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Sruthi Atmakur-Javdekar

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YOUNG CHILDREN'S PLAY IN HIGH-RISE HOUSING:
A WINDOW INTO THE CHANGING LIVES OF URBAN INDIAN MIDDLE-CLASS
FAMILIES IN PUNE METROPOLITAN AREA

By

SRUTHI ATMAKUR-JAVDEKAR

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2020

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This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Date

Roger A Hart

Chair of Examining Committee

Date

Richard Bodnar

Executive Officer

Supervisory Committee:

Roger Hart

Sheridan Bartlett

David Chapin

Pamela Wridt

Outside Reader – Robin Moore

Outside Reader – Lia Karsten

THE CITY UNIVERSITY OF NEW YORK

Abstract

YOUNG CHILDREN'S PLAY IN HIGH-RISE HOUSING: A WINDOW INTO THE CHANGING LIVES OF URBAN INDIAN MIDDLE-CLASS FAMILIES IN PUNE METROPOLITAN AREA

By

Sruthi Atmakur-Javdekar

Adviser: Professor Roger Hart

This dissertation aims to identify the combinations of spatial arrangements and physical features that influence young children's access to play and the quality of their play opportunities in a heterogeneous sample of high-rise housing in India. Using Bronfenbrenner's *Ecological Model of Human Development* as a framework, the study examines two large umbrellas that contribute to young children's play opportunities in high-rise housing developments: (1) The play environment that is made available for children by developers and design professionals; and (2) Parents' and caregivers' ways of using the designated and undesignated spaces based on their own play values and beliefs. A Baseline Study of 63 housing societies and case study research of seven varied high-rise housing environments in a fast-growing suburb of Pune metropolitan area supported the documentation and analysis of play opportunities for young children from middle-class families living in high-rise housing developments. Specifically, the case study research included in-depth field studies and interviews with developers, design professionals, city planners and Indian middle-class families. Further, I supplemented the analysis of each case study by adapting Lefebvre's Production of Space as an analytical framework to examine the *conceptualized*, *actual* and *experienced* spaces to represent the *produced space* of children's play. Study outcomes include the development of a comparative visual assessment chart, i.e., Array of Play Diversity, Design Principles and Improvement Practices to help design

professionals and developers provide an appropriate range of play elements, materials and surfaces to support young children's play. Findings and analysis from this study generate knowledge to create better housing environments for children, thus, building a case for high-rise housing developments as an acceptable and a desired form of housing for families with young children.

Dedication

*For my daughters,
Nandita and Leela.*

*Also, a heartfelt gratitude to all essential service providers and health care workers across
the world who are ensuring our safety during the COVID-19 global pandemic.*

Acknowledgements

My PhD journey has been a long and tedious one filled with personal and professional highs and lows. There are many people I want to acknowledge here but space may be a constraint, so, I will limit to sharing anecdotes with those who have influenced and shaped my thoughts in this critical part of my adult life. Through this journey, Roger Hart, my advisor has been central to informing my thought process to not just complete my dissertation but also to value my work as an essential contribution to the field of children's development, play and architecture. Thanks Roger, for keeping your faith in me and continually encouraging me with your kind words, "you are going to have a *terrific* dissertation, Sruthi." Your words instilled confidence and gave me the push to work in an otherwise non-conducive academic setting here in India. I want to thank my core committee members – Pamela Wridt, Sheridan Bartlett and David Chapin – for sticking with me through the long distance and many years. A special thanks to Robin Moore and Lia Karsten for joining and strengthening my committee as outside readers.

I distinctly identify my PhD journey in three large categories.

First – The first phase of my PhD journey was about living in tiny apartments in New York City and thinking out loud big ideas with my cohort and colleagues at the 6th and 8th floors of the CUNY Graduate Center, New York City. Besides discussing critical theories in social and environmental sciences, I remember warm hugs and laughters with my colleagues – Jennifer Pipitone, Bryce DuBois, Kelly Schroeder, Scott Fisher, Hannah Jaicks, Jennifer Tang, Bijan Kimiagar, Do Lee and Ayşenur Ataman. This was a special time when I made a life-long friendship with Kelly. We spent hours walking and reading in parks and drinking mochas at Birch café, where we swore we would finish the program in five or six years and no more (we had no idea where life was taking us).

Of course, Judith Kubran (lovingly, Jude), our uber-fantastic EA, knew us better. On my first meeting with Jude, she said, “life happens during this program, try not to be too hard on yourself, dear.” Thank you for these kind words, Jude, they have stayed with me through tough times, especially, when I had just moved back to India. Importantly, I want to thank Radhika and Vikram Samant, my friends in New Jersey, for their faith in me, and without whose monetary support, I could not have registered for the program in the first place.

Second – The second phase, was about reinventing my life in an unfamiliar Indian city while staying connected to my academic and professional roots in New York. I moved to Pune for love, for my partner – Saru and soon experienced the birth of my first daughter, Nandita. During this time, I wrote my dissertation proposal, which I believe was the most difficult task for me as I was trying to find my voice amidst the chaos of being a new mother and understanding the culture and language of a new city. The PhD program’s course-work taught me to think critically and while I was still practicing those skills, I was flustered to find myself obediently nodding to an unknown language and being servile to meaningless traditional norms.

This was the time when I missed the academic community *the most* and felt at peace during work calls and interacting with peers and David Chapin (also, my core committee member) during the dissertation seminar at the Graduate Center. I want to thank David for his honest advice while going through multiple iterations of my proposal, encouraging me to stick to my basics in architectural education. He always said, “You are an architect, right? Then, think visually!” David, your words echoed in my mind when I was writing my case studies and was key to inform the development of the visual assessment tool – Array of Play Diversity – for assessing young children’s play. Thank you, for reminding me of my roots in architecture and landscape architecture.

Also, during this time I continued to work with Pamela Wridt and Bijan Kimiagar at the Children's Environments Research Group (CERG), The Graduate Center. My work with CERG enabled me to sharpen my project management and critical thinking skills, and travel to beautiful countries such as Haiti, Kampala, Benin and Egypt, which I would otherwise not go to. I am forever grateful to Pamela Wridt (who is also my core committee member) for the opportunity to work with and learn from her during our memorable trip to Haiti. I appreciate Pamela for staying the course with me during this time of transition, and for always encouraging me to be myself, "You are getting there. Find your voice."

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While I was away conducting workshops with young people across the world, I will forever be grateful to my mother – Manju, who did not fully understand my work but always supported me by taking care of Nandita like her own child. For this, ma, I will be ever grateful.

Third – The last phase of my PhD journey has been one of sticking to my core values and exercising *my voice*, *my agency*. For this, I am grateful to Sheridan Bartlett (my core committee member) who helped me think critically and pushed me to think beyond the obvious. During this time, during my PhD fieldwork, I had another baby girl – Leela and realized that while writing is a solitude process, it need not make you lonely. Chandana

Bhowmick, my Ashtanga yoga teacher, taught me perseverance and discipline through the yoga practice. She instilled in me, to make my children a part of the practice. I soon started applying this approach to my writing and *this* acceptance of my children around me while I worked on my dissertation, empowered my journey and strengthened my voice. The practice taught me to be self-compassionate, to focus (*drishti*), that it's okay to start again after long breaks, and to show up on my mat to practice when I did not want to – all key elements critical to the writing process.

During my PhD journey, I lost a few special relationships but also made new ones. My heart fully opened to love, when my furry little poodle – Maya – came into our life and gave me endless company on long nights and early morning hours of analysis and writing. Thanks, Maya. Without the love, affection and continuous support of my friends, I could not have pulled through the last phase of my writing. I want to specially thank Mansi Trivedi, Anagha Shirolkar and Moushami Jaju for being loving aunts to my children and for listening to my struggles as a woman fighting for an education of her choice. A special mention to Sanjhana Shetty, my baby sitter and a friend, who took care of my children on evenings when I was away collecting data in the field. I am grateful to Ekta Shah-Manjrekar for always checking in on my mental health, keeping my evenings fun with our faffing and making my writing a-not-so-lonely process. Not to forget, my sweet girlfriends from VirginiaTech who are always rooting for me – Vrushali Chavan and Shreya Kothaneth.

Over the past six months, I reached out to the global academic community on social media – Twitter and Instagram – that were excellent support systems to keep my daily writing in check. I haven't met any of them, but their words of encouragement and funny memes, returned my sense of belonging to the community. This acknowledgement would not be complete without recognizing my home support system over the past 7 years. Komal, Ritika, Surekha and Shweta took care of my young girls while I stepped away from my home

office to work outside or collect data. Each of them came into my life at different times and I am grateful that they made my life as a PhD mom a bit easier.

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And oh! How can I not thank New York City? Here is to endless memories of this beautiful place for introducing me to all my life-altering decisions.

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List of Acronyms

AGM: Annual General body Meeting
APD: Array of Play Diversity
BT: Bio-Technology
CB: Cantonment Boards
DC: Development Control
ECD: Early Childhood Development
EWS: Economically Weaker Sections
EPQ: Environmental Play Qualities
FSI: Floor Space Index
HS: Housing Society
IT: Information Technology
MC: Municipal Corporations
NBCI: National Building Code of India
PCMC: Pimpri Chinchwad Municipal Corporation
PEaS: Physical Elements and Surfaces
PMC: Pune Municipal Corporation
PMR: Pune Metropolitan Region
PMRDA: Pune Metropolitan Region Development Authority
PZ: Parking Zone
RBZ: Residential Buildings Zone
ROS: Recreational Open Space
SAZ: Society Amenities Zone
TDR: Transfer of Development Rights
UN CRC: United Nations Convention on the Rights of the Child

PART ONE – BACKGROUND AND STUDY DEVELOPMENT

Part One of the dissertation lays the groundwork for my study. I review literature related to young children's play, factors influencing their play, trend of high-rise housing environments in an urbanizing world, and the current state of research related to children living in these housing environments across the world and in India. I raise concerns and frame my research questions using Bronfenbrenner's ecological model of human development. Following this, I describe my research design, outlining the rationale for focusing on young children from middle-class families living in a fast-growing suburb in Pune metropolis; and the research methods used to complete this investigation.

(CHAPTER 1)
Introduction

Play is fundamental to children's growth, learning and development, and how we plan and design cities can greatly affect the degree to which we provide an accessible and appropriate environment for children. Research carried out in some countries has concluded that it is very difficult to provide an appropriate range and quality of play opportunities for children living in high-rise buildings. Nevertheless, in major cities in many countries there is a trend towards building more high-rise apartments for all demographic groups (including, families with children). In India, the number of middle-class families is on the rise, and high-rise apartments have rapidly become their choice of housing. This study investigates this issue with the assumption that while it is unlikely that India will stop building high rise housing for families with children, as the UK Government did with its public housing policy, it would be valuable to investigate the factors that make it difficult for parents to provide adequate play opportunities for their children in high rise housing and how this knowledge might be used to create the best possible housing for children.

This research aims to identify the combinations of spatial arrangements and physical features that influence young children's access to play and the quality of their play opportunities in a broad sample of types of high-rise housing in India. It will necessarily also investigate the perspectives of caregivers on the kinds of play opportunities that they consider important for their young children, and the roles they play in promoting or restricting children's play. It will also address the views of the architects, planners and building developers of high-rise housing and the factors that influence their designs, including both their own perspectives on play and the constraints that they work under from both government policy and commercial pressures.

The conclusions of the research will address: (1) Urban policy in India regarding the provision of high rise housing for families with young children; (2) Planning and design criteria that need to be adopted in order to create appropriate play opportunities for young

children; and (3) Strategies to raise awareness of both parents and professionals regarding children's play and play provision.

This dissertation is organized into three parts: Part One – Background and Study Development, Part Two – The Case Studies; and Part Three – Findings and Analysis.

(CHAPTER 2)
Literature Review and Study Rationale

Importance of Play for Young Children's Growth and Development

Scholars have long established the connections between play and child development, particularly with young children (reviewed by Hughes, 1999). The significance of children's play is well known and valued for its health benefits and contributions to children's physiological growth and development; however, play is seldom valued for the development of children's understanding and thinking (Hart, 2002). Through play, children gain collaborative negotiating skills, confrontation and resolution of emotional crises, the management of conflicts and development of moral understanding. Gray (2013) affirms that through free play, children are able to solve problems, make decisions for themselves and become emotionally resilient. Further, the ability of play to provide opportunities for children to socialize freely in a common physical space is unique, serving as an important contribution to children's social development. Research shows that children who do not have the opportunity to play, owing to their physical or psychological abilities, lose their chance to develop their emotional intelligence, self-esteem, self-confidence and independence (National Playing Field Association, 2000). During free play, children tend to touch, explore, manipulate and experiment with their environments to understand their world (Hart, 2002). In a sense, children are active agents and not passive recipients in their environments, who continually make sense of their worlds (Holloway & Valentine, 2004) and expand on their social and cultural understanding by engaging in play.

Given the benefits play has to offer, the lack of play can significantly impact the development of a child. Particularly, during early childhood, opportunities for free, or child-directed, play and engagement with diverse types of materials are fundamental to promoting children's creativity, imagination, self-confidence and overall physical, social-emotional, and cognitive growth and development (Lester and Russell, 2010; O'Connor, 2017). Given that play is central to children's development, it is rightly recognized as one of the fundamental

rights by the United Nation's Convention on the Rights of the Child (UN CRC). The UN CRC emphasizes that children all over the world have a right to survival; to develop to the fullest; to be protected from harmful influences, abuse and exploitation; and to participate fully in family, cultural and social life. Accordingly, Article 31 (Right to Play) of the UN CRC (1989) rightly states: "*Children have the right to relax and play, and to join in a wide range of cultural, artistic and other recreational activities.*"

Despite the recognition of play as a fundamental right supporting children's well-being, growth and development, recent discussion papers by the International Play Association and the General Comment no.17 on Article 31 highlight the barriers to fulfilling children's right to play, particularly in urban environments. Challenges include poor material conditions in the physical environment (IPA, 2016), the lack of awareness of adults about the significance of play, inadequate opportunities for child-controlled play, inadequate space for play and particularly green spaces for play, pressure on children for educational achievement, an increase in structured leisure and recreation time, negative affects of technology and the lack of participation by children in planning for play (IPA, 2013; 2010; McKendrick et al., 2018).

Influences on Young Children's Play

This research follows Bronfenbrenner's ecological model of child development in its recognition of the need to simultaneously address both the social influences and the physical environment, including its spatial arrangement and material qualities (Bronfenbrenner, 1994). The materiality of the physical environment informs the quality of play and opportunities for children to play with peers and build close relationships. (Brooker and Woodhead, 2012). Accordingly, in this section, I address both the social issues of parents' play beliefs and play management practices as well as the influence of the physical environment on children's play.

Parents Play Beliefs and their Influence on Play

We know remarkably little about cultural variations in parents' beliefs and values regarding children's play because writing on the subject is largely dominated by Western theories of child development that are published in the English language books and journals. Nevertheless, it is reasonable to assume that many well educated urban middle-class parents in India have been exposed to the dominant academic theories and research of developmental psychologists through parenting guides or magazines. As a result, an important factor influencing parents' beliefs regarding play is their social class and level of education. (Chaudhary and Shukla, 2015; Chaudhary, 2013). In this section, I highlight some of the contemporary issues regarding children's play that seem to be spreading globally to the middle-class across cultures through neoliberal thinking regarding how children learn, and through the commercialization of play materials and playgrounds (McKendrick, Bradford & Fielder, 2000; Katz, 2008; Karsten, Kamphuis & Remeijnse, 2014; Karsten, 2015a; Karsten, 2015b).

Playful Learning

Many parents in India and other countries value children's academic performance and view play merely as an activity for learning, not recognizing other benefits of play such as development of emotional intelligence, self-esteem, self-confidence and independence. Research findings indicate that when compared to Euro-American parents, Asian parents pay greater attention to children's academic success (Sha, 1998; Parmar, et al., 2004; Chua, 2011; Chaudhary, 2013; Chaudhary and Shukla, 2015), and that Asian parents believe that getting a head start in academics is imperative for children's futures when compared to Euro-American parents (Parmar et al., 2004). Sha (1998) examined middle- and upper-middle-class parents' and teachers' perceptions of child's play in China, highlighting that parents and teachers perceived play as valuable, but that a well-structured academic environment was viewed as

more important for children. Likewise, in India most urban middle-class parents are anxious about their children's admissions into good schools and often prefer that their children get an additional head-start for a good education through pre-schools (Chaudhary and Shukla, 2015). This desire is often reflected in the ways adults engage with children during play. Chaudhary's (2013) study reveals that adults in Indian families (typically, from urban educated families) tend to engage with children during play, viewing playtime as an opportunity to teach numbers or alphabets. Moreover, a recent study in Hong Kong highlights that middle-class families today feel the need to provide their children with activities that focus not just on academic learning, but also with play activities that focus on developing a broad range of skills (Karsten, 2015a).

We try to establish a balance between learning and playing. I believe when they play they are happy. When they feel relaxed they learn faster. I teach them things in a playful way. Not textbook style. I want them to be happy; I think the learning comes when they are ready. (Karsten, 2015a; p. 564)

Enrichment Activities

In a rush to offer as many activities as possible to get a head start for their children, parents (particularly, from middle-class families) are engrossed in supervising their children's lives around structured activities. This act of "making the right choices, communicating with institutes, instructors and domestic helpers and supervising activities and travelling" (p.565) is part of a culture of 'intensive parenting' (Karsten, 2015a). In the United States, an integral component of the construction of middle-class childhood is the idea that a responsible and good parent by fosters children's talents through extracurricular activities (Lareau, 2003). Vincent & Ball (2007) reveal child-rearing practices in the UK, where intensive parenting begins as early as pre-school age. The trend observed in Asian countries is not different. In the South East Asian context, Chua (2011) provides insight into the changing standards of

parenting and childhood by her personal history as a 'tiger mother' where middle-class childhood is related to prestigious schools and extracurricular activities (Karsten et al., 2014; Karsten, 2015). Based on my personal observations, parents from middle-class families in India are also increasingly scheduling their children's lives around extra-curricular or enrichment activities.

Hiring Domestic Help

Families hire domestic help or nannies to play important roles in the culture of intensive parenting. This act of 'hiring a domestic help' to supervise children has been considered as good parenting, particularly in the Asian context (Karsten, 2015a).

"Supervising your child is strongly related to middle-class Hong Kong discourses on good parenthood. Leaving your child alone is interpreted as irresponsible behavior."(Karsten, 2015a, p. 565). Thus, children's play opportunities are not just about child-child relationship and child-adult relationships, but also about adult-adult relationships (Satta, 2015) where parents control or influence the play opportunities that domestic helpers provide for their children.

Physical Environment and Social Ecology of Children's Play

Problems of Access to Play Spaces

In urban areas, access to playgrounds is an issue because children are dependent on adults to visit the playground, making play a planned affair. The reason for this dependency is related to parents' perceptions of safety and local and state laws in some countries like the USA where parents cannot leave their children unsupervised. Research has been highlighting the decrease in children's access to play outside of their homes on streets and their ability to independently access public spaces for several decades now (Jacobs, 1961; Hayward, et al. 1974; Lynch & Banerjee, 1977; Bartlett et al., 1999; Cunningham & Jones, 1999; Tranter & Doyle, 1996; Kong, 2000; Clements, 2004; Wridt, 2004; Karsten, 2005; Staempfli, 2009;

Freeman, 2010; Blinkert & Weaver, 2015; Shaw et al., 2015; Arup, 2017). Parental apprehensions about letting their children play outdoors on streets and sidewalks is caused by perceptions of safety related to crime, increase in street traffic and pedestrian density on sidewalks.

Additionally, current parenting norms (requirements for supervised play in some developed countries) require that children be under supervision at all times. This has led to the inability of children to be active outdoors as few parents can supervise their children's play at all times (Churchman & Ginsberg, 1984; Hüttenmoser, 1995; Clements, 2004; Appold & Yeun 2007; Booth et al., 2015; Solomon-Moore et al., 2018). Related to parental supervision, Karsten's recent study on vertical living in Hong Kong confirms the 'intensive parenting' trend where children tend to rely on caretakers to drive or walk them to a playground in proximity to engage in play by themselves or with other children (Karsten, 2015a; 2015). This type of supervised play has an influence on children's motor and social skills, and limits their opportunities for engaging in diverse play.

Hüttenmoser's (1995) study investigated the influence on children's (five years of age) motor and social skills when living in two types of environments. The first type of living environment afforded children the opportunity to play on streets without adult supervision; and the second living environment required adult supervision during children's play due to presence of street traffic. Findings from the study confirm that children who played with no adult supervision, played longer, had better motor and social skills, and established flexible bonds with their mothers, which allowed them to develop independence and make friends, when compared to children who were supervised during play. In the first living environment, children brought their own toys and play materials outdoors to play with their friends, thus providing opportunities for children to engage in diverse play. By comparison, in the second living environment, where children had no opportunities to play unsupervised, parents

compensated by providing play opportunities for their children through organized activities and by going to the playground. But this dependency on playgrounds and structured activities revealed that children did not have opportunities to make new friends or establish familiarity with them; and that playgrounds typically offered a single type of play activity – playing on swings and slides. Hüttenmoser’s study is important to my research as it establishes the influence of parental supervision and a limiting play environment on children’s motor and social development.

In addition to the ‘access to play’ issues mentioned above, adults’ lack of awareness about the importance of play for children’s growth and development, works as an additional barrier for children to exercise their play rights. (IPA, 2013; 2010; Whitebread et al., 2012). My prior research related to inclusive play opportunities for children, in Bengaluru, India, echoes the lack of awareness among parents and the society at large about the importance of play for “all” children (Atmakur, 2012).

Rules and Restrictions in the Physical Environment

Signage on streets, at residential buildings and public parks restrict children’s access to space for play. Signs prohibit ball playing, bike riding; and play on sidewalks (observations from preliminary ethnography). Personal observations and research show that most residential neighborhood pocket parks in Bengaluru city, India, were recently modified to suit the needs of adults for walking and exercise. Children’s play is restricted to a rectangular sand box with limited fixed play equipment including swings, see-saws and slides. The signage at the entrance of these neighborhood pocket parks clearly state, “no playing” in the park (Atmakur, 2012). (Figure 2.1.)



Figure 2.1. Signage outside a neighborhood park in Bengaluru. Photo: Atmakur-Javdekar.

As a result, today, young children’s play resonates with the idea of “add-on” indoor playgrounds that are typically built in private commercial establishments such as malls, airports and restaurants. These play spaces typically have soft-play areas, small ball pools and replicas of domestic and vehicular equipment (McKendrick, Bradford & Fielder, 2000).

Despite restrictions in the physical environment, some cities have reclaimed their streets for play recognizing children’s preference to play on streets and sidewalks where most adult life takes place. For example, in Netherlands, some streets – Woonerven – are reclaimed by pedestrians and allow no vehicular traffic all year round. These streets, also known as living yards, allow for children to explore their surroundings through play.

Relatedly, such closed off streets in the United Kingdom are known as ‘Home Zones’ (Hart,

2002; Moore & Marcus, 2008). Similarly, summer time in New York City calls for the closing of some streets from vehicular traffic encouraging children in the neighborhood to bring their toys out to play. This initiative known as ‘play streets’ is not a permanent solution but provides for children’s free play outside their homes. Recently, there has been an increase in play streets across the world. A few examples include, StreetPLAY – a community led play intervention pilot program that started in 2017 in Toronto, Canada (Mitra & Abbasi, 2020); and Playing Out – started by two mothers on their street in 2010 in UK, now involves 800 street communities (Ferguson, 2019).

In major cities of India, the concept of play streets was started in 2013. The idea of play streets was first marketed as ‘Raahgiri day’ and is now popularly known as ‘Happy Streets.’¹ Here, private organizations in collaboration with city municipalities coordinated to provide play streets. This concept is currently celebrated as a success by city officials for providing relief to citizens to come together on city streets. However, based on personal observations, I consider this concept an ‘organized event’ and not as ‘play streets’. (See Figure 2.2) My remarks include:

- (a) It is not easy to close off busy streets for play at all times. These streets are closed off only for 3 – 4 hours every Sunday morning (typically, from 6 AM to 9 AM) for a specific number of months.
- (b) The initiative requires financial and human resources to cordon off streets and to organize smaller recreational programs within the event.
- (c) These play streets bring together citizens to engage in organized sports and structured recreational activities like street cricket, zumba, yoga, cycling, drawing and painting.

¹ Happy Streets first began as ‘Raahgiri Day movement’ in Gurgaon in 2013. Subsequently, this movement is currently being launched in other major cities of India including Mumbai, Hyderabad, Delhi, Kolkata, Pune, Coimbatore, Vizag, Ahmedabad, Vadodara and Coimbatore (Times News Network, 2016)

Bringing children together for those specific hours also mean that children do not have enough opportunities to establish social bonds. So, there is little opportunity for children to engage in self-directed and free play.



Figure 2.2. Happy Streets in Wakad suburb, Pune city. Photo: Atmakur-Javdekar.

- (d) Residents from across the city drive to specific play streets in personal vehicles, thereby putting the onus on the organizers to allocate parking space for those who participate in ‘Happy Streets’.

The example of 'Happy Streets' reinforces children's dependency on adults and related authorities (local government and private organizations) to exercise their right to play in cities.

Since there are many challenges to providing adequate play for children in cities in the public realm, it is then common-sense to ensure that children's play needs are fulfilled close to their home environments where parents are assured about their safety and are able to visually supervise their children. With urbanization, dense urban settings are on the rise and there is a need to understand the types of play opportunities made available for children in high-rise housing. It is also necessary to investigate the attitudes of parents and caregivers towards children's play as they are gatekeepers who regulate children's access to play spaces and opportunities. Simultaneously, it is important to investigate the attitudes of creators of play spaces who influence what is made available to young children for play.

In summary, we need to know more about how the physical environment restricts or enables parents and caregivers to offer certain kinds of play opportunities that they consider important for their children's growth and development and how parent's beliefs and values, and larger cultural norms regarding the kinds of play that are important to children influence the environmental play opportunities that are generally made available by architects and planners.

Appropriateness of High-rise Housing for Children

In fast-growing cities, rapid urbanization calls for high-rise housing as a solution to accommodate a diverse range of growing urban populations. Yet, there is considerable debate in the literature about the appropriateness of high-rise housing for children's growth and development. In the Western world, high-rise housing is considered inappropriate for children, but in major cities of South East Asia, high-rise housing is a popular success (Rooney, 2003; Yeung & Wong, 2003; Parmar, Harkness & Super 2004). Despite the

growing prevalence of high rise housing and the mixed perspectives regarding its appropriateness for children, there has been little focused research on young children's experience in these buildings and the specific design features that contribute to this experience. Perhaps the last study to do this in an explicit way was Macintosh's New York study in the early 1980s.

Factors contributing to the debate around high rise housing are related to the larger social fabric, housing policies and building construction technology available at specific time periods. Post war, by mid-20th century, in major cities of Europe, North America and Soviet Union, mass-housing in the form of high-rise residential buildings were envisioned as the housing solution for the growing middle-class families. The advent of concrete and steel as building materials along with Le Corbusier's vision of 'towers in the parks' guided the design and planning of these high-rise housing developments. This housing movement was followed by development of single-family houses in the suburbs that were socially constructed as the ideal family home with support from government policies and low-interest mortgages (Goetz, 2013). Single family homes encouraged white middle-class families living in high-rise housing to move to the suburbs, contributing to 'urban sprawl'; thus, leaving public housing to the racialized poor and poor building maintenance policies (New York Times, 2013)

Soon enough, in the 1970s, tall buildings with poor maintenance were blamed for social failure; and government policies insisted apartment lifestyle (buildings taller than 5 floors) as not appropriate for children in Europe and North America.

Research studies conducted during this time period supported the view that high-rise housing is inappropriate for families with children (reviewed by Evans, 2006) since they are occupied by the socially deprived, have a poor population, and located in isolated areas that are also high in crime and pollution (Newman, 1972; Young, 1976; Moser, 1981; Blair & Hulsbergen, 1993; Ford, 1994; Helleman & Wassenberg 2004; Carroll et al., 2011).

Interestingly, in 1982,² in an effort to improve the quality of residential environments, Esbensen investigated existing standards and guidelines³ for children's play areas in residential developments across 25 countries in the West.⁴ The study outlined the need for strict legislations and specific design and planning guidelines across national, regional and municipal levels to ensure the provision of play opportunities for children (across age groups) living in residential buildings (Esbensen, 1982). Though the study was addressed to public authorities urging them to develop policies with specific guidelines and standards for children's play in residential environments, no measures were taken.

Later, the introduction of glass as a building construction material afforded architects and planners the opportunity to transform public housing for the poor to condominiums for the rich. Soon, poor neighborhoods were gentrified to make room for taller and fancier high-rise 'condominiums' with luxurious amenities and services. These tall residential towers of steel and glass marketed as condominiums (in the US) or high-rise housing (in Australia) were soon envisioned as homes for the rich and adults with no children. For example, the current trend set by Australian developers is to consciously build high-rise apartments to cater to high-income groups who are a mix of DINKS (Dual Income No Kids) or 'empty nesters' (adults who do not have children) (Randolph & Holloway, 2005; Fincher, 2007). In the US and Canada, Rosen and Walks (2013, 2015) and Kern (2011, 2013) confirm a similar trend of building residential apartments for childless adults. This movement in the US, Australia and Canada for consumption-oriented young professionals or consumer citizens to

² Internet search shows this study as a 2012 chapter, but it is misleading. The 1982 book was made available as an e-book in 2012.

³ The study defines "standards" as 'legislations that imply enforcement'; and "guidelines" as 'recommendations'.

⁴ A study questionnaire was mailed to 100 professionals in 38 countries. Out of these, India and 12 other countries did not respond. The study published results from 25 countries, where majority of western European countries recognized the problem of lack of play opportunities faced by children living in residential environments.

live in the inner-city, reflects a neoliberal agenda of urban growth, competition and commodification (Kern, 2013). Despite the fact that these new buildings were designed for a specific demographic, families with children *did* live here, and subsequent research highlighted the lack of play spaces (Carroll et al., 2011) and constrained indoor spaces that discouraged children to engage with peers and participate in group activities (Sarkissian & Kerr 2003).

The poor research foundation related to high-rise housing and children was made worse with studies conducted with families living in high-rise buildings that were designed for adults with no children. Appold & Yeun (2007) rightly argue that the major reason for considering high-rise as inappropriate for children is due to "two-pronged sample selection effects of disadvantaged families concentrated into poor quality housing and childless adults into particular neighborhoods."(p.584)

By contrast, in South East Asian cities including Hong Kong, Singapore and Beijing, high-rise housing as the proposed development form to accommodate growing populations is considered ideal by middle class residents with children (Yeun et al., 2006, Appold & Yeun 2007; Yeh & Yeun, 2011). The focus of high-rise housing research in South East Asia is related to improving sustainable design and planning strategies, legislation governing the planning and safety norms, technological innovations of green building, man-made green spaces in common areas as places for socialization, and residents' satisfaction and aspirations around high-rise living that are limited to views, noise and air quality (Yeh & Yeun, 2011).

Recognizing this trend in research that is limited to technological innovation and advanced construction technology, Yuen points to a future research direction that focuses on addressing, "what do high-rise developments actually mean in terms of those people who live in them?" (p.184) (2011). As a response to Yuen's question and to address the long-standing issue that most studies focus on public housing with deprived residents, Karsten's 2015 study

investigates the constraints for middle-class families living in high-rise apartments in Hong Kong city. She asks: “What does the (new) urban condition of vertical family living mean for households with children?” (p. 241, 2015b)

The study reveals parents’ choices for living in high-rise housing and how it impacts their families. Parents’ apartment choice is based on two conditions: (1) Size and price of the apartment; and (2) location of apartment in relation to children's school and parents' work. Based on parents’ perspectives, the study identifies issues that contribute to children’s positive experience of living in high-rise housing estates⁵:

- (1) Children living in a high-rise apartment or estate, go to the same school, so there are opportunities for children to play with their peers after their school hours;
- (2) Families living in high-rise housing estates have more opportunities to socialize or meet with neighbors compared to families living in single high-rise apartment buildings. Unlike single high-rise apartments, estates have club houses, swimming pools and other amenities within the property that act as public spaces, encouraging children’s play and socialization (Karsten, 2015a, 2015b);
- (3) Some parents stated that children growing up in single family homes are less safe when compared to those in high-rise housing that is equipped with security personnel.

While there is a broad mention of facilities and services that are viewed as positive for children from the parents’ perspectives, Karsten’s study does not identify of specific planning and design features, including material conditions in the built environment that contribute to parents’ positive experience of high-rise housing.

This gap is addressed by Nethercote and Horne’s (2016) study, which focuses on understanding the material conditions and spatial design of middle-income families’ high-rise

⁵ Estates are high-rise housing developments with more than one high-rise building. In the Indian context, in Pune city, estates are known as societies.

apartments. Authors conducted in-depth interviews with 20 high-rise middle-income families in Melbourne to investigate the intimate and material geographies of high-rise living focusing on their identities, practices, and materialities. Out of these 20 families, 15 had young children (i.e., children who were not yet in school). The paper argues that high-rise housing works positively for families with young children as it affords parents the chance to take their toddlers down to play to use shared facilities and helps build a sense of community where “privatized amenities may be co-opted to meet familial needs” (p.1591). The study’s focus on “materiality” is limited to re-organization and adjustment of space or downsizing of “stuff” by families with young children to optimize space and improve accessibility within their apartment units. While the study claims to detail the materiality of high-rise living for families, it does not document (through text, drawings or images) specific material conditions and design details. For example, there is no mention of different textures or play materials or spaces with varying heights and depths that are typically supportive of young children’s diverse play (Doxiadis, 1975). Nor does the study analyze how the re-organization of small spaces influence children’s development. For instance, the study emphasizes the development of tight bonds between parents and children due to small apartment units but does not recognize that these same ‘tight bonds’ may weaken children’s development of independence, social and motor skills (Hüttenmöser, 1995).

Current research in high-rise housing developments in Malaysia (Agha et al., 2019) and Melbourne (Andrews et al., 2018) continue to highlight the lack of proper play environments for young children as negatively impacting their development. An ongoing response to these studies are various reports produced by architects who are investigating children’s use of outdoor spaces in residential environments and providing a few immediate guidelines for families and design professionals. Krysiak’s report describes ways to incorporate existing common spaces within the housing developments to support children’s

active and passive play (2018). Further, ZCD architects in UK continue to highlight that we are currently missing information about children's particular needs and their use of outdoor spaces in residential environments (Bornat, 2017; ZCD Architects & NHBC Foundation, 2017). Effectively, their work responds to systemic mapping of children's play in low-rise housing developments in UK (Bornat, 2018). These reports are a decent start to understanding ways to improve children's play opportunities in residential environments and indicate the need for future work.

Furthermore, play environments for children in care have received attention regarding specific design and planning guidelines including the material conditions. Relevant examples include design of therapeutic garden spaces in health care settings (Curtis et al., 2007), assessment of material conditions of residential environments for children with autism (Simpson, 2009) and abuse (Robinson and Brown, 2016). The focus on care environments is obvious as there is a need to design and plan spaces to ensure the environments are supportive of children's diverse developmental needs. Evidently, there is limited work around children's play in high-rise housing developments and there is a need to focus on understanding and providing for young children's play needs in high-rise residential environments.

In summary, the existing high-rise housing research largely focuses on poor housing conditions leading to failure of public housing or housing built for DINKS or advancement in technological innovation and construction techniques to build taller buildings. Clearly, there is a need to contribute to this debate and clarify the appropriateness of high-rise housing designed for families with children, by conducting a systematic inquiry that includes (a) research with children and parents (including caregivers); (b) documentation of the physical environment of high-rise housing that includes the material conditions; and (c) analysis of how the design and planning features influence children's physical, social-emotional and

cognitive growth and development. It is also important that the high-rise housing selected for the research is not designed exclusively for adults with no children or located in a socially deprived area, since other factors associated with poverty and the official neglect of the poor are likely to confound the findings.

Issues related to Children's Play in High-rise Housing

Research carried out in some countries has concluded that it is very difficult to provide an appropriate range and quality of play opportunities for children living in high-rise buildings. In this section, I identify four thematic areas that uncover challenges associated with young children's play in high-rise housing.

Higher Floor means Poor Parental Supervision

Building height is typically related to the degree of parental surveillance (Doxiadis, 1975), which controls children's ability to go outdoors and play (Hüttenmoser, 1995). An important study that systematically investigates children's ability to play outdoors (those less than ten years of age) in high-rise housing was conducted by Mackintosh (1982) in New York City. Three types of high-rise housing in New York City were chosen for the study:

- a. Single high-rise building with no opportunity for children's play;
- b. East Midtown Plaza with integrated development of plazas and elevated playgrounds on the second floor with access only to residents living in the building;
- c. Stuyvesant Town and Peter Cooper Village Development with grass, no through roads, fenced play spaces and security guards.

The research by Mackintosh revealed that the physical design of East Midtown Plaza's integrated development with elevated playgrounds enabled 73% of children to play outdoors, when compared to the single high-rise building and Stuyvesant Town and Peter Cooper Village Development, where only 14% and 39% of children (respectively) were allowed to play outdoors. The reason for a higher percentage of children playing outdoors at

the integrated development is that parents were visually connected to their children during play.

Research investigating building height focuses on understanding the environmental preferences of residents who desire to live on a higher floor. Yeun et al. (2006) studied the floor height at which residents like to live and why. The study highlights the fact that residents on the 30th floor preferred to live on higher floors, and that the environmental reasons for their preference were that they could see the city skyline, have access to cleaner air, breeze, and privacy.

Though the study by Mackintosh is over three decades old, it still holds significance for my research because: (1) it shows that children's ability to play outdoors is contingent upon parental surveillance and this long-standing issue holds good even today; (2) it demonstrates that elevated playgrounds could be a possible solution to support children's play in high-rise housing; and (3) there is no empirical research since the 1980s that systematically compares the influence of design and planning of the physical environment of different types of high-rise housing on children's play⁶.

Lack of Play Spaces and Related Building Rules

The majority of relevant research highlights the lack of official play spaces as an impediment to children's play in high-rise housing. One may assume that with a lack of designated play spaces in high-rise housing, children would use corridors or parking spaces within the high-rise complex or estate for their play. But some research studies highlight building rules and restrictions that discourage children from playing and socializing in

⁶ During online review, I found studies that investigate the issue of children's play in high-rise housing developments, but the studies are published in Japanese and Mandarin (Park, Park, & Park, 2016a; Park, Park, & Park, 2016b; Yao & Isami, 2011; Akiko & Tomoko, 2011; Li, 2010). I was unable to seek translation support for these journal articles. Online Google Translate helped little by concluding early that children's play was largely restricted to standardized play areas in high-density housing developments.

common areas of the high-rise building. In some residential developments in Australia, children's play is banned in common areas (Gleeson, 2007). Typically, children's noise within and outside apartment units can produce conflicts amongst families, thus discouraging children from playing (Sherry, 2008). Interestingly, these play-related conflicts amongst families are not limited to only high-rise housing developments but are reflected in low-rise informal settlements (or slum developments) too. Findings from Nallari's (2014) research in Mumbai city describes the ways in which neighbors living in closely-packed temporary houses or shacks discourage children from playing immediately outside their homes. Neighbors often scolded young children and girls (up to 13 years of age) for making noise during play and poured water in front of their homes to prevent them from playing. As a result, most times, young children are holed inside their tiny homes (Nallari, 2014) So, whether living in middle-class high-rise housing or poor informal settlements, children's play outside their homes tend to generate tensions amongst families.

Standardized Play Equipment

Garden city planners built play spaces in the interior enclaves of super blocks, thus coming up with a solution to keep children off the streets and safe from the ills of cities (Jacobs, 1961). But these designed play spaces (even today) are segregated from other public areas in the high-rise estate, and offer standardized play equipment for children. The 'Vertical Living Kids' research project that focuses on understanding the environmental experiences or perceptions of children (8 – 12 years) from lower and middle-income families living in private and public high-rise housing units in Australia confirm the trend of building standardized play spaces (Whitzman & Mirachi, 2012). The project highlights the problematic nature of structured play spaces for children where authors state, "One of the problems in all play spaces, but particularly those around high-rise housing, is a tendency to 'over-program' space, to fill up space with play equipment rather than allowing water, sand,

pebbles, and other elements that can be manipulated by children" (p.25) (Whitzman & Mirachi, 2012). While this study does not address in detail the environmental experiences of younger children living in high-rise, it does reveal the problematic nature of play spaces with fixed play equipment that are typically designed in high-rise housing.

Preliminary observations of high-rise housing in India and studies documenting high-rise living in South East Asia confirm the same (Yeh and Yuen, 2011). Contemporary high-rise housing developments that claim to be designed and planned keeping in mind the needs of families with children, typically provide: (a) segregated play spaces or children's play area with standardized play equipment; (b) facilities including swimming pool and indoor club; (c) organized sports for older children and adults (e.g. basketball courts or tennis courts); and (d) services such as shops, markets, cinema, library, and schools (Yuen et al., 2006).

We know that children need varied play materials and opportunities that support their physical, social, emotional and cognitive development. Such structured play spaces and equipment typically provide a single activity, which often fails to pique the interest of a child or to support positive physical and social experiences (Esbensen, 1982; Hüttenmoser, 1995). The studies mentioned above do not recognize that children living in high-rise housing tend to establish familiarity with other children living in the same building, and have more chances to engage in diverse play by sharing toys and other play materials. There is a need to formally investigate the available play opportunities for children in high rise housing, however standardized they are, and to consider how they impact children's overall development.

Reduced Access to Natural Environments for Play

It is well established that nature and natural environments provide varied opportunities for children across diverse ages and with different abilities to play (Moore, 1986; 1993; Moore & Wong, 2000; Hart, 1979; Williams, 1995; Kong, 2000; Clements,

2004; Moore & Marcus, 2008; Cox, 2013) and the lack of exposure to nature can negatively impact children's growth and development (Louv, 2005; Zamani & Moore 2013).

The benefits of playing in natural environments go beyond solving the well-known problem of childhood obesity, the primary focus in much recent research. Robin Moore and Clare Cooper Marcus (2008), draw on the then latest research findings to reinforce the physical, mental and social benefits for children of play in natural environments. According to the authors, children independently establish territories and share experiences with friends in special places, thereby, demonstrating heightened self-esteem and positive mental health (Moore & Marcus 2008). Related studies about children's play confirm that natural environments offer stimulating conditions affording a wide array of play experiences, thereby reinforcing positive behavior in children (Moore & Wong, 2000), reducing the prevalence of Attention Deficient Disorder (ADD), allowing for "healthy attention functioning" (Moore & Marcus, 2008), and fostering children's curiosity and imagination (Cox, 2013). Furthermore, Chawla (2007) establishes the correlation between childhood experiences of nature and environmental stewardship in adulthood including taking action against climate change and other environmental issues.

In order to encourage children's access to green spaces, research suggests ways to integrate nature into residential environments. These suggestions include citywide greenway networks (Cox, 2013), alleys, clustered housing and shared outdoor spaces, internal courtyards, and woonerven or home zones (Moore & Marcus 2008), and vest pocket-parks⁷ (Hart, 2002). The potential for garden-like spaces similar to vest pocket-parks that allow children to experience some elements of nature, close to their homes is an area that requires exploration, especially, in high-rise housing.

⁷ The idea of 'vest pocket parks' was proposed by Jacob Riis in 1897. Hart (2002) proposes residents to collaborate and facilitate these 'vest pocket parks' as "small play areas in the backyards of dense housing" (p.140).

Despite the recommendations to integrate nature in the design of open spaces in high-density housing and the emphasis on the benefits of playing in nature and natural environments, there are limited opportunities for children to engage with natural environments in high-rise housing developments. Research studies and preliminary observations reveal a lack of green spaces and/or restrictions imposed on children to engage with natural environments in high-rise housing developments. "Tall buildings are not good living environments because residents feel imprisoned and isolated from people and other living things, or because children are deprived of direct contact with nature" (Moser, 1981, p. 35). Moser's opinion holds good even today, as children living in high-rise housing have limited opportunities to engage with green spaces outside their apartment units. More than a decade ago, housing developments and other public establishments included signage informing children to keep off the grass (Clements, 2004) and green spaces were only patches of grass (Beer et al., 2003). These situations were documented as common and no more recent research indicates any change since then.

High-rise Housing in India

In cities across the world, particularly in developing countries like India, the complexities of residential living in urban areas are well established by scholars in the social sciences who work with low-income communities. Life in cities reflects experiences of poverty, exclusion, poor housing opportunities and lack of basic infrastructure including water, sanitation and electricity. Research from more than 15 or 20 years ago stated that children living in poor informal settlements have freedom to play outdoors close to their homes where they are watched by adults when compared to children living in middle-class or higher-class areas of the same cities (Lynch & Banerjee, 1977; Bartlett et al., 1999; Chawla & UNESCO, 2002; Hart, 2002; Chatterjee, 2006), and the limited research on this subject that exists today takes a more nuanced approach highlighting a range of factors including

increasing density, conflicting claims around constrained space, fear of being attacked by domestic animals (Nallari 2014; Children's Environments Research Group, 2014).

In India, we have had some research on where and with what children living in low-income communities (Chatterjee, 2006; Nallari, 2014) and rural areas (Chaudhary and Shukla 2015) play. There is however almost no research that specifically investigates children's play in contemporary middle- or high-income residential buildings in the Indian context. A study that investigated children's play in apartment buildings in Mumbai city, India in 1999 is a valuable exception. The study focused primarily on the play profile of middle – and lower class children (6 – 12 years of age) with occasional reference to upper-class children for comparison purposes in low-rise residential buildings, building construction sites, public parks and governmental and non-governmental organizations' play spaces. (Oke, Khattar, Pant & Saraswathi, 1999) Using participant observations, authors note features in the physical environment including a variety of textures, materials and corners with varying heights and depths that afford children the opportunity to play. The study is strikingly lacking in a critical analysis of the social environmental context of children's play by highlighting that children play anywhere and with everyday objects; and provides no future direction for improving play opportunities for children living in apartments in urban areas. After more than two decades, Oke's study today is outdated and does not apply to the current and future of high-rise residential buildings in urban India.

The closest study in the surrounding geographical area that examines the built residential environment and outdoor play of children (9 – 14 years) belonging to a higher socio-economic status is a 2016 study in Dhaka, Bangladesh (neighboring country to India) (Islam et al., 2016). The study focuses on children belonging to middle-childhood, a developmental stage where children are likely to explore outdoors. (Hart, 1979; Moore 1986). To encourage more outdoor time for children, the study results recommends open spaces

adjacent to children's homes that are distributed evenly throughout the neighborhood, instead of concentrating it in a single or few locations. Further, the study recommends using footprint density to measure the actual space available in the neighborhood instead of residential units per unit area to assess and provide for children's outdoor activity needs, and to use "building density as a primary metric" (p.730) for child-friendly development regulations (Islam et al., 2016). While this study provides an alternative approach to addressing child-friendly housing development regulations in developing countries, the results do not specifically address the material conditions of the housing developments or diversity of children's play opportunities in the examined residential neighborhoods. Furthermore, in this study, children (9 – 14 years) have independent mobility to explore their surroundings unlike young children (below 8 years) who are primarily dependent on their caregivers to access outdoor spaces for play. Evidently, there is a lack of research related to young children's play in middle and high-income housing developments in the Indian subcontinent.

To summarize, the issue of high-rise housing was not significant for large sections of the population in India until the 21st century. More recently, the number of middle-class families is on the rise⁸, and high-rise apartments have rapidly become their choice of housing. With India's current growing economy growing at 7% to 8% a year, real estate developers across Indian cities are focusing on building 'affordable homes' in the form of high-rise residential buildings targeting the working middle class families⁹ for whom easy credit and low interest rates are readily available (Range, 2008). Furthermore, there is a trend amongst

⁸ Lower income groups continue to improve their economic situation within the rapidly burgeoning economy, and will soon be entering this middle class, and even within low-income housing, high-rise developments are being adopted through government housing schemes. The Government of India recently launched 'Housing for All' or 'Pradhan Mantri Awas Yojana' scheme that aims at constructing large-scale housing for low-income groups in India. Under this scheme, the Ministry of Housing and Urban Poverty Alleviation has announced several interest subsidy schemes to encourage people from low-income groups to buy homes that are available in high-rise housing developments.

⁹ This is a demographic group who primarily work in the Information Technology (IT), Bio-Technology (BT) and Manufacturing industries.

Indian families to move away from joint-family lifestyle to a single-family ownership, hence, increasing the demand for high-rise residential buildings to accommodate single-family homeownerships in urban India. Also, high-rise housing developments are marketed to young families with claims of keeping in mind the needs of children in these new urban home environments. (See Figures 2.3 and 2.4)



Figure 2.3. A 2015 Real estate Developers' advertisement along Mumbai-Pune highway stating 'Childhoods Available'. Photo: Atmakur-Javdekar



Figure 2.4. A 2019 Real estate Developers' advertisement in Wakad introducing child-focused homes.
Photo: Atmakur-Javdekar

Existing research related to high-rise housing in India is limited to investigating construction technologies and building materials (Example: fly ash) to make high-rise buildings safe (Kavalikar & Patil, 2014). Studies related to home buyers' decisions to move into high-rise housing are typically associated with safety concerns of living in tall buildings (Sundrani, 2012). So, *what does high-rise housing actually mean for working middle-class families with children? Specifically, what environmental features do working middle-class families with children seek in high-rise housing? Why? And how does this influence children's growth and development?*

Conclusion

Play is fundamentally important to young children's learning and development and health and well-being. There are many factors in the social and physical environment that

influence whether or not children have adequate opportunities to play. Past research in other countries has revealed that there are some special challenges to trying to create adequate play opportunities for children when they are being raised in high-rise housing. India is currently experiencing a dramatic increase in the proportion of children who are being raised in high-rise housing developments. A paucity of research on the conditions that can influence the success of high-rise housing as appropriate settings for families with children makes this a priority area for research in India. This literature review has revealed that my dissertation research needs to take into account a wide range of factors.

(CHAPTER 3)
Theoretical Framework and Research Questions

An Ecological Model to Understanding Play Opportunities for Young Children Living in High-rise Housing

I draw upon Bronfenbrenner's ecological model of human development (1994) as a framework for the investigation. Using this model, the diagram below is a conceptualization of the nested hierarchy of factors that the literature suggests are important influences on the phenomena of children's play in high-rise housing. At the center of the analysis is the issue of how caregivers (including parents, domestic helpers and grandparents) think about the importance of play and what types of play and how they manage the daily activities of their children. Influencing caregivers' management of children's play are the particular physical design qualities of the housing development where they live and the location of the building in relation to nearby additional opportunities for play. These design qualities are not only influenced by the intentions of the developer or design professionals but also by the larger policy and economic forces that they operate under. Reaching even further out in the analysis of play opportunities, we need to ask what changes there are in how childhood is currently being constructed by society in India, what expectations there are of children and what the social norms are for children regarding how they should be spending their time, including their time in play.

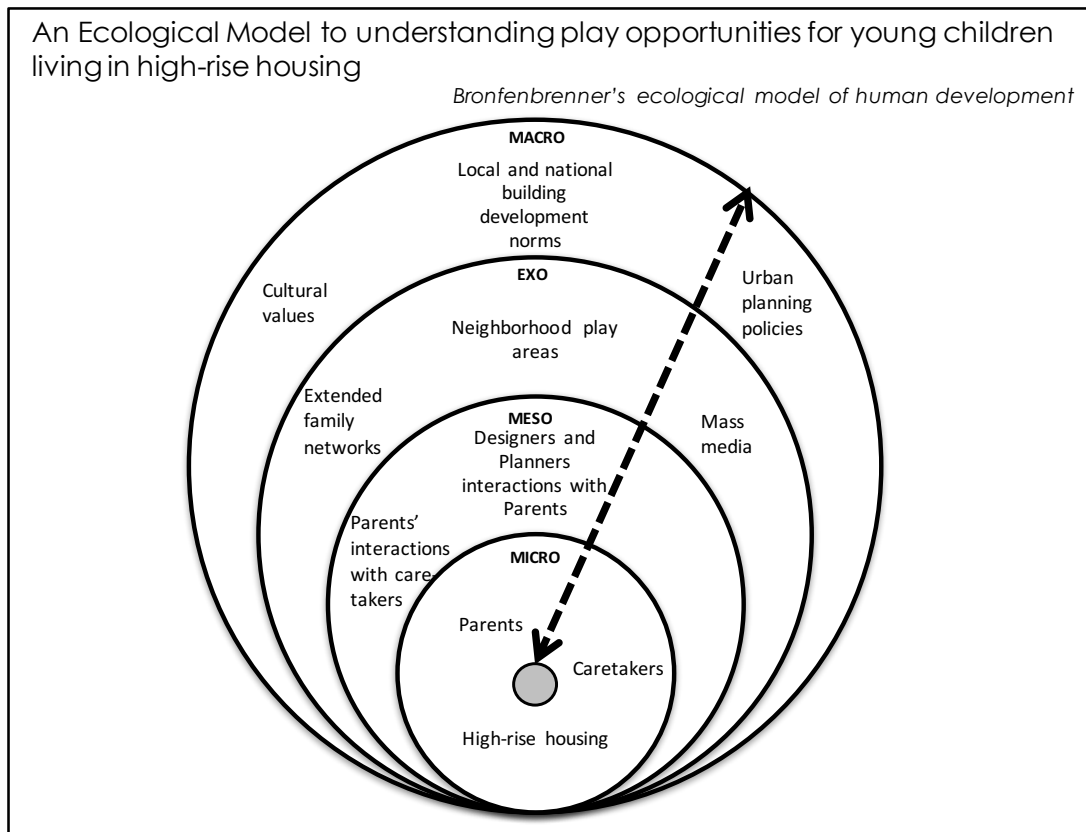


Figure 3.1. An ecological model for understanding play opportunities for young children living in high-rise housing, drawing on Bronfenbrenner (Created by Atmakur-Javdekar)

Main Research Question

What combinations of spatial arrangements and physical features in the planning and design of high-rise housing developments in India influence the access to play and quality of play opportunities available for young children (1 – 8 years of age), and how appropriate are they for young children's growth and development?

Specific Research Questions

1. What factors influence, inform and constrain the developers and designers of play spaces for high-rise housing developments (e.g. cultural norms regarding play, governmental policies and economic forces including real estate and commercial)?
2. What play spaces do children use and not use in the buildings and surrounding areas, and how is this related to:

- (a) environmental planning and design factors (e.g. distance, location etc.)
 - (b) building management regulations (e.g. security, hours of access, etc.)
 - (c) particular family characteristics (e.g. childcare arrangements, number of siblings, parents meeting desires, etc.).
 - (d) beliefs and values of middle-class parents regarding young children's play (e.g. free play versus structured, helicopter parenting, alternative commercial choices, digital technology etc.)
3. How appropriate is the range of play opportunities and the spatial layout of children's spaces typically available given the current state of theory and research on young children's play in relation to their health, development and well-being?

(CHAPTER 4)
Research Design

Choice of Working with Young Children Aged One to Eight Years

I chose to investigate the play opportunities made available for young children¹⁰ up to the age of 8 years. I did not include the first year given infants' limited mobility. Below is the rationale for working with the chosen age group:

- i) This age group is considered as a critical stage in human life when rapid neurological development along with overall health trajectory related to physical, emotional and social growth is established. Young children need a range of play opportunities to be available frequently and close by to enable informal surveillance by parents or caretakers. Yet the review of literature shows there are few studies that examine young children's environmental experiences and their play opportunities within high-rise housing that are home to increasing numbers of children this age.
- ii) Literature and preliminary ethnography indicates that parents, planners and designers are usually clear about how to provide for older children's organized games and sports. They are less informed about the full range of kinds of spontaneous play opportunities that are important for young children's growth, learning and development and the kinds of physical environments that are appropriate for affording these kinds of play.

Choice of Working with Indian Middle Class Families

The number of middle class families is increasing rapidly in India, a function in large part of the growing employment opportunities associated with the country's fast expanding trade, communications, information technology, businesses services, real estate and manufacturing sectors. But middle class affiliation is not just a matter of income. Across the

¹⁰ World organizations similar to UNICEF, The World Bank, Bernard van Leer Foundation that work in the field of children's rights, with a focus on Early Childhood Development (ECD), categorize children till 8 years of age as 'young children'.

top four of India's five income quintiles¹¹, the majority of people self-identify as middle class (The Hindu, 2016). Even among the lowest income group, almost half (46%) perceive themselves as middle class. There is no consensus on the debate of how much a middle-class family earns. Articles and reports highlight that defining middle-class based on income levels are faulty as the surveys currently only consider the people who pay taxes, i.e., less than a tenth of the total workforce. According to the 2016-2017 financial year (2017-2018 tax assessment year), only 4.7 crore individuals paid taxes. It is important to note that the population of India according to the Indian census is 48 crores. This primarily indicates that rest of the workforce (90%) work in the informal sector or earn income through agriculture where there are no taxes to be paid. To put simply, there is no data on income of the 90% of Indian workforce (Shashidhar, 2019). In the study published in The Hindu (a national newspaper), people across different states belonging to varied income groups associate themselves as middle-class. So, as a country, India's middle class – the driver of economic growth and socio-cultural change – is still under transformation. Clearly, it is as much a matter of aspiration and values as of income (Brandt & Büge, 2014). Given the vagueness of the term, then, for the purposes of this study, I have defined “middle class” in terms of three criteria that characterize a growing number of Indian households, and that reflect income, lifestyle and aspirations. My sample is defined by the following criteria:

- Families that include two working parents;
- Families whose annual income is more than 96,000 INR or 1,477 USD; and
- Parents who aspire for their children to engage in enriching or extra-curricular activities.

¹¹ (1) Lower class (less than 36,000 INR or 554 USD); (2) lower middle class (between 36,000 – 96,000 INR or 554 – 1,477 USD); (3) middle class (between 96,000 – 180,000 INR or 1,477 – 2,770 USD); (4) upper middle class (between 180,000 – 720,000 INR or 2,770 – 11,077 USD); and (5) upper class (above 720,000 INR or 11,077 USD).

Choice of Research Location

The urban landscapes of fast-growing cities in India are dotted with high-rise housing developments that are primarily designed to target the increasing number of middle-class families. I first briefly surveyed the city skylines of Hyderabad, Bengaluru¹² and Pune cities as possible sites to investigate high-rise housing developments. The brief survey included driving through the new suburban areas in all three cities and photographing them. The photographs revealed a similar pattern of completed and upcoming building skylines of high-rise residential developments (See Figures 4.1, 4.2 and 4.3). Later, I chose to investigate the feasibility for research in Pune city where I now live as this enabled me to have sustained engagement with the geographic-political-social-cultural context on an everyday basis.



Figure 4.1. Skyline of Hyderabad. Photo: Atmakur-Javdekar

¹² Hyderabad and Bengaluru cities are my paternal and maternal home cities, respectively.



Figure 4.2. Skyline of Bengaluru. Photo: Atmakur-Javdekar



Figure 4.3. Skyline of Pune. Photo: Provided by developer.

Pune, Maharashtra.

Located on the leeward side of the Western Ghats (also known as Sahyadri Hills) of the Indian peninsular, Pune is the second largest city in Maharashtra state after Mumbai and the ninth most populous Indian city with a population of 5.05 million (Office of the Registrar General & Census Commissioner, India, 2011). Popularly known as the Oxford of the East and better known historically as the ‘Queen of Deccan’, Pune continues to be a growing Information Technology (IT) and Bio-Technology (BT) hub; and is now second in line amongst 20 Indian cities to become a smart city.¹³ (Ministry of Housing and Urban Affairs, 2016).

¹³ The Indian Ministry of Housing and Urban Affairs introduced the smart city challenge to encourage cities across India to apply for funding for city improvements. (<http://smartcities.gov.in/content/innerpage/what-is-smart-city.php>)

Typical of ancient civilizations, Pune developed on the banks of river Mutha¹⁴ as an agricultural settlement during the 8th Century. Governed by the Peshwa rulers, this city grew to its form in an organic manner around the bend of Mutha river and was characterized by small communities with boundaries called ‘Peths’. It was during the Peshwas that the Wādas – traditional homes with a central courtyard – of Pune were developed to the highest form. The colonial period later influenced the development of a planned city area called the Cantonment or Camp area that was characterized by large avenues, colonial buildings and grand designs. Post-independence, industrialization led to the formation of a new city, Pimpri Chinchwad towards north of Pune across the Mula river. These twin cities each have their own municipal corporation called Pune Municipal Corporation (PMC) and Pimpri Chinchwad Municipal Corporation (PCMC).

