

The Effect of Environmental Factors on Sociopetality of Urban Spaces

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Abstract

Sociopetality is an important multimodal concept, characterizing the interpersonal and social interactions of the inhabitants of a space. When designing a public space the concept of sociopetality becomes even more crucial since the promotion of social interaction is a primary goal. Sociopetal urban spaces can help revive the sociable atmosphere in cities and societies, which have become increasingly individualistic, and thereby respond to the social demands of citizens. In this paper, the sociopetality of urban space as an aspect of the most public places in the cities is studied. Considering the relevant literature, this research proposes a conceptual structure based on “human,” “environmental,” and “meaning and perceptual” aspects to describe sociopetality. Environmental factors, as the chief tools of designers and urban planners, are studied in particular. The characteristics of “location/context,” “physical/spatial,” and “function/usage” are introduced as the most basic environmental factors and analysed in the context of some successful urban spaces. Finally, the role of environmental parameters in the realization of the concept of sociopetality in these successful urban spaces is verified and practical ways to design sociopetal spaces are suggested.

Keywords: Environmental Factors, Function and Usage, Location and Context, Physical and Spatial Characteristics, Sociopetality, Urban Spaces.

Introduction

With the increase of individualism in modern society, the importance of manmade environments as places to bring people closer and thereby recover lost social interactions is also increasing (Salehinia and Memarian, 2012). Consequently, the concept of sociopetality as a spatial quality that encourages people to interact has gained the attention of researchers and designers considering different scales and utilizing a variety of approaches (Bennet *et al.*, 2012; Germann-Chiari and Seeland, 2004; Leyden, 2003). This topic gains even more importance in urban public spaces that are the most public places in a given city (Lipton, 2002; Madanipour, 2003; Mitchell, 2003) because these open spaces can provide a positive effect on human-human interaction in addition to human-nature interaction (Omar *et al.*, 2015). Consequently, many scientific papers on urban planning emphasize the importance of maintaining, developing (Kabisch *et al.*, 2015), and renewing (Yung *et al.*, 2016) public urban spaces such as green spaces (Chen and Hu, 2015) because of their social benefits for city residents.

Sociopetality is desirable for different reasons. Human communication and interaction reflect a need for affiliation, attraction (Forgas and Jones, 1985), and belonging to place and community (Lang, 1987). This interaction is essential for personal growth and maturation (Lang, 1987), as well as the formation of friendships (Alexander, 1972) and the reduction of alienation, isolation and criminal tendencies (Jacobs, 1961; Newman, 1972). Social interaction in urban spaces brings people

with different backgrounds and features together and engenders national productivity by reinforcing social inclusion and social capital (Madanipour, 2003).

Much of the research in this area has been done by behaviourists and psychologists. Although they have contributed to designers' understanding of the environment's effect on social behaviour, they have not proposed any clear practical suggestions. Some designers and planners have examined social interaction to realize practical proposals. These studies, however, have not been connected to a comprehensive theory or model (Cherulnik, 1993).

In the first part of this paper, considering relevant theoretical and practical studies, we propose a classification of the concept of sociopetality in urban space. With this classification, the aim is to understand the concept and shed light on its different facets in order to create sociopetal spaces. We propose three aspects of "human," "environment," and "meaning/perception" to define and organize the concept of sociopetality. In the second part, we analyse the effect of environmental features on sociopetality in some successful urban spaces. Finally we propose a model that encompasses the most important environmental parameters of sociopetality in public urban spaces. The model distinguishes between sociopetality and other similar concepts, like liveliness, which should encourage further detailed studies on the under-investigated facets of sociopetality.

