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## ID 1423 | RECLAIMING SPACES: FAMILY INCLUSIVE URBAN DESIGN

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### 1 INTRODUCTION

Following the current trend of global urbanisation and the growing attraction of cities for families with children, urban environments are becoming principal contexts wherein new generation of children will thrive and grow. Though cities were traditionally designed for adults and cars and not children, Zukin (2010) observes an ongoing shift in her book 'The Naked City'. She notes that through gentrification Western cities are experiencing a revaluation of streetscapes through commercial and cultural activities. Boterman and Karsten (2015) have titled this ongoing urban transition as 'the march of city families worldwide'. Examples can be found world-over, in European cities like Paris, Berlin, the Scandinavian capitals and London (Authier & Lehman-Frisch, 2012; Butler, 2003; Karsten, 2013; Lilius, 2014). Not restricted to the west, examples can also be found in countries that are on the rise like India where 41.2 million children under the age of six live in urban spaces. An increase of children in cities comes with rising analytical and policy interest for families with children in urban environments through child friendly cities, and in children's geographies.

Ongoing work on child friendly cities explores and highlights the role of housing, transportation, community networks, play and green, and governance as important prerequisites for living in the city with children. With the expanding reach of children's studies within the social sciences, urban analysis is essential to improve contextual understanding of children's contemporary problems and needs in the city. Particularly the designs of neighbourhoods influences the geographies of everyday life for children, though the neighbourhood is a mere backdrop for many full-time employed and commuting adults (Carroll, Witten, Kearns, & Donovan, 2015). However in neighbourhoods where families settle for example, patterns of varied consumption, activities, and needs are more evident (Karsten, 2013), reflecting an intensive consumption of the city and also new practices of public parenting. Karsten (2014) argues that this transformation goes with the production of a new city. Families as consumers claim their own urban environment through the development of a range of family facilities that can be summarized in three types: child directed facilities, family directed facilities, and child and family friendly public space. Sidewalks are being transformed into places to play and to socialise.

Occupying the outdoors used to be typical working-class behaviour, today has become part of the behaviours of middle-class families. The rise of this family friendly consumption spaces is in part initiated by the families involved, but also by governments, NGO's, and developers. There is also an ongoing push from academia towards policy to encourage family directed consumption spaces within inner cities.

This paper positions the possible learnings for urban planning and design within the creation of child friendly environments. Structured as follows, the first section provides a literature review on planning for

families with children. Following this, context of planning for children in cities in the Netherlands is expanded on. The second section outlines the objectives and methodology used to develop on existing typologies of indicators on three important daily living domains – street, green spaces and play spaces within four neighbourhoods of Eindhoven in the Netherlands. The third section, provides analyses of three important daily living domains – street, green spaces and play spaces - through observations, surveys, workshops and interviews. Discussing the increasing need for family and child directed consumption spaces in city areas. Data from the four neighbourhoods reflects that though there are processes in place that progressively contribute towards the inclusion of changing urban lifestyles, importance of outside play, the concerns on safety, and separation remain high. These concerns can be addressed through planning and design by employing small DIY solutions or larger interventions at the neighbourhoods or/and city level.

## 2 CHILDREN, PLANNING AND CITIES

Rapid urbanization around the world is now a well-documented trend. This ongoing development has a number of effects including a shifting trend where not only young urban professionals are choosing to move into city- areas, but also families (Boterman, 2012; Bowles, Kotkin, & Giles, 2009; Karsten, 2013). Families moving into or deciding to stay in inner city-areas belong largely to a well-educated middle classes with enough resources to buy themselves an urban family home, and afford daily care of children (Karsten, 2013). It is estimated by the UN that 60 per cent of the world's children will live in cities by the year 2025. What this is indicative of is that for millions of children the contours of their everyday life and experience will be shaped by city environments. This has renewed an interest on children's lives in cities within the fields of social sciences, geography, planning and design (Karsten & Vliet, 2006b; Matthews, 2003; Wridt, 2010). The impacts of these ongoing demographic shifts have initiated a discussion on urban planning discourses for their inclusiveness of family life in cities. These discussions are focused on social and psychological aspects, health, education, and a growing awareness of the role of urban planning and design.

The advantages of city living are many, services, social networks, cultural resources, shorter commutes between work and home, and it is this daily combination of tasks, preferences, and budgets that motivates families to opt for an urban residential location (Hjorthol & Bjornskau, 2005). What this implies for urban planning is (re)defining the nature of planning for families in urban areas. Karsten and Vliet (2006a) for example have identified the lack understanding and recognition by planners of the importance of the local scale in the everyday lives of children and their parents, and plea for more family inclusive policies. With obesity levels increasing and social capital decreasing within children (Niekerk, 2012), themes such as importance of outside play, independent mobility, urban health, are pushing the role that planning can play in the creation of child friendly cities. These foci can be well served by developing an urban understanding of the interdependencies between different dimensions shaping child-friendly spaces and their impacts.

