PROCEEDINGS

of the

INTERNATIONAL CONFERENCE

on

CHANGING CITIES III

Spatial, Design, Landscape & Socio-economic Dimensions

Under the aegis of

The Department of Planning and Regional Development, University of Thessaly
The Greek Ministry of Tourism

Editor:

Professor Aspa Gospodini

University of Thessaly

Syros-Delos-Mykonos Islands, Greece ● June 26-30, 2017

Industrial city and health:
first industrial cities in early 1819 to modern industrial cities.

S. Ch.Fouseki[1*], D. Karvelas[1], E. Bakogiannis[1], I.Kyriazi[2]

[1]Rural & Surveying Engineer NTUA, Department of Geography and Regional Planning, National Technical University of Athens, Zografou Campus, 9 Iroon Polytechniou str, 15780 Zografou, Athens, Greece

[2] Civil & Structural Engineer and Civil & Structural Engineering Educatior (ASPETE)

[*] Corresponding author: so.fouseki@gmail.com, Tel.: +30 210 7772969, Mob: +30 6984 078777

Abstract

It is undeniable that during the industrial era, cities grew rapidly and became centers of population and production. This industrial expansion and population growth radically changed the face of the cities. Noise, traffic jams, slums, air pollution, and sanitation and health problems became commonplace. In 1800, only 3% of the world's population lived in cities. Since the industrial era, that figure, as of the beginning of the 21st century, has risen to nearly 50%. It was a common ascertainment the need to redesign those cities and moreover to create organized cities which will encourage a high living standard to their inhabitants and by extension they will promote health. Some of the most well-known city models designed in that direction where, the "Phalanstery" by Charles Fourier, the "Familistère" by Jean-Baptiste André Godin, the "Garden Cities of To-morrow" by Ebenezer Howard, the "Cité Industrielle" by Tony Garnier and the "Linear city" by Arturo Soria y Mata. Those entire city models were designed as a form of living which will be able to reduce industrial cities' problems. One of the main purposes of this paper is to evaluate the above mentioned city models on the issue of public health and in addition to the living standards provided. Moreover, due to the fact that industries are an integral part of the global economy and also nowadays industrial cities not only continue to exist, but also make efforts to redevelop their basic urban forms towards a sustainable development that keeps up with their industrial activity. In that direction some of the most renowned industrial cities of the modern Europe, such as Belfast, Bilbao, Bremen, Eindhoven, Leipzig, Saint-Étienne, Sheffield and Torino are transforming. Based on specific project plans, those cities make efforts to pass from industrial to postindustrial cities, while maintaining their industrial character, but also enriching them with characteristics of sustainable city models. After evaluating all of the above mentioned, there is an attempt to design the main factors of an anthropocentric industrial city model with basic objective to maintain high levels of inhabitants living, and moreover to promote the idea of the dipole including health and industrial city. In order to evaluate the previous mentioned considerations that obtained, there was a simulation effort held out in research level in order to transform an existing industrial city into a healthy industrial city. The most suitable example is "Aspra Spitia", a small seaside industrial town, designed initially by K. Doxiadis in 1965 and was built by the French company "Pechiney".

Keywords: City planning, Health planning – methods, Healthy cities, Industrial cities, Sustainable industrial cities, Urban health

1. INTRODUCTION

Centrally-planned industrialization characterized urban development in European countries after the Second World War. Moreover it's a fact that cities have changed more since the Industrial Revolution than in all the previous centuries of their existence. Key innovations also helped those changes, for example, the development of the steam engine by James Watt, an instrument maker in Glasgow, Scotland (1769), the creation of new techniques for removing impurities from molten iron, by Henry Cort, a naval agent working near Fareham, England (1783), the development of a "spinning frame" that used rollers to untangle cotton fibers (Richard Arkwright, 1768) and the creation of a locomotive using Watt's steam engine, devised by William Symington and William Murdoch (1774) and subsequently improved by William Hedley (1812) and George Stephenson, culminating in the first public railway, connecting Stockton and Darlington (1825). All the above mentioned factors set the "industrial city" which is the main subject of this paper.

