XIII CTV | Congreso Internacional Ciudad y Territorio Virtual / International Conference Virtual City and Territory · BARCELONA 2019

SHANGHAI SKYWALKS. THE WALKABLE MULTILAYERED CITY

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Initial submission: 2019-06-15; **Definitive submission:** 2019-08-20; **Publication:** 2019-12-21

Citation: Šterić, D. (2019). Shanghai Skywalks. The Walkable Multilayered City. In *XIII CTV 2019 Proceedings: XIII International Conference on Virtual City and Territory: "Challenges and paradigms of the contemporary city":* UPC, Barcelona, October 2-4, 2019. Barcelona: CPSV, 2019, p. 8564. E-ISSN 2604-6512. DOI http://dx.doi.org/10.5821/ctv.8564

Abstract

This research deals with the actualization of the skywalks phenomenon in evolvement a multileveled city such as Shanghai.

As in many contemporary megacities, Shanghai's generic evolution, which includes both, urban expansion, and inner densification of the city, causes the complete neglect of the relation between the individual and the urban environment. It seems that in such a context, the skyway phenomenon could offer new, unconventional, different public spaces and represent the possibility for the reinvention of humanlike spaces. The nature of the examined skyway phenomenon combines seemingly opposed ideas and concepts. These structures have extremely large dimensions, but then again, they offer spaces of human scale. Examined elevated walkways are closely connected to other city layers and they integrate a wide variety of uses, from sightseeing and meeting points to places for street vendors and traditional dance practices. At the same time skyways represent new public spaces and infrastructures of soft mobility, which points out the significance of the idea of "walkability". The research examines if these structures could contribute to the implementation idea of "urban porosity" in the extremely dense context of Shanghai. The concept of urban porosity is seen as a possibility for the multilayered city of Shanghai to enrich its public spaces, promote walkscapes and offer new perspectives. This work considers the skywalk phenomenon within a "framework" that could be applied from the smallest up to the metropolitan scale.

Taking all this as a starting point, it is our belief that, by providing humanlike spaces in a beyond scale context, these elevated walkways could represent a mechanism for the inscription of everyday life and culture into the multilayered urban settings.

Key terms: skywalks; walkability; multilayered city; human scale

1. Introduction

The aim of this study is to examine the urban phenomenon of skywalks in the urban context of Shanghai. The main effort will be to understand its benefits and limits, and to offer a framework for putting skywalks occurrence in a wider urban and spatial perspective. By doing so we will try to understand their meaning and significance in the observed urban context. The research will involve the morphological reading of the examined phenomenon, the analysis of their present practices, as well as the aspect of the ambiences, city perceptions and experiences they provide. Skywalks, spaces whose development in Shanghai is in expansion,[2] represent a specific urban phenomenon. They are a crucial part of multilayered city concept that is, claimed by many experts to be, rapidly evolving in the examined context.[3] The reflection on this matter provided the departure point and the curiosity for the subject of this study. Various experts refer to the importance of skywalks for the achievement of the human-mere urban environment. In other words, the examined urban phenomenon of skywalks represents one of the key layers that gives us the insight into the small, human scale within the megacity such as Shanghai. Only reasoning on the small scale could allow us to comprehend the significance of skyways for the

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[2] https://www.jfdaily.com/journal/2018-04-03/getArticle.htm?id=247703
[3] http://newsxmwb.xinmin.cn/xinminyx/2017/12/08/31340625.html

ISSN e: 2604-6512

daily lives of people who inhabit the metropolitan area and its numerous public spaces. In fact, some urban specialists described the occurrence of skywalks as an “acupuncture in which the urban body o Shanghai receives great benefits in terms of livability and sustainability” (Lan Wang, 2017). This is one of the main reasons why the skywalks research is significant and valuable. A start based on a small, human scale could provide observation strategies and questions for a better comprehension of this urban phenomenon within the larger scale: the whole Shanghai metropolitan area. Moreover, the paper will also consider the specificity of the skywalks phenomenon, and their dual nature- at the same time they represent the infrastructure of “soft mobility” and the public space. Several scholars from diverse disciplinary fields (urban planning, architecture, sociology...), argue that in heavily developed, multileveled urban contexts, such as Shanghai, public spaces should be considered as fundamental part of the city (Yoos & James, 2016). It seems that the skywalk phenomenon in central urban areas has the potential to be established as new public place, place of encounter with various different uses and functions. They facilitate pedestrian movement, improve accessibility to isolated urban areas, protect pedestrians from vehicles, and provide shelter under adverse climate conditions. These specific public spaces, adapted to the new, multilayered morphology of the city, serve as a starting point for the examination of the issues of porosity and density. In addition, they re-interrogate the established correlation between the main city layers. The study of Shanghai skywalks becomes an even more challenging goal if we wonder what happens to pedestrian flows? How do people move through the city now, and how does this urban phenomenon contribute to the issue of pedestrian mobility? Can these elevated pedestrian infrastructures have any influence in the city whose configuration and organization are completely inadequate for pedestrians? Also, we can question on the integration of the examined urban phenomenon with other parts of the pedestrian network, and if together they form a cohesive system. Some scholars claim that flows and ways we move through the city are what defines us. Referring to this, we could wonder if skywalks represent a new, different way of circulation and every-day life in Shanghai? Furthermore, the aim of this paper will be to discuss what new perspectives and city experiences Shanghai skyways offer. Regarding this matter, we should have in mind that some notable sources indicate that this urban phenomenon regenerates the concept of “walkability”, and represents a certain kind of democratization and the “right to the city”. Finally, the examination of this topic is stimulating because it is a relatively new urban phenomenon in Shanghai, treated by a very small number of studies, till now. The presented research issues and topics have made us define key research concepts and ideas. These concepts will serve us as basis for all the key questions and organization of the research.