Creating child friendly communities is central to building strong and vital neighbourhoods, cities and regions. Though planning for children is not new, from mid 1940's UNICEF has been advocating for rights of children, creating initiative's such as 'Mayor Defender of Children (1992), 'Child Friendly Cities' (1996), and developing frameworks for defining and developing a Child Friendly City. To facilitate this there is a growing body of research into the development of child friendly communities. While much of this research focuses on addressing challenges within neighbourhoods for children, the research on the role of design and planning tools for improving practices related to child friendly communities is still on the rise. Various initiatives around the world are pushing the conversation on family friendly strategies for inner cities. Examples include, 'Playful City', a non-profit organisation KaBOOM! is dedicated to bringing balanced and active play into the daily lives of all kids, particularly those growing up in poverty in America (Kaboom, 2017), the 'Child and Youth Friendly City Strategy' of Surrey (Canada), is an example of increased policy interest for inclusive design with families. Through community engagement, creation of community spaces, housing choice, youth programming, and community partnerships, planning can be used to bring together various stakeholders.

### 3 RESEARCH APPROACH

In order to develop insights into the role of planning and design for family friendly cities, the paper analyses three important daily living domains – street, green spaces and play spaces - through observations, surveys, workshops and interviews in the city of Eindhoven (NL). By using environment-focused planning indicators connected to aspects to the built environment, quantitative and qualitative data was collected. Divided into two phases, the first phase consisted of semi-structured interviews and surveys with 204 families living in three inner-city and one suburban neighbourhood, we identified use, challenges, and requirements for families with children under the age of 12. Three of the four neighbourhoods are centrally located within walking/cycling distance of the city centre, and the fourth neighbourhood is served by good public transport connections to the centre. The neighbourhoods were all working households with varying levels of education from middle to higher levels, socio-economic status, and gentrification.

The interviews covered, among other topics, housing preferences, play areas, green spaces, daily activities, commute, advantages and disadvantages of having children and living in an urban environment, and mapping activities to point out preferred walking route and locations. The interviews were fully transcribed and the results of the survey collated. The families and parents interviewed used the city and various facilities on a daily basis in various ways, with positive and negative experiences. The interviewees spoke about their daily involvement and experiences, and the transcripts about the city from the perspective of family friendly planning. Results from the four neighbourhoods were compared with each other to identify the best possible neighbourhood to carry out the next phase of the research. Phase two of the work was carried out in a gentrifying inner-city neighbourhood that is facing demographic changes, has active participation from parents of the neighbourhood and schools in the area. We held two intensive workshops for children and parents, at the school and a community centre, to verify challenges and identify methods of possible co-creation to address planning for families. Apart from this, neighbourhood coordinators and policy-makers were interviewed to document current attempts at addressing changing needs and existing initiatives. Finally, we conducted both desk-based studies of literature and policy documents on the initiatives in the city and global responses.

By using the findings, elements for the construction of alternative urban discourses rooted in the daily experiences and challenges can be identified. This paper is a small step in broadening the scope of urban planning discourses in the direction of family friendly cities.

### 4 THE NETHERLANDS: CENTRAL ROLE OF PLANNING FOR CHILDREN

Cities have always been full of children, and city children have somehow always found outdoor spaces to play in. The rise and decline of play spaces in urban areas can be seen as a metaphor for the changing dynamics of families living in cities. Karsten (2014) describes the historical dynamics of families in cities. At the start of the nineteenth century, streets were the most important space of play for children at the time, but also not the most suitable. Children had to share the streets first with traffic from horses and later by cars and various economic activities taking place on the street. However, this changed dramatically with the success of the private car around 1960 when mass suburbanisation started. The city was seen as overcrowded, unsafe and unhygienic. Families that could afford it left the city to surrounding districts. The suburbs became the child-rearing district of society (Ward, 1977). The Dutch VINEX-policy cemented the wave of families moving to the suburbs.

Following this, extensive urban renewal of Dutch cities resulted in central urban areas becoming increasingly attractive as living spaces. Manufacturing industries, the harbour and other industrial employment in cities are replaced by new forms of clean employment: a service economy, culture and tourism. Cities regained popularity as centres of new employment and possibilities for consumerism and culture (Zukin, 1995), and are becoming hubs for young families as well. With a population of more than 17 million people and still growing, the Netherlands is a densely-populated country, positioned as the twenty-second within density rankings (World Bank, 2017). The Dutch Environmental Assessment Agency (PBL) also highlight that in the following decades three quarters of the population growth will happen predominantly in urban areas (PBL, 2016b). Currently about 75 per cent of the population lives in cities. As a consequence of constant growth and transformation, the built environment of the Netherlands has substantially grown in the last decades and is today characterized by a polycentric urban structure, and as a melting pot of urban cores at relatively short distances from each other.