The meaning of Sociopetality, Its Formation and Development

The terms sociopetal and sociofugal were introduced by Humphry Osmond in a joint work with Robert Summer during Osmond's superintending in the Weyburn Mental Hospital in Saskatchewan, Canada (Osmond, 1966). "These words are ingenuously woven together based upon the Latin "centripetus," which literally means seeking the centre. So sociopetal space is that which tends to draw people together and sociofugal space is that which tends to throw them apart just as centrifugal force throws object away from the centre of a spinning axis" (Lawson, 2001). Osmond's consideration of the role of communication in the hospital's centre for elderly sparked the start of these investigations. He used the terms sociopetality and sociofugality in the context of the semi-static elements of the spaces, i.e. the movable furniture. Then he defined the role of spatial arrangement and configuration of furniture in sociopetality of spaces (Osmond, 1957). In sociopetal configuration, face-to-face contact is possible and the seats are arranged at socioconsultive distance (Lang, 1987). In contrast, sociofugal configuration prevents eye contact, as in the case of back-to-back seating (Hall, 1974). Each of these configurations is suitable for a specific situation. Edward Hall believes that a sociopetal space in one culture could be a sociofugal space in other cultures and vice-versa. He also argues that the sociofugal spaces are not necessarily unfavourable. Similarly, the sociopetal spaces are not always desirable. The most desirable result is a variety of spaces and options to allow people to interact based on their needs and their psychological states (Hall, 1959). One interesting case of using both configurations is the spiral patterns of seating e.g. Güell Park, Barcelona, which was designed by Antoni Gaudi.

While the terms sociopetal and sociofugal were first narrowly applied, there were later applied in architectural and urban contexts. Public or semi-public spaces came to be viewed as sociopetal when socialization between people are facilitated. But sometimes they are sociofugal when separating people and restricting their communication. Even though it is widely held that public places should enhance communication, many such spaces continue to be organized in a way as to make even accidental encounters impossible (Forgas and Jones, 1985).

Basic definitions and relevant researches

The behavioural and psychological sciences provide the foundation for this research, with a focus on social interactions, informal interpersonal and accidental relations (which are not previously planned for a certain purpose, and are not premeditated for the transaction of business or the promotion of common ends). Urban spaces are primary locales for this type of behaviour; hence they are the target spaces of this study.

The correlation between design and social interaction, sometimes called ecological behaviour, has been studied widely in the literature, and the architecture of space has been commonly viewed as an effective element in interactions between people. Roger Barker, a pioneer in understanding ecological social interactions, specifies the correlation between certain behaviours and interactions. His highlighting of the concept of behavioural settings illustrates how such settings determine what interactions are possible within their constraints (Forgas and Jones, 1985). Given that all human interactions are situated in locations, according to psychologists, the physical basis of interaction impacts how we understand and interpret social behaviours. This behaviour is often viewed as a nonverbal dimension of communication (Forgas, Joseph P., Brown, 1978). According to Forgas, the static and dynamic aspects of the environment play a crucial role in social interactions. Within dynamic and learnable systems people modify their behaviour in response to changes in architectural space (Forgas and Jones, 1985). In Forgas' opinion, however, environment does not affect social interaction directly. What mediates this interaction is our perception and interpretation of the environment rather than the actual characteristics of the environment (Forgas and Jones, 1985).

In Lang's opinion, environments, as behavioural settings, can facilitate or inhibit interactions, but they cannot determine or dictate behaviours. People's needs and motivations play the ultimate role (Lang, 1987). Normal. L. Mann also argues that proximity, congruence, density, situation and purpose are the basic elements of interaction between people; these factors can lead to cooperation or competition (Mann, 1977). According to many researchers, propinquity is a prominent factor for social interaction; others believe that propinquity is only one of several factors, with mutual aid and homogeneity in attitude being necessary to establish interaction patterns. Tony Cassidy argues that if people are homogeneous in a public space, the chances of their interaction increases; without homogeneity, interaction decreases (Cassidy, 1997).

Extensive research has also been done by scholars like Edward Hall (1966), Robert Summer (1969) and Altman (1975) and Newman (1972, 1079), specifying the mechanism of communication and interaction between people in intentionally manipulated environments. These studies form the basis of proxemics theory, which advanced concepts such as personal space, social distance and territoriality. Altman (1975) describes territories as a means of attaining privacy and also as a means of stabilizing social relationships. From the perspective of Serge Chermayeff and Christopher Alexander, privacy and social interactions are close concepts (2001, 1963). "Balancing privacy and social interactions is possible through physical concepts and also cultural and social concepts which provide the required mental background." (Einifar, 2000).