Figure 1. **Relation of the context with the researched phenomenon**

Source: Created on the basis of photos available at: Baidu maps.

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2. The Walkable Multilayered city

2.1 Short theoretical overview

Shanghai can be described as a huge construction field, a city completely out of the human scale, with incessant processes of urban sprawl and densification. As a chaotic city creates a chaotic atmosphere, generating people who are aggressive and unhappy, in the same way a generic, synthetic city, whose public spaces overcome the human scale and everyday uses, produces people with a sense of servitude, who do not manage their own time because they do not manage their space. They are not able to embrace the space of the city they live in, and therefore they cannot comprehend it, feel it and be part of it. The resulting society reflects the illiberality and the absolute triumph of the dehumanized urban settings of continuous production.[4]

In order to obtain a more profound and a more complete starting point for this paper, it seems important to give a short explanation of the key concepts and ideas linked to the examined urban phenomenon. These concepts provide a clearer insight into the complexity and significance of the proposed problematic.

Having in mind that the first levels, closest to the ground plain, are already occupied and “enclaved” by vehicles and various obstacles, and that their configuration and organization are completely inadequate for pedestrians, it becomes clear why pedestrian flows are moving to the upper levels. The cognition that Shanghai is developing a new multilayered urban scenario,[5] as well as the fact that last few decades have thought us to challenge the separation of infrastructures as isolated elements and comprehend that all kinds of public spaces are valuable and meaningful, provided the departure point for starting an investigation of this study. Thus, the phenomenon of skywalks, that are an integral part of the multilayered city, comes into focus. These spaces, whose development in Shanghai is in expansion,[6] represent a specific urban phenomenon. Not only that they enable the undisturbed movement of pedestrians, but they also allow a completely different overview of the city providing a new, more freeway perception and comprehension of space. Presented issues, combined with the knowledge that multilevel strategies are rapidly evolving in Shanghai form a better comprehension of the examined context.

Speaking about the key ideas for this paper, we should firstly mention the concept of multilayered cities. These cities represent a dynamic and complex cohabitation of spatial layers that are overlapping and exploring various connectivity types and options that could be implemented (Gensler, 2019). The concept of multilayered city comprehends by its meaning much more from a simple "multiplication of spatial layers". It includes the development and the diversification of many social and urban domains and practices. Moreover, we could notice that

[4] As Henri Lefevre mentioned in his famous "The Right to the City", this control of one's own time is the one that is crucial for the achievement of a liberal city (and society as a whole). "The starting point is the reflection that points out that the transformation of the time use is necessary and inevitable... It thus becomes urgent to prepare a revolution based on desire: to search for the latent desires of people in everyday life, to provoke them, to awaken them and to substitute them for those imposed by the dominant system. In this way, by using time and using the space, the imposed rules would be avoided, and then we would then be able to create new spaces of liberty."

[5] https://www.jfdaily.com/journal/2018-04-03/getArticle.htm?id=247703

[6] http://newsxmwb.xinmin.cn/xinminyx/2017/12/08/31340625.html

ISSN e: 2604-6512

scholars often use this term in order to describe the overall growing complexity of modern urban environments (Gehl, 2011). The addition of new layers, embedded with program, can be seen as a way to respond to city complexities, and pressures by providing opportunities for new programs and new public spaces and by reactivating communities in order to conceive more livable cities (Gensler, 2019). The examined urban phenomenon of skywalks represents one of the layers of such multilayered city. This layer is, in fact, claimed to be one of the key layers that gives us the insight into the small, humanlike scale in the megacity such as Shanghai.

Along with the concept of multilayered city comes the idea of “vertical urbanism”, that is in this paper used to describe an alternative approach that responds proactively to the state of contemporary multilayered metropolises, characterized by the relationships of density, complexity and verticality. This idea particularly addresses design issues of high-density urban areas supported by complex urban systems that conventional planning approaches are only able to manage with limited success. In urban areas of this kind, all components of urban design, including circulation, land uses, open spaces, ecologies and human activities are distributed in a different pattern, and their interrelations mutate. This is, probably, one of the most significant points of this concept, when referring to the study issues, and to the notion of skywalks.

Furthermore, it seems important to consider the concepts of urban density and porosity, that are directly attached to the idea mentioned above. Finally, we seem inevitable to say that confrontation with an astonishing megacity such as Shanghai obligatory leads to reflections on “the right to the city” and the possibilities of creating more humane like, more free living urban spaces and conditions. In a generic, dehumanized megacity like this, a man becomes unimportant, absorbed by the city's currents and massiveness, feeling disoriented and alienated.

