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Explaining the Concept of Flexibility in Urban Spaces

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Abstract

Nowadays, comprehending urban spaces and the appropriate design of space is a way toward meeting the diversified needs of each citizen. Among this, attention to the flexibility principle as a dynamic of qualified urban space creation can facilitate spaces to provide multiple opportunities for the general public. Accordingly, this study attempts to address the concept of flexibility and realization of it in urban spacing. In order to achieve flexibility in urban space, a new pattern is presented. It is notable that achieving the space at first needs prerequisites including permeability, adaptability, legibility followed by body requisites such as positive outdoor spaces, spaces with multimodal behavioural patterns, multiuse buildings, active frontages and fine amenities. These include constructive elements like activity, place and people. Through preparing such elements, flexibility can emerge in urban spaces into three classes; versatility, convertibility and expansibility at micro and macro scales.

Keywords: Flexibility; Urban space; Versatility; Convertibility; Expansibility

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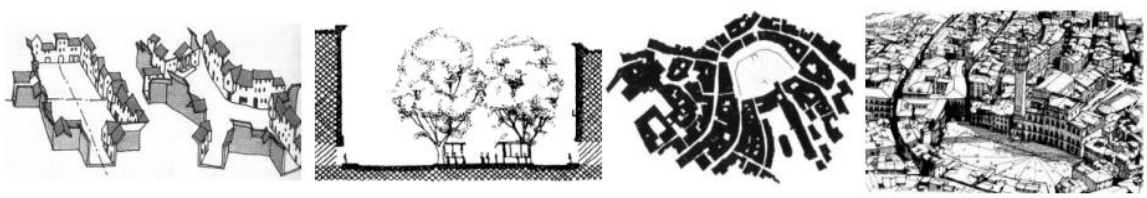
1. Introduction

Public spaces have an important role in forming social life, initial civilization appearances and biological complexes. By taking into account old cities in the 1900's that were just 13% of world population and also the population increase in the world, it is foreseen that up to 2050 cities will be filled with 70% of the world population. Hence this issue shows the necessity of having a new look towards urban development and its elements.

Future perspective is illustrative of flexible and creative cities as economics, social, and cultural development contexts of societies, and urban spaces such as streets, parks, and squares are important sites to shape social, economic, and political activities (Collins, 2009: 517). Given the importance of issue, it is tried, in this paper, to offer a pattern after explaining the concept of urban spaces and flexibility matter in order to have a comprehensive grasp of the issue and also to become familiar with all dimensions of flexible urban spaces by utilizing it.

2. Urban Space Nature

The urban space issue, as a conceptual phenomenon that is organized from information in various forms, performances and meanings, social life promotion and the shaping context of society is an indicator of culture and urbanity of civilization. Urban space is the reality resulting from the combination of social relationships in body context to needed human performances (Majedi et al., 2011: 263). According to performance perspectives urban spaces are known as outdoor spaces of buildings. These spaces are defined by city symbols and city roofs (Chau, 2000; Paumier, 2004).



a) 3D design urban space square and street (Carmona, 2003)

b) urban space street section (Jacobs, 1993)

c) urban space plan in Siena, Italy

d) urban space 3D design in Siena, Italy

(Rudlin & Falk, 1999)

Fig 1 Examples of urban space

Urban space status is essential in cities at various scales among created elements. It can be stated that urban space is the only unique element from the built environment in city that is posed in the field of engineers and urban planners. This issue demonstrates an emphasis on coherent and an all-dimension look into these spaces.