For a long period, families with children were considered to be a non-typical city household. The years of suburbanization of mostly middle-class families led to the almost 'natural' idea that families do not belong in the city. Households who stayed within the city were often considered to have weak socio-economic positions (Musterd & Ostendorf, 2012). Today we are experiencing a modest countermovement, it is mostly the highly-educated professionals who are increasingly choosing to remain in the city after the birth of their children. The city acts as a magnet for young people, especially when they pursue higher education, progressively finding their first job, housing, and eventually starting a family in the same place. The creation of more single-family housing and child-friendly neighbourhoods in places like Leidsche Rijn (Utrecht), IJburg (Amsterdam), and Ypenburg (The Hague) has enabled families to stay in urban areas (PBL, 2015). Parents are 'reinventing' the city as a place to live (Karsten, 2014).

As a response to and recognising that cities within the Netherlands are 'engines of the economy', in 2015 the Dutch Government launched 'Agenda Stad' (Rijksoverheid, 2015). A national urban agenda to promote economic growth, improve liveability and stimulate innovation in urban areas. As an addition to this agenda the PBL (2016a) published a report titled 'De stad: magneet, roltrap en spons. Bevolkingsontwikkelingen in stad en stadsgewest' (The City as a Magnet, an Escalator and Sponge) where a long-term vision on the population and spatial development is envisioned. This report highlights that there is a renewed interest for living in the city, also among young families. The metaphor of 'the magnet, escalator and sponge' is used to describe the shifting population dynamics in cities and their increasing popularity as places to live and inhabit. Cities also grow as a result of (im)migration, and this cohort belongs to the age group who are just before or in a stage of life where they are looking to have children (CBS, 2017a). This can be seen through the growing number of families with children in the four main cities (Amsterdam, Rotterdam, The Hague, Utrecht) of the Netherlands, while this number is decreasing at the national level. Driven by the large number of people in their twenties and thirties in these cities, more babies are born in these four big cities than the rest of the Netherlands.

Living in the city also has obvious downsides, the lack of affordable family housing being one main deterrent, and the image of space, quietness and green of suburbia influences many parents' decision to leave the city for suburbia (Boterman, 2012). Not for all families however. Various studies have shown that families deliberately choose to live in the city and the trend of young people moving from cities to suburbs once they have a family is slowly changing. Research by Karsten (2007) for example analyses why these households disconnect the seemingly traditional relationship between families and the suburbs. Underlying their settlement choice are identified as, (1) Time and geographical reasons: Residential location is a key factor to combine childcare with paid work, which often takes place in the same city. Not only the location of the workplace is a strong determinant of their residential location, also the broad range of urban cultural activities that the city has to offer; (2) Social embeddedness: The diverse composition of the city provides many opportunities to connect with other people. This can have a mutual benefit for both the parents and the children. Children connect families who live in close proximity, these connections can then develop into supportive communities with the mutual benefits for exchange of assistance and advice; (3) Identification as true urbanites: Families living in cities construct an identity of themselves as resolute families that can deal with negative sides of living in the city. They recognize there are serious considerations for living in the city but define themselves as city people who could not live anywhere else. As Karsten (2007) notes, "the choice of residential location is subject to continual reflection and renegotiation".

Questions however still remain on if the increase of families in cities is a structural or a temporary phenomenon. Boterman and Karsten (2015) expect that this trend of urban families in cities will persist for a while. In particular families with strong cultural capital ties who will want to stay in the city. More so as cities are increasingly becoming tailored towards their lifestyles and preferences. Traditional lines of separation between domains that exclusively belong to adults and exclusively to children are fading. Some neighbourhoods specialize in this kind of environment. In Amsterdam for example this is visible in increasing family consumer patterns. Cafes serve 'babychino' (a child friendly variant of cappuccino), cultural programs in the city made for children (museum activities) stores aimed especially at children are a few examples (Leclaire, 2015). These city neighbourhoods are transforming to welcome the settling of families. It will not be the increasing number of migrants, their birth-rates are shrinking, it is the middle class that bring new children to the city (Boterman, 2012). Other examples include municipal initiatives from the city of Rotterdam, 'Building Blocks for a Child Friendly Rotterdam' or 'Kindvriendelijke bouwblokken', or the development of the Kindlint as a safe route for children that encourages independent mobility through the neighbourhood, connecting the most important facilities like the school, play areas, the park, etc. through visible markers.