Due to the liberal economic reforms of 1991, and favorable economic policies of the 21st century, such as the 2001 Bio-Technology Policy and 2006 Special Economic Zone (Government of Maharashtra, 2013; Kantakumar, Kumar, & Schneider, 2016) Pune has witnessed suburban growth well beyond the three rivers – Mula, Mutha and Mula-Mutha (Figure 4.4). The development of these suburbs in the 90s was characterized by plotting of agricultural lands, and building of independent homes, gated communities, and low-rise and high-rise residential buildings (Diddee & Gupta, 2013). The construction of IT and BT parks during 2001-2013 converted grasslands and fertile agriculture lands into built-up urban land-use supporting residential and commercial establishments. Cushman & Wakefield (2014) indicated that by 2018, middle-income housing would increase by 46% and that Pune would witness a housing shortfall. Also, a rule of thumb used by real estate developers is that there should be 500 sft of residential space for every 100 sft of IT or BT office space¹⁵. A response

¹⁴ Mula, Mutha and Mula-Mutha are three rivers that pass through Pune city.

¹⁵ Information gathered from conversations with developers during preliminary ethnography.

to this is visible in the current landscape in the form of high-rise housing developments across the Pune Metropolitan Region (PMR).

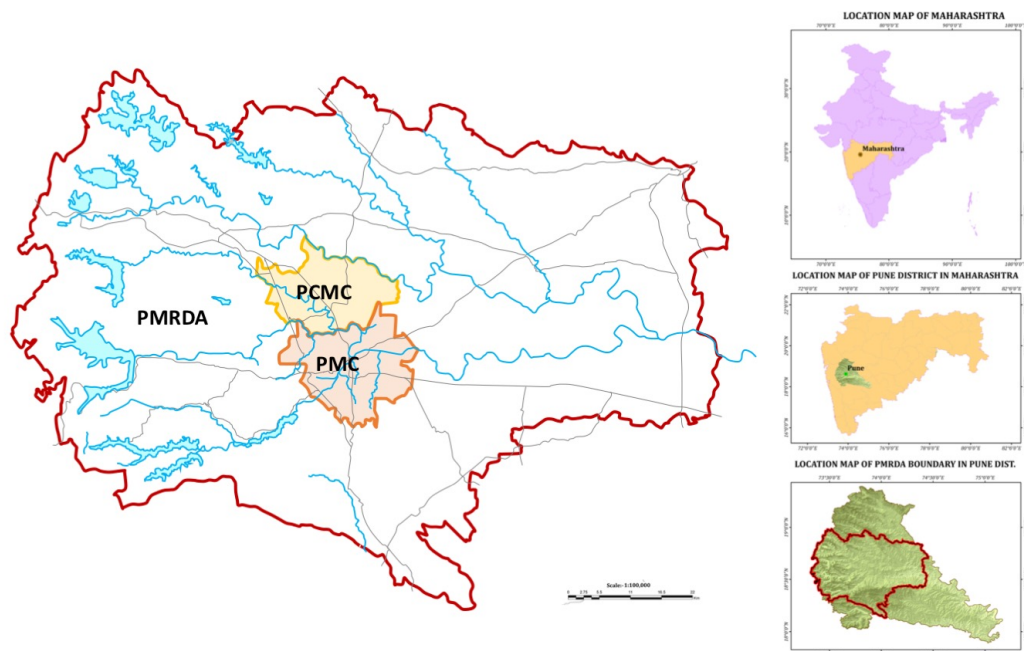


Figure 4.4. Map of PMC and PCMC¹⁶

The twin cities – Pune and Pimpri Chinchwad – and three Cantonment Boards – Pune, Khadki and Dehu Road – form the urban core of PMR. In 2016, the Pune Metropolitan Region Development Authority (PMRDA) announced revised boundaries of PMR, which includes (Express News Service, 2017):

- (a) Two Municipal Corporations (MC) – Pune (PMC) and Pimpri Chinchwad (PCMC);
- (b) Three Cantonment Boards (CB) – Pune CB, Khadki CB and Dehu Road CB
- (c) Seven Municipal Councils – Alandi, Chakan, Lonavala, Rajgurunagar (Khed), Saswad, Shirur and Talegaon Dabhade;
- (d) 13 census towns; and
- (e) 842 villages (Government of Maharashtra, 2016).

¹⁶ Map drawn by author based on PMRDA Limit as per Govt. notification no. TPS-1815/613/CR-309/15/UD13 issued on December 2015.

The predicted urban growth for Pune shows that the city will expand mainly in the North and East directions, rather than in the South and West directions. This may be because of the Western Ghats in the South and West (KantaKumar, Sawant & Kumar, 2011). The eastern part of Pune typically has large townships (400 – 600 acres) such as Amanora Park and Magarpatta City. Magarpatta recently gained global attention as ‘one-of-a-kind’ model of urban development, which includes a single developer working with farmers to build a new city and not the involvement of multiple real estate developers (Sami, 2013).

The urban form of Magarpatta is similar to that in other parts of Pune where agricultural lands are converted into high-rise residential buildings and commercial spaces. A successful urban development model like Magarpatta demands a developer who has the financial capital, political support and the social desire to work with farmers and integrate them into the development process (Sami, 2013).

In the north-west, along the Pune-Mumbai development corridor, the state government has allocated 2800 acres of land for the development of an IT Park (Government of Maharashtra, n.d.) in Hinjewadi. This has led to urbanization of rural fringe villages in the surrounding areas. This type of development is representative of other parts of urbanizing India where private developers are converting agricultural farmlands (no more than 200 acres) into high-rise residential developments to accommodate middle-class families in the IT and BT sectors. Successful developments like Magarpatta City are unique and cannot be easily replicated because it is not always possible to mobilize a large group of landowners with the necessary financial capital and social and political support. I am interested in the not-so-unique development models that are common to the urban landscape of India – where private developers invest the capital to buy land from the farmers or enter into a joint development contract with landowners.

Wakad.

I chose to conduct research in one of the fast-growing ‘suburbs’ surrounding Hinjewadi, i.e., ‘Wakad’ in the north-west region of Pune located along the Pune-Mumbai development corridor because of:

- (a) proximity to the IT and BT hubs in Hinjewadi (Figure 4.5);
- (b) a physical urban form is characterized by high-rise residential buildings; and
- (c) a largely young middle-income demographic, with families employed in the IT or BT sector where both partners are working professionals.

Further, the price range of apartment projects in Wakad is between 32.77 Lakhs to 1.66 Crores INR¹⁷. Young families who live in these areas typically invest in a two or three bedroom sized apartment in high-rise residential projects costing 80 lakhs (approximately, 117,534 USD)¹⁸.

¹⁷ Approximately, 48,144 USD to 243,883 USD @ 68 INR = 1 USD exchange rate

¹⁸ This information is based on conversations with developers in Pune city during my preliminary ethnography that led to the writing of the research proposal.

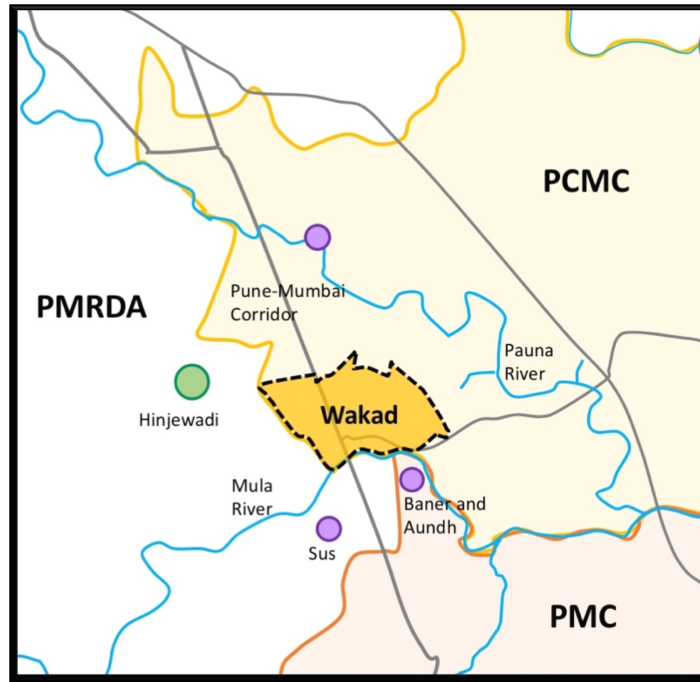


Figure 4.5 Wakad site selection¹⁹

High-rise residential buildings.

The 2016 National Building Code of India (NBCI) defines residential buildings with a height more than or equal to 15 m. (Bureau of Indian Standards, 2016a). The existing Development Control rules²⁰ for PMC, PCMC and PMRDA outline the maximum permissible height for a residential building as 100m (or up to 30 storeys) in PMC, and 70 m (up to 22 floors) in PCMC and PMRDA. However, most residential buildings recently constructed are 36 m tall or up to 12 storeys high across Pune metropolis. This is because of multiple factors²¹ including the plot size, side margins and the recommended Floor Space Index (FSI) that control the built up area for all residential buildings.

¹⁹ Map drawn by author based on PMRDA Limit as per Govt. notification no. TPS-1815/613/CR-309/15/UD13 issued on December 2015 and Google Maps.

²⁰ In Maharashtra state, every urban corporation abides by the Municipal Corporation Act that outlines broad development norms. For the Pune metropolis, PMC, PCMC and PMRDA areas have adapted the 2010 Development Control (DC) rules known as, PMC Development Control rules, PCMC Development Control rules and PMRDA Development Control rules, respectively.

²¹ I provide a detailed explanation of the factors influencing the physical (tall) form of the housing developments in Wakad in Chapter 6.1. Classification of Spatial Elements of Housing Societies.

Thus, for the purpose of my study, residential buildings higher than five floors are considered as high-rise²² housing as this takes into consideration the current trend of building heights (36 m) followed by developers in Pune metropolis according to the 2010 Development Control rules and the archaic definition of high-rise residential buildings as outlined by NBCI. Further, it is important to note that in Pune, any housing development (high-rise or low-rise) is commonly called a ‘housing society’ (HS). Thus, from now onwards, I will refer to high-rise housing developments or residential buildings as housing societies (HSs).

Mixed-Methods Research

As there are no formal studies documenting the physical environment of housing societies in Wakad, an overall investigation of the different types of residential environments in the area along with a detailed inquiry of few selected unique cases is necessary. Specifically, the research questions call for a thorough investigation of the housing societies to fully realize the physical environment and social influencers contributing towards the phenomenon of young children’s play opportunities in Wakad’s housing societies. For this, a mixed-methods research with a strong foundation of qualitative study supplemented with quantitative methods is appropriate. Accordingly, I employed a mixed methods approach to the investigation that called for a three-phase research design (Table 4.1):

1. Phase I – Area Overview;
2. Phase II – Baseline Study; and
3. Phase III – Case Study Research.

²² In architecture and planning, the term, ‘super-block’ is used to describe high-rise housing estates that have multiple buildings with internal streets and infrastructure. Such super-blocks in India are termed as townships (more than 125 acres) and are not as common as housing estates (10 – 15 acres) that are typically a group of six to ten residential buildings with modest amenities. As I position my work in the South-Asian context, I use the term high-rise housing or housing society as it is more commonly used in recent literature in children’s geographies.

Phase I – Area Overview <i>(June to September 2015)</i>	Phase II – Baseline Study <i>(October 2016 to April 2017)</i>	Phase III – Case Study Research <i>(May 2017 – December 2018)</i>
Method A – Visual Imagery	Method C – Field surveys of 63 housing societies	Method E – Semi-structured open ended interviews with developers and design professionals
Method B – Web-Scraping	Method D – Semi-structured open ended interviews with city planning professionals	Method F – In-depth field studies
		Method G – Semi-structured open ended interviews with parents and caretakers of seven Housing Societies
Method H – Archival data collection ²³		

Table 4.1. Three-phase research design

In Phase I – Area Overview, I used quantitative research methods to study the urban form of the chosen area and analyzed large datasets to identify a strategic sample of housing societies for Phases II and III of the investigation. Across the three phases, I developed data collection tools specifically for this study (see Appendices section). The tools include:

- A. Study-Site Profile Exercise
- B. B. Semi-structured open-ended interview protocol for city professionals
- C. Semi-structured open-ended interview protocol for developers and design professionals
- D. Field Visit – Researcher Protocol
- E. Semi-structured open-ended interview protocol for parents and caregivers of young children.

I piloted these tools during their initial use in the field and corrected them with minor changes.

My research aims to generate new knowledge about the available play opportunities for young children from middle-class families living in high-rise housing developments in

²³ Archival data collection as a research method was employed multiple times during the three phases of the research design.

Wakad, which has not been the focus of any prior research. This requires me to conduct an in-depth study of the physical environment of housing societies in Wakad and investigate the social factors influencing children's play, i.e., parents' and caregivers' management of their children's play. Accordingly, I adopted a qualitative research methodology for Phase II – Baseline Study of 63 housing societies in the Wakad area and Phase III – Case Study Research of the seven Housing Societies because a detailed description of the phenomenon (i.e., children's play in high-rise housing) was required as the first step in coming to understand it.

Miles and Huberman (1994) indicate that, the goal of qualitative research is to “gain a ‘holistic’ (systematic, encompassing, integrated) overview of the context under study” (p.6). Further, Groat and Wang (2002) describe qualitative research as a methodology that a) lays emphasis on real-life settings; b) focuses on interpretation and meaning by the researcher; c) focuses on how respondents make sense of their own circumstances; and d) uses multiple tactics or bricolage – “a pieced-together, close-knit set of practices that provide solutions to a problem in a concrete situation.” (Denzin and Lincoln, 1998, p.3). This implies a case study approach but one case study would not adequately cover the range of types of play settings included in the category of “high-rise housing”. A comparative case study is an appropriate choice because it aims to “discover contrasts, similarities, or patterns across the cases” (Campbell, 2010, p.174). I therefore chose to use a comparative case study approach, enabling me to describe in detail the play opportunities and constraints in a wide range of types of play settings found in multiple examples of housing societies in Wakad.

Phase I – Area Overview

From June to September 2015, I studied the Wakad area via: (a) Visual Images and (b) Web scraping. The process of web scraping includes accessing web pages, finding

specific unstructured and semi-structured data, extracting and transforming them (if required) into a structured data set (Mitchell, 2015; Boeing and Waddell, 2017).

Method A – Visual Images

In order to understand the urban form of housing developments in Wakad area, I captured aerial images of the area using Google Earth's 'Time Slider' feature during three time points over the past decade – 2005, 2010, 2015. At this stage, I also drove along the Pune-Mumbai Development Corridor and took photographs of the urbanizing landscape and real-estate related advertisements by developers to gather cultural and mass media trends that targeted sale of housing societies for middle-class families, particularly families with children. This type of visual imagery helped recognize macro-level factors that influence children's play opportunities in existing and future housing societies.

Method B – Web Scraping

Following the visual imagery, I employed Web Scraping (Boeing and Waddell, 2017), where I gathered data from three popular real estate websites including Commonfloor, Magicbricks and 99acres. I sourced specific housing data including number of floors, 2 or 3 BHK²⁴ apartment units, type of community amenities, price range of apartment unit, unique selling features as listed by the developer and date of completion of the project. During the analysis, I identified 288 residential buildings, out of which 266 (92.4%) were housing societies, and the rest were independent bungalows or row-house type of projects. Out of the 266 housing societies, 178 were completed and the remaining 88 were under construction (in 2015). During analysis of the datasets, I applied three criteria to the 178 housing societies data to identify 63 housing developments for the baseline study. These include:

1. Housing society should have more than five floors;
2. One apartment unit or tenement does not cost more than 80 lakhs; and

²⁴ BHK – Bedroom-Hall-Kitchen

3. Housing society was completed (or due to be completed) by 2015.

Method H – Archival Data Collection

I reviewed urban planning policies, rules and regulations as enlisted in PCMC Development Control rules (Urban Development Department, 1999) and the National Building Code of India (Bureau of Indian Standards, 2016a; 2016b) that guide open space planning and building design for residential buildings in Wakad.

Phase II – Baseline Study

Method C – Field Surveys of 63 Housing Societies

From October 2016 to April 2017, I conducted (C) Field surveys of 63 housing societies. For the Field Surveys, I used a ‘Study-Site Profile exercise’ (Appendix A) to assess the range of play opportunities available for children in the 63 housing societies. During the Field Surveys, I visited each study-site a minimum of three times at different times of the day. In the mornings, there tended to be no children using the open spaces for play in any given housing society, but in the evenings there were 10 – 50 children. I noticed that children typically come to play in the evening after 5 PM²⁵. At this stage of the research, I took photographs at each site and made sure not to take any pictures where children or adults could be recognized. Sometimes, I was escorted through the housing society by management staff or a resident volunteer who showed the different areas in the housing society.

Through analysis of data from the 63 HSs, I classified spatial elements of housing societies and developed analysis frameworks to assess young children’s play opportunities in residential environments. This aided me in identifying my strategic sample of seven Housing Societies (HS1, HS2 ... HS7) for in-depth case study research (Phase III).

²⁵ In Part Three of the Dissertation, I explain why children from middle-class families living in housing societies typically come out to play in the evening.

Method D – Semi-structured open-ended interviews with City Planning

Professionals

For the interviews with city planning professionals, I aimed to choose at least one city planning professional, i.e., urban planning officer or municipal commissioner responsible for urban development in each of the three municipalities of Pune metropolis. However, it was difficult to gain access to interview these professionals as they hold high positions in the government. With the help of a personal social network, I obtained permission to conduct semi-structured open-ended interview with one city planning professional (PMRDA commissioner). Through snowballing, I then gained access to interview the Child Rights Chairperson for Maharashtra state. I conducted these interviews during phase III due to constraints related to IRB approval²⁶ and delay in obtaining permissions. After receiving consent, I conducted both interviews by following the ‘Semi-structured open-ended interviews with city planning professionals’ interview protocol (See Appendix B). These interviews revealed the larger policy forces that impact city planning professionals in ways that influence young children’s play opportunities in HSs.

Method H – Archival Data Collection

I used an online search to gather (a) layout plans, (b) building plans, (c) marketing materials, and (d) design related documents and materials of the 63 housing societies.

Phase III – Case Study Research

From May 2017 to December 2018, I undertook the case study research where I replicated research methods or field procedures across the seven HSs. Field procedures for each Housing Society included: (E) Semi-structured open-ended interviews with design and planning professionals; (F) In-depth field study, and (G) Semi-structured open-ended interviews with parents and caretakers of young children. I used an Echo Smart pen (a

²⁶ I received IRB approval to conduct research with human subjects on 27th April, 2017.

recording device) to record all the key informant interviews. These procedures gave me the information I needed to (a) understand the diverse spatial variables that influence the current situation of young children's play in housing societies; (b) describe the different types of play opportunities available across a range of housing societies; (c) assess the quality of these play opportunities from the point of view of the parents and caretakers; and (d) evaluate from the perspective of theory and research on play.

Method E – Semi-structured open-ended interviews with developers and design professionals

Interviews with design professionals included three primary key informants: architects and landscape architects of HSSs, and play equipment manufacturer. I was unable to obtain permission of all developers and design professionals for each housing society. So, I made sure to interview a minimum of *one* design professional or developer for each HS where possible (Table 4.2). After receiving consent, I conducted the interviews by following the 'Semi-structured open-ended interviews with developers and design professionals' interview protocol (See Appendix C). In total, 11 key informants were interviewed, out of which there were four developers, four architects, two landscape architects and one play equipment manufacturer.

These interviews were designed to understand developers and design professionals impact on children's play opportunities at the micro, meso and macro levels. Specifically, at the micro-level, the interviews focused on the materiality of the space and the organization of the spatial elements that influence children's play. At the meso-level, interview questions aimed to understand the design and planning strategies related to the location of different types of play areas and parents access to them with their young children. Lastly, at the macro-level, the interviews aimed to understand the influence of policy frameworks and commercial forces within which design professionals planned housing societies.

S.No.	Housing Society	Developers and Design Professionals Interviewed	Number of Interviews
1	HS1	(Did not receive permission from developer to interview)	0
2	HS2	Developer and Architect	2
3	HS3	Developer and Architect	2
4	HS4	(Did not receive permission from developer to interview)	0
5	HS5	Architect	1
6	HS6	Developer, Architect and Landscape architect	3
7	HS7	Developer and Landscape architect	2
8	NA	Play equipment manufacturer	1
TOTAL NUMBER OF INTERVIEWS			11

Table 4.2. Overview of developers and design professionals' interviews

Method F – In-depth field studies

For the in-depth field studies, I visited each HS a minimum of four times in the evenings (between 5 PM and 8 PM) and once in the mornings (between 9 AM and 11 AM) because children typically came out to play in the evenings. During these visits, I walked the study site multiple times, identified spaces²⁷ used by children and caretakers, paused at each identified space and evaluated the space using the 'Field Visit – Researcher Protocol' (Appendix D). I documented these walks via photographs, videos and field notes. In the seven HSs, the typologies of spaces evaluated were either designated play areas or common areas²⁸ (open/semi-open/closed). Below, I outline two inclusion criteria to identify spaces for evaluation of children's play opportunities in the Housing Societies. If one out of the two inclusion criteria was satisfied, then I evaluated the space. The number of children using the space, children's abilities and gender were not grounds for exclusion.

1. I observed children use the space (designated or not) for play at least once;

²⁷ I printed multiple copies of the site layout plan gathered during archival research, and used these hard copies during my field visits. I marked spaces, made notes and sketched on the hardcopies of the layout plans for each of the seven housing societies. Further, I also used these hardcopies with my notes as probes during interviews with the developers and design professionals.

²⁸ 'Common areas' are defined as open or semi-open or closed space such as, lawn, small park, green pocket area, nature area, amphitheater, plaza, refuge area, parking area or community hall.

2. During the Field Surveys (Method C), I was informed by the housing society management staff or a resident volunteer about specific spaces (designated or not) used by a single child or group of children for play.

Further, when children were using a space for play, I engaged in light conversation with them after receiving informed consent from parents and caretakers; I did not conduct any in-depth interviews with children, nor did I record their identities. I spoke with seven children across two Housing Societies (HS3 (n=2) and HS4 (n=5)) (Table 4.3). During my conversations with children, I asked if they like their play space, and what they like about it. I documented these conversations through audio recordings. When children showed me specific things, such as, a shelter they built for an animal or a cake they baked in the sand pit, I took photographs and video recordings.

S.No.	Housing Society	Children (code name)	Age	Gender
1	HS3	CH01	5	Girl
		CH02	3	Girl
2	HS4	CH03	7	Boy
		CH04	7	Girl
		CH05	7	Girl

Table 4.3. Overview of conversations with children

Method G – Semi-structured open ended interviews with caregivers

Interviews with caregivers included three categories of key informants: parents, grandparents and domestic helpers of HSs. After the in-depth field studies, I received consent from caregivers to conduct semi-structured open-ended interviews with them about the study site and the spaces their children used and did not use for play (See Appendix E: Semi-structured open-ended interviews with parents and caregivers of young children). The consent forms were translated into Marathi and Hindi languages for caregivers who could not understand English. I recruited caregivers at the housing society and conducted these interviews close to the play areas or a place where they were comfortable. I conducted the interviews in Hindi, Marathi or English as per the convenience of the caregivers. In total,

across the seven HSs, 36 caregivers – 27 parents, five grandparents and four domestic help – from a total of 33 families participated in these interviews (Table 4.4). These interviews were designed to understand caregivers’ (primarily, parents’) play values and beliefs, societal norms influencing parents’ decisions about childcare, and parents’ management of their children’s daily activities.

S.No.	Housing Society	Parent/Caretaker (Code name)	Parent/Caretaker Gender (Male/Female)	Number of Children	Age and Gender of Children
1	HS1	Parent01	F	1	3.5/G
2		Parent02	F	1	2/B
3		Parent03	F	1	6/B
4		Parent04	F	1	6/G
5	HS2	Parent05	F	2	<ul style="list-style-type: none"> • 1/G • 4/G
6		Parent06	F	1	3.5/B
7		Parent07	F	1	3.5/B
8		Parent08	F	1	3.5/B
9		Grandparent01	F	2	<ul style="list-style-type: none"> • 3.5/G • 3.5/B
10		Domestic Help01	F	1	3/G
11	Domestic Help02	F	1	4/B	
12	HS3	Parent09	F	1	
13		Parent10	F	1	
14		Grandparent02	M	3	<ul style="list-style-type: none"> • 2.5/B • 7/B • 7/B
15		Grandparent03	F	1	4.5/G
16		Grandparent04	M	2	<ul style="list-style-type: none"> • 3/B • 6/G
17		Grandparent05	F		
18	HS4	Parent11	F	1	8/B
19		Parent12	F	1	8/B
20		Parent13	M		
21		Parent14	F	2	<ul style="list-style-type: none"> • 4/B • 10/B
22		Parent15	F	2	<ul style="list-style-type: none"> • 7.5/G • 13/B
23	HS5	Parent16	M	2	<ul style="list-style-type: none"> • 1.5/B • 9/B
24		Parent17	F		
25		Parent18	M	2	<ul style="list-style-type: none"> • 1/B

S.No.	Housing Society	Parent/Caretaker (Code name)	Parent/Caretaker Gender (Male/Female)	Number of Children	Age and Gender of Children
					• 5/B
26		Parent19	F	1	1.3/B
27	HS6	Parent20	F	1	5/B
28		Parent21	F	2	• 5/G • 2/B
29		Parent22	F	2	• 5/G • 1.5/G
30		Parent23	F	1	7/B
31		Parent24	F	1	6/G
32	HS7	Parent25	F	1	4/B
33		Parent26	F	2	• 5/B • 5/B
34		Parent27	F	1	1.5/B
35		Domestic Help03	F	1	1.5/B
36		Domestic Help04	F	3	• 1.5/B • 1.5/B • 8/B

Table 4.4. Overview of caregivers' interviews across seven HSs

For the interviews, I aimed for a balanced mix of male and female caregivers but since women primarily accompanied children to the play areas, this was not realistic. Table 4.5. shows the attributes (sex) of 36 caregivers²⁹ who were interviewed. Male caregivers comprise 14% (n=5) of the total and female caregivers 86% (n=31) including mothers (67%), grandmothers (8%) and domestic help (11%).

	Parents	Grandparents	Domestic Help	Total
Male	8.3	5.6	0	100.0
Female	66.7	8.3	11.1	100.0
Total	75.0	13.9	11.1	100.0

Table 4.5. Distribution of caregivers' sample by sex (%)

While recruiting caregivers, I was able to balance the number of toddlers (1 – 2 years), pre-school age children (3 – 5 years), and school age children (6 – 8 years). Table 4.6.

²⁹ No. of Parents = 27 (M=3; F=24); No. of Grandparents = 5 (M=2; F=3); No. of Domestic help = 4 (M=0; F=4)

lists the distribution of the age and sex of children whose parents or caretakers were interviewed for the study.

	Toddler (1 – 2 years)	Pre-school age (3 – 5 years)	School-age (6 – 8 years)	Total
Boy	22	28	20	100
Girl	4	16	10	100
Total	26	44	30	100

Table 4.6. Distribution of children’s sample by age and sex (%)

Table 4.6 shows the age and sex of the 50 children³⁰ whose caregivers were interviewed. Children aged one to two years comprise 26% (n=13) of the total, those three to five years comprise 44% (n=22) and six to eight years comprise 30% (n=15). This means, more caregivers of pre-school age children were interviewed than caregivers of toddlers or school-age children. In terms of sex, boys comprise 70% (n=35) of the total and girls 30% (n=15). Also, within each age group, the percentage of boys is consistently higher than girls.

Data Analysis

For this multiple case study research where the physical environment of each study site was unique, I first conducted a within-case analysis followed by a cross-case analysis (Yin, 2003). Here, the unit of analysis is the Housing Society. The within-case analysis is the first level of analysis where I analyzed my field notes along with photographs and videos of each of the seven HSs and systematically developed an assessment chart titled, ‘Array of play Diversity’³¹ to visually represent the range of play opportunities made available for young children within each Housing Society. Further, for the within-case analysis of the seven case studies, I adapted Lefebvre’s Production of Space (1974/1991) as an analytical framework³².

³⁰ No. of Toddlers = 13 (b=11; g=2); No. of Preschool = 22 (b=14; g=8); No. of School age = 15 (b=10; g=5)

³¹ See Section ‘5.4. Array of Play Diversity’ under Chapter 5 Background to the Case Studies’ for a description of the assessment chart.

³² See Section ‘5.5. Analytical framework for case studies’ under ‘Chapter 5 Background to the Case Studies’ for a description of the analytical framework.

by creating three maps; each map representing one aspect of Lefebvre's Spatial Triad, i.e., Conceptualized, Actual and Experienced spaces to represent the *Produced Space* of children's play opportunities at the Housing Society. Thus, for each Housing Society, I composed a unique descriptive analysis.

Next, I incorporated common and unique spatial planning and design features from the seven case descriptions into a word table to support a cross-case analysis of the study sites. The cross-case analysis enabled me to understand the complexity of each study site, and to recognize patterns and make any complex relationships across cases. Here, I was able to look comparatively at each of the unique Housing Societies as a whole to learn what combinations and arrangements of types of play settings work better than others.

Later, I conducted a thematic analysis of the semi-structured open-ended interviews with all participant groups, including, developers, design professionals, city planning professionals, parents, grandparents and domestic helpers. I transcribed the interviews and manually coded. Through open coding of raw data, I grouped them into 'index categories' in the Outline function of Microsoft Word (Ritchie et al., 2003). These categories became the outline of part Three: Findings and Analysis. Also, I first read the raw data or the interview transcriptions for general themes and then I organized my themes to respond to the analytical and theoretical frameworks outlined in my study. The themes identified were inductively generated (Creswell, 2007) to unpack the physical and social factors across the meso, exo and macro issues influencing children's play from middle-class families living in high-rise housing developments.

Data Validation and Enriching Phase

Amongst eight validation strategies outlined by Creswell (2007), I engaged in four procedures for the research. In my research proposal, these strategies included an enriching phase that is critical to establishing validity for qualitative research where data, preliminary

analyses and interpretations are shared with study participants for feedback (Lincoln & Guba, 1985; Creswell, 2007). Validation strategies included:

1. *Data triangulation*: For my study, data collection relied on multiple sources (explained earlier under section 4.4. Mixed methods research).
2. *Thick descriptions*: In Parts 2 and 3 of the dissertation, I describe in detail the cases and participants using thick descriptions. This will enable me to “transfer” (p.209) information about the cases and participants to different settings, and allow readers to determine if the findings can be transferred “because of shared characteristics.” (Erlandson et al., 1993, p.32 as cited in Creswell, 2007).
3. *Peer review and debriefing sessions*: During different stages of the research process, colleagues and my four committee members critically reviewed and helped keep check of the study. These peer-review and debriefing sessions enabled me to be critical and honest about the research study.
4. *Enriching phase or Member checking*: Ideally, I should “solicit participants’ views of the credibility of the findings and interpretations” (p.208, Creswell, 2007) by sharing the preliminary findings with study participants in a focus groups setting. However, I was unable to stimulate interest among the key informants in reviewing the analysis. Instead, I conveniently recruited two Pune city-based developers, to review the findings and analysis sections of my dissertation. This critical step was a valuable opportunity to share information and receive feedback about the design and planning of housing societies and young children’s play opportunities across the Pune metropolitan area.

Study Limitations

1. I was unable to interview city planning professionals from all three municipalities as permissions were difficult to obtain and time to complete the data collection was limited.
2. I did not actively recruit male caregivers for the caregiver interviews. In my study, the knowledge generated about children's play values and beliefs, assessment of play opportunities in the housing societies, and management of children's play, is primarily from the female caregivers' perspective.
3. I did not conduct any systematic field observations or in-depth interviews with children to understand their use of open spaces for play in the housing societies because it would have increased the size and time needed to complete the study beyond what was possible. As a result, I was unable to learn in detail about their use, and experience of space and the degree of agency they felt in their play. While I did have light conversations with them, they are not a major contribution to this study.
4. From a spatial perspective, during my analysis of the data, I realized that by failing to measure the size of areas and the spatial distances between key features of the housing societies I was not able to fully understand the importance of these variables. For example, I did not measure the size of the play area or distance between the elevators and play spaces or other common areas.

Study Assumptions

1. I assume that developers will continue to build taller residential buildings in urban areas to accommodate families with children in the future. This means more children will continue to live in high-rise housing developments and an understanding of the current situation of play is necessary to improve play opportunities for children in the future.

2. I assume that caregivers are well informed about sports and games of older children.

PART TWO – THE CASE STUDIES

In Part Two of the dissertation, I describe the factors shaping Wakad's urban form, classify the spatial elements of housing societies, and explain the Environmental Play Qualities (EPQ), Array of Play Diversity and the analytical framework I use to unpack the seven case studies.

(CHAPTER 5)
Background to the Case Studies

Factors Shaping Urban Form of Housing Societies in Wakad

In Indian cities, as in most of South Asia, tall residential apartment blocks, often surrounded by manicured green open spaces, increasingly dominate the formal housing landscape. In Pune metropolis, these blocks are generally known as Housing Societies, a term which can be defined as private large-scale residential developments with single or multiple buildings of 12 floors or higher, common spaces called amenities, and parking facilities.

The image below shows the speedy conversion of linear strips of agricultural land in Wakad along the Pune-Mumbai development corridor into high-rise housing developments during three time points over the past decade – 2005, 2010, 2015 (Figure 5.1.).

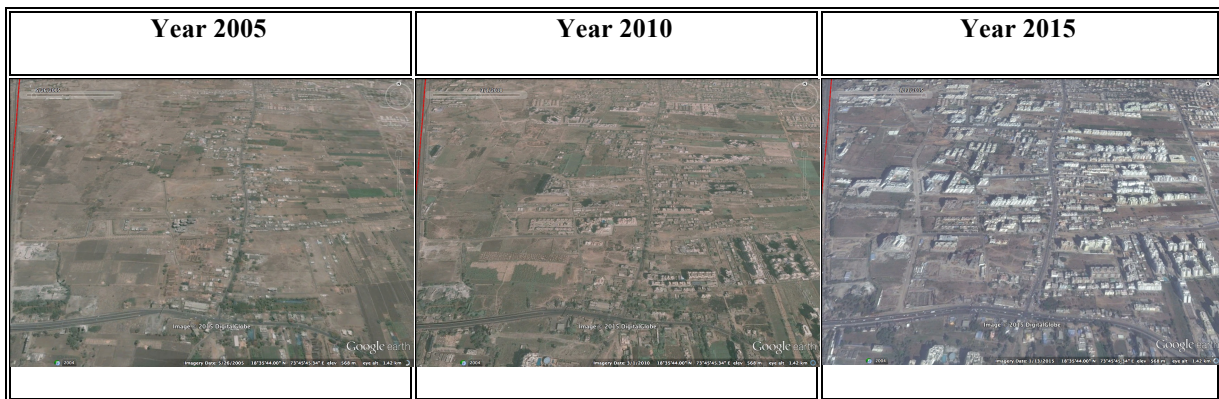


Figure 5.1. Wakad time-lapse urban development (Photos adapted from Google Earth)

I identify five interconnected factors that shape the urban form of Wakad and the overall spatial planning and design of individual Housing Societies:

1. Development Control Rules: In Pune metropolis, each municipality has Development Control (DC) rules that provide exhaustive guidelines and standards for permissible FSI³³, built up and open areas, common amenities, parking facilities, building maintenance systems and other related building services. These rules guide design and planning professionals about proposed residential or commercial development.

³³ FSI (Floor Space Index) = Total built up area/Total plot area

Since Wakad is located in the PCMC jurisdiction³⁴, PCMC DC rules (1999) apply to all residential developments.

2. Shape of plot acquired for development: The 2010 amendment to the 1997

Development Control rules stated an increase in the permissible building height from 36 m to 100 m. Out of the 63 housing societies selected for the baseline study, 60 (95%) are 11 floors and above, or 36 m tall. This is because the available land areas for development are linear strips of narrow agricultural lands, whose average width is approximately 40 m. This means the maximum width of the building is 16 m after leaving side margins of 12 m on each side³⁵, which demands building a wider podium or basement to accommodate the required parking facilities, amenities and apartment units.

3. Consumption of FSI³⁶ by developers: In addition to the 2010 amendment to increase building height from 36m to 100m, in 2016, a new Transfer of Development Rights (TDR) policy for PMC and PCMC was released in 2016, which made provisions to increase FSI from 1.6 to 3 depending on the road width abutting the plot (Maharashtra Regional and Town Planning Act, 1966, 2016). The 63 HSs selected for the baseline study are not taller than 36 m but the recent amendments to increase FSI is being

³⁴ See ‘Pune metropolis, Maharashtra’ under Part One, Chapter 4, 4.3. Choice of Research Location

³⁵ Table 5.1. provides a brief outline about the influence of side margins on building height.

If proposed building height (h) is:	Side margin (in meters) on each side of the plot area to be left vacant	Example of side margin on each side of the plot area to be left vacant
Up to 36 m (or up to 12 storeys)	$= h/3$ (where h = building height)	= 12 m (if h = 36 m)
Up to 70 m (or up to 22 floors)	$= (h/3) - 2$	= 21 m (approx.) (if h = 70 m)
Up to 100 m (or up to 30 storeys)	$= (h/3) - 3$	= 30 m (approx.) (if h = 100 m)

Table 5.1. Norms for building heights

³⁶ FSI (Floor Space Index) or FAR (Floor Area Ratio) = Total built up area/Total plot area; Current FSI is 1.6 in Pune metropolis.

reflected in the current landscape where taller buildings than before are under construction. This is because developers tend to build maximum number of floors possible and permissible, to meet the increasing demand for middle-class housing and make profits for initial investments made in the land. Hence, they tend to consume the total available FSI³⁷ for a proposed plot of land. This suggests that developers will continue building taller residential buildings in the future.



Figure 5.2. Future development in Wakad. Photo: Atmakur-Javdekar.

4. Accommodation of car parking spots for all tenements: According to PCMC DC rules, a minimum of one car parking, four scooter parking and four cycle parking spots are to be provided for two tenements that have carpet area below 80 sqm (1999). However, in response to residents' requirements, developers instead provide one

³⁷ Current FSI is 1.6 in Pune metropolis including PMC, PCMC and PMRDA jurisdictions.

designated car parking spot for each tenement and a limited number of common parking spots for two-wheelers and visitors' cars. This increases the overall parking allocation for housing societies, thereby, demanding the construction of a podium and/or basement to accommodate parking requirements. Also, developers arbitrarily choose the number of common parking spots. For example, some developers provide 50 two-wheeler spots and five visitor car parking spots for every 100 tenements, while others do not provide common parking spots for two-wheelers and visitors cars. This leads people to park in surrounding streets in undesignated areas, adding to traffic chaos.

5. Developers provide a high number of amenities to achieve maximum sales: The demand to accommodate a large number of parking spots in linear strips of land typically results in fragmented open spaces in the side setbacks. This leads to the planning and design of leisure, play and recreation-based amenities (including children's play area) in these leftover open spaces. Further, developers believe that customers want a high number of amenities³⁸ and that if the number of amenities is high, then it is better for sales. This is reflected in all marketing brochures and site display advertising (Figures 5.3 and 5.4) where an exhaustive list of amenities is listed to show the customer that the housing society has more than just apartment units and parking facilities³⁹.

³⁸ An explanation of amenities is provided below, under 'Society Amenities Zone' in the next section.

³⁹ I describe the reasons behind the multiple amenities provided by developers in Chapter 8: Factors influencing the physical environment of children's play in Part Three: Findings and Analysis.

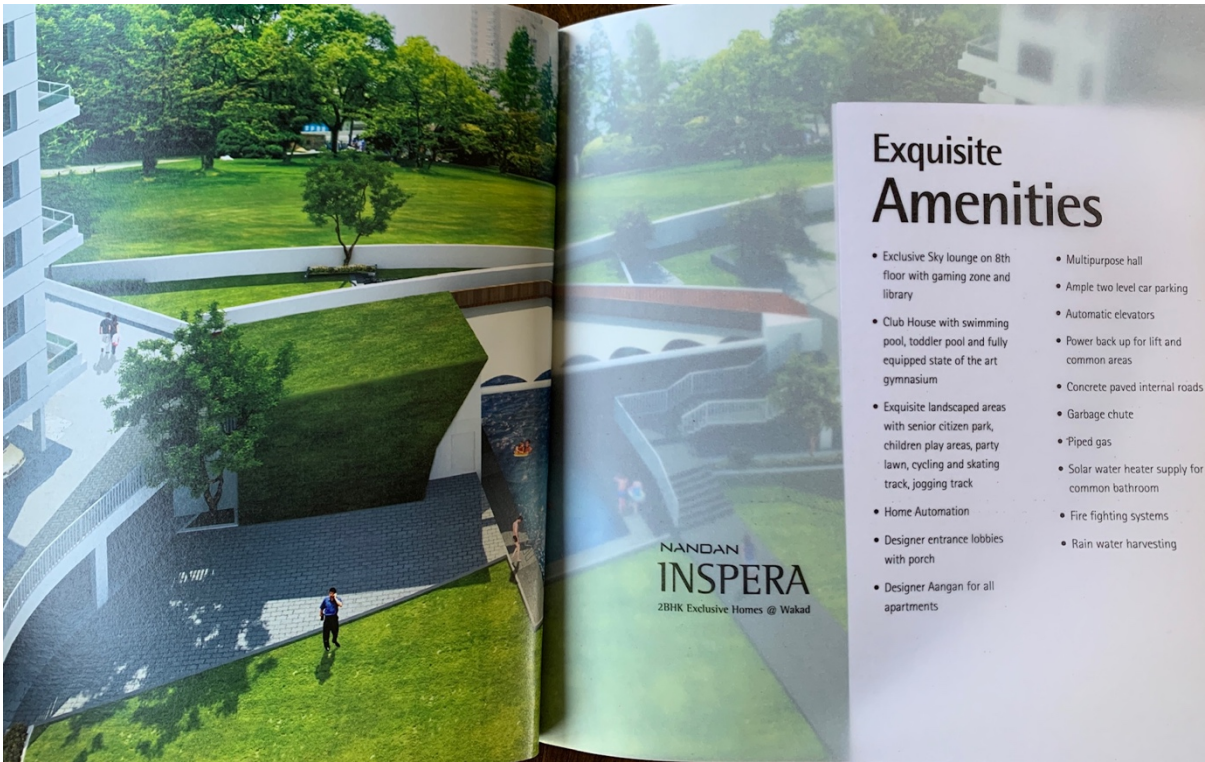


Figure 5.3. Sample Marketing Brochure. Photo: Atmakur-Javdekar



Figure 5.4. Advertising display outside an ongoing construction site in Wakad. Photo: Atmakur-Javdekar

Classification of Spatial Elements of Housing Societies

Owing to the five factors above, the overall spatial planning and design results in common features across the Housing Societies. Despite sharing many features, each is unique in planning and design because of the mix and organization of the many possible Spatial Elements⁴⁰. From the Baseline Study, I identified multiple Spatial Elements across 63 Housing Societies and grouped them into two major categories: 1.) Spatial Zones; and 2.) Spatial Levels.

1. Spatial Zones: A *Spatial Zone* is a planned space in each housing society. I identify three main spatial zones that define the planning and design of housing societies.

These are:

- (a) RBZ – Residential Buildings Zone: In Wakad, housing societies have single or multiple residential buildings with 12 or more floors, where each building has a minimum of four to six apartment units or tenements on each floor. Developers provide a balcony (or more) for each tenement, as it is free of FSI as long as the total area of balconies provided does not exceed 15% of total FSI (PCMC DC Rules, 1999). Also, within each building, the 8th floor is allocated as refuge area⁴¹ and last floor is top terrace⁴².
- (b) PZ – Parking Zone: Parking areas, as noted, are integral to the design of any Housing Society where one car parking spot per tenement is provided by the developer. The parking zone is most often located at the ground and podium level

⁴⁰ Spatial Elements are various parts of the housing society including but not limited to apartment units, pathways, swimming pool, children's play area, sports facilities, parking areas, basements, podium, terraces, gardens and parks.

⁴¹ 'Refuge area' is an allocated space in a building where occupants seek refuge during an emergency (e.g. fire) when evacuation is not possible.

⁴² 'Top terrace' is open to sky and is typically kept locked as the space is used for building services such as solar heating equipment and TV cables.

with the exception of a few housing societies, where parking is located at basement level, leaving some areas traffic-free.

(c) SAZ – Society Amenities Zone: For the purpose of my research, ‘Society Amenities’ are defined as ‘amenities’ provided by the developer for use by residents inside each housing society. These amenities are planned within the permissible 10% Recreational Open Space (Urban Development Department, 1999). Typically, the developer provides amenities that include designated play area, central lawn, clubhouse including gym and multipurpose room, swimming pool, and green pocket areas. Additionally, some developers provide courts for organized sports, amphitheater, fruit and vegetable garden areas, and indoor toddler play area. It is not always possible to provide all amenities in one area due to plot size, shape and FSI constraints. Typically, amenities are scattered across the housing society and there are no noticeable patterns of adjacency. The location of the amenities is arbitrary and depends on decisions made by design and planning professionals.

2. Spatial Levels: A *Spatial Level* is the vertical level at which spatial zones are located. Similar to spatial zones, there are three spatial levels:

(a) (-1) Basement: A *basement* is the level below the ground level. Basements are sometimes built to accommodate a *Parking Zone (PZ)* when design professionals intend to create traffic free zones at ground level. Generally, the construction cost of basements is high and hence, avoided by most developers.

(b) (0) Ground level: *Ground level* is the same level as the road that is used to access the housing society. According to PCMC DC Rules (1999), it is mandatory to leave 10% of total site area as an *open area*; where the open area *may* (emphasis here) include parking, children’s play area, clubhouse, central lawn, pathways and

other society amenities. So, developers typically provide parking spots and society amenities at ground level as this development is free of FSI.

- (c) (+1) Podium: A *podium* is one level above the ground level. The design of the podium is a direct function of the number of required car parking spots and shape of the plot. Since Wakad mostly has linear and narrow plots, Residential Buildings Zone (RBZ) are typically built at podium level with Parking Zone (PZ) at both podium and ground levels. When the plot for development is square-ish, the RBZ is typically built at the ground level with PZ at basement and/or ground level.

The seven study sites for my research are each unique because the number of society amenities and location of the three Spatial Zones varies for each site. The possible theoretical combinations of arrangements of three spatial zones when split individually or together with and without repetition across three spatial levels is 139 (See Appendix F: Combinations of spatial arrangements). However, in reality, because the number of Society Amenities varies, there are possibly thousands of variations. For my research, I selected seven housing societies that are unique and representative of the 63 housing societies in Wakad. See Table 5.2. below to understand the varied range of Housing Societies selected for in-depth research. In each HS the arrangement and extent of children and adults' designated play areas, society amenities and other open areas are different. For example, in HS2 and HS6, the RBZ, PZ and SAZ are located at similar spatial levels but the location and type of amenities provided are different, thus, making them unique.

Spatial Levels	HS-1	HS-2	HS-3	HS-4	HS-5	HS-6	HS-7
(+1) Podium	RBZ, SAZ	RBZ, PZ, SAZ	SAZ	--	--	RBZ, PZ, SAZ	RBZ, SAZ
(0) Ground	PZ	PZ, SAZ	RBZ, PZ, SAZ	RBZ, PZ, SAZ	RBZ, SAZ	PZ, SAZ	PZ
(-1) Basement	--	--	--	--	PZ	--	--

Table 5.2. Spatial zones and levels of seven housing societies

Environmental Play Qualities (EPQ)

In Wakad, the plot areas for development are more than 0.2 Ha, this means that all Housing Societies have to have a minimum of 10% of the entire land reserved as Recreational Open Space⁴³ (ROS). However, this 10% ROS is not primarily used for play by children because there are other uses and structures⁴⁴ that are permitted to be built within the 10% “Recreational Open Space”. These are clubhouse, swimming pool, courts for sports and recreational activities, playing fields, green open spaces, and building services such as elevated/underground water reservoir and electric sub-stations (Urban Development Department, 1999). There are no specific design or planning guidelines for children’s play areas in DC Rules. ROS is assumed to include children’s play area.

Interviews with 11 design professionals indicate that the space allocated specifically for children’s play area is typically less than 10% of the 10% Recreational Open Space or 1%

⁴³ According to PCMC DC rules, when total land of the Housing Society development measures 0.2 Ha or more, then 10% of the entire land should be reserved as recreational open space.

⁴⁴ Uses and structures permitted in the allocated recreational open space is as follows:

- a. Two-storeyed structure: If recreational open space is 500 sq.mt. and above, then a two storeyed structure for the purpose of clubhouse/gymnasium/pavilion/any sport and recreation activity is permissible. Maximum built up area for two storeyed structure is 15% out of which 10% built up area is allowed on the ground floor/stilt floor and the remaining 5% can be consumed one floor above.
- b. Toilet: No detached toilet block is permitted
- c. Swimming pool: Swimming pool is permitted in the recreational open space and is free of FSI.
- d. Building services: Elevated/underground water reservoir, electric sub-stations may be built in the recreational open space but cannot exceed 10% of the allocated recreational open space.

of the total plot area. While children may use other open spaces for play, it is expected by adults that children play in the designated play areas. These play areas typically include fixed play equipment such as swings, slides, climbing frames or walls, merry-go-round and integrated play structures on rubberized surfaces. Such spaces offer limited play opportunities for children as the focus is on gross motor play. Children, specifically, young children need a play environment that supports their holistic development by providing them opportunities where they can engage in a range of play types. While there are multiple ways to categorize play types, for the purpose of my research, I group Hughes (1999) 16 play types into five major categories:

1. Construction play: mastery, construction and manipulative play
2. Sensory play: fine motor, sensory and exploratory play
3. Physical play: gross motor, locomotor, object and deep play
4. Social-Emotional play: social and communication play

For children to be able to engage in this full range of types of play, a rich and diverse play area is essential where children can *perceive* their environment in terms of the functions it *affords*⁴⁵ (Heft, 1988, 2001; Gibson, 1979) Essentially, an environment where children can *freely choose* what and with whom they want to play with.

A rich and diverse play environment includes a range of fixed and moveable elements and surfaces that affords children to:

- Challenge their physical and mental strength by grasping objects, climbing trees, crawling, running and jumping (Physical play: gross motor, locomotor, object and deep play)

⁴⁵ According to Gibson, “The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill.” (Gibson, 2011, p.127)

- Build, control and manipulate the environment around them (Construction play: mastery, construction and manipulative play)
- Have rich sensory experiences, preferably with natural elements (Sensory play: fine motor, sensory and exploratory play)
- Participate in social experiences where they empathize, cooperate and socialize with peers (Social play: social and communication play)
- Exercise their creativity and imagination (Creative play: symbolic, creative, socio-dramatic, imaginative, fantasy and role play)

During in-depth field studies, I used a Field Visit – Researcher Protocol⁴⁶ (See Appendix D) to identify spatial features, layout, surface materials and design and planning elements of the seven housing societies that afford or restrict young children’s play. The protocol included a checklist of physical elements and surfaces that afford children a range of play opportunities close to their homes. An evaluation of spaces within the housing societies led to identification of additional physical elements, such as toys from home, parapet walls, columns in parking area, pebbles, boulders, and additional fixed play equipment.

A further review of literature helped group this list of physical elements and surfaces into eight *Environmental Play Qualities* (EPQ) categories that afford children opportunities to engage in different play types. The eight EPQ categories constitute 40 *Physical Elements and Surfaces* (PEaS) that can guide design professionals to design supportive play environments for young children. (Table 5.3.)

⁴⁶ Field Researcher Protocol was developed based on literature and theory related to children’s play environments.

Environmental Play Qualities (EPQ)	Physical Elements and Surfaces (PEaS)
I. Fixed play equipment	a. Traditional swings
	b. Toddler swings
	c. Family swing
	d. Slide
	e. Climbing frame/wall
	f. Merry-go-round
	g. Spring rider
	h. Integrated play structure
	i. See-Saw
II. Natural areas	a. Flowering plants and trees (manicured)
	b. Fruit trees (manicured)
	c. Wild green space but no shrubs and trees (could be grass if it is not mowed)
	d. Wild green space including shrubs and/or trees
	e. Trees (climbable)
	f. Space for dogs and house pets
	g. Space for domestic animals (cows, goats, rabbits, etc.)
	h. Bird houses and feeders
III. Seating/Table area	a. Seating (benches, stools, chairs, etc.)
	b. Tables
	c. Steps and walls of varying heights (parapet walls and columns)
	d. Small hills and mounds
	e. Tree stumps
	f. Boulders
IV. Moveable equipment and materials	a. Loose parts (stones, pebbles, wood, pipes, tires, construction material etc.)
	b. Toys from home
	c. Bicycles/scooters
	d. Wagons
	e. Cranes/pulleys etc.
V. Manipulable materials	a. Sand surface
	b. Sand table
	c. Sand pit
	d. Dirt/Soil/Mud
	e. Fine gravel
VI. Water	a. Water surface (for paddling)
	b. Water table
	c. Water spray
VII. Diverse surface textures and materials	a. Mown grass
	b. Hardtop surface
	c. Rubberized play surface
VIII. Retreat space	a. Play house (play house or store/tent/nook or cubby)

Table 5.3. Environmental Play Qualities and corresponding Physical Elements and Surfaces

Array of Play Diversity

During the initial data analysis, I developed a quantitative tool to assess the 40 Physical Elements and Surfaces (PEaS) to visually comprehend the range of Environmental Play Qualities (EPQ) available within and across the seven Housing Societies (HSs). For this, I assigned individual values to PEaS, calculated a ratio score for each EPQ and generated histograms for each of the HSs. Unfortunately, it is not possible to turn this analysis into a quantitative comparison because it would be simplistic to assume that each of the possible categories and sub-categories of kinds of play opportunities have equal value. Instead, I developed a visual representation of the data on the range of play types in each of the HSs. I call this comparative assessment chart the '*Array of Play Diversity*' (APD). It visually integrates the 40 Physical Elements and Surfaces (PEaS), of the spaces used by children for play in any environment, and thereby enables a reader to make a visual comparison across all of the play settings.

The APD is a visual assessment chart containing nine rows and ten columns; the left most column lists the eight Environmental Play Qualities (EPQ), and the cells in each EPQ row contains a hand-drawn image of the corresponding PEaS (Figure 5.4.). These images or icons⁴⁷ are organized into a compact tabular format to make it possible to quickly visualize the data, i.e. a range of play opportunities made available for children across multiple evaluated spaces in an environment. The assessed environment can be a housing or learning environment with single or multiple designated and undesignated play spaces. The APD is to be read together with a layout diagram of the assessed environment that highlights the evaluated spaces where children play. This layout diagram is shown in the grey large box on the right side within the APD chart. With both together, one can comprehend the spatial location and the PEaS of all evaluated spaces within an environment. Further, within each

⁴⁷ All images or icons for the Array of Play Diversity are drawn by the author.

cell, there is space for a number (shown as 1,2...n in the image below) on the top right that indicates the corresponding evaluated space's number. So, when one is reading the APD, it is easy to identify which PEaS image corresponds to which evaluated space. A theoretically ideal play environment would show all the PEaS icons in the APD.

For my research, I generated seven APDs each representing one HS and their corresponding evaluated spaces⁴⁸, thus, visually demonstrating an array of play opportunities made available for children in a range of HSs in the Wakad area. The template below was used to assess each of the HSs.






















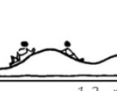







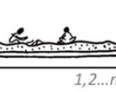
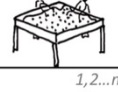
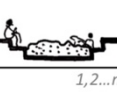



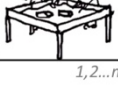
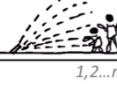
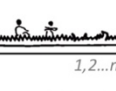



Array of Play Diversity (APD)									
Type of Environment (housing/learning/other): (insert here)									
Number of Evaluated Spaces: (insert here)									
PEaS /EPQ	a	b	c	d	e	f	g	h	i
I Fixed Play Eq.	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n
II Natural areas	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n
III Seating /table area	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n			
IV Move-able Eq. & Ma.	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	Insert Name and Type of Environment (housing/learning/other)			
V Manip- ulable Ma.	 1,2...n	 1,2...n	 1,2...n	 1,2...n	 1,2...n	Insert layout plan and section of the environment (housing/learning/other) showing 'n' evaluated spaces			
VI Water	 1,2...n	 1,2...n	 1,2...n						
VII Surface Tex. & Ma.	 1,2...n	 1,2...n	 1,2...n						
VIII Retreat Space	 1,2...n								

Figure 5.5. Template used for creating an 'Array of Play Diversity' for any residential area. (All images for the APD template are hand-drawn by Atmakur-Javdekar)
(NB: The particular number of categories and sub-categories are likely to vary across different cultures and climate/vegetation zones)

⁴⁸ In each HS, I evaluated multiple spaces that children used for their play. For details, see Method F – In-depth field studies in Chapter XX

Analytical Framework for Case Studies

Since the physical environment of each of the seven Housing Societies is unique, I adapted a within-case analysis followed by a cross-case analysis (Yin, 2003). For the within-case analysis, I unpack Lefebvre's Production of Space (1974/1991) as a framework to analyze the ways in which children's play opportunities are produced *within* each Housing Society. According to Lefebvre, space is a complex social construction produced by the perceived-conceived-lived triad (in spatial terms: spatial practice, representations of space and representational spaces) (Lefebvre, 1974/1991, p.40). I theorize children's play opportunities in high-rise housing environments as a socio-spatial construct produced by Conceptualized, Actual and Experienced spaces. (Figure 5.5.)

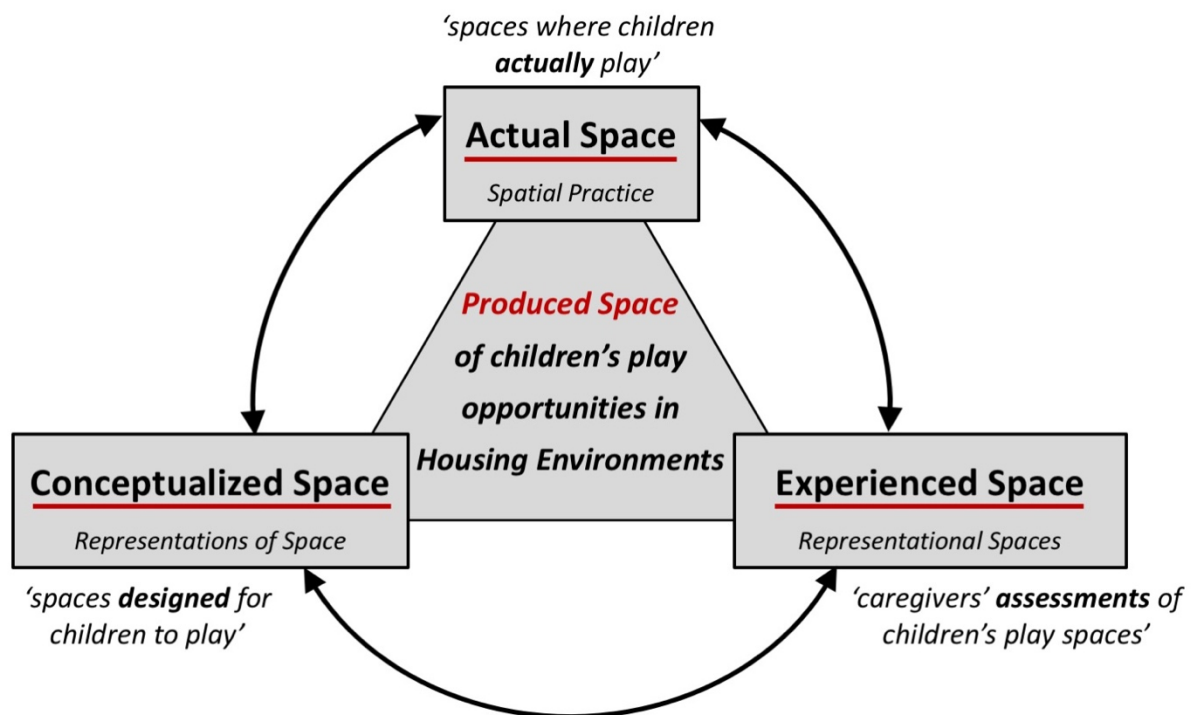


Figure 5.6. Produced Space of children's play opportunities

- The **Conceptualized Space** (representations of space) is the space that is conceptualized by design professionals for children's play. This primarily includes the designated play space and other open areas *conceptualized* as spaces for children to

play in the Housing Society. According to Lefebvre, this is the space of architects, planners, engineers, urbanists and technocrats (1974/1991). Through semi-structured open-ended interviews with design professionals (Method E), I gathered knowledge about the environmental (planning and design), social (or cultural norms), and economic (real estate and commercial) factors that influence the design and planning of spaces for children's play in the seven HSs. For two HSs (HS1 and HS4), I did not receive permission to conduct interviews, so, I relied on archival data including brochures and layout plans to understand the design and planning of spaces for children.