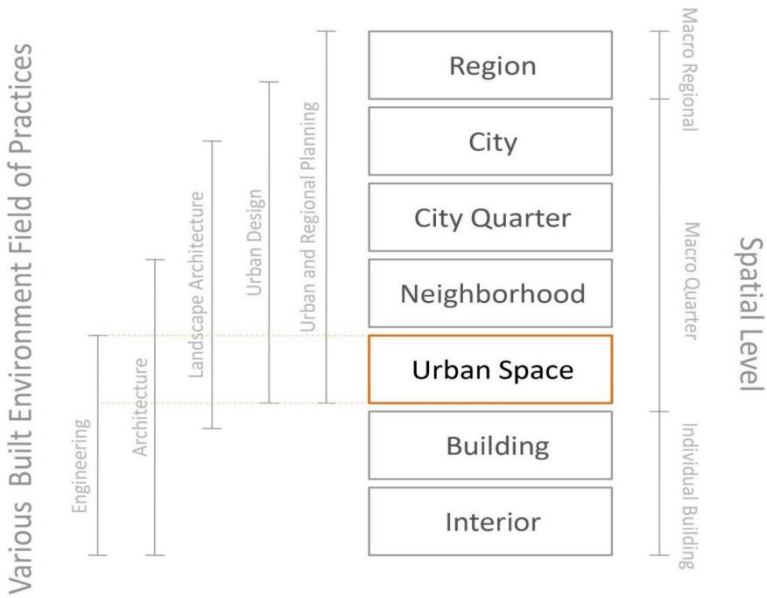


Fig 2 Urban space status among different living sectors
(Source: Moughtin & Mertens, 2003; Chau, 2000)

3. Public Urban Space

Urban spaces are explored in several classifications as determined urban fields and according to the necessity of their shape in order to answer the users' needs and offer acceptable levels of spatial quality to the users. These categorizations are public, semi-public and private urban spaces. Among these are streets, squares, and parks also known as public spaces, and also frontal yards can be recognized as semi-public spaces; and finally, private parking spaces which are known as private urban spaces (Madanipour, 2003).

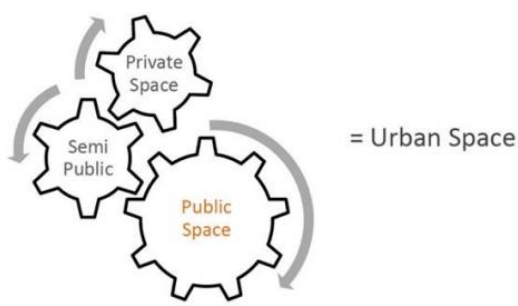


Fig 3 Urban spaces classifications including public, semipublic, and private spaces

It should be mentioned that among the various classifications of urban spaces, public space can be the most effective urban area for refreshing and dynamics. This space, in actual fact, provides services available to all walks of life without gender discrimination, ethnic prejudice, age bias, or religious, social, or economic favouritism. Moreover, public urban spaces are also called public arenas or public fields.

Fig 4 Public space, a kind of space for all people (Jacobs, 1993: 47)

4. Typology of Public Space

Generally, there are 4 types of separable public spaces. The first types are streets including all hierarchies, boulevards, and rest areas. The second types are plazas and squares. The third types are parks which include linear parks, city parks, and recreation grounds. The last types are water borders that include spaces leading to seas and water channels (Moughtin & Mertens, 2003).

a) Shanselize St, Paris (Gehl, 2004) b) Hans Sq. Copenhagen (Gehl, 2004) c) Washington, Lafayette park (Paumier, 2004) d) London, Nayebossaltasneh channel (Paumier, 2004)

Fig 5 Examples of public space

5. Public Spaces Performance

Public spaces are social, economic, leisure time spaces, where traffic congestion occurs (Gehl, 2007; CABE, 2004), and it should be noticed that the influence of public spaces on the performance of space must be of desirable quality. Regarding public space performance, Lord Ragers states that, these spaces should play an important role as outdoor room to relax and to enjoy urban experience and various activities like to eat outdoors and a place for recreation, to walk and sit and for political and civic events (Thompson, 2002: 61).

6. Accessibility to High-Quality Urban Space

Similarly, Gehl (2004), Paumier (2004), Davise (2007), and Evans (2007) believe in seven qualities that can create urban space promotion and development including safety, comfort ability, inclusiveness, attractiveness, durability, good management, and flexibility. It can be understood that flexibility has the lead role among them all. A new look toward urban spaces with flexibility is an attempt to define and reuse space, give personality to open spaces, and create social changes with respect to environment and in urban dynamic framework and accessibility to urban spaces (Thompson, 2002: 59).