The idea of “the right to the city,” the free usage of time-space instance, and the importance of the term “drift” necessarily lead to the consideration of the significance of “walkability” and pedestrian flows in the context of Shanghai. The concept of pedestrian mobility or walkability is tightly related to the phenomenon of skywalks. Walking, alongside cycling, is the most sustainable, democratic and healthy way to move within a city. Furthermore, many experts affirm that walking can also shape the way people think (Solnit, 2006). The environment starts blending with one′s mind, forming a new landscape of ideas. The act of walking is therefore an act of exploring the landscape. In this context, since the mid-1990s the notion of walkability has emerged as an important property of urban settings. Although the term has not yet a clear and unified definition, most walkable environments would be characterized by some common physical properties such as: transversality, safety and compactness. Moreover, scholars claim that walkable environments result in more social and lively places, in which residents are more prone to being involved in active transportation (Forsyth, 2015). In addition, we could add another widely accepted view of various scholars that walkable environments have a positive effect on the general state of the society. They claim that these spaces contribute to accessibility within the city, and lead to the liberation of movement and choice (Forsyth,2015). However, the promotion of “walkability” represents a complex task of urban policy. Infrastructure networks, such as pedestrian networks, are spaces of mobility and flows which “work to bring heterogeneous places, people, buildings and urban elements into dynamic relationships and exchanges which would not be possible otherwise” (Delalex, 20016). Addressing walkability urges the discussion about: what are the common goods, the “collective happiness”, the “spatial justice”, that new urban policies of walkability should create or regenerate?

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Having explained the key concepts and ideas, it seems necessary to clarify exactly what is meant by the term “skywalk”. According to “The Metapolis Dictionary of Advance Architecture”, in addition to their primary function of surmounting the railways and motorways, skywalks “serve as an organic link between two urban areas by connecting them to each other with a development of facilities erected on the very skywalk, or on its endpoints in order to accommodate various social and economic activities. In contrast to a purely vehicular bridge, the skywalk provides a continuity within the urban fabric that is not only economic, but also cultural, emotional and symbolic. Indeed, it is both seductive and functional” (Cros, 2003). Skywalks represent significant public spaces, embedded with diverse functions and influences, but in the same time they are mobility infrastructures with an exceeding importance for pedestrian flows. One can even propose a question which one of these characteristics prevails?

Despite the divided opinions regarding the functionality of multilayered city, there is a general agreement among scholars that in a city like Shanghai skyways represent one of the essence manifestations of the multileveled metropolis phenomenon. Skywalk systems, as distinctive public spaces, in cities all around the world have a similar intention-to continue the ground and extend the spatial opportunities for the urban engagement (Yoos & James, 2016). “The Multilevel Metropolis, On the radical origins — and mundane deployment — of the urban skyway”, Places Journal, 2016A skywalk system is defined as “a network of elevated inter-connected pedestrian walkways... which consists of sky bridges over streets, second-story corridors within buildings and various activity hubs” (Spurr, 2013). Thus defined, skywalks represent elevated planes of activities that integrate various elements, as opposed to the common understanding that they are merely a collection of bridges. They are creating a “suspended ground plane”, and they represent temporary spaces for passage, communication and consumption. Also, according to some academics, they are the classic example of *liminal urban spaces*, spaces of pure transition, in-between spaces, and that this is also one of the key elements of their nature (Gensler, 2019).

Many experts claim that in contemporary megacities, characterized by constant flux and upscaling, skyways provide connectivity at the higher level because the ground is interrupted by numerous highways, tramway tracks, tunnel entrances... (Gensler, 2019). It is therefore understandable why the majority of these scholars propose that skywalks are actually having an essential role in a creation of a humanized multilayer city.

Finally, we have to mention the factor that is probably essential for the nature of this study. As a matter of fact, many authors claim that in generic contemporary cities, whose urban morphology can be read as a physical manifestation of our disjointed, fragmented social fabric, the connectivity role that skyway systems have can be seen as a way to retrieve the human scale to the public spaces and to the city in whole (Soloman, 2012).

2.2 The skyway layer in the context of Shanghai

As it was mentioned earlier, the notion of skyways has a quite specific nature, combining and merging in one a specific public space and a mobility infrastructure. It appears that in order to understand these unique public spaces, and to be able to examine further this urban advent, in the specific context, we should deeply comprehend what is the general role and the meaning of public places in the examined context. The true comprehension of Shanghai public space demands a deeper explanation of the phenomenon of public space in the Chinese culture (Bata, *et al.,* 2009). Scholars claim that in the Chinese culture, when speaking of a certain space it is

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necessary to specify its function or its use. Otherwise, in the comprehension of the Chinese people, this space cannot be determined and therefore appreciated and valued. The valorization of the space therefore derives from its use by the community.

The denomination of the notion of “public space” is strongly related to the social or political comprehension of the word “public”. As a result, as we have already mentioned, the notion and the use of public space in China generally, and so in Shanghai as well, is necessarily different from the one in “Western” countries, where the public space is considered as “the part of the public domain, and used for public purposes”. Furthermore, Shanghai was the entrance gate for western influences in China in the middle of the XIX century (Gaubatz, 2008) It was the site where both, English and French, have created their own settlements, places that came to dominate the life of the city for many years. However, many urban and sociology experts underline the fact that even in Shanghai public activity and usage represent “the unique and special cultural legacies of the Chinese past, refreshed and performed by people who wish to keep alive their own collective identity” (Bata, *et al.,* 2009). Referring to this, we can say that public space in Shanghai is not only the place of encounter, but also a place which plays a very important role by keeping alive cultural scripts that show what it means to be Chinese today.

