Urban spaces for children

Could play space qualities be applied to urban design?

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ABSTRACT

According to research, public spaces and environments has great impact in people's life and how they feel. Successful urban spaces have been identified to create several positive effects on the environment, including factors such as economy, crime and health. In urban design literature, several professionals have discussed the factors contributing to making successful urban spaces. These factors are commonly referred to as urban design qualities and are perceptional qualities functioning as measurement for the quality of urban spaces. Through a literature review in the field, it became clear that there are little focus specifically addressing children and how they perceive the urban spaces. Ongoing trends tells us that children will compose for 60 % of the world's urban population in 2025, suggesting that addressing this subject are highly relevant. In addition to a review on urban design theory, the article will therefore go through research and findings from play space theory to see if it those qualities could or should be applied to urban design. The overall goal of this article is to figure out whether qualities for play spaces could be incorporated to the qualities of urban design in a way that could improve how we construct urban spaces for children.

KEYWORDS: urban design, urban spaces, urban spaces for children, play space, parks, playground, landscape architecture, outdoor play, design for kids

1. INTRODUCTION

In 1955, 27 % of the world's children lived in urban areas, and by 2005 this had increased to 43 % (Unicef, 2012). Estimations by United Nations indicates that children will compose for 60 % of the world's urban population by the year of 2025(Sukanya Krishnamurthy, 2018). This enormous change suggests that there is a greater need for designing urban places for children now compared to the mid-twentieth century when several of the initial urban design theories was established. Acknowledging this, a thorough literature review on urban design was carried out. Additionally, a review on play spaces was initiated because of a concern about a lacking focus specifically towards children in urban design theory. This was done in the effort of figuring out whether theory from play spaces could be applied to urban design theory. The purpose of doing this was to create better urban spaces for children. As urbanization has increased, the opportunities for recreational activities has decreased due to more buildings and less open space. Several factors argue for the need of great public spaces for children and young people.

1.1 The importance of play

Play spaces provide children with space and facilities for them to socialize, play and physical activities. The importance of kids being able to do these activities has been documented by several studies, as stated in this section. Play is crucial to several aspects of children's development, recognized by the United Nations in the *convention on the rights of the child*: Children

have the right to play, do recreation and experience culture(United Nations, 1989). Children with ADD benefits from activity in urban spaces (especially green spaces). When parents were asked about which activities that made their children more manageable, 85 % of activities in green spaces has been found to improve children's behavior(Taylor, 2001). In Scandinavian kindergarden's it was found that kids which got to play in forest areas in the urban landscape (as opposed to a traditional playground) were developing balance and coordination faster. Additionally, it led to less absence because of sickness and an increase in creativity in play and motor fitness were also identified (Fjortoft. I, 2001). Playing outside gives children the opportunity to develop social skills and create friendships(Pellegrini, 1993). Increased physical activity: Great outdoor spaces facilitate for play and physical activity. Physical activities could build muscles and bones in addition to provide for better sleep and greater abilities to handle physical and emotional challenges(Mary L. Gavin, 2018). The importance of play and the qualities of play spaces would be further discussed in main section.

1.2 The urban landscape

Briefly explained, streets are the framework of a city, or the blood vessels of a city. The streets facilitate for the movement of people, goods, water, electrical supply and more (Moughtin, 2003). The streets also provide for linkage between buildings, locally and to other areas, and are places for everyday life. Streets and urban spaces are areas for interaction, conversation, entertainment and recreation (Gutman, 1978). Urban landscape refers to the natural and artificial landscape visible in a city(Wan, 2008). Natural elements are the ones shaped naturally and geographically, whereas the artificial elements include urban objects and urban spaces. Urban spaces include areas such as streets, plazas, alleys and parks. The urban objects consist of architecture, street furniture and urban facilities(Wei, 2005). Definitions of urban spaces refer to the open spaces in the city, and are often, but not always limited to areas open for the public. This article will take use of a wide understanding of the definition and include several types of publicly accessible areas in the city, including all types of streets within the urban domain, squares, parks, narrow alleys, green areas, and natural areas.

1.3 Importance of urban spaces

In a survey from CABE it was found that 85 % of the asked reported that quality of the public space and environment has a direct impact in their lives and how they feel(CABE, 2002).

Despite people being aware of the importance of urban spaces and public areas, it is a field that unfortunately has tended to be neglected and taken for granted. All too often, urban spaces are subject to bad design, lack of facilities and poorly maintenance. But what are the potential upsides of creating great outdoor urban spaces? Examples of the positive effects that great urban spaces could contribute to are mentioned below.