Since most of the research has been dominated by behavioural and anthropological theories, it mostly serves to increase the understanding of designers about effects of unique constructions on social behaviour without providing practical suggestions for real world problems and situations. Only a few of these works have attempted to apply the theories to practical problems of designing the environments and spaces. For example, the research on proxemics theory makes the design of territorial locations possible for architects and attracted the attention of designers to the geography of rooms and the configuration of semi-static furniture as a mean to enable social interactions. Designers have proposed concepts such as "propinquity," "functional proximity," "functional

centrality” and “space for stopping” to create opportunities for meeting and increasing social interactions.

Since 1970 several behavioural studies have been done on an urban scale (Marcus and Francis, 1997). Researchers like White (1980) Lenard and Lenard (1984, 1987, 1993), Yan Gel (1987), Cooper Marcus (1990) and PPS (2005) have studied social life of urban space under various loose concepts and descriptors: human, useful, inevitability, successful, liveable, and popular urban space.

Whyte (1980) and most other researchers focus on physical features and architectural elements. They found several strong physical aspects which correlate with the popularity of some urban spaces; based on these correlations they fashion a general explanation for the success or failure of public urban spaces (Cherulnik, 1993). Whyte’s presentation of the design feature relevant to the frequency of plaza use could be summarized in three words: sustainability, transition, and food.

Whyte’s research was continued by Project for Public Spaces (PPS). PPS creates and sustains public places that build communities. In order to achieve its goal, PPS emphasizes management and flexible programming and takes advantage of local resources. PPS estimates that about 80% of the success of any public space can usually be attributed to its management. "No matter how good the design of a space is, it will never become a true place unless" it is well managed (Project for Public Spaces, 2011).

Some other researchers and critics focus more on the characteristics of the surrounding area, such as the volume of pedestrian and vehicular traffic, the uses of the adjoining building and other buildings in the area, and so on (Rostami Bookani, 2013). A study of the effect of the context on the use of plazas found that the most frequently used plazas were in the area of greatest land use diversity, where office and retail districts overlapped (Chidister, 1986). Lenard also discussed theoretical concepts of human environment. He specified a few concepts as the main principles for establishing a successful urban space such as availability for all levels of society, frequent and persistent usage, belonging and attachment, having personality, stimulating curiosity, facilitating various activities, making the sense of being at home and individual interactions (eye-contact ...). He then suggested various designs to realize these principles and social goals.

Jan Gehl and his collaborators are also outstanding in this field (Gehl, 2010; Jan and Svarre, 2013). Their research mostly concerns everyday activities and human-specific demands on man-made environment. They mainly focus on the human sense and human scale in simple activities like walking, standing, seating, watching, talking and meeting.

The effective parameters of sociopetal urban spaces

Considered as a concept, sociopetality has numerous facets. However, the effective factors can be classified into three categories: “human,” “environmental,” and “meaning and perceptual” aspects. These are illustrated in Figure 1.

The first category comprises all factors that originated from the people who use the space for any possible reason, while the second category is related to the characteristics of the space by itself. And finally, the parameters arise due to the interaction of humans and environment considered as a perceptual factor.

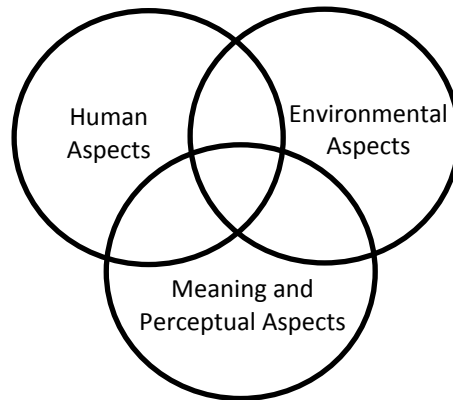


Figure1: Conceptual framework to describe aspects of sociopetal public spaces

The human aspects are the characteristics of the people who are present in space as interpreters. That includes all personal and social attributes of the people who are using the public architectural space. Personalities, motivation, stimuli, demands, moods, morals, beliefs, memories, cultures, backgrounds, and any other characteristics that individuals or groups of people possess; all have impact on the sociopetality of an urban public space.

Environmental aspects include all factors that correspond to the characteristics of the space, which are mainly determined by designers and urban planners. Considering previous studies, the environmental factors can be classified in three sub-categories. The first category of environmental factors originates from the location and situation of the space in the city. The second is related to materials, shapes, and proportions in the space. And the third directly arises from the actual usage and functionality of the space.