- The **Actual Space** (spatial practice) is the concrete, material, physical or real space where children play. These spaces can be designated or undesignated play spaces in the HS where children engage with the material conditions of the space; an *actual* “space that is generated and used”. (Lefebvre, 1974/1991, p.38). I conducted in-depth field studies (Method F) to document the physical and material conditions of the spaces used by children for play.
- The **Experienced Space** (or Representational Spaces) is caregivers’⁴⁹ *assessments* of the Evaluated Spaces⁵⁰ based on their own play values. For Lefebvre, ‘representational spaces’ is space as directly *experienced* by users through “associated images and symbols” (p.39); one that is passively experienced or felt – “a space which the imagination seeks to change and appropriate” (1974/1991, p.39). I conducted semi-structured open-ended interviews with caregivers (Method G) to

⁴⁹ Caregivers include parents, grandparents and domestic help. See: Method G – Semi-structured open-ended interviews with caregivers under 4.4.c. Phase III – Case Study Research for caregiver details.

⁵⁰ Evaluated Spaces are spaces in Housing Societies as identified by me where children are allowed or restricted to play. I identified these spaces based on two inclusion criteria. See: Method F - In-depth field studies under 4.4.c. Phase III – Case Study Research to learn about the selection of Evaluated Spaces.

identify environmental (planning and design) and social (or cultural norms) factors that caregivers *feel* are important for children's play.

The '*produced space*' of children's play opportunities is where the Conceptualized, Actual and Experienced spaces come together. For the cross-case analysis, I situate the '*produced spaces*' of children's play opportunities of the seven Housing Societies within my larger theoretical framework, i.e., Bronfenbrenner's ecological model of human development, to understand the nested hierarchy of factors influencing the phenomena of young children's play in high-rise housing developments in India. Thus, the ecology of children's play is not only the space that is 'produced' at each HS but also how these 'produced spaces of children's play opportunities' are impacted by the larger cultural values, local and national building development norms and urban planning policies (macro-system).

(CHAPTER 6)
The Seven Case Studies

Case Study One: Uru

Uru (adj.) = Spacious

/ŏŏ-rŏŏ/

Word origin = Sanskrit

At Case Study One, a feeling of spaciousness and grand open space is created because the parking areas at podium level is open and unused, and flows into the central open areas.

Hence, the name Uru to reflect the feeling of spaciousness.

Introduction and site-selection rationale for in-depth investigation

Uru was constructed in two phases where five out of six buildings along with the central lawn, clubhouse and designated play area were constructed during phase-1 in 2012 (See Table 6.1.). All six buildings have 12 floors with 255 apartment units (88% occupancy) where approximately, 160 families and 60 children (1 – 12 years) live. During phase-2 construction of F building, developers planned to construct apartment units at the podium level under B, C, D and E buildings but phase-1 residents did not give consent for the same. As a result, a continuous traffic-free semi-open space is generated, which merges with the central lawn creating a sense of openness in the middle of the plot. Here, children and adults claim parts of the semi-open space for socialization, play, leisure and recreation. This is unique for any housing society, as developers tend to consume all the FSI to build apartments to maximize profits.

Furthermore, away from the openness at the center, the side-setbacks of the plot have society amenities including a community garden, designated play area and other building services. During the Baseline Study, a resident volunteer from the housing society mentioned that children use the vegetable and fruit garden to plant trees and take care of the space. I found this unique as not many HSs have gardens that encourage children to participate in taking care of their natural environment. At Uru, the vegetable and fruit garden, and designated play area are spread across the plot, away from the spaciousness of the center and

I wanted investigate the ways in which children and adults used these designated spaces for play.

A. Uru	
(+1) Podium	RBZ – Residential Buildings Zone <ul style="list-style-type: none"> • Two phase construction • Phase 1 – Five buildings – A, B, C, D, E (2012) • Phase 2 – One building – F (2015) SAZ – Society Amenities Zone <ol style="list-style-type: none"> 1. Designated play area 2. Central lawn 3. Clubhouse 4. Swimming pool 5. Vegetable and fruit garden
(0) Ground	PZ – Parking Zone
(-1) Basement	(no basement)

Table 6.1. Uru’s Spatial zones and levels

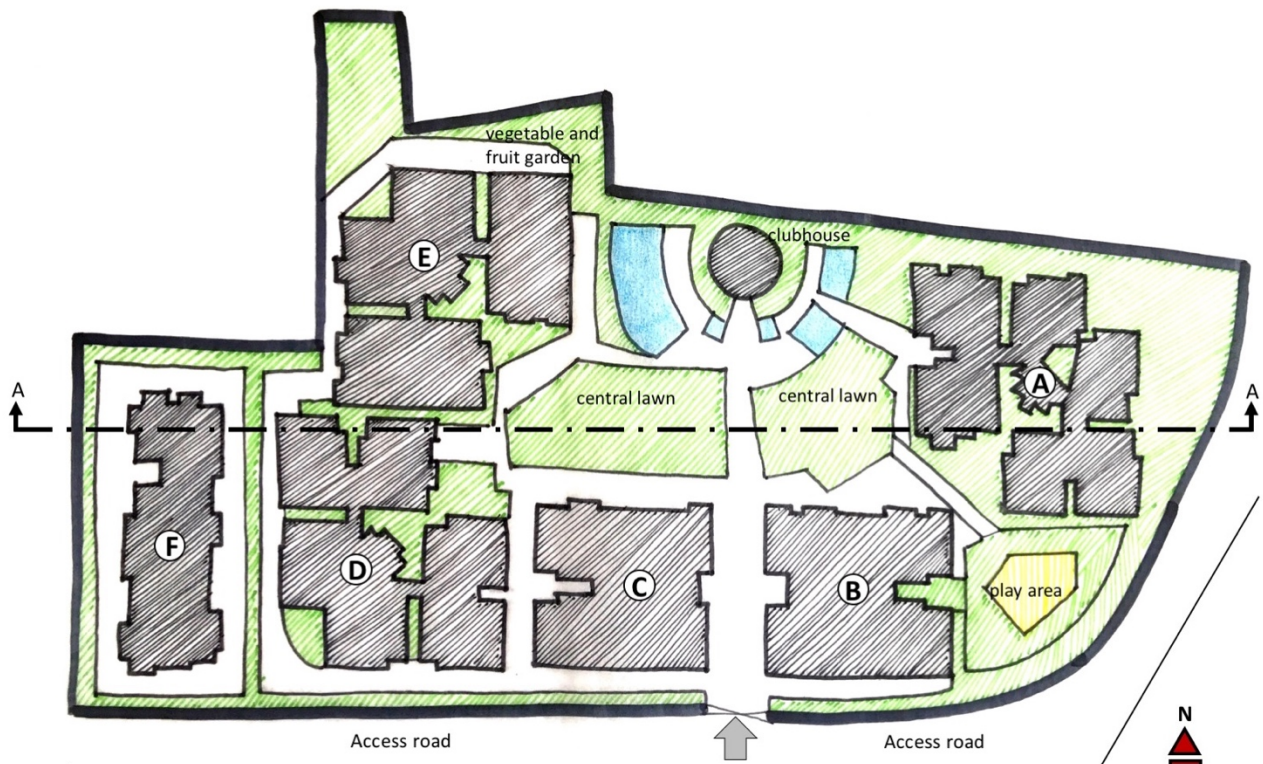


Figure 6.1.a. Uru – Base plan (Hand-drawn and created by Atmakur-Javdekar)

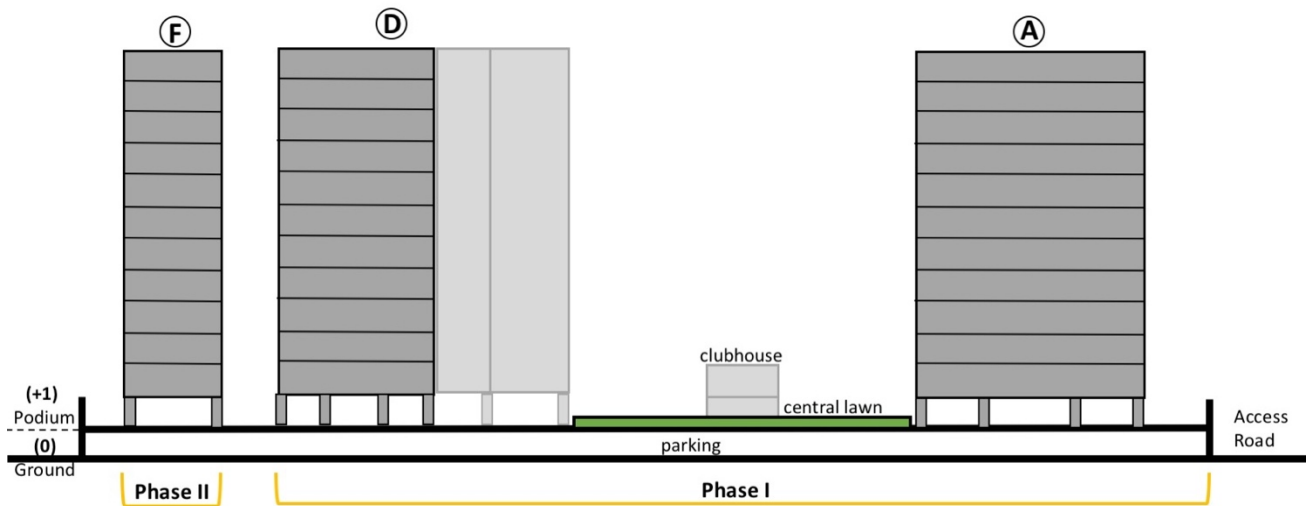


Figure 6.1.b. Uru – Section AA (Hand-drawn and created by Atmakur-Javdekar)

Evaluated spaces

I identified five spaces at Uru to investigate children’s play opportunities. All these five Evaluated Spaces (ESs) are located at (+1) podium level⁵¹. These are:

1. **Designated play area-1:** The Designated play area is located away from the central lawn at a corner on the right side of the plot close to A and B buildings. The play area has fixed play equipment including an integrated play structure with toddler swings, swings for older children, slide and climbing frame, and see-saw fixed on a sand surface. Plus, there is a bench for adults to sit. (Figures 6.1.e. and 6.1.f.)
2. **Central lawn-2:** The Central lawn has benches along its periphery and is surrounded by phase-1 residential buildings, and clubhouse with swimming pool and still-water features. (Figures 6.1.g. and 6.1.h.)
3. **Pathway and small plaza-3:** The Pathway and small plaza is a hard top space immediately outside the clubhouse adjoining the central lawn. This space has parapet walls and still-water features meant for aesthetic purpose and not for use by children or adults. (Figures 6.1.i. and 6.1.j.)

⁵¹ Please see figure 6.1.c. Uru’s Evaluated Spaces and 6.1.d. Uru’s Array of Play Diversity and corresponding images of the evaluated spaces when reading this section.

4. **Semi-open podium space-4:** The Semi-open podium space below B, C, D and E buildings has a hardtop surface adjoining the central lawn. Parapet walls and columns separate this space and the central lawn. (Figures 6.1.k. and 6.1.l.)
5. **Vegetable and fruit garden-5:** The Vegetable and fruit garden is located at the rear end of Uru, behind E building. This community garden has fertile soil with young plants and fully grown trees bearing fruits and vegetables. (Figures 6.1.m. and 6.1.n.)

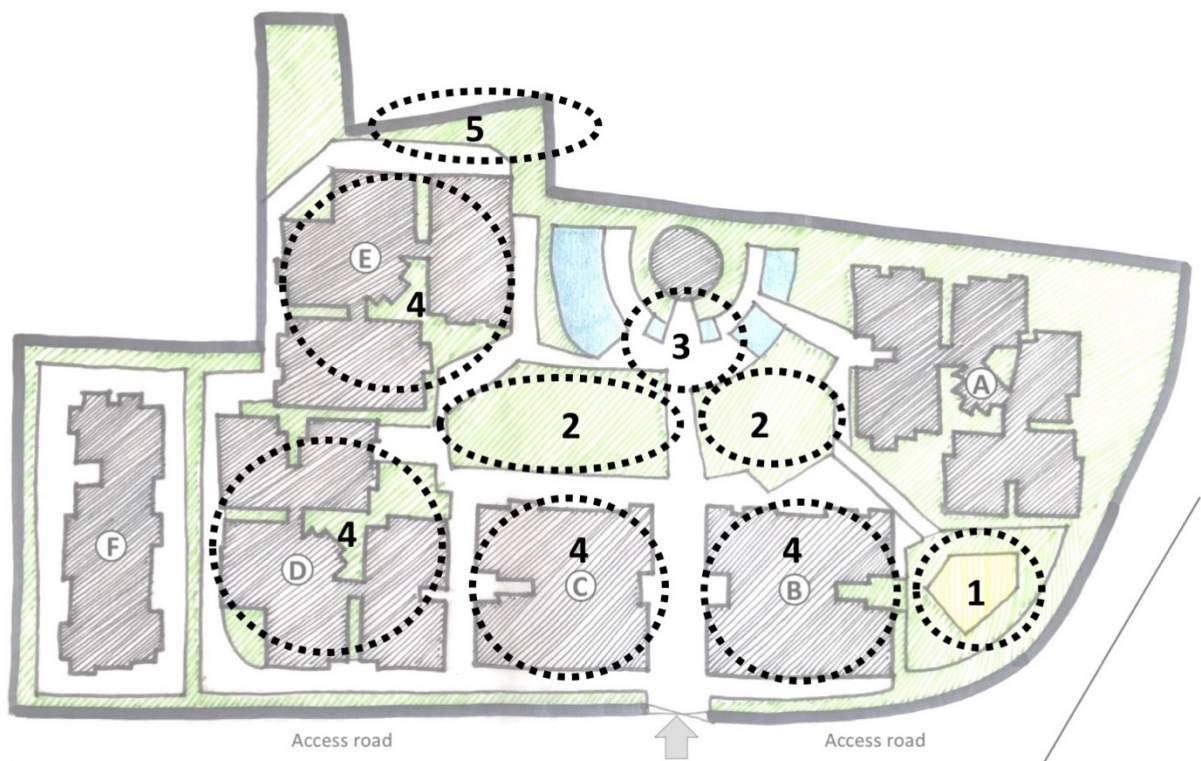


Figure 6.1.c. Uru's Evaluated spaces (Hand-drawn and created by Atmakur-Javdekar)

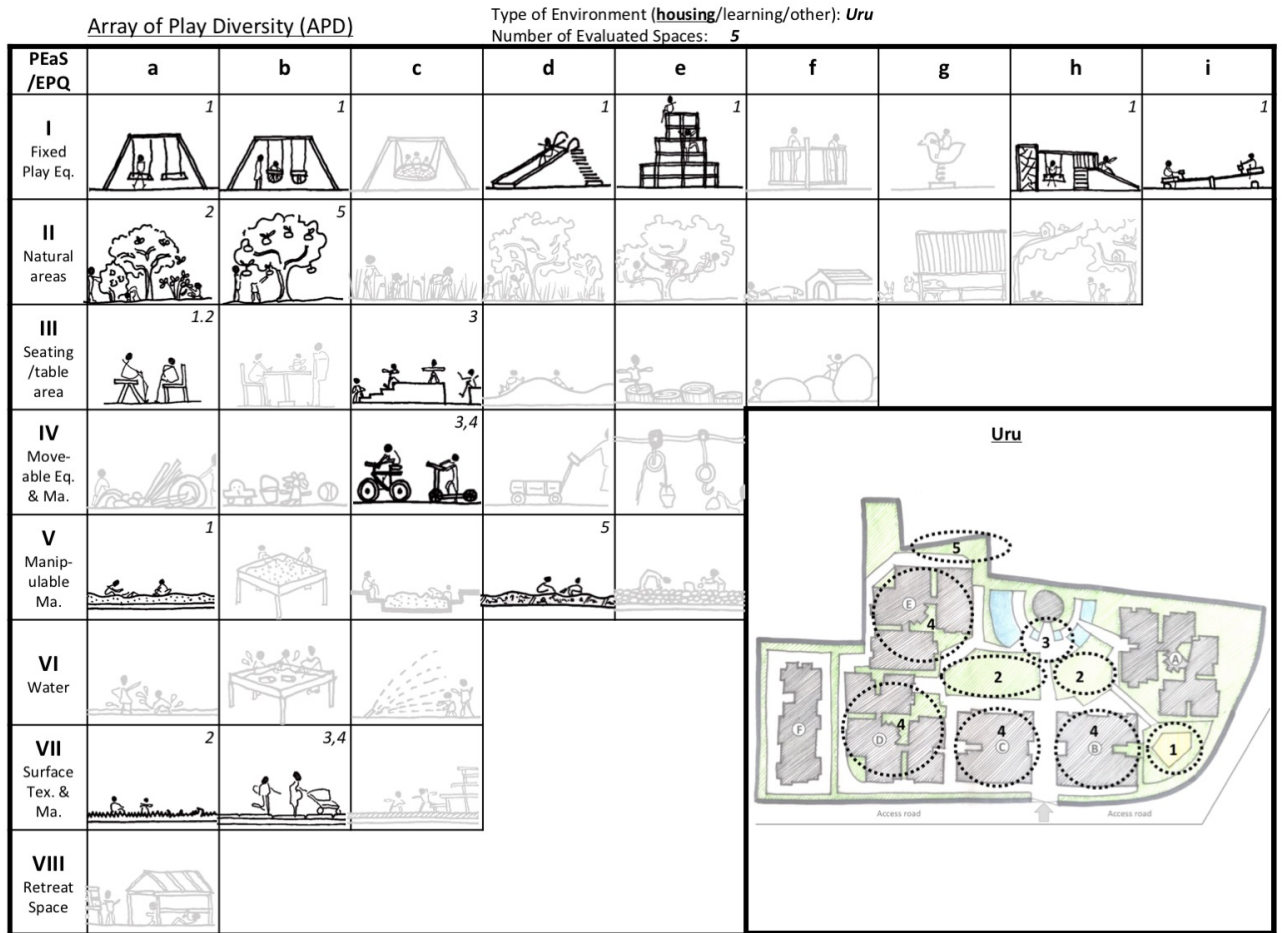


Figure 6.1.d. Uru's Array of Play Diversity (Hand-drawn and created by Atmakur-Javdekar)





Figure 6.1.g. Central lawn-2 at Uru



Figure 6.1.h. View of Central lawn-2 with older children playing football at Uru



Figure 6.1.i. Pathway and small plaza-3 at Uru



Figure 6.1.j. Pathway and small plaza-3 at Uru



Figure 6.1.k. Semi-open podium space-4 at Uru



Figure 6.1.l. Semi-open podium space-4 looking into the central lawn and club house at Uru



Figure 6.1.m. Vegetable and fruit garden-5 maintained by adults at Uru



Figure 6.1.n. Vegetable and fruit garden-5 at Uru

All photos of Evaluated Spaces by Atmakur-Javdekar

Production of children's play opportunities at Uru

1. Conceptualized Space

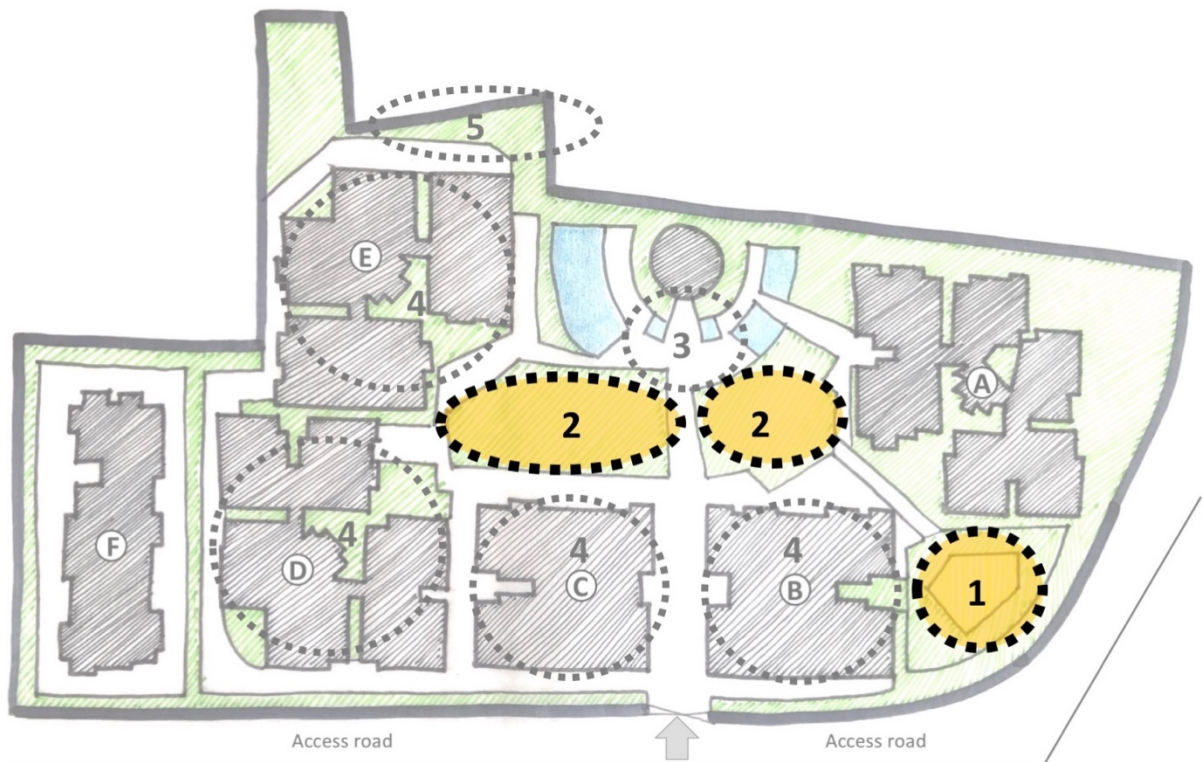


Figure 6.1.o. Uru's Imagined Space (Hand-drawn and created by Atmakur-Javdekar)

For Uru, I did not receive permission from design professionals to conduct interviews. I relied on the online project brochure and layout plans to identify the spaces conceptualized for children's play. Based on the layout plan, the Designated play area-1 and Central lawn-2 are two spaces that appear to be conceptualized for children to use for play and recreation (Figure 6.1.e.). An internal pathway between 'A' and 'B' buildings connects the Designated play area-1 and one part of the Central lawn-2. These conceptualized spaces are spatially planned away from each other to segregate younger children at the designated play area from the central busy space, which is typically used by adults and older children.

2. Actual Space

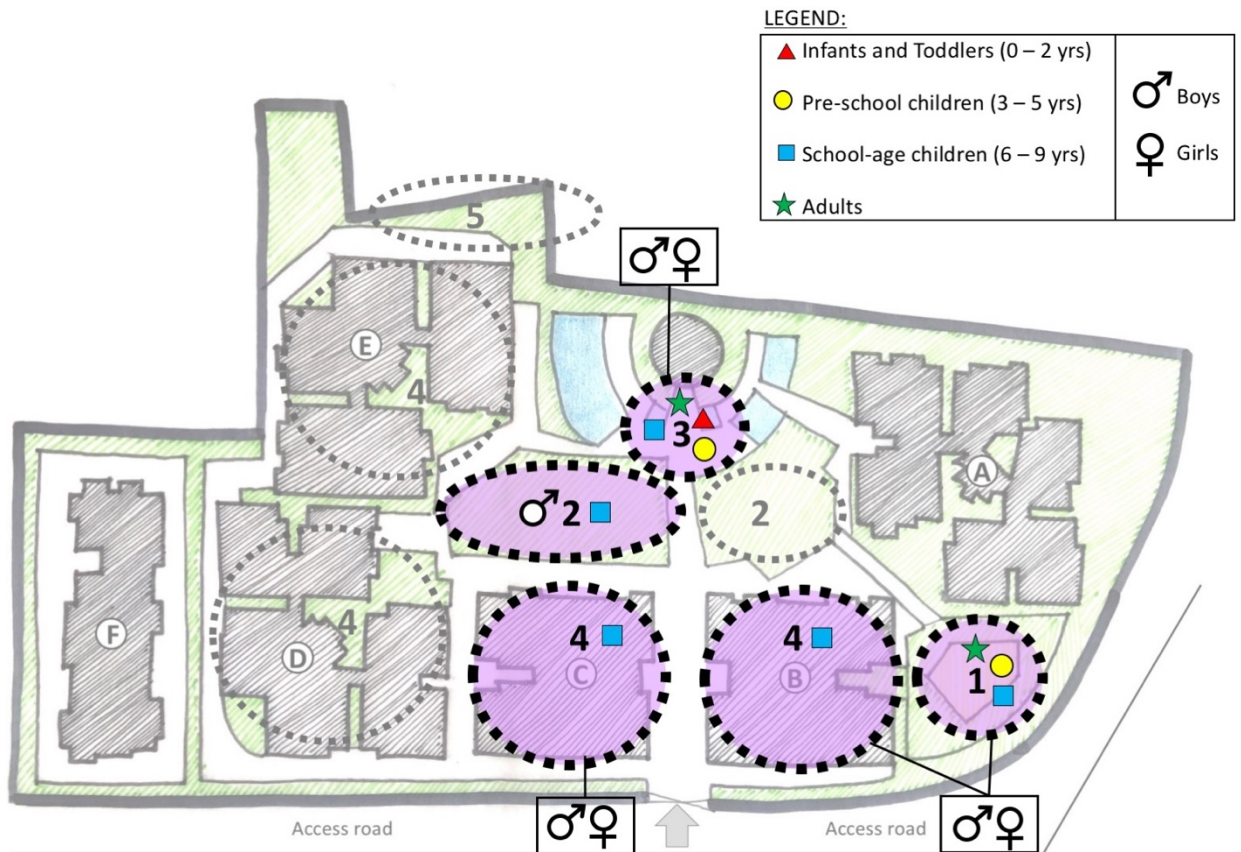


Figure 6.1.p. Uru's Actual Space (Hand-drawn and created by Atmakur-Javdekar)

'Figure 6.1.p. Uru's Actual Space' highlights the spaces that are actually used by boys and girls of different age groups. From the figure, it is evident that not all Semi-open podium spaces-4 under B, C, D and E buildings are used by children because of factors related to location and usage. For example, D and E buildings are located on two corners of the short side of the central lawn, thus, making these spaces disconnected and uninviting for children to explore and play. Also, the semi-open space under D building is primarily used by adults for farmers' market in the evenings and partially houses an enclosed community hall that is occasionally used by the residents.

Spatially, the Semi-open podium spaces-4 of B and C buildings are located along the long side of the central lawn, making both these spaces flow into each other creating a feeling of one large space. School-age boys and girls ride bikes and attend structured activities such as skating, karate and dance classes at semi-open spaces under B and C buildings.

Furthermore, school-age boys to park their bikes at the Semi-open podium space-4 under B building and go to play at the Designated play area-1 because of proximity. The dominant group using the Designated play area-1 are pre-school and school-age children who exercise their gross motor skills by climbing the integrated play structure and playing at swings and slides. Interestingly, this play area has toddler swings and sand but not many parents bring their young children here to play.

The large Central lawn-2 is the heart of Uru because it is easily accessible for children and adults living in phase-1 residential buildings. Furthermore, it is visually divided by 2' tall planters with shrubs and trees along the central pathway, thus, spatially segregating the Central lawn into two unequal spaces – right and left portions. The left portion is larger than right and is primarily used by school-age boys to play cricket, football and other ball games; and the right portion is smaller and closer to the designated play area but few children use this space.

While the Designated play area-1 and Central lawn-2 were conceptualized as spaces for children to play, in reality, the Pathway and small plaza-3 with limited Physical Elements and Surfaces (PEaS) is used by toddlers, pre-school and school-age boys and girls for play (Figure 6.1.d.). The plaza space is not a designated open area for play but is the primary space for parents and children to gather for play. The hardtop surface affords pre-school and school-age children to ride their wheeled vehicles (cycles and scooters); and the short parapet walls affords climbing for toddlers and seating for mothers, who regularly socialize in this centrally located space.

3. Experienced Space

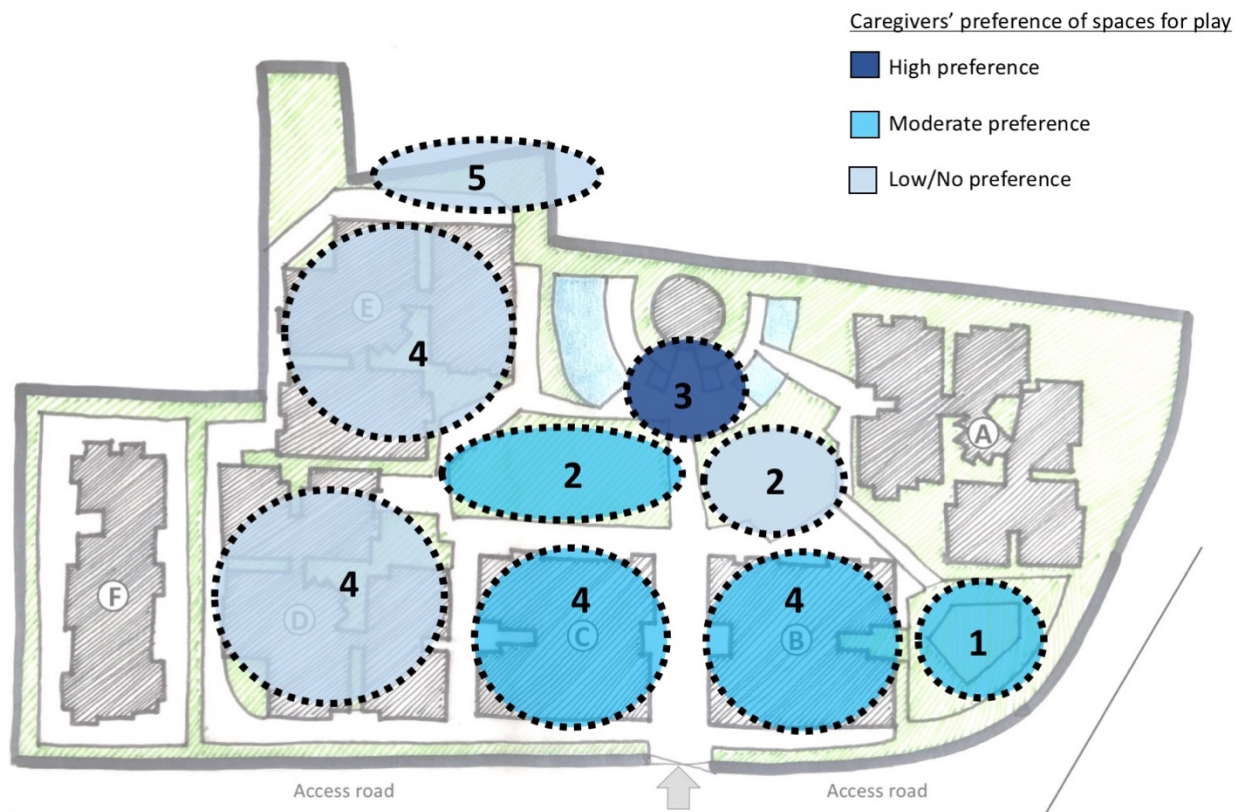


Figure 6.1.q. Uru's Lived Space showing caregivers's preference of spaces for play (Hand-drawn and created by Atmakur-Javdekar)

Despite the diverse play opportunities and large open spaces spread across Uru, parents primarily take their children to the Pathway and small plaza-3 that has almost no play equipment instead of the Designated play area-1 or other open spaces such as the Central lawn-2 and Semi-open podium spaces-3. This is because of poor hygiene, low maintenance of sand, and poor quality of play equipment at the Designated play area. Mother of a 5-year old girl stated, “there has been cat shit and rest many other things over there [referring to the designated play area]. Lately, there were bees. They are dead but they are buried deep in the sand. So, I don't find it very hygienic, so, I rarely go.” Additionally, a mother who took her school-age son and pre-school daughter to play at the Designated play area said, “You know we are not scared when kids fall here because they do not get hurt [due to sand surface]. But I

am always concerned about the infections kids get here. The skin gets itchy and they develop rashes.”

Design professionals provided a segregated play area for young children but as it is not well maintained, parents do not use it and are forced to use the left side of the Central lawn where older children play ball. Parent of a 3 ½ year old girl stated:

When the bigger kids play football over there [pointing to the Central lawn], it is very dangerous. The football can come here and hit any of the small kids. I don't like that at all. They should provide some other area for [older] kids to play. (personal communication, 14th November 2017)

While the right side of the central lawn is unused, parents do not prefer going there because it has many undulations and is poorly lit. “This side of the lawn [right-side] is not smooth, it is up and down. And this [Pathway and small plaza] is the only space where small kids [referring to pre-school age children] can play” expressed a parent of a two year old boy. Further, parents avoid the Semi-open podium spaces-4 because these spaces are not clean. In reality these spaces are used by school-age children who come down to play with no adult supervision.

Interestingly, the Vegetable and fruit garden-5 offers children across all age groups an opportunity to engage with nature, get their hands dirty and provides a rich sensory experience. However, children and caretakers do not access this space because it is located at the rear-end of the plot with poor visual and physical access. While there are no management rules about accessing this space, due to its disadvantaged location, parents feel the space is meant for adults, and unsafe and inappropriate for children. A mother of a 3 ½ year old girl and 9-year-old boy stated, “Only elderly people go there for their walks. I do not like to take my children there as it is away from here [referring to the Central lawn-2]”. Further, another parent of a 2 ½ year old boy echoed, “we don't actually go there [referring to the Vegetable and fruit garden] because there are many snakes there. It is very difficult to go there with kids”

The central issue at Uru is poor maintenance of the multiple open and semi-open spaces. Thus, leaving parents with very limited choices of spaces to take their children to play. Then, clearly, parents prefer to use the Pathway and small plaza-3 for children's play because it is centrally located, adjacent to the central lawn, well maintained, has ample seating areas for parents and has other children using the space.

Critical Reflective Summary

Theoretically, at Uru, children have ample play opportunities to engage in physical, social and sensory play. For example, the multiple Semi-open podium open spaces-4 encourage children to run, ride their wheeled vehicles brought from home and play games in groups. Further, the fixed play equipment affords children gross motor play opportunities challenging their physical and mental strength and the sand surface at the play area gives children an opportunity to exercise their fine motor skills by engaging in sensory play. However, poor maintenance of these spaces restricts parents from using these spaces for children's play.

Interestingly, the spaces often used by adults for their leisure and recreation is well maintained by the society. These include the Central lawn-2, Vegetable and fruit garden-5 and areas surrounding the clubhouse including Pathway and small plaza-3. Also, 'disconnected spatial planning' of the vegetable and fruit garden from the well-maintained central areas discourages parents to access the garden located at the rear-end of Uru.

In summary, *adjacency and cleanliness* of open, semi-open spaces and designated play area influence the overall play opportunities available for children at Uru.

Case Study Two: Ambar

Ambar (n) = Sky

/äm-bär/

Word origin = Sanskrit

Case Study Two has three open-to-sky walkways at 8th floor level connecting a pair of residential buildings, thus, creating leisure and recreation opportunities for children and adults. Hence, the name 'Ambar' echoing the open-to-sky spaces.

Introduction and site-selection rationale for in-depth investigation

The construction of Ambar was completed in a single phase in 2014 with six buildings including three sets of twin residential buildings; i.e., A1-A2, B1-B2, C1-C2. (Figure 6.2.a.) The Parking Zone is located at (0) ground and (+1) podium levels, so, neither the ground nor the podium levels are traffic-free. (Table 2.3.) The residential buildings are located at podium level and society amenities across ground and podium levels and across each floor (including 8th floor's sky lounge) in the residential buildings. In total, there are 390 apartment units (90% occupancy) where approximately, 350 families and 150 children (1 – 12 years) live.

I selected Ambar to investigate children's play opportunities because of two unique spatial design features and one spatial planning feature. The spatial design features include the Sky lounge and Aangan⁵². At Ambar, each set of twin residential buildings is connected through an open-to-sky walkway called 'Sky lounge' at the refuge area level (8th floor) that are designed as common restorative spaces for adults and children. Additionally, the Aangan or inner-courtyard is a semi-private enclosed common space immediately outside each apartment unit that spatially extends into the lobby of each floor. This space is open to use only for residents living in the surrounding apartment units of every floor.

⁵² The word 'Aangan' in Sanskrit, Hindi and Marathi languages means a 'courtyard', 'patio' or a space located immediately outside a house.

A noteworthy spatial planning feature is the distribution of designated amenity spaces across multiple spatial levels including (0) ground, (+1) podium, 8th floor and all-floor levels. I found this type of allocation of designated society amenities across spatial levels as unique and wanted to investigate how children and adults used these multi-level spaces for leisure, play and recreation and the reasons for the same.

Ambar	
(+1) Podium	RBZ – Residential Buildings Zone <ul style="list-style-type: none"> • Single phase construction • A1, A2, B1, B2, C1 and C2 buildings SAZ – Society Amenities Zone <ol style="list-style-type: none"> 1. Green pocket areas
(0) Ground	SAZ – Society Amenities Zone <ol style="list-style-type: none"> 2. Designated play area 3. Central lawn 4. Clubhouse 5. Swimming pool 6. Green pocket areas
(-1) Basement	(No basement)

Table 6.2. Ambar's Spatial zones and levels

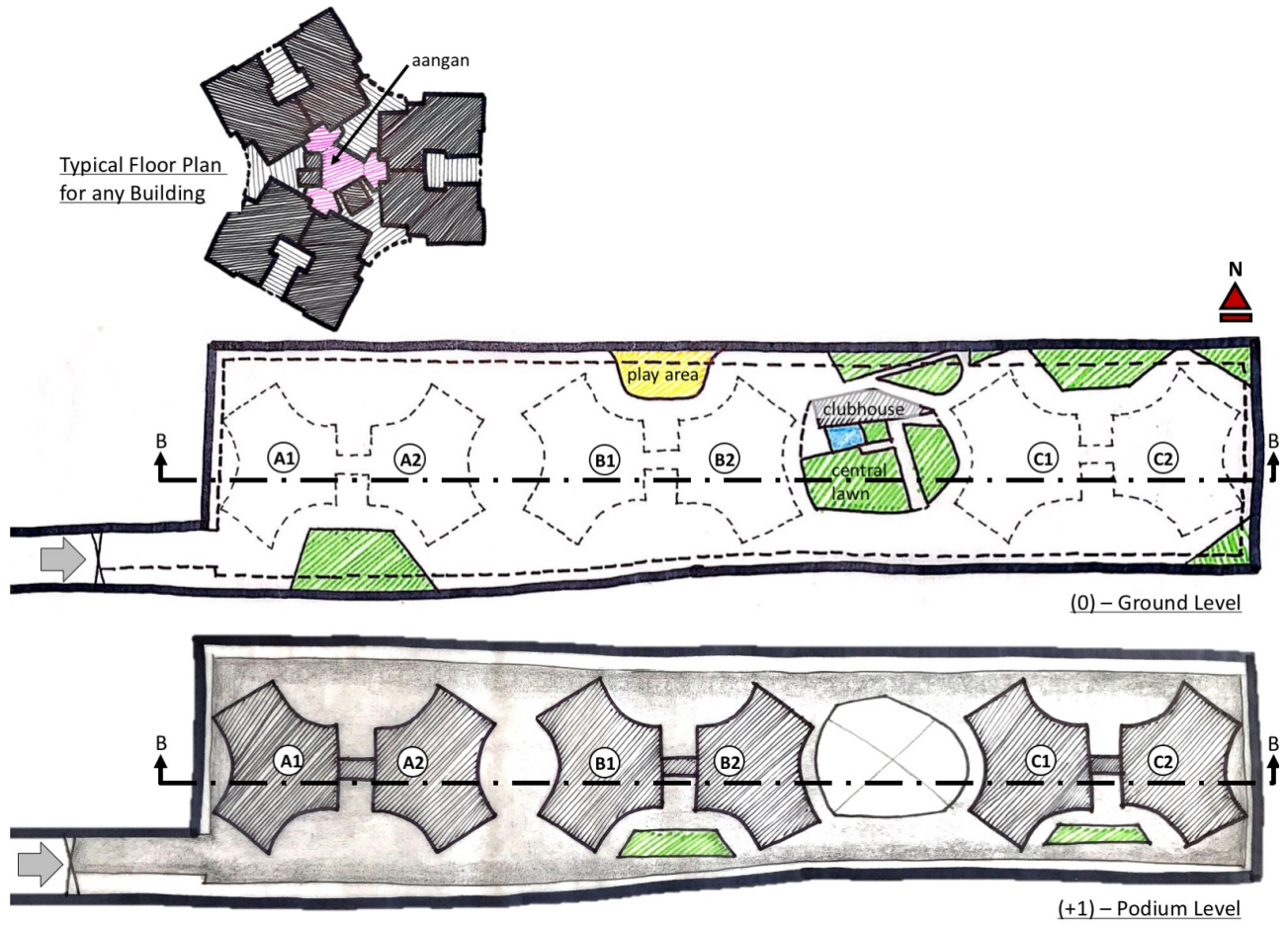


Figure 6.2.a. Ambar – Base plan (Hand-drawn and created by Atmakur-Javdekar)

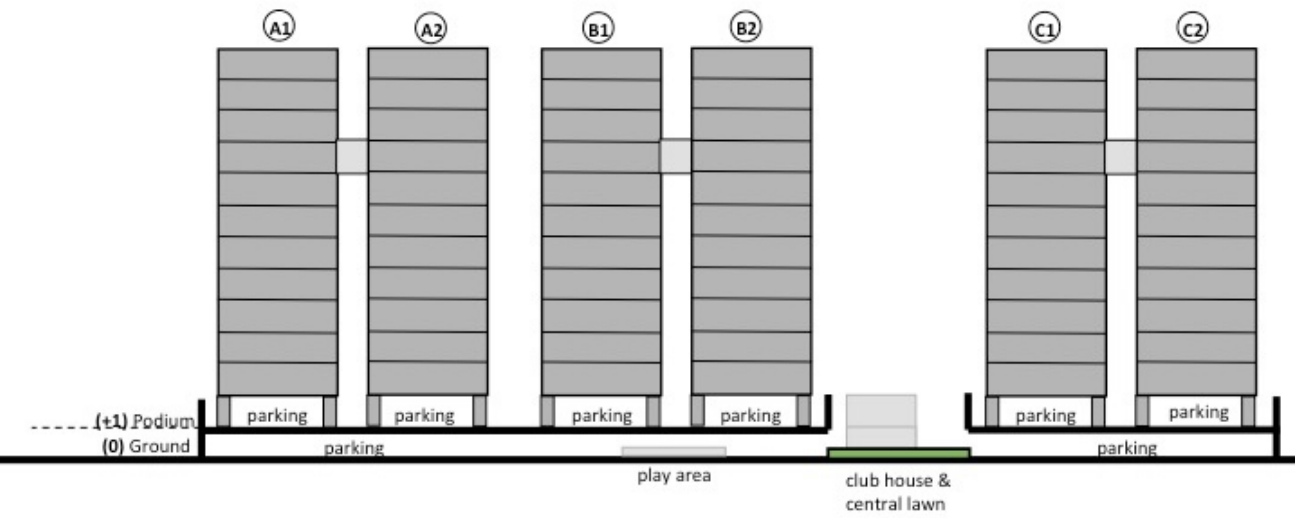


Figure 6.2.b. Ambar – Section YY (Hand-drawn and created by Atmakur-Javdekar)

Evaluated Spaces

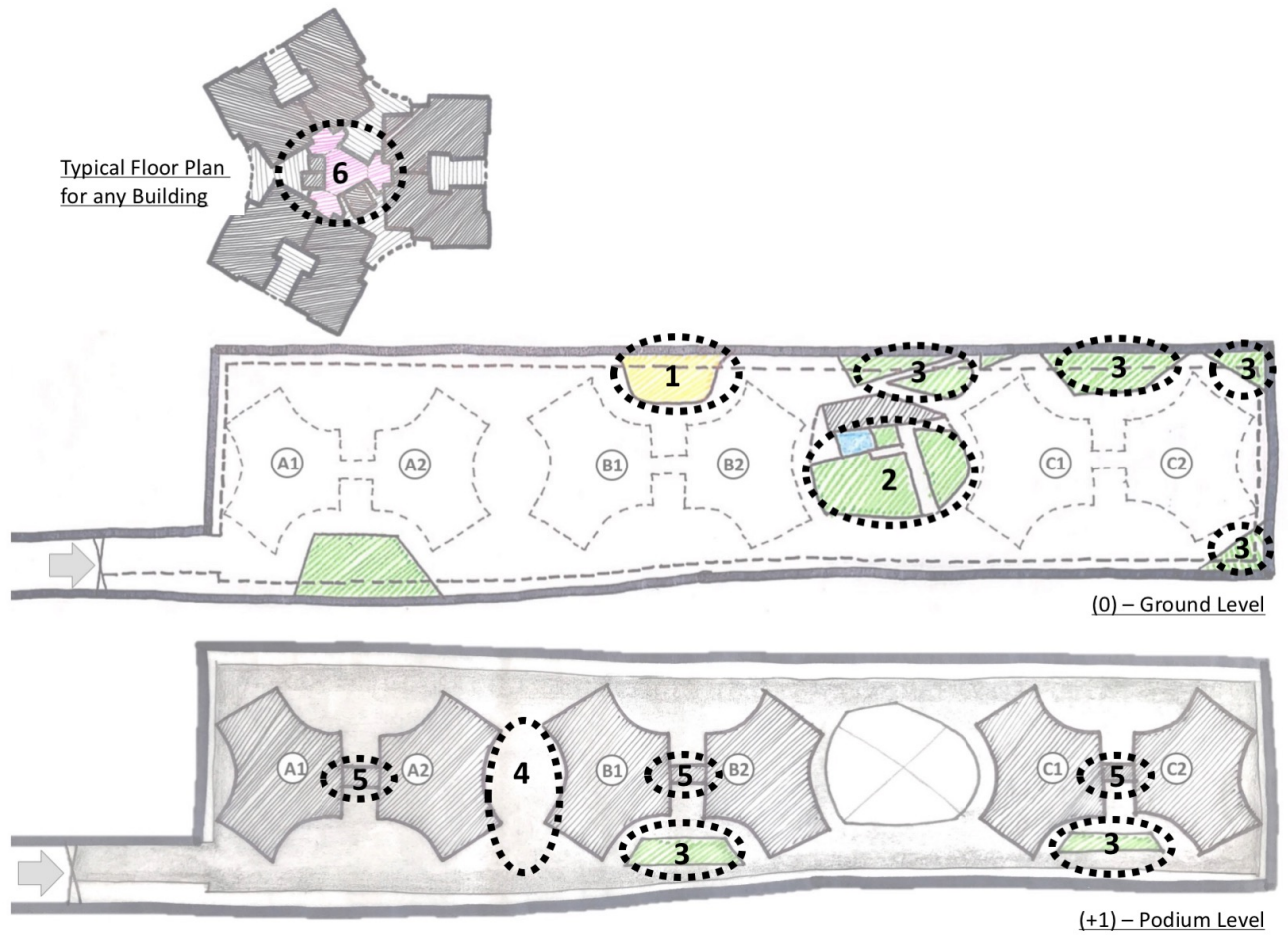


Figure 6.2.c. Ambar's Evaluated spaces (Hand-drawn and created by Atmakur-Javdekar)

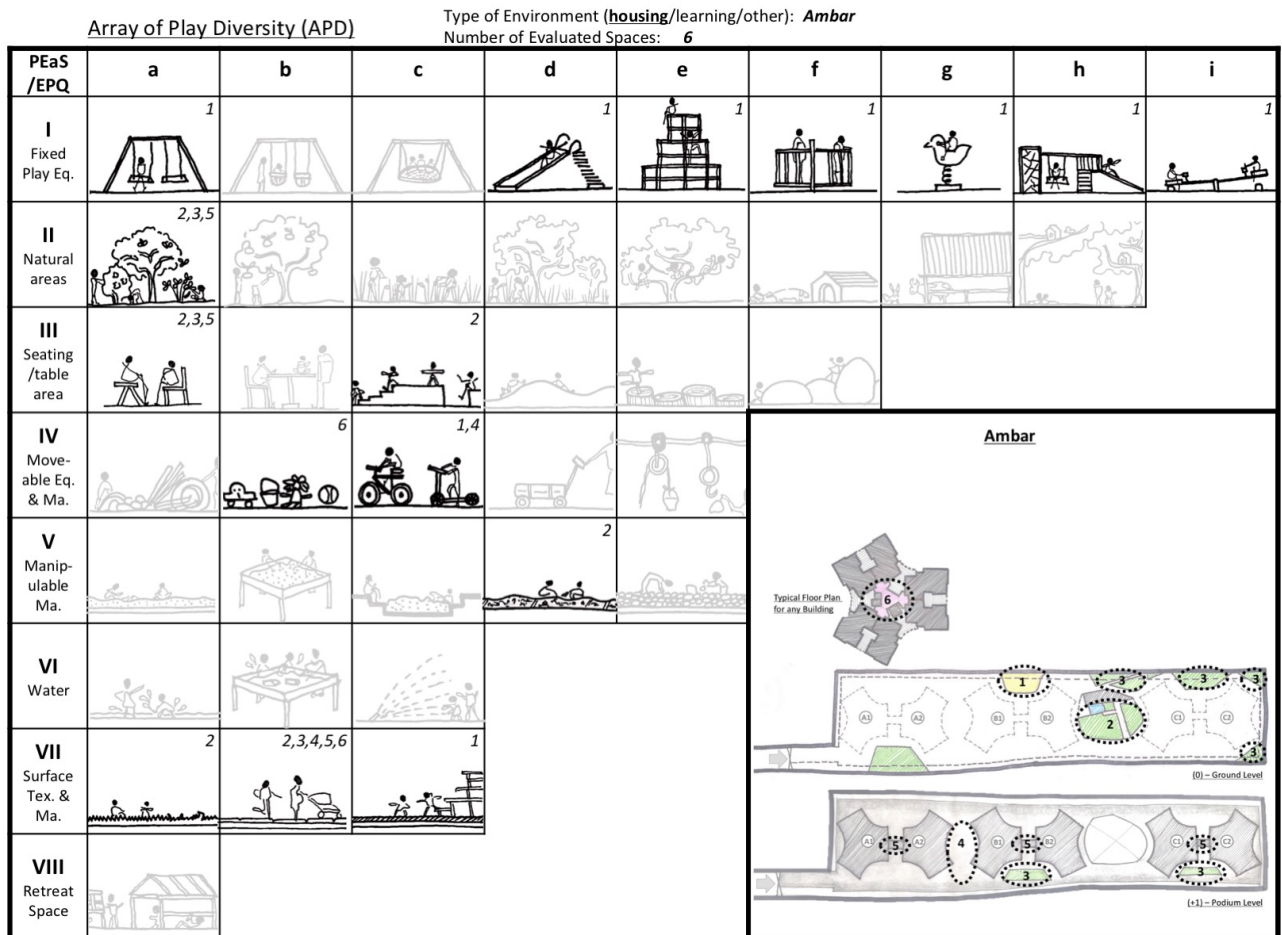


Figure 6.2.d. Ambar’s Array of Play Diversity (Hand-drawn and created by Atmakur-Javdekar)

I identified six spaces located across multiple spatial levels to evaluate children’s play opportunities⁵³. These are:

- 1. Designated play area-1:** The Designated play area is located at the (0) ground level and is accessed through the covered driveway. This is the only play area with fixed play equipment including slides, swings, seesaw, spring rider, merry-go-round and an integrated play structure on a rubberized surface and fake grass. There are two benches inside the play area that are designated seating areas. Also, a parapet-wall

⁵³ Please see Figure 6.2.c. Ambar’s Evaluated Spaces and 6.2.d. Ambar’s Array of Play Diversity and corresponding images of the evaluated spaces when reading this section.

segregates the play area and driveway that acts as seating areas. (Figures 6.2.e. and 6.2.f.)

- 2. Central lawn with clubhouse and amphitheater-2:** The Central lawn with clubhouse and amphitheater are located at (0) ground level alongside the swimming pool. (Figures 6.2.g. and 6.2.h.)
- 3. Green pocket areas-3:** The Green pocket areas are manicured landscaped spaces located at both (0) ground and (+1) podium levels with manicured plants and flowering trees and benches. At the ground level, these spaces are left-over spaces along the edge of the boundary wall. (Figures 6.2.i. and 6.2.j.)
- 4. Driveway between buildings-4:** The Driveway between buildings is a hardtop surface at (+1) podium level between A1 and A2 buildings that is not a designated play space. (Figures 6.2.k. and 6.2.l.)
- 5. Sky lounge-5:** Each pair of twin buildings are connected at the 8th floor level by an open-to-sky walkway called Sky-lounge. In total, there are three Sky lounges with hardtop surface, benches and manicured plants in planter-boxes. (Figures 6.2.m. and 6.2.n.)
- 6. Aangan-6:** The Aangan or inner-courtyard is the common space on all floors situated immediately outside the apartment units with a hardtop surface. During fieldwork, I had permission to enter C1 and C2 buildings at all floor levels to study this space. (Figures 6.2.o. and 6.2.p.)



Figure 6.2.e. Designated play area-1 at Ambar



Figure 6.2.f. Designated play area-1 and adjacent driveway at Ambar



Figure 6.2.g. View of amphitheater adjacent to the Central lawn and swimming pool with clubhouse -2 at Ambar



Figure 6.2.h. View of Central lawn with clubhouse and amphitheater-2 at Ambar



Figure 6.2.i. Green pocket area-3 at podium level of Ambar



Figure 6.2.j. Green pocket area-3 at ground level of Ambar



Figure 6.2.k. Driveway between buildings-4 on podium at Ambar



Figure 6.2.l. Top View of Driveway between buildings-4 at Ambar



Figure 6.2.m. View of Sky lounge-5 from podium at Ambar



Figure 6.2.n. Sky lounge-5 at Ambar



Figure 6.2.o. Aangan-6 or inner courtyard outside apartment units at Ambar



Figure 6.2.p. School-age children playing at Aangan-6

All photos of Evaluated Spaces by Atmakur-Javdekar

Production of children's play opportunities at Angan

1. Conceptualized Space

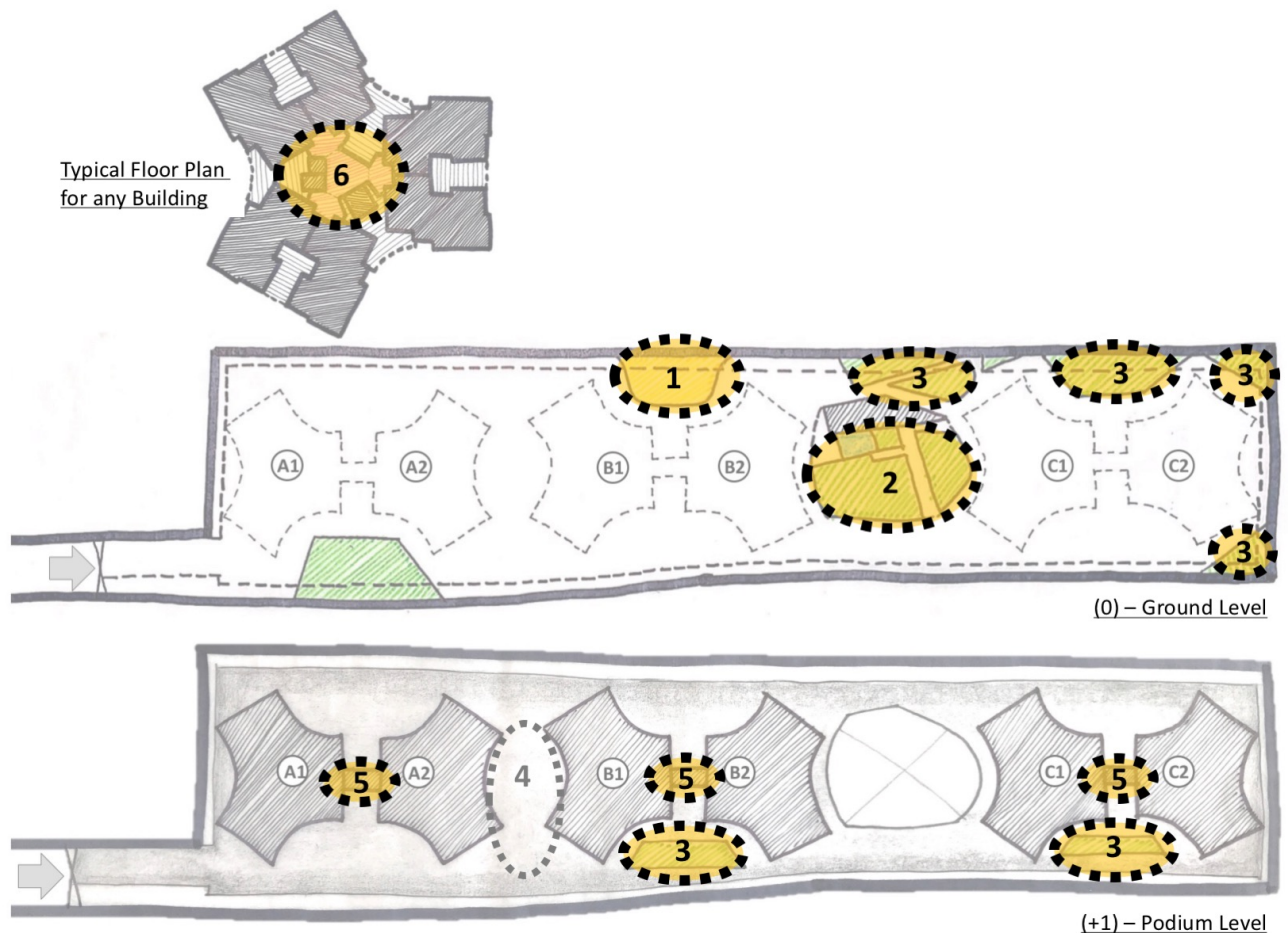


Figure 6.2.q. Ambar's Conceptualized Space (Hand-drawn and created by Atmakur-Javdekar)

During the design and planning stage, Ambar's developer along with the architect, conducted a participatory design session with potential customers or residents. At the session, customers provided a list of amenities and requirements that they felt were necessary in the Housing Society. This list included children's play area, open areas for adults' leisure, clubhouse, additional storage space inside the apartment units and interior design details related to kitchen and living areas. Based on the customers' needs, the developer along with the architect developed a final design brief including planning of apartment units and open areas for children and adults' recreation and leisure.

The developer felt that residents should not feel the need to go outside the Housing Society to relax and enjoy. For example, the Green pocket areas-3 were designed specifically as socializing spaces for elderly people to sit with infants and toddlers to relax. Similarly, Sky lounges-5 were designed as retreat spaces for all user groups. “Anyone can come and sit here (referring to the Sky lounge), kids come and sit comfortably. After dinner, parents like to come down and walk. Instead of coming all the way down to the podium, we thought a space in-between where they can still enjoy the sky and fresh air can be created.” So, the design professionals envisioned multiple open areas for children and adults’ leisure and recreation across various spatial levels including the Central lawn with clubhouse and amphitheater-2, Green pocket areas-3, Sky-lounges-5 and Aangan-6.

When asked specifically about children’s play needs, the architect said they did not put any specific thought into it and that they provided a standard kids play area, i.e., Designated play area-1 and mentioned that the focus of design was the “real challenge”, which was to fit the residential buildings with a good shape and form into the rectangular linear plot of land. The narrow rectangular plot shape of Ambar is typical to existing high-rise housing societies in Wakad. In such linear plots, design professionals typically allocate society amenities within the leftover open spaces in the mandated side margins at the ground level of the site. Essentially, common amenities are retrofitted into the side-margins after the design and planning of the main buildings. Likewise, at Ambar, the left over open areas in the side margins are used to allocate Green pocket areas, Designated children’s play area, gas bank, sewage treatment plant (STP), generator and other utilities and services for building maintenance.