## 5 EMPIRICAL CASES: FOUR NEIGHBOURHOODS IN EINDHOVEN

Eindhoven over the last decade has been increasingly transforming into a city for young adults and families. In 2015, the PBL reported that in the year 2000, the city had an overrepresentation of people in the age groups between 20 to 40. The surrounding region in contrast showed an underrepresentation of this age group. In last years, this disparity between the city and the region is becoming starker, while the city is attracting younger people the surrounding region is aging (Jong, Vriens, & Beets, 2016). The reasoning behind this shift according to PBL is the presence of various higher educational facilities and its growing innovative high-tech cluster. However, there appears to be a growing trend where many students are choosing to move to other regions of the Netherlands once they finish their education. Between 2005 to 2016 we can observe a slight decline within the representation of population group between 20 to 40 years from respectively 32,5% to 31,8% as a percentage of the total population (CBS, 2017b). The same pattern is also visible for children of 0 to 14 years from 15.9% to 14.9% on a city average for the same duration. Eindhoven in this sense is different from the other four large cities in the Netherlands Amsterdam, The Hague, Rotterdam and Utrecht where children between 0 to 14 make up respectively 15.3%, 17.6%, 16.4% and 17.4% of the population (CBS, 2017b). To analyse how the city is responding to the changes in population and need for better child-friendly planning, the research looked at four different neighbourhoods within the city: De Bergen, Blixembosch-Oost, Woensel-West and Lakerloppen. With relatively young populations, three of the four neighbourhoods were inner-city, and one was in the suburbs. The cases were selected based on three factors: Firstly, the social economic status and cultural background of the neighbourhood. This was done on the basis of financial indicators such as the average home value (WOZ-waarde) and the average income per household. Ethnic composition of the population was also considered. Second indicator was the location of the neighbourhood within the city. The four neighbourhoods should reflect the diverse geographical pattern of Eindhoven. One neighbourhood in the city centre was chosen, one neighbourhood within the inner-city ring, one outside of the city ring and one at the edge of the municipal boundaries. Third indicator was the appearance of the neighbourhood and measured with the housing composition and urban morphological type.

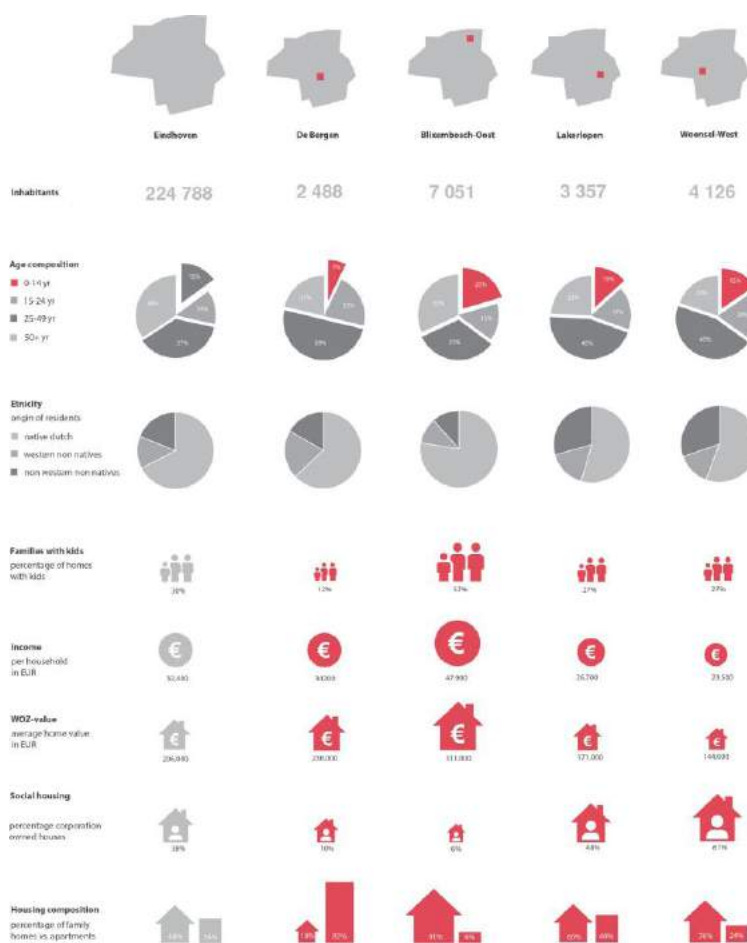


Figure 1: Location and demographic information of the four neighbourhoods. Source: Authors.

## 6 POSITIONING LEARNINGS IN CONTEXT

Based on the findings from the quantitative and qualitative data from the four neighbourhoods, we can position specific learnings and challenges of the neighbourhood along certain thematic lines. With the help of indicators based on the urban environment and systematic methods of data collection, cities can assess their levels of addressing child friendly planning and understand the changes over time.