Because of the lack of appropriate public spaces for certain activities (for example sports activities, group dancing, vendors, restaurants...) people have started to gather in places that are not so common (for example below motorway bridges). The spatial and social evolution of the city suggests the necessity to create new public spaces that will offer new opportunities. For this reason, a space considered as “insignificant” may gain importance for example when it appropriates some daily practices of a community. For example, as mentioned above, Shanghai residents “appropriate” spaces of large staircases, spaces around stadiums, below large overpasses etc. for a great variety of activities, from group dance and sport activities to meetings, commercial activities ...

Speaking of skywalks, as a special kind of public spaces, we should have in mind the fact that they represent a relatively new phenomenon in Shanghai. Thus, the ways of their use are also in development. Since there are different types of skywalks, which differ greatly among themselves, there are, as well, very different uses. Public activities and functions within these infrastructures depend on the very context, closest surroundings of the skyway itself (noise, public-private, change of purpose in relation to the time of day...). It seems important to mention that skyways represent spaces that were previously regarded only as simple places of transition, without any special value. Communities are progressively appropriating them by giving them a function. They are becoming vibrant spaces. Spaces of life and reunion. The same thing happens with surfaces below the motorway bridges or the sidewalks, that are in the transformation phase (Charis, 2017).

Having in mind the specificity of the examined phenomenon, as well as the fact that in previous paragraph we gave an insight into the aspect of public spaces in Shanghai, in order to have a complete comprehension of skyway phenomenon, it will be necessary to treat its parallel aspect-the aspect of mobility.

In order to accommodate motor vehicles Shanghai has, like many other megacities, narrowed its sidewalks to permit additional lanes of traffic. Insensitive building design, manifested in blank walls and parking ramps and a decrease in street-level shops and activities, have undermined

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the attractiveness of down-town streets for pedestrians. Greater distances between buildings and activity centers have made downtown less walkable. Finally, concerned with their personal safety and put off by the sense of isolation, people hesitate to venture on Shanghai downtown streets. These circumstances created new patterns of urban development. Mega blocks are bordered with arterial, multi-lane vehicle roads that are increasing the vehicular circulation and discouraging pedestrian movement and activities (Chen & Dong, 2005). We could assume that the strong urbanization, as well as the transformation of the urban block, accompanied by the increased use of vehicles, created the need for more walkable public spaces. “For walkable spaces to be used for a wide range of spontaneous activities, like leisure, recreation, market, informal sport and dance, performance, etc.” (Wang, *et al.,* 2017). Urban experts claim that people of Shanghai demand a city which is more accessible and comfortable (Mengxi, 2014). Instead of vehicular traffic, Shanghai's public wants to reach its public facilities by pedestrian paths and to involve direct daily contact with other people.

Urban surveys have shown that pedestrian movements of people within the city of Shanghai are different regarding the size of the city blocks (Mengxi, 2014). To be more precise, recent studies have shown that the dimension of urban blocks in newly planned expansion zones of Shanghai typically range from 400 to over 800 meters a side (Wang, *et al.,* 2017). Even after a very short stay in Shanghai, we could completely apprehend what many experts have already pointed out: the adoption of a mega block grid planning system has largely defavorized pedestrian activities and made them extremely problematic. Moreover, these superblocks are usually not divided into smaller zones, which implies a small range of connectivity, few intersections, and an environment that is not pedestrian friendly. It seems that these superblocks have created discontinuity. Together with high-spead arterial roads they are seen as impassable barriers within the city (Wang, *et al.,* 2017). Various scholars agree that this is the main reason why, in Shanghai context of reduced connectivity, people stopped walking. Other issues of Shanghai pedestrian network that we should mention are: the width of the intersection crossings, a poor quantity of intersections, and numerous elements that block free walking.

Along with the mentioned phenomenon of massgrid construction, another simultaneous process has been happening in Shanghai. A significate number of international investments, that have been present in the last few decades in Shanghai, have strongly influenced its urban morphology, providing numerous off-the-ground levels, turning it into a real multileveled metropolis. Elevated walkways and tunnels link floors of offices and commercial facilities, allowing a much higher accessibility and greater connections than ground floor space (Wang, *et al.,* 2017). These standardized spaces belong to retail district, malls, offices etc. Having in mind that the pedestrian space along Shanghai's mega block is very limited and not suitable for walking activities and public life, an alternate pedestrian mobility has gradually developed in commercial areas, as it has happened previously in Hong Kong. This situation reflects an ongoing transformation in the nature of pedestrian space, and the city as a whole. Not only that there is an increasing need for accessible public spaces, but they become, at the same time a commercial, and socially controlled, privately owned spaces (Mengxi, 2014).

Discussing about Shanghai's pedestrian mobility, we could also note that in the core area of the city, there are many examples where the pedestrian passage is compressed. For example, there are few passages between Lujiazui buildings. The corridors are “placed” on the existing public transport roads in the city. Although the two buildings are close at hand, they are not easy to reach. We could also add that, according to sources, there are many bridges across the

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Huangpu river in Shanghai, which are built according to car standards, but they are completely inconvenient for pedestrians (Chen & Dong, 2005).

Different kind of urban experts are still trying to resolve the question of Shanghai's flows. Not only that Shanghai has become choked with cars, fumes and traffic jams, but it's ground plane infrastructure alone cannot follow the complexity of constantly-changing city life. The reconstruction of the pedestrian network is a systematic process that should involve government departments, experts and scholars, as well as the public opinion. In the dense context like this, we can easily understand why urban planners and the local authorities are working on the development of multileveled city and reinforcing the grade separation system.[7] In the city whose Master plan is considering sustainable and more human public spaces (Mengxi, 2014), elevated walkways as their specific kind, are certainly gaining more attention and importance (Chen & Dong, 2005).