2. Actual Space

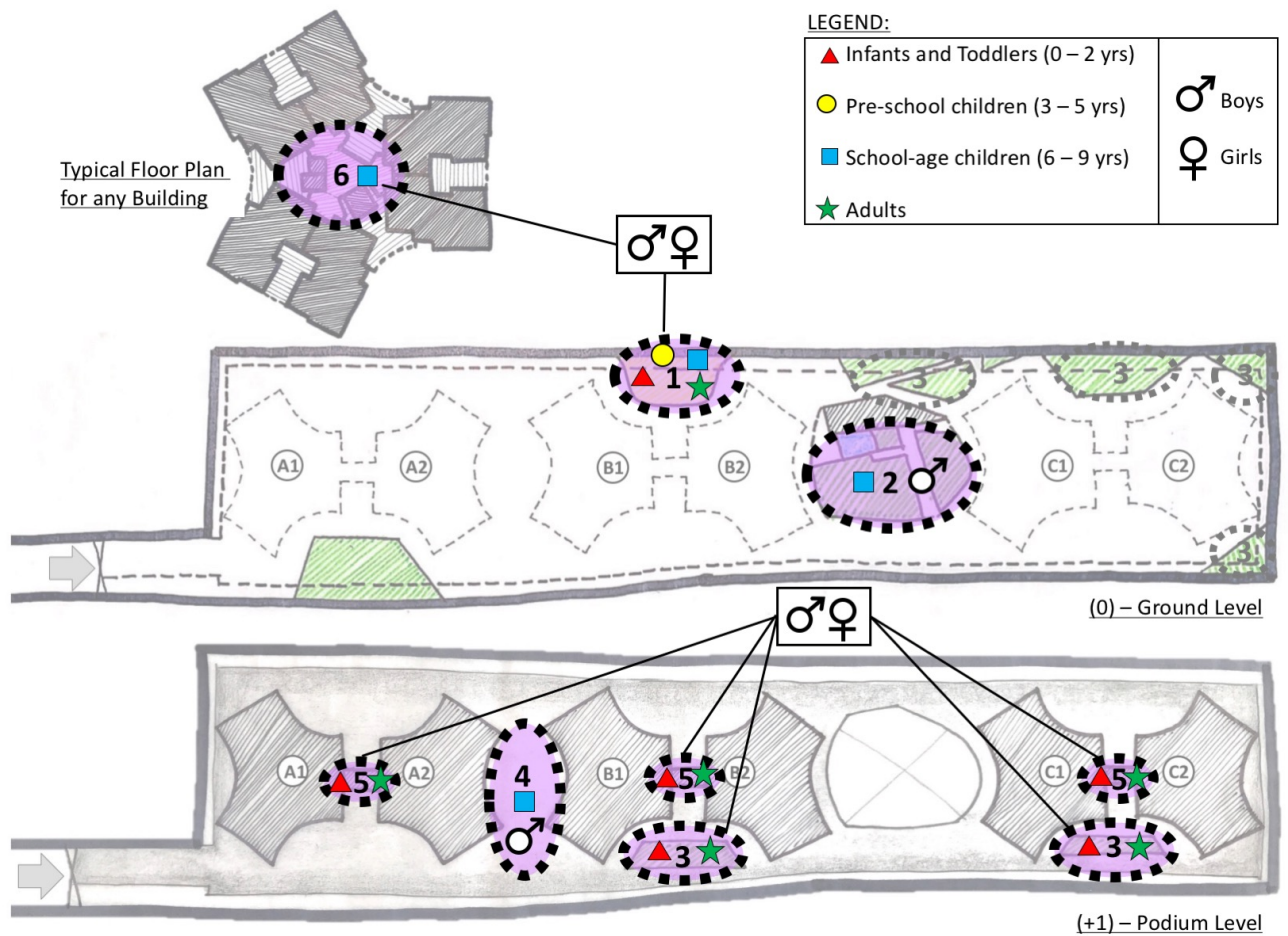


Figure 6.2.r. Ambar's Actual Space (Hand-drawn and created by Atmakur-Javdekar)

Though there are multiple open spaces across various spatial levels that could be used by children, they primarily gathered at the Designated play area-1 to play. Children brought their cycles and scooters and parked them immediately outside the play area, and use the adjoining driveway to ride their cycles under parental supervision. (See Figure 6.2.s. below)



Figure 6.2.s. Driveway adjoining the play area used by children to ride and park their cycles and scooters (Photo: Atmakur-Javdekar)

In walking distance from the play area across the driveway, the Central lawn with clubhouse and amphitheater-2 along with swimming pool are located. The Central lawn and amphitheater's hardtop surface with level changes affords children to run, climb, play ball and engage in games with peers but only school-age boys play football here. Interestingly, another space used by school-age boys is the Driveway between buildings-4 at the podium level. This Driveway is not a designated space but the flat hardtop surface affords children to play ball games and ride their cycles and scooters.

As conceptualized by design professionals, residents use Sky lounges, Aangans and some Green pocket areas. School-age boys and girls from neighbouring apartments gather at Aangan-6 to play with toys from home, and grandparents bring infants and toddlers to the Sky lounge-5 and Green pocket areas-3 at podium level. All the Green pocket areas-3 are

manicured green spaces with cut grass and hardtop surfaces along with benches, shrubs, small plants and trees that are not climbable. Interestingly, the Green pocket areas at ground level are spatially larger than the ones located at podium level but I observed only domestic helpers without any children use this space for socializing. This is because access to Green pocket areas at ground level is difficult as one has to either walk down a flight of stairs from the podium driveway or take the elevator to the ground level and walk across the driveway and parking area.

3. Experienced Space

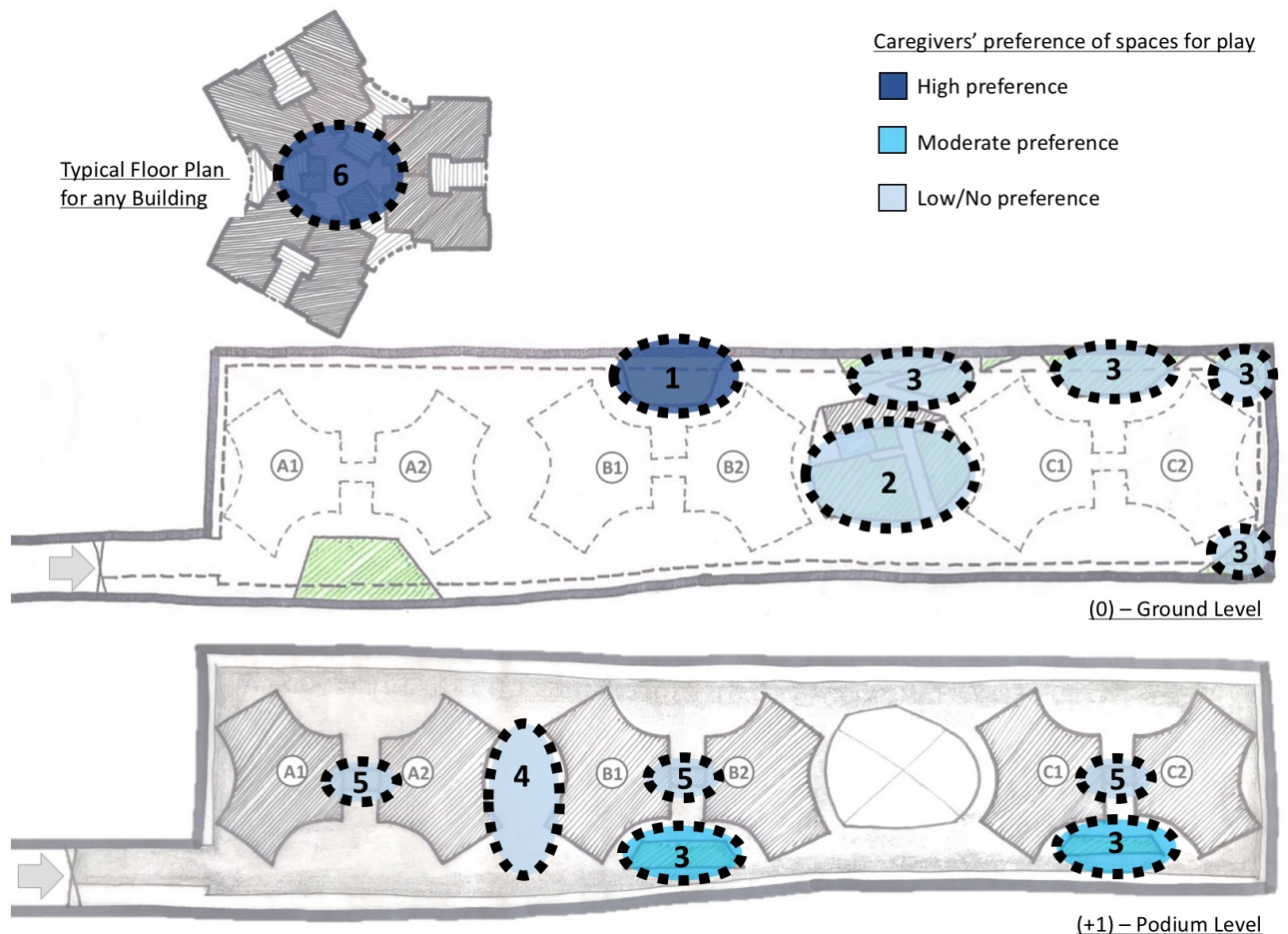


Figure 6.2.t. Ambar's Experienced Space (Hand-drawn and created by Atmakur-Javdekar)

Amongst the six evaluated spaces at Ambar, the Designated play area-1 is highly preferred by caregivers for children's play despite its small area because of the multiple factors described below:

- 1.) Presence of play equipment: This is the only amenity space at Ambar that has a range of play equipment that affords children to exercise their gross motor abilities. Parents stated that fixed play equipment was essential for children's play. This was the primary reason for parents to avoid taking their children to other open spaces, such as, sky-lounge, central lawn with amphitheater and clubhouse and green pocket areas that were conceptualized as spaces for leisure and recreation across all age groups.
- 2.) Presence of other children: Related to the point above, since most children played at the designated play area, caregivers brought their children here to play too. During interviews caregivers informed that "this [referring to Designated play area] is where children come to play, so, we also come here" – Parent of four-year-old girl.
- 3.) Bicycles and scooters: Further, parents like that children can bring their bicycles and scooters to this play space and park them outside the play area at the edge of the driveway. While there is no space to ride inside the play area, parents appreciate that children can ride their bikes in the adjacent driveway after some playtime with the equipment in the designated play area.
- 4.) Seating area: From a spatial perspective, the parapet wall separating the driveway and the play area acts as a seating ledge for caregivers while their children play. This ledge attracts parents and grandparents to sit and watch their children playing in the play area or riding their bikes in the driveway.
- 5.) Clean play surface: During interviews, parents expressed that they preferred rubberized surface instead of sand as a play surface as it is clean and easier to maintain. One parent expressed that children typically get a rash from sand and found it unsafe.

6.) Management rules: Parents emphasized that older children (above 15 years) do not use the play equipment as there are strict instructions by the building management restricting children above 15 years into the play area. As a result, they feel the play equipment is in fairly good shape.

Likewise, parents found Aangan-6 as a convenient space for school-age children to play board games, particularly during the monsoons. Parents expressed that the proximity to their apartment units and easy access to the Aangan made them feel safe about their children stepping out to meet their friends in a space immediately outside their homes.

The Central lawn with amphitheater and clubhouse-2 is spatially the largest designated space for children and adults to use. The lawn dries up during the summer months affording children an opportunity to dig in the mud, providing them an opportunity to exercise their sensory abilities but parents restrict children from using this space, as they fear their children could fall into the swimming pool that is located adjacent to the clubhouse and amphitheater. Also, parents of infants, toddlers and pre-school children stayed away from this space as school-age boys played football at the central lawn. Further, parents avoided taking their children to Green pocket areas-3 as they did not want their children to touch the plants as they could damage them; and the Sky lounge-5 as they believed there is no play equipment.

A reason to select Ambar was to investigate how parents and children used the Sky lounge-5 for play. During my field studies, I noticed only a few grandparents with infants and toddlers sitting and walking at the Sky lounge, I did not see any pre-school or school age children. When interviewed, parent of two young girls stated “there is nothing there [referring to Sky lounge] for children to play with” Parents responded similarly when asked about why they did not take children to the Green pocket areas-3 at ground and podium levels. Parent of a 3 ½ year old boy said, “there is nothing there [referring to Green pocket areas]. Only

grandparents or domestic helpers go there to meet their friends and chat.” Evidently, a lack of play materials and equipment discouraged parents from taking their children to play at Sky lounges and Green pocket areas.

Lastly, parents found the podium driveway as risky for children to use for play due to moving vehicles and hence, avoided taking their children to play.

Critical Reflective Summary

At Ambar, though the developers conducted a participatory design session to make customers feel that their voices and opinions are included, in reality, it appears as a tokenistic effort because of two reasons. First, the design professionals clearly stated in the interviews that the design workshop was only a ruse to attract customers. “kuch nahi, logo ko yeda banaya” [Translation – Nothing, we just fooled people]. In actuality, the developer finalized the design brief including the list of amenities from the vantage point of sales. Additionally, parents felt that the space provided for play area is small when compared to the number of children using the space and thus, is insufficient.

Second, for the developer the idea to sell the conceptualized ‘grand’ spaces (i.e., Sky lounge-5 and Aangan-6) on paper is more important than providing what customers actually need. For example, the Sky lounge remains as a grand design feature conceptualized and displayed in the brochures but in reality, people sparingly use this space. Overall, though an effort to include residents’ opinions was made, it was not successfully translated into actuality.

On a positive note, Aangan-6 as a special design feature on each floor of the residential buildings works efficiently as an immediate common space for residents and children living on the same floor. This is because caregivers feel safe when their children play in close proximity to their homes. In summary, though there are multiple open areas across various spatial levels at Ambar, caregivers prefer that their children played in a space

with fixed play equipment. As a result, young children flock at the Designated play area-1 despite its small size and poor location.

Case Study Three: Keerna

Keerna (adj.) = Scattered

/kēr-nā/

Word origin = Sanskrit

At Case Study Three, there are multiple spacious open spaces that are scattered across the housing societies at ground and podium levels. These spaces are spatially disconnected from each other. Hence, the name Keerna, meaning scattered.

Introduction and site-selection rationale for in-depth investigation

Keerna has nine residential buildings constructed in a single-phase on a square-shaped piece of land. Each building has 12 floors with parking at (0) ground level and society amenities distributed across (0) ground and (+1) podium levels. In total, there are 350 apartment units with 90% occupancy where approximately, 320 families and 100 – 150 children (1 – 12 years) live.

The society amenities include two spacious lawns, older and younger children play areas, park, clubhouse, semi-open space and swimming pool scattered across the site. At the ground level, there is one central lawn, clubhouse, park for the elderly (nana-nani park), and a semi-open space under the society office. Additionally, there are two podium spaces. The first podium is not connected to any building and is located between A, D, B and E buildings with a children's play area and a lawn; and the second podium is connected to four buildings – B, C, E and F – with an open area for older children. Further, the refuge area (8th floor) in G building is used as leisure and recreation space.

This is unlike other housing societies in Wakad where developers typically provide one central lawn and smaller open spaces to fit in other society-related amenities⁵⁴. In this context, I wanted to investigate how children and caregivers used these multiple large disconnected spaces for play and recreation and reasons for the same.

⁵⁴ See Case Studies: 6.1.Uru, 6.2.Ambar, 6.5.Shakti and 6.6.Dhara

6.3. Keerna	
(+1) Podium	SAZ – Society Amenities Zone 6. Swimming pool (above clubhouse) 7. Designated play area for young children 8. Designated play area for older children and open area 9. Central lawn
(0) Ground	RBZ – Residential Buildings Zone <ul style="list-style-type: none"> • Single phase construction • Nine buildings – A, B, C, D, E, F, G, H, I PZ – Parking Zone SAZ – Society Amenities Zone 1. Lawn near clubhouse 2. Clubhouse 3. Nana-nani Park 4. Semi-open space under society office
(-1) Basement	(no basement)

Table 6.3. Keerna's Spatial zones and levels

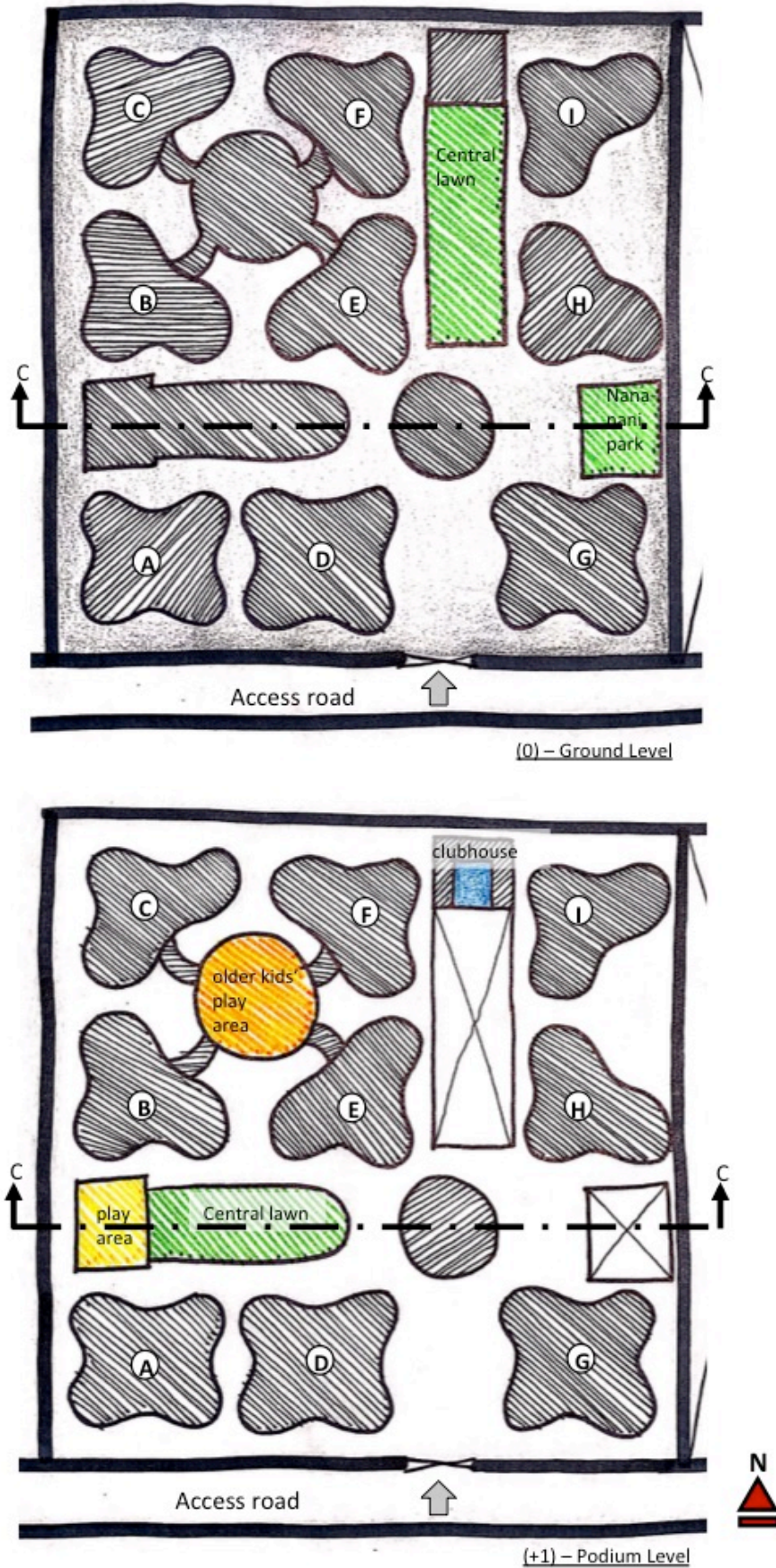


Figure 6.3.a. Keerna – Base plan (Hand-drawn and created by Atmakur-Javdekar)

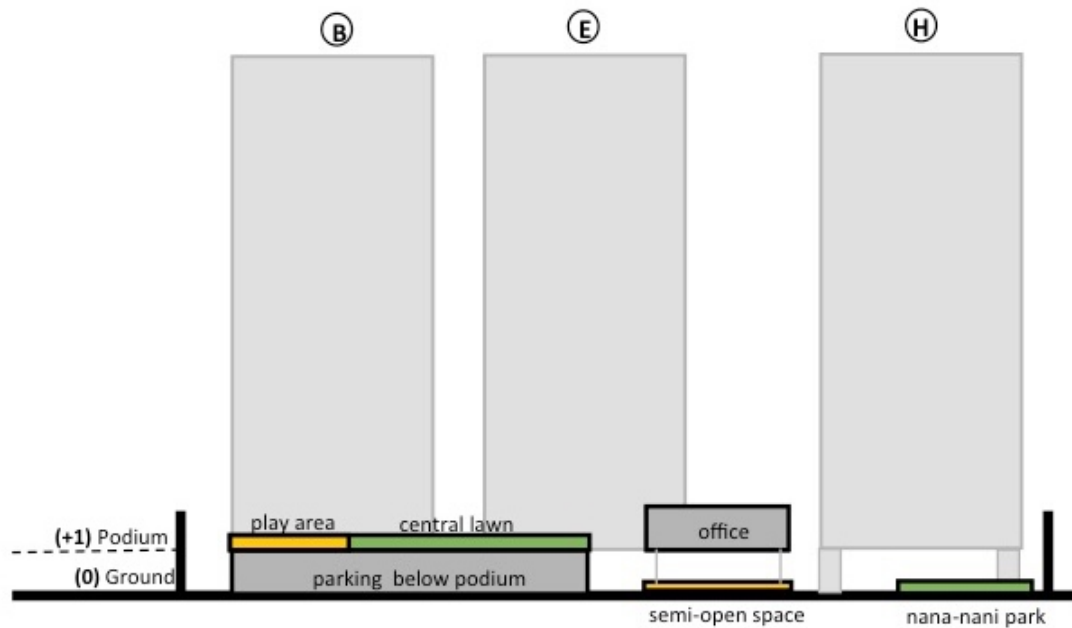


Figure 6.3.b. Keerna – Section CC (Hand-drawn and created by Atmakur-Javdekar)

Evaluated Spaces

I identified seven spaces at Keerna to evaluate children’s play opportunities⁵⁵. These are:

1. **Designated play area and central lawn-1:** The Designated play area and central lawn is one seamless space located at podium level between A, D, B and E buildings. The central lawn has benches on the manicured lawn with a hardscape pathway surrounding it. Adjoining the pathway on the left side of the lawn is the designated play area that has fixed play equipment including swing, slide, climbing frame, merry-go-round and see-saw on a gravel surface. On the right side of the lawn is a small hardscape plaza with a flag hoisting pole. (Figures 6.3.e. and 6.3.f.)
2. **Designated older children’s play area-2:** This space connects four buildings (B, C, E, F) at the (+1) podium level with cut grass and dirt surface surrounded by a hardtop pathway. (Figures 6.3.g. and 6.3.h.)

⁵⁵ Please see Figure 6.3.c – Keerna’s Evaluated Spaces and 6.6.d – Keerna’s Array of Play Diversity and corresponding images of the evaluated spaces when reading this section.

- 3. Lawn near clubhouse-3:** This is the second central lawn near the clubhouse located at (0) ground level between E, F, H and I buildings with cut grass and trees that are not climbable. (Figures 6.3.i. and 6.3.j.)
- 4. Nana-Nani park-4:** This is a park for elders with dirt surface and shade providing trees located at ground level between G and H buildings. Also, there are benches for adults to sit in this park. (Figures 6.3.k. and 6.3.l.)
- 5. Semi-open space below society office-5:** This semi-open space with a hardtop surface is located under the society office at the (0) ground level. Plants act as a visual barrier blocking the surrounding driveways and guest parking areas surrounding this space. (Figures 6.3.m. and 6.3.n.)
- 6. Parking areas-6:** All nine residential buildings have car-parking areas at the ground floor level. These parking areas are hardtop with parapets and columns. (Figures 6.3.o. and 6.3.p.)
- 7. Refuge area-7:** Each residential building has a refuge area on the 8th floor that is meant to be open at all times but the evaluated space highlighted here is the refuge area for G building that has a hardtop surface and is used by residents and children. (Figure 6.3.q.)

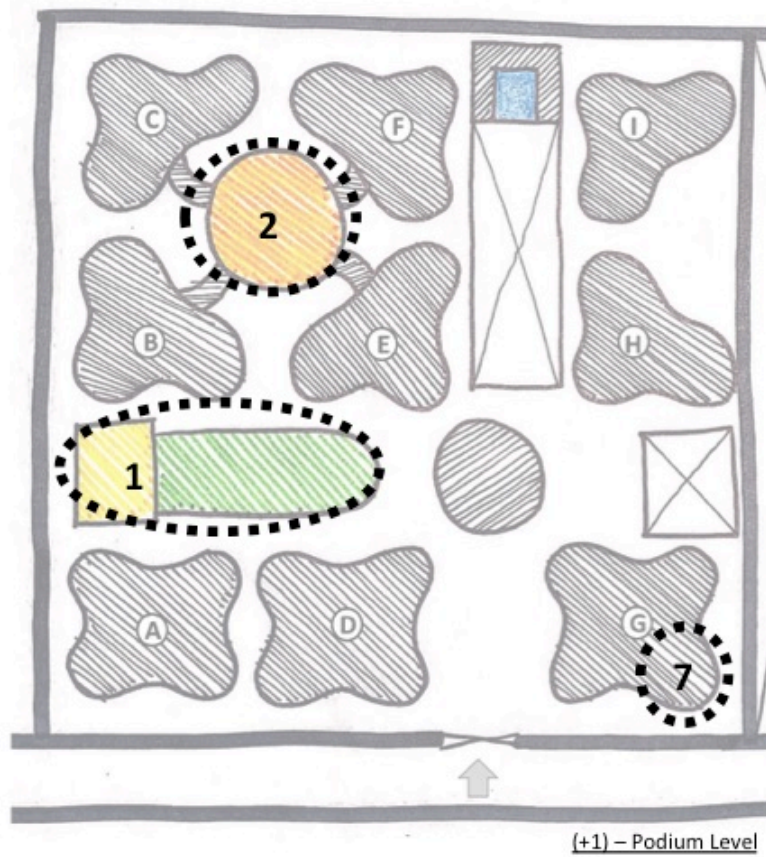
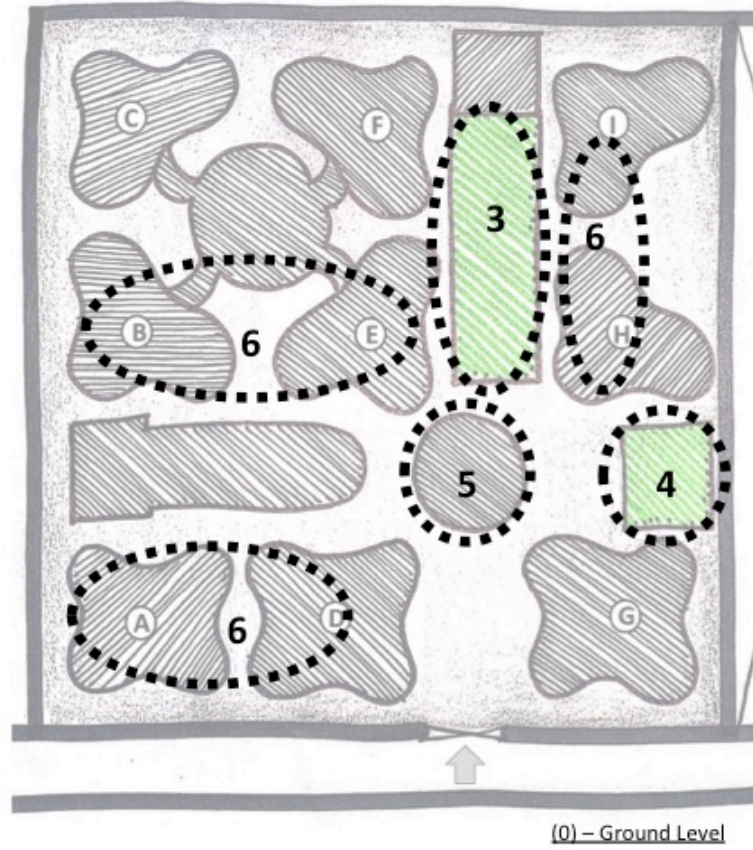


Figure 6.3.c. Keerna's Evaluated spaces (Hand-drawn and created by Atmakur-Javdekar)

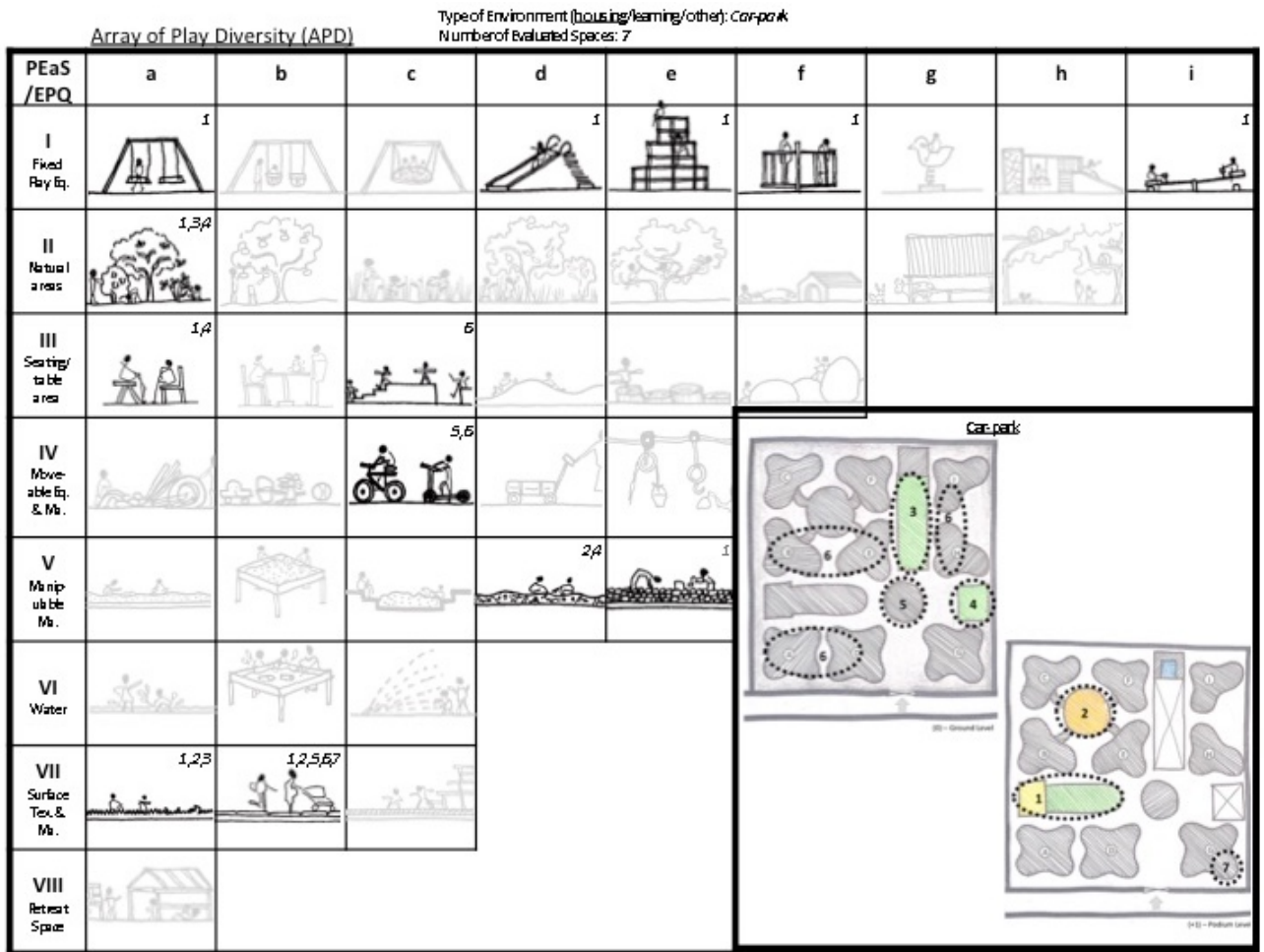


Figure 6.3.d. Keerna's Array of Play Diversity (Hand-drawn and created by Atmakur-Javdekar)



Figure 6.3.e. Designated play area-1 with gravel surface at Keerna



Figure 6.3.f. Central lawn-1 with surrounding hardscape pathway at Keerna



Figure 6.3.g. Older children's play area-2 above the podium at Keerna



Figure 6.3.h. View of Older children's play area-2 from ground level at Keerna



Figure 6.3.i. Lawn near clubhouse-3 at Keerna



Figure 6.3.j. Lawn near clubhouse-3 at Keerna



Figure 6.3.k. Outside view of Nana-nani park-4 at Keerna



Figure 6.3.l. Inside view of Nana-nani park-4 at Keerna



Figure 6.3.m. Inside view of Semi-open space below society office-5 at Keerna



Figure 6.3.n. Outside view of Semi-open space below society office-5 at Keerna



Figure 6.3.o. Parking area-6 and driveway at ground level between A and D buildings at Keerna



Figure 6.3.p. Parking area-6 and driveway at ground level between A and D buildings and Designated play area and central lawn-1 on podium at Keerna



Figure 6.3.q. Refuge area-7 at 8th floor of G building at Keerna
All photos of Evaluated Spaces by Atmakur-Javdekar

Production of children's play opportunities at Keerna

1. Conceptualized Space

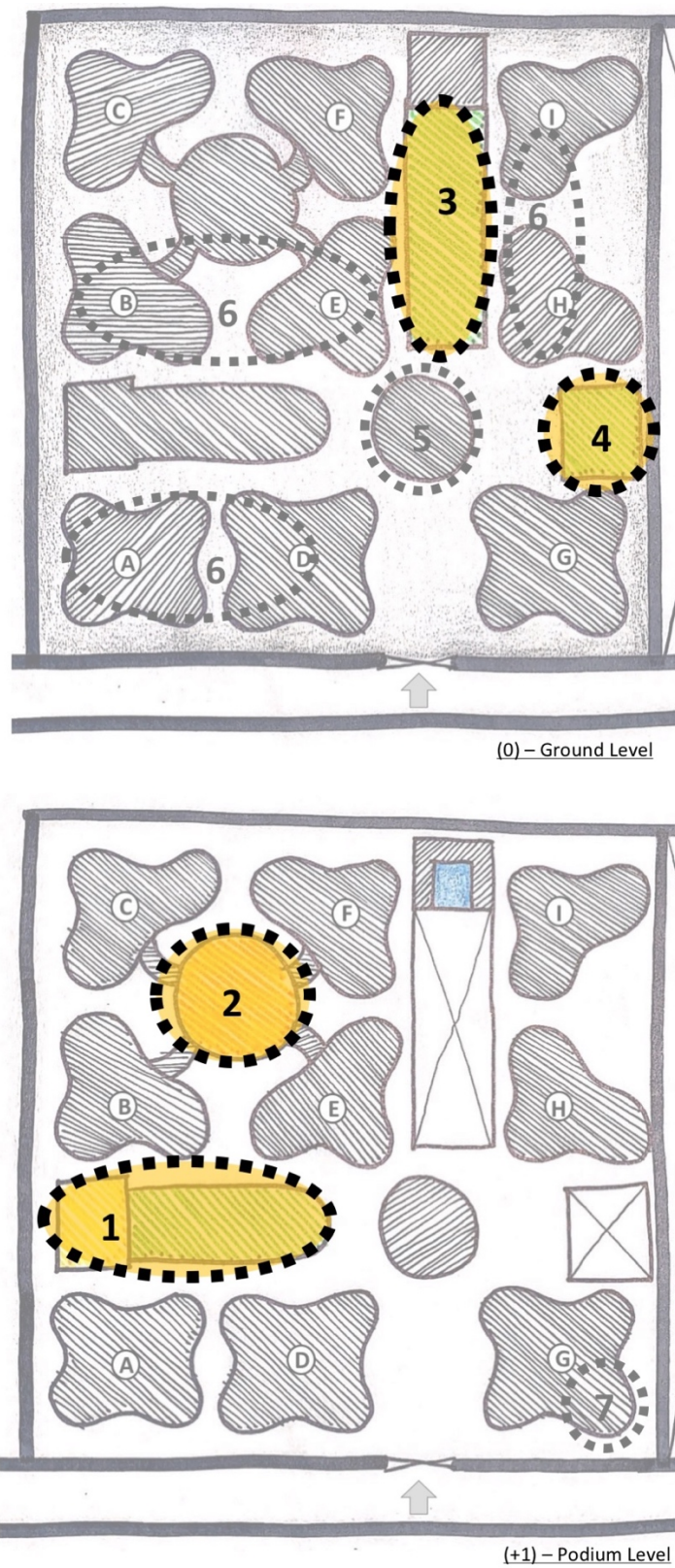


Figure 6.3.r. Keerna's Conceptualized Space (Hand-drawn and created by Atmakur-Javdekar)

Interviews with design professionals unpacked the reasons for the scattered location of multiple large open spaces at Keerna. The developer and the architect wanted to “do something different” with the form of the buildings. Instead of providing one large space, they focused on creating ‘multiple open spaces’ as a primary design theme where each apartment unit has large windows with views to green outdoor spaces. According to the architect, multiple cluster-like-buildings and open spaces provide openness, cross-ventilation to apartment units and gives character to the built environment. The architect stated:

So, in this particular place I wanted to create small nooks for every building rather than giving one generalized big open space. This was just a change that I wanted to bring because naturally bigger size open space looks nice, but also it doesn’t give any character differentiating from building to building and form to form. So, that’s why I wanted to get it [referring to open spaces and amenities] distributed. (personal communication, 15th May 2017)

Since providing multiple open spaces was the primary theme, the developer wanted to create age-segregated areas for all residents, specifically, play areas for toddlers, school-age and older children and recreation and leisure open spaces for adults. Accordingly, two age-segregated play areas Designated play area and central lawn-1 and Older children’s play area-2 on two separate (+1) podiums and a Nana-nani park-4 along with an additional Lawn near clubhouse-3 was created at the (0) ground level (Figure 6.3.e.)

Interestingly, the architect and developer’s vision of a play area is different. During the planning phase, the architect claimed that his proposed design did not include any play equipment and that developers added the existing play equipment later. The architect preferred natural ground with mounds and a dirt surface, so children and adults could take advantage of playing with the natural environment but the developer did not agree to this idea as it “does not look good” in the sales brochure. The developer wanted to provide imported play equipment specific for toddlers like toddler swings and slides and rubberized play surface but it was not possible due to high costs and difficulty in replacing or repairing any

worn out play equipment. So, the developer provided traditional play equipment of best quality that was locally manufactured with gravel as a play surface.

2. Actual Space

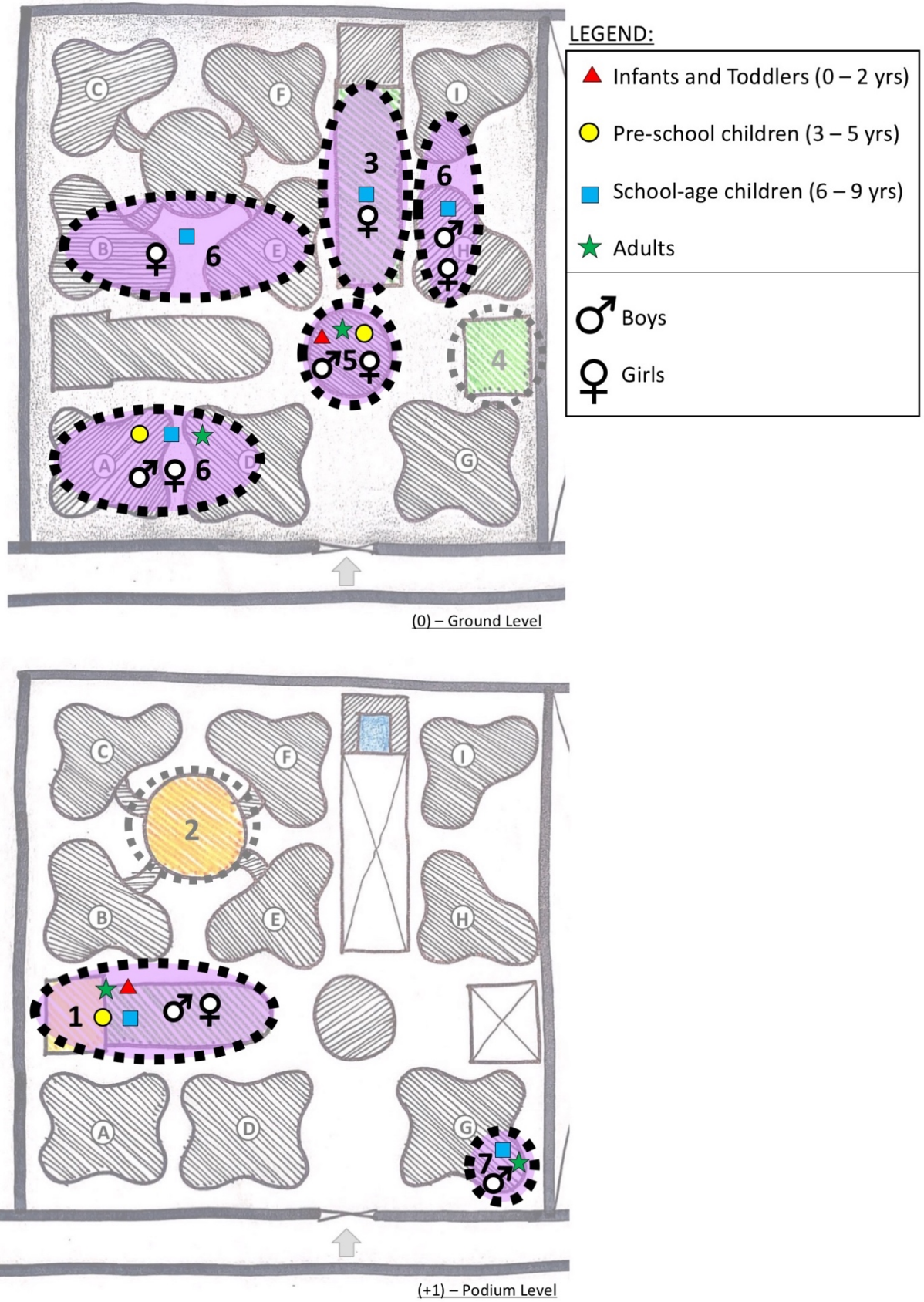


Figure 6.3.s. Keerna's Actual Space (Hand-drawn and created by Atmakur-Javdekar)

During field visits, I observed that out of the four designated play and recreation spaces, children and adults across all age groups largely use the Designated play area and Central lawn-1 due to the presence of play equipment, lawn and surrounding pathway. The pathway around the lawn affords adults to walk while watching their children playing with fixed play equipment at the play area or running games in the lawn. Further, I observed school-age boys playing cricket in a small group near the flag-hoisting pole on the right side of the lawn. Additionally, the Lawn near clubhouse-3 is another designated space primarily used by school-age boys to play football.

From Figure 6.3.s. Keerna's Actual Space, it is evident that school-age children do not use the Designated older children's play area-3. The architect designed this space keeping in mind that children from the surrounding buildings would use the open space but in reality it is barren and with no sports courts or equipment to afford play for older children. Also, this space is secluded and not easily accessible, as one has to take the elevator from one of the surrounding buildings (B, C, E or F) to access this podium space. Instead, school-age and older children use the Parking areas-6 at ground level beneath residential buildings for their play. For example, the Parking area underneath B and E buildings are used by school-age and older boys to play cricket, and the Parking area under H and I buildings are used by school-age boys and girls to ride their bikes. Further, pre-school and school-age children use the Parking area between and below A and D buildings for free play. Here, children use the parapet walls and columns of the parking areas to play hide 'n' seek, running games or to ride bikes.

Aside from the parking areas, there are two additional undesignated spaces that are used by children and adults regularly. These are the Semi-open space below society office-5 at ground level and Refuge area-7 on the 8th floor of G building. Since, the multi-purpose room of the clubhouse is not open to use for children's activity classes, the Semi-open space

under the society office and Refuge area are used to conduct dance, music and spiritual-discourse classes in the evenings for children. Further, infants, toddlers and pre-school children along with their caregivers use the Semi-open space below society office during monsoons to ride their wheeled vehicles.

In summary, the Designated play area and central lawn, Semi-open space under the society office and Parking area under A and D buildings are used by young children and their caregivers.

3. Experienced Space

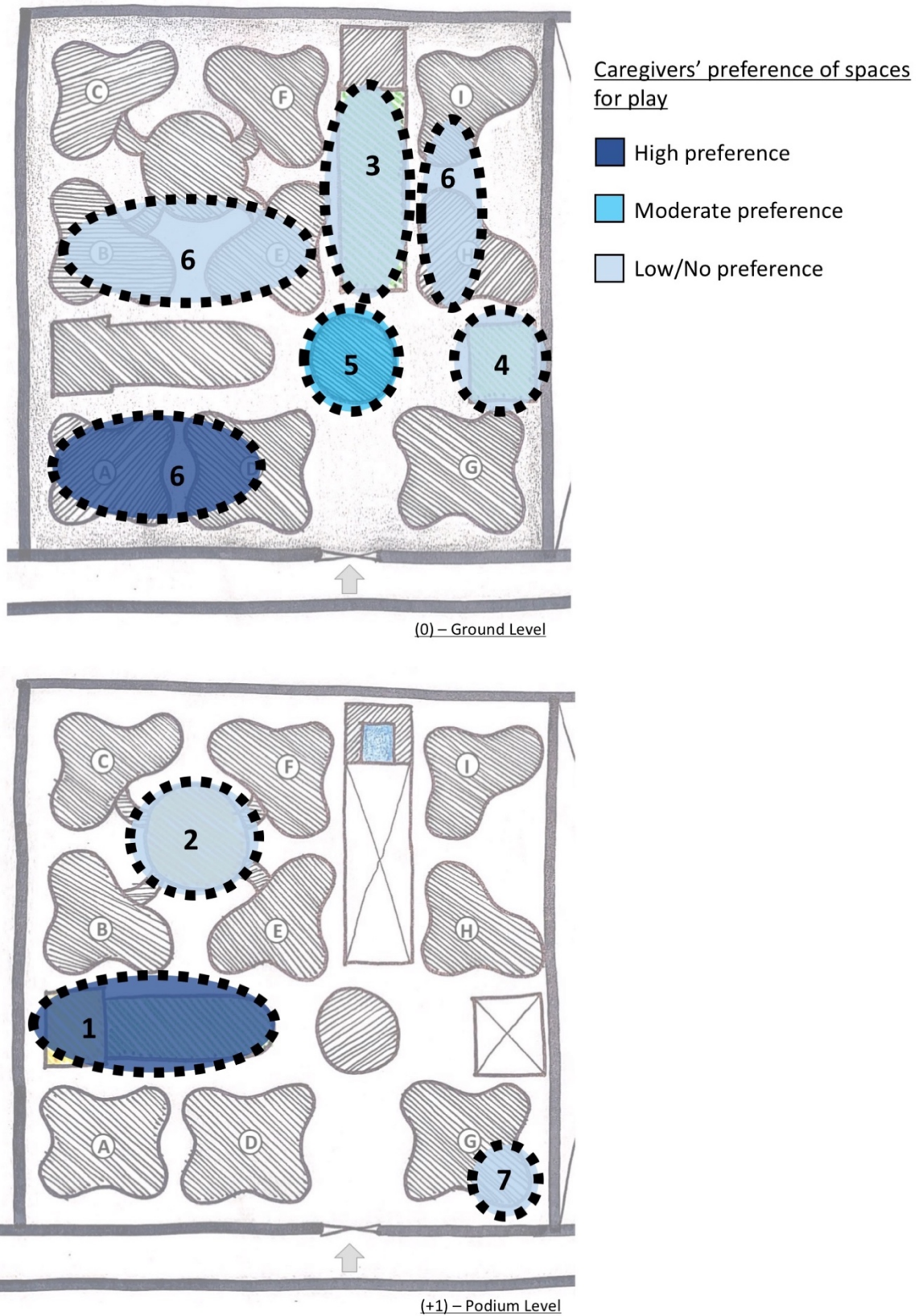


Figure 6.3.t. Keerna's Experienced Space (Hand-drawn and created by Atmakur-Javdekar)

There are multiple open spaces at Keerna where caregivers could take children to play, yet, 'Figure 6.3.g. Keerna's Experienced Space' shows that caregivers of infants,

toddlers and pre-school children preferred the Designated play area and central lawn-1 due to two inter-related reasons.

First, the fixed play equipment encourages caregivers to bring their children to play at the designated play area. Parents expressed that they didn't know another place to take their child to play as this is the only space with fixed play equipment at Keerna. Related to this, watching other children play at this space, encourages other caregivers to bring their children to play here despite other open spaces in this housing society. Two grandparents mentioned "this is where all children come to play because of the play equipment, so, we come here". A parent expressed that bringing their child to play in the same place as other kids, helps their child make friends and play with each other. Clearly, the presence of play equipment and other children encourages caregivers to bring their children to the Designated play area with central lawn. Apart from the fixed play equipment in the play area, there is a wide range of surfaces and textures and materials (grass, gravel and hardtop) for children to manipulate and play with. Further, this space affords children to bring bicycles, scooters and toys from home to play.

Second, caregivers felt safe with their children in this space as they were not in proximity to moving vehicles and felt their children were always being watched. This space is located on a podium with no access to vehicles where the pathway around the lawn affords young children to ride their cycles and scooters without the fear of any large moving vehicles. Also, the play area and central lawn is visually accessible from the surrounding residential buildings. Both parents that I interviewed lived in apartment units that overlooked this space and mentioned that they felt comfortable leaving their child down to play with another friend as they can watch their children from their apartments above. Related to visual connectivity from apartment units there are multiple seating areas for adults in this space.

There are benches in the lawn and parapet walls surrounding the play area that affords caregivers to sit and socialize with each other while keeping an eye on their children.

Furthermore, when I observed grandparents with their children at the designated play area, I asked them if they went to the Nana-nani park with their grandkids as it afforded a natural play environment but their response was negative. Though the park was conceptualized for use by young children and grandparents, children do not play here because this space is reserved by elderly people to relax with their friends. "...that park [referring to Nana-nani park] is meant for elderly people to relax" – stated a grandparent. Clearly, this park is experienced by residents as a space reserved for old-age people only. Since all children gathered to play at the Designated play area with central lawn, caregivers avoided going to other designated spaces to play. The only undesignated space that caregivers allowed children to use is the Semi-open space below society office-5. Typically, children played here during monsoons or attended dance and music classes. Relatedly, caregivers did not prefer sending their children to the Refuge area-7 for classes since they felt the space was secluded and found it unsafe.

Lastly, caregivers of pre-school and school-age children avoided most of the Parking areas that are used by school-age and older children for play except for one Parking area-6 between and below A and D buildings at ground level. This space is close to the Designated play area and central lawn-1 and is spatially larger, thus, affording children to ride their bikes and play freely. Also, parents felt comfortable leaving their children to play on their own with other friends as there is always a security guard present to watch children play.

Critical Reflective Summary

The multiple designated open spaces afford children a range of play opportunities to exercise their physical, social and emotional skills but the scattered location of these spaces is a disadvantage as young children do not have independent mobility to explore all the open

spaces. In reality, young children are brought by parents to the Designated play area with fixed play equipment adjacent to the central lawn at podium level where young children (infants, toddlers and pre-schoolers) come to play. Since, school-age and older children have independent mobility, they preferred to play at the large open Parking areas at ground level instead of the small designated older children's play area at podium level. The Parking areas affords children to ride their bikes and play ball games with friends that requires larger spaces.

In summary, the design professionals' 'multiple open spaces' theme does not work well in this context as not all the designated open spaces are used by children and adults for play. Instead, large open spaces at ground level, such as, Parking areas-6 are claimed by children and adults for play and recreation.

Case Study Four: Ekam

Ekam (n) = Unique

/ě-käm/

Word origin: Sanskrit

Case Study Four has three types of housing environments, i.e., low-rise row-houses and two types of high-rise apartment buildings (7 and 12 floors). This mix of horizontal and vertical development inside one property is unique because housing societies in Wakad are typically 12 floors and higher. Hence, the name 'Ekam', representing the uniqueness of the built environment.

Introduction and site-selection rationale for in-depth investigation

Ekam was built in two phases where phase-1 includes seven 7-floors tall residential buildings (A, B, C, D, E, F, and G) and 40 row-houses (H); and phase-2 includes five 12-floors tall residential buildings (I, J, K, L and M). Out of these five buildings, 'I' building is located inside phase-1 property and the remaining four (J, K, L and M) are located across a main vehicular access road within phase-2 property. (See Figure 6.4.a.) The main society amenities for both phases are located within phase-1 property with additional amenities are provided within phase-2 within its property boundary. In this context, I wanted to understand how children from both phases access and use the phase-1 main society amenities and phase-2's smaller amenities for play.

Furthermore, at phase-1 the residential buildings, parking and society amenities zones are all located at (0) ground level, which is unlike other housing societies at Wakad that typically have either a basement or podium to support parking requirements. Put together, I wanted to investigate the ways in which this mixed range of building typologies with phase-wise amenities and parking at one spatial level influenced children's play opportunities.

Ekam	
(+1) Podium	(no podium)
(0) Ground	<p>RBZ – Residential Buildings Zone</p> <ul style="list-style-type: none"> • Two phase construction • Phase 1 – 40 row houses, seven 7-floor tall buildings • Phase 2 – Five 12-floor tall buildings <p>PZ – Parking Zone</p> <p>SAZ – Society Amenities Zone</p> <ol style="list-style-type: none"> 1. Designated play area 2. Central lawn 3. Phase 1 – Clubhouse 4. Phase 2 – Clubhouse 5. Phase 2 – Older children’s play area including courts for organized sports 6. Swimming pool 7. Nature area
(-1) Basement	(no basement)

Table 6.4. Ekam’s Spatial zones and levels



Figure 6.4.a. Ekam – Base Plan (Hand-drawn and created by Atmakur-Javdekar)

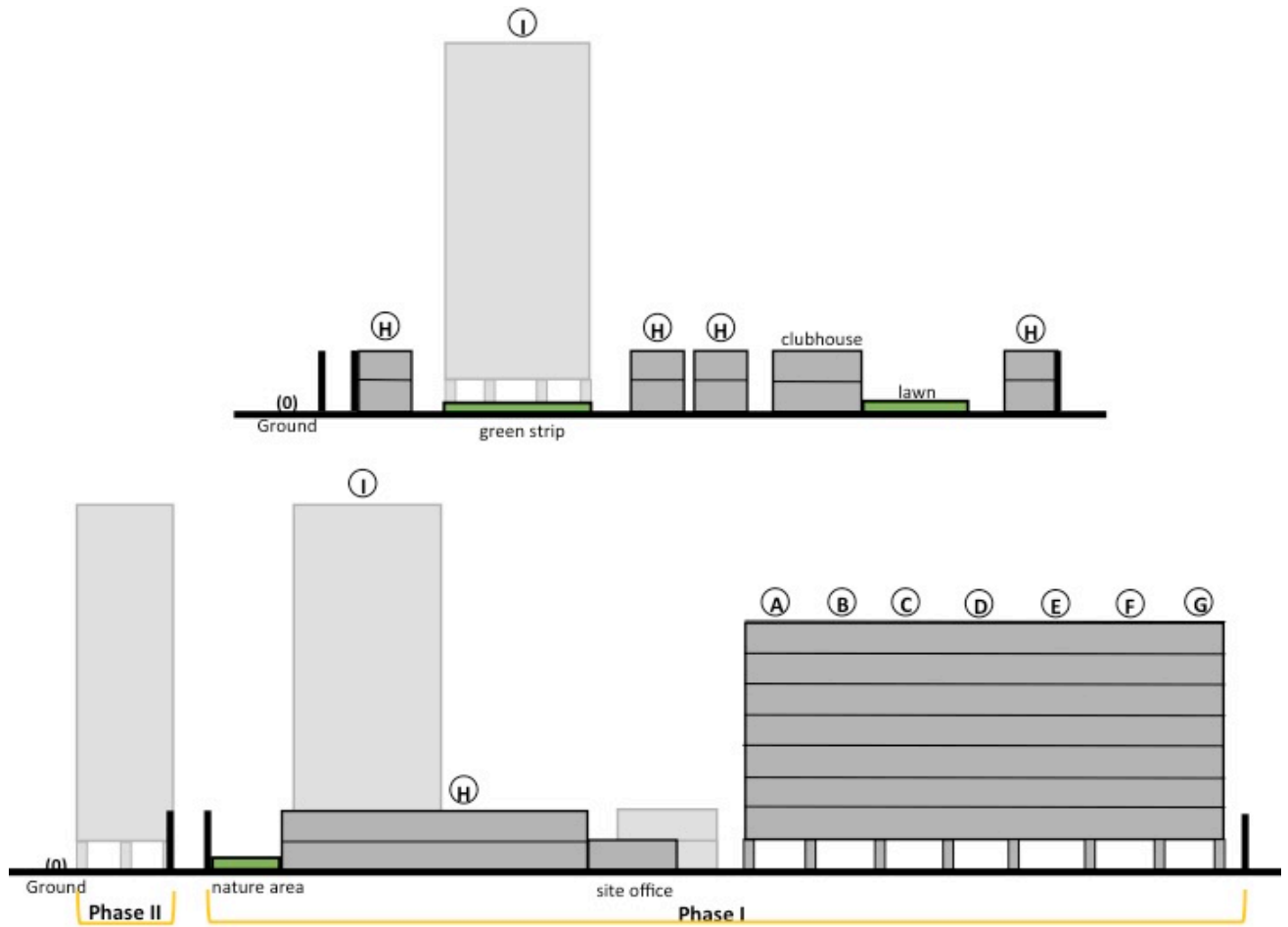


Figure 6.4.b. Ekam – Section DD and EE (Hand-drawn and created by Atmakur-Javdekar)

Evaluated Spaces



Figure 6.4.c. Ekam's Evaluated spaces (Hand-drawn and created by Atmakur-Javdekar)

Array of Play Diversity (APD) Type of Environment (housing/learning/other): **Ekam**
Number of Evaluated Spaces: **8**

PEaS /EPQ	a	b	c	d	e	f	g	h	i
I Fixed Play Eq.	1 	8 	8 	1,8 		1 			1,8
II Natural areas	1,2,3,6 								
III Seating /table area	3,6 								
IV Move-able Eq. & Ma.	7 	4 	4 	7 					
V Manipulable Ma.				6 	1 				
VI Water									
VII Surface Tex. & Ma.	1,3,4,6,8 	2,4,6,7 	5 						
VIII Retreat Space									

Ekam

Figure 6.4.d. Ekam's Array of Play Diversity (Hand-drawn and created by Atmakur-Javdekar)

I identified eight spaces at Ekam to evaluate children's play opportunities⁵⁶. These are:

1. **Designated play area-1:** This is the designated children's play area built during phase-1 and is located near the old clubhouse. This play space has fixed play equipment including a swing-set, toddler slide, regular slide and merry-go-round installed on lawn and gravel surface. (Figures 6.4.e. and 6.4.f.)
2. **Central lawn-2:** The central lawn near old clubhouse has cut grass with benches and trees (not climbable) on the periphery. (Figures 6.4.g. and 6.4.h.)
3. **Old clubhouse-3:** This clubhouse was built during phase-1 and has multiple indoor rooms with hardtop surface adjoining a swimming pool. (Figures 6.4.i. and 6.4.j.)
4. **Lane and green strip near I-building-4:** This space is the driveway lane located between the 12-floor tall I-building and the green strip adjoining the new clubhouse. The green strip has manicured lawn and the driveway is a hard-paved surface. (Figures 6.4.k. and 6.4.l.)
5. **Older children's play area-5:** These are basketball and tennis courts located adjoining the new clubhouse constructed during phase-2. A net separates the courts and the driveway surrounding it. (Figures 6.4.m. and 6.4.n.)
6. **Nature area-6:** This space is a natural environment with a gazebo and benches surrounded by grass, trees and a colorful wall with depictions of nature on the compound wall. (Figures 6.4.o. and 6.4.p.)
7. **Construction materials space-7:** This is the driveway space near the site office where hexagonal concrete pavers, a gravel mound, wheel-barrow and boundary markers were left unattended. (Figures 6.4.q. and 6.4.r.)

⁵⁶ Please see Figure 6.4.c. Ekam's Evaluated Spaces and 6.4.d. Ekam's Array of Play Diversity and corresponding images of the evaluated spaces when reading this section.

8. **Phase-2 designated play area-8:** This is a small designated play area with a toddler swing-set, slide, group swing and see-saw located on grass at the rear-end of phase-2 development. (Figures 6.4.s. and 6.4.t.)