This type of city was from the early beginning related to degraded urban planning methods. Therefore, there were many planners that tried to improve industrial cities. But as it is known, industrial cities are subject to deindustrialization. Restructuring the economy was initially accomplished by shrinking the oversized socialist industrial sector. Industries are dependent of several factors as technology, labour, capital and materials. A change in one of those factors will inevitable led to changes in the industrial structure itself. Since the late 1970ties a decline of basic industries in western societies took place. Coal mining, the iron and steel industry and textiles, for more than a century the pillars of industrial societies came into crisis. Nevertheless, there are many examples of European industrial cities that made efforts in order to achieve rehabilitation. Many transformation plans were carried out in that direction and those cities where transformed entirely and also appeared a huge amount of rehabilitation.

Apart from the other European industrial cities, Greek industrial cities were from their beginning referring to smaller scale cities. Thought deindustrialization period there were also affected but most of them collapsed due to private economy factors. But there is a great example of an industrial city in Greece, a city named "Aspra Spitia" and it has to be mentioned that it has was built by urban planners from the beginning. This city still exists and this paper focuses on promoting ways to retain this city and also transform it into a healthy city, without losing its initial identity.

2. INDUSTRIAL CITIES

The Industrial Revolution was the transition to new processes in agriculture, manufacturing, mining, transportation, and technology had a profound effect on the social, economic and cultural conditions of the times. in the period from about 1760 to sometime between 1820 and 1840. In modern history, industrial revolution, is the process of change from an agrarian and handicraft economy to one dominated by industry and machine manufacturing. The above mentioned process began in Britain in the 18th century and from there spread to other parts of the world and its' main features were technological, socioeconomic, and cultural. The Industrial Revolution changed labor patterns, wealth, material production and population distribution. The rise in industrial labor opportunities led to a population shift from rural areas to cities. It's a fact that before the industrial revolution, more than 80 percent of people lived in the country side. As people continued migrating from the rural areas, small towns grew into large cities. The new industries were stimulated by the process of urbanization, which concentrated factories and workers together.

Furthermore, during the industrial era, cities grew rapidly and became centers of population growth and production. This rapid growth brought urban problems, and industrial-era cities were rife with dangers to health and safety. It is worth mentioned that, in 1800, only 3% of the world's population lived in cities. Since the industrial era, that figure, as of the beginning of the 21st century, has risen to nearly 50%. Quickly expanding industrial cities could be quite deadly, full of contaminated water and air, and communicable diseases. During the industrial revolution living condition varied from the splendor of the homes of the wealthy to the squalor of the workers. It is reported that poor people lived in very small houses in cramped streets. These homes often shared toilet facilities, had open sewers, and were prone to epidemics exacerbated by persistent dampness. Diseases often spread through contaminated water supplies.

Regarding the socioeconomic changes and the migration it's a fact that working in the new industrial cities had an effect on people's lives outside of the factories as well. Simply, the working conditions were terrible during the Industrial Revolution. As business began to boom and the national markets grew, more people began to move to places near the new factories because they wanted jobs. As workers migrated from the country to the city, their lives and the lives of their families were utterly and permanently transformed. It is a fact that in the first sixty years the Industrial Revolution, working-class people had little time or opportunity for recreation. During those years of the industrial revolution, living conditions were, by far, worst for the poorest of the poor. It was then that the term of "poor houses" was revealed by the government. The Poor Law of 1834 created workhouses for the destitute. Poorhouses were designed to be deliberately harsh places to discourage people from staying on "relief".

Nevertheless, it is undeniable that the living conditions were extremely degraded. Problems in those cities continued to increase and thus the need for fresh urban planning was highlighted. In 1789, during the Revolution and specifically during his imprisonment, architect Claude-Nicolas Ledoux started the project for the "Ideal City of Chaux". Subsequently, more urban models were revealed such as the "phalanstère" by Charles Fourier, the "Familistère" by Jean-Baptiste André Godin, the garden cities, the "Garden Cities of To-morrow" by Ebenezer Howard, the "Cité Industrielle" by Tony Garnier and the "Linear City" by Arturo Soria y Mata.