One research team[8] found that the transit sites for pedestrians in Shanghai generally have three major problems: the contradiction between people and vehicles, the incoherent pedestrian network, and the lack of vitality in the pedestrian interface. Having in mind that, in Shanghai, the construction of rail transit sites is in an established state, it is understandable why one of the main questions these urban experts are trying to sort out is: how to build a good walking space in areas where railroad crossings and inner loop roads already exist? One of the possible solutions that this team of experts is offering is the creation of elevated walkways.[9] Although the construction of skyways has not become an official strategy of the city yet, it seems that Shanghai authorities have already started to apply it in various city emplacements.

2.3 Skywalks typologies and examples

Previous paragraphs offered a brief explanation of the skywalks phenomenon in order to help us comprehend and value its vast meaning and importance that it has for the treatment of pedestrian flows and urban public life in general. Beside this, the given clarifications of the theoretical concepts should help us identify the main features of the skywalks phenomenon and develop our examination further. In an attempt to create a typology of the examined phenomenon within the context of Shanghai, we realized that four main principals and evaluation criteria should be pointed out: morphology, context, mobility, and finally social activity and dynamics.

The cognition and differentiation of these aspects of the studied phenomenon revealed its complexity. It seems that a profound study and further analysis of skywalks phenomenon demands the creation of more than one typology. Hence, it can therefore be assumed that each one of the presented aspects should create a separate typology. In other words, the research will establish four typologies: typology in relation to context, morphological typology, typology based on mobility, and finally the typology of social activities and functions.

The following table offers categorized and summarized skywalks typologies and their subdivisions. These typologies of should enable us to gain a more comprehensive insight into

[7] http://en.cnki.com.cn/Article_en/CJFDTOTAL-CSJT201305005.htm; https://archive.shine.cn/news/20080510/359059, https://archive.shine.cn/metro/Skyways-offer-shortcuts-in-Honggiao-biz-hub/shdaily.shtml; https://www.jfdaily.com/journal/2018-04-03/getArticle.htm?id=247703
[8] http://wap.xinmin.cn/content/31345298.html
[9] http://wap.xinmin.cn/content/31345298.html

ISSN e: 2604-6512

the discussed issues, and to understand better the linkage between the examined phenomenon and the key concepts.

Table 1. **An overview of all typologies and their specifically types**

Classification regarding the context	• Infrastructures formed along major city roads • Infrastructures formed above significant invertebrates • Infrastructures representing a part and / or extension of commercial and business zones • infrastructures within green urban zones
Classification regarding the morphology	• polygonal / circular, with extremely large dimensions, and a greater number of approaches • linear: - with one approach on each side - with a greater number of approaches on each side • a unique example- specific morphological group of elevated walkways within Shanghai Expo Center
Classification regarding the aspect of mobility	• Skywalks that have more than one access on every side and are located above extremely busy mobility infrastructures (they often allow several types of mobility within them) • Skywalks that have only one access on every side and are located above regular roads, or above the green zones (they are limited to pedestrian movement only) • Skywalks that are integral part of the skywalks system, and therefore the mobility within them is regulated in a different way: Shanghai Expo Center
Classification based on social activities and functions	• Skywalks that are used only as spaces of transit • Skywalks that represent part / extension of commercial zones • Skywalks that represent part / extension of business zones • Skywalks whose usage / function/ content changes during the day • Skywalks that represent integral part of leisure, entertainment and recreation zones

Source: own elaboration.

Among the sites where new design approaches are underway are the Lujiazui financial hub, the former Shanghai World Expo site and the north plaza of the Shanghai Railway Station. These city emplacements are seen as the most representative examples of the examined question. They demonstrate the diversity and the widespread presence of the skywalks phenomenon in Shanghai, although it's development process has not adopted the form of the city's formal strategy yet. In addition, these specific locations have been selected not only in order to show the diversity and wide presence of the studied phenomenon, but also to demonstrate different levels of its development-from the point where the skywalk phenomenon represents only “nodes”, positioned at relatively large distances, to the site where it practically began to represent a coherent system. We will firstly and most profoundly present the currently most developed city emplacement regarding the skywalk occurrence - Lujiazui, which represents an indication of the real skyway system. After that we will give a brief indication about the two other chosen examples.

Before showing the examples we should underline some characteristics that are mutual for all the emplacements of investigated urban phenomenon. First and foremost, it is crucial to say that, although the occurrence of skywalks is very numerous in Shanghai, and we can treat it as an expanding, significant urban phenomenon, these infrastructures are not linked into a coherent system. Not only that the skyways located in different emplacements do not form any kind of network, but also they are not related with each other within the same emplacement. The other matter that we should point out is the way the phenomenon emplacements are created, or in the other words, the positioning of skyways. Most commonly they are built along

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the massive streets/roads and boulevards, or as a part of some commercial/ business centers and quarters. The very few of them makes part of some green zone, or residential district.

Lujiazui: indication of the system itself- The first example is located in the area of Pudong, more specifically within the Lujiazui district, and it covers the area from the Huangpu River, in the north and west, to the Zhangyang Road in the south, and to the Dongfang Road in the east. Investigating this area, we noted nine skywalks. They are grouped in three smaller zones. The first zone is in the vicinity of the intersection of Zhangyang Road and Pudong South Road. The second zone is concentrated above Lujiazui Ring Road and Century Avenue. The third zone includes only one, large skywalk, located above Dongfang Road.

