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The Planning and Development of Green Public Places in Urban South Africa: A Child-Friendly Approach

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***Abstract*—**The impact that urban green spaces have on sustainability and quality of life is phenomenal. This is also true for the local South African environment. However, in reality green spaces in urban environments are decreasing due to growing populations, increasing urbanization and development pressure. This further impacts on the provision of child-friendly spaces, a concept that is already limited in local context. Child-friendly spaces are described as environments in which people (children) feel intimately connected to, influencing the physical, social, emotional, and ecological health of individuals and communities. The benefits of providing such spaces for the youth are well documented in literature. This research therefore aimed to investigate the concept of child-friendly spaces and its applicability to the South African planning context, in order to guide the planning of such spaces for future communities and use. Child-friendly spaces in the urban environment of the city of Durban, was used as local case study, along with two international case studies namely Mullerpier public playground in Rotterdam, the Netherlands, and Kadidjiny Park in Melville, Australia. The aim was to determine how these spaces were planned and developed and to identify tools that were used to accomplish the goal of providing successful child-friendly green spaces within urban areas. The need and significance of planning for such spaces was portrayed within the international case studies. It is confirmed that minimal provision is made for green space planning within the South African context, when there is reflected on the international examples. As a result international examples and disciples of providing child-friendly green spaces should direct planning guidelines within local context. The research concluded that child-friendly green spaces have a positive impact on the urban environment and assist in a child's development and interaction with the natural environment. Regrettably, the planning of these child-friendly spaces is not given priority within current spatial plans, despite the proven benefits of such.

***Keywords*—**Built environment, child-friendly spaces, green spaces. public places, urban area.

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I. Introduction

INTERNATIONALLY, the planning for child-friendly green spaces has become a necessity, where the focus is placed on the needs of the public. Within local context, the planning of child-friendly green spaces is however limited. The positive impacts of child-friendly green spaces within the urban environment goes far beyond the obvious as these spaces cater for children's needs and assist in their development and interaction with the natural environment [21], while impacting on sustainability. Ultimately, the spaces that do exist or are created should form part of a place, in order to integrate cities to ultimately become sustainable and simultaneously provide for the needs of the public [28].

Child-friendly spaces in the context of this research imply public spaces that are planned and developed specifically for children in consort with their needs. The necessity for these urban green spaces, with the focus of planning for children, within South Africa are regrettably not recognised due to the extensive growth in population, urbanisation, adding to exponential housing demands within town and cities.

II. Understanding the Dimensions of Space and Place

Referred to as an interval between point and objects [17], spaces, as well as the people within an urban fabric are two related concepts, unable to be separated from one another. It is a mutual process where people create space while space simultaneously affects them [26], [28].

Various urban spaces, for example parks, are implemented or exist within the urban fabric in order to contribute to the sustainability of neighborhoods and enhance the beauty of the environment. When these spaces (parks) remain unmaintained, it could however be categorized as unused spaces leading to numerous concerns about the present and future use of these spaces [31]. Urban unused spaces do however contribute to the environment, but serve no purpose to the local residents [26] and therefore can actually create *barriers* between people and places [28]. Unused spaces could furthermore be defined as the leftover unstructured landscape at the base of high-rise towers or the unused plazas situated away from the pedestrian flow from within the city [34]. Open space on the other hand can be defined as an undeveloped open piece of land [9], land set aside or to be set aside for the use by a community as a recreational area, irrespective of the ownership of such land [27]. These open spaces exist mainly as a result of frail urban

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layout development [27], [35] or decentralization and suburbanization [3], [4].

Where space is seen as an open area within the urban fabric, place on the other hand is occupied by an object or person that gives meaning, adds value and forms a part of the space [29]. When referring to place, it can be accepted that a place is developed and designed within the urban fabric, in order to be utilized by the people (public) [8], [26].

As a result, place stands in contrast to space, as no relation can be identified within space, allowing movement to occur, while place provides a pause [17]. The description of a place is thus made in terms of its performance and not its form [8], having meaning as well as purpose.