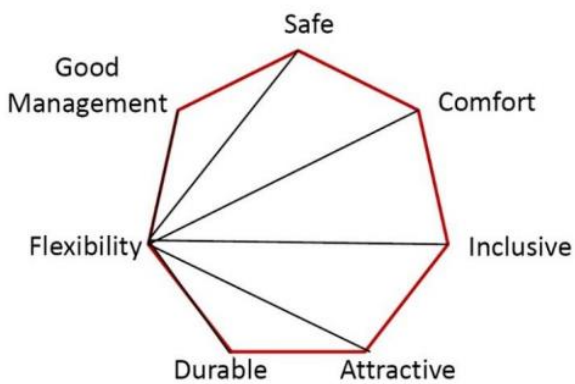


Fig 6 Required components to get to high-quality urban space

7. Explaining the Concept of Flexibility and Flexible Urban Spaces

The relevant literature indicates that the flexibility should be considered as a “useful act”; although, this concept indicates useful benefits, it is not absolutely good (Adler, 1988: 36). Flexibility, literally, means coordination and qualification in every environmental condition (Moein, 1992) and the concept of changeability is the simplicity to be able to adapt to the environment and its changes at different levels (Mardomi, 2010: 110). Flexibility, in

general, means a change in the system and making the possibility of obtaining new conditions, needs, and frameworks.

The concept of flexibility is obtained from Latin references in urban context studies conducted on environmental systems' behaviour usually against tensions and disorders rooted from exterior factors (Davic and Welsh), and indicates "durability of relationships in system" (Barnett, 2001: 978).

The inspiration from flexible ecosystem means the system's ability or society at risk to resist internal and exterior risks, and also to recover from risks at certain times with efficient behaviours including structure maintenance and infrastructural performances and an attempt to repair them (UNISDR, 2010: 10). The flexibility is a system's ability to perceive environmental changes and its fast and efficient response to them. It should be noted that the flexibility of an urban space leads to a system's having better response to changes (Pasmore, 1994: 4).

Generally, flexibility can be considered as a connector between urban space and its outdoor environment to attract non-certainty, system dynamic degree as well as adaptation and changeability. In effect, it should be stressed that flexibility searches for selection arrays against needs.

A notion should be considered about urban space, i.e., accepting that space being able to respond to various needs made by life's new streams, cultures, and different values. This important fact should also be considered that whether it is proper for one group in one space and whether it is not an obstacle for other groups' fulfillment and enjoyment. It should be accepted that urban spaces cannot be seen as the 19th century parks. Those parks were like melting pots that dissolved all peoples and cultures as one coherent nation in themselves. Therefore, today it is needed to search to create spaces like salad bowls for various people and cultures to be able to find inter-personal various needs (Thompson, 2002: 60).

8. Necessary Perquisites to Achieve Flexible Urban Spaces

Undoubtedly making flexible urban spaces enables the provision of many options for citizens' needs perquisites including permeability, versatility, and legibility that influence different dimensions of citizens' power or selection procedures.

8.1. Permeability

Places available for citizens are the only ones that give the rights of selection to people. Permeability in this interpretation means potential ways for environments, which is the central factor in achieving flexible urban spaces.

8.2. Versatility

Versatile spaces are the ones with easy accessibility giving direction to suggested options of space and experiences in the implementation stream (Bentley et al., 2003: 6).

8.3. Legibility

When citizens have the opportunity to utilize benefits providing quality, they would be able to perceive the place organization and what happens there. Legibility is the quality that helps one space to be perceived (Bentley et al., 2003: 113).

9. Urban Space Flexibility in Two Scales

This is an important fact in exploring urban space to make a differentiation between micro and macro scales. This makes the twofold analysis more comprehensive and the exploration possible.

9.1. Flexibility in Macro Scale

In this scale, flexibility addresses urban space ability coherently or its main sector in making different options available. Utilizing flexibility advantages in this scale usually includes references which are not available for most people, but flexibility in macro scale indirectly can increase the users' general selection power in the long-term.

