Tekin, 2013) In the residential area, there are 8 numbers of blocks, covering 9602, 40 square meters. Almost 640 people are living there. Compared to other types, this dwelling is smaller ones. They are constructed in the latter phases of the campus building. However, their configuration is highly compliant to the overall spatial organization of the residential area. Continuity and parallelism of them is cared of. Space determined design approach is observed. The plan layout as illustrated above represents the resemblance of plan to the workers housing general/basic schema.

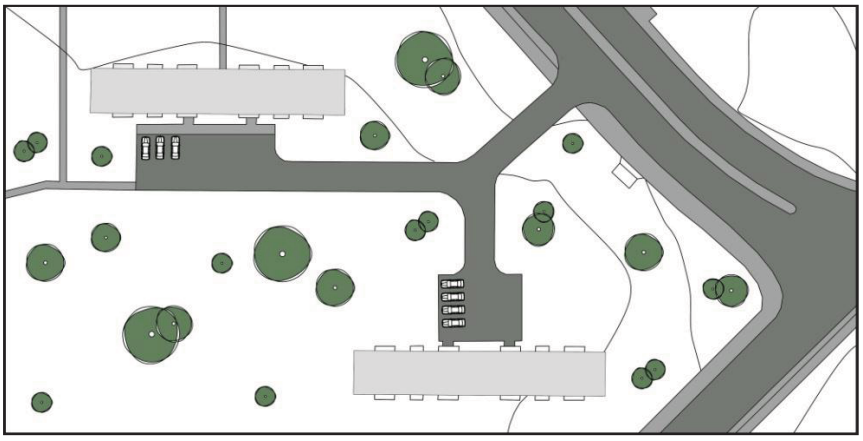


Figure 5.51 Layout of D blocks (Source: prepared by author)

Figure 5.52 Photography of D block (Source: İSDEMİR Archive, 2012)

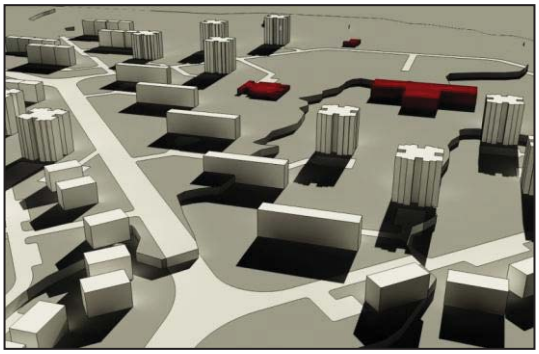


Figure 5.53 3d view of D blocks in the site (Source: prepared by author)

Type E

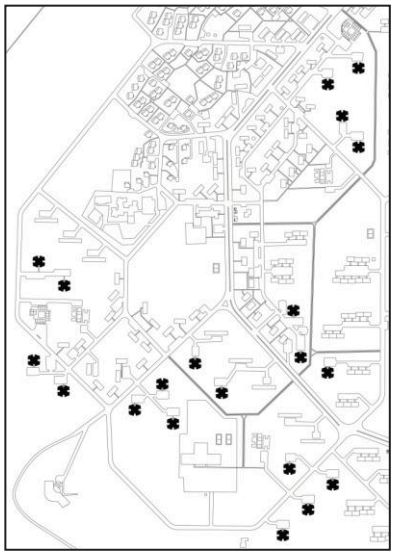


Figure 5.54 E blocks arrangement in the site (Source: İSDEMİR Archive, 2012 and revised by author)

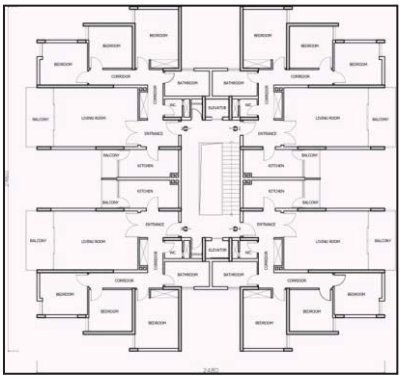


Figure 5.55 Floor plan layout of E (Source: İSDEMİR Archive, 2012 and revised by author)

E type of housing is constructed in two different forms such 9 and 10 number of floors. Nine floors (E9) ones are 9 numbers and ten floors (E10) are 11 numbers. On each floor there are four dwellings and the dwelling area is about 113 square meters. In the dwelling plan layout (figure 5.55), there are two bedrooms and a living room shown. The circulation areas of the flat are an entrance hall and a L type corridor. Common use areas open to entrance hall and the corridor attached to private spaces to each other and the entrance hall.(Tekin, 2013) In the residential area, E9 blocks cover 40376,07 and E10 blocks cover 54831,70 square meters. Average 2336 people are living in E blocks. They are the tallest buildings holding high density of the residential site. They are arranged with three or four groupings peripherally on varied other type of blocks. Their density is regarded while organizing on space and they are distributed through then. This type of housing is designed for engineers. The great number of dwellings pictures the fact that factory administration puts emphasis for provision housing to engineers. Their accommodation in the site, close to factory is considered and also their impact on social coherence on campus would be in regard.

Figure 5.56 Layout of E blocks (Source: prepared by author)

Figure 5.57 Photography of E block (Source: İSDEMİR Archive, 2012)

Figure 5.58 3d view of E blocks in the site (Source: prepared by author)

Type K

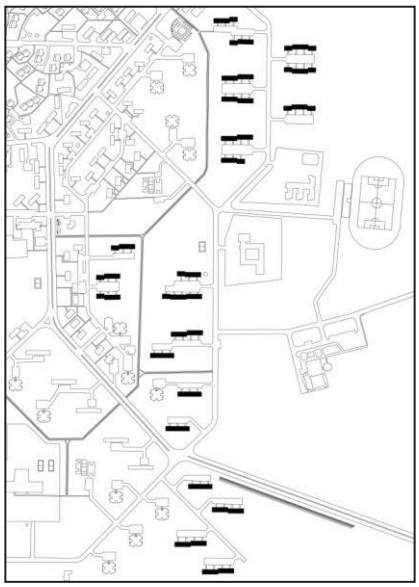


Figure 5.59 K blocks arrangement in the site
(Source: İSDEMİR Archive, 2012 and revised by author)

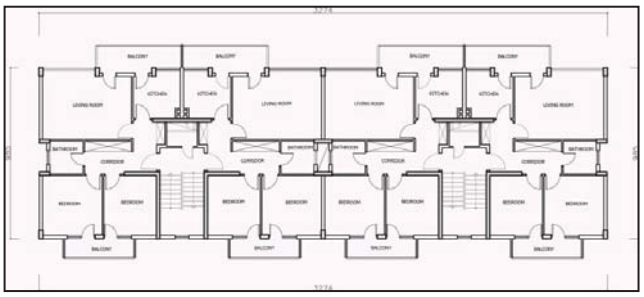


Figure 5.60 Floor plan layout of K
(Source: İSDEMİR Archive, 2012 and revised by author)

K type of housing has two different forms; 36 number of them are 5 floors can be called (K1) and 42 number of K blocks are 6 floors named (K2). Dwellings in this type have two bedrooms and a living room, 83 square meters. As total, they settled on 79172, 64 square meter area. As figured above (figure 5.60) the housing consists of two identical dwellings which have two flats at one floor. The entrance door of the flat opens to a L type corridor which connects all rooms of the flat. The flat has two balconies. One of them is shared by living room and the kitchen, whereas the other balcony is used by two bedrooms. (Tekin, 2013) The population is approximately 3456. K blocks are designed for workers. Relatively small dwellings in an excess number of housing capacities for workers signify the labor required in the heavy industry. K blocks are configured in 3-4 groupings in parallel to each other providing a north-south edge to the site. Their regularity insures remarkable point in designing the space.

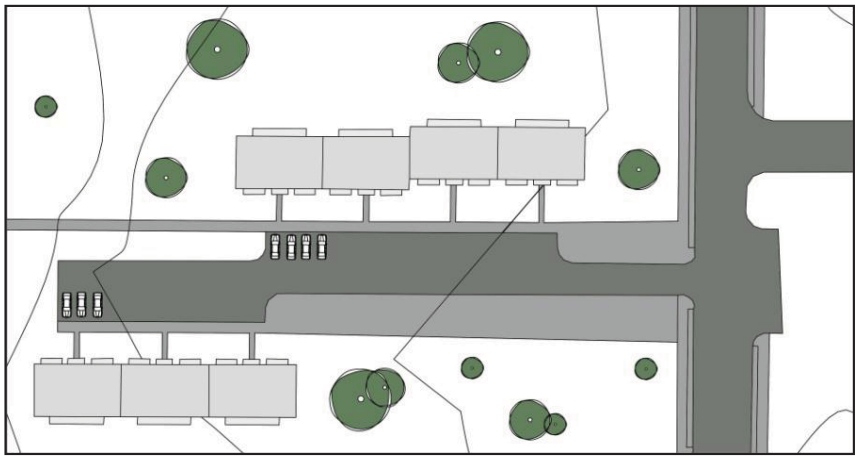


Figure 5.61 Layout of K blocks (Source: prepared by author)

Figure 5.62 Photography of K block (Source: İSDEMİR Archive, 2012)

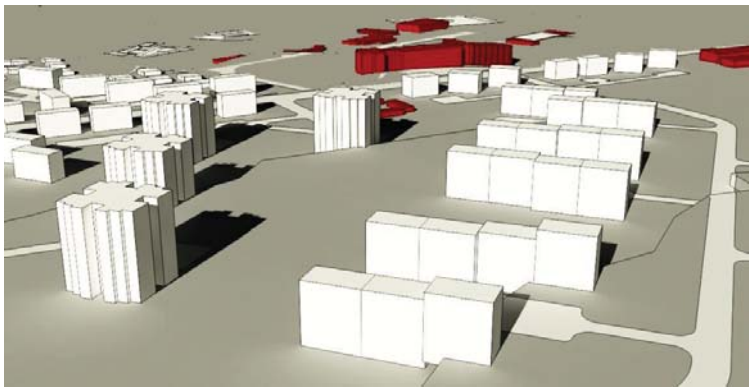


Figure 5.63 3d view of K blocks in the site (Source: prepared by author)

Type Kİ

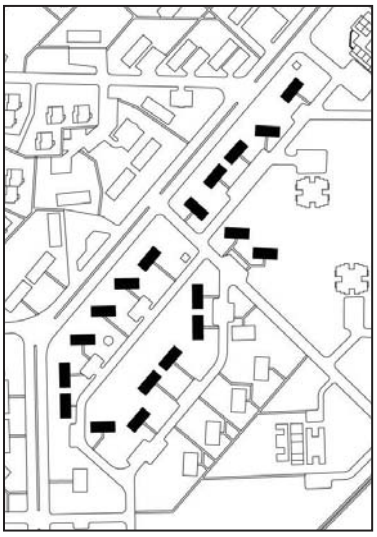


Figure 5.64 Kİ blocks arrangement in the site (Source: İSDEMİR Archive, 2012 and revised by author)

