

LANDSCAPE AND ARCHITECTURAL DESIGN FOR SUSTAINABLE AND LIVEABLE CITIES: A POSITIVE APPROACH - CASE STUDY

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Abstract

Currently, due to many factors, contemporary cities appear to have reached an impasse: The ever-increasing population that had led to an over-built urban fabric, the adverse effects of environmental pollution, including the strongly associated climate change are considered to be the main causes. In addition, they present a multidimensional and fragmented reality. The poor accessibility, the abandoned public spaces or the residual design of public and green areas, the lack of social integration and the excess of privatisation of spaces, have created a trend towards re-designing them. However, cities can continue to be attractive and reduce their suffocation if they provide good quality urban environments, offering prominent areas for parks, open spaces, green corridors, social infrastructure, urban facilities and affordable housing. Moreover, after the sock of social distancing, which was forced upon people by the pandemic, outdoor living became part of the everyday life. As a consequence, outside space, like public squares and streets, became places of encounter and public culture. The aim is to find creative solutions, in order to design (or re-design) a different urban landscape-one that is more innovative, friendly and inclusive, than the present one.

Keywords: Cultural landscape, urban design, political sustainability, square

1. INTRODUCTION

According to the Aristotelian view, the purpose of creating cities, in relation to citizens, is not simply their survival in them but mainly their 'well-being', that is, ensuring a beautiful life within them. Therefore, the main goal of public space management projects has to be the creation of a good city with a positive impact on human relations. Athens is a city which suffers from many problems related to economic, social, aesthetic, environmental and technological infrastructure developments especially in its central areas, where social conflicts and difficult living conditions are requiring greater attention. In contrast to the old fragilities, the strengths of the new approaches are the regeneration of the urban environment, at a local level with emphasis in sustainability. According to the main pillars of a sustainable development (as environment, economy, community and culture), the fresh adaptive solutions can be sought in '**Redevelopment, Renovation Wave and, Redesign** of the public space'. Thus, in a general sense of economy, the new trends of redevelopment have should favour of the renovation of the existing stock, the investment in networks, services, alternative transport modes, environmental goods and affordable housing. In other words, we have to focus on how to improve permeable or social connections, to support diverse uses, to re-think accessibility and finally to activate urban transformation processes based on regeneration and re-naturalisation at different scales. Instead of large transformation projects susceptible to speculative and financial investments in the city's wealthier sectors, small-scale local projects will improve and support local communities. On the other side municipality authorities, realizing the value of the 'open space quality' for a successful and liveable city, promote collaboration with the metropolitan governments, seeking European funding and international

cooperation for implementation projects by re-designing public open spaces in order to satisfy habitants, users and visitors of the city. Consequently, a theoretical question arises regarding how and in what way the design process is deterministic for the use of places and the way we experience space.