Although by virtue of the meaning that space implies, environmental aspects can modify (facilitate or inhibit) human behaviour, but they never determine the social behaviours which are the outcome of the will and choice of people based on their abilities and needs (Lang, 1987; Salehinia and Memarian, 2012). If people intend to interact together they will prepare the setting for it -- though the environment can facilitate the process (Lang, 1987). Therefore, social interaction is the heart of any space; designers need to make it a goal if they wish for it to flourish. That being said, the capacity of place to meet the expected goals can also be improved by having support from the administrative system (Lang, 1987).

Meaning and perceptual aspects are ascribed to any spiritual and subjective characteristic of the space. The interaction between environmental and human factors results in various subjective meanings and interpretations. For example, concepts like the sense-of-place, sense of social belonging, identity, beauty, memorability, and so forth all relate to the perceptual factors which have a complex two-way relation with sociopetality. Sometimes the perceptual factors are mediators for environmental and human factors to affect social behaviour in a space.

The environmental parameters of sociopetal urban spaces

In this section, we discuss the environmental factors that are the chief tools for designers and planners of cities. To this end, we analyse successful urban spaces according to location and context, physical and spatial features, and function and usage to underscore the effects of environmental factors on their sociopetality.

Sociopetality can be realized in many ways in successful urban spaces, such as co-existence of strangers, walking around, interactions between strangers, the tendency to interact in the space, the amount of people present, the time spent in the space, and the presence of people in groups. The

following examples were picked from successfully planned cities with various environmental characteristics.

Pioneer Courthouse Square, Portland, Oregon

Location and context

This square is at the centre of Portland, Oregon and is located in front of the old courthouse of the city. Different buildings such as shopping centres, hotels and banks are situated close by; it is considered as the main station of the city's public transportation (Figure 2).



Figure 2: Pioneer Courthouse Square is located on the paths of everyday activity patterns. Source: Google Maps, 2016.

Its communicational, historical, commercial characteristics have transformed it into one of the busiest parts of the city. It is highly accessible due to the openness from all sides and visually and physically connected via the surrounding urban sidewalk.

Physical and Spatial Features

Due to differences in ground levels, the square has been divided into two main subareas which are connected by stairs. The nearby columns and edges function as short-term stopover places and the central space is intended for main events. The steps near the main square have created various domains for different kinds of gatherings. People sit on them in small or big groups or individually and enjoy the view. The centre of the square is organized like an amphitheatre, with a semicircle of many steps serving as seats for musical performances or other events. In addition to the steps, there are a few chairs around the café at the northwest side. The modern design contains diverse natural and artistic elements, situated in different parts of the square (Figure 3).



Figure 3: Physical composition and central organization of Pioneer Courthouse Square.
Source: portlandoregon.gov

These elements enhance the overall aesthetics and the visual complexity of the square and also facilitate conversation between individuals.

Function and Usage

This square contains a café, flower vendor and food booths, ATMs, a small meeting room, a news office and also an information office for Portland's transportation system, which plays a key role in the usability of this square. This office is one of the main reasons people come to this square. Besides being a centre for entertainment and services, the square has become a hub for social and public events such as festivals, exhibitions, ceremonies and public parties; its structural design and efficient management lends itself to such public events (Figure 4 and Figure 5 respectively).



Figure 4: Portland's largest outdoor movie theater at the Courthouse Square. Source: michaeljohnsmith.com, 2007.



Figure 5: Portland Farmers Market at the Courthouse Square. Source: thesquarepdx.org.

Quality of sociopetality

As is apparent in this square, public events draw people together and offer the possibility of connection and interaction. Known as Portland's "living room," the square is also used every day by passersby. It provides a place for short-term stays and relaxation, rather than long stops as it lacks suitable seating arrangements for extended conversations (Figure 6).



Figure 6: People are sitting on the stairs individually or in small groups and watching the space as a whole. Photo by Stephanie Paris, portlandbybus.com.

Most of the users are adults who gather on the steps; social interaction is passive and based in simply looking around the square. Longer stops mostly happen near the café, which has chairs that are appropriate for sitting for longer periods.