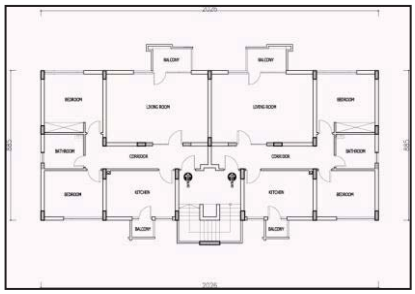


Figure 5.65 Floor plan layout of Kİ (Source: İSDEMİR Archive, 2012 and revised by author)

Kİ type of housing is 4 floors buildings. There are 19 numbers of Kİ blocks in the site. The plan layout indicates that it has 2 dwellings in each floor (figure 5.65).The entrance door of flat opens directly to the corridor which connects all spaces of the flat. The living room and the kitchen are close to the entrance to provide easy access. The bedrooms and the bathroom are at the end of the corridor because of the privacy. (Tekin, 2013) Each dwelling's size is 89 square meters, and they cover 14503,08 square meters as total. Almost 608 people are living in this type. In this type, apart from the Turkish technicians and qualified workers, the Russian workers are accommodating. Kİ blocks are the initially built up ones of the residential area. Thus, at first their ground floors were used for social facilities. For instance, one of the ground floors is utilized as primary school for Russian children. (Tan, 2012)

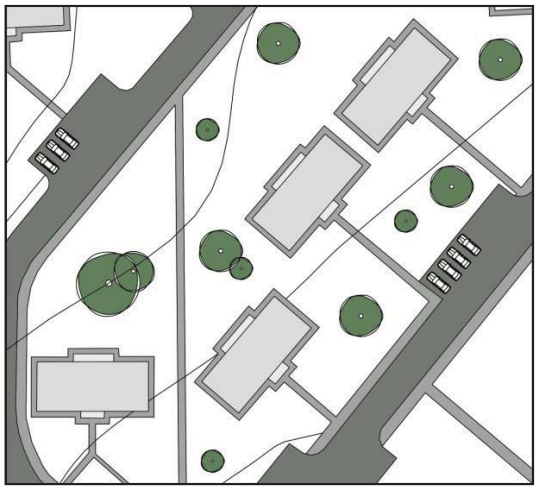


Figure 5.66 Layout of Kİ blocks (Source: prepared by author)

Figure 5.67 Photography of Kİ block (Source: İSDEMİR Archive, 2012)

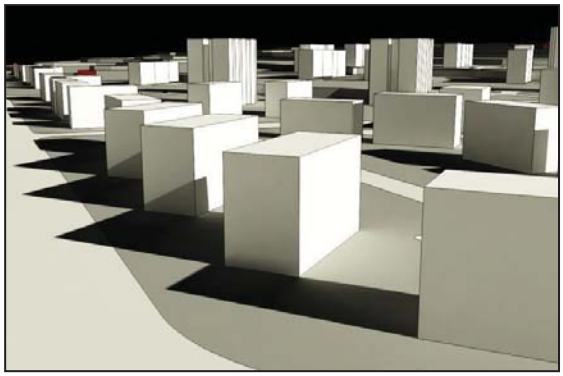


Figure 5.68 3d view of Kİ blocks in the site (Source: prepared by author)

Type OD

Figure 5.69 OD blocks arrangement in the site (Source: İSDEMİR Archive, 2012 and revised by author)

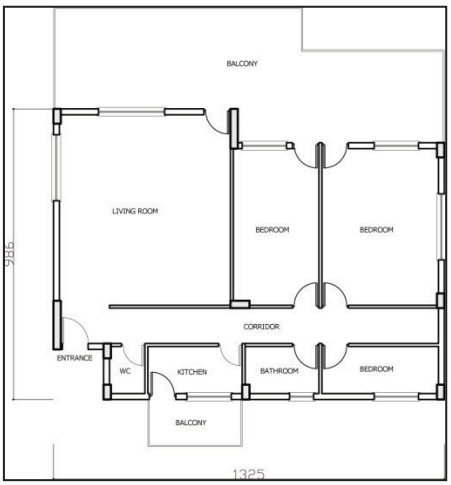


Figure 5.70 Floor plan layout of OD (Source: İSDEMİR Archive, 2012 and revised by author)

OD type of housing is single-storey buildings. They are settled in the site with groupings of one, two or three. There are 78 number of OD blocks. They settled on 13347, 36 square meters area. The size of the block is 170 square meters. As figured above, the dwelling has three bedrooms and a living room. It has a huge balcony; hence it enables to use the open space much more. The simple form of the house resembles the modernist form of layout. In the OD blocks, more or less 312 people live in. They are designed for accommodation of the manager or deputy director general. They are detached houses and clustered in the north side. They are separated a little from other types, not distributed widely in the site.

Figure 5.71 Layout of OD blocks (Source: prepared by author)

Figure 5.72 Photography of OD block (Source: İSDEMİR Archive, 2012)

Figure 5.73 3d view of OD blocks in the site (Source: prepared by author)

Type SD

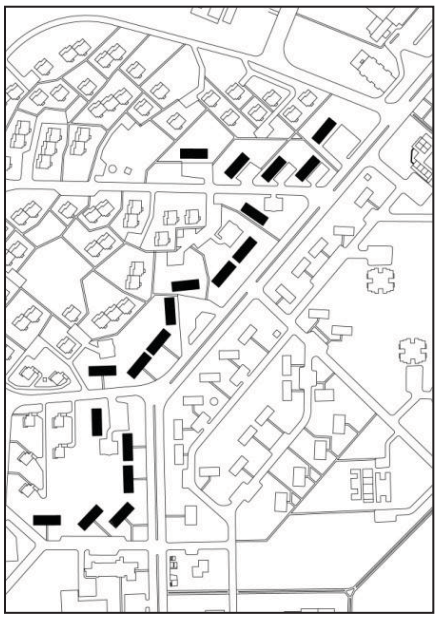


Figure 5.74 SD blocks arrangement in the site (Source: İSDEMİR Archive, 2012 and revised by author)

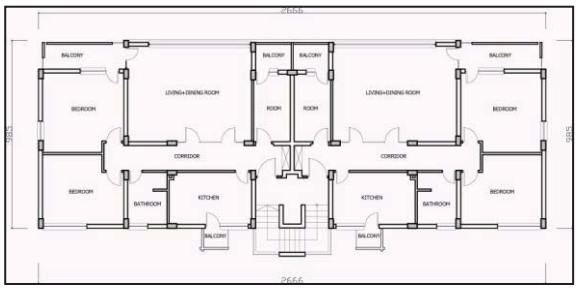


Figure 5.75 Floor plan layout of SD (Source: İSDEMİR Archive, 2012 and revised by author)

SD type of housing is 4 floor blocks. In each floor, there are two dwellings (as shown in figure 5.75) in each floor. The entrance door of flat opens directly to the corridor which connects all spaces of the flat. The living room, the kitchen and the lounge room are close to the entrance to provide easy access. The bedrooms and the bathroom are at the end of the corridor because of the privacy. (Tekin, 2013) Each dwelling is 127 square meters size. In the site there is 19 numbers of block settling on 20166, 60 square meters area. About 608 people live there. SD block type is also primary constructed housings and they are allocated for engineers and chief engineers. They are designed as a sequenced order along the main road of the residential area on the north side. They facades are determinant spatial factor in the main public space axis though. The articulation of the blocks is systematical and they have a role of distinguishing OD blocks from the main road.

Figure 5.76 Layout of SD blocks (Source: prepared by author)

Figure 5.77 Photography of SD block (Source: İSDEMİR Archive, 2012)

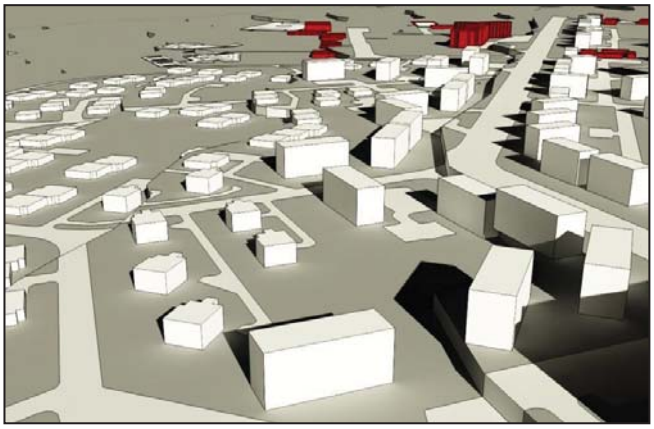


Figure 5.78 3d view of SD blocks in the site (Source: prepared by author)

There is a labor pavilion for single workers. It is generally built at as possible as nook place of the district. Pavilions are built usually much more close to the factory and far away from the married workers' dwellings. (See figure 5.79)

Figure 5.79 photography of single-worker pavilion (Source: İSDEMİR Archive, 2012)

The design of the site and dwellings is generated from production relationship of the Soviet Union approach. (Bulgur, 2012)

The residential area is planned to complement the employment opportunities for industrial facility accommodating a diversified of dwelling types to meet the wide range family composition in a balanced community.

Association of Housing Types

The spatial relations of housing types with each other are tried to be clarified. The coding for morphological differences of houses is questioned. Types are evaluated in a historically manner. In fact, it is required to be noted that how their configuration were formed in time. Especially, how each type articulated to each other is surveyed. At first glance the design of site has basic characteristics. However, partially the layout of housing blocks represents randomly arranged form. The user profile of the housing is also taken into consideration to understand if there is any spatial rule/code differing each other with respect to the working hierarchy of factory relied in the housing district.