Economy

Great public environment in cities has a positive economic impact on several areas. In the Netherlands, it has been documented that houses with views of a park raised the price by 8 % (Luttik, 2000). Additionally, in Berlin it has been documented that proximity to playgrounds increases land values by 16 %(The trust for public land, 2001).

Health

In Britain, trends points towards that obesity will be a larger issue in the public health domain than smoking within 15 years(Pretty, 2003). The cause of obesity is usually pointing towards a sedentary lifestyle and less outdoor activity compared to previous generations. An increase in found stress- levels(Thompson, 2017), suggests that there also is reasons for concern about people's mental health. Great outdoor urban areas are one of the elements that could help in the process of improving peoples physical and psychological health (Wan, 2008), by encouraging people to walk, being active and enjoying the outdoors.

Crime reduction

Fear of crime can deter people from using public urban spaces. Children might not be allowed to play in the public spaces because of parents worrying, and there might also exist similar barriers for women. There are several measures that has a proven effect on reducing the fear of crime and actual crime. In Birmingham, a 70 % drop from pickpocketing was archived after an expansion of lights along the street markets and widening of the pedestrian footpath(Conolly. P, 2002). In Los Angeles, a study concluded that there were less crimes committed around clearly visible bus stops with shelters and with high traffic levels compared to areas with vacant buildings, parking lots and areas with graffiti/littering (Loukaitou-Sideris, 2001).

Great communities

Public urban spaces provide for a social arena open for everyone regardless of age, genders, ethnicity and religion. Made correctly, these spaces could act as a community bringing different people together and provide for a convivial place to linger and socialize (Baulkwill. A, 2002; Massey. H, 2002). Greatly designed urban spaces also creates opportunities for events, festivals and social meetings(Quayle, 1997).

Pedestrian oriented

One of the main functions of the streets and urban spaces is to facilitate for transport regardless of mode of transport. Another important aspect is to deal with conflicts between different transport modes and the prioritizing of these. Streets that facilitate for pedestrians and cyclists tends to get people more active, reduce emissions, increase safety and make the streets attractive to use(CABE, 2003; R. H. Ewing, Bartholomew, Burden, Cloyton, & Brown, 2013; John Lahart, 2013).

1.4 Purpose of article

The article gathers theory within urban design as well as qualities of play spaces. Literature and finds in fields regarding outdoor play areas has been included in the article because of the number of children which live in urban areas has risen noticeably. This suggests a greater attention towards developing urban spaces with emphasize on children's needs. The purpose of the article is to point out this importance, whilst also figuring out the similarities and differences between urban design qualities and play space qualities. Additionally, it seeks to figure out whether play space qualities could be implemented into urban design qualities. The finds of this article could serve as an overview over important aspects to consider when planning and designing for urban spaces, with an extra attention towards children's needs. This could be relevant for researchers, urban planners, architects, landscape architects, industrial designers and others working with planning or design of urban areas.

2. METHOD

The findings behind this article is based on a literature review. The method section will explain how the search was done. Urban design: The search for relevant literature started wide to get an overview over the field of urban design. Search terms that was used includes "public design", "urban spaces", "urban design", "urban design principles", "public outdoor design" and similar phrases. When an overview on the field was obtained, the searches were narrowed down to names of specific design qualities, important authors within the field and research as referenced by found literature in initial searches. The literature used originates from digital books of urban design theory, Design guides/manuals, journal articles and physical books from NTNU university library. The databases used in searches were: Oria, google scholar, Web of Science and Pro Quest. Some literature has been found using google and ResearchGate. Literature found in this field dates from 1960 until today. Play spaces: The search for play spaces started narrower due to information that was gathered from urban design. Initial search phrases included "urban play spaces", "outdoor spaces for play" and "urban design for kids". The search words were modified due to little relevance in results, and the following search words was used for nearly

all literature found: "playscape", "playground" and "public parks". The words were combined with "design guidelines", "design principles" and "qualities" when searching. Nearly all literature used are journal articles from journals including: "Health education research", Parks & recreation", "Landscape architecture", "Pediatrics" and "Health & place". The literature is from 1990 until today, with exception of one (Nicholson, S).

3. QUALITIES OF PLAY SPACES

This section will go through the different qualities of play spaces as identified from case studies, observations and journal articles within the field. Play spaces are not limited to one type of space, but includes findings from areas such as open spaces, traditional playgrounds, parks and playscapes.