### 6.1 STREETS AND PERCEIVED SAFETY LEVELS

Despite the various measures taken for street safety within all the four neighbourhoods, perceived safety in the street is low in all of them. In three out of the four neighbourhoods (De Bergen, Woensel-West, Lakerloep) more than half of the parents admit that they do not find the streets safe for their children to play in. A recurring observation was the number of cars on the street and the attitude of the drivers, apart from these, reasons such as speeding cyclists in De Bergen to bad visibility in the streets of Blixembosch-Oost deter parents from encouraging their children to play outside. While some parents are able to cope with this and appeal to common sense, like this parent in Lakerloep, "...don't do stupid things, then it's safe", for most parents this is not the case. Interestingly, in De Bergen children were even less satisfied with their safety than their parents. Of the children who participated in the intensive workshop within the neighbourhood only one third of the children found the street safe to play in, but half of the children said they do regularly play in the street (responses were a mix of personal and parents' choice).

Of all the four neighbourhoods, Blixembosch-Oost was the neighbourhood where parents considered the streets most safe. Blixembosch-Oost, a suburban VINEX neighbourhood, consists mainly of access roads that also have a low intensity of use. Although traffic safety remains a challenge, two third of the parents were satisfied in this neighbourhood with regards to safety. One parent answered, "as a mother I am not satisfied, but in comparison to other neighbourhoods, then yes I am. If I had to give it a grade, it would be a seven (out of 10 ed.)". Though levels of perceived safety were quite high, play activities in this neighbourhood do not take place on the street but more within assigned play areas (e.g. playgrounds). The abundance of play facilities around the neighbourhood appears to deter from playing on the streets.

Parents from De Bergen on the other hand were concerned about the speed of traffic, and when asked on how improve this situation, all pointed towards traffic calming and more safety: "Make the neighbourhood car-free, make the bike lanes safer and provide less parking for tourists." One of the parents mentioned speeding cars that crashed into people's home. Others stressed on creating better signages and control. Though it was not only traffic related reasons that contributed to lower perceived safety levels. Social and environmental factors were also associated with a lower perceived neighbourhood safety. In line with earlier research 'stranger danger' appears to be causes of parental anxiety in relation to their children's safety in the neighbourhood (Carver et al, 2008). Findings from this research follow the same pattern. Examples include the presence of homeless people in De Bergen and (activities related to) prostitution and drug abuse in Woensel- West. Not only adults contribute to an unsafe feeling where also older peers of the children (teenagers) appear to be a reason to avoid certain places as the workshop in De Bergen showed.

The perceived safety levels can also be related to the popularity of walking around the neighbourhood. The findings show that Woensel-West is considerably the least popular neighbourhood to walk in. Respondents say that the situation has improved from previous years though some parents generally do not let their children walk or play around the neighbourhood unsupervised. Parents generally check up on them after some time or make agreements on how far the kids can go, one example being "the kids walk on the streets by themselves. I let them walk to the playscapes sometimes, but after a few minutes I will check if he is alright". De Bergen and Blixembosch-Oost are considerably more popular neighbourhoods to walk in, with Blixembosch-Oost being praised generally for its safety and social control.

### 6.2 DESIGNATED PLAY VERSUS UNDESIGNATED PLAY

The importance of outside play has been stressed in the literature ranging from health to children's geography (Aarts, Wendel-Vos, Oers, Goor, & Schuit, 2010; Christian et al., 2015; Hinkley, Crawford, Salmon, Okely, & Hesketh, 2008; Vries & Veenendaal, 2012). Within our research, we found that the

majority of children play outside every day, and that they play mostly in designated play areas i.e. places of organized play (such as the playground, sports field, schoolyard, park) rather than undesignated playing areas (such as streets or side walks).

The ample availability of designated play areas in all the four neighbourhoods can be identified as the primary reasons for this behaviour. We should note here that though designated areas are easy to identify visually and spatially, undesignated playing areas are more difficult to determine. More so as these spaces cannot be identified through analysis and observation alone, and need input from children and/ or parents to point out where else play happens. Between the four neighbourhoods, designated outside play was most evident in Blixembosch-Oost and undesignated play areas were most evident in De Bergen.

The number of designated playgrounds in Blixembosch-Oost (almost double when compared to the others) appears to encourage playing outside. Though a number of parents complained about the quality of playgrounds and that there weren't enough spaces tailored for older children. "We need more for teenagers, all playgrounds are for little children. And I see teenagers hanging around the playgrounds", says one parent of two children under the age of ten. Parents appeared largely satisfied with the quality and number of available facilities. Other observations included the need for variety of playgrounds, natural, sport, and creating more attractive play and activity spaces (urban farms for example). In comparison to Blixembosch-Oost, quarter of outside play in Woensel-West happens on the streets. It is also the neighbourhood (along with Lakerloper) that has been identified as a transition neighbourhood, and is also the most diverse in population. Woensel-West is also the only neighbourhood in the city where the Kindlint was introduced to provide a safe route for children through the neighbourhood connecting school, playgrounds, and the park (Wassenberg & Milder, 2008). Based on a workshop with elementary school children in the neighbourhood about the Kindlint showed that the children are yet to grasp the meaning or knowledge of the various safety elements along the route (e.g. posts for a safe crossing). Interestingly, the children indicated various elements along the route - designated or not - as places for play. Though levels of perceived safety were low, children were still allowed to play on the streets, more so as the number of designated play spaces were also the lowest.