9.2. Flexibility in Micro Scale

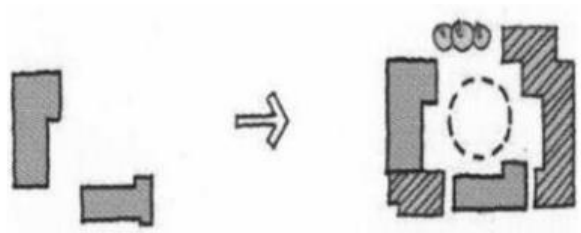
Flexibility in this scale is defined in spatial elements and ingredients and urban space performance, and it considers certain elements in urban space in order to be able to link vast ranges of functional options to it. It should be taken into consideration that this issue influences most people's daily selection power and activities quality; therefore, it is regarded as important and serious (Bentley et al., 2003).

10. Body Perquisites of Flexible Urban Spaces

After introducing accessing perquisites and accomplishing flexible urban spaces, it is required to refer to body elements and their features that are undoubtedly necessary to create flexible urban spaces. These body features appear in positive exterior spaces, multimodal behavioral patterns, multiuse buildings, active frontages and fine amenities which are mentioned in the following.

10.1. Positive Outdoor Spaces

Flexible urban space is positively coherent with certain limitations which can provide an optimum size and proper shape in a good relation with space characteristics and performance (Davies, 2007).



Negative space **Positive space**

Fig 7 Example of positive Outdoor Spaces

10.2. Spaces with Multimodal Behavior Pattern

Flexible streets as the flexible urban space element is an example of multimodal spaces utilized in order to adapt with the macro spectrum of citizens' needs. These spaces are always pathways where passengers commute on foot or drive with private cars, public transportation vehicles or bicycles with a complete coordination with the city's other paths. It is important to note that flexible paths are patterns of optimum space usage providing various options. Some parts are accomplished by various activities among streets, and they also create safety and passenger-oriented environments with low traffic.

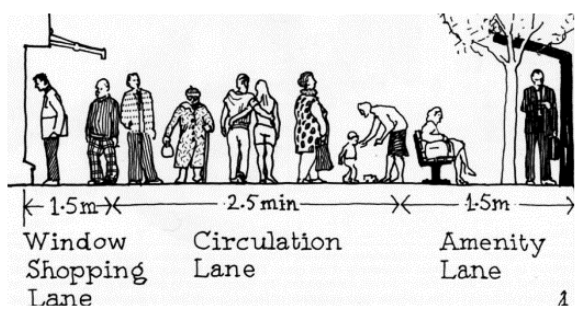


Fig 8 Convenient pavement, space with multimodal behavioral pattern (Bentley et al., 1985)

10.3. Multifunctional Structures

To obtain a flexible urban space, multifunctional building shaping in this environment is essential. Flexible building indexes can be referred to as adaptations and adjustments that

are created along with different tasks during time and shaping various activities in the given spaces.

10.4. Active Frontage

Cooperation among buildings and public plazas are one of the most important issues that should be considered in flexible urban space, and this can be accomplished by semi-public plaza designing. These are the kinds of design which are configured after the indoor private interaction with neighbours and vast ranges of outdoor activities in the edges.

a. Spaces to wait and sit b. Social transaction sites c. Arcade to protect from sun and rain

Fig 9 Examples of Active Frontage (Bentley et al., 1985)

10.5. Fine Amenities

This is the kind of place able to utilize various forms to be attractive and convenient and offers fine amenities. These amenities prevent from shaping unpleasant feelings from space in citizens and move forward reinforcing the sense of enjoyment including experience of elements like trees and bushes, water quality, pavement, benches, public art works and street regular furniture.

a. Coquette statue b. Using urban amenities c. Reinforcing freshness with water in environment

Fig 10 Examples of Fine Amenities (Gehl, 2004)

11. Flexibility Types in Urban Space

Urban spaces have been figured in urban contexts in various periods which have relatively sought to meet people's needs and expectations such as squares, paths, mosques, and markets. There are spaces where three types of flexibility can be found. This classification is adopted from William M. Pena and Steven A. Parshall's perspectives about the flexibility issue that is addressed in their book entitled 'Problem Seeking, An Architectural Programming Primer' which includes multifunction, convertibility indoor space, and expansibility to the outdoors (Pena & Parshall, 2012: 84). It is emphasized that these three types together can accomplish flexibility in its complete meaning, and each one alone cannot be replaced by the concept of flexibility.