2. REGENERATE THE CITY BY IMPROVING THE PUBLIC SPACE

The outdoor spaces are no longer treated as secondary environments, but as places where, design responsibility, cultural meaning and everyday life increasingly intersect. There are consequences on the design of public open spaces as produced by the transformation of the city and the society. According to Prof. Bill Hillier, architecture influences spatial experience and behavior through the way it organizes space, allows or hinders views, and constructs a set of relationships between the individual areas of the city - influencing the way we perceive and read them, but also between the visitors of this city themselves, creating possibilities for shared presence and informal encounters, and thus the public space is "the encounter field of socialisation" (B. Hillier-J. Hanson 1984, *Space Syntax Theory*) [1]. He also argues that the segregated areas of a city, are places of 'pathogeny' as without proper social interface and self-policing, they rather constitute cores of delinquency and criminality (e.g., '*Ghettos*'). Therefore, public spaces play a crucial role in urban interaction. This is because the way inhabitants live, consume, commute and interact has a positive impact on their quality of life, enhances resilience to fragility and social vulnerability, and reduces the environmental footprint of cities. For example, abandonment places in the city are the spatial indicator of a discomfort linked to various factors: the lack of services and infrastructure, delays in integration, social tension, and a sense of marginalization. Consequently, urban projects must consider the density of relations, the dynamism and flexibility of uses, the sharing of the transformation process to avoid forms of social exclusion in the new neighbourhoods. Moreover, urban projects must build an identity, as identity is both a process and an opportunity that increases the sense of belonging to a city and allows different populations and groups to share and experience its places [2]. The value of public spaces seems to be deterministic for the quality of the citizens' lives, especially after the COVID era, as they can be used safely by a large part of the population in critical times, where a sufficient free natural environment within the city is required [3]. Subsequently, the new philosophy of urban design is that of shaping *cities of 15-20 minutes' walk*, where all the first-needed services, including parks and other public spaces, such as squares, are closely accessible to the citizens. In parallel, the contemporary trend of reformed small size places in parks, known as (*'pocket parks'*) improve the neighbourhood in numerous ways. A specific programme (*'Green City'*) attempts to explore the construction of spaces for people, with the aim of enhancing the design of new green corridors and the combination of uses, forms and resources for the city and the urban environment and also through the regeneration of its degraded areas.

The project for the transformation of an unbuild area (Block 90 in the city of Athens), to an attractive and dynamic square, is based on a collaboration between the local authority and the Metropolitan Authority (Region of Attica), funded by the Ministry of Environment and Energy through the '*Green Fund Program*' of the European Union. It is an innovative experimental design project offered to the local community with the aim of exploring opportunities to utilize an abandoned plot of land for the improvement of the city. The starting point is local issues, linked to local and national political agendas, with spatial implications for the city and its residents [4]. Considering how public spaces are designed to improve social interaction, reform urban structures and address contemporary environmental issues, this urban project underlines the importance of changing the abandoned plot in a healthy urban environment. As acknowledged, the aim is to find creative solutions, to be shared with

local associations and cultural organizations, in order to design a liveable urban landscape with an innovative and interesting approach with a clear emphasis on quality and sustainability. The aim of 'Re-designing' the public spaces for "Re-forming the city" lies in a multidimensional meaning; it addresses the urgency of an urban reform, involving not only a physical and morphological renovation of parts of the city, but also a deep concern on the economic, social, political transformation of the city, towards a new urban sustainable development. Specifically, the project highlights the importance of inventing possible transformation based on new interaction with the context, and finally, new images of the cityscape. In such cases, the urban design must investigate and analyse elements of the close environment and find solutions to build relationships, connections and networks, justified and based on knowledge and interpretation of the context itself, and be closely articulated with the surrounding fabric. In other words, once outdoor living becomes part of everyday life, expectations change. Comfort matters. Materials matter. Design language matters.

3. THE PROJECT : DESIGNING THE SQUARE OF HAPINESS (BLOCK 90)

So far, the priority in city and metropolitan planning has been the increasing the quality of urban living through an adaptive design aimed at the promotion of the transdisciplinary research and design projects on 'anti-fragility' policies. This approach will contribute to avoid territories of 'pathologies', which relate to multiple and diverse risk factors (such as environmental, social, economic, political and institutional ones). A common problem for the large cities is the weakening of the relationship between space and society. It is time to rethink urban planning: cities can continue to be attractive and reduce their distress if they provide good quality to the urban environment, offering prominent areas for parks, urban facilities and social infrastructure. Specifically, in order to foster public and social life, by redesigning public open spaces, the Program of 'Green City' attempts to increase green areas in the city mainly for ecological and sustainable purposes. Building on this, the programme evolved to provide Urban Projects for regenerating abandoned areas. Such a case is the empty (void left) piece of land of *Block 90* in Lykovrisi (of Attica), which has been bought by the Municipality of Lykovrisi, (paying 2/3 of the total cost to the owners, in 2009), and this was the starting point for the **regeneration** of this 'open space' by '**Redesigning**' it (the purchase has just been completed). Thus, the specific project of 'Redesign Block 90' started in 2009 under the coordination and supervision of the Municipality of Lykovrisi-Attica and the scientific responsibility of the architectural and landscape design by D. Katraouzou (*architect-engineer*). The initial idea for this project belongs to the former mayor of the Municipality of Lykovrisi (1), who entrusted me for the inspiration of this new urban design. Through this approach, the Project, was organized in partnership with the city government. The urban design Project is based on the renovation of the existing, complex and unsolved urban area, which attempted an innovative and resilient proposal of architectural synthesis. Furthermore, according to the initial mission of the Municipality, the design process aims to achieve spaces that can be attractive, accessible, green, safe, multi-functional and socially inclusive. By studying this leftover area, in relation with the approved Urban Plan, it is eager to experiment with new ideas for its rehabilitation. In such a way the implementation of the above Project has just joined the Recovery and Resilience Program to be funded. by the European Community and the *Green Fund* (initially by *Antonis Tritsis*). Specifically, the area of about 1600m² (Block 90), where the new square will be created, is surrounded by the *Joy, Happiness, Oulof Palme and Makrygianni Streets*.