III. Child-Friendly Spaces

Within the build environment, child-friendly spaces are defined as public spaces, which are specifically designed in an urban area for children in order to enjoy the natural environment, and simultaneously have a positive impact on their skill development [15], [20], [37]. Such spaces are designed for a purpose and should have a direct positive impact on the development stages of children, their wants and needs [6].

The concept of child-friendly environments has been inspired by the concept of child-friendly cities [24]. The concept refers to developing improved and healthier conditions for children within urban areas by focusing on child-friendly green spaces within the built environment.

According to [19] a child's living environment has a tremendous influence on almost all aspects of their lives. As a result, children need open space, in order to connect and interact with their natural environment and consequently develop their skills and natural abilities to their full potential. The focus of urban planning should thus be to provide, among others, for green spaces and places designed particularly for children's needs [6].

IV. Transforming Existing Spaces into Places: Child-Friendly Approach

Space existing within the urban fabric could consequently be transformed into a place through the process of place-making [27]. Place-making consists of the implementation of elements, where the fiscal environment is made meaningful.

Fig. 1 illustrates six basic concepts that need to be achieved in order to provide a successful place for people, in this case children, and to ensure a connection between the children and the places created within existing spaces of urban areas.

Fig. 1 illustrates the basic concepts to be achieved through the process of transforming spaces to ultimately become places, in this regard child-friendly spaces. The child-friendly spaces provided, should firstly be sustainable, integrated as well as liveable. These three concepts has a direct correlation to the build environment in which these spaces are provided, as it effect the integration and sustainability of the urban area and simultaneously influences the liveability of the towns and cities. When succeeding in the first three concepts of the place provided, elements such as safety, how inviting the space is and the sense of place could evidently be achieved.

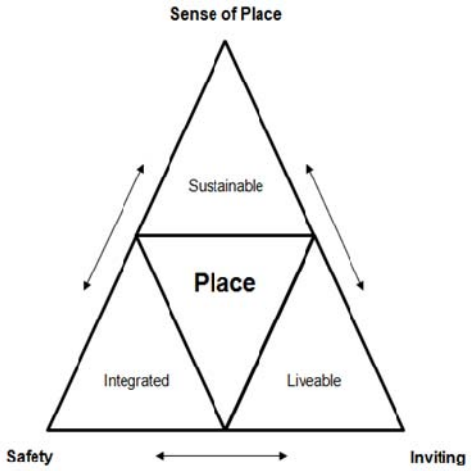


Fig. 1 Six basic concept of creating place

V. Public Places

Public places are identified as environments in which people have invested meaning over time and are defined by the way it is used and the people who use it [26], [28], [29]. The key aspect of creating public places is however to provide an area where people feel intimate, safe and have a sense of belonging, while the public place simultaneously influences the urban fabric of the city by contributing to urban sustainability [27]. These public places, designed and developed according to the needs of the residents and the specifications of the area, could in addition contribute to a city's environmental integrity, its sense of community as well as creating a sense of attractiveness within the urban environment [10].

The key motive for the creation of public places within South African towns and cities is mainly due to the fact that a great deal of our economy is driven by public enjoyment of public places [26], [27]. These public places should therefore be multifunctional, sustainable, supporting bleuity and integration as well as improving accessibility and quality simultaneously [10], [12], [14], [18], [31].

VI. Urban Green Spaces as a Form of Public Places

The key challenge in today's cities is to provide quality green spaces for the public, where spaces have meaning and development has taken place in order to provide outdoor environments for the inhabitants of cities. But too often these green spaces exist in new developments and cities where ill-planning were the cause and according to [34] it becomes "after-the-fact cosmetic treatment".

Urban green spaces are defined as areas having continuous vegetated localities, public or private space, directly or indirectly available for the use by residents [2]; [16], [32]. When nature is shaped within the built environment, artificially created city parks, botanical gardens, street trees

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that are isolated and even private gardens [16], [36], can all be defined as green spaces existing within the urban fabric.