With reference to the Figure 5.33 indicating the phases of housing construction, this part is formulated. Housing types of SD and Kİ were initially constructed buildings. First examinations are applied through these types SD and Kİ. These building types were designed aligning on the main road between the two public space centers. Some of them were laid in the back yard to refer and articulate with other types. In especial, the ground floors of Kİs were primarily used for public. SDs and Kİs constituted the beginning of the settlement spine. Both has four number of floors, thus on the streetscape was designed with the same height of building. The landscaping on the setbacks from the main boulevard provides boulevard to be defined well. Buildings were in detached form, positioning with some angles and produce different space to avoid monotony. SD blocks entrances were designed either from the boulevard/main road or minor roads as braches of main streets. However, all entrances of Kİ blocks were on the backyard. Kİs do not have direct circulation relation with the main road. This discrimination would be derived from the inhabitants' working status. (See figure 5.32)

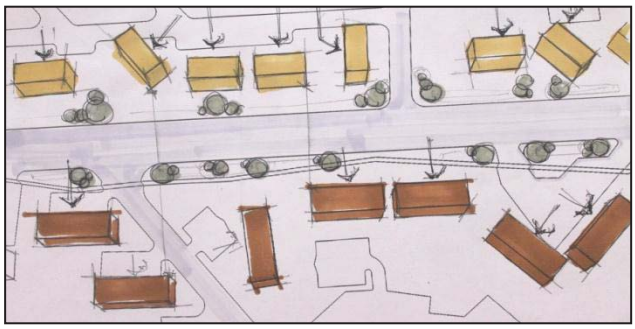


Figure 5.80 Sketch indicating the relationship of SD and Kİ blocks (Source: drawn by author)

In the second phase of construction, A, B, OD and BD types of buildings were built up. The relationship between first and second phases would be examined principally with SD and Kİ. SDs were like a connector or conductor element of ODs. SDs surrounded ODs and provide slightly private sub-district in the site. Managers and chief engineers were living these buildings. This factor intimates the disintegration. There was approximately 30 meters between SDs and ODs. Certain distance between two was provided. The size and height differences between two types were obvious. SD was four times of OD's height and the block size of SD was roughly two times of OD's. ODs had terrace housing form orienting to the open space and topography. They were one-story, partially detached and adjacent houses. They were allocated with groupings of one-two or three of them. Besides, they had special pedestrian route such a spine among ODs connecting each other. All entrances of ODs were designed through this path. Pursuant to the pedestrian route there were two

central open spaces, used for parks or playgrounds. They got parking service with cul-de-sacs, which were collectively utilized. (See Figure 5.81)

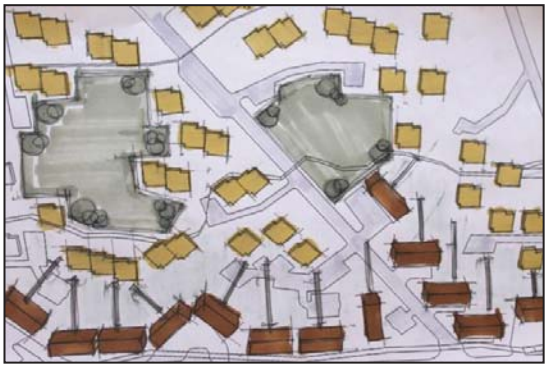


Figure 5.81 Sketch indicating the relationship of SD and OD blocks (Source: drawn by author)

Likewise ODs, SDs had similar association with BDs. BDs were two-story buildings for the use of general managers. They were in a few numbers. Only ten blocks existed. They were on the back yard of the SDs, in an isolated district. Their positioning was determined with reference to the block line of SDs'. Discretely, BDs were partially nested with ODs. Their morphological properties in terms of building plot size and the height of buildings were alike. Thus, their close configuration was compatible enough. However, it is to be noted that BDs had much more private texture. They had private gardens and their parking area directly reached to the building plot. (See figure 5.82)

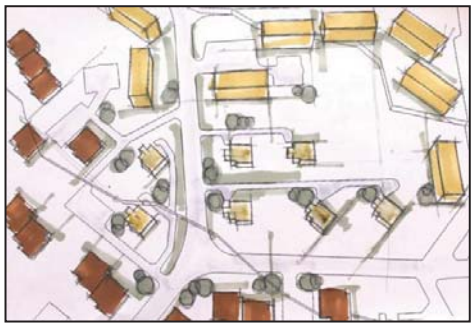


Figure 5.82 Sketch indicating the relationship of SD, BD and OD blocks (Source: drawn by author)

B type of buildings has four numbers of floors. B buildings positioned in the 3 part but in a continuum expanding the settlement structure. Some of them were designed align to the main road. Only six of them were settled in the periphery of the Kİs. The rectangular building block form and height of building are alike with SDs and Kİ, but the size of the building and relatively the dwelling size was larger than others. Blocks on the boundary of Ki were designed with reference to the Kİ block lines. Their close togetherness and lack of concrete division morphological elements among them makes public that the user profile of buildings belongs to some group/status workers. (see Figure 5.83)

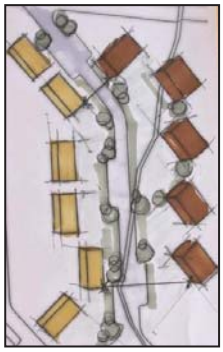


Figure 5.83 Sketch indicating the relationship of Kİ and B blocks (Source: drawn by author)

A blocks were built in the second phase of construction. They have similar building height and rectangular building block form with SD, Kİ and B. A blocks were arranged on a street branched of the main road. They were expanding the settlement towards the south-west of the site, where one sub-center was situated. The distance between block lines were comparably wide than SD, Ki and B.

In the third phase, E and K blocks were built over the residential area, varying the housing types. E blocks had nine or ten number floors. They were the highest buildings with good vistas. Technological advances produced this type of housing structure in 1970s. In the previous factory campus illustrations, such structure had not been observed. As they were point blocks having high density, it is predicted that they were distributed in scattered form in the site to balance the population there. Also, its shading impact was in regard arranging in the site. Therefore E blocks associated with five different types, producing heterogeneity in the residential area. Commonly, there was not exact rule between them. Only, it would be cared to prevent certain distance from the other types due to its building height. The relationship of it with its surrounding was prevailing. Grouping of two, three or four of them constituted their basic spatial organization. For the buildings' settling down, the spatial reference was marking the corner points or the entrance space/the middle point of other type buildings it associated with. (See Figure 5.84)

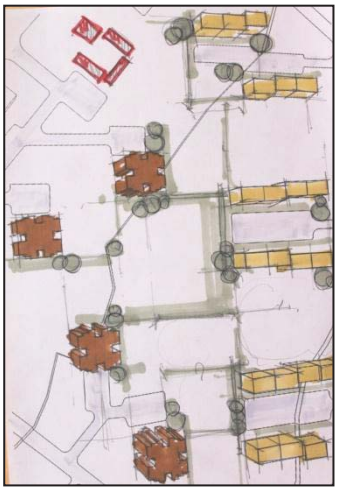


Figure5.84 Sketch indicating the relationship of E and K blocks (Source: drawn by author)

Apart from E blocks, K type of housing was developed in the same period. They were strictly separated from already built environment. They were designed on the east part of the site with a definite distance from the other types approximately 55-60 meters. Oğuz (2012) marked that they were calling "Cuba Neighborhood" for the district comprised of K types. Dwellings of K type of

buildings were the smallest of houses and they were used for the workers of lowest status in the factory. Substantially, they were the most hard-working part of the factory workers. Nonetheless, K buildings' configuration was well enough designed in parallel to each other. They were designed in the form of three or four of them grouping. They were a sided to the pedestrian pathway with perpendicular angle. The facades of the buildings were not oriented to the path. Besides, the outer ring road serves to these buildings. Parallelism between the K blocks prevents a certain distance, it would be coded. K type only associated with the E buildings and B buildings. They have perpendicular relationship and they did not define common space within each other. Partially, it can be stated they developed a negative relationship.

In the last phase of settlement, D type of housing was initiated. It was developed by different designer. Thus, it was articulated with regarding the design power lines and general orientation of other nearby buildings types of A and E. However, they did not form a closeness produce public space. They were formulated in parallel form. D type of building was an underpass building. Hence, on the ground floor it enabled public use and pedestrian access throughout it. Besides, some D buildings were aligned to the tail of the main road with 45 degree composition. It brought a different image, due to its long-wide building form attaching to the main road. (See figure 5.85)

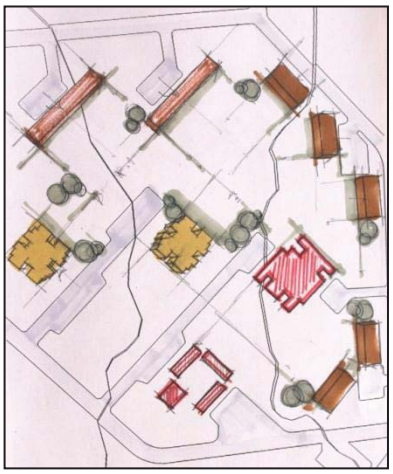


Figure 5.85 Sketch indicating the relationship of A, D and E blocks (Source: drawn by author)

In sum, mass housing area was configured with some circumstances of housing type's conjunctions. The design perspective represents a cumulative approach. The positioning of them referring each other, but they do not create defined cluster.

5.4.1.2.2 Public Utilities

In residential area of the campus, the public utilities and public space carry significant role in designing urban space. Here, the clarification of these spaces and services takes place. In the campus, there are educational, sports, cultural, recreational, commercial and social facilities. What a neighborhood required is bountifully provided. Çepni(2012) states that "*Factory campus is like a modern planned pocket urban area".* He points out the provision of social services/ infrastructure. Great emphasis on the public amenities is also concluded in the interviews.

In the site there is three kindergartens, two primary school for Turkish children and one for the Russian children, two high schools (college), an education center for factory workers and a school for apprenticeship, which is specifically open to out of the campus alive.

As shown in the below, (figure 5.86) the high school which is located in the north-west side of the district, is a courtyard form of building. It was designed by Eryıldız and his team (2012). Functional spatial organization of the plan is interesting and successful. The high school located on the south of the site was latterly built down.

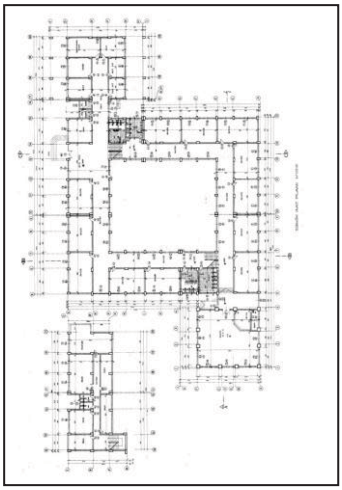


Figure 5.86 Plan layout of the High-school (Source: İSDEMİR Archive, 2012)

In the site there are three kindergartens. Accessibility of the kindergartens is good owing to be positioned in certain part of the district in accordance with the population density of the buildings surrounded. Pedestrian route intersects with the kindergartens. Around the kindergartens the playgrounds are designed jointly. Especially for female workers, this is an important service. Because when they are at work, their children would be looked after there. The floor plan of kindergarten is shown (figure 5.87) in the below that it has indoor gardens. The design purpose carries out distinct space organization. For instance, there are different classrooms for certain age groups.

Figure 5.87 Floor Plan of Kindergarten (Source: İSDEMİR Archive, 2012 and revised by author)

Figure 5.88 Photography of Kindergarten (Source: İSDEMİR Archive)

Great open and green space is planned in the campus. Dominance of the open spaces is deliberately observed. The particularity of the factory campus grounded to this factor with somehow. Mainly surrounding by a forest land has two aspects, isolating the residential area from factory/production site and rehabilitating workers live in the campus. Forest area was generated during the construction of housings.

Although there is not well-defined open space system, active and passive green spaces are concrete. Playgrounds, sport areas, parks, picnic areas, flower garden, vegetable glasshouse and gardens diversified the green space use. Landscape unit of factory practices the forestation and maintenance of all green spaces itself.

For sport facilities, there is a stadium for football facilities. The place of the stadium was subsequently built there. The earlier one was located on the south of social center. (Tan, 2012)

Figure 5.89 Photography of park/open space (Source: İSDEMİR Archive, 2012)

Figure 5.90 Photography of Stadium (Source: İSDEMİR Archive, 2012)

Likewise the other industrial settlement, the football is dominant sport activity among others. Football team called *Demir-Çelik Spor* has been prospering team in the region.