2.1. "Phalanstère" by Charles Fourier

Charles Fourier was a French utopian socialist who actually rejected industrialization and free market economy because he considered that they contributed to workers´ exploitation. Through his work he promoted the return to the land and agriculture and he proposed the creation of an ideal community called "phalanstère". This ideal plan refers to a community located in the countryside formed by around 1,600-1,800 people (400 families of around 4 members). It should be 400 hectares long and concentrate agricultural and industrial activities. According to C.Fourier, the distribution of space in the phalanstères will be, the central part, destined to quiet activities, with meeting rooms, dining rooms and libraries, one of the lateral wings for work and the noisy activities and the other lateral wing would be destined to the external visits. The visitors would pay a fee, which would be used to finance the community. In 1832 Fourier put his ideas into practice at Condé-sur-Vesgre, 75 km West Paris, but the project failed in 1834 due to the lack of capital and inexperience of the members.

2.2. "Familistère" by Jean-Baptiste André Godin

Godin was reading voraciously, he discovered the works of utopian socialist Charles Fourier, and was instantly taken with his ideas. It inspired him, in 1846, to take his family and 20 employees and relocate to Guise, where he began building his ideal working community where by 1880, he had more than 2.000 inhabitants under his care. Building commenced in 1859, and over the next 15 years, his idealistic project became a reality. His project was a sprawling factory with living areas just a short distance away, separated by the river Oise. There were three palatial housing buildings, each with large glass-rooved courtyards in the center where residents could socialize and where celebrations were often held. These were encircled by imposing buildings such as a school, laundry rooms, a swimming pool, shops, a bar, a nursery, gardens, a gym – everything his workers and his families would need – organized around a square. In the center of this symmetrical arrangement was a theatre. In fact, Godin designed every aspect of the Familistère with a higher quality of life. His Familistère lasted 80 years. But the factory slowly became less financially viable and in 1968, the apartments were sold off to private owners.

2.3. "Garden Cities of To-morrow" by Ebenezer Howard

E.Howard's "Gardern Cities of To-morrow", is a proposed city model in order to reintegrate people with the countryside. In trying to understand and represent the attraction of the city he compared each city to a magnet, with individuals represented as needles drawn to the city. Building on the principles of the Three Magnets, Howard begins to establish a hypothetical scenario for the testing of his proposals for social reform. The Garden City itself was to cover 1,000 acres and be home to 30,000 people. Taking a circular form the city would be divided into six equal Wards, by six main Boulevards that radiated from a central garden. Around the center garden would be placed the civic institutions and then a 'Central Park,' which in turn is enclosed by a 'Crystal Palace' – an arcade of indoor shops and winter garden. Series of concentric ringed tree-lined Avenues provide the major streets of houses, with a 'Grand Avenue' 420-feet wide that is both a 3-mile continuous public park and home to schools and churches. At the edge of the city Howard placed the 'heavy' industry of factories and warehouses, with direct access to a Municipal railway that aimed to alleviate pressure on the cities street network and connect the Garden City to the rest of the nation. Surrounding the city the remaining 5,000 acres are a designated Agricultural Belt, home to 2,000 people, with cow pastures, farmland and welfare services including an asylum. Referring to the city's growth he proposed that there would be a central city (of perhaps 58,000 inhabitants) that would be surrounded by a number of smaller off-shoot cities, connected by railroad and canal infrastructure.

2.4. "Cité Industrielle" by Tony Garnier

Tony Garnier's Une Cite Industrialle is considered as one of the most comprehensive ideal plans of all time. Garnier's proposal was an industrial city for approx 35,000 inhabitants situated in an area in southeast France on a plateau with high land and a lake to the north, a valley and river to the south. Une Cite industrialle is a well-coordinated and monumentally conceived plan placed in a park like setting where both the classical spirit of the academic tradition and the primitive simplicity of utopian ideas. The public area at the heart of the city was grouped into 3 sections, administrative services and assembly halls, museum collections and sports facilities. The residential area is made up of rectangular blocks running east-west which gives the city its characteristic elongated form. The residential districts are the first attempt towards passive solar architecture. The city was completed by a railroad d station to the

east. In this plan it appears the idea of zoning. The main factory is located in the valley at the confluence of the stream and river. A railway passes between the factory and the city, which is on a plateau, and further up are the medical facilities. The land for the construction of the residential homes, are initially divided into 150 meters from east to west and 30 meters from north to south, dividing into lots of 15 by 15 meters, with one side facing the street. Finally, Garnier's Cité Industrielle was never built but echoes of his vision can be seen in Lyon. A more refined attempt is made in the Ville Contemporaine (1922), a plan for 3 million inhabitants. There, Le Corbusier distinguishes between the liberal strata of the population and the working class, mainly according to their daily displacement.