At present, urban green spaces are considered as an important constituent of sustainable development of cities [16], [27], [36]. The incorporation of green spaces within the urban fabric can play an essential role in social, economic, cultural and environmental aspects of sustainable development, holding great benefits as well as challenges for the urban environment [2].

VII. The Importance of Green Space Planning on Sustainable Development within the Built Environment

Within South Africa, reality reveals that more people are relocating from rural areas to urban areas resulting in an increase in urbanization. Rapid urbanization, which refers to the growing number of people within the urban area [25] can place major pressure on the built environment, posing challenges for government service provision, creates greater risks for environmental and health problems and fuels crime [23]. The obvious problem is that there are more people and less space. As a result of rapid urbanization, the land set aside for the use of public green spaces are rather being used to build and provide houses (residential development) for the growing population [5] resulting in the quality of life within the urban area not being taken into consideration.

Within urban areas green spaces play an important role towards improving sustainability and integration, which ultimately results in an improvement of the quality of life for the residents [2], [27] by impacting their health as well as their mental well-being.

The benefits that green spaces show go far beyond the obvious [2], as illustrated in Table I.

TABLE I
Benefits and Impacts of Green Spaces within Urban Areas

ɔact	Benefits	Description
vironmental	Ecological Benefits	Supply of ecosystem services. Mitigate the situation of heat island effect.
	Pollution Control	Air and noise pollution is in general a problem in urban areas. According to [2] 85% of air pollution can be filtered in a park and noise levels can be reduces by green spaces (parks).
	Biodiversity and Nature Conservation	Serve as protection for reproduction of different species and plants. Green spaces serve as a link between urban areas and nature, contributing to sustainability and maintenance of ecological aspects.
Economic and Aesthetic	Energy Saving	Increasing green spaces regulates the temperature in urban areas.
	Property Value	Increases property value by making areas more attractive for the residents.
	Aesthetic Value	Green spaces offer the value of substituting gray infrastructure in the urban areas. People can enjoy nature.
Social and Psychological	Recreation and wellbeing	Contributing to sustainable development, green spaces also provide opportunity for outdoor activity, resulting in mental well-being and a healthy lifestyle.
	Human Health	Reduces stress levels of people who are exposed to green spaces. Increases the physical wellbeing of urban citizens.

VIII. Place-Making: Child-Friendly Approach

Urban unused spaces are the main result of more and more spaces existing within the urban fabric. These spaces indicate great potential to be transformed into public places, known to be one of the biggest challenges in today's cities [27], [28]. Spaces as well as places should have meaning and continue to provide outdoor environments for the inhabitants of towns and cities through the process of place-making. But most of all, the process of place-making should continue to be conducted through a bottom-up approach, as place-making ought to focus on the needs of the community, rather than only relying on professional "experts".

The place-making approach is further focused on the importance of providing and developing lively neighbourhoods and inviting public spaces and places within the urban fabric [28]. The approach is both an overarching idea and a hands-on tool for improving a neighbourhood, city or region, where public spaces should form the heart of every community, within every town and city.

According to [22] place-making is how public spaces are collectively shaped, in order to maximize shared value, and includes the planning, management, design as well as programming of public spaces. Project for Public Spaces (PPS) describes place-making as both a process and a philosophy, as place-making has grown into an international movement, incorporated in order to serve the people of the community, providing vital places where function is put ahead of form [22].

In order to provide spaces and place with meaning, the process of place-making has a certain criteria that should be followed to ensure a well-developed and designed space or place. Place-making can thus be described, defined and identified as flexible, inclusive, adaptable, ever changing, community-driven, inspiring as well as sociable and transformative. Fig. 2 illustrates the place diagram, developed by [28].



Fig. 2 The Place Diagram [28]

Fig. 2 captures the four key attributes of place-making as identified by PPS, namely sociability, uses & activities, access & linkages as well as comfort & image.