Besides, there are courts for sport facilities namely tennis and volleyball built in need of workers. Also there are sport center and swimming pool. There were two beaches on the south of the factory harbor. The north side was infilled with sinter, which is the ruin of solid waste iron thrown from the high furnace. (Tan, 2012)

Lacking of cultural facilities of the campus is exposed to criticism. Ferah who is famous singer in Turkey lives in the Factory campus of İskenderun Iron and Steel factory. She narrates her childhood such that;

"I lived in a big neighborhood. Nonetheless the population is very much, ever body knows each other in the site and whatever happened there is known as well. It is 20km away from the city and it has beach, cinema, swimming pool, clubhouse, tea garden, restaurant, sport facilities. Going to city is only for fun. However, likewise theatre, concert and shopping facilities are not presented. Never mind, there is an open swimming pool, open and closed basketball and volley ball courts, tennis courts, sea, dense open green spaces, those days were very dynamic on the long summer days, spending time under the sun and on the top of the trees."(2006)

It is understood that she was very pleased to live there, but she criticizes the insufficient of cultural facilities. Also, Bulgur states that there is one missing point that apart from the factory there is not any cultural production collectively done by the workers.

However, it is noticed that there are cinemas; one of them is used in summer time. Tan (2012) denotes that there was a cinema in the primary school, which was located around the BD blocks.

After the privatization in order to compensate this shortcoming, the building which was already used for the heating system center re-functioned as a cultural center. It was a necessary facility to be constructed in the campus earlier. It was latterly provided. Pursuant to the original plan layout of building, the re-functioning of the building was realized. (Okur, 2012)

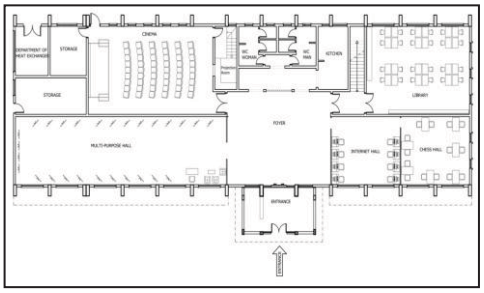


Figure 5.91 The floor plan of the Cultural Center (Source: İSDEMİR Archive, 2012 and revised by author)

Figure 5.92 Photography of Cultural center (Source: İSDEMİR Archive, 2012)

Multi-purpose spaces within the center provide opportunity for several cultural facilities. (See figure 5.91) In order to use the height and relatively the volume of the building, they have built a mezzanine.

As well as the other campuses, the clubhouse use is common place for socialization. In the clubhouse, they let off stress reasoned by hard-heavy working by drinking, playing and etc. The first one was on ground floor of SD-11 block; it was used during the construction of residential area. Later on, three clubhouses were built up. Each had dining halls within it. Russians' clubhouse was separate from others, the north block. The one on the south was open for all workers. (It was then demolished. In between block was specialized for engineers (name of "TMMOB Clubhouse") and then it was used as association. This building was re-functioned after the privatization and today used as a restaurant managed by a private company whereas previously it was in possession of factory.

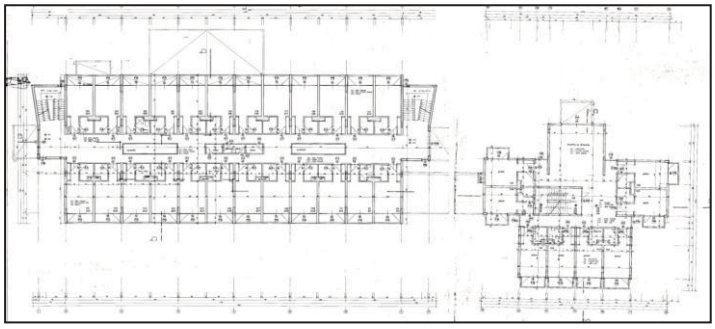


Figure 5.93 Floor Plan Layout of Guesthouse (Source: İSDEMİR Archive, 2012)

Figure 5.94 Photography of Guesthouse (Source: İSDEMİR Archive, 2012)

To accommodate technical consultants or public officers who have temporary visit to factory, a guesthouse was built. Guesthouse is located in the north side the neighborhood close to the factory.

Figure above shows that it has two separate blocks connected to each other. The rectangular block is used for accommodation designed like a dormitory. The other block like a square form is used for the collective necessities like dining hall and etc.

Figure 5.95 Photography of social administrative building (Source: İSDEMİR Archive, 2012)

The other public center was planned around the Social Administrative building. (See figure 5.95) On the upper story, there was clubhouse and "Çatı Restaurant". On the ground floor of social administrative building there was medical service. In between spaces is used for social activities. Restaurant numbered 1 and 3 for families in the shopping center and the Çatı Restaurant are most often used places for dining and socialization. (Tan, 2012)

Figure 5.96 Photography of Market (Source: İSDEMİR Archive, 2012)

There is a market located on the south-west of social administrative building to acquire basic commodities/goods. (See figure 5.96) The reason behind settling down a market, in order to prevent workers go city for the purposes to get cheap and clean supplies. In addition, there was another place for commercial purposes called DEÇKO. It was like a wholesale center like a market. It was actually the cooperative of Iron and Steel workers. It was designed by Eryıldız with his colleague Akdamar and it was located on backyard of Kİ6 and Kİ7 blocks. It was destructed later on. (Eryıldız, 2012)

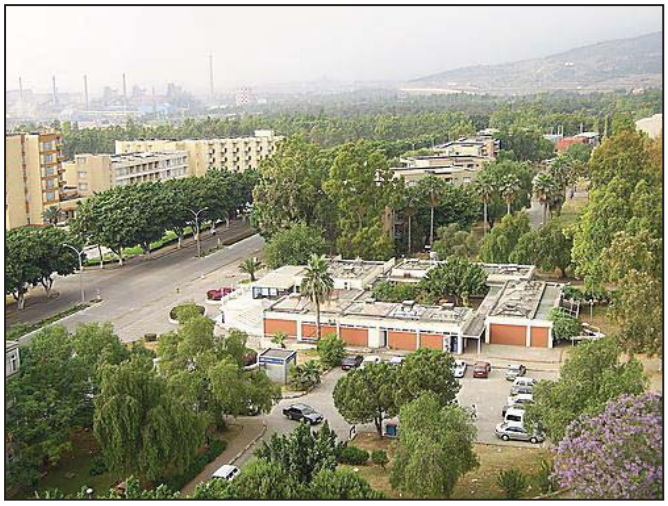


Figure 5.97 Photography of shopping center 1 (Source: İSDEMİR Archive, 2012)

Three shopping centers were built in different parts of the district to make available all inhabitants access easily. Centers numbered 1 (see figure above) and 2 are composed of more facilities such as hairdresser, banks, post office, patisserie and etc. On the southern part of the gate called İskenderun, a bazaar has been installed once in a week.

In addition, the transportation system and infrastructure was outstanding rather than the public amenities served. Accessing to the working and living space has been organized by public transportation with bus services. Although the distance between factory and housing was short enough, walking to work was not suggested; even it was restricted. Service system contributes to efficiency of the labor force. There are approximately 20 bus services. Services collect workers according to their units. In factory site, they leave them at one place. At first, labor and officers' services are separate. Since 1986, they are compounded. (Bulgur, 2012)

There are also services out of the campus, for the workers who are not living in the campus. Services with destinations to İskenderun, Payas, Dörtyol, Osmaniye, Arsuz, Belen, Kırıkhan and Antakya have been generated. The workers union reached an agreement about the service distance with the factory administration. Factory has provided services 100km radius from the campus. (Çepni, 2012) This is important, because such transportation implementation has related with urban spatial policy. This practice has prevented the urban agglomeration due to housing demand around the campus site.

Çepni states that (2012) after the privatization, the factory administration that came on work has not preferred to employ workers coming from remote locations to factory due to the loss of time and workers' lack of concentration. The service radius from the factory site becomes shorter. It is now approximately 80km despite it was about 100km.

Accessing to city center was also operated by services. School buses for children of workers who went to city center were discrete from others. Out of the working hours, services were much more, and everyone benefited readily. Dividedly, Russian workers had separate services to city center. Besides, these services were free provided by the factory; but it has been paid since privatization.

There was a transportation node, on the south of the factory site intersected with railway all buses, taxis were allocated there. It was like a vehicle store place. Within the campus to the control the vehicle use, the sticker implementation exists. Vehicles with green stickers are only enabled to go housing district and they are controlled in the gates. Vehicles with red sticker are for headman and chief engineer, enabled to go factory site and they are controlled in the gates. Vehicles with orange stickers are for managers; free to go everywhere in the campus site and they are not controlled.

Infrastructure has a striking feature such that along the boulevard there were galleries designed with 3m x 3m dimension underlying the pavements in order to intervene in any malfunction. Electricity, water and heating system have been treated from there. This implementation had not been observed in any residential area of Turkey until it constructed. (Tan, 2012)

Factory as a non-stop working facility, its infrastructure is highly qualified. Residential area infrastructure was planned contingent upon the factory system. Thus, there has not been any electricity cut, water problem etc. Heating system of housings was performed with the waste vapor of factory. The residential area has own its treatment system apart from the municipality. (Okur, 2012)

5.5 Remarks of the İskenderun Iron and Steel Factory campus design

İskenderun Iron and Steel Factory campus is a space where production and housing in conjunction likewise other factory campuses. The design principles of the campus, its urban impacts and respectively 'today use' & condition would be elaborated. In addition, particularities of this campus and its similarities with other cases are tried to be presented concomitantly.

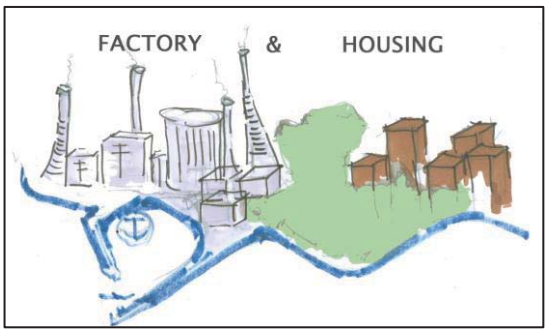


Figure 5.98 Sketch of factory and housing couple (Source: drawing of author)

Factory campus was established as a state enterprise the scope of *"state-owned enterprises"* in 1970. Industrialization was still in control of state. State modernism ideal means to industrialized society creation was prevailing. State political ideals and hegemony generated throughout industrialization in the period between 1950s and 1980s.

Respectively, campus was built upon a public property and workers are able to live and work in the same place constituting an industrial community.

Compared to earlier ones, İskenderun factory campus is the largest of them on the tail of factory campus developing trend. It was the latest and established as the third biggest heavy industrial facility. Case study area discriminates majorly with these features.

It was designed by Soviet Union. The designer impact and ongoing planning approaches shaped this urban space. Soviets proposed and designed a suburban factory campus like Seydişehir Aluminum factory campus. Two campuses are pertained to a different type of industrial settlement. (See appendix 3) In 1970s such suburban development was in favor.