Between all the four neighbourhoods, parents emphasised the need for more centralized and diverse play spaces, and improvements of the playing environment. Like a participant in Woensel-West said: "I want the play areas to be bigger and more together. Not one piece of play-equipment on every street, but a bigger dedicated place where not only children but also parents can gather". A common observation was the absence of activities for parents or waiting spaces while the children played in designated spaces. It was also striking that all the answers about improvements were about designated play areas and nothing was mentioned about adapting undesignated play areas. One of the advantages of undesignated play spaces is the accessibility for all children (Wilson, 2012). The workshop with children in De Bergen revealed children indeed appreciated undesignated play areas because it's close to their home, especially when designated play areas can be more difficult to reach. Moreover, children temporary own and imagine these spaces, encouraging a large variety of play themes: what game can I play here? (Frost, 1992). Car-parks that are accessed by placing a brick under the garage doors, some appropriation of sidewalks and private courtyards (e.g. Bourbonhof in De Bergen) are very popular to name a few. As streets are considered unsafe by children in De Bergen, a private courtyard of a gated community appears to be a popular alternative to cope with the capricious city environment.

Of the interviewed children in De Bergen, there was also a big difference in preference of play spaces between genders. Girls are much more negative about the place and name bad maintenance as a deterrent to play, variety of play equipment and the threat of older teenagers are other nuisances pointed out. Boys would like to see improvements on the maintenance of the soccer field, and additions of more sport facilities. Interestingly they both point out that more attention needs to be paid to diversity of ages within the neighbourhood.

### 6.3 URBAN GREEN SPACES

Urban green spaces (UGS) over the past years have become central to a number of research themes, sustainability, physical health, mental health and safety (Barrera, Reyes-Paecke, & Banzhaf, 2016). Studies show that accessibility to and the presence of green attracts play, which is important for physical, social and cognitive development of young children (Amoly et al., 2014; Louv, 2005). Children's access to

local child-friendly environments, including green spaces, contributes to sustainable development in several ways, like diminished car transportation and support for children's healthy development, physically active free play and concern for the environment (Jansson, Sundevall, & Wales, 2016).

The issue of accessibility to UGS is one of the crucial aspects of sustainable urban planning and it is linked to the growing concern on the wellbeing of urban population, particularly in children (Gupta, Roy, Luthra, Maithani, & Mahavir, 2016). Studies from the perspective of the child on the design of urban green spaces show that children felt that the management of their local environments was not adapted to their preferences (Roe, 2006). This appears to be the case for Eindhoven as well in terms of use and accessibility of urban green spaces. While the data was collected independently for play and green, in practice however they are closely related to each other. The embedding of playgrounds in green areas, green spaces often provides opportunities for play (natural playground) or just an informal patch of green in front or back of the house.

Within the inner-city neighbourhood of De Bergen, the park is the most visited greenscape for play according to findings from the children's workshop. This was confirmed by the data from the survey with the parents. Remarkably, this park has no specific play facilities for children. The children invent their own games or make creative use of what is already there, like using an art object as a playset to climb on. The design of the Anne Frankplantsoen (De Bergen's city park) and its enclosed character also provides possibilities for informal group play, like hide and go seek for example. During the workshop, an eight-year-old girl described how through their own imagination she created a park that was the exclusive domain of the children. This description fits in line with the research that shows that play in a natural environment is more varied than play in non-natural play spaces. Play in natural environments is also more sensational, explorative and constructive (Berg, Koenis, & Berg, 2007). Natural playgrounds, like the ones that can be found in Blixembosch-Oost, are especially suitable for this.

Blixembosch-Oost is the neighbourhood with the most greenery from the cases researched. Because of its suburban character, it has the highest volume of private gardens, which also contributes to the green character of the neighbourhood. At the same time Blixembosch-Oost has the least amount of solely aesthetically purposed green. Most greenery in Blixembosch-Oost has a double function as it is a playground as well as a grass field for aesthetic purposes. This doubling of function translates to a high quantity of different play opportunities in this neighbourhood. This quantity and quality of green also appears to contribute to the high rate of outdoor play in designated spaces in Blixembosch-Oost.

With the other neighbourhoods researched, quality and access to green was much lower. A number of parents raised this issue including a parent in Lakerloper: "A larger park would be nice, there are a large number small green patches in the neighbourhood, but still a single large one would be nicer". Parents also gave examples of what they would like in terms of greening streets and addition of play spaces. Findings of the workshop also highlighted importance of greening schoolyards. These findings fit in the line with a push towards increasing green Dutch schoolyards (NOS, 2017).