Contact with nature
In studies from Norway and Pennsylvania it was found that natural play areas are more likely to be used by Children than traditional playgrounds because it is considered as more challenging(Fjortoft. I, 2001; Fjørtoft I, 2000; Lee SH, 1999). In Canada, schools that added greenery to the play areas reported that the areas appealed to a wider range of interests (90 %) and activities (85 %). In addition, vigorous activity increased by 50%, light activity increased by 70 % and 84 % reported about more exploration of nature(Dyment JE, 2008). An interesting found by Nordström, was that especially in northern countries, nature seems to give children a stronger sense of belonging to the place and that they develop a stronger concern for environmental topics.

Accessibility
Another important aspect of playgrounds is that they should be close to where children live. 400 meters has been argued for as an appropriate distance(Roemmich J, 2006). A study on park playgrounds in Denmark and in the US found that long distances is the superior argument for why parents would not be visiting a park frequently.

Finds indicate that adolescent girls are less likely to travel to parks close to highly trafficked roads, and which decreases their participation in physical activities(Norman GJ, 2006). While fencing of play areas are a prevention towards vandalism, it is also limiting children's accessibility to the place(Wood L, 2006).

Age and interest
Playgrounds and play areas should facilitate for all ages of children. When playgrounds are designed it is usually made for children within the year span of 2-12 years. This is often divided into sub-groups such as 2-5 years and 5-12 years. There are several reasons to why the age groups should be designed for as different segments like physical skills, social skills and interest. The youngest might play with manipulation of elements such as sand or playing ball games, the older one tends to play more organized(Christensen K, 2003). Even though one should consider the different age groups, one should be careful with segregating the actual playground into areas based on ability and age. The equipment on the playground should be laid out in a way that foster variety in use and by a wide group of different children(Aileen Shackell, 2008).

Risky play
For children to be allowed by parents to play in a playground there should be a certain degree of safety to the activates offered(Anne Dahl Refshaugea, 2012; Play England, 2009; Veitch J, 2006). On the other side, playgrounds should offer a certain level of risk to be challenging and exiting enough for children. In an article by Peter Gray it is argued for why risky play is so important for children, relating to emotional regulation and resilience(Gray, 2018). According to Ellen Sandseter there is six different types of risky play: Great heights, rapid speeds, dangerous tools, dangerous elements, rough and tumble and disappearing/getting lost.

Manipulation of elements

Emphasized in several studies is the importance of loose parts, material and naturally elements that are manipulatable(Moore, 1992; Mårtensson. F, 2004; Nicholson, 1971). The elements that could be used is grit, sand, water, wind and fire.

Imagination and creativity

Play features that could stimulate to creativity and imagination has been identified as a key component in effective playgrounds(Malone K, 2009). Sensory stimulation could be achieved by one or several of the five senses: Sight, hearing, taste, smell and touch. An example could be sound and music features, and smells by plants(Aileen Shackell, 2008).

Spaces for play

Play spaces that are successful should be designed accordingly to its environment. The quality of the space itself is important when designing spaces for play. The qualities could be aspects such as buildings, trees sculptures and more(Aileen Shackell, 2008). This suggests that when designing spaces for play in urban areas, urban design qualities are relevant and important in selecting an appropriate space, and especially towards the imaginability of a place. Another factor towards selecting space for play are related to the possibility to do physical activity, and where places with grass seems to be highly supportive towards such activities(Martin KE, 2010).

Inclusive

Great play spaces should not only accommodate non- disabled children. Rather , it should try to meet the needs of various types of disabilities and special needs, even though every element could not fit all(Aileen Shackell, 2008). This emphasizes the importance of a wide range of possible activities.

Requirements of society

Play spaces should meet the needs of children living in the area(Aileen Shackell, 2008), which suggests that one should investigate and ideally include the community when designing play spaces. Requirements that are important to consider are safety standards and regulations such as absorbing ground surfaces, dangerous edges and pinch points(Henriksson, 2001).

Good quality and maintenance

Quality of play spaces and its facilities depends indeed of the level of maintenance, and the maintenance is vital in the long-term, financially, but also for children wanting to visit the place. When it comes to adults motivation for bringing their kids to parks, a lack of maintenance detracts from their appreciation of the area and use of the park(Anne Dahl Refshaugea, 2012).

4. URBAN DESIGN QUALITIES

Considering the vast and continuous development we see today, both in technology and the way we live, the urban landscape will get more complicated(Wan, 2008). Therefore, the urban landscape must consist of several perspectives and theories to cope with the diversity and complexity of today's world. Collected below are summaries of the most documented qualities and principles of urban design.