2.5."Linear City" by Arturo Soria y Mata

The linear city was an urban plan for an elongated urban formation. The linear city design was first developed by Arturo Soria y Mata in Madrid, Spain during the 19th century, but was promoted by the Soviet planner Nikolay Alexandrovich Milyutin in the late 1920s. He theorized a single developed strip of no more than 500 meters in width, with a central tram and roadway and residential and commercial plots on either side of stipulated size and separated by smaller streets, at the intersections of which there would be kiosks and shops, and in the center of which there would be schools, hospitals, courtrooms and so on as need determined. No point in the city would be more than a few hundred meters from the countryside. His vision was to unwind the city. In 1894 Soria managed to found a company, buy some land to the East of Madrid, and start work on his tramway. The initial plan was for a 55km belt running North to South which would act as an attractor for suburban development, but Europe was already old, all the land had been parceled up long since, and it proved impossible to put together more than a 5km stretch which was no sooner completed that it was absorbed by the wholly unplanned and riotous expansion of the city.

3. DEINDUSTRIALIZATION AND URBAN SHRINKAGE – POST INDUSTRIAL CITIES

The processes of deindustrialisation and disurbanisation, and the emergence of the postindustrial society or city, have been debated within a number of disciplines since 1960.After remodeling the economies of the Western world all along the 1980s, deindustrialization abruptly hit the former socialist countries in the early 1990s. Deindustrialization with destructuring meant the disintegration of the economic structure and industrial cities, and regions entered a downsizing spiral of population loss after the breakdown of traditional industries, outmigration and suburbanization. Post-socialist Europe forms a new 'pole of shrinkage'.

In the cities affected by globalization, industrial production abandoned and nowadays unused zones of polluted and contaminated properties with the remains of factory buildings and warehouses are increasing (brownfields). Those cities biggest problem was the fact, that it had always been dependent on jobs in manufacturing industry. And they couldn't generate enough jobs in other industries, because nearly everything was shifted to the suburbs. The need of those cities' revitalization was highlighted as sooner as possible. Specific urban plans and economic plans were generated in order to achieve rehabilitation. Some of the most worth mentioning examples are the city plans of Belfast, Bilbao, Bremen, Eindhoven, Leipzig, Saint-Étienne, Sheffield and Torino. Each one of those cities, has its own characteristics, the only thing in common is that they were industrial cities and that they were all affected by the deindustrialization. Faced with depleted resources, plummeting populations and urban degradation, these cities struggled to round a corner. Through innovative plans round the turn of the

century, they recovered and began to flourish. European governments opted to reinvest former industrial cities had produced most of the continent's wealth. Former industrial cities had immense assets such as imposing civic structures, town halls, concert venues, public libraries and swimming baths, universities, hospitals, parks and public squares, railways, canals, rivers and above all, technical skill – now hugely undervalued. Due to those assets, heritage was set as a starting point for recovery, as cities displayed their grit and determination to recover. A beneficial key to these cities makeover was the fact that they were small cities.