The Republic Square (Place de la République), Paris, France

Location and context

This square borders the 3rd, 10th, and 11th arrondissements of Paris and features a 19th century bronze statue that symbolizes French republican values. The southern part of the square is filled with shopping centres, and the other parts are full of cafes and bars with a lively night life (Figure 7 and Figure 8 respectively).



Figure 7: Satellite view of Place de la République with the north up. Source: Google Maps, 2016.



Figure 8: Location of Place de la République, Paris, France. Photo by Philippe Guignard, 2007, air-images.net.

Except for the southern side, all sides of the square are surrounded by transportation routes which make it difficult for pedestrians from the other city spaces to pass through the square.

Physical and Spatial Features

Place de la République is a large square with dimensions of 120 by 300 meters (area of 3.5 ha). This square contains an open space and three main focal points: the bronze statue of Marianne, an impressive fountain, and a café, which are all located along a line (Figure 9).



Figure 9: Open space of the Republic Square showing the main focal points. Photo by Clément Guillaume, 2013.

The placement of surrounding trees in rows emphasizes this linearity. The only useful spaces of the square are limited to these focal points; the other parts draw little interest from visitors. Seating is limited to the portable chairs nearby the café and a few long seats in the square and edges around the trees.

Function and Usage

This square includes a relatively large café next to a place for children to play in shallow water. The proximity of these two aspects allows adults to sit on the café seats and watch children at play (Figure 10).

A metro stop is also situated near the square, which may increase foot traffic around the square.

Quality of sociopetality

This square is a large public space that people enter individually, with families, or in groups. The diversity of visitors to the square is positive, but the usage of the square is lower than what's expected, given its desirable location. This may be associated with the monotony of the square, a lack of diverse and attractive spaces, and shortage of diverse activities. People typically stop by its focal points; the rest of the space has little to offer. Adults prefer to sit on the seats around the café and speak with each other and most of the children play around the fountain and statue.



Figure 10: Attractive scenes of children playing in the water at the Republic Square. Photo by Clément Guillaume, 2013.

Naghsh-e Jahan Square, Isfahan, Iran

Location and context

The Naghsh-e Jahan Square is the central square and the heart of Isfahan, Iran. This square is located in the dense and traditional part of the city, in a neighbourhood of residential, commercial, cultural, and historic buildings (Figure 11).



Figure 11: Location of Naghsh-e Jahan Square, Isfahan, Iran. Source: DigitalGlobe, 2016.

Isfahan's most important tourist attractions are positioned around this square or are within easy walking distance. This positioning attracts locals and tourists from all around the world. Vast areas of the square are allocated only for the pedestrians, which increases uniformity and connection between the central space of square and its peripheral buildings.

Physical and Spatial Features

This square has a rectangular plan of 158 by 507 meters. The spatial structure of this closed square implies a uniform and inward space that forms a visual connection all around it. This square contains four focal points that are situated in the middle of each four sides. The focal points are the Shah Mosque, Qeysar Bazaar entrance, the AliGhapoo Palace, and Sheikh Lotfollah Mosque that are located on the northern, southern, western and eastern sides respectively. Most of gatherings and stops by tourists occur around these locations. The central space of this square is a vast and uniform plane that is decorated with a large pool, grass fields and a limited number of lined benches arranged linearly (Figure 12).



Figure 12: Enclosed and wide space of the Naghsh-e Jahan square with four focal points shown at the four sides.

Function and usage

Commercial stands offer handcrafted arts near the historic buildings and attract a large number of people to walk around the square and observe its attractions. Some of the commercial stands sell snacks like ice cream, but they are few in number compared to the square's size and number of visitors. Carriages turn around in the square and provide the only means of entertainment, which is welcomed by the families. But there are few other activities in the square, particularly in the vast centre.

Quality of sociopetality

The Naghsh-e Jahan square is one of the most successful urban spaces in attracting large numbers of people, but its ability to establish active social interaction is not remarkable. People usually move around the square in groups and observe the surroundings and talk to shopkeepers. But this square does not have suitable spaces for pausing to establish interactions between strangers who mostly come for the shared purpose of visiting historic attractions (Figure 13).