Soviet planning approaches on industrial settlements were adopted in different period of Turkey urbanization process. As Soviets were professional on the issue of creating industrial settlement, Turkish administrative bodies were usually in touch through industrialization continuum. Soviets produced different forms. While they settled down an in-city factory campus like in Kayseri Textile factory in the 1930s, they produced suburban factory campuses in 1970s. The context and contents of production designate the form of settlement. In "Principles of Town Planning in Soviet", the state

committee of civil engineering and architecture of Soviet Union (1967) declared that there are some typical urban configurations overlap with the kind of industrial production.

Nevertheless, in this case general acceptance of soviet urbanism effects can be observed. A balanced community was come up with this settlement. It has approximately 10000-12000 inhabitants. It is calm and quite environment. It resembles a micro-rayon, a unit of settlement in soviet urbanism system. This kind of settlement was derived from the ideas against the capitalist spatial organization, which has figured generally 'dense agglomerations in the city centers'. However, capitalist system has also demanded new space to get profit through its building, consuming over there and etc.

According to the constructivists and their successors, their architecture and city planning designs not only symbolized the Soviet Revolution, but also were a tool to further the communist social agenda of liberalizing the household, collectively sharing goods, and cultivating individuals through cultural institutions, making rapid economic growth possible. Thus the Soviet suburb was designed to change human social structures through architecture and design. Self-contained urban settlement created with respect to production relations, especially industrial production were emphasized and encouraged. The aims and advantages of suburban settlement are mentioned.

On the contrary, there are some criticisms over this spatial form. Çepni was one of the interviewers and he had been working in Karabük Iron and Steel Factory before İskenderun. Hence, he compared two factory campuses. He stated that Yenişehir housing district of Karabük Iron and Steel Factory campus is such a neighborhood of the city. When a leaf is stirred in the factory, all social layers are immediately affected. Factory campus is integrated to the city. However, İskenderun case is not like that. What happened in the factory does not take part in the urban agenda. Factory campus is isolated from the city. This serves the purpose of the employers. There is no public opinion or public control over the working conditions/problems of the factory workers. (2012)

Factory campus was designed highly isolated from the city. It was secured settlement, somehow this makes feel workers be imprisoned or bounded to certain space. However, this closeness makes them community sharing a life together, in a defined urban space.

Apart from the constructivism a modernism way of soviets, exactly the modernism influences have been beheld. In the first congress of CIAM (1928), modern architectures determined the primary functions of the city as follows; dwelling, work, recreation and transportation. (Günay, 1988) Definitely decomposition of these functions was idealized. In the design of factory campuses, this principle was completely sovereign. Living and working space discrimination is the basic and even critical phenomenon of the industrial urban space design. In the Athens charter, these functions were explained in detail. In the second section of the Charter denotes that *"Industry and dwelling zones should be separated and good communications should be provided."* (quoted in Günay, 1988) Furthermore, in the third congress of CIAM (1930), the appropriate settlement forms were discussed. It is concluded that merely the family should not be the consideration of settlement form, in especial community's needs should be regarded. (Günay, 1988) Here in the case area, these design principles were implemented. These mentioned principles have substantially effects on soviet planning approaches and compatible with their ideology as well.

CIAM approach on settlement or residential area design was based upon some characteristics. Even so in the Athens charter, dwelling issue was clarified such that *"high-rise apartments away from traffic with open spaces receiving sunlight are recommended*". Besides, greenery was described as follows "*sufficient amount of open space should be maintained*". (quoted in Günay, 1988) Sum up, the required features of modern city were defined with four main points. These is functional organization, skyscraper in vast open space to be used for recreation with mechanical order, minimum standards of dwelling units, accentuation of vehicular traffic and pedestrian segregation. Industrializing ideologies, both capitalists and socialists had adopted this design way. İskenderun Iron and Steel Factory campus was one of the factory campuses representing these characteristics. Factory campuses established in the early republican period did not absolutely figure these features.

While designing, Soviets developed their plan schema in accordance to these approaches. Later on, there was some intervention realized by Eryıldız and his team. They did not exactly strike in the main

plan layout; they had only put in one housing type D blocks and some arrangements related transportation system. Eryıldız stated that they had protected the same design principles previously implemented.

Within the campus, there is a main arterial road connects the residential area and factory. In the residential area, there are widest choice of opportunities – social, cultural, recreational and etc. - be made available for the full use of leisure time. Wide-range of social and recreational facilities were designed for inhabitants, especially for workers to reproduce labor force. These amenities were provided for workers to prepare themselves physically and psychologically; and concentrate to work. Housing design has also direct influence for them with its environment. Urban design of the residential site has been a significant occupation in this purpose.

Socialist approach in design deals with how and in what conditions the people would live. They have detailed explanations about the working style, conditions and environment of daily life and how the resting time and spaces would be.

Planning decisions of the housing units in the newly established industrial settlements, which were built for the employees and their families, figure some design rules. They planned in each settlement social units like libraries, clubs, cafeterias and theatres; swimming pool surrounding sports areas like tennis courts; kindergarten, dormitory; School; Sports area; Greenhouse. The housing blocks have meeting and game halls on the ground floors. As Cooke (2000, 73) stated that *"The ground floors of the houses are suggested to allocate for the social functions like reading halls and game rooms. Besides, the units like sports areas, school, and kindergarten are stipulated in the housing settlements*."

Case study area reveals these attitudes. Public utilities were all provided in the site. Moreover, the ground floor of SD and Kİ blocks were publicly used and some social services were established there. As they were built in the first phase of campus originally represent soviets design way.

Pedestrian dominant transportation system was ascendant, and it is enhanced with public transportation. Street hierarchy was a definite design principle. Segregated traffic and pedestrian-only route was planned. A footpath system connects recreational areas, schools, shopping and residential quarters. This path was partially transformed through Eryıldız team interventions; it should be more precisely integrate the public utilities.

Publicity was realized through the functional structures. It would be an issue of criticism that public space was not well-defined. It is caused by the progressist design perspective of campus. Progressist design model's elements are as follows*; looking to the future parallel to social progress, universal & international, separation of functions, air, light, greenery, continuity of voids, regularity, perpendicularity, geometric order, standardization, sterility and mechanical*. (Günay, 1988, 40)

Accordingly, it is formulated such that people are coming together on functional purposes. Housing with minimum standards only for sheltering and resting, but in the campus houses were good qualified. There are diversified housing types; nine different housing types exist in the site. Heterogeneity was acquired in the site. It has positive effects; thus it spells a lively and varied community. There are low, medium and high rise buildings.

As a worker housing district, it has a collective housing form. Houses have simple geometric order of architecture. The clean proportion of architecture was detected like in a modernist way. Standardization in housing was seized in design in a rational mind.

Compared to cases analyzed in chapter 4, high-rise buildings were common in this case. Housing types are varied in the site. Constructivist housing formations were planned in the site. varied forms of housing were developed. One of them is distinct. In the late 1950s, to overcome the housing insufficiency, housing model named Khrushckevki was developed. As it is mentioned in the previous parts, it is a five-storey, simple form, and low cost buildings. K type of blocks in the case study area resembles Khrushckevki. One third of the population living in the campus accommodate in K blocks. Mass housing type of building was designed for industrial workers.

Similar asset of the campus with others is the hierarchy in housing. Workers accommodation in the housing district is determined though their working status in the factory campus, this results some social dissociations; however the emplacement is not strict. This approach was derived from the industrialization in name of capitalism. Capitalism has brought class-based discrimination primarily in factory; and respectively it has repeated in the housing district. This became a design issue in factory campuses. Either capitalist or socialist approach is not so deterministic in this phenomenon.

One interesting fact is that there were two communities up to 1986. Russian workers and Turkish workers were living together. It has some positive effects on creating urbanized and industrial community for Turkish workers. Bilir (2012) stated that "*We learned walking in the forest and swimming before the working hours from the Russian workers. Russians are instances for us."* Two different cultures were living there. However, their socialization was limited and restricted in housing district due to political concerns. They had separated life in the housing district whereas there was not any discrimination in the factory site. In the residential area, Russians' housing and public utilities were differentiated.

In the campus, there are two same generations; the workers and their children. Two similar generations live there collectively for a long time. Relatively, socio-spatial impacts are occurred. Namely sense of belonging to space is common feature of kinds of urban settlements as similar to other examples. Asiliskender (2008,36) clarifies the sense of belonging and space relation such that individual is in a pursuit for concretization of this individuality, even in the public spaces such as workplace, school that he/she has to share with the others. Space gains existence with interpretation of the meaning codes of the physical environment by the individual. The building capacity of human is directly related with perception of his/her environment. The individual gathers whole information to maintain his/her daily life from physical environment and as the result of mutual relationship between him/herself and the society he/she lives in. But the experiences that will reveal his/her own living space is slightly different from the information of daily life. The objectification of the experience: transformation to the space is closely related to the concept of belonging. In the factory campuses, appreciated socio-spatial impact is the belonging to space. It is directly resulted living in certain defined space. For some, the closeness of these campuses and sharing of working and living space with limited social environment had some disadvantages. Çepni (2012) explored it such that the problems arisen in the factory were transferred to the housing site and the daily dialogues were about the same issues. "The same faces and the same problems" was concluded. Besides, living a long time together in an isolated place produced some adaptability troubles for inhabitants when they left the campus. Afterwards, when they were retired and forced to leave campus, they intended to continue "living together" somehow. This tendency has definite urban impacts. They tried to find out housing having a similar spatial morphology with campus. Majorly, they settled in three main neighborhoods of İskenderun. They are namely Yalıkent, İssume and Körfez. These districts were on the periphery of the city. First two are closed/secured neighborhoods with qualified public utilities. Houses in these districts were detached 2 storey with own gardens. The other one is comparably close to the city and more integrated to urban space. It is not isolated. Five storey apartments constituted this district. Due to the fact that factory campus was developed as an suburb and closed in itself, its spatial impact was not dominant likewise other factory campuses which were located in city.

Since 2002, when the factory and all its properties were privatized, factory was operating with an increasing profit by renewing its production technology. Hand-over the property and administration relatively reasoned the transformation in the worker composition. Private sector's working order is different to state. It usually holds unsecured and temporary labors. Hence, throughout privatization approximately all workers and in company with all the inhabitants were transformed. Although factory administrative body come to power has renewed and maintained the housing district, the housing provision is not private sector's primary concerns due to its cost and etc. Okur (2012) stated that factory administration has been in search of new land place to settle workers instead of residential area of campus.

Furthermore, there is an industrial magnet effects on İskenderun coast. Iron and steel factory has been the center place of industrial agglomerations and it has attracted industrial facilities concentrations in its hinterlands.

After the privatization progress held about İskenderun Iron and Steel Factory and İskenderun Harbor, decisions of 1/100000 scaled Master plan (certified in 2005) and relatively 1/25000 scaled Master plan (certified in 2006) should be significantly elaborated. That is to say, 1/100000 scaled Master plan proposed south part of the factory campus corresponding to the forest land surrounding the residential area as "*development area of organized industrial district*" (see figure 5.99). This plan decision was objected reasoning public benefit and protecting the natural resources. In the end, this decision was repealed by the judiciary. While this subject was on judiciary, this plan decision was copied to 1/25000 scaled Master plan. With same justifications, it was objected and still on judiciary.