Firstly mentioned city Belfast, its economy was based on trade and the export of goods such as wool, grain, butter and salted meat. During industrial period ne industrial sectors such as brewing and rope and sail-making were added. More important, however, was the development of shipbuilding as a key industry. Belfast's industrial development during the 19th century was remarkable, given its remoteness, lack of energy supplies and raw materials. A third important sector, engineering, was added to Belfast's industrial "portfolio" in the early 20th century. In the years before and during World War II aircraft production became another important sector. Furthermore, the population increased from 20,000 at the beginning of the 19th century to 350,000 by the end. In 1891, it had become the ninth largest city in the British Isles. The rapid expansion period also saw the erection of many civic buildings, such as the Grand Opera House (1895) and the new City Hall (1906). Belfast's fortunes already started to turn as early as the 1930s. The worldwide economic recession of that period badly affected Belfast's export-dependent economy. Its worth mentioning that the most dramatic phase of decline started in the 1960s and affected all three of the most important manufacturing sectors. From the 1970s, Belfast experienced overall employment losses. A large part of the population decline in the city can be attributed to suburbanisation. Many households relocated to the suburbs to escape the divisions, insecurity and decline of the city. Between 1951 and 1991 the City of Belfast lost about 205,000 inhabitants, while the adjacent suburban counties grew by about 237,000. Planning policy has reinforced suburbanisation. Commercial development followed residential suburbanisation to cash in on the purchasing power of the middle-classes and to offer safe shopping spaces. Due to this massive suburbanisation, the Belfast metropolitan area is now one of the most sprawling in the UK. The first strategic efforts towards the regeneration of Belfast were made at the height of the 'Troubles' and urban decline, with the 'Making Belfast Work' programme in 1988 and the Belfast Urban Area Plan in 1990. The Belfast Urban Area Plan, developed by the Department of the Environment was formally adopted in 1990. It identified three major tasks for recovery actions in Belfast, strengthen the city's role as a regional center for Northern Ireland, create a physical environment and framework for social and economic activity which will enhance the quality of urban living and facilitate an efficient, economic and orderly pattern of development. Two of the main regeneration projects during this initial phase of urban regeneration where the Laganside redevelopment and the revitalisation of the city center.

When referring to Eindhoven, it has to be mentioned that deindustrialization, like in Eindhoven, also happened in many other cities in the Netherlands. The industrial revolution of the 19th century provided a major growth impulse. Canals, roads and railroads were constructed. Industrialization brought population growth to Eindhoven. At the establishment of the Kingdom of the Netherlands in 1815, Eindhoven had 2,310 inhabitants. During its deindustrialization, more than half of the cases, the

company moved to another country (or city) and did not need the site any more. Over the years the image of Eindhoven as the city of light has blurred due to the diminishing influence of Philips in Eindhoven. The main part of this city's regeneration was the idea of its re-branding. The rise of the creative industry in relation to innovative business environments led to images like "The city as a laboratory" or "Eindhoven the city of design". The past few years the designation of "Brainport Eindhoven" as a possible brand for the city of Eindhoven has found its way among policymakers and corporations. Several government reports recognized the Eindhoven/Southeast Brabant region as "Brainport". Brainport is characterized by a relatively high percentage of (creative) industry, is knowledge-intensive and innovative and aimed at high technological products. Besides technology, design plays an important role in the creation of added value. Since the positioning of Brainport Eindhoven started, many programs and initiatives are set up in order to strengthen the economic structure, and to build its position in a competitive international environment. These programs and initiatives implicitly attempt to propagate and strengthen the image of the brand "Brainport Eindhoven". The redevelopment of the empty industrial buildings in the city might help to shape the brand image, through connecting the old image with a new functionality. As the Eindhoven case has shown, in the industrial era the image of cities emerged spontaneously, mainly through primary communication. Through the extensions of landscape and infrastructure, organisational structures and behaviour of different stakeholders, people acquired a certain image in their head that stuck.

To continue with, the city of Sheffield is a city with an incredible industrial heritage. It is synonymous with steel, the city of steel, and in the early 20th century the most people were somehow connected to the steel industry. Obviously in the post-war and in the 60s and 70s Sheffield was going towards post-industrial ages. It had to spend the last 20-30 years reinventing itself and trying to forge new identity. This city's master plan generated in order to recover the ruins of post-industrial period, reflects environmental social and commercial requirements and demonstrates the principles supporting the brief including those for land use, design density, transport, landscape and infrastructure. This master plan focuses on retail, economy and sustainability. Although it is not a statutory plan, it will guide future regeneration and will therefore have a large impact on the future shape of the city center. It's worth mentioned the fact that through this plan many open green spaces are located in the city and many public places are transformed.

Last but not least, Torino, Leipzig, Bilbao and St Etienne have created their own breakthroughs in energy-saving district heating, decontaminating heavily polluted industrial sites, mainstreaming electric car production, designing hydrogen buses and ultramodern trains and planning for 100-percent conversion to renewable energy. Their plans are focusing on sustainable urban development, highlighting sustainable urban transportation and open green spaces. It's a fact that all of those cities survived the industrial crisis through plans that included assets of sustainable urban development.