Defining varied places for sitting in the square, especially around the snack vendors and more popular locations like the focal points, could be beneficial and could form different kinds of social interactions between strangers, tourists, and locals. In addition, the open and vast inner space of the square and its historical-cultural identity has a huge potential for hosting various social events like ceremonies, festivals and exhibitions. Adding flexible and temporary activities, besides increasing the square's attraction for locals, would also improve social connections in general.



Figure 13: Lack of suitable sitting area for social interactions (lack of sociopetal urban furniture). Photo by Mehrdad Tadjini, 2013.

Greenacre Park, New York, USA

Location and context

Greenacre Park is located in a lively and diverse usage site in New York City. Different usages such as shopping centres, residential buildings, restaurants, offices and hotels are available around it. Direct contact of its entrance with sidewalks results in human access (Figure 14).



Figure 14: Hideo Sasaki Garden at Greenacre Park, an appropriate physical and visual connection between the park entrance and sidewalk. Photo by Hubert J Steed, www.pbase.com, 2014.

Physical and Spatial Features

This small plaza consists of three levels, which are created for people with different interests. The first level has a physical and visual connection with the city transportation; the second level is situated further down and creates a more reclusive space in front of the waterfall. The third level is connected with the plaza's small café and has a higher altitude than the first level (Figure 15).



Figure 15: Space diversity in three levels in the form of an integrated and coherent structure.
Source: sideways.nyc, 2014.

In spite of being divided in three sections, the plaza has a uniform and convex configuration; its various parts are visually connected. Its small size creates a sense of intimacy and dynamicity, adding to its charm. But its small size also leads to proximity of sitting places, which can limit privacy. The design does not encourage visitors to interact with each other. The sound of the waterfall and the portability of the chairs, however, may encourage a sense of privacy. The portable chairs bring physical, mental and social comfort; they provide people with choice of location and different seating angles. Various natural elements such as water and trees in different forms increase the visual diversity and provides relaxation and comfort for the users.

Function and usage

The only fixed usage of this plaza is a café on the west side, which plays a key role in its success.

Quality of Sociopetality

Abundant and varied seating around the café is the plaza's most attractive feature. This intimate space is most popular for adults who enter individually or in groups of two or three to have a conversation; it does not attract as many children and teenagers. The space does not accommodate large social groups or encourage social interactions between strangers.

Discussion

The most important environmental factors analysed in the case studies in this paper involve "location/context," "physical/spatial," and "function/usage." The results of this analysis are summarized in the following model (Figure 16).

The effect of environmental factors on sociopetality can be divided into two parts: "physical presence" and "social presence."

Different groups of people tend to enter and spend time in an urban space due to environmental features. Researchers have used descriptors such as "inviting," "liveliness," and "usability" to characterize how the spaces relate to human interaction (Gehl, 2010; Whyte, 1980). Our model defines this aspect as "physical presence." The spaces that only promote physical presence often face the problem of "civil inattention" (Whyte, 1980). In our model, other environmental factors which encourage active and passive social interactions are called "social presence."

