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Designing for the next generation. Children urban design as a strategic method to improve the future in the cities.

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Abstract: Nowadays, society recognizes the childhood as an important step able to generate a social value: children are the main actors of the future but it is necessary to consider the children as children and not as the next adult.

Traditionally, the design for kids consider them little adults in a transition phase. The research intention is to spread a new design culture conceived expressly for children, which shall be able to communicate to them using their languages. The project is dedicated to the children - the next generation - from 3 to 11 years old. The aim of this research is to propose a methodological system to design public spaces in the cities able to orient, inform, communicate, entertain, interact, educate, and integrate all kind of children (and their parents) belonging to different cultures with one universal language.

Keywords: Kids Design, Communication Design, Urban Design, Children, Social relationship

1. Introduction

1.1 Context of reference. Children rights.

Designing products for kids is a big challenge for designers not only because it suggests an ability to involve such "little users", but also because it necessarily implies some rules on education,

development, and safety for children. Generally, the planning approach to these products represents an extremely captivating and hard issue for designers. Indeed, a child is a complex user, despite his/her simple needs. The daily life of a child, as it happens to adults, is usually marked by repetitive actions called “routine”. Perceptive stimulation can’t be selective, it must be a constant presence in any moment of kids’ day and activity

The premise starting point is the child’s need to receive information and being stimulated in any moment. Such processes have to take place inside the family house as well as during outdoor activities, e. g. while strolling to the city park.

Nowadays, we’re witnessing a continuous and variegated evolution of cities, whose main aim is to fulfill adults’ frantic needs. Such trend takes place paying lower attention to the children’s needs. In Italy and elsewhere, a rapid industrialization and urbanization during the 1950s and the 1960s had major repercussions on children, in particular on their safe mobility, autonomy and their capacity to explore surroundings and participate actively in daily life.

If we take a look at urban environments – both in big cities and small local areas – we may notice that spaces for children are mostly conceived as “merry islands”, limited areas with no connection to the urban environment they are in. Such planning choices are aimed at creating safe areas for kids, where it is easy to overlook their activities. Nevertheless, the children-centered design in the urban context is becoming more and more important as the impact it may have on personal and social evolution is overtly recognized. The sensitization on this matter is carried out primarily by the increasing awareness on the impact of growing traffic, noise, pollution, as well as neighbourhoods devoid of urban design focused on children’s safety hinder the kids’ ability to interact with the outdoor environment.

A key convention supplying references and guidelines for developing “child-friendly cities” was the Convention on the Rights of the Child adopted unanimously by the UN General Assembly on November 20, 1989 and in force on September 2, 1990, after being ratified by 20 countries. Its 54 articles describe the economic, social and cultural rights of the children. The Convention changed the way children are viewed and treated; such convention is one of a kind in a treaty on human rights which introduces the idea of children “participation”, regarding them as real individuals. Currently, 196 countries have ratified the Convention, no other international treaty on human rights has provoked such a consensus by governments. Besides, more initiatives as The Earth Summit in Rio de Janeiro 1992 and the Habitat 2 conference in Istanbul have encouraged a more sustainable urban development with more attention for children’s needs. Indeed, a lot of local administrations have been responding to such promptings since 1992, launching programmes and projects aimed at improving the quality of urban life. For instance, Italian government issued a law in support of such actions. That law required the presence of National resources to fund local projects, promote inter-ministerial projects, and update relevant laws. The plan includes two main actions focused on the city for kids, namely, new policies for infancy and new policies for cities. In 2002, the UN Special Session on Children stated the role that mayors and local administrations and authorities can play in order to promote the rights of children and purposes at the local level. During the latest years, actions have been carried out and articles have been written in order to supply financial and legal aid to cities joining the “Città sostenibili per Bambine e Bambini”, a project launched by the Ministry for the Environment at the 1996 Istanbul “City Summit”. This project has the specific purpose to promote new initiatives, opportunities, and structures for children.

Even if an increasing amount of issues are brought out, and they are more and more complex, all such initiatives are signs of a new and strong will to make cities more livable and comfortable for everyone.

Despite the growing and strong interest for such an issue, which encompasses different fields and disciplines (e. g., design, sociology, pedagogy, psychology, etc.), despite the several State financial facilitations for developing good practices, at the moment we can find no realization of such projects, and cities are not at “child’s size”.

1.2 Urban places for children

Generally, the peculiarity of an urban texture is due to the urban planning that rules public and private civil works. Regarding public urban spaces in the cities, in general we refer to streets, path walks, squares, parks, gardens and playgrounds. Street and sidewalks represent the connection areas that people use to go from one place to another, while the other urban spaces are used for socialization and free time. The urban quality is also characterized by different kind of urban elements that live together often without rules, such as: curbs, sidewalks, storm drains, bins, road signs, shop windows, architectural barriers, billboards, lampposts, mail boxes, bus shelters and so on. Usually, people walking in a urban environment are oriented by these elements that realize spontaneous wayfinding systems because, sidewalks, pedestrian crossing, traffic lights, bland signage for pedestrians are not always sufficient for navigation.