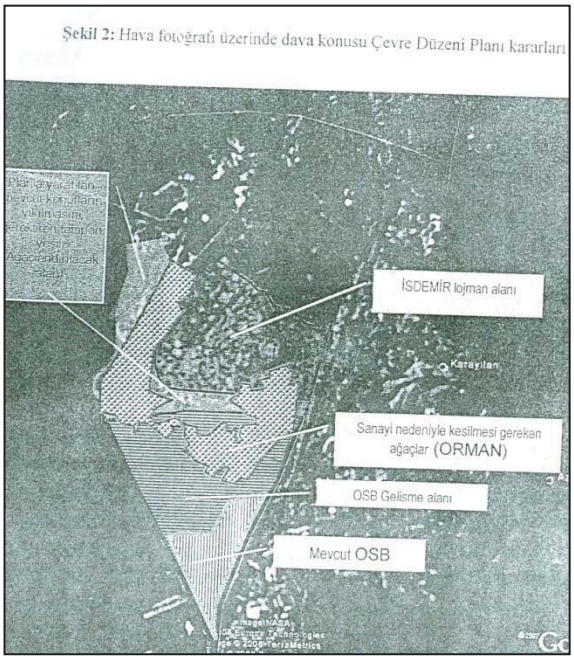


Figure 5.99 Diagram of Expert Report of dealing with 1/100000 scaled plan indicates the problematic subject area (Source: Evren, Mısır and Şengezer , 2008)

Figure 5.100 The Ariel Photography indicating the problematic area (Source: http://mapcarta.com/13122294, accessed in 12th January, 2013)

Furthermore, private industrial companies have press on this area to transform the land-use of this space. They are planning to establish Thermal Power Plants on this place. One of the private enterprises founded a Thermal Plant on the south of this place. Their intention was to replace the industrial facility from iron and steel sector to energy sector. Industry of energy has excessive hazards on environment and externalizes nearby living spaces. In order to get resources for the plant operations, they necessitate compatible coastal area. The pressure on this land is due to this purpose.

In 2006, coastal area infill plan was done as shown in the figure 5.101. According to the plan, on the north side of the Factory harbor is infilled. A new harbor is planned on the coastal area of housing district with some infill of sea.

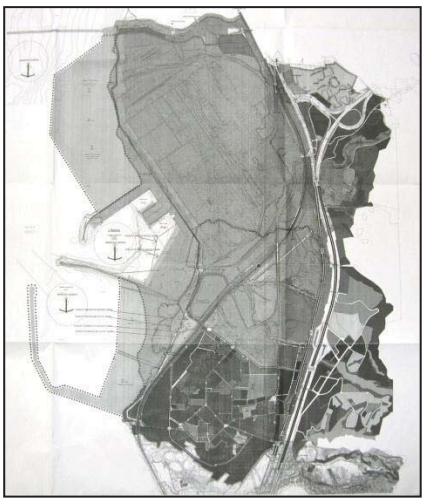


Figure 5.101 İSDEMİR Coastal Area Infill Plan (Source: Çakır's Archive, 2012)

Under these planning works, and regarding out of iron and steel factory , the residual industries' intention of creating specified industrial agglomeration on the coastal area would cause a new form of urban industrial space. Industrial clusters align on the coast would constitute an industrial corridor on the İskenderun gulf.

Reproduction of the space within the political and economical circumstances seems inevitable. However, in the meanwhile the relationship of factory and housing would be dissolved. Togetherness of factory and housing in the form of factory campuses would disappear on urban space. Whereas design features of factory campuses and aims behind their coming up are all appreciated, these kinds of industrial settlements would be destroyed. Similar scenario is probably realized in the case study area in the forth coming time.

CHAPTER 6

CONCLUSION

The circumstances created by industrialization brought about a new urban pattern starting from the 18th century. Factory became the central place of mass production. The change in production facility inevitably affected the existing urban forms. Working and living habits were transformed.

Consequently, a severe housing problem emerged in urban areas for industrial workers. Nearby the factories, housing/sheltering was emplaced in dreadful conditions In order to overcome this problematic issue, industrialist built up housing for their workers. Gradually, so as to prevent workers from looking for other jobs and provide the continuity of production, housing was provided for them. Worker housing/residential areas were configured in the vicinity of the factory. These areas were provided by either the capitalists or state. Ideologically, who provided the housing is not the matter. The major aim is to provide the continuity of the industrial production. The relevant requirements were arranged in accordance with the industrial organization. Housing was the significant component of this system. Therefore, this reproduction of space with respect to the industrialization became an urban phenomenon with its physical, political, economical and social aspects.

This thesis is mainly deals with the togetherness of 'Factory' and 'Housing' through an urban design point of view. The evolution of this coupling -namely the 'Factory Campus'-, and different factory campus forms are elaborated throughout the study.

Design of factory campuses is the subject of the urban design field. There are a number of utopias, ideas and planning approaches developed about this issue. In the 3rd chapter, the theoretical and historical base of the factory campuses and industrial towns are examined broadly.

In parallel, modern urban planning understanding, approaches have been generated as a result of industrialization. Industrialization introduced new spatial conceptions. The standardization, functionality, regulation, rigidity, specialization, order, control, centralization, concentration and so on were unprecedented/original perceptions in urban design and architecture. Modernism and industrialism design approaches interacting with each other have been united in the factory campuses. Therefore, they are significant urban fabrics to be searched.

Factory campuses can be defined as places consisting of factory and its workers' residential areas under the power/supervision of industrialists. Every established factory is an urban scale regulation, including not only industrial plants but also 'homes' for its employees, markets and various spaces in which a number of cultural activities are performed such as cinema, theatre or swimming championships. (Asiliskender, 2002)

Despite the peculiarities of each space/factory campus in the context of 'spatial fix' notion, it is still possible to talk about similar configurations in these campuses. Because industry has its own style to produce urban space. I.e. the requirements of industry lead to a typical spatial pattern. Industry settles down on urban space with respect to its rational circumstances to function/operate efficiently. This rationality poses similar layouts in the housing district of the factory positioned nearby it. Through the housing provision in the campus, workers are subjected to space. In this way, labor force is reproduced and the continuity of production is provided. In the campus, new dwelling forms are introduced, and all requirements are provided for workers and their families. There are some socio-spatial outcomes observed: Sharing a life and a space together for a long time have

strengthened the sense of belonging to space and collectivity. All factory campuses somehow generate a community/industrial community. The physical and social characteristics of factory campuses are all appreciated as specialized urban fabrics representing urban industrial history. Their commemorative effects are remarkable.

Apart from the social aspects of the factory campuses, the physical aspect is the major concern. In this study, it is aimed to elaborate factory campuses within the context of their spatial typology. The industrial spatial formations on urban space and typical togetherness of housing and factory are put forth in a morphological survey.

The factory campus developing experience of Turkey is examined in three different periods. Under the urbanization and industrialization policies, the transformation of factory campuses and their spatial commonalities and particularities are shown. Five factory campuses with distinct patterns are investigated.

More specifically, İskenderun Iron and Steel Factory Campus is considered as a typical example corresponding to a different type of factory campus morphology. Therefore, it is examined deeply as a case study.

İskenderun Iron and Steel Factory Campus was a state-establishment industrial facility in the period of 1950-1980. It is the latest heavy industrial facility. As it was built up by the Soviet urban planners, the Soviet urbanism had serious impacts on the form of factory campus. This campus was developed as a 'suburb' on the public property. This character basically overlaps with the Soviet urbanism approaches of 'deagglomeration'. In addition, İskenderun Iron and Steel Factory Campus figures 'separated' form of the factory and housing integration. It is rooted from the haphazard environment impact of the iron and steel heavy industry. In accordance to the Soviet industrial town planning principles, such an urban spatial configuration coincides with the rationality of heavy industrial organization.

Günay denotes that "*The principles set forth by CIAM found application in the construction of cities in the socialist world; for their extensive usage of technology in construction, the idea of the minimum dwelling, functional organization of space, abundance of open space in a society where land is publicly owned all favored the application of such thinking*." (1988, 32) The designer of the factory campus is a socialist state, Soviet Union, thus it ideologically differentiates from the earlier ones, which were designed by European designers. Design of İskenderun Iron and Steel Factory Campus definitely presents CIAM principles. Mass-housing settlement in the vicinity of factory is surrounded by an urban forestry. Open and green space in the residential area is remarkable. Although it is not well-defined, it dominates the housing district, landscaping greatly. All public necessities are provided and collective life constituents are emphasized. For the reproduction of labor force, all factors are regarded in the secured campus.

The housings were built up in nine different types. Simple form of architecture and high-infrastructure as characteristics of Soviet architecture are figured in the residential area. Diversity of the housing shatters the monotony of the life of the campus in the least. The capacity of the residential district is much more than it necessitates. In fact, the extent of the campus is wider compared to other campuses. Moreover, it serves for much more workers who are obliged to be in the proximity of the factory. Thus, it can be concluded that the provision of housing is more than a requirement for industry; it is rather a social project. However, with the privatization, instead of forestry area, there are attempts to reproduce this space with industrial facilities. Planning works demanding to transform the factory campus have been preconditioned in the agenda of İskenderun. This is a strict press, assuming the dissolution of factory campus soon.

Factory and housing have created a strong relationship gradually. Then, it has been dissolved, disappeared or become vague since the 1980s. Changing economy, politics and ideology have impacts on shaping these spaces. It is resulted by deindustrialization or it is caused by privatization. Private sector does not take the responsibility of housing provision. The land rent of housing areas supported by the state became more valuable. Moreover, whereas in Turkey industrial housing had been a state provision, industrial housing and also social housing has not been a right or

indispensability any more. Ultimately, the dissolution of factory campuses is being observed, although they have been the crucial milestone of industrialization age. Working and living spaces are rapidly alienated more recently for the industry.

REFERENCES

Alanen, A.R., (2007) Morgan Park : Duluth, U.S. Steel, and the forging of a company town, Minnesota University press, Minneapolis

Anderson, N., (1971) The Industrial Urban Community: Historical and Comparative Perspective, Appleton-Century-Crofts, New York

Arıtan, Ö. (2009) Sümerbank Yerleşkeleri: Cumhuriyet Modernleşmesi'nin İdeolojik Varyasyonlarına İlişkin Mekansal Bir Okuma, Fabrikada Barınmak, Arkadaş Yayınevi, İstanbul, pp. 177-214

Asiliskender, B., (2009) Anadolu'da 'Modern' Bir Yaşam Kurmak: Sümerbank Kayseri Bez Fabrikası ve Lojmanları, Fabrikada Barınmak, Arkadaş Yayınevi, İstanbul, pp. 111-130

Asiliskender, B.(2008) Modernleşme ve Konut; Cumhuriyetin sanayi yatırımları ile Kayseri'de mekansal ve toplumsal değişim, İTÜ Doktoral thesis, İstanbul

Ayhan, E.D., (2006) Workers' Health And Archıtecture: A Readıng On EskSehR Sugar Factory Wıthın Turkısh Modernızatıon, METU Ms Thesis, Ankara

Baş, Y. (2010) Productıon of Urban Form As The Reproductıon of Property Relatıons Morphogenesis of Yenişehir – Ankara, Metu Doktoral Thesis, Ankara

Benevolo, L. (1967) The history of the city, London: Scolar Press

Benevolo, L. (1967) The origins of modern town planning, Cambridge, Mass., M.I.T. Press

Bentley, I. (1999) , Urban Transformations, Routledge, London, New York

Birol, G. (2006) Modern Mimarlığın Ortaya Çıkışı ve Gelişimi, Megaron, Mimarlar Odası Balıkesir Şubesi Dergisi, p. 3-16.