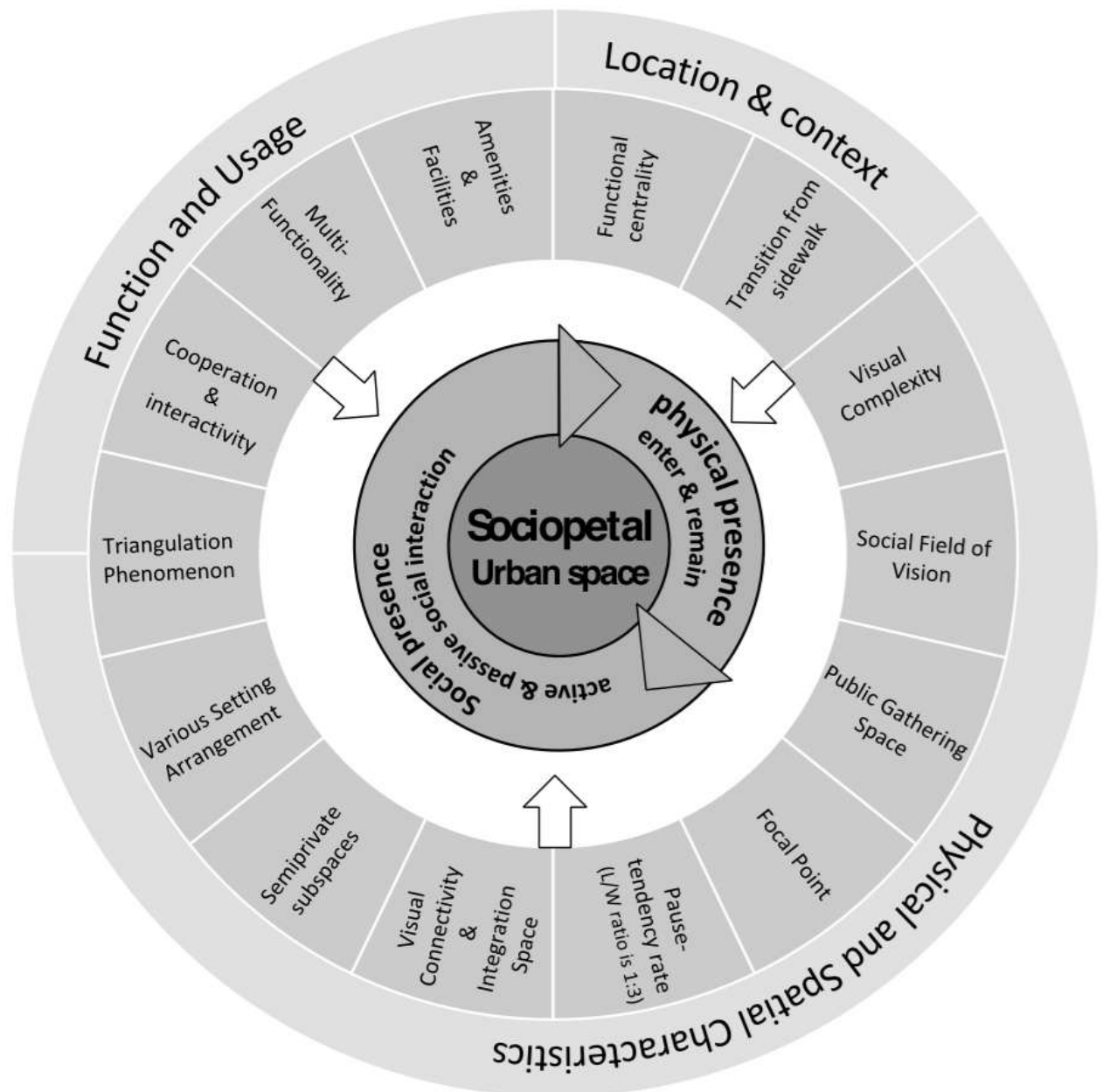


Figure 16: Model to describe the effect of environmental aspects on sociopetal urban spaces.

- Sociopetal aspects
- Environmental effective features
- Environmental main aspects

As seen in the case studies, being located on the paths of everyday activity patterns and greatest land use diversity (Chidister, 1986) are the main contributors to successful urban spaces. Functional centrality in these spaces encourages use by diverse groups. Functional centrality refers to the ease of access to common facilities for a group of people, the frequency with which people use them, and the amount of time they spend in them. One of the important variables in establishing the functional centrality of place is whether or not they are on the paths of everyday activity patterns.

This conclusion stands in contrast to the conventional organization of cities; the four great human functions -- live, work, movement and leisure -- are separated from each other. Furthermore, if the physical and visual connections between an urban park (such as a square) and the traffic spaces surrounding it (such as streets) are easier to access and more comfortable to use, the more likely people will be to move between them.

Suitable spatial organization remains one of the most important social factors of urban spaces. It is noticeable in the case studies that sociopetal urban spaces, besides having different semipublic sub-spaces, all demonstrate an integrated space with visual communication between all of the space's parts. Such spaces can host public gatherings and maintain a pleasant appearance when empty (Marcus and Francis, 1997). Because people rarely tend to pause in a vast and undefined space, the main area in successful spaces is divided into sub-spaces using differences in levels or elements like gardens, decorative fences and furniture; at the same time, spaces for pausing are well-defined without blocking the visual connection between the sub-spaces.