However, as said before, urban areas never consider the audience of children as pedestrian users neither their specific needs and, in the cities, we can say that the only actual public places specifically designed for children are the playgrounds.

Starting from the consideration that children interact naturally with their environment, this research means to detect those elements in urban scenarios and playgrounds that are able to interact with them and understand why, in order to improve these elements according to the real needs of children.

The playground is a restricted area, an enclosed security space equipped with different kind of equipment designed for children. The different equipment depend on the geographic and cultural contest and moreover from the historical period.

In general, it is possible to find equipment, with restricted rules, dedicated to specific functions as swings, slides, rides, or equipment, and with open rules, that leave children free to use it in different way as, castles for adventure or sand tanks. Inside a playground it is possible to find areas reserved for different ages: a restricted area for babies, a football field, a skating ring, a basketball court, a bicycle path etc. Furthermore, in a playground there are elements that compose these spaces, as paths, flower beds, anti-fall pavements, lawns, meadows, trees, signage, fountains, curbs, benches, litter bins, lighting, tables for picnics etc. All of these elements manage to define the “natural” wayfinding system of orientation and communication.

Inside these areas, children with different ages test their skills and competences by learning about their ability and limits. These daily practices give them the opportunity to meet and socialize with other children, helping social inclusion. To sum up, the daily experience is able to influence the psychological and physical growing of children, training them to sharing and towards multicultural integration. Even if in the playgrounds there are many different sub-area with restricted rules and ways of playing, they represent the outdoor place where children experiment and learn about life and where they can play and live pleasant and educative experience with all kind of children avoiding social hierarchies.

Recently, a significant number of innovative projects dedicated to playgrounds are demonstrating that there is a growing interest on this theme.

However, this research underlines that, aside from the playgrounds, in the cities, there are no public spaces designed for children with children able to orientate and to communicate to them.

An adult changes his habits when becomes parent when there is a change in terms of needs and relationship with the territory. For example, parents bring children to playgrounds by walking through preferred routes far from traffic and pollution.

When children start to walk, parents prefer to choose security paths with wayfinding systems (e.g. elements and signage that are able to guide and stimulate children to walk). When children become more autonomous, the adults prefer routes sidewalk, nodes, and signs able to orient and inform children, in security. They could also prefer that children enjoy themselves and at least learning something useful for their growth.

So, in order to design a stimulating secure and pleasant urban environment, connected with wayfinding systems, it is necessary to conceive not only playgrounds but also all the other urban spaces and elements - streets, squares, path, sidewalk, signage, pavement, etc – that children see and find outdoor.

2. The aim of the research

The aim of this research is to propose a methodological system to design public spaces in the cities able to orient, inform, communicate, entertain, interact, educate, and integrate all kind of children (and their parents) belonging to different cultures with one universal language.

In order to spread a new culture in designing citywide spaces for children, the aim of the research is to propose a concrete methodology to be easy applied in different urban scenarios. The proposed methodological instrument is designed taking into account a multi-cultural language. Practically, the purpose of this work is to propose a referring methodological system to design citywide public spaces and wayfinding systems able to interact at the same time with children and their parents. These new solutions allow to communicate according to two different level of interaction. The first level intends to orientate and inform about surrounding services while the second one permits to explore, entertain, educate, and integrate children (and their parents) with different cultures and nationalities by using a unique universal language of signs.

- The first level of communication is founded on basic orientation and security information. Generally, these systems are based on human behaviour and people use their knowledge and earlier experiences to find their way in the urban environment. Wayfinding systems have the function to inform people about the surroundings, and it is important to show this kind of information at strategic points to guide people into the right directions. Wayfinding is also described as the ability to learn and remember a route in a environment. But children have a different kind of orientation difficulties so it is necessary to know their skills and behaviors, different from the adults, to specifically design wayfinding for them.
- The second level of communication regards the emotional sphere and allows children to live a pleasant experience while walking, permitting to explore, entertain, educate, and integrate children (and their parents) in a multicultural context.

In short, the final research goal is to find open rules to be applied in order to obtain this kind of interaction among a large number of children.

3. Methods of research

3.1 Multidisciplinary approach: children needs and skills.

The research has involved many different actors and has seen the role of the designer as a sort of director (Maldonado, 1976) of the different interdisciplinary contributions. As the program is relevant to the personal experience in cities of children aged from three to eleven, in order to maximize the understanding of the proposed urban system by the primary users, (the children), and to analyse the issues from different points of view, it was necessary to interact with a lot of different actors such as educators, psychologists, pedagogists, designers, urbanists, ergonomists, parents and children themselves. The referring educational theories (Montessori, 1949) divide children according to their abilities and skills into different ages groups. By following this approach we have divided children in two groups: three-six and seven-eleven years old.