Figure 6.4.e. View of Designated play area-1 and old clubhouse at Ekam



Figure 6.4.f. Designated play area-1 at Ekam



Figure 6.4.g. Central lawn-2 adjacent to old clubhouse at Ekam



Figure 6.4.h. Central lawn-2 at Ekam



Figure 6.4.i. Children playing in the corridor of the Old clubhouse-3 at Ekam



Figure 6.4.j. Exterior view of the Old clubhouse-3 from the Central lawn at Ekam



Figure 6.4.k. Lane and green strip near I-building-4 at Ekam



Figure 6.4.l. Lane and green strip near I-building-4 at Ekam



Figure 6.4.m. Children playing at the Older children's play area-5 at Ekam



Figure 6.4.n. Older children's play area-5 at Ekam



Figure 6.4.o. Exterior view of Nature area-6 at Ekam



Figure 6.4.p. Interior view of Nature area-6 at Ekam



Figure 6.4.q. Children playing with Construction materials at Ekam



Figure 6.4.r. Caregivers with children near Construction materials space-7 at Ekam

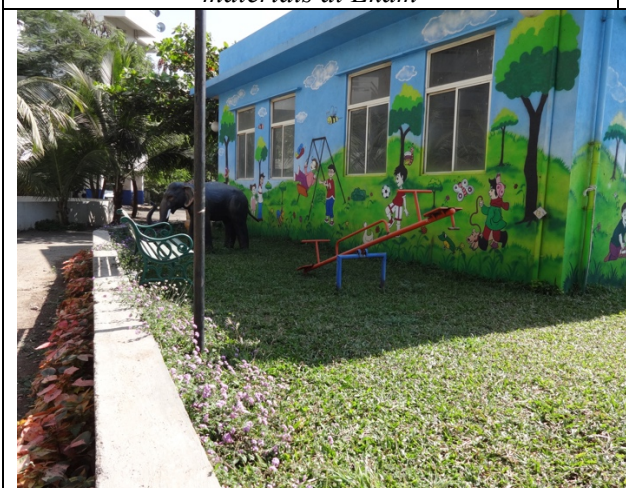


Figure 6.4.s. View of Phase-2 designated play area-8 and clubhouse at Ekam



Figure 6.4.t. Phase-2 designated play area-8 at Ekam

All photos of Evaluated Spaces by Atmakur-Javdekar

Production of children's play opportunities at the Plaza

1. Conceptualized Space



Figure 6.4.u. Ekam's Conceptualized Space (Hand-drawn and created by Atmakur-Javdekar)

Like Uru, I did not receive permission to interview any of the design professionals involved in the planning and design of Ekam. However, interviews with other developers helped unpack the reasons for the horizontal development of row-houses during phase-1. The primary reason is because of low land prices prior to 2004, where developers didn't need to build taller buildings to consume permissible FSI to make profits on their investment on the land.

So, I really didn't care about consuming all the FSI that was available to me. My investment was less. I was making two times, two and a half times my investment. My profits were great. We were doing horizontal development. I just didn't want to do anything more. (personal communication, Uru's developer with respect to other housing developments in Wakad, 16th May 2017).

Also, in years leading up to 2004, developers were unsure about future land values and real-estate market trends in surrounding villages (then, rural areas) of Hinjewadi. They focused on bringing in customers to invest and live in a villa or an independent home with more space a little away from the city.

Hinjewadi was already established but would people be coming in this rural community and start living? Ummm... The only way you could entice them [referring to residents or consumers] or convince them is to say move down to a horizontal development. Come here and see your villa, see your house, buy a house. (personal communication, Uru's developer with respect to other housing developments in Wakad, 16th May 2017).

Over time, housing demand began to rise in surrounding areas of Hinjewadi and as a result, the land price increased exponentially too. This has currently led to a 400% increase in the cost of the apartment unit for nearly half the residential unit size that was available in 2004. In 2004, the price of an independent house with a saleable area of 2800 sft was 29 lac INR. Whereas, in 2019, the average price for a three-bedroom apartment with a saleable area of 1600 sft in a similar quality high-rise housing society is 1 to 1.2 crore INR. The reduction of the apartment unit size is related to consuming the available FSI. In order to make profits, developers consumed maximum permissible FSI by reducing the size of the apartment units and increasing the number of floors and number of apartment units. Thereby, building taller buildings over time. *This* explains the shift in housing typology from phase-1's horizontal development to phase-2's vertical development at Ekam.

Based on interviews with residents, I gathered that the developer envisioned two large amenity spaces for both phases within the phase-1 property boundary. The first amenity space includes the Designated play area-1, Central lawn-2 and Old clubhouse-3 constructed during phase-1, and the second amenity space includes the new clubhouse and Older children's play area-5 and Nature area-6 constructed during phase-2. Furthermore, the developer provided a new designated play area-8 with fixed play equipment designed for toddlers and preschoolers for phase-2 residents within their property boundary.

2. Actual Space

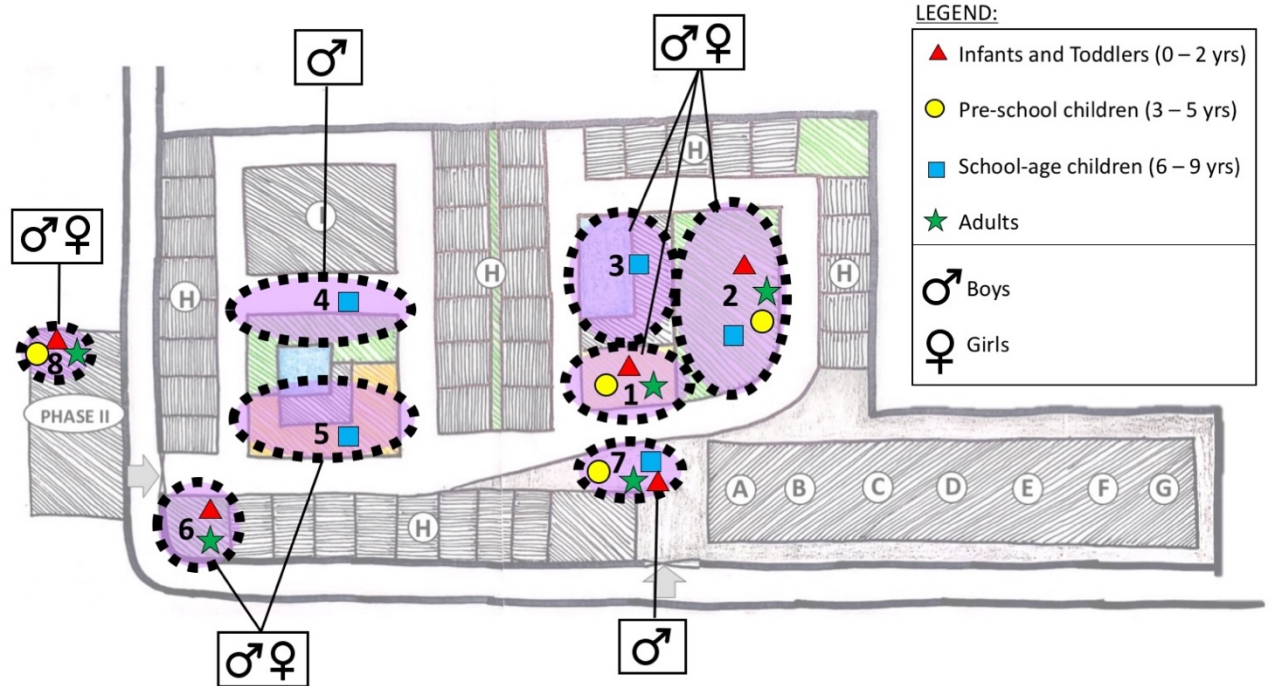


Figure 6.4.v. Ekam's Actual Space (Hand-drawn and created by Atmakur-Javdekar)

'Figure 6.4.f. Ekam's Actual Space' shows the eight evaluated spaces that are actually used by children for play.

As conceptualized, phase-1's main society amenities including the Designated play area-1 and Central lawn-2 are used by children for play and recreation. The Central lawn is accessed by all young children where boys play ball games and girls pretend-play or play catch while being watched by caregivers sitting across the lawn on benches. Adjacent to the lawn is phase-1's Designated play area-1 that has limited and outdated play equipment but is still used by infants, toddlers and preschoolers (boys and girls). Since Phase-2 designated play area-8 was constructed in 2011, it has newer play equipment such as, toddler swing-set and family swing which is not available at phase-1's designated play area. However, parents from phase-1 do not take their children to phase-2's play area because it is located far away and spatially disconnected from phase-1 premises.

Similarly, Older children's play area-5 has newer facilities including basketball and tennis courts and a new swimming pool that are well used by school-age boys and girls. These outdoor sports courts have an adjoining new clubhouse that is primarily used to store play equipment. The new clubhouse is smaller in size with less multipurpose indoor rooms than the Old clubhouse-3. One room inside the Old clubhouse is used by 3 to 8 years-old boys and girls for dance classes and other rooms are used by older children to play indoor games such as table-tennis, caroms or chess. Another dedicated outdoor space that is mostly used by grandmothers, domestic helpers and infants is the Nature area-6 where adults sit on the benches under the gazebo and socialize while children in strollers are parked in front of them.

Despite the many designated spaces for play and recreation at Ekam, I noticed two undesignated areas that were bustling with children's informal play. The first undesignated space is the Lane and green strip near I-building-4 that has no thorough traffic, so, school-age boys play cricket, ride their wheeled vehicles or play freely with toys from home. Vehicles that need to access parking at the ground level of I-building, go around the building's driveway, avoiding the Lane adjoining the green strip and the new clubhouse. Also, this space is a hangout space for school children as it is located immediately outside the new clubhouse where they hang out to meet friends and go play at the sports courts located inside the new clubhouse premises.

The access gate between two phases (on the left-side) was recently completed, so, a few construction materials were left unattended in the open along the internal driveway outside the site office. This created the second undesignated space – Construction material space-7 – that invited children to come and play with the construction materials. These loose parts (here, construction materials) afford infants and toddlers with caretakers, preschool and school-age boys to build and engage in constructive play (See Figure 6.4.w Young children at

construction materials space). Interestingly, only boys occupied both the undesignated spaces for play while girls played at the designated play and recreation spaces.



Figure 6.4.w Young children at construction materials space

3. Experienced Space

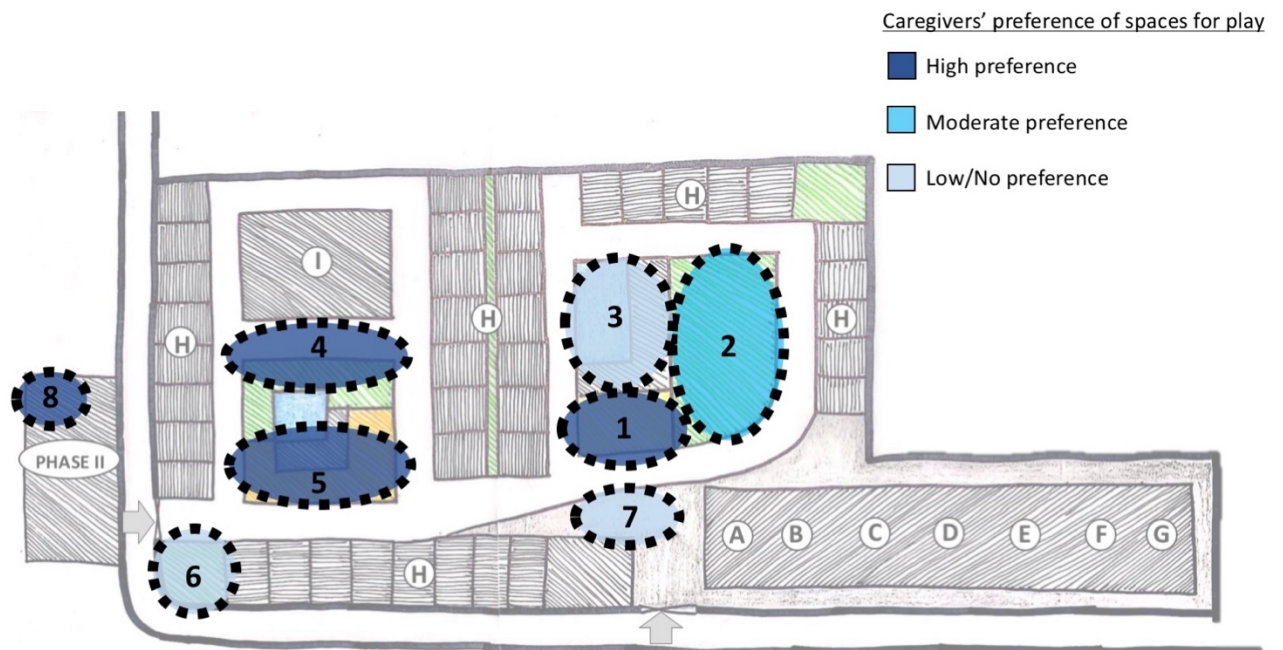


Figure 6.4.x. Ekam's Experienced Space (Hand-drawn and created by Atmakur-Javdekar)

'Figure 6.4.g. Ekam's Experienced Space' indicates caregivers' preference of spaces for children's play. Parents' evaluations of designated and undesignated play spaces unpacked where and why children from both phases play.

A deciding factor influencing parents play preferences is the access road between phase-1 and 2 (on the left side) that was not imagined as a busy street. However, between construction-years of the two phases, the road transformed into a main vehicular access road making it difficult for children and adults to safely cross from one phase to the other. Effectively, this busy road influences parents' preferences of where they take their children to play. Specifically, parents of infants, toddlers and preschoolers at both phases preferred to take their children to the designated play areas within their building premises due to nearby location of the designated play area and for safety of their children. For example, though phase-2 has better play equipment for toddlers, parents living in phase-1 do not take their children to phase-2's designated play area because they find it dangerous to cross the main road with young children.

Similarly, parents of school-age children from phase-1 prefer that their children do not go to play at phase-2 and vice-versa because of the busy main road. However, some school-age children from phase-2 come to play at phase-1 premises because all the main society amenities such as sports courts and open areas are located in phase-1 premises and their friends live here. Further, school-age children are not always supervised by adults and have independent mobility unlike younger kids, making it easier for them to move between phases. Despite their independent mobility, caregivers control the spaces where school-age children can and cannot access for their play. During in-depth fieldwork, I observed school-age kids playing at the Central lawn-2 but parents asked their children to not play ball games on the lawn as it would get spoilt and preferred that they played at the Lane and green strip near I-building-4 that has a hard surface.

This type of adults' control over children's play was evident in other spaces including the Old clubhouse-3, Nature area-6 and Construction materials space-7. The multipurpose rooms inside the old clubhouse are used only for structured activity classes such as dance music, art or karate classes, and the management in the premises restricts children from using the space for play during non-activity class times. For example, when girls were singing and playing in the corridor space, the maintenance supervisor asked the girls to not make any noise. He repeatedly said, "no noise", and shooed them away.

At the Nature area-6, children have plenty opportunities to engage with natural elements but I observed caregivers restricting children from touching the plants or grass due to fear of insects and bugs. Further, adults restricted toddlers from running in the garden as the grass could get spoilt. The Nature area is primarily used by children of all ages to plant saplings only under adult supervision. Similarly, at the Construction materials space-7, parents worry about hygiene as dogs and cats litter around this space and the maintenance

supervisor discourages children from playing with the materials. Despite these apprehensions by adults, school-age children and a few preschoolers use these spaces for play.

Critical Reflective Summary

At Ekam, due to the horizontal and vertical developments in two different phases constructed over eight years, there are multiple designated amenities and open spaces spread across the layout, especially, in phase-1 premises. The internal driveways and multiple open spaces and amenities spread across the property create a sense of openness, thus, affording children, particularly, school children to ride their bikes and engage in unstructured free play. Also, similar to Keerna, this spatial spread of spaces automatically segregates spaces used by infants, toddlers and preschoolers from spaces used by school-age children for play. Overall, Ekam is a unique housing society in Wakad offering these multiple free and unstructured play opportunities for children, which cannot be easily found in other housing societies since because there are limited open spaces for children's play, leisure and recreation.

Case Study Five: Shakti

*Shakti (n) = Feminine power
/shäk-thĩ/*

Word origin = Sanskrit

At Case Study Five, a working mother with the help of other parents voluntarily runs a mother-toddler program to help other parents balance their work, children and homes. Hence, the name, 'Shakti' to denote the feminine energy or power that supports young children's play.

Introduction and site-selection rationale for in-depth investigation

Shakti has six residential buildings, where two sets of three buildings (A1, A2, A3 and B1, B2 and B3) are combined with a series of internal corridors acting as two long buildings flanked on either side along the length of the rectangular piece of plot. (Figure 6.5.a.) In each building, there are 12 floors, where the ground and first floors are twin-houses and the remaining floors have apartment units. So, in total, there are approximately 250 household units (with 90% occupancy) where, 225 families and 120 children (1 – 12 years) live. Further, there is no podium and the parking requirements are fulfilled by the (-1) basement, thus, making the ground floor vehicle-free, which is unlike most housing societies in Wakad. (See Table 6.5. and Figure 6.5.b.)

During the Baseline Study, I learnt about a mother-toddler program hosted by a working parent at the multi-purpose room inside the clubhouse. I found this type of adults' participation in managing young children's play needs, unique. I wanted investigate the reasons for starting the mother-toddler program and the ways in which mothers organized themselves to support each other's work and home lives while raising young children. Lastly, similar to Uru, a resident volunteer from the housing society mentioned that adults encourage children to participate in growing their own food at a designated organic farm within the Housing Society's premises. This is also one of the reasons for choosing Shakti to conduct in-depth field studies.

6.5. Shakti	
(+1) Podium	(no podium)
(0) Ground	<p>RBZ – Residential Buildings Zone</p> <ul style="list-style-type: none"> • Single phase construction (2011) • Six buildings – A1, A2, A3, B1, B2, B3 <p>SAZ – Society Amenities Zone</p> <ol style="list-style-type: none"> 1. Designated play area for young children 2. Central lawn 3. Club house 4. Swimming Pool 5. Organic farm 6. Designated hardtop field for older children
(-1) Basement	PZ – Parking Zone

Table 6.5. Shakti's Spatial zones and levels

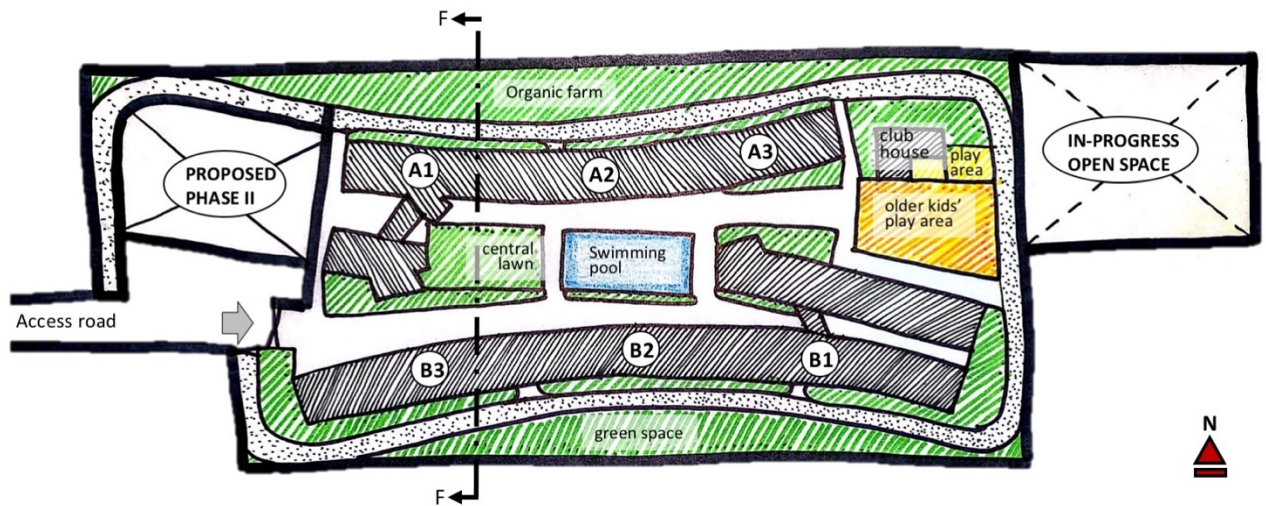


Figure 6.5.a. Shakti's Base Plan (Hand-drawn and created by Atmakur-Javdekar)

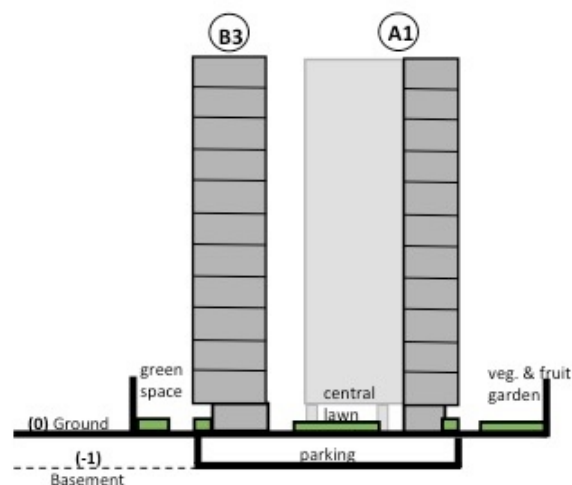


Figure 6.5.b. Shakti's Section FF (Hand-drawn and created by Atmakur-Javdekar)

Evaluated Spaces

I identified six spaces at Shakti to evaluate children's play opportunities⁵⁷. All the six Evaluated Spaces (ESs) are located at (0) ground level.

- 1. Designated play area-1:** The designated play area is part of the outdoor space of the clubhouse that is located away from the residential buildings closer to the older children's concrete playing field. The designated play area has limited fixed play equipment including a swing-set, slide and an integrated play structure installed on sand and grass surface. (Figures 6.5.e. and 6.5.f.)
- 2. Central lawn-2:** The central lawn is located between A1 and B3 buildings, closer to Shakti's main entrance. The lawn is surrounded by manicured shrubs and trees in planters on three sides and a hardtop pathway on one side. (Figures 6.5.g. and 6.5.h.)
- 3. Mother-toddler program-3:** The multi-purpose hall inside the clubhouse is used by parents to organize a mother-toddler program on weekday mornings. The clubhouse is located near the designated play area and outdoor concrete playing field. The space has a hardtop surface with toys and books donated by parents from their homes. (Figures 6.5.i. and 6.5.j.)
- 4. Concrete playing field-4:** A designated outdoor concrete playing field is located close to the Designated play area-1. There are two benches located along the periphery of this field. (Figures 6.5.k. and 6.5.l.)
- 5. Pedestrian walkway-5:** An internal vehicle-free pedestrian pathway with concrete top connects the open spaces and residential buildings within the Housing Society. Three pathway spaces were selected for in-depth investigation. These are located in

⁵⁷ ⁵⁷ Please see figure 6.5.c. Shakti's Evaluated Spaces and 6.c.d. Shakti's Array of play Diversity and corresponding images of the evaluated spaces when reading this section.

front of B1 and B2 buildings, B3 building, and A2 and A3 buildings. (Figures 6.5.m. and 6.5.n.)

- 6. **Organic farm-6:** A designated open space, on the rear side of A1, A2 and A3 buildings is used as a community farm to grow and harvest fruits and vegetables. (Figures 6.5.o. and 6.5.p.)

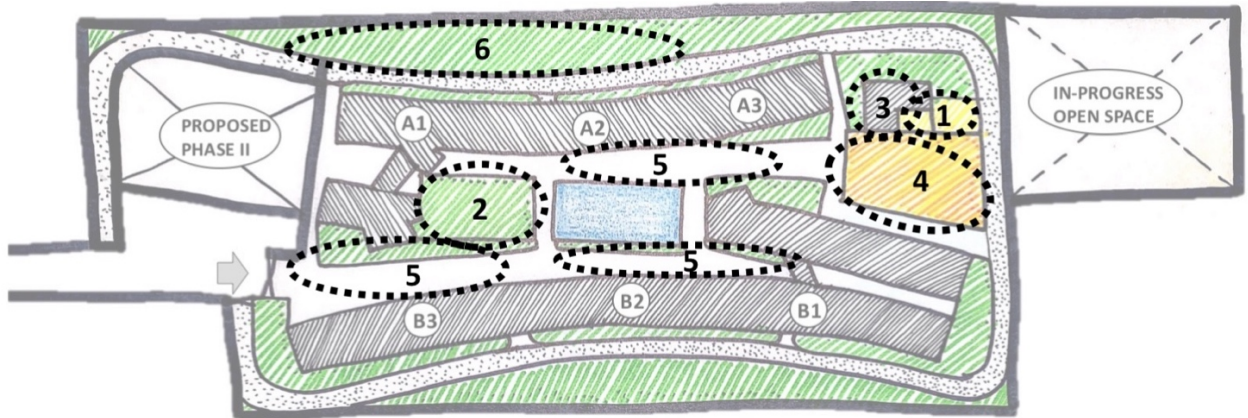


Figure 6.5.c. Shakti's Evaluated Spaces (Hand-drawn and created by Atmakur-Javdekar)

Array of Play Diversity (APD) Type of Environment (housing/learning/other): *Shakti*
Number of Evaluated Spaces: **6**

PEaS /EPQ	a	b	c	d	e	f	g	h	i
I Fixed Play Eq.	1 			1 				1 	
II Natural areas	2 	6 		6 					
III Seating /table area	4 		2,5 	3,5 					
IV Move-able Eq. & Ma.		3,4,5 							
V Manip- ular Ma.	1 			6 					
VI Water									
VII Surface Tex. & Ma.	1,2 	3,4,5 							
VIII Retreat Space									

Shakti

Figure 6.5.d. Shakti's Array of Play Diversity (Hand-drawn and created by Atmakur-Javdekar)



Figure 6.5.e. View of Designated play area-land clubhouse at Shakti



Figure 6.5.f. Designated play area-1 at Shakti



Figure 6.5.g. Central lawn-2 at Shakti



Figure 6.5.h. View of Central lawn-2 with children and caregivers at Shakti



Figure 6.5.i. View of toys at the Mother-toddler program-3 at Shakti



Figure 6.5.j. Mother-toddler program-3 at Shakti's clubhouse



Figure 6.5.k. View of older children playing ball games at Concrete playing field-5 at Shakti



Figure 6.5.l. View of Concrete playing field-5 and clubhouse at Shakti



Figure 6.5.m. View of Pedestrian walkway-5 adjoining the town houses at Shakti



Figure 6.5.n. View of the Pedestrian walkway at Shakti



Figure 6.5.o. Organic farm-6 at Shakti



Figure 6.5.p. View of Organic farm and adjoining pathway at Shakti

All photos of Evaluated Spaces by Atmakur-Javdekar

and adults that are produced along the internal Pedestrian pathways (Figure 6.5.e.) The first is a Designated play area-1 for young children (less than 8 years of age) adjacent to the clubhouse with fixed play equipment on a sand surface; and the second is a Concrete playing field-5 for older children to play ball games with peers.

2. Actual Space

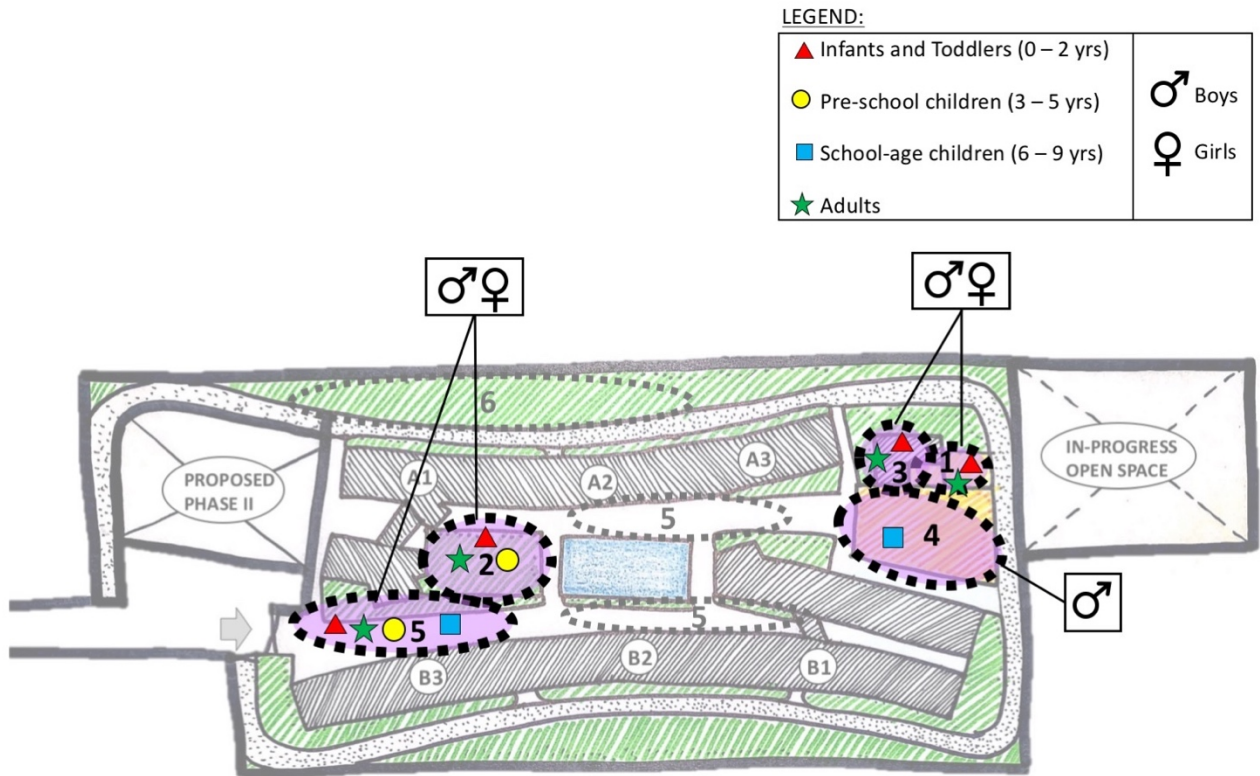


Figure 6.5.r. Shakti's Actual Space (Hand-drawn and created by Atmakur-Javdekar)

In reality, at the Designated play area-1, I observed few caregivers with infants and toddlers use the fixed play equipment. Also, the designated play area does not have sufficient seating areas (e.g. benches or parapet walls) for caregivers. The architect conceptualized the Concrete playing field-4 in proximity to the clubhouse and the designated play area where school-age and older boys play ball games including cricket and football. As a result, the only open space for infants, toddlers and pre-school age children for play is the Central lawn-2 that is located away from the designated play area. The Central lawn was primarily conceptualized as a community space to be used during festivals and celebrations but is now

used primarily by infants, toddlers, pre-school boys and girls as an open space for free play on a daily basis. Here, mothers and domestic helpers sit along the edge of the tree planters around the Central lawn keeping an eye on their children. (Figure 6.5.r.)

Complying with planning norms and regulations, design professionals provided a fire-lane along the periphery of the residential buildings where no private vehicles are allowed. This large driveway is used by school-age children to ride their cycles in the evenings. Related to this, school-age boys and girls meet near the entrance of Shakti, which is the Pedestrian walkway-5 in-between B3 building and the central lawn, as a starting point for riding their bikes. Though the pedestrian walkway is a continuous walking strip that flows through Shakti, children typically gather in this particular part of the walkway because it is wider than other parts. Also, pre-school children playing at the central lawn spill-over into this portion of the pedestrian walkway converting this space into a social gathering area for children where they bring toys from home and wheeled vehicles. Lastly, children using this space are always being watched by neighbors living in the adjacent ground floor twin houses, thus, contributing to overall surveillance and safety.

3. Experienced Space

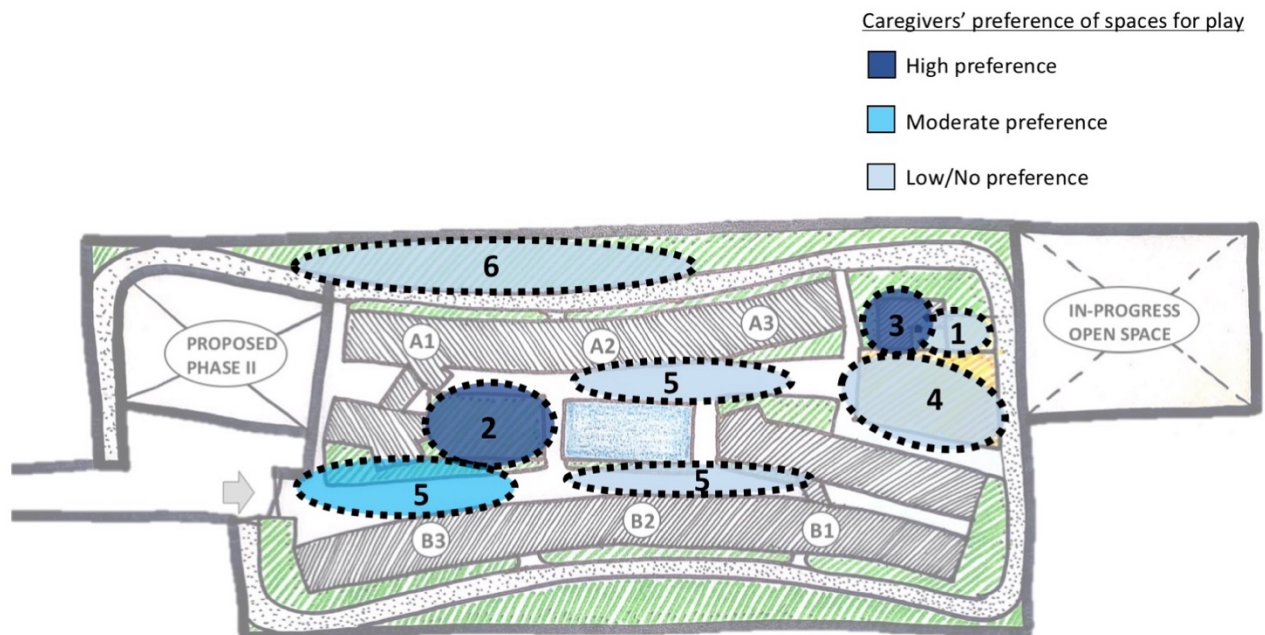


Figure 6.5.s. Shakti's Experienced Space (Hand-drawn and created by Atmakur-Javdekar)

'Figure 6.5.s. Shakti's Experienced Space' indicates caregivers' preference of spaces where they take their children to play. On a daily basis, in the evenings, parents of young children preferred the Central lawn-2 due to limited options of *safe* open spaces. An inquiry into the limited use of the Designated play area-1 revealed that due to poor maintenance of the play equipment and isolated location, caretakers preferred to gather in the central lawn with infants, toddlers and pre-school children. Parents found the designated play area unsafe for children because of sharp edges of the metal sheets that cover the parking ducts⁵⁸. These parking ducts are mostly located along the residential buildings as part of the built spaces but are sometimes located in the open like the designated play area where they are left exposed at a height of 3', making it dangerous for small children.

Relatedly, at the concrete playing field, parents preferred to keep young children away from older kids to avoid unnecessary social interactions and to physically protect younger kids from rough play of older children. Previously, a few parents noticed young

⁵⁸ Parking ducts provide natural light to basement parking areas.

children learning and engaging in inappropriate language with older kids. Also, some parents preferred not to take their children to the playing field as they were afraid that they could get hurt by ball games played by older children. Hence, parents avoid the Designated play area-1 *and* concrete playing field-4 for play.

Clearly, for parents, safety is an important factor determining the spaces where they preferred to take their children for play. For parents of infants and toddlers, the multi-purpose room inside the clubhouse is an ideal space where the mother-toddler group meets for a couple of hours on weekday mornings. A working mother with the help of three additional mothers voluntarily leads the Mother-toddler program-3 where children play with toys, read books and are taken outdoors to the adjacent Designated play area-1. Parents sign-up to take turns to watch the kids with the help of domestic helpers. The program runs primarily on toys and books donated by other families living at Shakti and a weekly toy library subscription from a local vendor. Parents feel safe leaving their children in the mother-toddler group due to the presence of other known parents and the fact that the multi-purpose room is an amenity space located within the premises of Shakti.

Furthermore, the Organic farm-6 is primarily maintained by a group of enthusiastic adults at Shakti. Children's participation in growing their own food and maintaining the space is restricted to organized events like tree plantation drives or a harvesting event. During interviews, parents preferred not to take their children to the organic farm as they felt the space is visually blocked and located "far away" or on the "other side" of the Housing Society. However, two parents who are nature lovers do take their children to walk in the farm.

Critical Reflective Summary

At first glance, Shakti appears similar to other housing societies in Wakad given its standard set of society amenities but the residents' spirit of 'community' is what makes this

Housing Society unique. The mother-toddler program initiated and voluntarily run by a small group of working mothers and organic farm maintained by a group of garden enthusiasts highlight the community spirit at Shakti. A continuing example of residents' enthusiasm is their interest in developing other open areas currently left vacant for future development. While the developer wanted to construct phase-2 residential buildings in two proposed open spaces on the right and left sides of the plot, existing residents did not give permission for the same. Instead, residents currently envision the open space on the right side as a playground for children.

Furthermore, the spatial planning and design of the twin-houses along the internal vehicle-free pedestrian pathways results in a continuous surveillance or 'eyes on the street' (Jacobs, 1961) making the incidental community spaces safe and bustling with energy. These incidental community spaces complement the residents' spirit of 'community' by affording people multiple and convenient opportunities to meet and engage with each other on issues concerning their housing environment.

Case Study Six: Dhara

Dhara (n) = Edge

/dhä-rä/

Word origin = Sanskrit

At Case Study Six, multiple society amenities are fitted along the edge of the podium or ground level creating a series of usable edges further emphasizing the linearity of the plot. Hence, Dhara highlighting the edges of the plot.

Introduction and site-selection rationale for in-depth investigation

Dhara was constructed in two phases comprising of 10 residential buildings with 360 apartment units (90% occupancy) where approximately, 300 families and 180 children (1 – 12 years) live. Since, the project was completed in two phases, there are two smaller play areas, each for phase 1 and 2, and one large central play area that are distributed across podium and ground levels. (Table 6.6. and Figure 6.6.b.) At Uru, the developer provided a single play area despite two-phase construction within the plot boundary. In this sense, I found Dhara unique due to multiple play areas corresponding to different phases of construction. Hence, I chose Dhara for detailed fieldwork because I wanted to investigate the reasons for providing more than one play area for a two-phase construction within a property boundary and how that impacts children's play.

6.6. Dhara	
(+1) Podium	<p>RBZ – Residential Buildings Zone</p> <ul style="list-style-type: none"> • Two phase construction • Phase 1(2010) – Eight buildings – A, B, C, D, E, F, G, H • Phase 2 (2015) – Two buildings – J and I <p>PZ – Parking Zone</p> <p>SAZ – Society Amenities Zone</p> <ol style="list-style-type: none"> 1. Phase 1 – Designated play area 2. Courts for organized sports
(0) Ground	<p>PZ – Parking Zone</p> <p>SAZ – Society Amenities Zone</p> <ol style="list-style-type: none"> 3. Main designated play area 4. Central lawn 5. Clubhouse 6. Swimming pool 7. Courts for organized sports 8. Phase 2 – Designated play area
(-1) Basement	(no basement)

Table 6.6. Dhara’s Spatial zones and levels

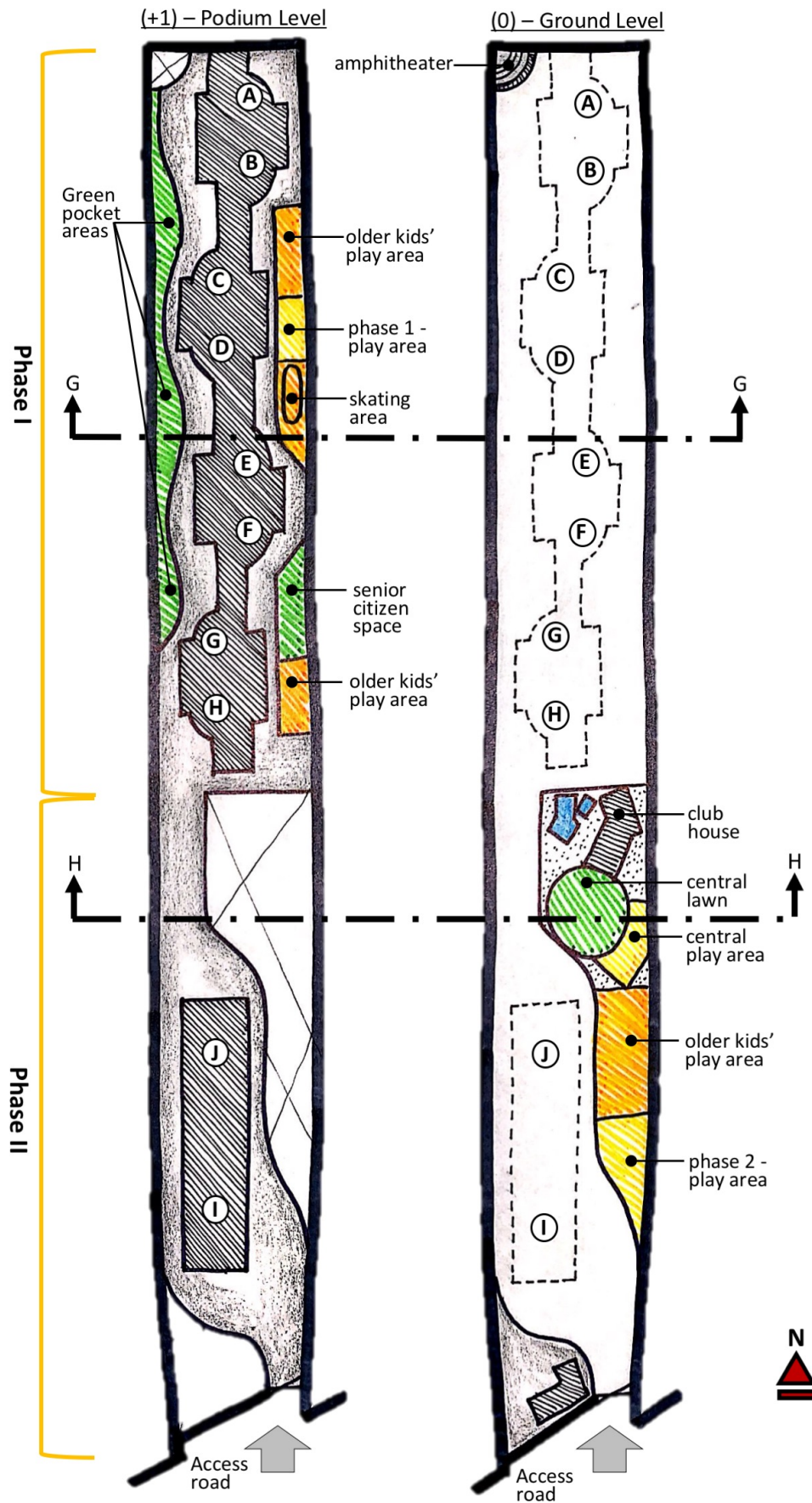


Figure 6.6.a. Dhara's Base plan (Hand-drawn and created by Atmakur-Javdekar)

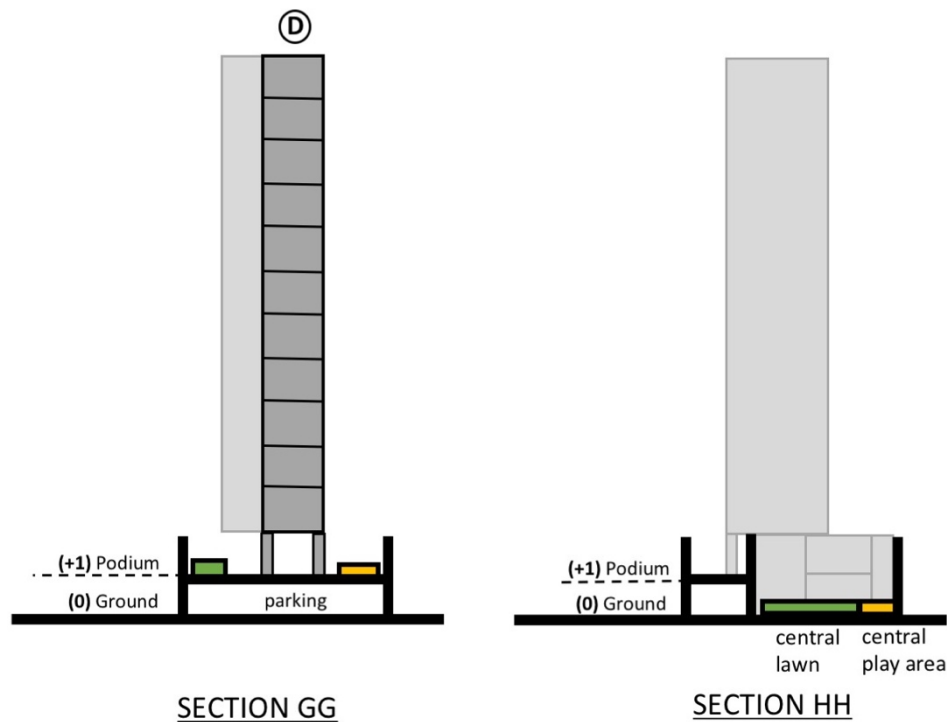


Figure 6.6.b. Dhara's Sections – GG and HH (Hand-drawn and created by Atmakur-Javdekar)

Evaluated Spaces

I identified seven spaces at Dhara to evaluate children's play opportunities⁵⁹. These are:

1. **Phase-1 designated play area-1:** Phase 1 play area is located on the podium close to the C and D buildings. There is limited and basic fixed play equipment including a swing-set, slide and a climbing frame. (Figure 6.6.e.)
2. **Phase-2 designated play area-2:** Phase 2 play area is located at (0) ground level close to I and J buildings and is merged within the side-setback. The play equipment includes a swing-set, merry-go-round, spring rider, see-saw and an integrated play structure with slides. (Figures 6.6.f. and 6.6.g.)
3. **Designated central play area-3:** The central play area is a hybrid⁶⁰ play area located at (0) ground level adjacent to the Central lawn and Clubhouse. A range of play

⁵⁹ Please see Figure 6.6.c. Dhara's Evaluated Spaces and 6.6.d. Dhara's Array of Play Diversity and corresponding images of the evaluated spaces when reading this section.

⁶⁰ In hybrid play areas, the surface of the play area has both rubberized flooring and sand surface.

equipment including swing-sets, climbing frame, merry-go-round, integrated play structure are installed on sand and rubberized flooring. Also, there are benches located on one side of this play area. (Figures 6.6.h. and 6.6.i.)

4. **Central lawn-4:** The Central lawn is surrounded by a hardscape pathway and adjoins the clubhouse, swimming pool and designated central play area. Along the pathway, there is a small stage with a flag-hoisting pole. (Figures 6.6.j. and 6.6.k.)
5. **Clubhouse-5:** The multipurpose room inside the clubhouse is an indoor space with a hardtop surface. (Figure 6.6.l.)
6. **Green pocket space-6:** Along the left side at (+1) podium level close to B, C, D, E and F buildings, there is a green space with lawn, manicured plants, a gazebo, temple and an internal hardscape pathway. (Figures 6.6.m. and 6.6.n.)
7. **Driveway near B and C buildings-7:** This is a vehicular driveway with a concrete-top located at the podium level. (Figure 6.6.o.)

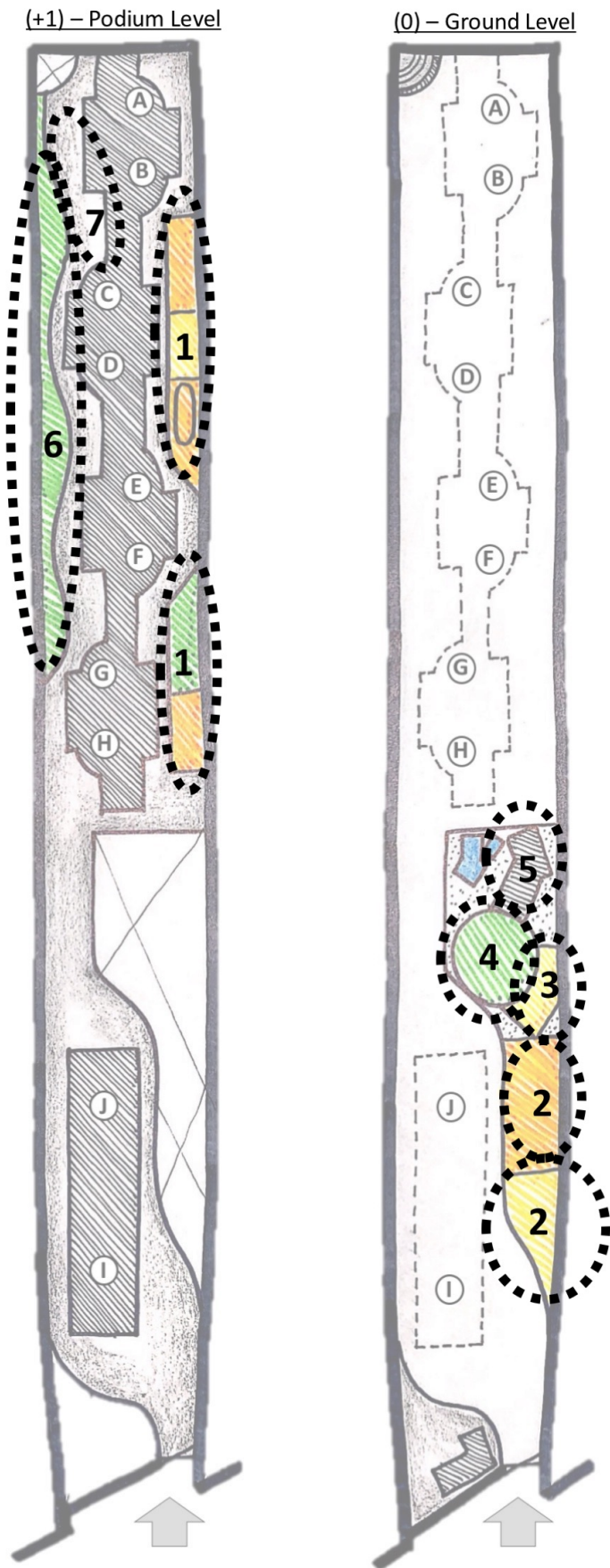


Figure 6.6.c. Dhara's Evaluated spaces (Hand-drawn and created by Atmakur-Javdekar)

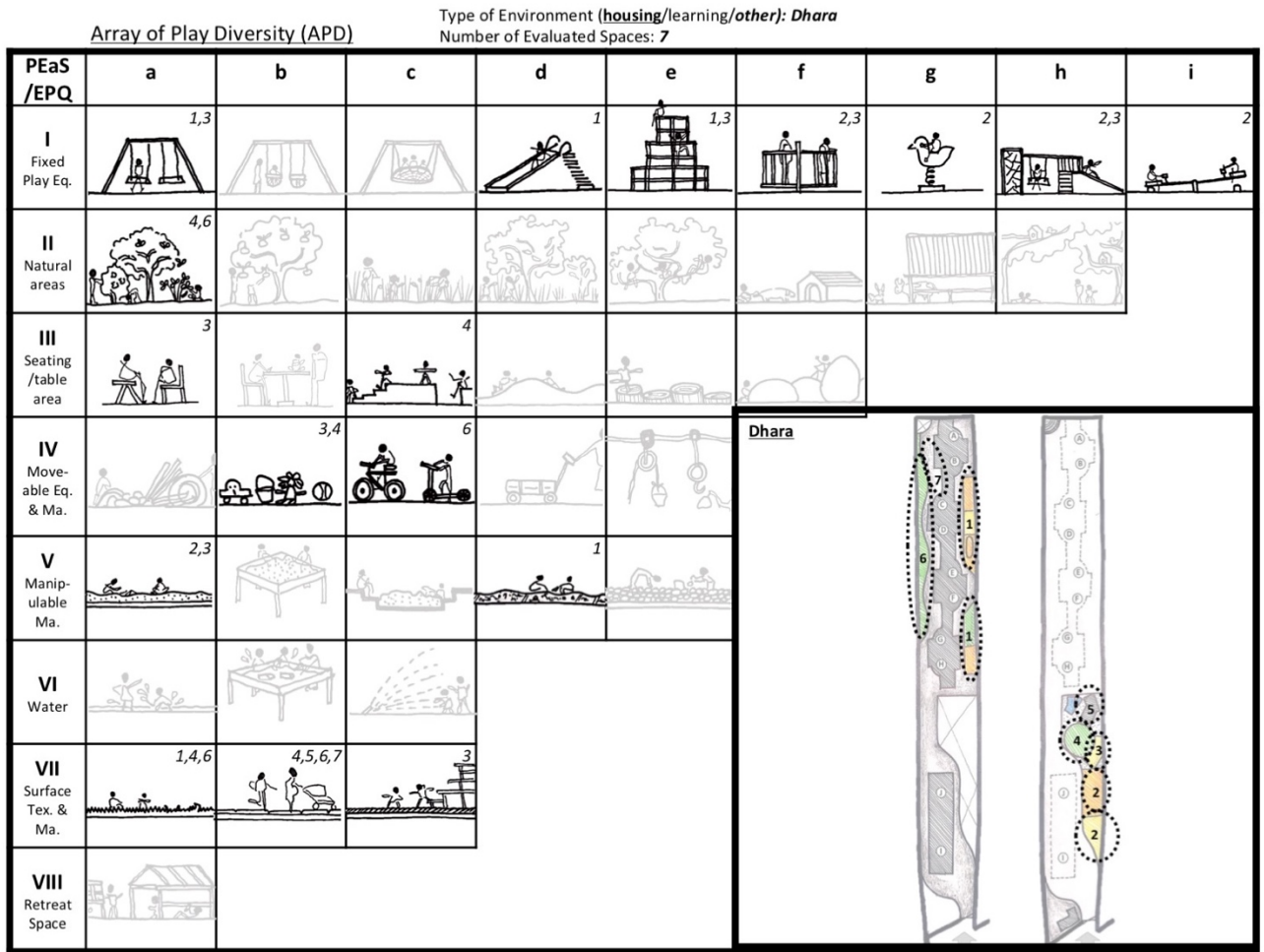


Figure 6.6.d. Dhara's Array of Play Diversity (Hand-drawn and created by Atmakur-Javdekar)



Figure 6.6.e. Phase-1 designated play area-1 on Dhara's podium



Figure 6.6.f. Phase-2 designated play area-2 at Dhara's ground level



Figure 6.6.g. View of Phase-2 designated play area-2 adjoining pathway at Dhara's ground level



Figure 6.6.h. Designated central play area-3 adjoining central lawn at Dhara



Figure 6.6.i. View of Designated central play area-3 from Dhara's podium



Figure 6.6.j. View of Central lawn-4 looking at Clubhouse and Designated central play area at Dhara



Figure 6.6.k. View of Central lawn-4 looking towards Phase-2 residential buildings at Dhara



Figure 6.6.l. Children engaged in an organized sports activity inside Dhara's Clubhouse-5



Figure 6.6.m. Green pocket space-6 on Dhara's podium



Figure 6.6.n. Walkway adjoining Green pocket space-6 on Dhara's podium



Figure 6.6.o. Driveway near B and C buildings-7 adjacent to the Green pocket space-6 at Dhara

All photos of Evaluated Spaces by Atmakur-Javdekar

Production of children's play opportunities at Dhara

1. Conceptualized Space

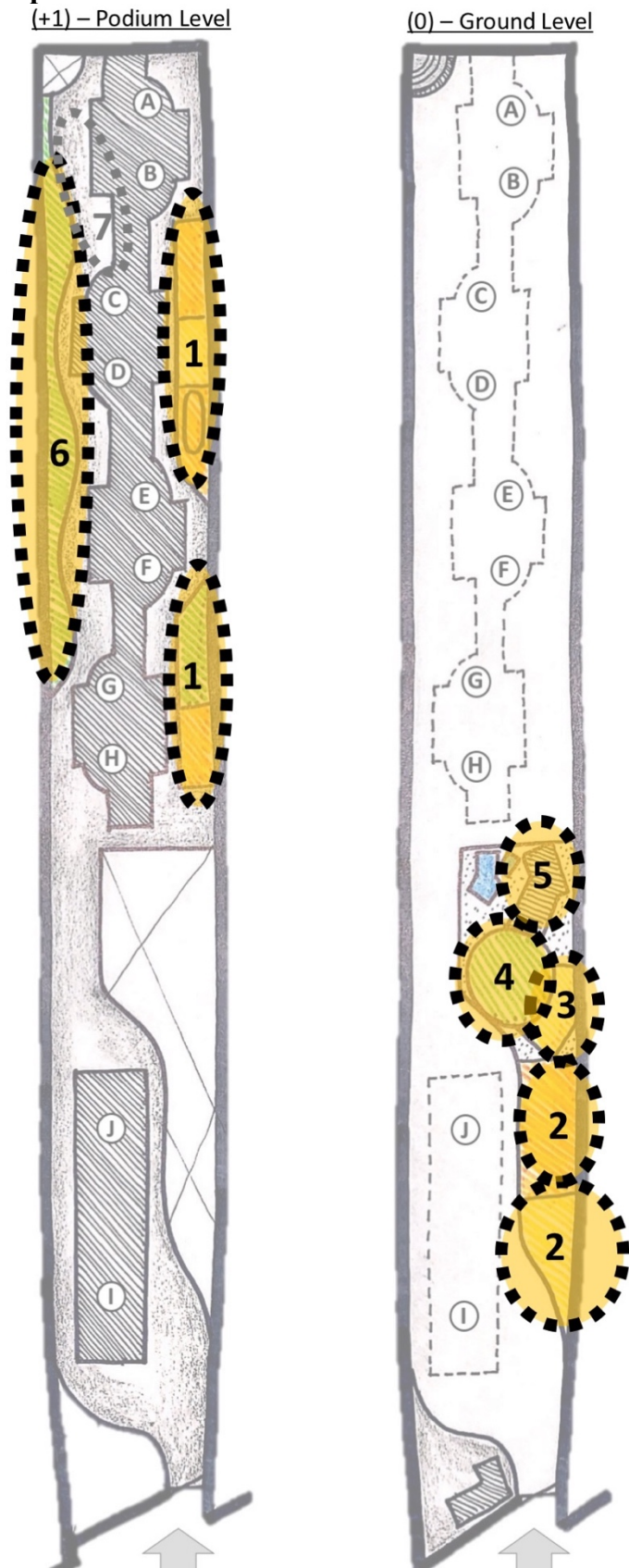


Figure 6.6.p. Dhara's Conceptualized Space (Hand-drawn and created by Atmakur-Javdekar)

‘Figure 6.6.p. Dhara’s Conceptualized Space’ shows the evaluated spaces at Dhara that were designed specifically for children to use. During interviews, design professionals stated that they thought about children and adults while designing the open spaces and accordingly, provided “unique” spaces for each age-group including, sandpit for young children, play courts for older kids and seating areas for adults. Hence, there are multiple “amenities” including but not limited to half-sports courts, play areas, and Green pocket spaces-6 at ground and podium levels.

As mentioned earlier, Dhara has three designated play areas because of the phase-wise development of the entire project. In 2010, Phase-1 designated play area-1 was designed keeping in mind open spaces and a play area for children living in A, B, C, D, E, F, G, and H buildings at (+1) podium level. Later, in 2015, Phase-2 designated play area-2 and common society amenities including, Designated central play area-3, Central lawn-4, Clubhouse-5, and smaller open areas and sports courts along the edge of the plot at (0) ground level were constructed. Phase-2 designated play area was planned keeping in mind families with children living in I and J buildings. The idea to provide two smaller play areas stems primarily from the developer’s belief to keep the customer happy. Since, phase-1 customers have their own play area, the developer felt it was appropriate to provide something similar for phase-2 customers.

However, Dhara’s landscape architect differs from the developer’s viewpoint and believes that for children, access to play spaces should be easy where “children can just come down and play”. According to Dhara’s architect and landscape architect, play areas for young children need to be safe, have colors to make it attractive and offer opportunities to climb and exercise their gross motor skills. Hence, they selected standardized play equipment and rubberized flooring from play manufacturer’s brochures to tackle hygiene and safety issues that they felt is important for children and their parents.