#### **6.4 IMPACTS AND ROLE OF THE SOCIO-CULTURAL ENVIRONMENT**

Within a community, the physical (built and natural) environment cannot be detached from social, economic, and political realities of the neighbourhood. While the role of the physical environment is central to the wellbeing of children, from the need for walking and cycling facilities to the preservation of green space, social and cultural features also shape behaviours and permeate into activities. Though contestations exist within research on parental values between high, middle and lower class families on raising children, the difference between access to activities and amenities was evident through this work. Between the four neighbourhoods studied, it is relatively easy to demarcate lower class and upper-middle class families. Families belonging to the lower-middle classes are neither rich nor poor, though have limited to medium resources (cultural and economic capital). The relatively rich neighbourhood of Blixembosch-Oost appears to have very different forms of activities and capital in comparison to Woensel-West or Lakerloper. With diverse immigrant status ranging from Turkish, Moroccan, other African and Asian backgrounds, Woensel-West and Lakerloper typify a very visible generational upward mobility of migrant families. The gentrifying De Bergen is a neighbourhood composed of a well-educated upper-middle class families where almost all have a native or highly skilled immigrant background.

Given the diversity in the spatial layouts and demographic composition of these neighbourhoods, it is noteworthy, that the parents were generally satisfied with the wide range of social services in the neighbourhood and the quality of the social environment. Not restricted to social capital of residents, parents with children feel most welcome to local business in Blixembosch-Oost, and value the friendly environment of semi-private and commercial spaces within the neighbourhood. An interesting observation is found in De Bergen, where semi-private and commercial spaces are considered least inviting children. Although there are some very positively rated commercial spaces (e.g. those especially aimed towards children), residents identify the conflict of interest between the commercial (restaurants, bars etc.) and the living areas as an issue of future improvement. While commercial activities formerly exclusively belonged to adults, parents note that lines between adult and child oriented spaces are fading.

As one of the more affluent neighbourhoods in the city, within the four-researched neighbourhood Blixembosch-Oost also has the most number of private and commercial activities available for children organised through neighbourhood organisation. Blixemkids, one such example, is a group of volunteers organising activities for children, an interviewee expands: “We celebrate for example Sinterklaas, and on National play day Blixemkids brings waterslides, inflatable bouncers and more”. Although positive, multiple interviewees identified the importance of (and absence of) mixture of people with different backgrounds: “We think the culture of the people in this neighbourhood is ‘too white’. Nowadays we live in a multicultural society and I want my children to grow up knowing this multicultural society”.

In contrast to Lakerloper, where activities for children are not as common (“there are a few activities, but they’re organised just once a year”, says one parent) and support groups for parents are less known or even wanted. A parent who is aware of such activities highlights “There is a support group for parents at the elementary school, but we don’t go or need that”. Based on the small sample size here it is hard to position the reason behind this. Similarly, low levels of participation can be observed within activities organised by the neighbourhood association, where turnouts are low. One of the interviewee observed that the organization itself, and therefore the activities, might be a bit outdated since there are only seniors on board. In line with Bell et al (2008), who underpins the importance of a varied group of citizens participating in for example community groups, and the need for feeling of ownership to the success of any participation process. By far the most diverse neighbourhood within the study, Woensel-West has been successful in banding together to realise the Kindlint, and organise various community activities. The diversity of this neighbourhood, also lead parents to comment on the need for more inter-communal activities. “...add more common activities for different groups, promote more mixing of people or children with different backgrounds”, says one parent. Some parents raised concerns on the presence of the red-light district close by, and other noted that the differences in socio-economic status implied variance in access to amenities. “While they have the means to access services and special care, not all families have that ability (lower income, lesser social networks). Also, improvement of (mis)communication between people in the neighbourhood through lack of Dutch language comprehension”, is a noteworthy example of the differences between the four neighbourhoods.

Interestingly, De Bergen, also a neighbourhood in transition attracting skilled and affluent native and international workers, has been successful in encouraging various co-creative initiatives for child-friendly environments. Reflecting on the active involvement of its residents and civil society organisations, Stadstuin de Bergen located in the heart of de Bergen is one such example. The aim of the resident led initiative is to transform a decayed parking space and playground through greening activities into an environment that facilitates interaction between residents, children, and civil organizations such as a home for veterans and social day care facilities for disabled people. The initiative is supported though municipal funding, but also in kind by the various neighborhood organizations and local entrepreneurs.

## 7 CONCLUSIONS AND RECOMMENDATIONS

The results of this research from four neighborhoods in Eindhoven on child friendly spaces both confirm patterns of consumption and use as reported in literature, but also add new insights for urban design. It is useful here to distinguish between the following, role of urban planning and design can play in highlighting the importance of children’s geographies, the levels of possible interventions, bottom up and top-down, and accommodating for changing demographics in cities. The role that urban planning and design can play in highlighting the validity and agency of children’s geography in planning processes is vital within the changing profile of cities. This can be seen through the issues raised on repeated concerns regarding

safety, awareness, maintenance, and more family friendly spaces, which can be addressed at various scales and levels of interventions as seen below through selected examples.