4. HEALTHY CITY – ACTIVE LINING IN THE CITY

It is a fact that urban planning and public health intersect. Specifically it is recognized that physical and social environments play major roles in the health of communities. Urban planning contributes to air, water and other types of pollution and at the same time plays a role in the prevention of it. Much of the developed world has become reliant on the automobile as the main mode of transportation. A "car-centric" culture has evolved, and this has undeniably been a major factor in air pollution. The links

between the environment and health are not new to the field of public health. Many industrialized nations have policies to regulate clean air and water in addition to controlling housing and industrial hazards.

A healthy, active city recognizes the value of active living, physical activity and sport. It provides opportunities for physical activity and active living for all. The built and social environments are key focal points. The built environment includes land-use patterns, transport systems, urban design, green spaces and all buildings and spaces that are created by people. Elements in the social environment that influence participation in physical activity include income, equity, culture and social support. When referring to action strategies in urban design towards a healthy living city, there have to be mentioned some of the above according to WHO:

- Carry out health impact assessment to make sure that active living issues are incorporated into land-use review and planning processes.
- Strategic land-use and transport planning should be integrated. Work with planning, transport and economic development agencies to ensure that the long-term evolution of your city and region reduces car dependence and promotes equitable access to high-quality public transport.
- Protect the traditional design of older cities and control further development of dispersed, segregated, suburban land uses, such as business, retail and leisure parks, isolated educational or hospital development and sporadic residential developments, which by their nature, rely on car access.
- Create a comprehensive plan for cycling and walking in existing and future development and integrate the plan into broader transport planning.
- Support cycling with appropriate traffic policies and legislation, expanded networks for cycling, safe and attractive cycling routes and trails that connect people to local destinations, access to city bicycles for short trips and bicycle storage areas in public places. Build separate tracks for pedestrians, cyclists and cars on busy streets. Provide bicycles for government staff, especially police, park employees and meter-readers, to use on neighborhood routes.
- Give priority to funding for public transport and projects such as sidewalks, trails, traffic-calming measures and bike lanes. Park-and-ride schemes should only be used in low-density areas where existing levels of public transport are inadequate. Locate them as close as possible to the source of the traveler: for example, in outlying community sectors rather than the edge of the city. Encourage cyclists and walkers to use them as well.
- Reduce urban sprawl by embedding workplaces, shops, schools and health care facilities within integrated neighborhoods that facilitate walking and cycling.
- Provide easy access to seashores, rivers, lakes and forests on the periphery of the city.
- Conserve and develop green spaces. Provide incentives for developing vacant lots and rundown areas into green and/or open spaces. Work toward an urban green network accessible to all residents complemented by a network of squares and other small outdoor places for active living.
- Provide convenient and visible stairs and signage for public spaces that encourages people to take the stairs. Design buildings that encourage the use of stairs and ensure that stairwells are unlocked in office buildings and health care facilities.

5. "ASPRA SPITIA": A TYPICAL EXAMPLE OF AN INDUSTRIAL CITY IN THE GREEK TERRITORY

"Aspra Spitia", are Constantinos A. Doxiadis's only European example of a complete realization of his ekistic theory, usually illustrated with other exemplary large scale projects in the developing world. This prototype industrial settlement was originally planned and constructed between 1961 and 1965 for the French aluminium company Pechiney and its Greek subsidiary Aluminion of Greece at Distomitika, nearby Antikyra and the historical settlement of Distomo in the Southern shore of Mount Parnassos in Voiotia, Greece. As a whole, Aspra Spitia were presented as a paradigmatic application of Doxiadis' anthropocentric attempt to revive the ancient Greek city in the context of both a radical critique to modern planning and architecture, and the urgent challenges of the future, culminating in the ideas featured in Doxiadis' books Anthropopolis and Actions for Human Settlements.