2. Actual Space

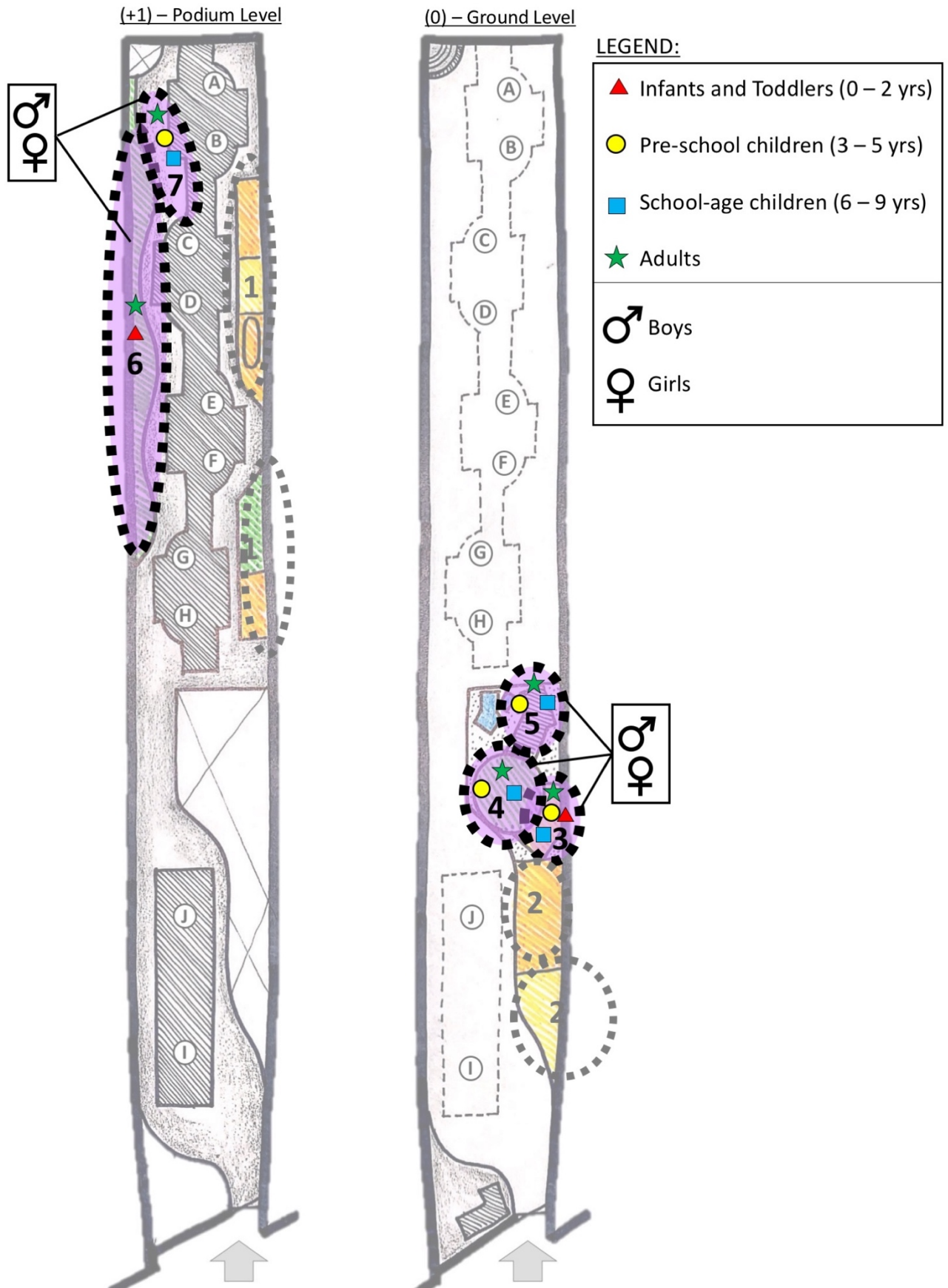


Figure 6.6.q. Dhara's Actual Space (Hand-drawn and created by Atmakur-Javdekar)

While design professionals conceptualized phase-1 and phase-2 designated play areas, children do not use these spaces for play. Instead, all children (i.e., infants, toddlers, pre-school and school-age boys and girls) played at the Designated central play area-3 located adjacent to the central lawn-4 and clubhouse-5 (Figure 6.6.q).

The Designated central play area-3 welcomes all young children to exercise their gross motor skills by climbing, sliding, swinging and balancing on the fixed play equipment. For example, there are no bucket swings for infants and toddlers but I observed caretakers use traditional swings for toddlers. Also, I observed children bringing toys from home to play in the sand with their friends. The multi-purpose room inside the Clubhouse-5, is used by pre-school and school-age boys and girls for dance, art and music classes; and as a rain venue for tennis coaching class. Children finish their classes and then come out to play in the Central lawn-4 and designated central play area. The Central lawn is primarily used by pre-school and school-age children to play ball and running games; and as a gathering space for all residents during festivals and other celebrations.

Spatially, the Central lawn binds together the clubhouse and designated central play area into one large 'social hub' that is situated in-between phase-1 and phase-2 residential buildings. This 'social hub' functions as a play, leisure and recreation space for a range of user groups including children, parents, grandparents and domestic helpers. Additionally, design elements such as pathways and benches encourage overall use of these spaces, making it socially vibrant. The pathway around the central lawn affords caretakers to exercise through walking, and the benches located close to the designated central play area encourage mothers to socialize with each other while keeping an eye on their children playing nearby.

Apart from the 'social hub' and other designated open spaces along the edges of Dhara, non-designated open areas such as driveways are used by children for structured activities. For example, during my visits, I observed pre-school and school-age boys and girls

use the Driveway near B and C buildings-7 for skating classes. Since, this driveway is adjacent to the Green pocket space-6, parents use this space with infants and toddlers when the other older child is enrolled in the skating class. Design professionals conceived the green pocket space as a resting and retreat space for elderly with their grandchildren but not many residents use this space as everyone gathers at the central lawn.

3. Experienced Space

(+1) – Podium Level

(0) – Ground Level

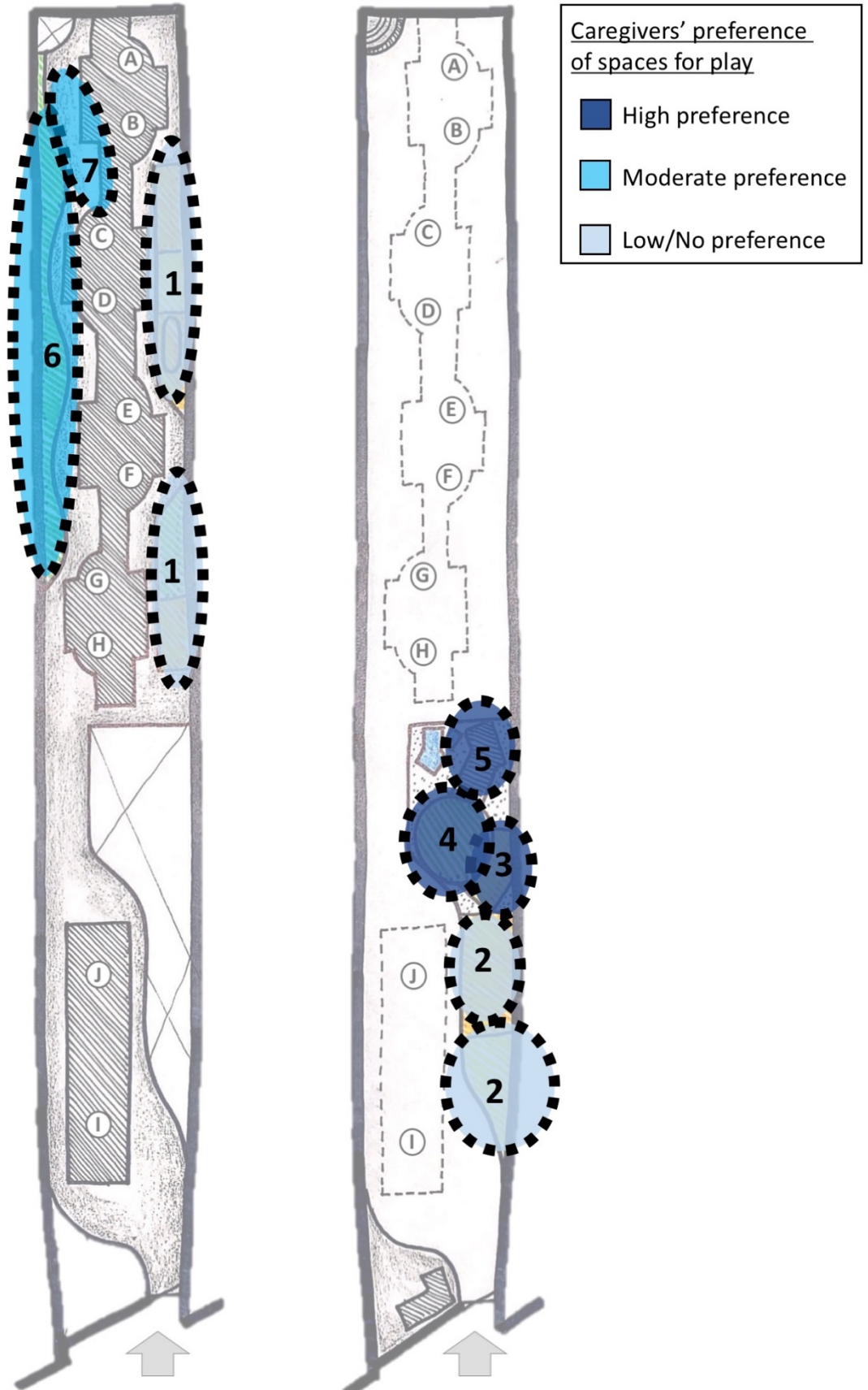


Figure 6.6.r. Dhara's Experienced Space (Hand-drawn and created by Atmakur-Javdekar)

‘Figure 6.6.r. Dhara’s Experienced Space’ indicates caregivers’ preference of spaces where they take their children to play. The central ‘social hub’ (i.e., Designated central play area-3, Central lawn-4 and Clubhouse-5) are highly preferred by parents for children’s play, primarily because of the presence of other children, convenient location in-between phase-1 and phase-2 residential buildings, range of play equipment and hybrid play surface (i.e., sand *and* rubberized surfaces). According to parents living in E building, phase-1 designated play area was used until construction of the designated central play area in 2015. After this, parents stopped taking their children to phase-1 play area because they felt it was small and has limited play equipment. At phase-2 designated play area, parents complained about poor maintenance of the play area, particularly the sand. A mother stated, “some people saw snakes there [referring to phase-2 designated play area] and sometimes, we see dog litter, so, we don’t go”.

Furthermore, interviews with parents revealed that it is difficult to bring wheeled vehicles down to the ‘social hub’ as the access to the central ‘social hub’ from the podium level is via staircases only. As a result, children ride their cycles, scooters and other wheeled vehicles on the podium driveway near B and C buildings-7. So, parents tend to take their children to the rear end of the plot to ride their bikes since the frequency of moving vehicles is minimal when compared to other driveway spaces. “We only have to be careful about cars that come here to park, in other places [pointing to driveway near I, J and E, F, G, H buildings] there are more vehicles moving on the podium.” So, parents of infants and toddlers use the Green pocket space-6 when their older children use the adjacent driveway for structured activities. During other times, parents avoid this space as they are worried about insects and bugs in the lawn.

Critical Reflective Summary

Two environmental design and planning factors, '*adjacency and location*' of three common amenity spaces, i.e., Designated central play area, Central lawn, and Clubhouse contribute to the successful use of a central 'social hub' that brings together children and adults from both phases of the housing society. Here, the developer's intention to build separate play areas close to phases 1 and 2 to keep customers happy is irrelevant since '*presence of other children*' is an important factor for caregivers. The design and planning downside in Dhara is the poor connectivity between the podium and ground level. Staircases restrict caregivers with infants-in-strollers and children with wheeled vehicles at the podium to come down to ground level to play at the central 'social hub'.

Case Study Seven: Yuj

Yuj (v) = (to) Unite

/yoog/

Word origin = Sanskrit

The physical environment of Case Study Seven is designed to unite the built form and open spaces on a narrow rectangular piece of land. Hence, the name, Yuj.

Introduction and site-selection rationale for in-depth investigation

Yuj has six residential buildings⁶¹ with multiple small designated play areas, manicured landscapes, adults' outdoor gym, sports courts, indoor toddler play area and other amenities, all connected by internal pedestrian walkways on a vehicle-free podium. The PZ is located at (0) ground level and RBZ and SAZ are located at the (+1) podium level where no open space is left un-planned. Thus, the podium is a seamless open space with manicured green spaces, and play, leisure and recreation areas for different user groups with apartments overlooking these open spaces.

I selected Yuj to investigate in detail the children's play opportunities because of three spatial factors. First, there are multiple designated play areas spread across the vehicle-free podium. Typically, developers provide only one designated play area for young children unless the housing society is constructed in two or more phases where each phase tends to have its own designated play area (See, Case Study Four: Ekam and Case Study Six: Dhara). Yuj was built in one phase, and despite that, there are multiple designated play areas including outdoor play area for young children and older kids, outdoor gym for adults and indoor toddler play area. I wanted to investigate the reasons for the developer to provide multiple designated play areas and how children and adults used these multiple designated play areas in a vehicle-free zone.

⁶¹ Each building has 12 floors with approximately 290 apartment units having 85% occupancy (200 families and 80 children)

Second, a ‘shared-open-yet-private space’ physically exists between Yuj and Dhara. Yuj shares a boundary wall with Dhara and since both properties are built on a podium, they are at the same level. This affords children and adults to be connected audio-visually across two housing societies. Also, it is typical in Wakad to build residential buildings adjacent to each other with minimal side-setbacks. In this scenario, I wanted to explore how children from both properties played and socialized with each other given the presence of this ‘shared-open-yet-private space’ created between the two Housing Societies.

Lastly, Yuj has designated indoor toddler play area, which is a unique society amenity that is not provided by developers and I wanted to investigate how this space was maintained and used by residents on a daily basis.

6.7. Yuj	
(+1) Podium	<p>RBZ – Residential Buildings Zone</p> <ul style="list-style-type: none"> • Single phase construction • Six buildings – A1, A2, A3, B1, B2, B3 <p>SAZ – Society Amenities Zone</p> <ol style="list-style-type: none"> 10. Multiple designated play areas 11. Clubhouse with gym and multipurpose room 12. Swimming pool 13. Designated indoor toddler play area 14. Courts for organized sports
(0) Ground	PZ – Parking Zone
(-1) Basement	(no basement)

Table 6.7. Yuj’s Spatial zones and levels

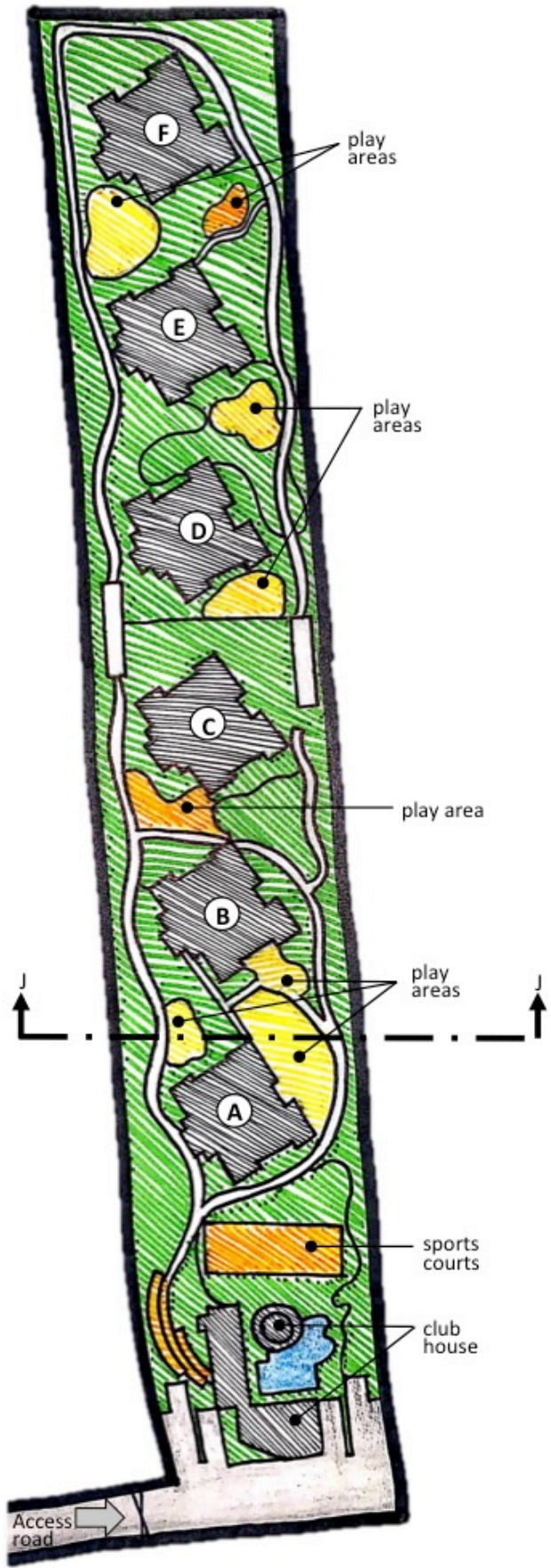


Figure 6.7.a. Yuj – Base plan (Hand-drawn and created by Atmakur-Javdekar)

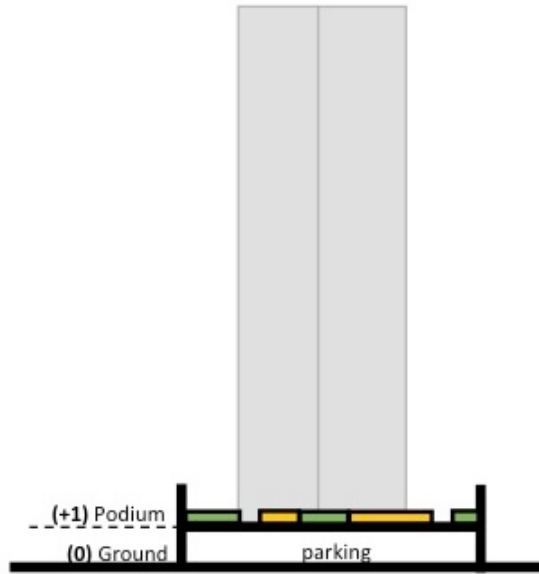


Figure 6.7.b. Yuj – Section JJ (Hand-drawn and created by Atmakur-Javdekar)

Evaluated Spaces

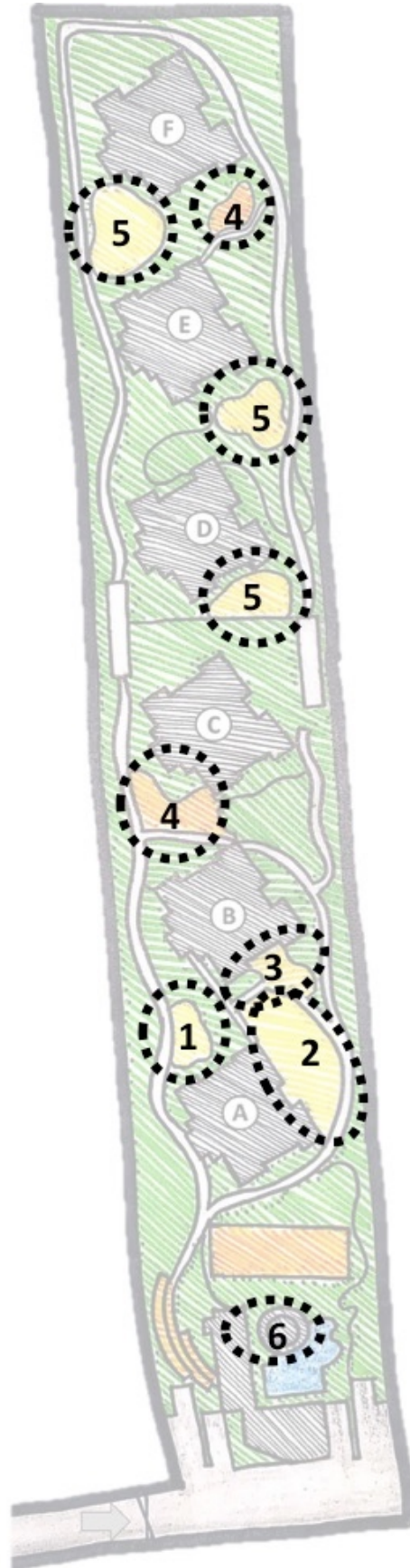


Figure 6.7.c. Yuj's Evaluated spaces (Hand-drawn and created by Atmakur-Javdekar)

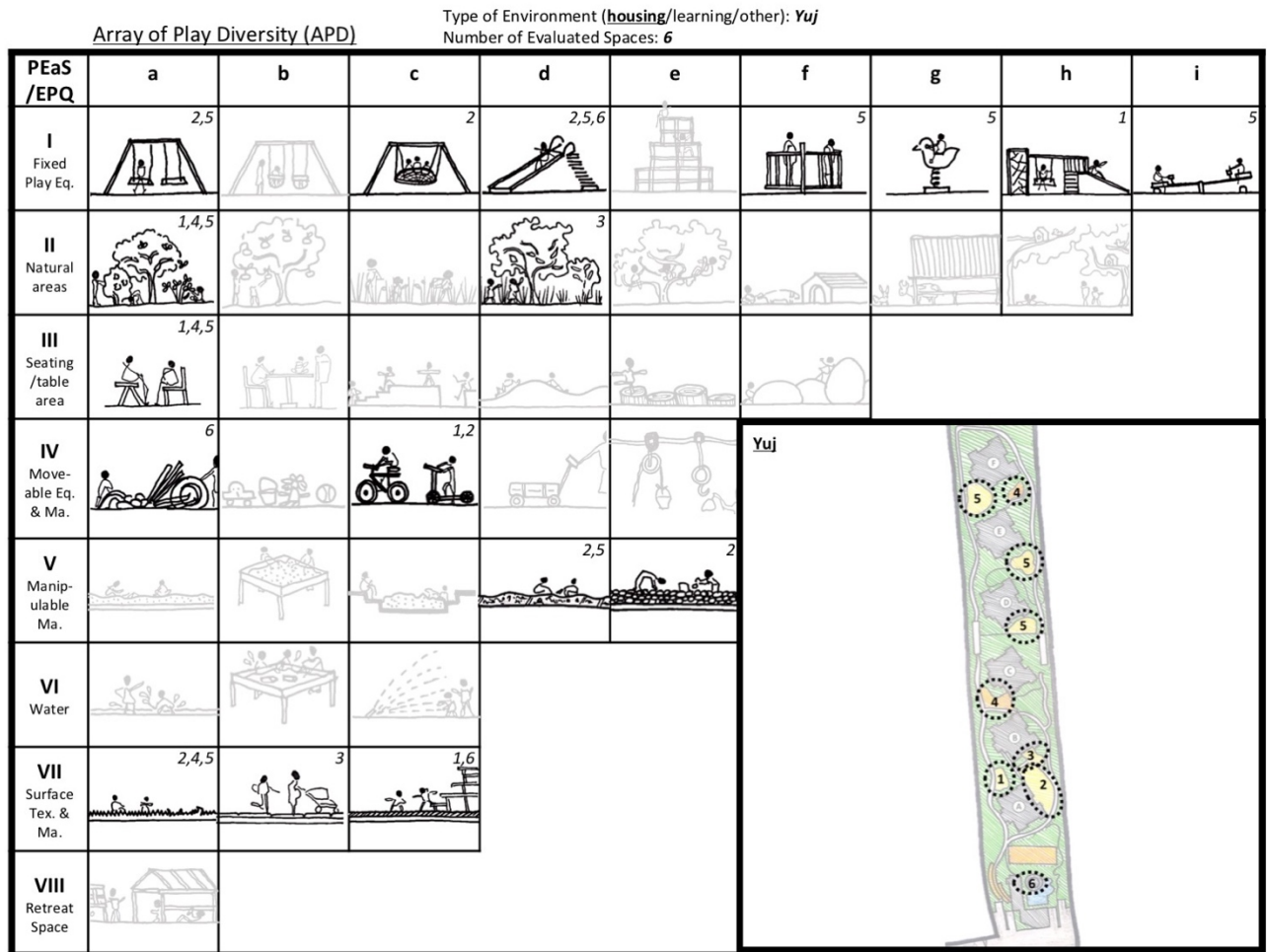


Figure 6.7.d. *Yuj's Array of Play Diversity (Hand-drawn and created by Atmakur-Javdekar)*

I identified six spaces at Yuj to evaluate children's play opportunities⁶². These are:

- 1. Designated play area-1:** Amongst the multiple designated play areas spread across Yuj, this play space is the largest in size located between A and B buildings. This play space has only one integrated play structure with climbing frames and slides installed on a rubberized surface. There are benches and other seating areas for adults in proximity to the play area. (Figures 6.7.e. and 6.7.f.)
- 2. Designated outdoor toddler play area-2:** This is a designated outdoor toddler play area located close to the Designated play area-1 between A and B buildings. This play space has fixed play equipment for toddlers and pre-school children. The play

⁶² Please see figure 6.7.c. Yuj's Evaluated Spaces and 6.7.d. Yuj's Array of play Diversity and corresponding images of the evaluated spaces when reading this section.

equipment includes a traditional swing-set, family swing and slides installed on gravel. Other surface materials in this space include cut grass and hard-top pathways. (Figures 6.7.g. and 6.7.h.)

- 3. Wild green space-3:** A small pathway from the Designated outdoor toddler play area-2 leads to a natural space with shrubs and tall grasses. (Figures 6.7.i. and 6.7.j.)
- 4. Adults outdoor gym-4:** Outdoor gyms for adults in located in two spaces across the podium. The first is between B and C buildings and the second is located between F and E buildings. In both areas, benches as seating areas are provided. (Figures 6.7.k. and 6.7.l.)
- 5. Designated small play areas-5:** There are three small play areas with limited fixed play equipment and benches spread across the podium at Yuj. The play equipment in each of these small play areas is different. One play area has a swing and merry-go-round, another one has swing-set, merry-go-round, spring-riders, and the last one has a swing-set, see-saw and slide. The fall area where play equipment is installed has dirt and rubberized surface as impact materials. The space surrounding the fall area is cut grass in all of the three small play areas. (Figures 6.7.m. and 6.7.n.)
- 6. Designated indoor toddler play area-6 :** An indoor toddler play area is located inside the clubhouse that has a small integrated playing structure with slides and a cordoned area with plastic balls. (Figures 6.7.o. and 6.7.p.)



Figure 6.7.e. Designated play area – 1 at Yuj



Figure 6.7.f. View of Designated play area – 1 with surrounding buildings at Yuj



Figure 6.7.g. Designated outdoor toddler play area-2 at Yuj



Figure 6.7.h. Children playing at Yuj's Designated outdoor toddler play area-2



Figure 6.7.i. Wild green space-3 at Yuj



Figure 6.7.j. View of apartment units and Wild green space-3 at Yuj



Figure 6.7.k. Adults outdoor gym-4 at Yuj



Figure 6.7.l. View of pathway adjoining Adults outdoor gym-4 at Yuj



Figure 6.7.m. One of the Designated small play area-5 between D and E buildings at Yuj



Figure 6.7.n. One of the Designated small play area-5 between C and D buildings at Yuj



Figure 6.7.o. View of Designated indoor toddler play area-6 at Yuj



Figure 6.7.p. Closer view of Designated indoor toddler play area-6 at Yuj

All photos of Evaluated Spaces by Atmakur-Javdekar

Production of children's play opportunities at Yuj

1. Conceptualized Space

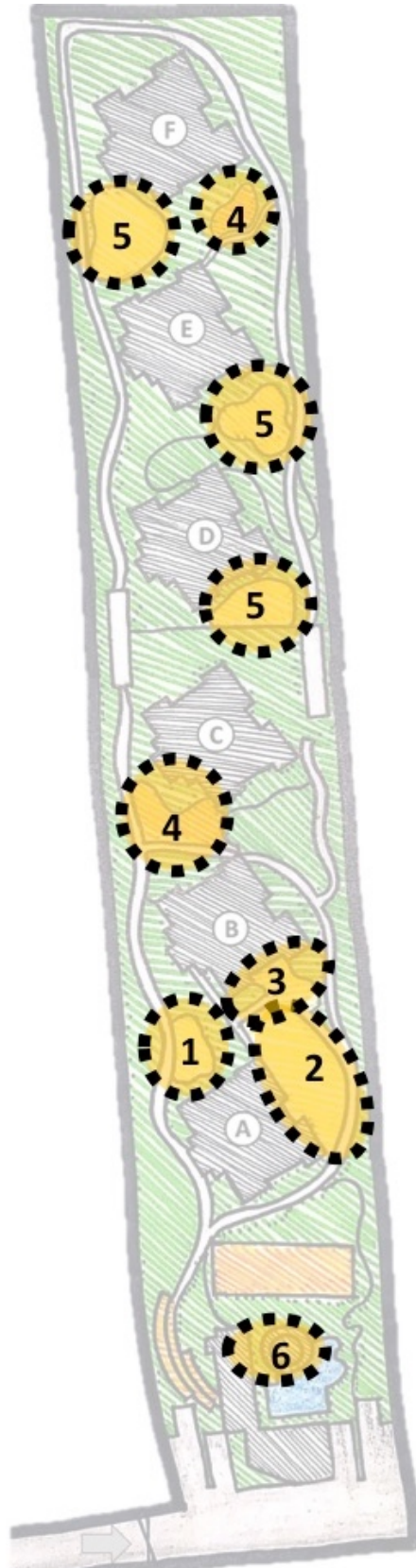


Figure 6.7.q. Yuj's Conceptualized Space (Hand-drawn and created by Atmakur-Javdekar)

‘Figure 6.7.q. Yuj’s Conceptualized Space’ highlights the spaces conceptualized by the developer and landscape architect for play and recreation. The developer’s personal life events primarily influenced the design and planning of open areas at Yuj. During the planning stage, the developer was a parent to a young child, and this sensitized him to the needs of parents with young children, particularly infants and toddlers. Also, the developer is a fitness enthusiast and believed that young parents of today are invested in physical fitness and like to maintain an active lifestyle. So, he ensured that the landscape at Yuj affords young children and adults an opportunity to play and stay active.

For the developer *and* landscape architect, children’s safety and access to sufficient access to play equipment was an important criterion. Accordingly, the podium is vehicle-free ensuring that all children are safe within the premises and can access all spaces without the fear of any moving traffic. In order to ensure that all children had easy access to play equipment, a range of designated play areas were planned along the pedestrian pathways close to the residential buildings. This type of spatial arrangement of the designated play areas (i.e., Designated play area-1, Designated outdoor toddler play area-2 and Designated small play areas-5) close to the residential buildings was important to the developer as he felt it would help parents keep an eye on their children during play.

In line with this thought, the developer insisted on providing multiple opportunities for adults to exercise close to where their children play. For example, two Adults outdoor gym-4 are located adjacent to open areas and Designated small play area-5. Another example is the provision of the Designated indoor toddler play area-6, which is a unique amenity where parents can leave their children with caretakers and go to the gym while kids play in the indoor play area downstairs. This idea again stems from the developer’s own experience as a young parent to leave the child in a safe space with other caretakers during exercise time.

So, the idea was when I am going for swimming as a customer, say, my daughter can be there in the wall, where if the society comes together and have a maid, who can

take care of the kids at that time, then we can go for gymming, or swimming, or take a walk. The kid is safe in [side] the wall. And they have their own things to play and if there are more kids, then you know they keep on playing and you know, in one hour, my exercise is done, I go back, pick her up and go. (personal communication, Yuj's developer, 16th May 2017)

Further, the developer's wife is a horticulturist and she influenced him to ensure that Yuj is a green property with a well-design landscape where plants were selected to attract insects, bugs, small animals and birds to improve the overall local ecology of the Housing Society. This type of plants selection was made keeping in mind that "children have the freedom to go wherever they choose to" said the developer.

2. Actual Space

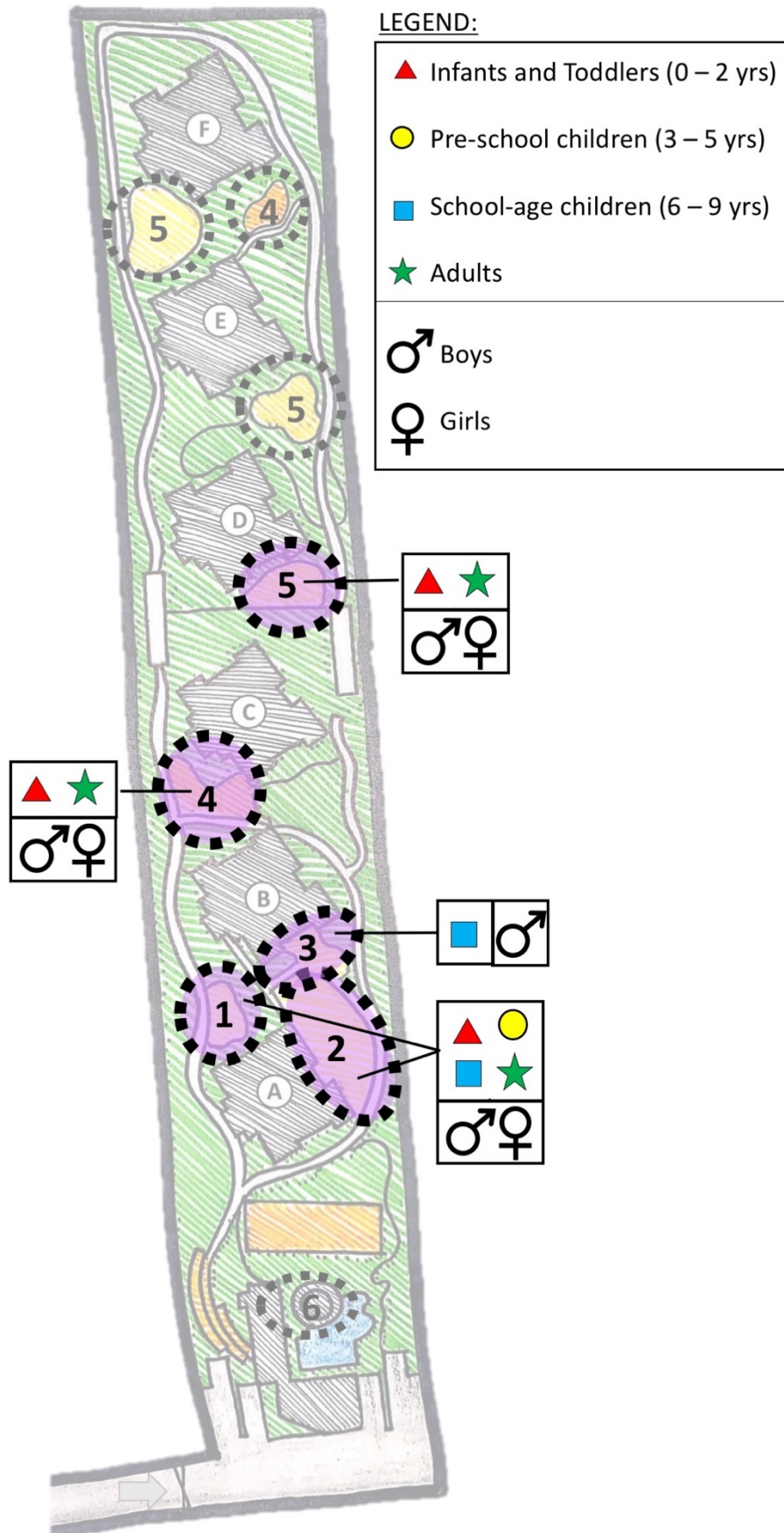


Figure 6.7.r. Yuj's Actual Space (Hand-drawn and created by Atmakur-Javdekar)

Interestingly, while the design professionals provided multiple play and recreation areas close to each residential building spread across the vehicle-free podium, I noticed that most children and adults used the Designated play area- 1 and Designated outdoor toddler play area-2 between A and B buildings for their play. One of the reasons for children to play here is because the Designated play area-1 is the only play area with a large integrated play structure, while other Designated small play areas-5 have a limited number of play equipment. Also, the Designated play area-1 is located adjacent to the Designated outdoor toddler play area-2, and spatially, this collective space affords a range of gross and fine motor play opportunities for children of all age groups. Also, a Wild green space-3 is located close to both these play areas between A and B buildings where a small pathway encourages children to explore and engage with the plants but not many children used this space. I noticed only a few school-age boys without caregivers exploring this space.

As conceptualized by the design professionals, parents and grandparents exercise at the Adults' outdoor gym-4 in the mornings while their infants and toddlers played in the surrounding areas. However, children and adults mostly used the adults' outdoor gym closer to A, B and C buildings as these spaces are located closer to the Designated play area-1 and Designated outdoor toddler play area-2 and main common amenities such as clubhouse, sports courts and swimming pool. The Adults outdoor gym-4 and Designated small play areas-5 located at the rear-side were unused. Furthermore, many parents used the gym inside the clubhouse but did not bring their children to the Designated indoor toddler play area-6 inside the clubhouse.

Interestingly, Yuj is the only case study where children play in the designated play areas. This is because the entire open space on the podium is designed as a manicured green space with multiple play areas and other amenities. In a sense, there are *no unplanned* open spaces.

3. Experienced Space

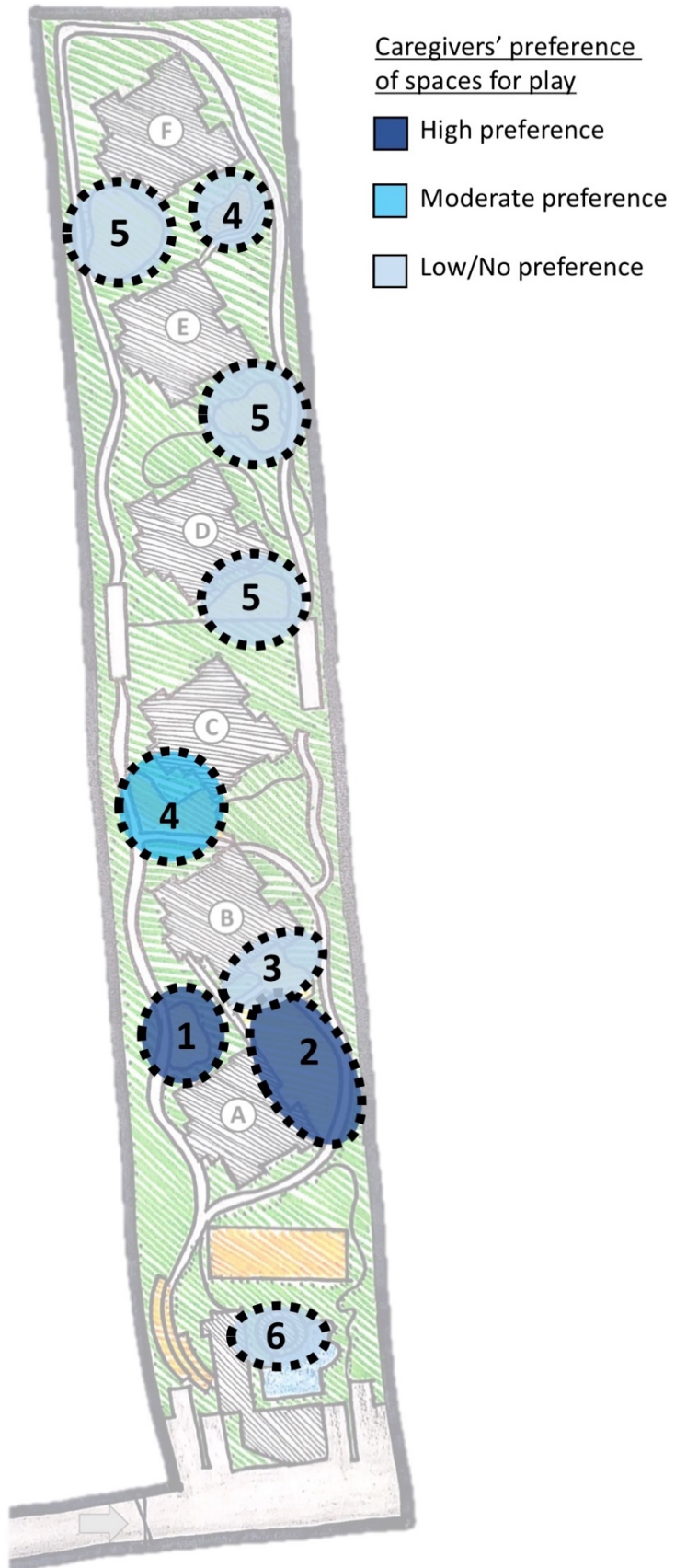


Figure 6.7.s. Yuj's Experienced Space (Hand-drawn and created by Atmakur-Javdekar)

I had observed that parents did not use the Designated indoor toddler play area-6 because the place was not well maintained. A mother confirmed my observation by stating, “no child goes there to play and it’s dirty, so, we always come here only”. Despite the conceptualization of multiple designated play areas, parents prefer to bring their children to play at the Designated play area-1 and Designated outdoor toddler play area-2 because all children gather in these spaces to play in the evenings.

During my visits, I observed two mothers with toddlers at one of the Designated small play areas-5 between C and D building. When I asked them if they lived in the surrounding buildings and hence, used the play area because of easy access, they responded negatively. Both parents were neighbors who lived in ‘F’ building (located further away) and during their evening walk around the property, they sometimes stopped at one of the Designated small play areas-5 as a break during their walk before heading to the Designated outdoor toddler play area-2 between A and B building where all children gather to play.

Similar to parents at Uru, Ekam and Shakti, parents at Yuj do not encourage their children to engage with plants and shrubs though the Wild green space-3 was designed to be accessible for children. Parents restrict young children due to fear of insects and bugs, and because of society management rules where children are not encouraged to play at any of the manicured landscapes.

Given the ‘shared-yet-private space’ created between two housing societies, I asked parents if children from Dhara and Yuj interacted with each other when playing at podium level but parents responded that there is no or minimal interaction. At the podium level, children can see and hear each other’s voices during play but they do not communicate with each other because children at Dhara mostly played at the central society amenities space located at (0) ground level and children at Yuj played at podium level.

Critical Reflective Summary

Despite the meticulously planned and designed multiple play spaces at Yuj, children and adults preferred to play at the Designated play area-1 and Designated outdoor play area-2 located between A and B buildings because both spaces are located in proximity to each other and collectively afford children a range of play opportunities including fixed play equipment large open space, various surface textures and materials (rubberized surface, lawn, gravel and dirt). Furthermore, since both these spaces combined have a larger spatial footprint when compared to the multiple smaller play areas-5 that are distributed across the podium, children and adults gather here because their peers met at this space to play and socialize. It is interesting to note that Yuj has no large central lawn for residents to gather during festivals and celebrations and the open space along with the play areas between A and B buildings are used for large social gatherings.

Lastly, the 'shared-yet-private space' between Yuj and Dhara is an opportunity to build social relationships between children living in different housing societies. In the future, it would be worthwhile to investigate how the spatial planning of closely located high-rise housing societies inform the social relationships between children living in adjacent buildings.

PART THREE – FINDINGS AND ANALYSIS

In Part three of the dissertation, I aim to answer my main research question, i.e., What combinations of spatial arrangements and physical features in the planning and design of high-rise housing developments in India influences the access to play and quality of play opportunities available for young children (1 – 8 years of age), and how appropriate are they for young children’s growth and development? Also, I answer the three sub-research questions as stated in Chapter 3: Theoretical Framework and Research Questions and five additional sub-research questions that were developed during the analysis. (See Table 7.1)

Part three consists of five chapters, where each chapter unpacks the complex network of actors and factors that contribute towards the production of young children’s play in high-rise housing developments. In ‘Chapter 7: Integration of the Case Studies’, I bring together the seven case studies providing the reader with an overview of the range of physical environments and the spectrum of play opportunities that are available for young children within and across the seven housing societies. In the next two chapters (8 and 9), I provide insight into developers and design professionals’ play values and their influence on the produced play environments in high-rise housing developments; and parent’s and caregivers’ play values and beliefs that guide the ways in which they manage their children’s play. Following this, in ‘Chapter 10: Neoliberal Analysis of Middle-Class Housing and Play’, I provide an analysis of the transformation of middle-class residences from independent homes to high-rise housing developments in the Pune metropolitan area; and what this changing urban form means to developers and design professionals and to middle-class families with young children and their play.

I conclude my findings and analysis with ‘Chapter 11: Design Principles and Improvement Practices’ where I offer broad guidelines based on my critical assessment of

existing play environments, so, developers and design professionals can better design and plan high-rise housing developments keeping in mind the play needs of young children.

Part Three: Chapters	Sub-Research Questions	Additional Sub-Research Questions
Chapter 8: Factors Influencing the Physical Environment of Children’s Play	<p>1. What factors influence, inform and constrain the designers and developers of play spaces for high-rise housing developments (e.g. cultural norms regarding play, governmental policies and economic forces including real estate and commercial)?</p> <p>2. What play spaces do children use and not use in the buildings and surrounding areas, and how is this related to:</p> <p>(a) Environmental planning and design factors (e.g. distance, location etc.)</p> <p>(b) Building management regulations (e.g. security, hours of access, etc.)</p>	
Chapter 9: Parents’ and Caregivers Management of Children’s Play	<p>2. What play spaces do children use and not use in the buildings and surrounding areas, and how is this related to:</p> <p>(c) Particular family issues (e.g. childcare arrangements, number of siblings, parents meeting desires, etc.).</p> <p>(d) Beliefs and values of middle-class parents regarding young children's play (e.g. free play vs structured, helicopter parenting, alternative commercial choices, digital technology etc.)</p>	
Chapter 10: Neoliberal Analysis of Middle-Class Housing and Play		<p>4. Why are middle-class families moving into high-rise housing developments?</p> <p>5. How are developers and design professionals accommodating to this change of high-rise housing developments?</p> <p>6. What do middle-class families want for their children in the physical environment of high-rise housing developments?</p> <p>7. What do these shifts in housing priorities and preferences mean for children’s play?</p>
Chapter 11: Design Principles and Improvement Practices	<p>3. How appropriate is the range of play opportunities and the spatial layout of children’s spaces typically available given the current state of theory and research on young children’s play in relation to their health, development and well-being?</p>	<p>8. How can developers and design professionals improve the current state of children’s play in housing societies?</p>

Table 7.1. Original and additional sub-research questions according to analysis chapters

(CHAPTER 7)
Integration of the Case Studies

I believe a quick examination of the physical environments of the seven case studies would be valuable to the reader before moving on into the findings and analysis chapters. So, in this chapter I provide a review of the seven case studies including the physical features and attributes, and the varied range of play opportunities available within and across the seven housing societies.

Case Profiles

My study relies on Bronfenbrenner’s ecological model to understand the micro, meso, exo and macro systems that influence children’s play in high-rise housing developments, particularly, across the seven case studies. Additionally, within each case study, I use Lefebvre’s theoretical lens to describe the play opportunities produced as a result of developers and design professionals *conceptualization* of the space, the ways children *actually* use the space and parents and caregivers management of children’s play based on their play values and *experiences*. Below, I provide brief case profiles to recap the seven case studies.

HS1. Uru-1

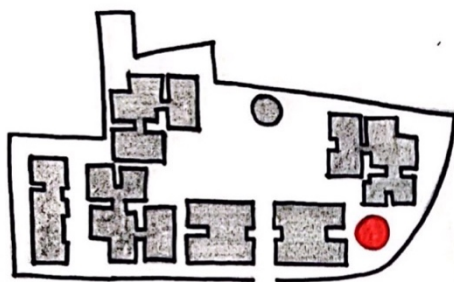


Figure 7.1.a. Uru Icon (Hand-drawn by Atmakur-Javdekar)

HS1 or Uru-1 has a range of evaluated spaces that are all located at podium level in a traffic-free environment. This includes a bifurcated central lawn, surrounded by semi-open spaces under the residential buildings, a clubhouse with a small plaza, a corner designated play area and a vegetable and fruit garden that is tucked away on the rear side of the property.

These multiple large open and semi-open spaces and smaller environments offer a range of gross motor play opportunities and sensory experiences. Yet, young children and their caregivers avoid these areas and mostly play at the Pathway and small plaza located in front of the clubhouse, close to the swimming pools and central lawn due to poor maintenance and spread-out location of society amenities. Uru is an example of a housing society that has ample play opportunities for young children but they are unable to fully exercise their right to play.

HS2. Ambar-2

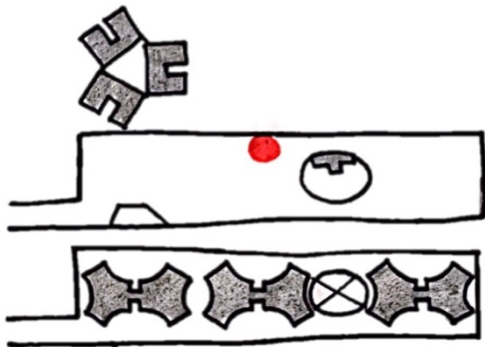


Figure 7.1.b. Ambar Icon (Hand-drawn by Atmakur-Javdekar)

HS2 or Ambar-2 has multi-level play and recreation spaces including the Sky-lounge on the 8th floor, Aangan (or inner-courtyard outside apartment units on every floor); green pocket areas on the podium and ground levels; a designated play area and central lawn with amphitheater at the ground level. At the ground level, society amenities are located close to the driveways and parking areas and along the edges of the boundary wall. Though the concept of Sky-lounge – a recreation and leisure space – on the 8th floor is unique in terms of architectural design and planning, only a few caregivers with infants use this space. This holds true for the green pocket areas too.

At Ambar, children along with caregivers primarily gather at the designated play area at the ground level to play in the evenings because of the presence of play equipment, presence of other children, ability to bring bicycles and scooters to the play area and ride

them at the driveway close to the play area. Though the play area is small and tucked away at the ground level, parents enjoy it as the parapet walls separating the play area and driveway afford them a space to sit and socialize while they are able to watch their children play. Also, other factors important for caregivers is that the surface of the play area is clean with rubberized flooring and that strict management rules ensure that older children are not allowed to play at the designated play area.

HS3. Keerna-3

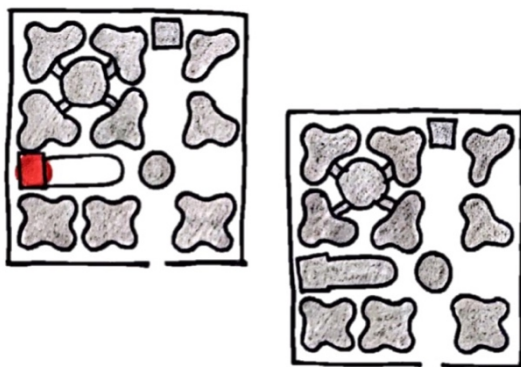


Figure 7.1.c. Keerna Icon (Hand-drawn by Atmakur-Javdekar)

HS3 or Keerna-3 is easily distinguished by its square-ish plot shape and organic shaped cluster buildings with multiple large disconnected open spaces scattered across the ground level. Additionally, there are two separate podiums that are designed for the purpose of play and recreation. The first has a designated play area for young children and a central lawn and the second is a designated space for older children's play. At the ground level there are two large green open spaces such as the central lawn and nana-nani park, semi-open space below the society office, large driveways with thorough-traffic and car parking areas. Older children who have independent mobility use the driveways and parking areas for their games while the nana-nani park is reserved as a leisure space for the elderly. Though Keerna was designed to offer multiple spaces for residents to use for play, leisure and recreation, caregivers along with young children primarily use the designated play area with central lawn

at the podium level because this area is traffic-free, has fixed play equipment and all children accompanied with caregivers gather here in the evenings.

HS4. Ekam-4

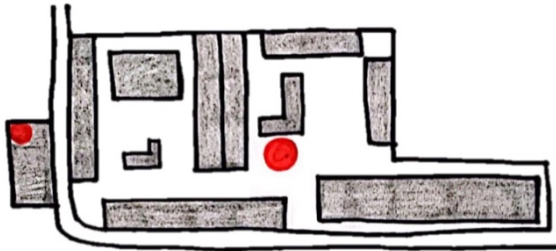


Figure 7.1.d. Ekam Icon (Hand-drawn by Atmakur-Javdekar)

To recall, HS4 or Ekam-4 is a unique housing society with three types of housing environments: i.e., low-rise row-houses and two types of high-rise apartment buildings (7 and 12 floors) designed and built over two phases. A major access road separates the property into two areas resulting in an uneven distribution of the society amenities. Since the access road cannot be crossed easily by caregivers with young children, an additional designated play area for young children with basic fixed play equipment is offered on both sides of the main road. It is also worth recalling as the only housing society where I observed children building with construction materials and exploring their creativity through loose parts play.

The overall physical environment of Ekam can be summed up as a mixed range of building typologies with multiple phase wise amenities including old and new clubhouses, central lawn, sports courts, nature area with gazebo and designated play areas, and multiple open spaces at ground level including internal driveways, pathways and parking areas. The wide range of spaces encourages school-age children who have independent mobility to freely use these spaces for their play. However, infants, toddlers and pre-schoolers with caregivers typically use the designated play areas for their play.

HS5. Shakti-5

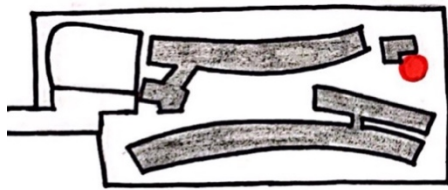


Figure 7.1.d. Shakti Icon (Hand-drawn by Atmakur-Javdekar)

Like other housing societies, HS5 or Shakti's plot shape is linear and rectangular with a standard set of amenities including designated children's play area, clubhouse, central lawn and a playing field for older children. In terms of the spatial design and planning, the architect took great care to design all amenities and open spaces free of vehicular movement. This encourages pedestrians (adults and children) to use internal pathways, thus, creating a socially vibrant space. It is important to recall that the surrounding twin houses overlook these incidental vibrant pedestrian spaces ensuring a natural surveillance. What sets Shakti apart is the mother-toddler program that is voluntarily run by a group of mothers during the week at the society's clubhouse.

Unsurprisingly, the designated play area has a limited range of fixed play equipment and is not a popular play space due to poor quality of equipment and due to its proximity to the older children's football field. Instead, infants, toddlers, pre-school age children and their caregivers primarily use the central lawn next to the vibrant pedestrian space. Furthermore, similar to Uru-1, there is an organic farm within the property that is maintained by a group of nature lovers and garden enthusiasts who are mostly adults. Unfortunately, children do not have the freedom to access this space on their own.

HS6. Dhara-6

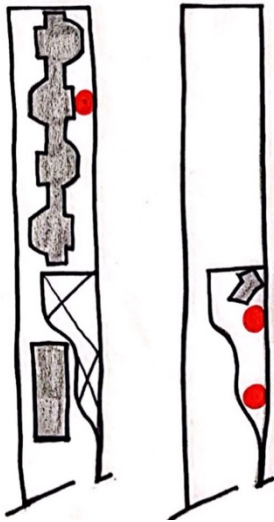


Figure 7.1.e. Dhara Icon (Hand-drawn by Atmakur-Javdekar)

At first glance, HS6 or Dhara-6 appears similar to other housing societies in Wakad as it is built on a linear rectangular plot with residential buildings on a podium along with parking at ground *and* podium levels, and society amenities along the edge of the plot at both spatial levels. However, what distinguishes Dhara-6 is the two small designated play areas and one large central play area that were built during two different construction phases. The developer constructed separate phase-1 and phase-2 play areas to keep customers from both phases happy but in *reality*, everyone uses the large play area that is centrally located adjacent to the central lawn, and clubhouse. Furthermore, parents prefer the central play area because of convenient location between phases 1 and 2, presence of other children and range of play equipment and hybrid play surface. Also, the other two play areas have limited play equipment and are poorly maintained.

Overall, Dhara is a good example of a housing society where all the main society amenities including the designated play area, clubhouse and central lawn are adjacent to each other and act as one large central space for socialization.

HS7. Yuj-7

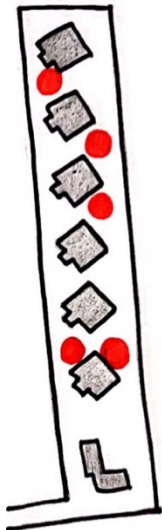


Figure 7.1.f. Yuj Icon (Hand-drawn by Atmakur-Javdekar)

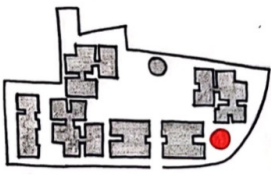

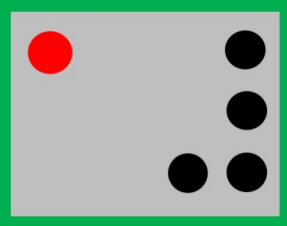
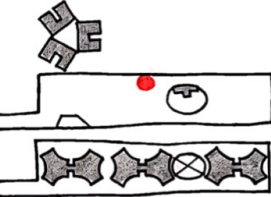
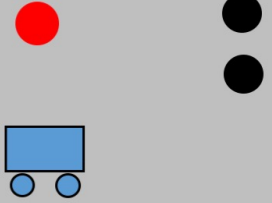
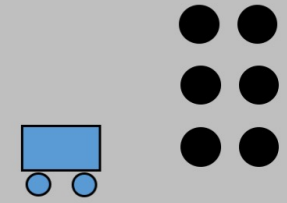

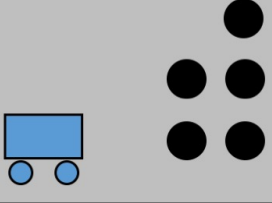
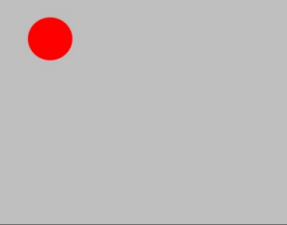

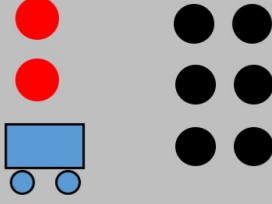


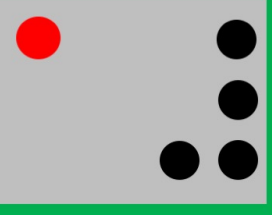
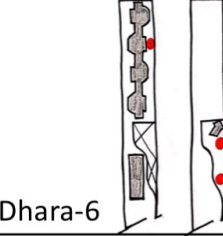
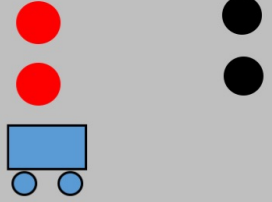
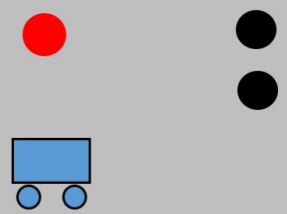
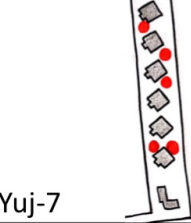

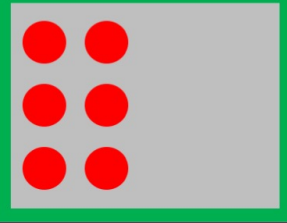
HS7 or Yuj-7 was designed to unite the built form and open spaces on a narrow rectangular piece of land where children and adults could walk freely without the fear of moving traffic and for children to access a play area immediately outside their apartment buildings. As a result, a traffic-free podium with multiple designated outdoor play areas for children, outdoor gyms and leisure spaces for adults, sports courts, manicured landscapes and an indoor toddler play area inside the clubhouse with swimming pool and residential buildings was created. Furthermore, Yuj was built in one phase with multiple play areas because the developer did not want any child or adult go too far to play and also felt that it is easy for adults to keep an eye on their children when there is a play space located closer to their building.

However, in reality, all parents brought their children to play near the first building where two designated play areas are located adjacent to each other. This collective designated play area affords young children of all age groups a range of gross and motor play opportunities in one large space.

In summary, developers and design professionals planned play areas and children promptly used those and other undesignated spaces for play. For example, in addition to other open spaces, the designated play areas at Ambar-2, Keerna-3, Ekam-4, Dhara-6 and Yuj-7 are all used as conceptualized. Interestingly, at Yuj-7 there are no undesignated spaces where children play. This is because the entire podium is designed as a manicured green space with specifically planned amenities, play areas and green open spaces, thus, leaving no opportunity for children to explore other types of spaces for play. Additionally, in two cases, developers and design professionals *conceptualized* particular ways for children to use the designated spaces for play and recreation but in *actuality*, children used other spaces because the designated play areas were not satisfactory for parents in terms of quality of play equipment, maintenance or range of play equipment. For example, at Uru-1, parents directed their children to play at the pathway and central plaza close to the clubhouse instead of the designated play area. Also, at Shakti-5, design professionals or the developer did not conceptualize the mother-toddler program but a mother's *experience* of a similar program abroad helped her translate that into an *actual* space with the help of other parents.

Overall Spatial Parameters of the Seven Cases

In this section, I provide an overview of the current spatial parameters across the seven case studies that influence children and caregivers' use of designated and undesignated spaces for play, leisure and recreation. Figure 7.2 below assimilates four spatial parameters including: (a) Traffic-free or low-traffic spaces; (b) Location of designated play areas; (c) Number of designated play areas; and (d) Undesignated spaces used for play. In the figure, the red dots represent the number of designated play areas, and black dots represent the undesignated play areas used by children. The number of red and black dots corresponds to the number of undesignated spaces that are used by children for their play.