Figure 1. Project site & new axes

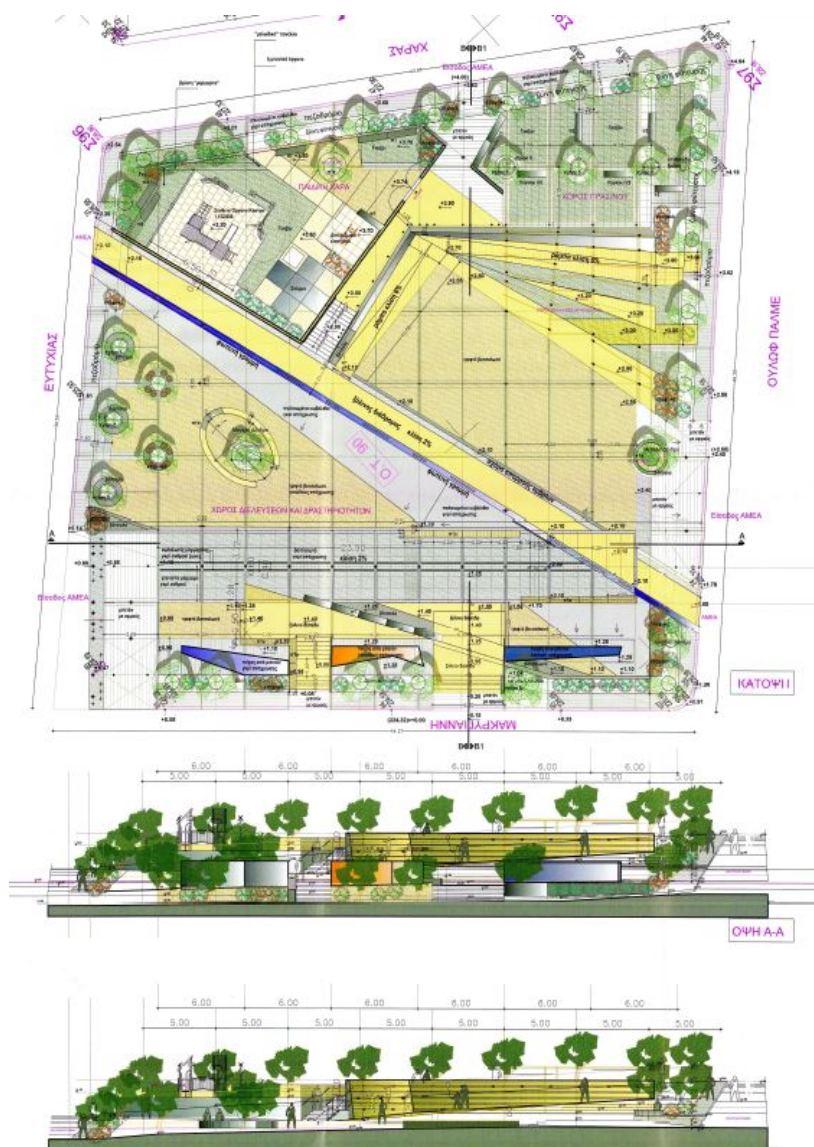


Figure 2. Urban Plans of the Redesign 'Block 90'- 'The square of happiness' (2)