Context- Walkways within this emplacement are formed along large, significant traffic roads, within the most important business zone in the city, and in close proximity of shopping facilities. The streets that are crossed over by these pedestrian infrastructures are very frequent, with extremely large profiles (40-75m wide). Besides that, buildings in this city area are about twenty meters away from the street front._Some of the skywalks within this research area are directly linked to the surrounding objects. As an example, we can refer to the skywalk formed along Century Avenue, from the Shanghai World Financial Center to the Shanghai International Finance Center. This elevated pedestrian walkway connects not only with two mentioned objects, but also with all the objects that are between them. The surrounding buildings in this city area are extremely high, especially those that encircle the skyways at Lujiazui Ring Road. The height of the buildings within this urban area goes from 25 up to 121 floor above ground level. However, speaking about their relation with surrounding buildings, we could notice a significant difference in comparison with some other urban environments, which we have explored through the literature (Hong Kong, Seoul, Tokyo). Namely, even when physically connected to the objects, regardless of the extreme height, and accentuated verticality of this emplacement, the observed phenomenon occurs at relatively low altitudes, and within the lower floors. In addition, the majority of skywalks in this emplacement has no physical connection with surrounding buildings. The green layer, the layer of city vegetation within this area of study mainly appears below elevated walkways. Although these infrastructures do not interrupt it, we could note that they are not including it in their conception and spatial organization._We can notice that in this researched emplacement the observed phenomenon connects with other elements of the pedestrian network in two ways. The skywalks group, formed in the immediate vicinity of the Lujiazui Ring Road, connects with other parts of the pedestrian network through sidewalk extensions that form some kind of squares. Skywalks from the other two zones within this emplacement form their connection with the pedestrian network directly through relatively narrow and uncomfortable sidewalks (barriers, a narrow space that produces a sense of exposure to fast vehicles, a small number of places to cross the street ...). Regarding the aspect of the context, the elements of the observed phenomenon within this urban zone could be classified into the following three groups:

1) Infrastructures formed along major city roads
2) Infrastructures formed above significant invertebrates
3) Infrastructures representing a part and / or extension of commercial and business zones

Regarding the concepts of porosity and urban density, we could assume that all of the three groups noted within this emplacement, represent an indication of the presence of these ideas. One of the key characteristics of this city emplacement is an extremely high density. We could suppose that, the very existence of these three types of elevated walkways is possible only in

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conditions of an exceptional density as this one, present within this first researched urban zone. Skywalks within this emplacement that belong to a group of infrastructures formed along major city roads, and Infrastructures formed above significant invertebrate probably represent a clear example of the idea of porosity within this city zone. In a context whose built environment is not so dense, these types of connections would not be possible, or there would be no need for them. This typology gives us also an insight into the significance of the concept of "walkability". Based on the three present types, we could note that skywalks within this emplacement were formed precisely at places where the concept of “walkability” was most vulnerable. Infrastructures belonging to the first and second group of this typological classification were created in places where the context no longer allowed the idea of “walkability” to develop at the same level. On the other hand, infrastructures from the third group were created in places where the conditions of the context were such that it was necessary to further stimulate this idea of “walkability”. The concept of urban “drift” relates to the idea of “walkability”. The continuity of pedestrian paths and flows are of major importance for this theoretical concept. This concept does not represent a form of urban living and functioning in the urban context of Shanghai. However, the three obtained types of skywalks, positioned at places where the context represented a certain kind of constraint, could point to an understanding of the necessity and importance of this concept to be developed.

Mobility- Although this emplacement is a space where the studied urban phenomenon has reached the highest frequency, density and complexity in Shanghai, these three “zones” of skywalks are not interconnected, and they do not form a unified system. Moreover, the skywalks within zones are not connected internally. In most cases approaches from the ground level to the observed elevated pedestrian infrastructures are realized through regular stairs and escalators. Some skywalks within this researched emplacement can be also accessed directly from the surrounding buildings. These approaches are horizontal, and they appear in the form of partially covered “bridges”. Regarding the aspect of mobility, they also appertain to the first two typological groups:

1) Skywalks that have more than one access on every side and are located above extremely busy mobility infrastructures (they often allow several types of mobility within them)
2) Skywalks that have only one access on every side and are located above regular roads, or above the green zones (they are limited to pedestrian mobility only)

Regarding the concept of walkability, we could say that within this typology there is a correlation that is analogous to the correlation existing within the morphological typology. The group of skyways that have more than one access on every side and are located above extremely busy mobility infrastructures are those that actually represent certain destinations and bring a new dimension of “walkability” concept. Skyways from the other group, that have only one access on each side, and are located above regular roads, or above the green zones, have a more utilitarian character, but they still provide a maintenance of this concept. Finally, we could say that it might seem logical that the term “drift” is primarily associated with those skywalks that have more access. However, it seems that that both of these types allow the development of the drift concept within this emplacement by creating a greater accessibility and a greater number of choices for the “wanderer”.