Imaginability

Kevin Lynch defines imaginability is the quality of a physical environment which evokes a strong image by the observer: "It is that shape, color, or arrangement which facilitates the making of vividly identified, powerfully structured, highly useful mental images of the environment"(Lynch, 1960). Several features has been found significant to imaginability: Number of people, historic buildings, courtyards, parks, plazas, outdoor dining, buildings with non-rectangular silhouettes, noise level, major landscape features and number of buildings with identifiers(R. Ewing, Clemente, O., Handy, S., Brownson, R. & Winston, E., 2005). Imaginability contribute to peoples physical and psychological well-being, the feeling of a pleasant place to be in(Gehl, 1987), and is in a way the net effect of the design qualities following below:

Enclosure

Enclosure refers to the degree of which public spaces are defined visually by buildings, walls, and other vertical elements, which creates a room- like quality of the space(R. H. Ewing et al., 2013). Enclosure embodies the idea of hereness(Cullen, 1961), and people react favorable to fixed boundaries as something safe, defined and memorable(A. Jacobs, 1993). The perceptions of enclosure are found to be based on the proportion of street wall, sky and long sight lines.

Human scale

Human scale has previously been defined differently by several urban designers, but in a study by Ewing. R, a consensus qualitative definition was identified by a team of urban design experts: "Human scale refers to a size, texture, and articulation of physical elements that match the size and proportions of humans and, equally important, correspond to the speed at which humans walk. Building details, pavement texture, street trees, and street furniture are all physical elements contributing to human scale»(R. Ewing & Handy, 2009). When designing for the human scale, personal interaction distances is important. Gehl divided these into four categories: intimate distances, personal distances, social distances and public distances (Gehl, 1987). The factors contributing to human scale are number of long sight lines, number of street furniture (and misc. items), proportion of first floor with windows, building height and number of small planters(R. Ewing & Handy, 2009).

Transparency

Transparency in relation to urban design does not necessarily refer to something people can see, but rather what people could perceive of what lies beyond the edge of a street. One example of this is a shopping street with windows which allows those passing by to look in. According to Allan Jacobs, a street with several entryways could amplify the perception of human activity beyond the street, and where walls and garages suggests the opposite(A.

Jacobs, 1993). Trees with high canopies has been identified as "partially transparent tents" contributing to both transparency and enclosure, whereas trees with low canopies tends to have a negative effect for transparency(Arnold, 1993). Elements which has an influence of transparency is walls, doors, windows, landscaping, fences and openings to mid-block spaces. In an attempt to operationalize transparency, an expert team of urban designers and planners revealed that there were three very important variables to the perception of transparency: Proportion of first floor windows, proportion of active users, and proportion of street walls(R. Ewing, Clemente, O., Handy, S., Brownson, R. & Winston, E., 2005).

Complexity

Complexity relates to the number of differences to which a viewer is exposed for a certain amount of time. It is claimed that people are most comfortable with receiving certain amount of information at the same time. Therefore, too little information gives little stimuli to our senses, while too much could cause exhaustion for our minds(Rapoport, 1990). Several different elements can contribute to perceived complexity, such as details on buildings shape, materials, colors and ornamentation, but also light and shadows and the movement of them is said to be adding complexity(Arnold, 1993; A. Jacobs, 1993). Diversity is closely related to the term "mixed use" which Jane Jacobs describes as a mix of commercial, residential and civil use in relation to another, creating human traffic around the clock, resulting in increased safety, economic function and the appeal of the place(J. Jacobs, 1961).

A newer attempt to define complexity is that it is depending on the variety of the physical environment and are especially related to the types and count of buildings, architectural diversity, landscape elements, street furniture and human activity. The most substantial elements contributing to the dimension of complexity are the found to be the number of people, number of dominant building colors, number of buildings, number of accent colors,

number of pieces of art and the presence of outdoor dining(R. Ewing & Handy, 2009). Also found in this study, was that variables such as street lights, street furniture and textured sidewalk structures had little measured significance for the perception of complexity.

Coherence

Coherence refers to a sense of visual order and is determined by consistence and how a physical element complement another based on arrangement, character and scale. This applies to amongst other: buildings, street furniture, landscaping, pavement and materials. In order to create visual unity it is necessary to accomplish a balance between uniformity and distinctiveness(Hedman, 1984). Unity could for example be made by ensuring correct proportions of windows and doorways, surface material on walls, and similar building silhouettes. Survey shows that people tend to like complexity, but not of the unstructured kind. Kaplan and Kaplan found based on many surveys that scenes with low complexity and high coherence was boring. Further, high complexity and low coherence were identified as cluttered, while high complexity and high coherence were described as rich and organized(Herzog, 1982). Worth mentioning is that coherent design alone could become monotonous without the dimension of diversity.