My basic idea was that, the design process concerned with the square of 'happiness' - as I characterized it, influenced by the street names of the area, instead of the official name of 'A. Papandreou square'- was the regeneration of an abandoned public space with imagination and modern design. Moreover, it could be attributed to the citizens themselves in the true sense of the term *'plateia'* as *'Agora'* in ancient Athens, which means a lively and dynamic open public space, a 'core' of social - political interaction, contact and entertainment, promoting creative, inspired and enjoyable activities for all ages. The redesigned area includes a small yard, as children's playground, the main central area of the

square for outdoor seating, and many other activities and a network of passages that intersects and connects it with the wider urban environment. This allows for the enjoyment of the greenery, the changes of the seasons, the alternation of light and shadow, natural and artificial, by day and night, the element of water as a 'blue zone' for coolness and all this in the context of sustainable green development!

The ultimate goal is **to upgrade the image of the urban fabric**, improve the microclimate, the open spaces, the green areas and generally improve the quality of life of residents and visitors. The aim of the architectural proposal was to create a space that is vibrant, clearly conveying the meaning of the 'Joy Square' (as the second adjacent street name), through the variety of images, the dynamism of the carvings, the combination and contrast of the materials, the alternation of their different textures, the comfort and simplicity of the open space in relation to the more enclosed green spaces, ergonomics, functionality and aesthetics.

The following basic functions are offered: *Playground for the youngest children, Playing and Entertainment areas for teenagers & children and adolescents, organized areas for physical exercise and sports.* The landscape design also suggests modern exploration activities relieving the anxiety as: three wall surfaces, as a territory of the open space opposite to the boundary of the high-rise neighboring apartment buildings, are available for 'Graffiti',

vertical walls for *amateur 'climbing'*, inclined levels for *'skateboarding'*, etc. Furthermore, the central area of the square in combination with the designed stands can also be offered as an outdoor entertainment and fun area for organizing various small events and cultural performances. It can also be used as a place for common life as: *meeting, gaming and social contact, or just as a static area along the passages for a quick rest, or for respite and contemplation in the outdoor seating areas and green areas.*



Figure 3. Project 'Redesign Block 90'. Views of design language and new activities

The **architectural proposal** attempts to renovate and highlight the empty and abandoned space of the O.T. 90, to create a new Square, but also to integrate and connect it with the wider urban fabric as a continuation of the structured space and the pedestrian or road network.

The basic principles of the architectural Design Project are: First, the design of a perimeter zone (around Block 90), for the pedestrian crossing area - sidewalks and a second one parallel to the first one, with the planting area and the zone of the technological infrastructure and installations. Secondly, the design of different routes as 'passages' that cross and also unify by connecting different sub-areas of the wide area of the square, in simultaneous organization of the location of the individual activities. Additionally, the design of the place and the selection of materials were studied carefully and in detail, so as to ensure the greatest possible durability and require the least maintenance, as is mandatory in an open public space. Redefining the responsibilities of architecture, this is a project with an emphasis on bioclimatic design and the circular economy, with technologically modern methods and materials that will also facilitate accessibility for all.