Morphology- Speaking about the form of the studied phenomenon, we can say that the morphology of skywalks within this studied urban area is very diverse. Looking at individual examples within this emplacement, and comparing them, we could note the adaptation of these

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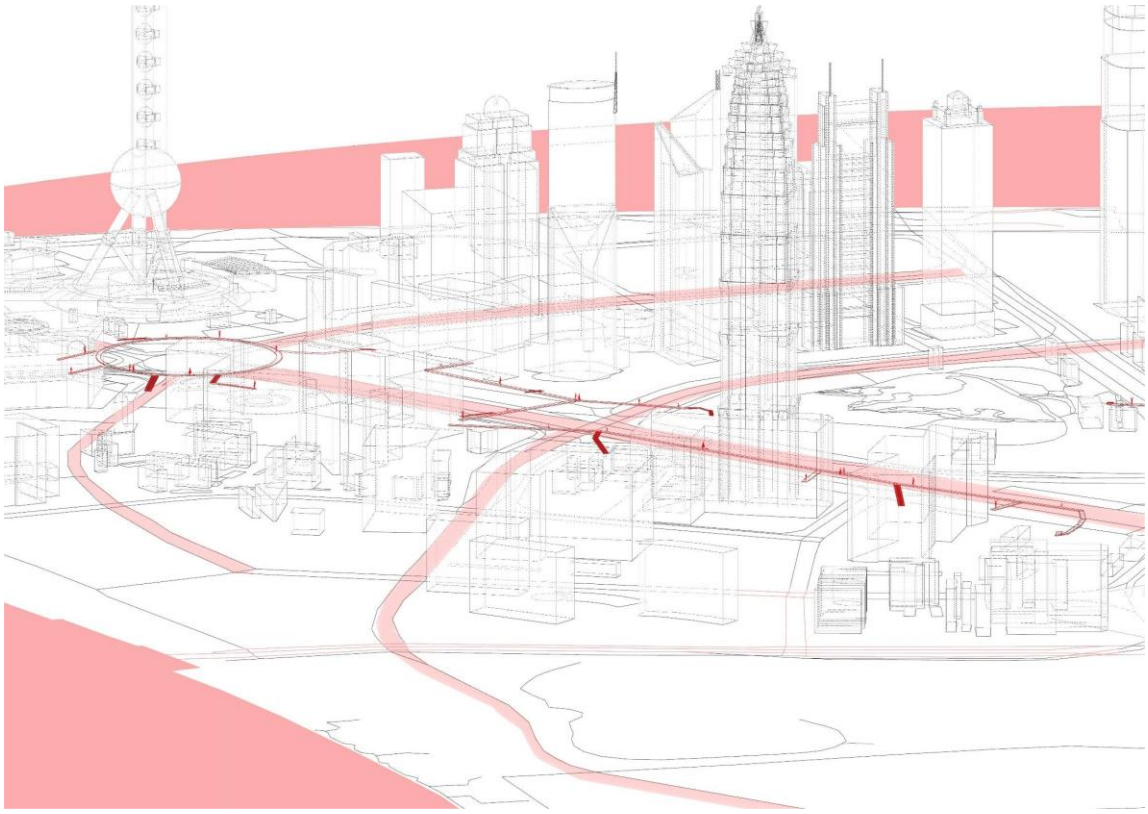
pedestrian infrastructures to the closest context. The research shows that within this researched emplacement there are: 1. linear skywalks formed along the streets, within the city blocks, 2. Skywalks that "crossover" large roads (with one or more access on each side of the street), 3. circular skywalk that is located exactly above the roundabout, whose approaches are formed around five major streets that flow into this circular traffic junction.

Figure 1. **General overview**



Source: created on the basis of Baidu maps (https://map.baidu.com/@861672,6173103,15z)

Skywalks within this emplacement are extremely large. Although they are not connected to a unique system, they cover a significant longitude of the area, reaching the length of up to 565 meters. Their dimensions allow them to connect blocks that are located opposite to one another, among which are extremely busy roads with a large number of lanes. They also connect various blocks that are located on the same side of the street, but are not easy accessible from the ground level. Regarding their most general morphology aspect and characteristics, we could sort these elevated walkways in two typological groups:

1) polygonal / circular, with extremely large dimensions, and a greater number of approaches
2) linear:
   - with one approach on each side
   - with a greater number of approaches on each side

We assumed that for this type of typology it would be most important to analyze the concept of “walkability”. Within this research emplacement we noted two groups of skywalks that differ considerably in their morphological characteristics. Both of these morphological groups were created in a way to correspond the best as possible to their immediate context. A group of linear

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elevated walkways that have one or more accesses from all sides in most cases responds to the idea of “walkability” by “overcoming” the context and overcoming the obstacles that the pedestrians encounter on the ground level. On the other hand, it seems that the other morphological group of skywalks within this emplacement goes a step further. These skywalks not only generate the idea of “walkability”, but they become destinations themselves. They encourage the idea of “walkability” by offering a new perspective and view to the city.

Social activity and dynamics- At the very beginning of the consideration of this section of study, it seems necessary to note that we will be able to produce a real, profound analysis of this aspect only after the stay in Shanghai and the direct field work. However, certain general guidelines related to social activity and dynamics of this emplacement can be given now. Considering that the part of the city in which these skywalks are located represents the most elite, central business-trade zone in Shanghai, it seems understandable that their usage is practically completely subordinated to these activities. In other words, they represent a kind of serving structures for surrounding objects. Skywalks within this research emplacement often lead directly from one to another facility. It seems that they have been made primarily in order to arouse and facilitate the flow of commerce and business activities.