- In the group three-six years old, children are not autonomous, they do not keep the focus, they tend to get distracted, forget objectives and often do not understand risks and hazards.
- In the group seven-eleven, children are more autonomous, they manage to keep the focus, if they want, are curious to experiment consciously and interested to learn and improve their autonomy and skills.

Irrespective of the ages, all the children have in common the “playing” attitude. Piaget (1967) underlines the importance of playing. Indeed, through the observation of children playing it is possible to understand both the basics of forms of learning and the level of children growth. When children play they emphasize their needs to communicate and socialize and, at the same time, show their inner emotional world.

3.2 Child friendly cities

By referring to urban settings, it is possible to find a large number of elements that characterize them. Urban scenarios and kinds of path vary in different contexts and the Lynch studies (1960) have shown that there are fundamental perceptual elements that can be recognized by everyone.

These elements are five:

1. Paths
2. Nodes
3. Landmarks
4. Edges
5. Districts

He demonstrated that these elements identify urban scenarios; they are responsible to represent the shared and collective image of urban settings. This is confirmed by the fact that people recognize urban surroundings through familiar elements that confirm the perception to be in a known environment.

To improve urban wayfinding systems all these elements have to be connected one to each other in order to let them interact and communicate different levels of messages and information. When we consider children it is important to use languages that children are able to recognize, referring to their collective imaginary, capturing their interest and stimulating their abilities.

One of the primary objectives of this research is to consider the environment where children live their experiences by studying their behaviour both in small towns and big cities, if they generally go to school by walking along paths or along sidewalks in street with a lot of traffic, etc.

3.3 Applied method

The research investigated the aspects related to the characteristics of different urban scenarios as follows:

1. Study of the literature of all the involved disciplines: urban perception of spaces, children skills and behaviour, pedagogy, urban design, wayfinding systems, children design, communication design;
2. Direct observation of children in public urban spaces (see Use Case below);
3. Interviews to parents about their experience of pedestrian spaces and collective areas when they are with or without their children;
4. Collection and comparison of results.

The practical experimentation starts from the theory of Lynch (1960) on how to design the image of the cities to please inhabitants. The aim of this step is to know how children evaluate the urban environment and the image of the cities, moreover to individuate recognizable urban elements. The results allow to define a method to design a wayfinding system able to orientate and inform on the right direction and also able to interact, entertain and educate in a pleasant way while walking and living experiences in the urban environment.

At the same time, the method underlines the elements that are critical for security, for orientation and do not allowed children to live a pleasant experience.

3.4 The Use Case

The experiment was set in Pistoia, a small town near Florence, elected Italian Capital of the Culture for 2017. It consists in two activities: direct observation and interviews. These activities allow to understand children behaviors and needs.

FIRST ACTIVITY/DIRECT OBSERVATION:

It started considering the usual routes that generally children and their parents walk every day: from home to school and back, from school to playground, from home to playground and back, from home to historical center and back

The experiment involved two groups of children and their parents, one from three to six years old and the other from seven to eleven years old. Young and adult people living in Pistoia, were of different nationality. The observation shows how children move along the public urban scenario choosing different routes according to various criteria, the most used is due to the facility to move freely and in security.

The method's application underlines for the most the difficulties of all the children to be oriented. While children use to play with the elements in the surroundings even if the elements are not design for playing. The results identify in different routes the strengths: physical elements as point of reference, orientation points, information points, landmark and ludic elements, and the weaknesses as dangerous elements. Children from three to six years old are not autonomous yet and are used to walk along usual routes together with parents; they need that adults take decisions and often and are not able to recognize the potential dangers. On the contrary, children from seven to

eleven are used to walk along routes and have already acquired more autonomy. They know how to orient themselves and are able to recognize potential dangers.

The observation will aim therefore to highlight what are the behaviour influencing urban elements and to drive the autonomous choices and why.

The resulting elements that guide children and encourage them to walk and to interact are:

- Paths: flooring with tiles (especially irregular with different shapes) because leaks induce children to jump and walk. Curbs and steps to walk over.
- Nodes: elements interesting for children to sign a path in the points of intersection as pedestrian crossing, trees, streetlight, shop-sign, advertising, colours, graffiti, signage, semaphores.
- Landmarks: vertical elements as point of orientation as shop sign, advertising, colours, graffiti, signage, mail boxes, bus shelters. coloured garbage bins.