Blumer, H. (1973) From farm to factory- The development of the modern society, [Mott, P.E., Kaplan, H.M., Yelagotes, G.J., Pittenger, D.B., Riedel, M., Charles E.] Merrill publishing co., Ohio

Bostan, M., Erdoğanaras F., Görer Tamer, N., (2010), "Ankara metropoliten alanında imalat sanayinin yer değiştirme süreci ve özellikleri", Metu Journal of Faculty of Architecture, 2010/1 (27:1) 81-102, Ankara

Brain, D., (2004) Placemaking and Community Building, Presentation at the University of Miami School of Architecture

Castells, M. (1983) The city and the grassroots :a cross-cultural theory of urban social movements, University of California Press, Berkeley

Cengizkan, A. (2009) Fabrikada Barınmak, Arkadaş yayınevi, İstanbul

Choay, F. (1969) The Modern City: Planning in the 19th Century, Trans. M. Hugo and G. R. Collins, George Braziller Inc., Netherlands

Corbusier, L. (2007) Toward an architecture /; introduction by Jean-Louis Cohen ; translation by John Goodman, Los Angeles, Calif. : Getty Research Institute

Crawford, M. (1995) Building the workingman's paradise: The design of American Company Towns, Verso Publishing, New York

Cuthbert, A.R. (2006) The form of cities –Political economy and Urban Design, blackwell publishing, UK

Çakır, B. (2010) Urban Coastal Settlements: Implementation of A Coastal Area Assessment Model in Iskenderun Case, Phd Thesis, METU, Ankara

Çalıskan, O. (2003) Anadolu'da Bir "Yarı-Çevre Modernite Deneyimi":Kemalizm'in Sehirciligi, Planlama (TMMOB Sehir Plancıları Odası Dergisi), 3, pp. 14-23

Doğan, Ç.E., (2009) Nazilli Basma Fabrikası Yerleşimi: Tarihçe ve Yaşantı, Fabrikada Barınmak, Arkadaş Yayınevi, İstanbul, pp. 77-110

Doygun, H., and Alphan, H. (2006) Monitoring Urbanization of Iskenderun, Turkey and Its Negative Implications, Environmental Monitoring and Assessment, Number: 114, pp: 145–155.

Eco, U. (1986) Art and beauty in the Middle Ages, Yale University Press, New Haven

Ersoy, M. (2012) Kentsel Planlama Ansiklopedisi, Ninova yayıncılık, İstanbul

Fenster, T. (2005) "On belonging and spatial planning in ısrael", Constructing a sense of place : architecture and the Zionist discourse, Aldershot, Hants, England ; Burlington, VT, pp 285-301

Fishman, R. (2002) Urban utopias in the twentieth century : Ebenezer Howard, Frank Lloyd Wright, and Le Corbusier, Basic Books, New York c.1946

Frampton, K. (1968) Notes on Soviet Urbanism, published by Wiley Interscience, John Wiley and Sons Inc.,New York

Frank Lloyd Wright, (1958) The Living City, Horizon Press

Gallion,A.B. & Eisner,S. (1980) The urban pattern : city planning and design, New York: Van Nostrand

Gallion, A. B. (1986) The urban pattern: city planning and design, New York: Van Nostrand

Giddens, A. (1990) The consequences of modernity, Cambridge,UK.: Polity Press

Gruson, L. (2004), Claude Nicolas Ledoux, visionary architecture et social utopia, Coordination Action (CA) 029127 – CAENTI, 299-307.

Gutnov et. al. (1970) The Ideal Communist City, New York: Brazillier

Günay, B. (1988) History of CIAM and Team 10, METU Journal of Faculty of Architecture, Volume 8 (1), METU Faculty of Architecture Press, Ankara, pp. 23- 44

Günay, B. (1999) Urban Design is a Public Policy, METU Faculty of Architecture, Ankara

Hall,T., Hubbard,P. (1998) The Entrepreneurial City and The New Urban Politics, The Entrepreneurial City, John Wiley and Sons, West Sussex, England; 1-26

Harvey, D. (2006), The limits to capital, London; New York: Verso

Hebbert (2002) The street as locus of collective memory, Environment and Planning D: Society and Space 2005, volume 23, pages 581 – 596

Herbert (1973) From farm to factory - The development of the modern society Merrill publishing co., Ohio

Howard, E. (1902) Garden Cities of To-morrow, Sonnenschein and Co. Ltd., London

İskender, K. (1998) From Modernism to Postmodernism, Art in Turkey, Vol.35, p 40

Jeanniere, A. (1993), Modernite Nedir?, Modernite versus postmodernite içinde, M. Küçük, ed., Vadi Yayınları, İstanbul; 97.

Kabatepe, E. (1972) “Iskenderun Sub-region”, Master Thesis in City Planning, GraduateSchool of Natural and Applied Sciences, METU.

Karakaya, E. (2010) Construction of the Republican in city space: from political ideal to urban planning principles, METU thesis, Ankara

Keskinok, Ç. H. (2006) Kentlesme Siyasaları, Kaynak Yayınları, İstanbul

Keskinok, Ç. H. (2010) Urban planning experience of Turkey in 1930s, METU Journal of Faculty of Architecture, Volume 27 (2), METU Faculty of Architecture Press, Ankara, pp. 173-188

Kopp, A. (1970) Town and Revolution: Soviet architecture and city planning 1917-1935, Translated by homas E. Burton, New York: Braziller

Kostof, S. (1991) The City Shaped, Urban Patterns and Meanings Through, History Thames & Hudson Ltd. London

Lefebvre, H. (1991) The Production of Space, Trans. D., N. Smith, Blackwell Publishing, UK

Lewis, D. (1976) From Urban Structure To Urban Landscape, David Le, Bellwether Publishing, Ltd.

Lynch, K. , & Rodwin, L. (1958) A theory of Urban form, Journal of the American Institute of Planners. November

Lynch, K. (1984) A theory of Good City Form, the MIT pres, London

Navruz, G. Uysal, M. (2011), Seydişehir Etibank Alüminyum Tesisleri yerleşkesi sosyal konutları mekân analizi, Erciyes Üniversitesi Fen Bilimleri Enstitüsü Dergisi 27(3), 271-281

Markus, T. A. (1993) Buildings & power : freedom and control in the origin of modern building types, London ; New York : Routledge

Marx C. & Engels. F. (2008) Communist Manifesto 1848, Pluto Press, London

Mumford, L. (1938) The Culture of Cities, Harcourt, Brace & World Inc., New York

Norberg Schulz, C. (1980) Meaning in Western Architecture, Studio Vista, London

Öktem, S. (2009) Karabük Demir Çelik Fabrikaları ve Yerleşimi, Fabrikada Barınmak, Arkadaş Yayınevi, İstanbul, pp. 157-176

Peck, J. (1996) Work-Place: The Social Regulation of Labor Markets, The Guildford Press, New York

Power, A. (1993) Hovels to High rise: State Housing in Europe Since 1850, Routledge, London

Rapoport, A. (1969) House Form and Culture, Prentice-Hall, Inc., New Jersey

Rutland, P. (1985) The Myth Of Plan: Lessons Of Soviet Planning Experience, Hutchinson Publishing, London

Saner, M., Severcan, Y.C., (2009) Fabrikada Zorunlu Sorumlu Olarak Barınmak: Ankara Maltepe Elektrik ve Havagazı Fabrikası Konutları, Fabrikada Barınmak, Arkadaş Yayınevi, İstanbul, pp.45-76

Scott, A.J. (1988) Metropolis From The Division of Labor to Urban Form, University of California Press, Berkeley.

Scott, WM. S. (2009) The Ideal Soviet Suburb Social Change Through Urban Design, Panorama, p.58-62

Smith, A.P. (2000) Ethnicity, University Press, Oxford

Soja, E. (1989) Postmodern Geographies: the reassertion of space in critical social theory, Verso, New York

Songülen, N. (2012) Space Organisation In Urban Block: Interfaces Among Public, Common And Private Spaces Based On Conzen Method In Bahcelievler, METU thesis, Ankara

Spreiregen, P., (1965) The Architecture of Towns and Cities, Mc Graw-Hill Book Co., New York

State Committee of Civil Engineering and Architecture (1967) Principles of Town Planning in Soviet Union, vol.2, University Press of Pacific, Honolulu, Hawai

Sutcliffe, A. (1981) The Rise of modern urban planning, 1800-1914, London: Mansell

Sutcliffe, A., (1981) Towards the Planned city – Germany, Britain, the United States and France, 1780-1914, Basil Blackwell, Oxford.

Şengezer, B., Evren, Y., Mısır, M. (2008), Hatay İdare Mahkemesi 2007/1223 esas sayılı dosya bilirkişi raporu, Held in 23.06.2008

Şengül, T. (2001) Kentsel çelişki ve siyaset: kapitalist kentleşme süreçleri üzerine yazılar, Demokrasi kitaplığı, İstanbul

Tekeli, İ. (1980) Türkiye'de Kent Planlamasının Tarihsel Kökleri, In Türkiye'de mar Planlaması Eds. T. Gök, ODTÜ Sehir ve Bölge Planlama Bölümü, Ankara, pp. 8-113

Ümit, D., Yamak, S., (2012) Kardemir And Karabuk: A Story Of "Civilization", International Iron & Steel Symposium, 02-04 April 2012, Karabük, Türkiye, p. 1243-1249

Üstün, B. (2010) company towns out of the residential patterns od industrial cities: the campus of Eskişerhir Sugar factory, World applied sciences journal, volume 9 (11), pp.1250-1259

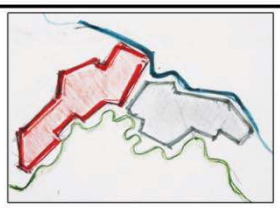
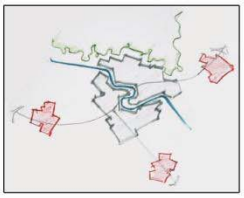
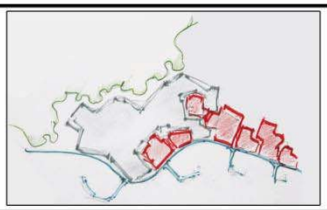
Wright, F. L. (1932) The Disappearing City / http://nextcity.org/daily/entry/frank-lloyd-wrights-utopian-dystopia

Yin, R. K. (2009) Case study research: design and methods, Los Angeles, Calif.: Sage Publications

Appendix A

Typology of Urban Industrial Space

Typology of Urban Industrial Space
[Urban context]

Type	Diagram	Description
a. Compact Industrial District In City [1]		Either originally settled down in purpose of industrial town constitution, or heavily transformed its urban economy to industrial facilities and locates industry into the central area. Highly organized industrial facilities in the city center
b. Scattered Industrial District In City [1]		Varied industrial facilities with discriminating means of manufacture/ production select different places to settle down in the city. Light industrial production would often figured such that in scattered form.
c.Suburban Industrial Establishment[1]		The suburban industrial development as self-sufficient settlement likewise theories of Cite Industrielle, Garden City. Heavy industrial facilities would figure this type rather than light industries.
d. Industrial Clusters In The Periphery [2]		Aiming the collaboration among industries, the form of clustering of industrial facilities. To further be organized and use the common facilities (infrastructure, transport, etc.), and decrease certain expenditures. Integration of varied types of production.