Although researchers like Whyte argue that the geometry and dimensions of the spaces are not the most important factors for sociopetal, these factors are still influential. Generally speaking, a width that is one third of the length of the space enhances sociopetal; overly long spaces tend to result in people moving rather than pausing, thereby discouraging social interaction (Osmond, 1957).

The size of urban spaces should also be proportional to the social life that is flowing there. The space should be able to handle most daily and weekly events and should not be overly large; its popularity depends on centralized and thriving activities and dynamic, joyful experiences (Lennard, 1993).

In the sociopetal urban spaces, where the connection between setting, communication and geometry is important, the "social field of vision" can be described. The social field of vision's boundary is 100 meters (110 yards), the distance at which we can see people in motion. Twenty-five meters (27 yards) is another important margin; at this distance emotions and facial expressions can be recognized. These two margins are significant in many physical settings where the attention is focused on watching other people (Gehl, 2010).

Also a successful urban space has diversity in seating, which enhances physical and emotional experiences, and notably "social comfort." Considering both sociopetal and sociofugal seating arrangements are essential for achieving social comfort. Seating places with sociopetal arrangement in different sizes makes it possible for small and big groups of people to congregate and consort; sociofugal seating arrangements make it possible for visitors to maintain privacy and to co-exist with others (Lawson, 2001).

The freedom to choose seating places is likened to the "feeling of being at your own home" by Lennard (Lennard, 1993). Movable seats, short walls and fences, edges, platforms and stairs create a variety of places to sit in urban spaces.

As seen in the analysis of case studies, the existence of natural or artificial elements like waterfalls or prominent statues can act as focal points that encourage people to pause and sit beside each other. These elements may possibly be a pretext to launch a dialogue and social interaction. This type of social stimuli helps even strangers and find a reason for short greetings and lingering presence in these spaces (Lennard, 1993). Whyte defines such stimuli as "triangle phenomena" (Whyte, 1980).

Natural elements, in addition to defining spaces for pausing and sometimes forming focal points for gatherings, mostly are utilized to enhance physical and emotional comfort and visual complexity; they also tend to form the activity centres. From the functional point of view, lively

urban spaces are often multi-purpose spaces providing a variety of activities and are appropriate to usage time of different users.

Successful spaces also have urban facilities like toilets, drinking water fountains, "street food" choices and restaurants. Food-related facilities take advantage of the desire for leisure time (individually and collectively). Social activities such as concerts and performances and celebrations, festivals, seasonal markets, and fireworks are strong social stimuli that gather people together and facilitate communication and interaction among strangers. In addition to the collective activities that occur in certain situations, it may be preferable to provide some fixed activities and entertainments that are collective and participatory rather than individual.

Conclusion

In this research a conceptual structure based on "human," "environmental" and "meaning and perceptual" aspects is proposed to describe sociopetality. This paper examines environmental factors as the chief tool in the hands of designers and urban planners. To show the effect of environmental factors on the sociopetality of urban spaces and to extract the most important environmental factors and parameters that affect sociopetality, some representative urban spaces were analysed with the results set out in the discussion section. According to results based on these case studies, the effects of environmental factors on sociopetality of urban spaces are divided into two main categories: "physical presence" and "social presence." As seen, between the two categories, "social presence" tends to be less considered in urban contexts. However, the consideration of social presence distinguishes the concept of sociopetality from other concepts such as liveliness and dynamicity in urban spaces. Many popular urban spaces have become mere lively places as a result of people's presence; they do not motivate visitors towards interaction. These spaces only promote visual and auditory interactions (passive social interactions); they evince the problem of civil inattention. Some spaces not only do not promote social interaction between strangers, but also they do not even provide adequate space for a gathering of family members or friends. In other spaces this kind space has been provided, but they tend to be suitable for just special groups and limit age groups. Ultimately, physical and social presence are the main aspects of sociopetality in urban spaces. However, each provides a necessary but not sufficient condition for creating a successful sociopetal urban space. Consideration of both types of presence can lead us to a comprehensive understanding of the concept of sociopetality and the environmental factors that enhance it. In conclusion, we recommend that designers and planners consider all of the effective environmental factors of sociopetality discussed in this paper. Doing so will help achieve physical and social presence and create a successful sociopetal urban space.

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