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Table II illustrates these four key attributes, as identified by PPS for developing or transforming public spaces within urban environments. These attributes should be developed in harmony with one another, for the public places to reach its maximum potential, contribute to sustainable development and provide for the needs of the community within urban environments.

TABLE II
KEY ATTRIBUTES OF A SUCCESSFUL PLACE

Attribute	Applicability in terms of public places within urban environments
Sociability	Sociability is a huge quality for place-making, as people feel more comfortable in the space they find themselves when interacting with friends or strangers. This leads to people feeling a stronger sense of place or attraction to these public places provided within urban environments.
Uses and Activities	The activities provided within the public places should be the reason for people to want to go there and to always want to return.
Comfort and Images	The comfort of a public space defines how often it would be used. Safety, cleanliness and the feeling one has when you find yourself in the specific place all play a role in the comfort of the public place. The character of this space is important in terms of its image.
Access and Linkages	Visually and physically a place and its surroundings should be connected well. A public place should be convenient and visual, easy to approach.

The place-making approach is mainly focused on designing cities for people, paying attention to the social and cultural importance of lively and inviting public places and spaces [28]. The most important aspect in the development of public places is however public participation. The wants and needs of the public should first be established in order to determine what the main use and activities of the public place would be. Thus adopting a collaborative community process is the most effective approach for creating and revitalizing urban unused spaces into lively public places.

IX. International Evaluation of Child-Friendly Urban Green Spaces

A case study analysis was conducted in order to evaluate international examples of child-friendly urban green spaces. Accordingly best practices were identified and illustrated in terms of applicability within South Africa [12], based on two international identified case studies.

A. Kadidjiny Park in Melville, Australia

The Kadidjiny Park situated in Melville, Western Australia was specifically planned and designed for children, in order to interact with the natural environment, and increase their abilities to think, learn and listen [7], providing a unique multi-use landscape [12], which contributes to having a positive effect on all residents of Melville. It is evident that the space is much focused on the green aspects, such as the conservation and expansion of natural habitat, and improving the sustainability of the town [7].

The children were involved in the designing and planning of the park, resulting in comprehensive public participation processes [7].

The Kadidjiny Park is fenced, which ultimately improving the safety element for the main user group of the space, mainly the children. In addition, the park is almost four hectares in size, contributing to the fact that it caters for all user and age groups in order to enjoy the outdoor space in Melville, along with sufficient benches provided in the space [12]. The space promotes the idea of children to be creative within their natural environment, where the name Kadidjiny comes from the Aboriginal Noongar word meaning “learning. thinking and listening” [7].



Fig. 3 Kadidjiny Park in Melville, Australia

B. Mullerpier Public Playground in Rotterdam, Netherlands

Rotterdam is situated in the Dutch province of South Holland, the Netherland [12]. Rotterdam as a city believes that children form an intrinsic part of the city and therefore they should feel like they belong and fit in with the city. The child-friendly Rotterdam program was initiated in 2007 with the goal of improving or incorporating child-friendly open spaces within the city for children to be able to enjoy the spaces developed for them [37].

A method of “Building Blocks for a child-friendly Rotterdam” was developed [37] in order to identify areas where there is room for improvement in certain neighbourhoods in the city of Rotterdam and improve the sustainability of the city [12]. For the inhabitants of Rotterdam it became an important goal to improve child-friendliness within the city to make a difference in children’s lives with the main focus on improving outdoor open spaces for these children [37].

The aims of the building blocks include, but are not limited to the following: [37]

- To observe individual neighbourhoods and identify where there is room for improvement.
- Formulate neighbourhoods truly to be child-friendly.
- Making the city more sustainable.
- Provide a city where children literally and figuratively have room to grow.