Legibility

Legibility refers to the extent of which streets make it easy for people to understand where they are and where they are going. Streets that are legible consists of understandable networks of routes and junctions, providing a sense of orientation and location. In addition, those streets also have signs and physical elements that work as reference points(Burton & Mitchell, 2006; R. Ewing & Handy, 2009; R. H. Ewing et al., 2013). Especially signage and landmarks seem to be helpful for people when distinguishing one place from another. There are several opinions about the definition of legibility, and some experts points to the context of the street, while others mean that has to do with the design of the street itself(R. H. Ewing et al., 2013).

Linkage

Linkage could be described as physical and visual connections between several places, buildings or spaces, or in other words something that contribute to unify separate elements. In urban design theory this often relates to the length of streets, intersections between them and grid network of streets. Several recommendations have been presented regarding length of streets, from 300ft (A. Jacobs, 1993), 200-300ft (Alexander. C., 1977) and 230-600 ft (Duany, 1992). (Arnold, 1993) argued for the connection between the street and the buildings with the use of continues rows of trees. As an attempt to define linkage, a group of experts agreed to that it is mostly defined by the connectiveness of things(R. Ewing, Clemente, O., Handy, S., Brownson, R. & Winston, E., 2005), but the definition is neither very specific or absolute.

5. DISCUSSION

The findings in this article shows that there are many correlations between the qualities between play spaces and qualities of urban spaces. The focus in question is still somewhat different, as urban design qualities tend to apply to the masses of people, whereas the qualities for play spaces are more specific to the users involved, mainly focusing towards children and their parents. The findings of this article are relevant and important because the urban population in the world are changing, and where it has been estimated that in 2025, 60 % of urban citizens will compose of children. Based on the information gathered in the review on urban design theory, it was also noticed that limited focus was specifically addressing children and how they perceive the urban spaces. Those were the main motivating factors towards reviewing this subject. Play spaces are spaces that provide children with a place and facilities for them to socialize, play and do physical activities

(Wood L. and Martin, 2010). Similarly, urban spaces could be described as an arena for interaction, conversation, entertainment and recreation(Gutman, 1978). Qualities from both fields have in common that place and facilities should be accessible in terms of physical distances to where people live, stay, and where they travel. Additionally, inclusiveness and the fostering of variety of use is emphasized clearly in the qualities of play spaces and qualities of urban spaces(Aileen Shackell, 2008; Burton & Mitchell, 2006). A noticed difference is that qualities of play spaces aims towards age, physical skills, social skills and interest, whereas urban design theory specifies this with regard of age, gender, ethnicity and religion. Other common attributes of urban spaces and play spaces, are the potential of contributing to health benefits, where one in urban design are for instance talking about encouraging people to being active, as opposed to a sedentary life style, while as play spaces are supposed to serve as a place for children to develop their physical abilities.

There seems to be few contradictory factors regarding urban spaces and play spaces, even though they have different focuses, and that both fields include elements not mentioned by the other. However, urban spaces as an artificial part of the urban landscape often lacks what seems to be some of the greatest attributes of successful play spaces: The closeness to nature, challenging and exiting ways to play, and with a certain level of risk involved. Also, the possibility of manipulating and playing in various ways with earth elements such as water, sand and soil is often limited in the urban spaces. An interesting find was that traditional playgrounds tends to be less used than natural areas because they are perceived as less challenging(Fjørtoft I, 2001), which also might be the case for urban spaces, where such standard playground equipment is installed. The public playgrounds have been criticized by several, as being poorly visited, predictable and boring. In addition, Wardle (1990) argued for that adults increasing concerns for their children are destroying children's outdoor play(Jansson, 2010).

6. CONCLUSION

This article aimed to figure out whether play space qualities could be incorporated to urban design in the attempt to improve how we construct urban spaces for children. The greatest barrier does not seem to be related to the implementation of play space qualities to urban design, but rather that we tend to design for children and not with children. Further on, standardization and traditional thoughts about what playground equipment in the city could be, besides a lack of natural features in the urban environment appear to be some of the major reasons towards to why urban play spaces fail. Aspects that could be further researched are involvement by children when designing play spaces/urban spaces and how to enable for play by utilizing natural features in urban space. Through reviews of urban design and play spaces and a comparison of the two fields, it has come clear that it seems reasonable to apply play space qualities when designing urban spaces for children, but further work will need to be done to get operational findings into a framework that could be used for the purpose of planning and designing for urban spaces for children. This work will continue in a project following by this article.

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