SECOND ACTIVITY/ INTERVIEWS:

The interviews have been carried out with parents of children from three to eleven years old on the usual routes that their children walk every day (the same routes of the experimentation in the above first activity). The questions were asked to evaluate:

- The threats, the weakness and critical elements for security of children
- The strengths, the opportunity and the potentiality of the routes

Moreover the interviews asked parents to specify the areas and the elements they preferred to walk with children and why according to the physical features they considered for the evaluations.

Finally the research has compared the actions that children generally practiced at school and at home to find habits and behaviours in common. The results achieved are important in order to reproduce in the urban areas some elements recognizable by children able to educate them suggesting good practices as, for instance, the habit to operate the separate collection of waste.

The research has taken into account that urban quality is also influenced by people. The image of a city changes according to different kind of people, their culture, their habits and their behaviours. For all of these reasons the results underline the necessity to define a new system of communication in urban scenarios dedicated to children and their parents able to suggesting to the citizens and young citizens good behaviours and practices.

Comparing all the results of the above steps, the research identify those elements that are really important to design urban spaces for children.

4 Results of the research

4.1 Open rules

The research has highlighted that urban spaces and routes have to be characterized by design elements to be able to facilitate movement and relations, to stimulate imagination and encourage the socialization of children.

We have identified the following good practices, which are easily applicable to different urban scenarios and can be described through the following steps:

1. To identify in the urban environment:
 - Spaces (e.g. areas, roads, squares, paths) where to locate “wayfinding routes” that can be opened or closed.
 - Any existing elements, in selected areas, which is necessary to re-design taking into account project’s results.
2. To define the new elements to be added to improve the children’s perception of the urban environment.
3. To decide the strategic functions and the communicative purpose of the elements, choosing among:
 - Basic functions to inform, to orientate, to reassure, realized by visual communication.
 - Experiencing function: to excite (engage the sense), to explore, to entertain, to educate (about behaviours, culture, history) realized through “playing”.

The first ones are dedicated to children from three to eleven years old, while the second ones are specifically addressed to children up to six years old, according to their abilities and skills.

All the elements should own the following features:

- LUDIC: child relationship mode to communicate values and to educate through the dynamics of the game
- POLI-USE: flexible solutions that can be used to stimulate creativity in differently aged children
- SENSORIALLY INTERACTIVE: stimulate positive emotions and provoke the desire of repetition

The method’s application underlines clearly the difficulties of the children to be oriented in the standard urban scenario, however the research results yielded that children use to play with the elements in the surroundings even if these elements are not designed for playing.

The research highlighted also that children usually recognize routes on recalling landmarks (Cohen and Schuepfer, 1980). This information suggests that landmarks are conclusive for children’s route learning and that the only direction is not sufficient especially until the age of ten. So the use of characterized landmarks to underline the “natural” environmental landmarks could be a important strategy to act.

Moreover, children never stop noticing what is going around them. When they are outside they are stimulated by all the elements they see in the environment. Children are very curious and nosy also understanding the rules and the habits of the adult world. So the exploration is an interesting kind of experience for children, able to represent a way to know and understand something new while walking and playing.

Underlining appropriate landmarks in real urban scenarios might be particularly important because the real environment can include many potential landmarks.

Scenarios, routes, objects and elements are able to communicate different kind of information and the messages they send could be denotative (basic) and connotative (depending from the receiver) (Eco, 1975).

To satisfy the basic communication the urban environment has to orientate and reassure. Consequently paths have to be marked in a comprehensible way, separated from traffic, able to guide

and orientate with protecting elements (security cameras, bollards, fences, signage) and to inform about services around (e.g. signage, apps).

To realize connotative communication about immaterial values and education, the communication system has to involve children in ludic experiences. The elements are material like clues and traces to discover or sign to decode and, if possible, immaterial like virtual application for smartphones also using augmented reality to educate while playing. This method is well-known as edutainment. The edutainment recognizes as "a cleverly designed game could produce meaningful experiences, able to raise awareness and persuade the players to reconsider of their positions and behaviours" (Bertolo, Mariani, 2015). In this sense, the research introduces the act of "playing" as a useful learning activity both for children and adults, capable of transmitting messages recognizable by both generations of children and their parents. The experience of games is a training for children to combine autonomy of decision, obstacles to overcome and continuous feedback.

5. Conclusions and future work

In this paper we have identified a set of design principles and good practices to define public spaces in urban environments through wayfinding systems design according to children and parents needs with the final objective to improve children skills and social inclusion.

The result of the research underlines that a typical urban environment has to be characterized by design elements to invite, facilitate movement and relations, stimulate imagination and encourage children socialization. The research points out that play, nature and training, have a decisive influence on the well-being and growth of children. Children need safe paths, streets, squares and a natural environment to live experiences in security and in freedom.

For the future, as a further step of this research, it is desirable to make the results open to a wide community in order to develop the project's good practices by integrating the results of other experimentations performed in other contexts worldwide.

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