Level of recommendation	Concern addressed through possible interventions
<b>Micro: The smallest level of intervention possible</b>	
Playful street furniture	Streets are potential places for children to learn and play. Research identifies adding urban furniture around the neighborhood could facilitate observing children at play. Adding a bench between the street and home can have two functions, a buffer between private and public spaces, and increase opportunities to connect with neighbors and other children.
Sidewalk games	Outside play is not restricted to designated play spaces only, but should extend to public space at large. Playing games on the sidewalk encourages more types of social play, introduces a larger variety of play themes, and increases social interaction. Sidewalks also provides access to all children to use it as a play space.
Street green	Literature shows that the design and management of urban green does not always reflect the needs and preferences of children. Underlining this, neighborhoods resident's plea for small scale greening. The importance of turning hard gray urban spaces to softer, natural aesthetics is vital and can also help with rainwater drainage.
Climbable objects	Any object can become an element to scramble up on: a piece of art in the park, some steel objects on the sidewalk, a tree. For children, climbing on objects is more than just fun. Scaling an object teaches them vital lessons, such as dexterity, risk assessment, focus and planning. They have to decide how high they're comfortable to climb and find the best way to get there.
Alternating pavements	Traffic safety and awareness levels can be addressed in many ways, one of the easier DIY solutions is creating awareness through design interventions. Informal demarcations are a subtle but clear way to mark different zones of ownership or use of space through alternating tile patterns, using colors within pavements etc.
Temporary street closure	Streets safety is a repeated concern for families in urban areas. A temporary solution is the closure of a street for a day (once a month for example) to create a play-street. Due to its temporary nature residents can be stimulated to create a festive day to set an example for alternate possibilities.
Natural play areas	Children's access to local green spaces supports healthy development, physically active free play and awareness for the environment. Natural play areas are more suitable for different age groups and offer another type of play-space and meeting space. Creating softer alternatives to urban landscapes.
Shared space	A recurring observation in the research is the number of cars on the street and the attitude of the drivers. When streets are not considered safe to play in, less play happens on streets. One way to increase safety levels and at the same time improve the walkability streets is through the introduction of shared space.
Narrowing: visual and physical	The attitude of drivers is an important determinant when trying to improve traffic safety. Physically and visually narrowing the street can help to reduce the speed of drivers.
Lighting	Adding better street and floor lighting is a solution that can have immediate effect. Through the use of adaptive and LED lighting, neighbourhoods can create special atmospheres, and increase safety. One could also think of creating an illuminated path (with various colours) along the child route, resulting in a pleasant route by day and night.
Maintenance and awareness	Concerns related to dirty and depreciated play equipment, pet feces in play spaces, old sidewalks and general neglect of play equipment and play spaces can be deterrents to play. Clean streets, attractive open and green spaces, well maintained signs, buildings, and roads all contribute to high spatial qualities of a neighborhood.
Flexible schoolyard	Schoolyards are locations that are only used at certain times of the day and mostly only during weekdays. School yards have a potential to become much more than just a playground during school hours. For example, they can be opened up for bringing and dropping children at school, play spaces in the weekend, etc.
<b>Meso: An intermediate level of interventions at the district or neighborhood level</b>	
Multiple use of spaces	Schoolyards are locations that are only used at certain times of the day and mostly only during weekdays. School yards have a potential to become much more than just playgrounds during school hours. For example, they can be opened up for bringing and dropping of kids at school, play spaces in the weekend, etc.
Neighbourhood child route	Cities are growing in attraction for families with children, renewing interests in child geographies. Cities are now responding to this growing trend by actively looking at family friendly developments. Though there is a long way to go to create family friendly cities, incremental shifts can create more awareness.
<b>Macro: The highest and the most complex level of intervention at the city level</b>	
Encouraging child participation	Children are often overlooked when it comes to decision making. Adults decide for children what needs to be done or how it should look like. The rich local knowledge of children and families often remains an untapped source of information.
Family friendly city strategy	A family friendly strategy starts with various public and private stakeholders; governments, developers, NGO's, residents. Rotterdam (NL) is a successful example in developing and evaluating Child Friendly Cities, by adopting 'child friendliness' as a valuable urban planning tool to design a livable, sustainable city.

In the context of the Netherlands where increasing institutionalization is visible in a number of cities, Amsterdam, Rotterdam etc., the importance of children's geography in planning and design is growing. However, these forms of institutionalization need to be balanced between top-down and bottom-up approaches. With growing diversity in urban areas, cities and planning needs to develop mechanisms through which the interests of young children and families are better represented and articulated within planning and design.

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