In addition, the infrastructures within this city emplacement have gain the role of a unique tourist destination, promenade, sightseeing point. Having in mind the context of these infrastructures, their position and morphology, it becomes clear why this function is so detectable, both during the day and night. Finally, regarding the aspect of social activities and dynamics, for this instance we could assume that these elevated walkways belong to these typological groups:

1) Skywalks that are used only as spaces of transit
2) Skywalks that represent part / extension of commercial zones
3) Skywalks that represent part / extension of business zones
4) Skywalks whose usage / function / content changes during the day

With these obtained typologies we will now try to look at the originally established ideas and concepts and to reconsider them in the concrete urban areas selected for case studies. These ideas will be examined on the basis of previously obtained and presented typologies.

We will firstly consider this typology through the two broadest concepts: density and porosity. It seems that these concepts should be thought in a different way than in the consideration of the context typology. Here the ideas of “density” and “porosity” are discussed primarily relating to the presence of social activity and functions, and not in relation to the built physical form. This research emplacement is, most probably, one of the urban zones of Shanghai with densest social activity. Four types of skyways were noted in this urban zone, densely filled with activities and functions of a similar type (business and commerce). It seems that Skywalks that represent a part / extension of commercial zones and Skywalks that represent part / extension of business zones can be viewed as urban elements that contribute to the concept of “densification” of the city and the mentioned functions. On the other hand, skyways from the other two groups, whose use / function / content changes during the day, as well as those that are used only as transit spaces can be seen as elements that contribute to urban porosity and introduce some kind of “change” into urban environment.

The urban emplacement in which the investigated phenomenon is present in a different way and in a different stage of development is the urban area near Shanghai Expo, including the

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opposite side of the Huangpu River. We could say that this example represents a detached "system" and the open sequence of "nodes". It covers a bit wider urban area than the first one, including parts of the city on both sides of the Huangpu River. In the extreme west the explored location extends to Yishan Road and in the extreme east to the water channel near Gaoke West Road. The northern boundary of the investigated area is Zhaojiaband Road, and the southern Yauhua Road. By exploring this area, we spotted nine individual skywalks and one unitary system of skywalks. Having in mind that this research emplacement is quite large and diverse, we could perceive three different groups of skyways. We formed these groups depending on two things- the place of origin of skywalks and the way they are formed. These two facts influenced all other characteristics of the researched urban phenomenon, that we will analyze. The first group of skywalks gathers elevated walkways that are formed along the Zhaojiaband Road. The second group is very specific group, and it represents a system of skywalks formed at the Shanghai World Expo Exhibition and Convention Center. The third group involves individual examples of the studied phenomenon that have very different originating places, and that do not follow the general characteristics of the two previously mentioned groups.

In the very end we could refer to the location in which the phenomenon of elevated walkways is least developed: Shanghai Railway Station. In this city emplacement the examined urban phenomenon represents a development of regularly ordered "nodes". It is located near the Shanghai Railway Station, and it covers the area from Zhongxing Road in the north to S. Suzhou Road in the south, and from Hengfeng Road in the west to Baoshan-Henan Road in the east. As it was mentioned at the very beginning of this chapter, the observed urban phenomenon of skywalks has been established in Shanghai in two ways: around extremely large and busy traffic roads, or within trade zones, close to, or even as part of trade centers.

3. Final considerations and Further questions

Instead of making a classical closing chapter we will firstly propose a possible orientation, direction for the eventual continuation of the research. After this we will introduce some of the possible questions regarding the future development of the skyway phenomenon in the context of Shanghai. Although we conducted a vast research, studied a large number of different sources, and authors from the diverse scientific fields, we are conscious that certain parts of the research lack profundity. We are completely aware that this paper could represent just an initial stage of the whole research. Further examination might explore if these elevated walkways have a possibility to create a general connective mesh, made of paths suitable for slow mobility? Can this new "mesh", made of skywalks become an alternative transport mode to vehicular? Do these elevated walkways have a capacity to support the large network of already existing public services, in order to make easier and faster movements through the city? In addition, having in mind that we already perceived that these elevated walkways are far more than simple serving structures for its surroundings, we could question what exactly are the different meanings and uses that they comprehend. We could also wonder if there is a point when they become a destination, places of the "journey's end" itself? Also, it would be interesting to question if they can upgrade the existing public spaces? And finally, are these elevated walkways one of the key factors for Shanghai to become a sustainable megacity? Until this point, the study primarily concerned the wider, urban scale, in order to comprehend the general picture, and obtain a broader insight into the studied phenomenon. On the other hand, it seems to us that, for the nature of the research and the subject of the study, it would be extremely useful to analyze the focused, smaller scale of the examined phenomenon. Meaning

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that we would also concentrate on the scale of the object itself. Based on this, smaller scale, we could acquire clearer answers and conclusions regarding the relation of the individual in the urban environment of Shanghai. For this reason, it is our assumption that the examination of this scale could greatly contribute to the comprehension of the research problematic. Finally, as a sort of a closing statement we would say that it our deepest belief that, in the multilayered city of Shanghai, the significance of the skyways will undoubtedly grow, and that they will show that pedestrian mobility does not concern the mere separation of flows, but also a creation of spaces for social interaction. And as mentioned in *Walkable Cities in High Density China*: "the effective increase and improvement of walkability is a fundamental element to support a more sustainable city, resulting in a more livable city (Wang, *et al.,* 2017)

Conflict of Interest: The author declares no conflict of interests.

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ISSN e: 2604-6512