Aspra Spitia (Modern Greek for "White Houses"), situated on the coast of the Corinthian Gulf about one hour's drive from Delphi, was designed for a projected population of 5,000. The program proposed the construction of a total of 1,100 dwellings, including one and two-storey houses, bachelor apartments, stores and shops, a customs house, a school and recreational and other facilities. The conclusion drawn by DA's planners was that they needed a simple, clear and strong plan incorporating these desirable qualities and with its "invisible geometry" holding the varied parts together. That they needed a simple, strong and "primitive" architecture composed of natural, local materials, which the people could add to with flower pots and pergolas, rather than a modern architecture in which the visual equilibrium can be upset by the addition of a dot. These thoughts are reflected in the general plan of the town: on the L-shaped site (the short leg of which is bordered by the sea, while the long one is flanked by two hills) four neighborhoods were created, each surrounded by a peripheral road and penetrated by culs-de-sac in selected locations only. At the junction of the two legs of the L, the shopping, business and civic center was set up, with the administrative center just below it. A zone along the waterfront was reserved for recreational and tourist facilities. Then, each neighborhood and the center were studied in great detail with particular attention to the feeling of space one would have in walking through its pedestrian ways, small squares, streets and piazzas. In the housing study the main effort was to realize the maximum visual richness with standardized house types. Twelve different types were used to serve the requirements of the program.

5.1. TRANSFORMING "ASPRA SPITIA" INTO A HEALTHY INDUSTRIAL SETTLEMENT

Through this research a whole plan is held out in order to transform the "Aspra Spitia" settlement into a healthy city retaining its characteristics as an industrial city. Therefore, after collecting and analyzing all of the existing infrastructures there is a whole plan proposed. According to it, there are basic changes carried out referring to many areas such as its transportation network and its land use. More specifically, the plan contains the following elements:

- Improvement and redesign of the existing cycling network: increase it by more than 7km and also create a cycling network of 3 basic routes.
- Redesign the walkable areas and enhance with new standards in order to achieve a higher safety level and at the same time to attract more residents to use them.
- Design a green open spaces network that will compose of more than 70m^2. This network will be related to the previous networks.

- Creation of two new parking areas in order to prevent car use inside the city.
- Expand and improve the seafront pedestrian street.
- Empowerment of the city's public transportation network.
- Reform existing areas in order to prevent urban sprawl.

6. CONCLUSION

The links between urban planning and health are many and varied. Environmental, social and economic conditions in cities can have both positive and negative influences on human health and wellbeing. Urban planning and related professions play an important role in shaping those conditions. With the proposed plan it is highlighted that an industrial settlement after taking under consideration sustainable development's manners can be considered and transformed as a healthy city too.

REFERENCES

- Back, H. (1996). "Decentralisation, Privatisation and Representativeness in Local Government", in Bogason, P., New Modes of Local Organizing: Local Government Fragmentation in Scandinavia.
- C.A. Doxiadis Aspra Spitia. A New "Greek" City http://www.doxiadis.org/ViewStaticPage.aspx?ValueId=4303
- Hall, P. (1966). The World Cities. London: Heinemann.
- Hall, P. (1997). "Modelling the Post-Industrial City", Futures, vol. 29, no. 4/5, pp. 311-322.
- Lund Hansen, A., & Andersen, H., & Clark, E. (2001). "Creative Copenhagen - Globalization, Urban Governance and Social Change", European Planning Studies, Vol. 9, No 7, pp. 851-869, London: Routledge
- Pickvance, C. G. (1997). "Decentralization and democracy in eastern Europe: a sceptical approach Environment and planning C", Government and policy, 15, pp.129-142.
- S.Ch.Fouseki, "From the industrial city to deindustrialisation - Greek industrial cities and modern European industrial cities - Examples of contemporary deindustrialisation of cities - Implementation in the European area - Designing of a sustainable model of an industrial city." Diploma thesis, 2014.
- Smith, N. (2002). "New Globalism, New Urbanism: Gentrification as Global Urban
- Stevenson, D. (2003). Cities and Urban Cultures, Open University Press UK Limited.
- Taylor, P. & Walker, D. R. F. (2001). "World Cities: A First Multivariate Analysis of their Service Complexes", Urban Studies, 38:1, pp. 23-47.
- Wigren, R. & Wilhelmsson, M. (2007). "Housing Stock and Price Adjustments in 12 West European Countries between 1976 and 1999", Housing, Theory and Society, 24:2, pp. 133-154.