A public playground, situated on the Mullerpier in Rotterdam, was developed by Bekkering Adams Architects in 2007 [1]. Originally developed to serve as a playground, this

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unique and inviting square currently also meets the needs of the children within the surrounding urban environment by serving as a public playground [12]. Adding to the "green" element of the area, the space is surrounded by trees, improving sustainability. With sufficient activities, different surfaces as well as the incorporation of the green element provided in the space, as identified in Fig. 4, opportunities are provided for children to interact on different levels.



Fig. 4 Mullerpier Public playground in Rotterdam, Netherlands

X. Local Evaluation of Child-Friendly Urban Green Spaces

A. Local Urban Realities and Challenges

In terms of the local reality, "green" and "public" spaces are mostly uninviting and unsafe in general [12], mainly caused by the fact that urban spaces provided are too often ill-shaped and ill-planned for [13], [26], [34], with the result of children feeling uncomfortable interacting with their natural environment or being outdoors [24], [33]. This however affects the liveability of South African towns & cities [10].

The unfortunate is that little or no attention is given to the public environment [26], [30], where urban spaces are left unmaintained within the urban area. Urban spaces, referring to traditional parks, are increasingly being eliminated and not maintained, resulting in these spaces to become unused spaces. These spaces (parks) are regarded as unaffordable to provide and maintain for, where it cannot compete for popular or political support in the face of demands for basic services [27], [30], due to South Africa's continuing growing population causing urbanization. As a result, residents have developed a feeling of uncertainty, experiencing public health, safety and access problems [30] within the urban fabric, due to these urban unused spaces occurring within the build environment. Spaces to be transformed and eventually to become public places have historically fallen between the cracks and consequently have not had an institutional home or budget within South African towns or cities [26], [27], [30]. What is required in terms of the local urban realities within South Africa is a sensitive understanding of the problems that South African cities are facing [8], [26].

B. Essenwood in Durban, South Africa

Green spaces are what make's Durban, South Africa, as a city livable [12]. The city expands as the population continues to grow, demanding green spaces to increase within urban areas [27]. Green spaces are nevertheless vital for the wellbeing of the residents of the city.

Durban's project objectives in developing child-friendly/ open green spaces in the urban area of the city of Durban include [11]:

- Create an identity for the public park
- Create a high quality sustainable public space
- Create a catalyst
- Implementation strategy
- Management strategy

The majority of the residents in the Essenwood area, a suburb in Durban, live in apartment block, having no backyard space or access to open green space. Certain residents who do however live in houses have undersized backyards [27]. Therefore, the open space identified in Fig. 5 is ideally located to plan and develop a child-friendly green space, specifically equipped for the needs of children in order to feel safe within the space, enhancing outdoor activities, play and movement.

Currently the space is being used as a "play area" for children. Elements such as slides and swings can be identified within the space, but the space is neglected, with an uninviting and unsafe feeling as the space is located adjacent to 3 roads.



Fig. 5 Current use of identified space

Based on evaluations of the concept that enhanced child-friendly green spaces as portrayed in the international case studies, the Essenwood case study was found to be successful in terms of various place-making elements such as access and linkages. However, gaps were identified in terms of the elements such as safety, different surfaces, comfort and image, uses and activities and sociability [12].

XI. Concluding Remarks

In comparison to international cases, it can be concluded that there is minimal provision made for child-friendly spaces in urban areas within South Africa. On a macro scale recommendations were made to improve the safety around the identified space where micro environment recommendations were made in terms of the different functions that could be provided within the open space identified.

Theoretically provision should be made for the development of open green spaces for the people, the public, but in reality these spaces are not realized due to extensive housing demands and limited financial provision. In the instances where urban green spaces do exist or are developed, a lack in maintenance exists, causing extensive negative impacts on the surrounding environment. As a result, the places we should be creating within South African cities cannot be achieved in terms of current urban realities, regulations and practices [26]. The central issue is to focus on the growth patterns and structural characteristics of the city as a whole, through establishing frameworks guiding decision-making in terms of urban spaces and the creation of places [8].

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