In particular, **elements of bioclimatic architecture** incorporated the choice of ecological materials or nature-based approaches (e.g. bio cobblestones, vegetated drainage, de-sealed areas with earthen cast floors and permeable concrete instead of classic concrete, for collecting the rainwater and using it for the plants), planting in relation to orientation, the use of photovoltaic lighting or LED technology for energy saving, and preservation of the natural resources, for functional purposes with careful aesthetics, etc. (e.g. especially during the evening hours the scattered lit spotlights of the floor will look like a reflection of the image of the starry sky, or the innovative system that allows to change the technical lighting automatically according the time or the weather circumstances). The outdoor configurations are complemented by equipment with appropriate lighting masts, seating in combination with elements of exposed concrete and wooden surfaces, drinking water taps, signage, waste bins and sustainable methods for waste management. The design project also includes two canopies of bioclimatic architecture: one linear, above the wide central passage and one free-flowing, irregular, above the event stands (*Eco-friendly, for shading with advanced technology that adapts to weather conditions with adjusted blinds*). In addition, appropriate infrastructure is provided for the aesthetic and functional utilization of the water element as for playing and cooling for the improvement of the microclimate during summer, as cities become more vulnerable to droughts.

The green area is organized in subareas with plantings of suitable trees and shrubs, creating units with low or high greenery, depending on site suitability. For example, shrubs provide simple cooling, aesthetic and environmental upgrading, while tall trees create a microclimate, offering cooling and shade for the protection of visitors during the summer months, and shelter during windy winters. Furthermore, they provide a refuge for birds and other species of the animal kingdom, enriching the natural environment through their sounds and contributing to the relaxation and rest of the square's patrons. For the walking routes, cold cobblestone pavements, in contrast to the large area with the base - subbase made of water-permeable materials (for flood risk reduction and stormwater management), were chosen. The design process aims to ensure access for disabled people, through paving and the formation of four routes, and also to improve the connection with the nearby School complex via a wider crossing path. The redesign of this public space attempts to activate new sports and leisure facilities, recover green areas, and renew pedestrian paths. Based on the architectural synthesis proposal, the elevation differences are utilized to deliberately shape the square into an interesting relief surface, where different qualities of spaces serve different activities and interests, but at the same time it is planned to be accessible to everyone (such as people with mobility problems, or generally disabled people). We hope that this project, once implemented, as planned, will become a truly vital space for citizens, a pleasant breath of fresh air within the urban fabric of the city!

Consequently, the range of area is definitely larger and more complex than in the initial programme and responds to a broader set of needs and lines of research developed inside it and in its broader context. According to this, the reform of a new type of 'clever square' refers to a general system of knowledge description of technical and infrastructure data for each category. The project suggests providing new opportunities for better energy and water management, introduces ecological solutions helping community by new technological use services, as for the "infrastructural nodes and connections" for reduce the human print and better health and offers social interaction. The category of "edge areas between the existing block and its borders" offers the opportunity to re-connect city and green land with new sustainable program including new living solutions integrated with green area, through redevelopment of abandoned area, improvement of social facilities as safe connections for children -between housing and school buildings- and citizens by foot or cycle connections, enhancement of environmental potential and promotion of cultural and sports activities. This project also explores the role of physical and ecological networks based on principles of ecosystem services, in relation to the wider area of the city and their potential in terms of urban regeneration and protection of biodiversity and soil health, consisting of "green spaces and corridors of prominent environmental and ecological interest".



Figure 4. The urban design Project for children's activities.

Conceptually, the guidelines of the project, promote a sustainable densification and the renewal of spaces so to achieve a better quality in a familiar-friendly way, that supports local communities in accessing green open public spaces which reduce urban heat islands and serve new facilities. The project is focused on the transformation of the empty field into an attractive urban environment for 'living'. It also encourages approaches that improve the accessibility by alternative means of transport, create shared spaces for pedestrians, and introduce green/blue corridors and public spaces for meeting and interaction, working or spending leisure time and also sun exposure and shading issues according to orientation. It could also host daily routines as: working outdoors, formal and informal meetings, shared meals and extended time spent between activities, as the familiar scenery of a traditional 'outdoor life' of a street or square (as *extended street*= '*platoma*' or *plateia*) on the 'outside summer room' which is perfectly integrated, with its context in a typical Cycladic island [5]. It is obvious that relationship with outdoor space is deeply physical: Outdoors, 'we behave differently, more open. There is a sense of freedom outside, as growing up 'naked' on a beach, about light, air, water, and about the absence of walls. The role of design is not to destroy the structure of this freedom, but more to organise and protect it. Outdoor products must withstand sun, wind, rain and salt, yet remain discreet. As a place where the changing meaning of outdoor space becomes tangible, or life continues to move outside socially, culturally and climatically, the circumstances raised here are simply part of how we live now. The case of the "square of happiness" involves a place once abandoned and void in the city, which by the design process and the architectural re-use, has been developed as a catalyst of urban regeneration, by proceed of the consistent safeguarding and enhancing of this urban value, as to be perfectly integrated to the wider context.