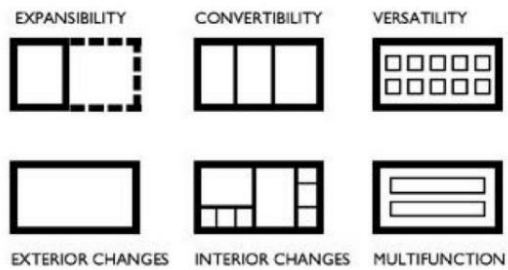


Fig 11 Flexible space typology from Pena and Parshall perspective (Pena & Parshall, 2012: 84)

11.1. Flexible Urban Space Multifunction

Spaces which can be used for different purposes offer their users more choice than places whose design is limited to a single fixed use (Bentley et al., 1985: 56). Spaces benefiting these abilities with quality are known as multifunction. Multifunction or performance versatility is considered as an important feature of flexible urban spaces which seek to create various selections in using spaces by citizens. Activity, place, and people variables can be regarded as this kind of flexibility; a flexible space can be utilized for several usages simultaneously and also for one performance at various times and in different places by people of different ages, genders, and cultures. Totally, it should be stated that urban spaces' multifunction and versatility is assumed as the most effective and basic way to increase urban space flexibility.

11.2. Flexible Urban Space Convertibility

The feature of convertibility happens in an urban space when this space is able to include different performances against changes in it and adapt to new conditions. It should be noted that changes happening in this type and space are created by spatial elements and happen

without a change in total dimensions of urban spaces such as changes in characteristics and structure, micro elements and spaces combination. The notion is that this feature happens in new spaces for boundaries being variable, elements, space furniture, the possibility to add or reduce other elements, and their combination.

As previously mentioned, changes to coordinate urban spaces with new conditions occur in space, but effective factors in a system may impose themselves, from indoor or outdoor, on urban spaces. It is worthy to mention that flexibility in urban contexts is one of the solutions for reducing natural and non-natural harms; given the necessity for accurate energy usage with daily growth of population, attention to future generations is crucial for world population, and new urban planning has to try to put forward durability and non-functional defense by creating flexible urban spaces. These issues will be solved using urban space convertibility features.

11.3. Flexible Urban Space Expansibility

In designing expansible urban spaces, the feature of expansibility tries to consider outdoor changes in urban spaces, leading to its expansion according to performance, structure and space, hence helping citizens have more of a selection. The expansion happening in urban space can be accomplished horizontally and vertically. The appearance of automobiles in urban spaces or the urban space users' increase can make new needs for which expansibility can, without doubt, provide solutions.

Flexible Urban Space			
constructive elements	people - place - activity		
flexibility types	expansibility	convertibility	multifunction
changes field and range	outdoor structural-spatial	indoor structural- spatial	indoor functional

Fig 12 Constructing elements and changes range for flexible urban spaces types

12. Conclusion

Today urban space recognition and proper designing is a way to meet society members' needs, while in many cities it is seen that urban space occurrence as a turnoff, designed by permanent and contemporary versatilities and body divisions, show people's attention and presence. To this must be added that attention to flexibility principle in configuring urban spaces has been very important and the presence of many facts like the triple flexibility types mainly multifunction, convertibility, and expansibility in these spaces confirm this

high importance. It is worthy to point out that a regular and all-dimension analysis in urban spaces provides a pattern which depicts the triple flexibility types more according to people, place and activity variables in two micro and macro scales. In this way, quality accomplishments such as legibility, versatility, and permeability as perquisites and positive outdoor spaces for the quintuple body necessities, multimodal spaces, multifunctional structures, active frontages, and fine amenities become surely necessary in creating flexible urban spaces.

Finally, it can be concluded that life's new approaches and configurations with various cultures and values as well as the creation of various needs in order to accomplish the flexibility concept in urban spaces are highly more efficient than those by technology revolutions. The utilization of a modern conciliator in responding to draw a responsive urban space and more efficient and optimum urban spaces can be deducted to citizens by a better understanding of the flexibility concept.

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