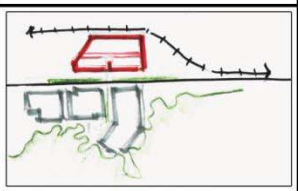
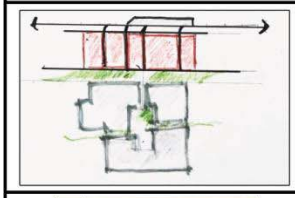
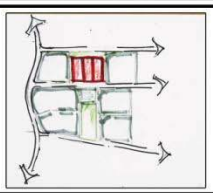
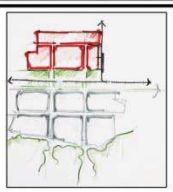
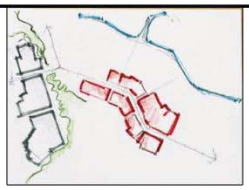
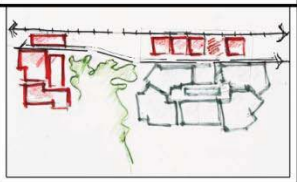
[1]State Committee of Civil Engineering and Architecture in soviet Union, 1967 [2] Contribution of author

Figure A Typology of Urban Industrial Space (Source: prepared by author)

Appendix B

Factory Campus Typology

Factory campus typology
[Factory & Housing Togetherness context]

Type	Diagram	Description
Joint		**[A1]** figure represents the light industry enterprises location in the city industrial area. The district has convenient transport communication with other parts of the city.
		**[A2]** shows the location of industrial area parallel to residential area will allow sideways development of the industrial district.
		**[A3]** the model of industrial and residential area joint. Places of employment are located within walking distances.
Segregated		[B1] type of factory campus organized with a slight distance between factory and housing area. The railway is the common line between them.
		**[B2]** industrial area remoted from the residential area
Composed		**[C1]** The composition of two different form.The residential area serves two varied industrial facilities.

(Source: State Committee of Civil Engineering and Architecture in Soviet Union, 1967 and conceptualized & drawn by author)

Figure B Factory Campus Typology (Source: prepared by author)

Appendix C

Typology survey of Factory Campuses in Turkey

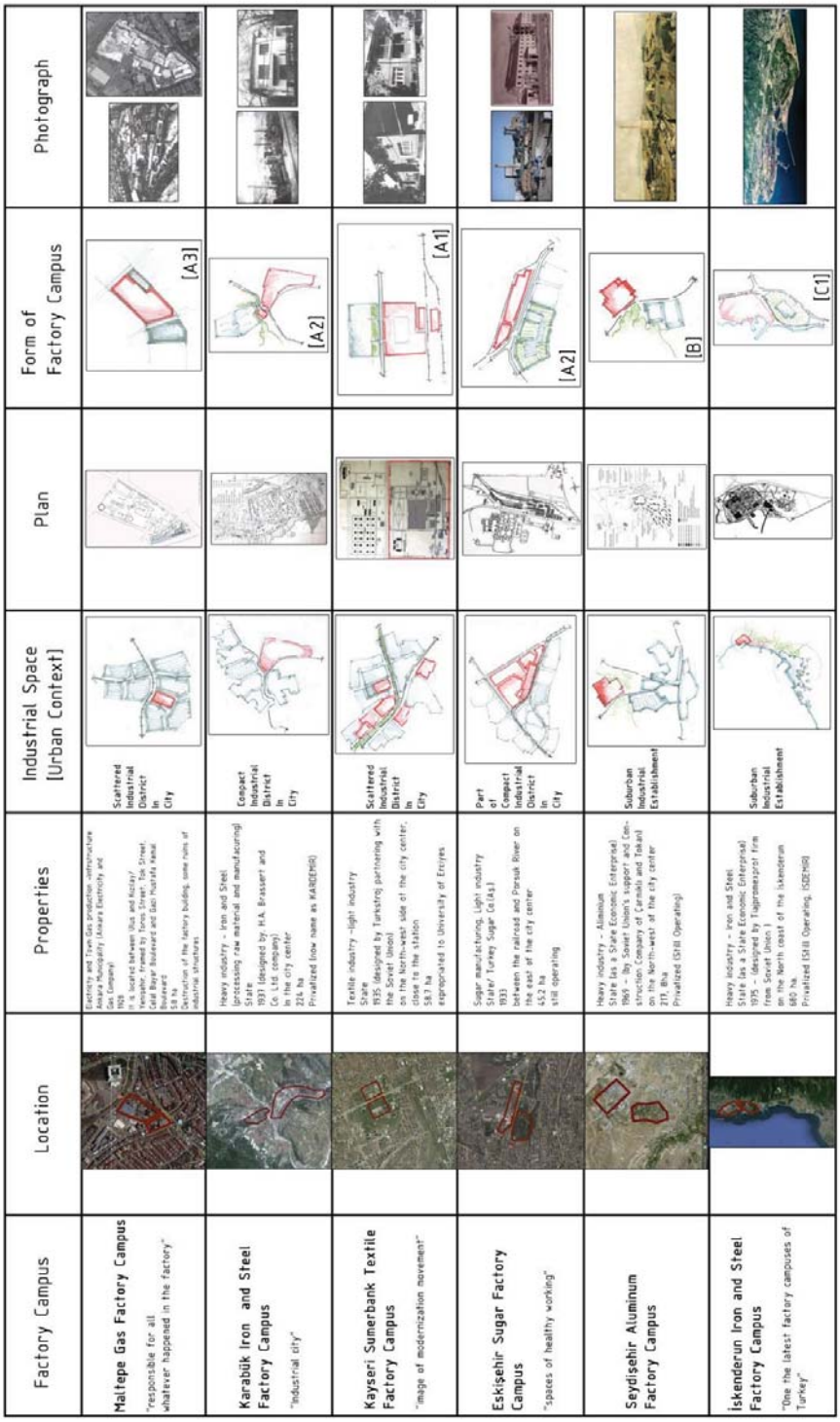


Figure C Typology survey of Factory Campuses in Turkey (Source: prepared by author)

Appendix D

İskenderun Iron and Steel Factory Campus Layout

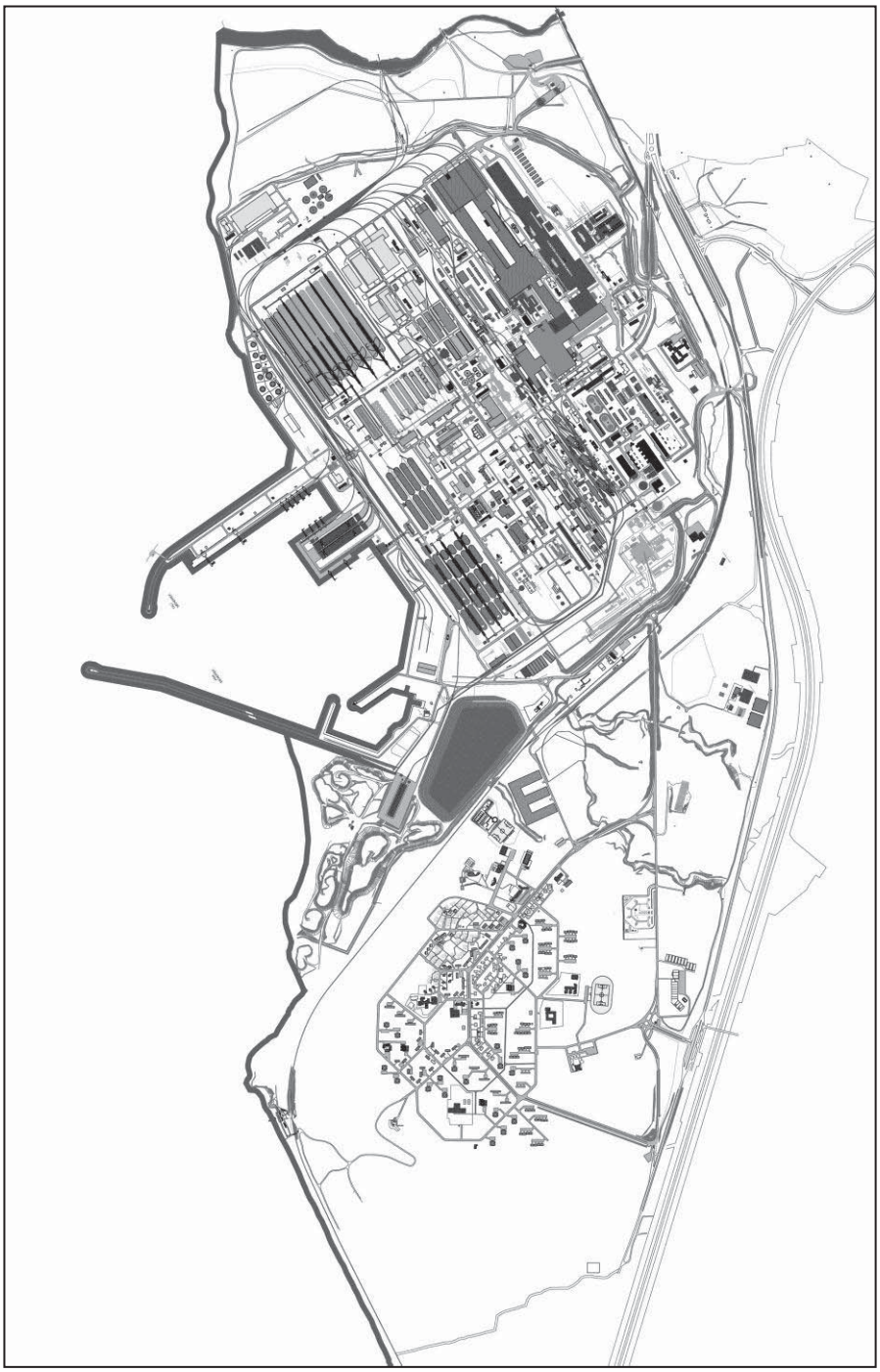


Figure D İskenderun Iron and Steel Factory Campus Layout (Source: prepared by author)