The project process tried to analyse and interpret, to prepare a schedule with the basic principles and then to elaborate a project focused on the (re)design of the public space. As it is a multi-scale project, pays particular attention to the systems of infrastructures of the public space and also tries to enhance the vitality of the deprived area in peripheral industrial neighbourhoods. Therefore, the entire design process attempts to combine the physical material design of the space with the demand to make sense of its immaterial, thus generating the place [6]. From the methodological point of view, we followed the next steps: first is the collection of useful information which is aimed at having an in-depth knowledge of the project area and its role in different scales (city, local and neighbourhood). In particular, the topics explored are the geomorphology of the urban site, mobility/accessibility of the area, the presence of environmental systems, the functions and uses that characterize the context as well as all the information needed to get a picture of the socio-economic and demographic dynamics or about the users of the area. Territory being designed, through surveys on maps, inspections on site, statistical analyses, interviews, etc. Secondly, is strictly dependent on the knowledge of the project area, but at the same time, the project can request specific analyses. The good point for an architect and designer who has resided in this area for many years (like in my case), is that he has already plenty of knowledge and elements about it and also it looks positive to contribute to this place by a personal urban design stamp. This is the third step, the masterplan which is considered as a tool that collects the guidelines, the indications, the constraints and the rules that will be used for the future transformation of the area. Its final representations include both the development of the preferred scenario and, through an iconographic language, the rules for its realization. According to the recently approved Urban Plan, city-block 90 has been classified as a green space, so a minor modification would be required for the implementation of the childrens' playground. Nowadays, outdoor space is increasingly asked to hold several visions at once. Issues of longevity, material intelligence and environmental responsibility are now closer to the center of the discussion, signaling a gradual shift towards approaches that are more considered and more intentionally long-term.

The diverse suggestions produced of this architectural protasis are aiming at the creation of a more inclusive, innovative and sustainable city, that recognizes the need for plenty of common public space (especially in large urban centers which are characterized by high building densities), as well as at the planning of active and pleasant neighborhoods' well interconnected with the existing city.

4. CONCLUSION

Cities can continue to be attractive and reduce their discomfort if they provide a good quality in the urban environment, aiming at the creation of a more sustainable city, offering conspicuous areas for public use, parks, green corridors and social infrastructure. The main aim of the urban projects for redesigning public spaces is to produce a 'good city' that has a positive impact on human relationships. The morphological design and culture of "public spaces" show the integration between open and built spaces, in order to achieve "places" in relation to the contexts in which they are embedded. Consequently, domestic comfort, civic responsibility and personal freedom are not competing narratives but must overlap, within the same environments we increasingly share. The specific project of the Redesign 'Block 90' into the Square of 'happiness' carries out a theme of identity, by reforming the *space* to a *place* (topos). Additionally, it offers the opportunity for citizens to increase the sense of familiarity and the sense of 'belonging to a city' and allows different populations and groups to share its places and use them; in other words, to "inhabit" them.

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Links

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Notes

- (1) Thanking warmly the previous mayor of Municipality of Lykovrisi (*Fokianos D.*) and also the current mayor (*Psychalis M.*), as well as every municipal councilor and factor who contributed to the immediate promotion of this project, as the excellent colleagues of the technical service: *Pippou J.-civil engineer, Charisiadis D.-mechanical engineer.*
- (2) All plans of the new Square and photos (Fig.1-4): *Katraouzou D., PhD architect-engineer*