Housing Society	Basement Level	Ground Level	Podium Level
 Uru-1			
 Ambar-2			
 Keerna-3			
 Ekam-4			
 Shakti-5			
 Dhara-6			
 Yuj-7			

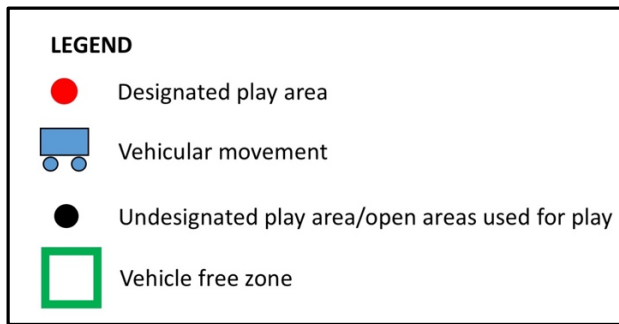


Figure 7.2. Overall spatial parameters of seven case studies (Created by Atmakur-Javdekar)

(a) Traffic-free or Low-traffic Spaces

Figure 7.2. highlights Uru-1, Shakti-5 and Yuj-7 as housing societies that have traffic-free podium or ground levels. At Shakti-5 and Yuj-7, the architect and developer (respectively) made a conscious decision to segregate pedestrian and parking areas so children and adults can use the space without the fear of any moving vehicles. Interestingly, at Uru-1, the society members took the initiative to create a ‘pedestrian only’ space at the podium level. The podium was designed for car parking and to build apartment units during phase-2 construction but society members from phase-1 did not give permission for the developer to pursue the same. So, in these three cases, adults who were concerned about children’s safety insisted on having areas in the housing societies that are free of traffic.

Interestingly, at housing societies with through traffic, young children with caregivers or school-age and older children used parts of the driveways on the podium or at ground level for their play. The driveways identified for play were typically where traffic flow is the least. For example, at Ambar-2 older children used the driveway on the podium to play cricket; and at Keerna-3 young children with caregivers used parts of the driveways between buildings to play hide-and-seek, running games or ride their cycles and scooters. Similar to Ambar-2, school-age and older children at Keerna-3 and Ekam-4 used driveway spaces to play ball games. Also, Dhara-6 has a central social hub including a lawn, central play area and clubhouse, so, children did not use the driveway to play ball games but parents of young

children used parts of the driveway for organized enrichment activities in the evening such as, skating classes for pre-school and school-age children.

(b) Location of Designated Play Areas

In housing societies where play areas are tucked away in a corner of the entire plot, away from the central lawn and other society amenities, they end up being poorly maintained and lack cleanliness. This is true for Uru-1, Shakti-5 and Dhara-6. As one may recall, at Dhara-6, there are two smaller phase-wise play areas provided by the developer that are located away from the central social space that are unused. This is similar to play areas at Uru-1 and Shakti-5 where few children play due to poor maintenance. Residents complain of old and worn-out play equipment, animal feces and snakes in the sand in these play areas. In contrast, when the designated play area is centrally located, and adjacent to the central lawn and other society amenities such as clubhouse, they are well maintained as the play area is cleaned regularly along with other common society amenities. For example, at Ambar-2, Ekam-4 and Dhara-6, the play areas are well maintained because they are used often, as they are located close to other society amenities. In summary, this appears as a virtuous cycle in a sense that when the play areas are located centrally, they are used regularly, and hence, are well maintained as well. So, proximity of designated play area to other common society amenities plays a vital role in the maintenance and use of the play space.

(c) Number of Designated Play Areas

The number of designated play areas in a housing society in relation to single or multiple phase construction solely lies at the discretion of the developer. Out of the 63 housing societies from the Baseline study, only 10 are single-phase construction and 52 (82.5%) are multiple phase construction with one or more play areas. There are three inter-related factors contributing to phase-wise development of housing societies. These are finances, length of construction time and amalgamation of adjacent or neighboring plots for

construction. The time period between two construction phases can range from 6 months to 3 years or sometimes, 5 years or more. At the end of each construction phase, residential buildings and corresponding society amenities including designated play area, clubhouse etc. are completed and handed over to the customers at the discretion of the developer. Analysis of these housing societies along with in-depth study of the seven cases helped understand that there are no formal rules or regulations to guide developers about the time-frame or when to provide designated play areas and the number of play areas required based on phase-wise development.

Table 7.2 shows that only six (9.5%) are multiple-phase housing societies with two or more play areas. This indicates that it is rare for developers to provide more than one play area in a housing society. Ekam-4 and Dhara-6 are two such examples of multiple-phase housing societies where the developer provided a play area for each phase of the housing society. Further, at Dhara-6, the developer provided a large common central play area in addition to the two phase-wise designated play areas. This provision of a large central play area ensures that children from both phases used this space for play.

Based on my research, developers tend to provide only one play area irrespective of the phase-wise development. Table 7.2 demonstrates that 46 (73%) out of the 63 are multiple-phase housing societies with one play area. Providing only one play area in a multiple-phase construction raises a few concerns. If the play area is constructed during phase-1, then children and families from phase-2 do not feel included during play at the common designated play area. For example, at Uru-1, along with the designated play area, the central lawn and clubhouse were constructed during phase-1 for the entire housing society but children from phase-2 do not play at these common society amenities. On the contrary, if a play area is constructed during phase-2 construction, then existing residents from phase-1 who are occupying the property do not have a designated play area until the developer

completes phase-2 construction. Interestingly, there is one exception in the set of 63 housing societies, i.e., Yuj-7, where the developer provided multiple designated play areas during a single-phase construction.

From my research, it is evident that irrespective of the number of designated play areas, parents eventually bring their children to one central play area where other children come to play⁶³. Clearly, the number of designated play areas and the time at which they are provided to residents in a housing society depends solely on the developer’s discretion. Currently, there is a lack of formal guidance in the method of creating and delivering home environments that are supportive of children’s basic play needs.

Single/multiple phase construction with play area(s)	No. of housing societies	Percentage (%)
Single phase construction + One play area	10	15.9
Single phase construction + Two or more play areas	1	1.6
Multiple phase construction + One play area	46	73.0
Multiple phase construction + Two or more play areas	6	9.5
Total housing societies (from Baseline Study)	63	100

Table 7.2. Phase-wise construction and play areas

(d) Types of Undesignated Spaces used for Play

Aside from the designated play areas, there are multiple open or semi-open spaces across the seven housing societies that children use for play and recreation-based on their own will or under the influence of their parents or caregivers. These are represented as black dots in Figure 7.2. As described in the case studies, these undesignated spaces range from driveways, to semi-open spaces, pathways and other informal open spaces found within the public landscape of a housing society. Across the seven HSs, children played ball games, other organized games or rode their cycles and scooters at the undesignated spaces that are large open spaces with hardtop surface. The undesignated spaces produced at each of the housing societies are a result of what was *conceptualized* by the developers or the design

⁶³ For a full discussion about the number of play areas, see (iii) Size and number of designated play areas under Section 9.1. Caregivers’ Response to the Provision of Amenities in Chapter 9. Caregivers’ Management of Children’s Play.

professionals and how children *actually* use these spaces based on caregivers’ management of their children.

In summary, the four spatial parameters including traffic-free or low-traffic spaces, number and location of designated play areas and types of undesignated spaces used for play determine the overall play environment of housing societies as used by caregivers and children for play and recreation.

Environmental Play Qualities across the Seven Cases

While the previous section provided an understanding of the overall spatial parameters influencing children’s play in housing societies, here, I draw attention to the overall materiality of the physical spaces used by children and caregivers. For this, I provide a cross-case analysis of the eight Environmental Play Qualities across the seven case studies.

Fixed Play Equipment (I)










Environmental Play Quality: Fixed Play Equipment (I)									
Physical Elements and Surfaces									
	(a) Traditional Swings	(b) Toddler Swings	(c) Family Swing	(d) Slide	(e) Climbing frame/wall	(f) Merry-go-round	(g) Spring rider	(h) Integrated play structure	(i) See-Saw
Uru 1									
Ambar 2									
Keerna 3									
Ekam 4									
Shakti 5									
Dhara 6									
Yuj 7									

Figure 7.3.a. Fixed Play Equipment: Cross-case analysis

Each of the seven HSs has some type of fixed play equipment at the designated play areas but the range of equipment is not unique. These are available in catalogues and are locally made or imported from standard play equipment manufacturers. From the figure, it is

evident that commonly and easily manufactured play equipment are popular at HSs. For instance, out of the nine 'Fixed Play Equipment' features, traditional swings and slide are found at all the seven HSs. Also, seesaw, merry-go-round and integrated play structure are other popular play equipment found in a majority of the HSs.

With reference to play equipment for young children, the existing range of equipment primarily affords gross-motor activities for pre-school and school-age children. There are limited gross and fine motor play opportunities for infants and toddlers. Figure 7.3.a shows that three out of the seven HSs have play equipment suitable for toddlers but the within case analysis disclosed that two of these play areas are seldom used due to issues related to maintenance and difficulty in accessing the play space. Specifically, Uru-1 has toddler swings placed on poorly maintained sand surface and Ekam-4 has toddler and family swing, slide and see-saw that are tucked away in a corner for phase-2 residents making it difficult to access for phase-1 residents who live across the main road.

Intriguingly, the outdoor toddler play area with family swing and slides on gravel surface at Yuj-7 is a popular space for caregivers and children. This is because it is located close to another designated play area that has an integrated play structure used by pre-school and school-age children. Additionally, Yuj-7 has other smaller play areas with spring riders and slides suitable for toddlers but is seldom used as parents prefer to bring their children to the play area where all children come to play.

Natural Areas (II)









Environmental Play Quality: Natural Areas (II)								
Physical Elements and Surfaces								
	(a) Flowering plants and trees (manicured)	(b) Fruit trees (manicured)	(c) Wild green space but no shrubs and trees	(d) Wild green space including shrubs and trees	(e) Trees (climbable)	(f) Space for dogs and house pets	(g) Space for domestic animals (cows, goats, rabbits, etc.)	(h) Bird houses and feeders
Uru 1								
Ambar 2								
Keerna 3								
Ekam 4								
Shakti 5								
Dhara 6								
Yuj 7								

Figure 7.3.b. Natural Areas: Cross-case analysis

For ‘Natural Areas’, five out of the eight Physical Elements and Surfaces that I used to assess the landscape were not available at any of the seven housing societies. These include, Wild green space but no shrubs and trees, Trees (climbable), Space for dogs and house pets, Space for domestic animals and Bird houses and feeders. Only ‘Flowering plants and trees’ (manicured) are present across all the seven HSs. While trees and plants are plentiful across the seven HSs, they are only used as decorative elements in manicured landscapes with neatly pruned edges that surround the central lawn and other open spaces. Such manicured landscapes discourage children and adults from engaging with plants or trees.

Relative to other cases, Uru-1 and Shakti-5 have ‘Fruit trees’ as part of their vegetable and fruit garden and organic farm but as noted in the case studies, children cannot access this space at own will. These spaces are primarily used by adults who are garden enthusiasts and on particular occasions, children are encouraged to accompany adults to plant saplings. Another unique ‘Natural Areas’ element is the Wild green space including shrubs and trees at

Yuj-7 and Shakti-5. Unfortunately, children are not allowed to enter these spaces either due to management restrictions. Overall, children have no access to engage with nature or natural materials like mud, plants, sticks, stones, water, flowers or interact with domestic animals during play. In a sense, children are removed from engaging with the natural environment, thus, depriving them of the kinds of sensory play experiences that are typically afforded in nature⁶⁴.

Seating/Table Areas (III)

Environmental Play Quality: Seating/Table Area (III)						
Physical Elements and Surfaces						
	(a) Seating (benches, stools, chairs, etc.)	(b) Tables	(c) Steps and walls of varying heights (parapet walls and columns)	(d) Small hills and mounds	(e) Tree stumps	(f) Boulders
Uru 1						
Ambar 2						
Keerna 3						
Ekam 4						
Shakti 5						
Dhara 6						
Yuj 7						

Figure 7.3.c. Seating/Table Areas: Cross-case analysis

The seven HSs have benches as ‘Seating’ areas surrounding the designated play areas or other open areas where children play. These seating areas encourage caregivers to sit and socialize with their peers while watching their children play. Further, ‘Steps and walls of varying heights’ are present at five HSs, i.e., Uru-1, Ambar-2, Keerna-3, Shakti-5 and Dhara-6. These steps and walls are typically parapet walls close to the parking areas abutting the

⁶⁴ To further understand children’s limitation to natural environments, see ‘Caregivers awareness to natural areas (II)’ under Section 9.2. Caregivers’ awareness of young children’s play needs in Chapter 9. Caregivers’ Management of Children’s Play.

open areas that are used by adults for sitting, or by children for climbing or playing games such as hide-and-seek. Incidentally, the presence of parapet walls surrounding the parking areas provides some opportunities for children to climb and jump. More generally, however, there are no intentional design elements, such as small hills and mounds, tree stumps or boulders, that afford children the opportunity for climbing and jumping across the seven HSs. Moreover, Tables are also not provided at any of the HSs.

Moveable Equipment and Materials (IV)





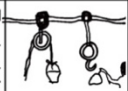
Environmental Play Quality: Moveable Equipment and Materials (IV)					
Physical Elements and Surfaces					
	(a) Loose parts (stones, pebbles, wood, pipes, etc.)	(b) Toys from home	(c) Bicycles /scooters	(d) Wagons	(e) Cranes /pulleys etc.
Uru 1					
Ambar 2					
Keerna 3					
Ekam 4					
Shakti 5					
Dhara 6					
Yuj 7					

Figure 7.3.d. Moveable Equipment and Materials: Cross-case analysis

There are five Physical Elements and Surfaces associated with Moveable Equipment and Materials. These include loose parts, toys from home, bicycles/scooters, wagons and cranes/pulleys. A popular physical element belonging to this category is bicycles/scooters that are brought down to the ground or podium level by children at all HSs. While there are no restrictions upon children to bring toys from home, I observed children at Ambar-2, Ekam-4, Shakti-5 and Dhara-6 bring toys from home to play with other children. The reason for bringing toys from home is dependent on the personal desire of a parent and his/her child.

Further, the availability of loose parts as construction materials or stones, pebbles, etc. is not common at Housing Societies. At Ekam-4, loose parts in the form of construction materials and wagon were available as there was ongoing construction related work within the property and I observed children playing with these materials. While this is a temporary set-up and not a designated play environment created by design professionals, it is important to note the importance of loose parts for children’s construction play enabling them to build, control and manipulate the environment around them.

Manipulable Materials (V)






Environmental Play Quality: Manipulable Materials (V)					
Physical Elements and Surfaces					
	(a) Sand surface	(b) Sand table	(c) Sand pit	(d) Dirt/Soil /mud	(e) Fine gravel
Uru 1					
Ambar 2					
Keerna 3					
Ekam 4					
Shakti 5					
Dhara 6					
Yuj 7					

Figure 7.3.e. Manipulable Materials: Cross-case analysis

During Case Study Research, I identified Sand, Dirt/soil/mud and Fine gravel as possible materials that children could use to manipulate with during play. These materials afford children to engage in sensory play helping them refine their fine motor, sensory and exploratory skills. Sand as a material is typically used and is available at Uru-1, Shakti-5 and Dhara-6. However, as mentioned earlier, the within-case analysis of the three HSs revealed that poor maintenance of the sand surface, which has led to complaints from parents and to children not playing there. Also, sand is made available in the form of the play area surface

and not as an element of play such as sand table or sand pit. A popular alternative to sand as a surface material for play area is fine gravel. For instance, at Keerna-3, I noticed children manipulating with gravel and engaging in pretend play. Likewise, play areas at Ekam-4 and Yuj-7 too have fine gravel as the surface material.

It is worth noting that dirt/soil/mud is present at all HSs due to the presence of garden areas and central lawns but this does not mean all children have *access* to playing *with* dirt/mud/soil. Caregivers' apprehensions about cleanliness restrict children from playing in mud.⁶⁵

Water (VI)

Water as an element is not perceived as an opportunity for children's play by developers, design professionals and caregivers. Across all the seven cases there are no play elements related to the category of water such as a water surface, table or spray but the 'swimming pool' including a children's pool hides in plain sight as a society amenity at all housing societies. Yet, these pools are not used by children on a regular (or daily) basis despite the tropical weather in Pune. This is because during winters and monsoons the water is too cold. So, the pool is used only during three months of summer where the usage is limited to swimming classes conducted by a coach or when children are accompanied by parents.

While mothers generally accompany children to the play area, fathers are usually expected to accompany their children to the swimming pool. This is because the modest nature of middle-class Indian families dictates women to dress conservatively and women often feel shy to use a common pool in housing societies. Since fathers are not regularly

⁶⁵ I unpack caregivers' apprehensions surrounding children's play with mud/sand/soil in 'Caregivers awareness of manipulable materials (V)' and 'Caregivers awareness of surface textures and materials (VII)' under Section 9.2. Caregivers' awareness of young children's play needs in Chapter 9. Caregivers' Management of Children's Play.

available to go swimming with their children, the society members appoint a swimming coach who conducts swimming classes during summers. Unfortunately, it is also during the summer months that water shortage is at the highest in Pune, causing the local government to send public notices to shut down swimming pools for a few weeks in housing societies and schools. So, overall, the swimming pool is an amenity that is expected as a ‘must-have’ by the residents in a housing society but one that is used sporadically throughout the year.

Surface Textures and Materials (VII)

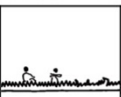
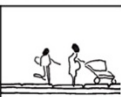

Environmental Play Quality: Diverse Surface Textures and Materials (VII)			
Physical Elements and Surfaces			
	(a) Mown grass	(b) Hardtop surface	(c) Rubberized play surface
Uru 1			
Ambar 2			
Keerna 3			
Ekam 4			
Shakti 5			
Dhara 6			
Yuj 7			

Figure 7.3.f. Diverse Surface Textures and Materials: Cross-case analysis

Given that all HSs have central lawns and some form of a pathway surrounding the lawn, ‘Mown grass’ and ‘Hardtop surface’ are easily accessible to children for play. The hard-top surface encourages children to bring their bicycles/scooters and parents and grandparents to walk in the evenings. Furthermore, a rubberized play surface is preferred by parents in designated play areas with fixed play equipment as they feel it is clean, safe and easy to maintain. Four of the HSs, including Ambar-2, Ekam-4, Dhara-6 and Yuj-7 have rubberized play surfaces in their designated play areas.

Retreat Space (VIII)

None of the HSs had a play house or a retreat space for children to use during play. The idea of a play house or a mud kitchen or small store was not considered essential for children's play by developers, design professionals and caregivers. Clearly, it is important to understand why standardized play equipment in play areas are a popular solution to children's play needs in middle class families' housing societies. The next chapters address the macro, exo and meso factors that support the creation of these standardized play areas.

(CHAPTER 8)
Factors Influencing the Physical Environment of Children's Play

Earlier, in chapter 7, I provided an integrated analysis of the seven case studies. In this chapter, I unpack the reasons for why there is a ubiquitous provision of standardized play equipment by developers and design professionals; and how building management rules inform the ways children use these designated play spaces or other undesignated open areas for play. Specifically, I answer the following two sub-research questions:

- 1.) What factors influence, inform and constrain the designers and developers of play spaces for high-rise housing developments (e.g. cultural norms regarding play, governmental policies and economic forces including real estate and commercial)?
- 2.) What play spaces do children use and not use in the buildings and surrounding areas, and how is this related to:
 - a. Environmental planning and design factors (e.g. distance, location etc.)
 - b. Building management regulations (e.g. security, hours of access, etc.)

Governmental Policies influencing Children's Play

The National Building Code of India (NBCI) is a pan India reference book that outlines guidelines for all design and construction related professionals including but not limited to architects, landscape architects, civil and structural engineers, and project management consultants. However, these national level guidelines are not mandatory for city and state level design and construction professionals to adhere to them.

Earlier in my dissertation, I noted that the Development Control rules (Urban Development Department, 1999) for Wakad outlines that children's play area may be provided as part of the 10% Recreational Open Space. Further, there are no specific guidelines for children's play areas within these Development Control rules (Urban Development Department, 1999) about the types of play equipment or the design of spaces keeping children's holistic development in mind. However, No. 5.2.5, 'Section I Landscape planning, design and development' in Volume Two of the National Building Code of India

offers six guidelines for providing free and imaginative play opportunities in children's play areas (Bureau of Indian Standards, 2016b). The six pointers include:

- (a) Opportunities for children to explore imaginative play through interaction with natural elements of their environment may be provided.
- (b) Raised beds or planting areas, play shelters, niches, sand areas, etc. may be provided.
- (c) Ways of functioning of natural systems within the site may be explored. For example, hydrology and water flows that attract butterflies, birds, and frogs may be considered.
- (d) Science play opportunities that stimulate curiosity about science may be provided. Suggested elements may include centrifugal force, sound waves, sunlight refractors, weather stations and windmills.
- (e) Signage that gives cues to parents about things to show or teach their children, using equipment or other elements of the playground, may be provided.
- (f) All possible efforts should be made to extend opportunities to children of all abilities and age, by providing access to a variety of play features and using features that appeal to all the senses.

(Bureau of Indian Standards, 2016b, p.12)

For Pune Metropolitan Region, as per the Maharashtra Regional Town Planning Act (1966), developers and design professionals are bound to follow the regulations as mentioned in the municipality's Development Control rules as notified by the Urban Development department of the state of Maharashtra. Put simply, city-based design and construction professionals adhere to the national guidelines only when these are included within the regulations of state urban development authorities. Unsurprisingly, my interviews with design professionals and developers revealed their lack of awareness⁶⁶ of the free and imaginative play guidelines in children's play areas as outlined in the National Building Code of India.

In the following sections, I unpack the ways in which design professionals' and developers' play values influence children's play within housing societies.

⁶⁶ In my dissertation, I did not specifically investigate reasons for developers' lack of awareness about these guidelines.

Design Professionals' Idea of Children's play

Architects and landscape architects wish to provide open grounds with dirt or mud surface and grass mounds with limited or no standardized play equipment. Dhara-6's landscape architect affirmed, "I also feel that don't just provide play equipment, provide something else. Put logs in the play area. Kids will play in that, like a mounds garden. Like, only mounds and trees, that's it." Another architect mentioned, "So, mitti mein nahi khelenge tho bache bade kaise honge? [If children do not play in soil, then how will they grow up?]." However, design professionals feel it is difficult to convince developers to have these kinds of natural play spaces. At Keerna-3, the architect desired that his proposed design did not have any play equipment but the developer installed standard play equipment selected from a play equipment catalogue.

...I never anticipated those swings and those [other play equipment] what not. Jo plastic rehte hain [the ones they make with plastic]. Those they must have added but they were never in my design. I always wanted the land to stay natural and people to take advantage with the natural way of playing. (Personal communication, 17th May 2017)

Particularly for the younger children (3-4 year olds), the architect insisted that they use their own physical strength during running instead of using something mechanical to get moving.

So, to give those equipment was never in my thoughts. What I wanted to give was just few undulations and maybe some natural rocks so that children can climb and move... Maximum I had expressed my thought was to have a sports wall which is also quite sufficient but I don't think they have done the sports wall. (Personal communication, 17th May 2017)

Design professionals feel frustrated that they cannot provide open grounds with natural elements for children where they can dig in the mud and engage in free play because developers discourage these ideas. Dhara-6's landscape architect stated that he asks his clients (i.e., developers) to provide ground with rammed earth but states that developers do not listen to these ideas, "because they want to list out amenities." Developers insist on

central lawns with manicured landscapes as these elements make the sales brochure aesthetic and appealing for promoting the housing society to the customers. Additionally, developers resist design professionals' idea for a natural play space by stating that parents expect, 'world-class amenities' which are clean and kempt and not open grounds with rammed earth. Developers fail to understand that though open grounds and grass mounds may look unappealing on the brochure, they are inviting and welcoming for children to engage freely in play of their own choice.

Despite the lack of understanding by the developers, design professionals recognize that there is a good challenge in designing play areas but quickly state that it is out of their scope of work. So, design professionals typically seek play equipment manufacturers' catalogues to select standard play equipment for children's play areas. Design professionals mentioned that they don't find the time to design and execute children's play spaces and that it is the job of a specialist or some authority. "...and one major thing of children's play area is that it has never been a concern; neither of planners nor authorities nor sanctioning authorities, nor developers or nobody," stated Dhara-6's landscape architect. Yet at the same time, he felt that it is the responsibility of the architects and design professionals to think differently and "provide an environment for kids to play." Despite these frustrations, architects feel optimistic about being able to create something meaningful for children now that high-rise housing developments are being created in plot areas of more than 2 or 3 acres that need more open areas.

... if there is an adventure, there is forms and colors, then children will enjoy. They play hours and hours in that kind of situation. If you create mountains and streets, they will play for more than four hours maybe. (Personal communication, Dhara-6's landscape architect, 14th November 2017)

In conclusion, design professionals do not view play from the rights perspective, nor do they have a thorough understanding about the range of play types and their contribution to

children's holistic growth and wellbeing. However, they do value natural play areas as essential for children's development.

Developers Establish Play as an Amenity

Eventually, architects and landscape architects leave the decision to the developers who determine the physical elements and surfaces of the amenities and play areas. For the developers, the mantra to sell apartment units to middle-class families has been 'the more the amenities, the better for sales.' Developers are often focused on creating aesthetically pleasing sales brochure with maximum number of amenities. (See Section 10.3. Desire for World-class Amenities) Since the 'number of amenities' is important for the developer, there is not much thought put into the design of the play environment, so, the developer or design professional selects standardized play equipment from a conventional play equipment catalogue. Put simply, developers' sales and marketing brochures define the aesthetics of play spaces defining the overall landscape and the play opportunities for children in a housing society.

When asked specifically about the amenities the customers want for their children, developers mentioned, children's play areas and sports courts within the housing society, and proximity of housing societies to good schools, hospitals and commercial malls as essential. Today middle-class families have one or two children and they want to give the best for their child. So, developers called attention to the related trends of smaller families and higher aspirations for their children. A developer stated, "...they care so much for the child that whatever the child needs... they give." While describing the exact needs of middle-class parents, Ambar-2's developer detailed, "they want a ground or playground, tennis court, indoor hall, swimming pool, game zone for kids. They want something important for every need of theirs." So, developers focus on providing courts and sports facilities to support older

children's organized games and sports, as customers demand these amenities from them before or during the sale of the project.

Besides the designated play areas and sports courts, when developers were asked about other spaces that children need, their standard response included the need to provide multi-purpose rooms inside the clubhouse so, parents can send their children to activity classes such as dance, music, art or other enrichment activities. The four developers interviewed stated the importance of providing "space for activity classes" because often children are left in the care of domestic helpers or grandparents as both parents are working. Developers feel that by providing child-specific amenities such as children's play area, a range of sports courts and an indoor room for activity classes, domestic helpers and grandparents can "keep children entertained".

Moreover, since there are no guidelines mandated by the Development Control rules in Maharashtra state on the type of spaces necessary to support children's play, developers reflected on their own childhood experiences of playing in large open grounds and neighborhood streets. However, they quickly shied away from the idea of children playing in the natural environment because they believed that since middle-class families live in home environments that reflect the standards of their global workspaces, the play areas should be modern or western too. (See Section 10.2. Creating Home Aspirations for Middle-class Families) So, for inspiration of the design of play areas, developers' childhood experiences of playing in open spaces and streets in Indian neighborhoods were tempered by their exposure to international play areas from their experiences of travelling or living abroad.

I saw my kids growing up in US and they had access to lovely public spaces and public parks in New York City though it was an inner city they still had a lot of open spaces. So, that influence was always there when we designed this. That we need to have open spaces for kids, that there should be open spaces, there should be play areas for kids, that they should be able to run around and do things... and I think that has worked out pretty okay in here. (Personal communication, Keerna-3's developer, 16th May 2017)

Additionally, during a business travel experience abroad, Yuj-7's developer saw outdoor gym equipment and included these outdoor gyms for adults in addition to the multiple small play areas for children. Visibly, developers gather inspiration for play areas and amenities from a limited understanding of modern or contemporary play areas of developed countries.

Thus, design professionals' ideas about natural play environments with limited play equipment are not welcomed by developers because such play areas are "not attractive" for middle-class families who are seeking "world-class amenities"; and do not look "good" or "aesthetically pleasing" on the sales brochures. Furthermore, developers feel that their "job is done" when they sell apartment units based on the sales brochure. And once the sale is done, they do not feel it is their job to invest more time and money into improving the amenities of the housing societies. Particularly with play areas, developers prefer to spend very little money, i.e., less than 0.3% of total construction cost. So, the result is a standardized play area with basic equipment on rubberized play surface or sand or gravel. In this context of sales, developers view children's play as a mandatory amenity in a housing society and not as an essential environment that supports children's growth and holistic development.

Evidently, there is a gap between design professionals' and developers' idea of play. Ultimately, developers make the final decision about the number and type of amenities and the design of the housing societies, and the result is a standardized play area with basic play equipment. Clearly, like the location and number of designated play areas, the type of play equipment and the range of play opportunities to be provided for children in housing societies rely solely on the developer's discretion. Since 'children's play area' has become a mandatory amenity in housing societies, the developer or the design professional ultimately selects equipment from a standard play equipment catalogue.

Nevertheless, I questioned why developers do not make efforts to provide something more than what currently exists in the play equipment manufacturer's catalogues. During the interviews, when asked if developers visited the housing society after completion to evaluate the space to understand what works or doesn't work, the response was negative. After the complete construction of the housing society, the developer obtains an occupancy certificate or a completion certificate from the local authorities and gives possession of the apartment units to the customers. After customers' possession of the apartment units, developers do not conduct any assessments to investigate what works or does not work for children and adults living in the housing society. Further, developers discouraged meetings between the customers and project architect or landscape architect because they did not want to "get into any litigations" or "go to consumer courts." The reason for the apprehensions to conduct any post-occupancy evaluation is because customers might complain about what is working or not working in the housing society and go to consumer courts threatening the future business of the developers. This has resulted in a lack of understanding of what works for customers after they start residing in the housing society, particularly in terms of children's play and use of other amenities.

As a result, developers are only aware of standardized play equipment that is currently available in the commercial market. These types of play spaces with basic equipment have unfortunately become the benchmark 'children's play areas' for all developers in the metropolitan area. Put simply, developers focus on the sale of the housing society and readily provide what is currently and easily available in the market and is being offered by other developers. To summarize, there are five reasons related to design professionals and developers that result in standardized children's play areas with basic play equipment:

1. Architects and landscape architects believe they do not have the time and resources to design play areas. They feel it is out of their scope of work to design play areas and that it is a job of the specialist;
2. There are no formal guidelines or principles for design professionals and developers to design environments supportive of children's play;
3. Developers and design professionals have a limited understanding of the value of providing a range of play opportunities for young children's holistic growth and development. Instead, they gather inspiration from standardized play areas currently available in the market and from travels abroad;
4. Developers consider children's play area merely as an *amenity* to complete the list of amenities that are promised in sales brochures to the customers. After the sale, they do not invest time and resources to design a play environment appropriate for children's developmental needs. So, they provide what is currently and easily available in the market, i.e., standardized play equipment; and
5. Developers and design professionals do not conduct post-occupancy evaluations to assess current usage of play areas and other amenities to improve future spaces to be designed for children and adults in housing societies.

Building Management Regulations

After obtaining the occupancy certificate from the local authorities and giving possession of the apartment units to the customers, the developer forms a 'Cooperative Housing Society' or 'Residents Welfare Association' by obtaining signatures from 51% of all flat owners. This Society or Association is then registered with the Department of Cooperatives, Government of Maharashtra and a registration certificate is obtained. Then, the first Annual General body Meeting (AGM) is called and the Managing Committee is elected comprising of Chairman, Secretary, Treasurer and other nominal members. This Managing

Committee decides the Building Management rules and regulations of operation and maintenance of society's open spaces, amenities and other related services. In a sense, the society members who are customers or residents of the housing society draft the Building Management rules.

Essentially, the Residents Welfare Association informs the ways in which the overall landscape and amenities are maintained, thus, influencing children's access to these amenities. All the 36 caregivers interviewed mentioned that there are no rules and that children could play everywhere. By contrast, during fieldwork at Yuj-7, I observed parents tell their children, "don't go there [near the plants], the management [Residents Welfare Association] will not be happy." Also, at Ekam-4, I observed the society manager shooing children away from the loose parts construction materials space. For the Residents Welfare Association, it is important to maintain the aesthetic of the open areas of the housing society, including the manicured landscape, sports courts, swimming pools, clubhouse and other amenities. Often, children are not allowed to play in the manicured landscape, touch plants or pluck flowers. For example, at the Green pocket areas at Ambar-2, grandparents only take their children to view the plants but do not allow children to touch them. Similarly, at Ekam-4, there are signs in the housing society restricting children from plucking flowers.⁶⁷ (See Figure 8.1 below)

⁶⁷ I discuss this in detail in 'Caregivers awareness of natural areas (II)' under Section 9.2. Caregivers' awareness of young children's play needs in Chapter 9. Caregivers' Management of Children's Play.



Figure 8.1. Signage restricting residents including children from plucking flowers at Ekam-4
Photo: Atmakur-Javdekar

Further, though developers provide multipurpose rooms inside the clubhouse, residents need to have prior permission from the Residents Welfare Association to use the space for children's enrichment activities. At Shakti-5, the society management did not readily agree for the mother to conduct the mother-toddler program, as they were concerned that the program might turn into a commercial establishment. While there are no written rules displayed by the building management in the outdoors about children's access to play in the housing society, there are certain "behaviors" that are expected from children.

Consequently, parents and caregivers manage children's access to certain play areas through the voice of the Residents Welfare Association controlling the spaces that children can and cannot use. Related to this, in the next chapter, I unpack the specific ways in which

parents, domestic helpers and grandparents from middle-class families manage children's play within and outside the housing societies.

(CHAPTER 9)
Caregivers' Management of Children's Play

While developers and design professionals influence the design of the designated play areas and Residents Welfare Association determines where children can play within the housing society, caregivers are equally responsible for providing children access to these spaces and other play opportunities outside their home environments. In this chapter, I describe the ways in which parents, grandparents and domestic helpers manage children's play, and unpack what influences them to manage play in certain ways. I do this by answering the remainder of the second sub-research question:

2.) What play spaces do children use and not use in the buildings and surrounding areas, and how is this related to:

- c. Particular family issues (e.g. childcare arrangements, number of siblings, parents meeting desires, etc.).
- d. Beliefs and values of middle-class parents regarding young children's play (e.g. free play versus structured, helicopter parenting, alternative commercial choices, digital technology etc.)

Caregivers Response to the Provision of Amenities

Unsurprisingly, the developers' vision of multiple amenities on the project brochure is not fully realized at the actual housing society. After the sale of apartment units, the developer feels his "job is done" and provides what is easily and readily available in the market. Also, during the construction phase, additional amenities are sometimes added as an afterthought⁶⁸. As a result, the amenities provided are not always well planned spatially and are average in terms of quality. In this section, I describe three factors that are important to caregivers for their children in terms of spatial planning and design of amenities including the

⁶⁸ In Chapter 10: Neoliberal Analysis of Middle-class Housing and Play, I explain in detail the ways in which developers contribute to middle-class families' ideal home aspirations through the provision of multiple amenities.

designated play areas. These are: (a) Spatial location of amenities; (b) Parental surveillance; and (c) Size and number of designated play areas.

Spatial Location of Amenities

Aside from the poor quality of play equipment as a common complaint amongst residents, caregivers from Uru-1, Ambar-2, Keerna-3 and Shakti-5 further expressed dissatisfaction about the spatial location of the play area in relation to other amenities. At Uru-1 and Ambar-2, they complained that the central lawn is located away from the children's play area. Likewise, caregivers at Keerna-3 stated that the scattered location of the play area, central lawns, nana-nani park and clubhouse made it inconvenient for caregivers to use the amenities fully. Although some Housing Societies make more intensive use of the central lawn, in most cases, it is used primarily for community events such as celebrating birthdays and festivals. It is not used during other times of the year unless it is located closer to the designated play area where toddlers and pre-school children tend to play freely in the lawn. Also, if the designated play area is poorly maintained, then the central lawn is used. For caregivers, the proximity of the play area to the central lawn is important as it affords more space for toddlers and pre-school children to play freely, and for caregivers to use the lawn in the evening for walking or relaxing with their friends.

Related to spatial location of amenities, caregivers preferred that older children's sports courts and playing fields are located away from the central lawn and designated play area that are used by young children. At Shakti-5, parents raised concerns about the proximity of the designated play area to the concrete playing field because ball games of older children could hurt young children. When the location of the play area is not ideal and quality of play equipment is average, caregivers tend to take young children to the central lawn, which is located away from the designated play area and concrete playing field.

Additionally, through the voice of the Residents Welfare Association, parents of young children ensure that school-age children do not play ball games at the central lawn.

... we ask them [older children] not to play like cricket and football or activities that are not suitable for young children [at the central lawn]. It may happen like, six-year old is hit with a ball, right? So, we ask them to have a separate group. We never enforced any rule but we say that use the lawn for normal [meaning low-impact] activities... So, mostly these kids [young] are doing activities [engaging in free play] here. And the older ones go to the concrete field there. Mostly, they play football and skating there. (Personal communication, Father of two boys (1 and 5 years old) at Shakti and a member of the Resident Welfare Association, 12th July 2017)

Parental Surveillance

Mackintosh's (1982) study demonstrated that the concerns around parental surveillance influences children's ability to play outdoors. In her study, an elevated space afforded parents the chance to view their children from their apartment units and parents felt comfortable to send their children down to play knowing that they could watch them. So, the floor from which parents could visually be connected to their children mattered. Over the past four decades, the idea of parental surveillance has changed from being able to physically view their child playing on the streets or in play spaces to keeping track of their children on phones via surveillance cameras. While young children are primarily dependent on their caregivers to take them to specific places to play, in my study, I further noted that if children were accompanied with domestic helpers, then parents monitored their children through the surveillance cameras installed at the play areas. This was true for Ambar-2. So, for families with young children, the floor at which they live has no relation to the degree of parental surveillance of their children.

Size and Number of Designated Play Area

Across the seven HSs, parents' and caregivers' concerns around the number of play areas and their sizes can be best described with the help of three broad scenarios:

1. Scenario One: There is only one designated play area at the HS and irrespective of the size or location, everyone plays there. Here, parents

complain about the small size or the poor location of the play area, but eventually bring their children to play in these play areas as that is the only place with play equipment. For example, Ambar-2 and Keerna-3.

2. Scenario Two: There is only one play area and irrespective of the size, caregivers avoid going there because the play area is dirty and poorly maintained. For example, Uru-1 and Shakti-5.
3. Scenario Three: There are multiple play areas and caregivers take their children to play at the one play area that is larger in size and has more play equipment. For example, Dhara-6 and Yuj-7.

Interestingly, the idea of the size of play area is a subjective one. At Ambar-2, parents expressed the opinion that the existing play areas are “too small” for the number of children living there and that the play area gets “very crowded” in the evenings. Similarly, Dhara-6 has two small play areas closer to the residential buildings, but the five mothers interviewed stated that all children come to play at the central play area and that the small play areas are not used anymore. A parent from Dhara-6 complained about the small size of the phase-wise designated play areas.

I feel for the amount of space here [central play area], it is good enough because earlier it was there [Phase-1 small play area]. It is a small play area...Now, I feel that in comparison to that, this is very good here. (Personal communication, Mother of a seven-year-old boy at Dhara-6, 4th July 2017)

Contrastingly, families who moved from crowded cities like Mumbai felt the existing play area and open spaces in the housing societies was a blessing. “...It is really horrible staying in Bombay [now, Mumbai]. They don’t have space. As in, you don’t have space for kids to play over there...so, for me, this [referring to the amenities and open spaces] is the ideal place you know”, stated a parent from Dhara-6.

Clearly, in the case of multiple play areas (i.e., at Dhara-6 and Yuj-7), caregivers prefer the play area that is larger than the others and where all children go to play. At Dhara-6

where there are three phase-wise play areas, parents preferred to bring their children to one space (i.e., the large central space with play area) where all children come to play. At Yuj-7, parents, domestic helpers and grandparents took children to play at the spatially larger play space as “this space is bigger than other places” and because “all children come here to play”. One may recall that Yuj-7 was consciously designed by the developer to assure that every child has a small play area close to their residential building. This planning concept is in line with the 2016 Dhaka study by Islam, Moore and Cosco where the research recommends adjacent open spaces close to homes to encourage children’s (9 – 14 years) outdoor activity. However, the five caregivers interviewed at Yuj-7 said that no one took children to play at the multiple smaller play areas scattered across the HS. The quote below is the opinion of 1.5 years old boy’s mother at Yuj-7:

So, I think they have all the things in the society, but not at one area. ...I think it is a negative because they could have increased this area and little bit over there also. Like, they have that... I don’t know what it’s called, like, one person sits over here, and one person sits over here...seesaw! So, they have that at two places, but I have never seen anyone over there [referring to the smaller play areas] like, playing. So, if it would have been here [referring to the play area where all children generally play], it would have been easy for kids to play. (Personal communication, 2nd November 2017)

Furthermore, all 36 caregivers across the seven HSs identified the *presence of other children* as an important factor influencing them to bring their children to a certain play area or open space for play. Clearly, caregivers of young children prefer one large space for their children’s play. I unpack the reasons for middle-class families to bring their children to one play area or a large open space within the housing society on a daily basis in Section 9.3. Children’s play and adults’ socialization as an evening ritual.

Though developers display multiple amenities in their sales brochures to attract customers to buy apartments in their housing society, after the completion of the project, not all customers are satisfied with the spatial planning and quality of the amenities provided. This is because when caregivers start living and using the open spaces and amenities, they

realize that the spatial location of the amenities including the designated play area, size of the play area and quality of the play equipment are important for young children's play.

However, these issues go uncorrected in future design and planning of housing societies because of two reasons:

1. Prior to sale of the apartments, the developers' sales teams and their in-house designers interact with the customers to find out the range of amenities that customers want in their housing society. The developer then informs the project architects and landscape architects the requirement of the customers in terms of the list of amenities. There is no interaction of the customer and the project architects or landscape architects who *actually* design and spatially plan the housing society. This creates a gap in understanding the customer needs and effectively translating it into the physical environment by the project architect and landscape architect.
2. Post occupancy evaluations help understand the concerns that can be improved in the design and planning of future housing societies. Currently, there are no post-occupancy evaluations of a completed project by any of the design professionals and developers to understand concerns faced by the caregivers when they start living in the housing society.

Caregivers' Awareness of Young Children's Play Needs

In this section, I describe caregivers' play values and their preference for elements and materials that they feel are important for their children's play; and the current play values of middle-class families. Further, I confirm my assumption that parents are more aware about older children's organized sports and games and that they view sports as essential for children as young as four years of age.

Caregivers' Play Values

During thematic analysis of caregiver interviews, I inductively identified seven themes that define the play values of caregivers from middle-class families. These play values are caregivers' response to the question, "Do you think play is important for your children? If so, Why?" See Table 9.1: Caregivers' Play Values below:

Caregivers' Play Values	Parents (n=27)	Grand- parents (n=5)	Domestic Helpers (n=4)	Total number of caregivers (n=36)
1. Play is a form of physical exercise	27	5	4	36
2. Play helps children socialize	27	5	4	36
3. Play increases hunger, tiredness and supports sleep	19	0	4	23
4. Play makes the mind fresh and alert	2	2	0	4
5. Play supports overall development	3	0	0	3
6. Play promotes creativity	1	0	0	1
7. Play is a form of leisure for children	1	0	0	1

Table 9.1. Caregivers' play values

All 36 caregivers including parents, grandparents and domestic helpers viewed play as a *physical exercise* to expend energy and as important for children's *socialization*. Parents identified gross-motor play as integral to the idea of play. A mother of a young boy stated, "In running they [children] get muscle power, they don't get overweight, they have their physical activity, they are active, cycling also strengthens their muscle, they get height by that [or become tall], climbing on the ladder can improve their coordination." Additionally, parents of toddlers and pre-school children stressed that play was a way to meet friends and improve their social interaction.

An interesting theme that surfaced during the analysis is related to an early classical play theory called, 'Surplus Energy Theory' that play is the result of surplus energy and that when children play, they expend energy (Schiller, 1873; Spencer, 1875). Caregivers believed that when children play, they get hungry, are easily tired and it's easier to put them to sleep. Out of the 36 caregivers, 19 parents and four domestic helpers strongly felt that play was a means to *exhaust* the child at the end of the day. Mother of a 5-year-old boy stated, "when he

plays, then he will feel hungry, he will sleep.” Extending this idea of play to all young children, a domestic helper of a 1.5-year-old boy confirmed:

Because when kids play, they get hungry, they sleep well when they are tired. So, it is good for them too. They have a full sleep. Kids play all day and then they get tired and sleep well. So, that is good when they get tired, then, they are in good health too. So, for this it is good to play. (Personal communication, 2nd November 2017)

Only a small number of parents believed that play supports children’s mental development and creativity. Out of the 36 caregivers who were interviewed, only three mothers believed that play was important for children’s overall development. These mothers have or had some affiliation with early childhood programs that were oriented towards play. For example, the resident who runs the mother-toddler program at Shakti-5 who is also a mother to two boys (1.5 and 9 years of age) said:

I think playing makes them fearless otherwise it is you know structured all the time and I think it is important for their overall development. I cannot really explain it, but it is very very important. I think you know, in every aspect, whether social skills, or their gross motor skills or their fine motor skills, because right now, these are the developments that we are looking for. And these are the developments that are happening. So, I think *playing* [emphasis by parent] is what they really need and not so much of teaching or learning. By playing they learn a lot more. (Personal communication, 7th July 2017)

Furthermore, middle-class families view play as a supportive practice to mainstream education. A mother of two girls (1.5 and 5 years of age) stated that along with formal education, play is necessary. She believed, “if the child is engrossed only in studying, [that] child according to me, won’t be a normal child.” Further, two parents and two grandparents of young children were of the opinion that the mind of a child becomes fresh and that “their focus improves” after playing outdoors. Another mother of an eight-year-old boy said that her son’s concentration during studies improved after playing. She attributed his focus and improved concentration to play, stating, “...when he plays in the evening, his mood is good and he is fresh. So, I feel playing is important for kids. There is physical and mental development for kids.” Likewise, grandmother to a 4.5-year-old girl insisted that if children

are kept home all day, then they develop a fear to go outdoors, thereby, eventually impacting their brain development. She stated,

It is important for them [for children] to play. Their brain will develop. Else, brain does not develop. Kids should get a full chance to play [outdoors]. If you pin them down and keep them [indoors] in fear, then it is not good for kids. (Personal communication, 23rd June 2017)

Related to the value system that ‘play makes the mind fresh and alert’, a mother of two boys (4 and 10 years of age) stated that when children play, “then their mind changes, so they will think more, [and that] they will be creative.”

Lastly, only one mother of an eight-year-old boy expressed play as a form of leisure for children. She said that though children today go to many classes, they are not really at leisure or “*swachanda*⁶⁹’ like [when] there is no binding” for children. The mother strongly felt that at structured classes, children are “stuck in that environment for one hour. They are not able to do [what they want] freely”. Further, she insisted, “what everyone [all children] wants is leisure time.” where “they should be able to do whatever they want in whatever way they want to play.”

To summarize, caregivers primarily value play as important for children’s physical development and as an opportunity for socialization; and more than half of the caregivers valued play as an essential tool to sap children’s energy at the end of the day. Very few parents valued play as essential for children’s leisure, creative growth and overall development.

Caregivers’ Array of Play Diversity

Below, I represent data from the 36 caregiver interviews within the Array of Play Diversity analytical framework to represent the range of ‘Physical Elements and Surfaces’ that caregivers wish for their children at housing societies. For this APD, the number

⁶⁹ Swachanda means leisure in Hindi.

indicated inside each cell is the number of caregivers who stated their preference for the corresponding Physical Elements and Surfaces.

Caregivers' Array of Play Diversity (APD) Overview of caregivers' awareness of children's play needs
36 caregivers = 27 parents + 5 grandparents + 4 domestic helpers



























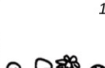






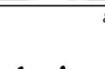

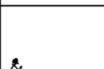
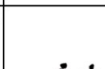




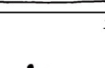

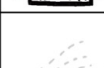





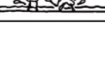









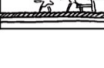





PEaS /EPQ	a	b	c	d	e	f	g	h	i
I Fixed Play Eq.	 36	 4		 36	 36	 35	 36	 36	 36
II Natural areas				 9	 5				
III Seating /table area	 36								
IV Move-able Eq. & Ma.		 11	 16						
V Manip- ulable Ma.	 8		 3	 4					
VI Water	 1								
VII Surface Tex. & Ma.			 28						
VIII Retreat Space									

Figure 9.1. Caregivers' Array of Play Diversity

Caregivers' Awareness of Fixed Play Equipment-I

When I asked the 36 caregivers (27 parents, four domestic helpers and five grandparents) how they would like developers or design professionals to improve children's play areas, their initial responses were limited to the basic play equipment in the designated play areas. At housing societies with old or rundown play equipment such as Uru-1, Keerna-3, Ekam-4 and Shakti-5, all 15 parents wanted the existing play equipment to be replaced with new equipment. At the remaining three housing societies, Ambar-2, Dhara-6 and Yuj-7, the play equipment is fairly new and in good condition. At these societies, caregivers felt satisfied with the range of play equipment and felt "nothing else is needed" as there was nothing else to add or improve to the existing play areas.

Actually, I don't know what can be more [provided in terms of play equipment]... These are the things that are available and so, that's all there is. What is better? I mean, like you need to see something [different] and then realize that you need that. (Personal communication, Mother of a five-year-old boy at Dhara-6, 29th July 2017)

However, caregivers were concerned about the provision of bucket swings for infants and toddlers and swings for older children. 19 caregivers felt that an increase in the number of regular swings is necessary, so a large number of children could enjoy the swings. "You know, here there are many fights related to the swings because there are only four swings and everyone wants to use the swing. We need more swings.", stated a mother of 6-year-old girl at Dhara-6. Further, four caregivers insisted that the developer should provide bucket swings. Their awareness about bucket swings for infants and toddlers is from experiences of living abroad or in other Indian metropolitan cities. Mother of a 3.5 year old at Yuj-7 said, "So, I like in US, the swing for smaller kids. The bucket swings. That is so safe for small kids. The new societies that are coming up, they are providing I think."

Caregivers' Awareness of Natural Areas-II

As mentioned earlier, the Residents Welfare Association includes only a few parents from the housing society. This association restricts children from playing with plants or engaging with natural elements in landscaped areas of the housing society. During case study research, I wanted to investigate if parents and caregivers who are not part of the Resident Welfare Association felt the same way about children's access to the manicured landscaped areas. I found contrasting opinions about children playing with mud, grass, plants or other natural elements.

22 caregivers strongly expressed the opinion that children should not be playing in the mud, as their clothes can get dirty and that it is unsafe. In contrast, 14 caregivers including all five grandparents felt that engaging with sand and mud, climbing trees and getting dirty is an essential part of growing up. The grandfather of two girls (3 and 5 years of age) stated: "Mud is good. It is generally said, it is good for health too. Because when we were kids we played

in the soil and we got strong.” Further, he reflected upon his childhood experiences of playing in the mud and climbing trees. He stated:

Earlier, we climbed a lot of trees, we have a lot of fun. We used to jump off the trees, break a bone. But today kids don’t have that chance. We used to climb mango trees to get mangoes. We had a lot of fun. (Personal communication, 23rd June 2017)

Grandparents felt that children today are missing out on opportunities to play outdoors because their parents are worried that their children might get hurt (physically) and that they do not like their children getting dirty. So, parents keep children at home all day or send them to structured classes where they are supervised under an adult. Interestingly, when parents reflected about their childhood experiences of play, they said that they played outdoors unsupervised, climbed trees or that they visited or lived on farms. Father of two young boys (1 and 5 years old) stated:

I grew up in a small town and then we moved to Pune. But the childhood itself that was again farmland and other things right. So, we had an open field. The experiences we had, I don’t think these kids will have. (Personal communication, 12th July 2017)

While parents reminisced about their carefree childhood outdoors, more than half of them did not want their children to play in the mud or get dirty outdoors because they always wanted their children to be clean and “well groomed.” A parent confirmed that if children get messy, then it meant “more work” for caregivers to clean up after their play. Further, parents believed that it was unhealthy for children to play in natural areas as they would catch germs and fall sick. Confirming these parents’ apprehensions to send their children outdoors to play in natural areas, the grandfather of two young girls reinforced:

They [children and adults] feel all that [playing in natural spaces] is dirty or yucky or ghaan [Marathi word for disgusting]. See here [pointing to the manicured landscaped areas] they feel it is all posh. They have a nice swimming pool. In our childhood, we used to bathe in the river even if the water was dirty. (Personal communication, 23rd June 2017)

In contrast, the mother who runs the mother-toddler program insisted that children do not need play equipment and that a well-designed play garden is essential for children. “I

think outdoor play area is a must. And not really designed. I think something which is not purely designed as a play area works.” Evidently, a majority of caregivers are not aware about the range of physiological and psychological benefits including (emotional development, overall resiliency and well-being) of playing in natural areas.

Caregivers’ Awareness of Seating/table Area-III

Overall, during my observations across the seven HSs, I found that a place for caregivers to sit is essential as it helps them watch their children when they are playing and that it also affords them the opportunity to socialize. Mother of 3.5 year old boy from Ambar-2 stated, “I can sit here [referring to the parapet wall] and keep an eye on him.” Since, there were seating areas in all the play areas across the Housing Societies; so, caregivers did not find it necessary to specifically suggest places to sit. Also, they were not conscious about elements such as grass mounds, tree stumps or walls of different heights that could afford sitting.

Caregivers’ Awareness of Moveable Equipment and Materials-IV

Less than half of the caregivers expressed interest in providing toys to support their children’s play in the designated play areas or other open spaces. Only 11 caregivers asserted that developers should consider providing toys for children (such as, balls) to play at the play area. Parents complained of children’s fighting amongst themselves when they bring toys from home, as not all children like to share with their friends. The mother of a six year old said, “What happens here is that, the kids start to quarrel that ‘someone took my ball’”, then “someone *else* [emphasis by parent] took my ball”. If there is a ball here, then everybody plays, and then has to leave it back here.” So, caregivers feel that developers should provide standard toys such as large balls for toddlers and pre-school age children to play with.

A majority of parents (n = 25) felt that children’s toys are meant for indoor play at home and are not something to bring out to the common public space to use for play in the

designated play area. Instead, parents strongly felt that outdoor play was an opportunity for children to socialize and make new friends.

I don't encourage toys in the play area, that's why I am not giving actually... I want him to have more physical activity. Because in the apartment, closed and all, no proper ventilation. No outside playing nowadays. So, mostly, I encourage him to play outside. And interaction with other kids. Other than toys, this is better. He obviously has lots of toys. (Personal communication, Mother of 3.5 year old boy at Ambar-2, 22nd June 2017)

This desire for parents to ensure that their children socialize with other children is related to smaller family sizes consisting of one or two children when compared to prior generations where parents had five or more children. The same mother stated:

We played with our siblings and nowadays, siblings are rare, so, they play with their friends and all. And they generally go to the tabs [referring to I-pads or tablets] and other toys. In our time, there were less toys and we were busy playing with our siblings. (Personal communication, 22nd June 2017)

Today, middle-class families have one or two children and there is a desire to buy the latest toys and gadgets for their children. While 16 caregivers felt riding cycles and scooters are essential for children's overall physical development, interviews with domestic helpers highlighted the influence of parents to use cycles and toys during play. Domestic helpers stated that parents buy toys and cycles for their children in the expectation that the helpers will teach children how to use them.

And whatever their parents buy for them, it is important that they use it. Just yesterday, her dad asked me, if she is riding her cycle well. And I told him that yes, I don't need to hold her anymore for support. So, when we say this, it makes them happy and that when they buy things for their children and we make sure the child uses it. (Personal communication, Domestic helper of three-year-old girl, 22nd June 2017)

So, caregivers awareness of moveable equipment and materials is about buying toys and cycles for children, and providing balls to play catch at the designated play areas.

Caregivers' Awareness of Manipulable Materials-V

A small number of parents preferred sand as a surface (n=8) or in the form of a sand pit (n=3) at play areas. Parents preference for sand related to their childhood experiences of

play and the desire for a similar play experience for their children in the closed environment of the housing society. “Yes, I feel that there should be a sandpit. Because we are from Kerala, so, when we go there and we see that [referring to the beach], then we feel it is not there here [referring to the designated play area].” – Mother of 3.5 year old boy at Ambar-2.

Further, parents preferred that their children played in sand rather than with gravel because “hands become very dirty and black”. As stated earlier, grandparents wished that children played in natural areas. Specifically, four grandparents wished for mud or soil surface instead of sand as they felt mud was essential for children’s growth and development. Only one mother supported the notion of children playing with mud stating that mud gave children the opportunity to “make something”. However, a majority of parents wished for rubberized play surfaces at the play areas because they were worried that their children would get rashes from the sand, catch germs or get dirty. Further, even in Housing Societies, where the gravel or sand surface was well maintained, parents preferred to keep their children away from these manipulable surfaces. The mother of a toddler at Yuj-7 stated,

No no, sand I think would hurt them. If it will not hurt them, then they will pick and put it in their mouth. Ultimately, it will be problematic for them. That’s why I do not send him over there [referring to a play surface with gravel], and I keep him over here. (Personal communication, 2nd November 2017)

Caregivers’ Awareness of Water-VI

Only one out of the 36 caregivers suggested a baby pool for children to splash water regularly. As discussed in Chapter 7, caregivers viewed swimming pool as a feature used mostly by fathers.

Caregivers’ Awareness of Surface Textures and Materials-VII

A majority of caregivers (n=28) wanted rubberized surface in the play areas because it “acts as a cushion” protecting children from getting hurt during play. At Yuj-7, where there are two different types of play surfaces, caregivers preferred for play equipment to be

installed at rubberized play surfaces. Though rubberized surface is a preferred play surface, parents also complained that after a few rainy seasons, the surface gets damaged and children tend to start digging and removing the rubberized surface. “They [five-year-old children] scratch this. Actually, there [pointing to a spot on the floor of the play area]... there was a damage” informed the Mother of a 3.5 year old boy at Ambar-2. When investigated further, I learnt that improper installation of the rubberized play surface on poorly drained concrete surface leads to water clogging and damage of the rubberized play surface.

Caregivers’ Awareness of Retreat Space-VIII

Retreat spaces during play include playhouse, store, tent, nook or cubby that encourage children to engage in pretend, social and cooperative play. During the interviews, when I asked caregivers specifically about the need for a retreat space for young children during their play, parents stated that they did not need any of such spaces as they played with their playhouses inside the apartment units. All caregivers associated play with being outdoors, away from the closed indoor spaces of apartment units and did not seek for any kind of retreat spaces within the designated play areas. Mother of a five-year-old boy emphasized:

Yeah, they get bored, right. Entire day, being at home. Anyone. Even adults if entire day they are at home, right. You want fresh air. So, same with kids, they want to see other kids. They enjoy seeing other kids. (Personal communication, 29th June 2017)

Evidently, caregivers understanding of the range of appropriate play opportunities for young children is largely related to standardized play equipment installed on rubberized surface. Majority of caregivers are concerned about their children getting dirty and prefer that their children do not play in natural areas, or with manipulable materials like sand or mud. In the need to keep their children clean, caregivers restrict children to sensory play, thus limiting their opportunity to explore fine motor skills. Overall, caregivers’ view of play opportunities

restricts children to a sterile play environment where they do not have opportunities to fully exercise their right to play and to support their holistic growth and development.

Caregivers Value Sports and Games

Caregiver interviews reinforced my assumption that parents have more knowledge about sports and games for older children and know little about the potential value of a wide range of play opportunities for younger children. When asked about what caregivers would like to change in the housing society to specifically support young children's play needs, parents always first addressed the play needs of older children.

Now, it is well developed. I don't think I have any complaints. There is so much beautification in the society and on the other side too, the phase 2 of this society, even there they have a central area where is badminton and nets put up over there too. (Personal communication, Mother of eight-year-old boy at Ekam-4, 12th July 2017)

Related to sports and games, 23 caregivers responded that organized sports are important for the development of young children too and stated that a range of structured sports activities should be provided at the housing society, so, pre-school age children could be engaged.

So, for improving existing societies, it's...as the kids grow up, you need various sports activities, so, right now, there are no sports activities, compared to other complex [means housing societies]. So, other complexes have badminton court or tennis court or squash tables, so, this society is not having that. So, sometimes it becomes easier if kids pick up any sport. (Personal communication, Father of two boys - 1.5 and 9 year old at Shakti-5, 7th July, 2017)

Thus, caregivers value sports and games for children as young as four years of age. To summarize, caregivers understanding about the value of play and the range of physical elements, materials and surfaces that are essential to support young children's play are restricted to what is available in the immediate environment, and their child-rearing views based on personal life experiences. Also, caregivers primarily rely on developers and design professionals to provide an appropriate environment for their children's play within the housing society. Further, middle-class parents today associate sports and games for not just

with older children but with children as young as four years of age. In this context, caregivers feel the range of play opportunities is insufficient inside the housing society and send their children to sports facilities outside their home environments. I unpack this further in Section 9.4. Structured lives of young children from middle-class families.

Children's Play and Adults' Socialization as an Evening Ritual

Regardless of the number of amenities, the diversity of play opportunities or overall spatial layout of a housing society, caregivers bring children down to play at one designated or undesignated play area in the evenings. I associate two primary reasons for this behavior.

Children Socialize with other Children:

For middle-class families living in high-rise housing societies, playing outdoors is an evening ritual for parents with young children because they feel it is important for children to get outdoors, meet other children and get some fresh air as young children typically spend most of their time indoors inside the apartment units.

I bring her down everyday. Then her mind remains fresh because she is home all day. I am always in the kitchen working and I don't like that the kids are always in the kitchen with me, this is why I bring them down everyday. So, she is able to play with other kids. (Personal communication, Mother of 3.5 year old girl and 9 year old boy at Uru-1, 14th November 2017)

Additionally, children too look forward to meeting and playing with their friends in the evenings. Reinforcing this belief, mother of a six-year-old girl at Dhara-6 confirmed, "If [other] children are not there, then they play for 15 or 20 minutes and then they say, "Lets go, mumma."

Caregivers Socialize with other Caregivers:

Another reason for caregivers to encourage children's play in the evenings is due to the presence of other caregivers. Middle-class families today are nuclear families who earlier lived in joint family settings in different parts of India. These young families continue to seek family-like support from their neighbors within the housing society. Particularly, at Shakti-5,

the idea of the mother-toddler program was initiated for new mothers to socialize and support each other in raising their children and to arrange play dates. New mothers are often lonely and seek support from family or friends. Traditionally, new mothers received help and support by living in a joint family system or by living closer to their parents or in-laws. With young families moving to new cities and living in Housing Societies, they often miss the larger family network.

The problem that I faced there in Scotland was... similar problems others face here because lot of them are coming from outside Pune in Wakad area, so, they don't have a lot of family members here, staying with them. So, they think that this is a good relief for them. (Personal communication, Mother who started the mother-toddler program at at Shakti-5, 7th July 2017)

However, not all housing societies have mother-toddler programs and neither do all mothers at Shakti-5 attend the program due to household chores or work restrictions. So, gathering in the evenings at one large space where children play is a way for mothers and other caregivers to reinforce their friendship amongst themselves. The designated play area is where children and adults gather in the evenings, unless the play area is poorly maintained. For example, at Uru-1 and Shakti-5, one may recall that caregivers primarily take children to play and socialize with their neighbors in alternate open spaces such as the small plaza (at Uru-1) and central lawn (at Shakti-5) because the play equipment at the designated play areas is poorly maintained.

So, irrespective of the play diversity, quality of play areas or range of sports related amenities, caregivers bring their children to play at one place because other caregivers bring children to the *same* place to play. Put simply, children's play is as much a matter of caregivers' socialization as it is of meeting children's needs.

Structured Lives of Young Children from Middle-class Families

While the focus of my research was primarily to understand where and why children play at housing societies, a consideration of the relationship of play to children's structured

lives was inevitable. The need to send children to activity classes or structuring their lives around enrichment activities is mostly related to the phenomenon of two full-time working parents in nuclear middle-class families. Interestingly, there are few mothers who are homemakers and demand to send their children to specific classes throughout the day. This is largely related to parents' desire to make their child "well-rounded" in all aspects of their growing childhood. Below, I draw upon five themes that define contribute to the degree of structure in the lives of young children from middle-class families. The five themes include: (a) Play environments outside the housing societies; (b) Daily rhythm of young children; (c) Organized sports and games; (d) Enrichment activities; and (e) Academic pressures on young children.

Play Environments outside the Housing Societies:

While there are two public parks in the Wakad area, they are not a popular place for caregivers with children. When asked why parents do not take their children to these public parks, they responded that there is nothing different there from what is provided inside the housing society. Specifically, parents stated that since the play equipment at the designated play areas at the public parks is similar to that in the play areas inside the housing society; and that it would be an additional and unnecessary task in the day to take them outside to a park to play when nothing different was offered. A working mother of a 3.5-year-old boy stated,

Actually, there is [a park outside]... but we don't go because of traffic. Already play [area] is there here [in the housing society]. I have to take him in vehicle and while returning it will be dark and then I have to cook and all. (Personal communication, 22nd July 2017)

However, parents stated that they do take their children outside to play during the weekends to the malls. Commercial indoor soft play areas are popular amongst middle-class families with young children. The culture of going to malls on the weekends is prevalent and this activity appears to be a strong defining feature of middle-class families. During

interviews, all caregivers mentioned that they spent their weekends at the malls, shopping, watching movies or taking their children to the indoor soft play zones. Developers recognize this and try to locate malls as an essential feature that needs to be located in close proximity to middle-class families' housing societies.

They [middle-class families] are definitely looking for good education... They have now Phoenix [referring to a popular chain of commercial malls] is coming in Wakad. It is a mall in 16 acres. So, it is definitely for affordable people but I think [with the mall coming] everybody [will] have a better lifestyle, great lifestyle. (Personal communication, Dhara-6's developer, 21st September 2017)

Undoubtedly, there has been a shift from informally playing on streets and in the neighborhood parks in the 80s and 90s to a greater reliance on formal sports facilities and designated play areas with standardized play equipment within housing societies and soft play zones inside commercial malls.

Daily rhythm of young children:

An insight into the daily rhythm of young children might be worthwhile to better understand how parents organize their children's time. The table below provides an insight into the typical weekday of the young children from middle-class families living in high-rise housing. The categories for the time of the day were developed as part of the interview protocol for caregivers (See Appendix E: Semi-structured open-ended interviews with parents and caregivers of young children). While infants and toddlers spend their time primarily inside the home for most of the day and step outdoors in the evenings for play, pre-school and school age children attend school and enrichment activities in addition to playing with their friends in the evenings. Sometimes, school-age children (6 – 8 years) accompany their parents after dinner for a late night stroll around the building. In the following themes, I discuss the full range of enrichment classes and sports activities of pre-school and school-age children.

Age group/ Time of the day	1 – 2 years of age (Infants and Toddlers)	3 – 5 years of age (Pre-school age children)	6 – 8 years of age (School age children)
Before breakfast	At home	At home	At home
After breakfast	Sometimes come down to play	At school	At school
After lunch	Nap	At school or nap at home	At school
Late afternoon (3 PM)	Play inside home or watch TV/digital device	Back from school, eat, watch TV/digital device, go to enrichment activity classes or sports classes. Sometimes, younger children nap in the afternoon.	
Evening (5 PM)	Play outdoors with friends within the HS	Play outdoors with friends within the HS and/or go to enrichment activity classes or sport classes.	
After dinner	At home	At home	Sometimes, parents go for walks within the HS, so, children accompany them.

Table 9.2. Typical daily rhythm of young children

Organized Sports and Games

From Section 9.2 on Caregivers’ awareness of children’s play needs, it is evident that adults strongly associate the need for play opportunities with sports and games for children – young and old. Caregiver interviews reveal that children as young as four years of age attend sports classes because parents feel that organized sports is essential for their children as they can excel in it like the way they can excel in academics. Sports classes typically include skating, swimming, karate and football. When these classes are not offered inside the housing societies, adults take their children outside the housing society to formal sports facilities. It is important to note that though sports related amenities are provided at housing societies, parents feel their children are “not getting enough” at the HS in terms of the range of play opportunities. This is evident at Dhara-6, where though a swimming pool is provided, parents take their children outside of the HS to a formal swimming facility that has coaches and trains children all year round. “I then take her for swimming. It’s like six days a week”, stated mother of two young girls (5 and 1.5 years of age) at Dhara-6.

Enrichment Activities

Moreover, caregivers viewed children’s socialization during play at housing societies as an opportunity to learn skills, including the learning of other Indian languages. Since, middle-class families living in high-rise housing developments have migrated from different

regions of India, parents feel their children get to learn other languages when they play with other children. “There are kids from everywhere in this society. In our home in Gujarat, there are only Gujaratis, so, we never learnt Hindi.” – Grandmother of a 3 year old boy and 6 year old girl. Another mother from Kerala at Ambar-2 felt the same. She further stated that she would send her 3.5 year old to activity or enrichment classes if he can pick up Hindi by meeting other children; she stated, “If his language gets better, I will send him [to Karate class].” Relatedly, there are many enrichment programs such as music and language learning for children as young as 18 months. In my research, I did not interview any of the coordinators or directors of such programs but as a new mother, I am aware of the numerous programs offered to young children to develop their music, language and learning skills.

Essentially, middle-class parents focus on activities where their children are learning and not really engaged in free play. Caregivers are often focused on providing enrichment activities ensuring their kids are attending dance, music, language, art or sports classes, so their children can become “well rounded.” This attitude of parents was evident across all caregiver interviews where they focused on keeping children “busy” through the day by sending them to a daycare or kindergarten followed by enrichment activities in the evenings or on the weekends for children as young as 2.5 years of age. Below, I provide a brief collection of quotes from caregiver interviews that outline the ways in which parents keep their children occupied on a daily basis:

I feel these kids get very little time to play. Lot of other kids go to other classes and are busy. Nowadays, there are so many activities, there is not enough time for all the activities. Skating, dance, karate. Parents feel their kids should go to these classes. (Personal communication, Grandmother of a 3.5-year-old boy and girl at Ambar-2, 22nd June 2017)

We are going to start karate classes for her from the 1st of next month. She has already started swimming. (Personal communication, Grandmother of a 4.5-year-old boy and girl at Keerna-3, 23rd June 2017)

She [referring to 6 year old girl] slept and woke up, went to tuition class, and she will come down now for some time to play, perhaps, for an hour or one hour fifteen

minutes. She'll play here till 8 PM and then will go back up. She will eat and then sleep. (Personal communication, Grandfather of three-year-old boy and six-year-old girl at Keerna-3, 23rd June 2017)

I then take her for swimming. It's like six days a week. Then, like, I go around 4.30 [PM] and by 5.45 [PM] I come back. (Personal communication, Mother of two young girls (5 and 1.5 years of age) at Dhara-6, 4th July 2017)

The desire to send children to enrichment activities is also related to the fact that both parents are working and do not have enough time to spend with their children. Parents prefer to leave their children at enrichment classes where they feel their children are learning instead of staying at home with a domestic helper. Linked to this, parents are also concerned about the safety and prefer to leave their children in an environment that offers enrichment programs with full access to surveillance cameras. By law, children younger than three years of age are not accepted formally into kindergartens or preschools. So, infants and toddlers (from 6 months up to 3 years) along with domestic helpers are typically sent to activity classes instead of a formal pre-school. In this context, sending young children to enrichment activities after their kindergarten or during the day with domestic helpers is a supplement to existing pre-schools or a way of alternate schooling for middle-class families.

Academic Pressures on Young Children

Lastly, parents are so focused on the academic success of young children that this can lessen a focus on the value of play. It is common practice to send children to structured tuition or after school study classes. At these tuitions, children complete their homework and study what is taught to them during school time. Young children are often taught phonetics and basic mathematics skills of counting, addition and subtraction. During an interview with a mother of a five-year-old, I learnt that children as young as four years of age attend tuitions. Though the parent stressed that she sends her daughter because “she likes to study in a group”, the culture of academic pressure is seen early on amongst parents. Interviews with

grandparents confirmed the academic pressures on young children today. The grandmother of a 4.5-year-old girl underscored:

Now, parents stress that their kids have to do the task given to them and study no matter what. Nowadays, kids in kindergarten, nursery and playgroup are put under pressure... during our time, this type of burden was there when kids were in 10th class. Do this, do that... kids get scared. (Personal communication, 23rd June 2017)

Another grandfather of two young girls (3 and 5 years of age) attributed the academic pressure on children to the smaller size of families. He said:

During that [earlier] time, there was not much tension about studying. Now, there is a lot of pressure. Everyone feels that their children should study more and work hard. Now, there is only one kid... one or two. Earlier, five or six kids, one or two would shine and come out as bright kids and that was enough. (Personal communication, 23rd June 2017)

So, middle-class families are currently defining young children's lives outside of their housing societies by sending them to structured classes such as arts, music and dance related enrichment classes and academic classes or tuitions.

To summarize, the physical environments available for children's play outside the housing societies are limited to public parks with standardized play equipment and soft play areas and gaming zones at the malls. Also, middle-class families' child-rearing attitudes are conspicuously expressed through the enrichment activities (e.g. dance, music, language, organized sports or other art-related classes) they enroll their children in from a young age. Lastly, parents expectations of academic success from young children further underscores the desire to send children to tuitions or structured classes where children can finish their homework and reiterate what they learnt at school.

Despite this more general perspective on the need for a structured life for their young children, filled with enrichment activities and academic progress, there are also parents with other views. The mother at Shakti-5 who conducts the mother-toddler program feels otherwise, for instance, says this with regard to their younger boy who is 1.5 years old.

Yeah, our approach has changed when the first one grew up and this one because being the first one you tend to... learn red, white, yellow, colors, numbers, ABCD, and we are not going in that direction for this kid. So, we want him to take it easy. (Personal communication, Father of 1.5 and 9-year-old boys at Shakti-5, 6th July 2017)

Another mother of a six-year-old boy at Uru-1 also felt that being ambitious about their children's success seems meaningless. She said:

Sometimes, they have started to realize that being so ambitious about their kids and being so over-powering over them, that-you do this, you do that. [That] doesn't lead them anywhere. So, you need to take a back seat, be there for them when required but let them choose their own path. Their field of interest. (Personal communication, 22nd November 2017)

Evidently, there is a need to raise awareness amongst parents about the value of play and for non-structuring their children's lives. There is also a need to improve the existing play opportunities that are being offered to young children within and outside the housing society. To address this, in Chapter 11, I outline the kinds of improved awareness raising that is essential with respect to play and the design principles that are needed to address the physical environment. Importantly, this way of structuring young children's lives by middle-class families is similar to the construction of middle-class childhoods in other Asian and Western countries.

(CHAPTER 10)
Neoliberal Analysis of Middle-class Housing and Play

So far, I have established that there are two large umbrellas that contribute to young children's play opportunities in high-rise housing developments: (1) The play environment that is made available for children by developers and design professionals; and (2) Parents' and caregivers' ways of using the designated and undesignated spaces based on their own play values and beliefs. In this chapter, using a neoliberal lens, I unpack the transformation of middle-class housing environments and its impact on children's play in Pune city. I do this by answering the following four additional sub-research questions:

- 4.) Why are middle-class families moving into high-rise housing developments?
- 5.) How are developers and design professionals accommodating to this change of high-rise housing developments?
- 6.) What do middle-class families want for their children in the physical environment of high-rise housing developments?
- 7.) What does this shift in housing typology mean for children's play?

From Wādās to High-rise Housing Developments

The Peshwas who ruled Pune in 18th century had an austere lifestyle with no inclination to build large public buildings, grand monuments or beautiful palaces. They were not great city builders but the wāda or a traditional house was fully developed during their reign (Diddee & Gupta, 2013). Wadās are traditional homes with multiple rooms surrounding a large internal courtyard that were meant to house large joint families (See Figure 10.1. below). An upper-caste (Brahmin) or rich family owned and lived in one large Wadā that could support their entire household, while middle- and lower class families lived in Wadās that they shared with other families.

Wadās along with other small homes, huts, gardens, temples, artisan workshops and small shops developed along a maze of narrow lanes around the bend of Mutha and Mula rivers in small areas called Peths. Parents who grew up in these areas remember them warmly

as close communities where children could play freely with their friends. Today, these Peths constitute old Pune city and continue to host a few orthodox Brahmin families and other middle-class families. With the British Raj during pre-independence, the British Poona, Camp or Cantonment developed in colonial style constituting of large bungalows with beautiful landscapes and monumental public buildings connected by a network of wide roads laid on a grid (Diddee & Gupta, 2013). These two distinct styles of homes continued till the development of new areas surrounding Peth and Camp.



Figure 10.1. Wadā – The traditional home. Photo: Atmakur-Javdekar.

With time, the growing population led to over-crowding of the Peths' narrow organic lanes and the Wadās were unable to support the demands of modern residential amenities such as flushable toilets, water pipelines and vehicular parking. Also, the Wadās started to deteriorate as plaster on the brick walls started to peel away and the timber was infested with woodworms. Further, many families were in litigation with each other about property ownership and avoided the responsibility of maintaining the Wadās. Slowly the younger

generations from the traditional middle-class families desired to move out of the Peths into suburban areas for a better quality of life and also viewed moving into the suburbs as a symbol of higher social status (Diddee & Gupta, 2013). Subsequently, parts of the Wadās were rented out to other residential or commercial tenants. In a sense, the social structure of the Wadās disintegrated from the joint family system to nuclear families, where smaller joint families or nuclear units moved into larger independent homes or spacious apartment units in the suburban areas. While many families separated and moved into the suburbs, few passionate families continue to maintain some of the old Wadās in the Peths as a symbol of family pride.

Geographically, Pune city continued to grow beyond the Mula river to form a new city called Pimpri Chinchwad. In the 70s and 80s, areas surrounding the Peths, developed under the government's Town Planning Schemes (See Figure 10.2) where large tracts of agricultural land were sub-divided into smaller plots to support residential and commercial development. Residential development during this time included independent homes, low-rise apartment buildings and large open spaces including public parks, private hospitals, schools, universities and other civil facilities.

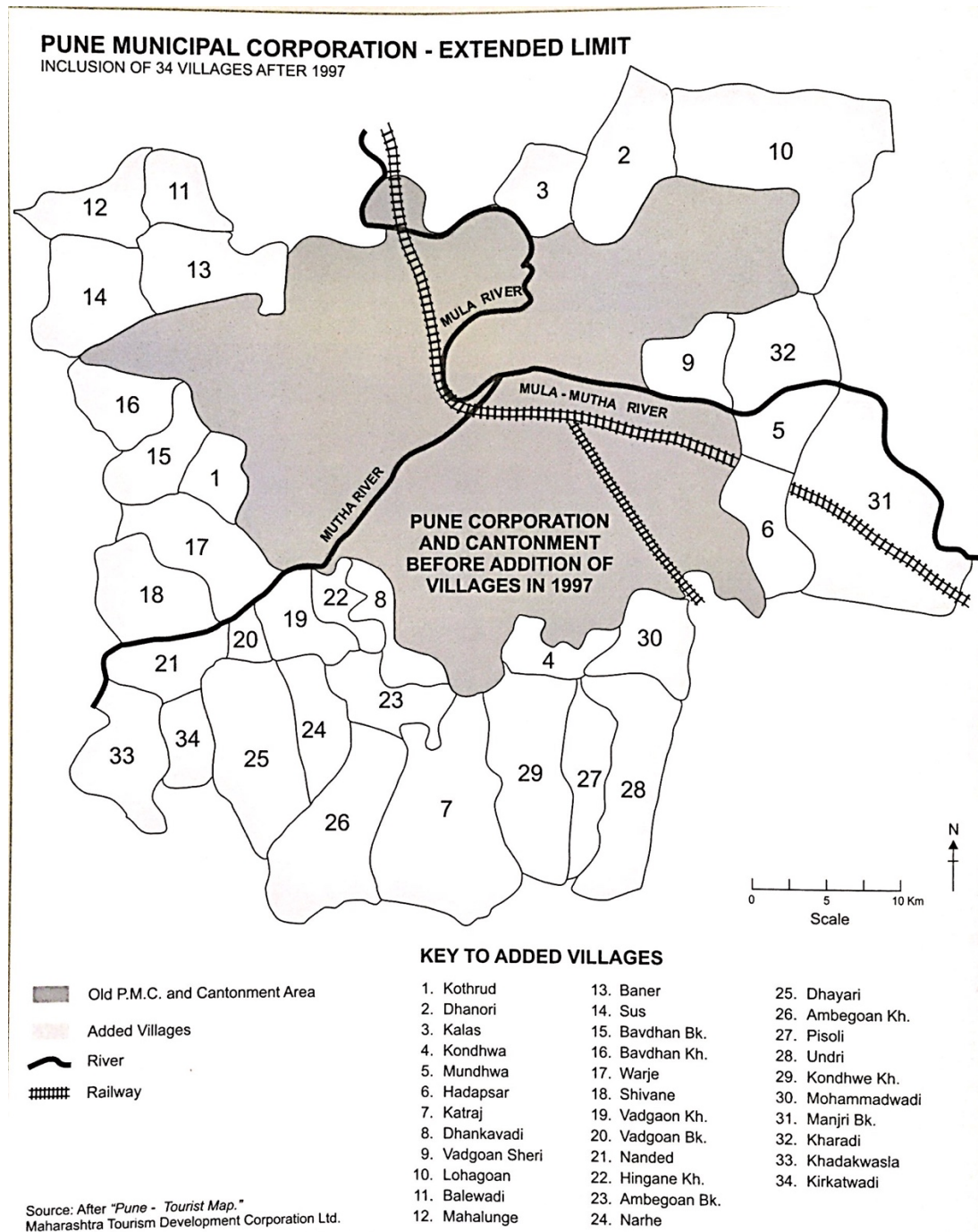


Figure 10.2. 1997 Map of Pune Municipal Corporation

With the introduction of the neoliberal reforms in India in 1992, Pune city began to witness a fast paced change in its overall landscape. The economic reforms of the 1990s and the 21st century led to Information and Bio-Technology parks extending the city limits well beyond the three rivers – Mula, Mutha and Mula-Mutha, thus leading to the formation of the Pune Metropolitan Region (PMR). The industrial and technological growth for Pune meant

an influx of migrants seeking work opportunities from neighboring cities across Maharashtra and other parts of the country. This created a demand for housing, particularly for young middle-class families that resulted in a speedy growth of high-rise housing developments along the main transportation corridors connecting Pune with other major cities such as Mumbai metropolitan area, Aurangabad, Solapur, Nashik, Ahmednagar, Kolhapur and Nagpur. In a sense, the development of housing societies has been faster than the government's execution of proposed zonal development plans.

In this neoliberal context, one can witness the greater dependence on private developers to meet the housing demands and infrastructure that the public sector was unable to meet. For example, today, the home aspirations of low-income families or Economically Weaker Sections (EWS) as well are to live in apartment units in high-rise housing developments. Since 2014 the government has a housing lottery system (*Maharashtra Housing and Area Development Authority*, n.d.) where private developers allocate 20% of a new housing society for EWS or low income families within the housing developments that are designed and planned for middle-class families from the the Information Technology (IT) and Buisness Technology (BT) sectors. This also means that there is an additional housing demand for the lower and middle-class families not in the form of independent homes but as apartment units in housing societies. As a result, private developers continue to step in to meet this increasing housing demand with high-rise housing developments while the government keeps pace with this urban growth by building roads, providing water and sanitation facilities and other related infrastructure.

Clearly, the physical notion of a home has changed from the Wāda – a traditional home with rooms surrounding a courtyard occupied by joint families – to larger independent homes in the Town Planning Schemes outside the Peth areas. Here too, the idea of traditional joint families and orthodoxy continued but moving away from Peths also meant an

opportunity for traditional families to dissolve into nuclear families with more space. These nuclear families soon moved into apartment units of three, five or seven-storey residential buildings. As more people continue to move to Pune for education and work, the profile of middle-class families is in flux, and traditional joint families are being replaced by nuclear families composed of migrants and cosmopolitan groups of nuclear families from other parts of India. This has encouraged the building of independent homes for those who could afford them (upper middle-classes and wealthy families), and apartment units in high-rise housing societies for middle-class families.

In summary, with no history of traditional town planning, the Peshwai Pune or Peths grew organically around the rivers; likewise, even today, parts of Pune, especially, the new suburbs in the Pune Metropolitan Region continue to grow organically with a basic zoning development plan issued by the government; and planning by developers and design professionals. With an increase in population, migration of people from other cities and amalgamation of housing aspirations for low and middle-class families as apartments in high-rise housing developments, the idea of a home for a middle-class family has changed from the traditional Wāda or independent house to an apartment unit with amenities in high-rise housing developments.

Creating Home Aspirations for Middle-class Families

Another outcome of neoliberal policies is the changing idea of what it means to be a middle-class family. As recognized earlier in the dissertation, while there is no consensus on the debate on the annual earnings of a middle-class family, their aspirations do play a significant role in determining their middle-class status. These aspirations include but are not limited to their choice of home and neighborhood, places of work, education for their children and child-rearing values. Contributing to this idea of what it means to be middle-class, developers play an important role in shaping middle-class home aspirations. They

promote high-rise housing as an aspirational home and lifestyle for middle-class families for a desirable price. (See Figure 10.3, 10.4) Also, developers target young families with children by showcasing a range of amenities within the high-rise housing as an ideal environment to raise a child. (See Figure 10.5 below) These three images are representative of the many hoardings by developers that can be found in the Pune Metropolitan Region and a discourse around these hoardings deserves a separate discussion. However, I will refrain from that discussion here as it is outside the scope of this dissertation.



Figure 10.3. Developer's advertisement of high-rise housing for families. Photo: Atmakur-Javdekar



Figure 10.4. Developer's advertisement encouraging high-rise living. Photo: Atmakur-Javdekar



*Figure 10.5. Developer's advertisement targeting high-rise housing as ideal families with children
Photo: Atmakur-Javdekar*

Aside from hoardings, another significant way that developers contribute to the discussion of middle-class families' home aspirations is by re-inventing traditional design features within the new housing developments. In my study, I did not focus in-depth on traditional or vernacular features used in contemporary architectural building design. However, during fieldwork and interviews with developers, architects and landscape architects, I observed that the notion of adapting elements from traditional homes or vernacular architecture was a common theme; where elements are reinvented to make the

standard apartments *unique*. Developers draw these traditional ideas from Peths in Pune or their respective hometowns.

For instance, at Ambar-2, the developers included the ‘Aangan’ or the inner courtyard surrounded by apartment units at each floor of the residential building to reflect the idea of the courtyard from Wādās. The large courtyard of the Wādās were social spaces that brought families together and are reminisced about as spaces where children played freely with their peers living in the surrounding rooms. With these in mind, the developer aimed to create a small common space or a wider corridor outside the apartment units on every floor to encourage neighbors to socialize with each other and as an opportunity for children to play immediately outside their homes while adults from the apartment units can keep an eye on them. The developer stated, “Anyone can come and sit here [referring to the Aangan], kids come and sit here comfortably. Kids of that floor come and play.”

Also, at Keerna-3, the developer reminisced about his childhood joint family home, which influenced the way he designed apartment units today.

...in my family, we always lived in a older house, we grew up in a older house in Gujarat...so, it was like a small palace. The rooms were 22’x18’ with a ceiling height of 14’... and had huge doors and huge windows... very large windows and very large doors. So, I guess we were spoilt with the ventilation part, which was there... it looks good having large windows, so it also becomes part of your USP. (Personal communication, 16th May 2017)

Reflecting this childhood experience of a home, the developer ensures that all apartment units across various housing societies designed by him have large windows with ample light and cross-ventilation as a mandatory feature. Both developers believed that the provision of traditional and vernacular elements in new housing societies increased the value of their product or housing development. And in turn, this helps them better promote and market their apartments as *unique* to the customers or middle-class families.

So, when you tell people [refers to customers who are middle-class families] that everybody else gives you a window of a certain size and mine is 1.3 times larger than that. It makes sense when people see it. And everybody wants to have light and

ventilation coming into their unit. So, that's what made a difference. (Personal communication, Keerna's developer, 16th May 2017.

Furthermore, there is a current trend by developers to seek elements related to their customers' roots and include that in the design and planning of the housing society. For example, small temples are constructed as part of the society amenities as a space to bring elderly people together on a daily basis and to encourage families to celebrate festivals with their neighbors in the housing society. Additionally, a concept called 'Devarai' or a flower garden from where flowers are harvested for worship in temples in rural areas is a popular landscape feature that is provided in housing societies today. Another example is a small ledge as a seating area that is provided in front of the house and in the balconies of each apartment unit. This is reminiscent of the vernacular architecture of humid areas where verandahs with seating ledges are provided in the front of the house as a space to rest and cool off in the breeze. In the context of high-rise housing developments, these seating ledges in the balconies offer an opportunity for families to enjoy the outdoors and the ledge outside the main door has a functional purpose for keeping bags, shoes or other household items.

To summarize, developers continue to promote high-rise housing as an aspirational home for middle-class families through various marketing strategies. Further, in collaboration with design professionals, developers continue to find ways to incorporate traditional design elements and features from vernacular architecture to make their projects unique and attractive to middle-class families. Thus, contributing to the larger idea of a middle-class home.

Desire for World-class Amenities

While developers and design professionals attempt to incorporate elements from traditional homes and vernacular designs, they also respond to the aspirations middle-class families have regarding the amenities and types of spaces that they want in their home

environments. According to the developers, the demographic profile of people living in Wakad and surrounding areas is middle-class families working in the IT, BT and automobile manufacturing sectors who work in a 'world-class facility or workspace'. They expect their housing societies to reflect the same global standards with world-class amenities. The four developers, four architects and two landscape architects interviewed confirmed that families working in multi-national companies expect that their "homes should be plush like hotels" and should have all the amenities so they are able to match their work lifestyle to their home environments.

They [middle-class families] want good amenities, they want good elevation nowadays; they are aware of that. They want good parking spaces; particularly, about the Wakad area... like IT crowd is more over there and they want all the facilities... hi-fi network and all, they want good kitchen, they want good airy spaces, good terraces they want. Even though you provide a studio apartment, they are happy with this, but they want good amenities, good quality. (Personal communication, Keerna's architect, 17th May 2017)

To get a better sense of customer expectations, developers make efforts to create housing societies with inputs from customers or residents, where developers ask them what they would like in their housing societies. As described earlier in case study two of Chapter 6, Ambar-2's developer along with the architect conducted participatory design sessions to include inputs of customers on the type and range of amenities they would like in their housing societies. Often times, a few amenities are an afterthought – after the plans are finalized, developers insist that designers fit in more amenities that the customers are asking for. This results in haphazard planning of left over spaces in the plot where every corner of the plot is utilized to fit in as many amenities as possible. This is evident in the spatial planning of Ambar-2 and Dhara-6, where the developer incorporated amenities in the leftover spaces in the side margins.

... because for some projects, after the completion or after taking 50% of the booking, the client [customer or resident] will come and ask, "don't you have a basketball court?" Then he will come to us and ask us, 'can you fit a basket ball court here

somewhere?’’ Then we see, where there is space and then just cramp it. (Personal communication, Dhara-6’s landscape architect, 14th November 2017)

Also, Yuj-7’s developer stated that customers visit the sales office to investigate the range of amenities provided at the housing society, and compare it with other housing societies before making a final decision on buying an apartment. Clearly, customers buy an apartment based on the number of amenities that are provided at a specific housing society. A few examples of these world-class amenities include gym, swimming pool, landscape areas, yoga and meditation zone, jogging track, gaming zones, space for the elderly, zen gardens, community gardens, central lawn, daycare facility, amphitheater, clubhouse, party halls, children’s play areas and a range of sports courts. Consequently, developers focus on providing a maximum number of amenities in the sales brochure to attract customers to sell apartments. (See Figure 10.6)

AMENITIES				
DETAILS	ENTIRE PROJECT			
	Completed	Expected Month of Completion		
		Nov-19	Jan-20	May-20
Outdoor Play Area		Nov-19		
Pet Friendly Area				May-20
Rock Climbing & Adventure Wall				May-20
Indoor Kids Play Area		Nov-19		
Flag Hosting Pole		Nov-19		
Amphitheatre				May-20
Landscape Theme Garden				May-20
TV Room		Nov-19		
Club House with Guest Rooms		Nov-19		
Open Music Arena				May-20
Organic Farming Area			Jan-20	
Book Reading HAMMOCK Park				May-20
Urban Katta			Jan-20	
Jogging Track			Jan-20	
Indoor Cardio Studio in Club House		Nov-19		
Yoga & Meditation Park				May-20
Cricket Bowling Machine/Cricket Pitch				May-20
Tennis Court				May-20
Sythetic FUTSAL Court				May-20
Temple Complex		Nov-19		
Assisted Walking Track				May-20
Shuttle Service & Cab Point		Nov-19		
Banquet Hall & Lawn			Jan-20	

Figure 10.6. Example of range of amenities provided at a housing society in Wakad in 2019.
Photo: Atmakur-Javdekar

Commodification of Children's Play

In this context of providing multiple world-class amenities, 'Children's play area' with standard play equipment is only one of the many. During the Baseline Study of 63 housing societies, I noticed that all the 'Children's play areas' have standardized play equipment situated on gravel, sand or more commonly, on rubberized surfaces. During my in-depth studies and interviews with developers and design professionals, I learnt that developers offer what is available in the brochures of the play equipment manufacturer. These play equipment brochures include standard play equipment influenced by western

countries. Confirming this, one of the design professionals pointed me to a play equipment manufacturer stating, "... this [play equipment manufacturer] is the vendor that has supplied equipment for most kids play areas in Wakad. There are two other manufacturers who supply play equipment as well but they [their equipment] are all the same." The identified Indian play equipment manufacturers work with standard play equipment manufacturers from USA and European countries to produce play equipment here, in India. So, children's play areas within Indian middle-class housing environments are deeply influenced by western ideas of an "appropriate" play area as depicted in their play equipment brochures. Interestingly, according to the Indian play equipment manufacturer, developers do not pay much thought into the type and range of play equipment that needs to be provided for children to support their growth and development. Developers typically prefer to put a range of basic play equipment to show the customers that they *did* provide a 'Children's play area' as per the sales brochure.

Clearly, the neoliberal economic reforms of 1992 not only transformed the landscape of housing environments but deeply changed where and with what children play. Earlier, children played in the narrow lanes of the Peths and large courtyards of the Wadās with friends and family, and toys and items that were locally made and sourced. With the development of the suburbs (Town Planning Schemes outside the Peths), children played on streets outside their independent homes and at public parks where locally manufactured play equipment was available. Today, the large independent homes that were developed as part of the Town Planning Schemes are also now being redeveloped into five or seven-storey housing societies with tiny play areas with standard integrated play structures. This redevelopment of independent homes into residential buildings has led to an increase in density, crowded streets and reduced opportunities for children to play on the streets. With the arrival of neoliberal reforms, Pune's housing scenario witnessed a shift to high-rise

housing developments designed and planned by private developers in the last two decades. This coupled with middle-class families' desire for world-class amenities has resulted in the idea of play as an *amenity* titled, 'Children's Play Area'.

In summary, my work has demonstrated the ways in which the larger economic reforms influenced the transformation of housing environments for middle-class families and continues to shape their home aspirations; and how this large-scale shift to high-rise housing developments has led to the commodification of children's play, thus, reducing play to confined standardized play areas within housing societies.

(CHAPTER 11)
Design Principles and Improvement Practices

In the earlier chapters, I established that the current state of play opportunities for young children in housing societies is largely limited by (1) the standardized play equipment that affords children primarily gross motor skills; and (2) middle-class families' intensive prioritization of structured enrichment classes focused on academic success, arts and organized sports for children as young as four years of age. Prior studies (such as Hüttenmoser, 1995) indicate that increased parental supervision and a limiting play environment reduce children's opportunities to develop their motor and social skills. However, like Karsten's (2015a) research, my study has demonstrated that high-rise housing developments in fact have various amenities that act as public spaces offering opportunities for families to socialize or meet with their neighbors. Taken together, high-rise housing developments are excellent sites affording young children opportunities to develop their social skills but the play environment is limited to a standardized one, where children primarily exercise their gross motor skills.

Furthermore, based on the analysis provided thus far in Chapters 8, 9 and 10, it is evident that there is a need to design and plan for children's play areas that are creative and affording of a range of play types that go beyond just challenging their gross motor play. Thus, in addition to the free and imaginative play opportunities as outlined in the National Building Code of India (Bureau of Indian Standards, 2016b), based on my research findings, I propose design principles to support developers and design professionals to create spaces within housing societies that are more supportive of young children's holistic development.

Before offering the design principles, it may be worthwhile to review the broad factors influencing young children's play in high-rise housing developments.

First, design professionals and developers have differing opinions on the type of designed play environments for young children. Due to factors related to lack of understanding of the value of play, play diversity, time and financial resources, and an

absence of state mandated formal guidelines on designing young children's play areas within housing societies, they typically provide standardized play areas with basic fixed play equipment. Additionally, play opportunities outside the housing societies are limited to soft play zones within malls and standardized play areas with basic play equipment similar to play areas inside the housing society.

Second, caregivers primarily focus on play as a physical exercise and are not aware of the much broader range of theory and research reading the value of play for children's intellectual, social and emotional development and for creativity in general. They have limited knowledge on the value of play for young children and the range of opportunities that are essential to support young children's growth and development. Further, they rely on design professionals and developers for providing appropriate play environments. Given parents' limited awareness about the value of play and knowledge of young children's play, they focus on organized sports and games in sports facilities outside the housing societies. Additionally, middle-class parents' aspirations for their children include attending structured enrichment activities related to academic learning and arts, music and dance classes.

Taking these factors together, the onus of creating appropriate play environments within the housing societies for children apparently rests on design professionals. However, there are no local, state or national level rules and regulations about the size and number of play areas, amenities to be provided adjacent to the designated play area, and quantity and types of play environment design and equipment to be provided at housing societies. In reality, while design professionals maybe drawn to other solutions, they have little incentive to dispute the developers' views. The existing inclination among developers is to view common space in terms of the number of amenities rather than on the range of play and recreational opportunities afforded by these amenities. So, 'Children's play area' eventually becomes one of the many *amenities* that developers provide for middle-class families in

housing societies. Yet, play should be thought of by designers and parents as much more than an amenity; it should be seen as a fundamental developmental process whereby all children are driven through their own initiatives to learn about the world and themselves. This recognition calls for a conscious effort by designers to create a wide diversity of play opportunities and for parents to give their children the time to use it for play in ways that they know best.

For these reasons, in addition to the Array of Play Diversity framework, I propose ten design principles to help developers and design professionals to design and plan appropriate play opportunities that support young children's growth and development.

Design Principles

The standardized play areas currently offer children gross motor play opportunities and a chance to socialize with other children, but limited access to a range of fine-motor, creative, construction, sensory, exploratory, imaginative and manipulative play. In my study, I developed the Array of Play Diversity (APD) with 40 Physical Elements and Surfaces as a framework to help design professionals and developers provide an appropriate range of play elements and surfaces to support young children's play for holistic growth and development.

While it is ideal to have a range of play diversity, my research also highlights that there is another layer of factors including maintenance, spatial layout, adjacency, management, etc. that encourage or restrict children's play. Here, I wish to provide specific design recommendations but that requires a further investigation of a range of different types of play environments that currently exist across the world in varied settings. So, for now, I would like to reserve this idea for a later time and currently offer *design principles* based on research of the current state of children's play in high-rise housing developments conducted here in India. The ten design principles outlined below, along with the APD framework will

guide design professionals and developers in improving the current state of play areas designed for young children.

1. One designated play zone: Whether designated or undesignated, multiple play areas or open spaces do not work for young children's play since all adults and children in most cases come to *one* space to play and socialize. Instead, one large *designated play zone* is ideal.
2. Smaller segregated play areas: Within the one large designated play zone, smaller segregated yet adjoining play areas for infants and toddlers, and pre-school age children should be provided. These segregated play areas should not be scattered across the housing society but need to be contained within the designated play zone.
3. Age-appropriate play equipment: There is a need for age-appropriate play equipment that needs to be specifically designed for young children in the designated play zone. Particularly, for infants and toddlers.
4. Playing field for older children: For older children's ball games, a separate playing field located away from the designated play zone is necessary. The playing field can be located alongside older children's sports courts. This type of segregation will avoid bullying amongst children of all age groups.
5. Spaces for socialization: Adults' social networks support young children's play; and seating areas afford adults to socialize while watching their children play. There should be sufficient seating areas for caregivers within and around the designated play zone.
6. Spatial layout and maintenance: From my study, it is evident that play areas are well maintained when they are centrally located alongside the central lawn and clubhouse and are poorly maintained when tucked away in a corner of the plot. So, the designated play zone for children should be located close to other open spaces and

amenities, particularly, the central lawn, clubhouse and walking or jogging track that is often used by adults.

7. Vehicle-free areas: A vehicle-free podium or ground level containing the designated play zone is essential for children and caregivers, so, they can use the space without any fear of traffic.
8. Semi-open spaces: Semi-open spaces are essential for children's play, especially, during monsoons.
9. Shared small spaces close to homes: Aside from the common designated play zone for the entire housing society, shared small spaces for doorstep play, similar to the Aangan or common inner courtyard are ideal. Such shared spaces afford children from neighboring apartment units additional opportunities for immediate play.
10. Natural environments for sensory and exploratory play: Nature and nature-like settings afford a diverse range of play materials for children to explore but increasing urbanization has led to urban landscapes that have restricted access to natural environments. Furthermore, my interviews revealed that few parents seem troubled by this and try to seek out natural areas for their children's play. I documented a range of types of spaces within the landscapes of the different housing areas, but they are not well used, partly because they are not adjacent to the designed play areas. These spaces include: Fruit and vegetable garden (at Uru-1), Green pocket spaces (at Ambar-2 and Dhara-6), Nana-nani park (at Keerna-3), Nature area (at Ekam-4), Organic farm (at Shakti-5) and Wild green space (Yuj-7). The fact that parents may not be calling for green play areas is probably, in part, because designers also tend to think that the design of play environments is a matter of building and erecting places and equipment and thereby reinforce parent's lack of awareness of the values of green areas for play. Design professionals need to devise creative ways to bring nature close

to where children live and play. Nature play areas or children's gardens affording children opportunities to engage in exploratory and sensory play could adjoin or be built within the designated play zones. For example, they could incorporate physical elements such as mounds, boulders and tree stumps to encourage children to climb and play instead of or in addition to the standard fixed play equipment.

Improvement Practices

In addition to the design principles, I identify **four** practices for design professionals and developers that can further help to improve the existing play areas, amenities and overall spaces within the housing societies. These are:

1. Transparency: Essential to improve communication between project architects, landscape architects, developers and customers to understand customers needs and translate those demands effectively into the physical environment. For this, conducting meetings to increase transparency between design professionals, developers and customers is vital.
2. Post-occupancy evaluations: Important to conduct post-occupancy evaluations to improve existing conditions (e.g. minor changes such as addition of signage, repairs in hardscape and soft-scape areas, add or remove lighting fixtures, etc.) in housing societies and to ensure quality check and better spatial planning and design of amenities in future housing societies.
3. Look into roots: Currently, developers are influenced by modern play areas with standard play equipment from the west, but there is a need to look into their own memories of childhoods and/or their roots in India to gather ideas for creative play spaces. Similar to how developers and design professionals look to reinvent elements from traditional design features and vernacular architecture for designing homes for middle-class families.

4. Limit last-minute additions: Design professionals and developers should limit fitting amenities, such as, sports courts or related large amenities within existing open spaces close to the possession date of the housing society. Additionally, developers should conduct regular ‘open houses’ with customers or residents after the sale and during the initial construction phase for feedback to incorporate any smaller changes. Also, it is essential that architects, landscape architects and play space designers attend these open houses and offer immediate suggestions and incorporate the collectively identified design and planning changes at the earliest.

Alongside the APD framework, by incorporating these design principles and practices, developers and design professionals can offer young children not only diversity in play but holistic supportive play environments that are sensitive to the needs of children and their caregivers.

(CHAPTER 12)
Conclusion and Future Directions

In summary, this dissertation provides the reader with an in-depth understanding of the range of actors and factors shaping young children's play opportunities in high-rise housing developments in a fast-growing city of urban India. This section of the dissertation will highlight the primary contributions that have emerged from this research, including proposals on how India needs to move forward in recognizing the importance of children's play and in better designing play environments. I also offer some suggestions for what kinds of further research that could further these goals.

Research Contributions

My dissertation research contributes to the large umbrella of children's urban geographies in the developing world with a focus on middle-class childhoods, young children's play and spatial design and planning of high-rise housing developments. The major piece of contribution is for developers and design professionals to improve better play environments for young children within housing societies. Key contributions include:

1. Array of Play Diversity (APD) Tool:

The Array of Play Diversity (APD) is a visual assessment tool assimilating the 40 Physical Elements and Surfaces (PEaS) that can guide professionals to create supportive play environments for young children. The 40 Physical Elements and Surfaces encapsulate a diverse range of play opportunities that need to be made available for young children close to where they live. The APD can be used to assess an environment (i.e., housing or learning) with single or multiple designated and undesignated play spaces. Further, this tool can be used by play researchers in the field of children's environments, children's geographies, early childhood education and practitioners of the built environment including developers, architects, landscape architects, play space designers and play equipment manufacturers.

2. Design Principles for young children's play in high-rise housing developments:

Apart from the Array of Play Diversity, I developed a set of design principles based on my analysis of existing play spaces in housing societies in Pune metropolitan area. These *Design Principles* are offered to developers, architects, landscape architects, and designers of the built environment as a beginning framework for their creation of spaces that support the play needs of young children and their caregivers.

3. Improvement Practices:

Along with the design principles, I also developed *Improvement Practices* for developers and design professionals to support their thought process while designing and planning existing play areas, amenities and overall spaces within the housing societies.

4. Address gaps in current literature about play practices of young children from middle-class families:

My dissertation contributes to existing literature by shedding light on the actors and factors influencing play opportunities of young children from middle-class families and highlighting the additional kinds of information that are needed.

5. National and state level urban planning and building design policies:

My analysis highlights the lack of state regulations governing children's play spaces in high-rise housing developments and underscores that there is an urgent need to address building design and urban planning related policies. Given the current state of children's play areas, particularly, in residential environments, it is necessary for the state urban development authorities to mandate the design guidelines as outlined in the 2016 NIBC. Further, the Design Principles and Improvement Practices in Chapter 11 can inform larger policies related to building design and urban planning at local, state *and* national levels.

Future Directions for Research

Throughout the course of my fieldwork and analysis, I identified six broad domains where this research could be improved upon by anyone envisaging similar work related to children's play in housing developments.

First, I suspected from the start that it would have been ideal to invest more time in the observation of young children's play inside *and* outside their homes. This suspicion was confirmed during the analysis of data and I strongly recommend this improvement. Second, it would have been useful to measure, the sizes of each play area in order to learn how the size of the play areas impacts children's play. Third, there is potential to recognize children's agency during play by systematic observations, conducting interviews with caregivers about the same and using participatory play-based methods of listening to their voices. Fourth, from 'Yuj' case study, the concept of 'shared-yet-private' space between two closely located housing societies was touched upon. When two HSs are adjacent to each other and both are built on a podium at the same level, then both HSs appear as though they are within the same property. Thus, giving the feeling of a 'shared-yet-private' podium space between the two HSs, thereby, encouraging children and adults from either side of the HS to interact with each other. Moving on, I could investigate the impacts on the social relationships amongst children living in closely located high-rise housing societies. Fifth, it would be valuable to have a broader range of categories of key informants; the most glaring example being fathers' views of play. Sixth, given India's diversity in cultural values, beliefs and practices, I foresee the need to replicate this type of study in similar fringe urban areas in major Indian cities.

Lastly, I believe my work is relevant to researchers and practitioners in early childhood education, particularly, for those working in play-based learning and curriculum development. Play based learning involves designing appropriate environments for children that encourages them to learn through play. Moving forward, I envision research related to

young children's play environments in school settings and its impact on play-based learning. In doing this, however, it will be important for me to avoid the danger of furthering the belief by many parents and professionals that intellectual development is the sole, or primary, value of play, rather than fostering a broader recognition of the importance of play that includes social and emotional, and physical development.

While there are broad directions to move forward, I would like to outline four specific steps that I believe need to be addressed urgently:

1. Mandate existing national guidelines on children's play opportunities at state level:

I aim to write to Maharashtra state urban development authorities to mandate the existing guidelines for children's play areas as outlined in No. 5.2.5, Section I Landscape planning, design and development in the National Building Code of India, Volume Two (Bureau of Indian Standards, 2016b) within the state regulations (e.g. Development Control rules).

2. Design recommendations for young children's play:

While I developed the APD as a visual assessment tool and proposed Design Principles that act as basic guidelines for developers and design professionals, a critical next step for me will be to work on further developing Design Guidelines based on a greater awareness of good play environment design in other parts of India as well as relevant innovation overseas.

3. Raise awareness amongst parents and caregivers about play:

The case studies have shown that even if a housing environment affords a full range of children's play opportunities, parents' limited understanding of the developmental benefits of play and their rejection of the idea of messy play could restrict the full use of a well-designed play environment. In this context, in order to fully realize UN CRC's Article 31 – Right to Play, leisure and recreation, I find it of utmost

importance to educate caregivers about the importance of a range of play types essential for young children's holistic growth and development. This is because caregivers manage children's play and determine the spaces, physical elements, materials and surfaces that children interact with.

Additionally, the case studies demonstrate that parents' and caregivers' socialization around common spaces that afford seating, trumps the range of play diversity offered in a housing society. This is starkly visible at Uru-1 where parents sit on the ledges of the small plaza that has no play elements instead of taking their children to the fruit and vegetable garden or central lawn. This desire for parents and caregivers to come together on a daily basis around their children's play and during festivals and community celebrations reflects the changing social structure of Indian middle-class families from large joint families to small nuclear families. Earlier, large joint families fostered social relationships within their homes; today, nuclear families step out of their apartment units to meet other families in common areas within their housing society to build and maintain social bonds. I find these daily and occasional social gatherings as opportunities to raise awareness amongst caregivers about the value of play for children's overall development.

For this, I aim to publish an easy-to-understand manual/flyer on the importance of free-play, particularly, in natural environments, and using loose-parts play for use by early childhood providers. I will submit articles for magazines and newspapers that are read by large number of parents and caregivers. I also plan to bring the knowledge of the play profession into other national policy debates including urban planning, urban design, housing, public space planning recreation and sports professions. I will do this by organizing, with other play advocate colleagues in

India, special sessions on play in their conferences and writing within their journals and publications.

4. Develop community level play programs at housing societies and schools:

I believe it is essential to bring play opportunities close to people's home environments like the mother-toddler program at Shakti-5. For the past year, I experimented with a play program twice a month (on Sundays) at one high-rise housing society in Baner, Pune city where I facilitated loose parts play with young children ages 3 to 8 years of age. Loose parts included cardboard boxes, tape and household items. During this pilot project, I made note of what worked and did not work at the play sessions.

Amongst the many lessons learnt, I highlight two important lessons that are worth mentioning here. First, I noticed that children engaged with loose parts only when their parents saw value in it. For example, most children who participated were expats from the UK or parts of Europe who already had exposure to playing with loose parts and encouraged their children to create daily objects out of loose parts at their homes. These children had no trouble engaging with the range of materials offered to them. But a couple of children who played video games at home had a difficult time to engage with the physical materials and often expressed boredom. When asked to make an attempt to create their favourite thing or express what's on their mind, they recreated the interface of the video games onto the cardboard boxes. Soon, the parents too expressed that their child did spend most of the time playing video games and realized that their child was not interested in playing or making something with real objects.

Second, in order to conduct these play programs, I realized that it is mandatory to have a 'point of contact' or a parent who will coordinate with other parents living

in the HS to conduct the play program. After a year of conducting these play programs, the parent who was coordinating these play sessions, moved back to their home country and the remainder of the parents did not express a keen interest in continuing the play program though they saw value in playing with loose parts for their children. As a result, I then started to facilitate the play program as an extra-curricular activity or after-school program at a private school whose primary principal is a strong advocate of play.

Moving on, I aim to develop a play program that provides loose parts play opportunities for children living in high-rise housing developments, thereby also raising awareness about the importance of play for children's holistic development amongst caregivers. I will document this case study and publish it as a model for other community organizations to learn from and modify.

Conclusion

For this PhD research, I used Bronfenbrenner's ecological model of human development as a theoretical lens, to investigate the physical environment of children's play in high-rise housing developments and the perspectives of caregivers on the kinds of play opportunities that they consider important for their children. The Baseline Study of 63 housing societies and Case study research of seven varied high-rise housing environments in a fast-growing suburb of Pune Metropolitan area supported the analysis of play opportunities for young children living in high-rise housing developments. Specifically, the Case study research included in-depth field studies and interviews with developers, design professionals, city planners and Indian middle-class families.

My study has demonstrated that high-rise housing developments offer nuclear families with young children a range of common open spaces, amenities and play areas for all residents, and that these common spaces are opportunities for play and socialization.

However, data analysis of developers and design professionals has shown the need to *improve existing* amenities or common spaces that can fully support children's play needs while affording social interactions between adults and children. Accordingly, I provide developers and design professionals with: (a) Array of Play Diversity outlining the range of physical elements and surfaces essential for young children's play, (b) Design Principles to support planning of open spaces keeping play areas in mind, and (c) Improvement Practices to better the overall spatial planning and design existing housing societies.

Through this body of work, I equally emphasize the role of caregivers in the management of children's play by shedding light on the play practices of middle-class families of urban India. The finding that parents in high-rise housing in Pune generally have a narrow recognition of the value of play as contributing to the intellectual development of their children echoes the conclusions from my international review of the child-rearing practices of middle-class families. These findings focus on the emphasis on play as an academic enrichment activity for young children whereby parents send them for additional tuitions, sports coaching classes, or to learn a skill related to art, music or any dance form. Further, I contribute to the existing body of work related to Indian middle-class caregivers' play values where they view play primarily as a means to socialize with other children and as a physical exercise that aids in exhausting the child. Parents' limited awareness of the value of unstructured play of playing in natural environments, coupled with structured "learning based" activities and standardized play equipment, contribute to a childhood where *playing without a learning-based outcome is deemed frivolous*. I respond to this by proposing ways to engage children with loose parts play within their housing societies and to raise awareness amongst caregivers about the value of play for children's holistic growth and development.

Given the history of high-rise housing developments as inappropriate for families with young children, my detailed investigation, analysis and contributions build a case for

high-rise housing developments as an acceptable form of housing for families with young children, when carried out with closer attention to the full range of children's developmental needs.

A Neoliberal View of Play

The United Nations Convention on the Rights of the Child (UNCRC) clearly states children's right to play, recreation and leisure, and India has ratified the Convention thereby promising to abide by the articles of the Convention. However, apart from discussions at a global policy level, there is no real action by local, state and national governments to fulfill children's right to play, particularly, in meeting young children's play needs in various housing environments. This has to take into account where there is an increasing trend towards high-rise housing developments across the world for all demographic groups including families with children. In India, these types of housing environments by private developers have become the first choice for young urban middle-class families who constitute the global workforce.

When the transformation of middle-class families' home environments is recognized within the larger neoliberal framework, I am able to describe the journey of 'play' as an act of caregivers' socialization. One that has evolved from children playing in the courtyards of traditional homes while being watched by adults from large joint families to a daily act of evening socialization ritual by mothers (mostly), grandparents and domestic helpers from across the country around the common play area, central lawn or other amenity within a high-rise housing development.

Thus, through my work, I unpack young children's play opportunities in high-rise housing developments by recognizing the two large umbrellas, i.e., the physical environment and caregivers' management, which are further informed by larger neo-liberal economic forces and westernization of middle-class parenting about structuring children's lives through

enrichment activities. So, by looking through the window of changing lives of urban Indian middle-class families and their housing environments, I unpacked the ways in which children's play is being constructed in the current neoliberal world.

Appendices

Appendix A: Study-Site Profile Exercise

Appendix B: Semi – structured open-ended interview protocol for city planning professionals

Appendix C: Semi – structured open-ended interview protocol for developers and design professionals

Appendix D: Field Visit – Researcher Protocol

Appendix E: Semi-structured open-ended interview protocol for parents and caregivers of young children

Appendix F: Combinations of spatial arrangements

**Appendix A:
Study-Site Profile Exercise**

Study site name and address:

Date and Time:

Photographs taken: yes/no

S. no.	Play space variables	Case 1	Case 2	Case 3	Case 4	Case 5
1	Buildings with a designated formal play space with play equipment					
2	Buildings with a designated formal play space with play equipment with sand and water play					
3	Building sites without designated play space but with public play space in a 0.25 mile (0.4 km) or 5 minutes radius					
4	Long and wide common corridors					
5	Common areas (e.g. balconies, refuge areas) used as play spaces in the buildings					
6	Indoor play space (or indoor common areas used as play space)					
7	Roof terraces as a play space					
8	Access to a green park for play					
9	Access to a wild area for play					
10	Play spaces with toys/loose parts					

Investigator Observation notes:

Appendix B:

Semi – structured open-ended interview protocol for city planning professionals

Preamble statement:

Hello (*name of key informant*)! Thank you for willing to meet with me. I am conducting this interview to understand how high-rise housing developments and surrounding areas are designed keeping in mind children’s play needs. Since, you are a key decision maker in the design and planning of (*insert name of study site*) Pune metropolis, it would be great if you can share your opinion. I will take no more than 45 minutes of your time. Also, I will audio record this interview. I will not identify you by name in any of the publications. You can choose to stop the interview at any point in time. Also, if you wish that I delete some parts of this recorded interview, please let me know and I can do so. Before we begin, I request you to sign a consent form that documents your willingness to participate in this study and for the interview to be audio-recorded.

Background information about the key informant:

Name:

Name of public office (e.g. PMRDA, Town planning etc.):

Role in the public office (e.g. municipal commissioner, town planner, etc.):

Time of experience of working in the public office:

Interview Questions for City Planning Professionals

I. Planning and policies related to children’s play

Are there any child-friendly urban planning and development policies in high-rise residential areas of Pune metropolis? Can you please elaborate?

What provisions/facilities/services are provided by municipalities in high-rise residential areas of Pune metropolis to support children’s play?

What about for young children (below 8 years of age)?

Are there any private or publicly funded programs that focus on young children’s (below 8 years of age) play? Please explain.

Are there any new policies in the pipe-line to ensure the fulfillment of young children’s (below 8 years of age) play needs?

II. Play values

What is your personal opinion about the state of provision for young children’s play in high-rise housing in Pune? Do you think there could be any improvements? If so, what? And how?

In your planning for children’s play, do you think of different age groups when you are thinking about children’s play? So, do you think it’s worth thinking about infants or toddlers?

What is an ideal play space for young children according to you?

We have been talking about your official role and your professional opinion about play, so, what do you personally feel about play for children?

How would you personally envisage programs or policies if there were funds available?

VII. Concluding questions

How do you want to improve the current state of play for children? Particularly, for young children?

Do you have any specific programs in mind? Or any new policies that you believe would support young children’s play in high-rise residential areas?

Should there be legislations about limited play provision related to high-rise housing?

Are there other people related to child-friendly urban planning and policy making that I should meet?

Is there anything else you would like to add?

Appendix C.

Semi – structured open-ended interview protocol for developers and design professionals

Design professionals include architect, landscape architect and play equipment manufacturer

Preamble statement:

Hi (*name of key informant*)! Thank you for willing to meet with me. I am conducting this interview to understand how high-rise housing developments are designed keeping in mind children’s play needs. Since, you were key in the design and planning of (*insert name of study site*) this project, it would be great if you can share your experience. I will take no more than one hour of your time. Also, I will audio record this interview. I will not identify you or the project by name in any of the publications. You can choose to stop the interview at any point in time. Also, if you wish that I delete some parts of this recorded interview, please let me know and I can do so. Before we begin, I request you to sign a consent form that documents your willingness to participate in this study and for the interview to be audio-recorded.

Background information about study site and key informant (to be completed by researcher prior to the interview)

Study Site ID:

Name of key informant:

His/her role in this project:

Time of experience working in the field of building/designing/planning high-rise housing developments:

INTERVIEW QUESTIONS	WHY?	RESEARCHER NOTES
PROJECT BEGINNINGS		
Can you tell me about the beginning of this project? When did it start? How did you get involved in the design/planning of this project? Was there a specific reason to build this particular project?	<i>To learn about the start date of the design and planning of the project. Also, to learn key informant’s purpose to design this project.</i>	
KEY PERSONNEL RESPONSIBLE FOR DESIGN AND PLANNING OF THE PROJECT		
What was your role in this project?	<i>To understand key informant’s role in the project.</i>	
Were there other people working on the design and planning of this project? (e.g. architect, landscape architect or designer, etc.) Can you tell me more about their role in this project?	<i>To learn about other members who were involved in the design and planning of this project.</i>	
Would you say you are the key person who made decisions related to the design and planning of this project?	<i>To know who is ultimately responsible for the design and planning of this high-rise housing development.</i>	

OVERALL HIGH-RISE HOUSING DESIGN AND PLANNING FEATURES		
Does this project have a unique design? In what way? Can you tell me more?	<i>To learn about features that make this project unique</i>	
Is this a prototype for future projects?	<i>To understand if this project is a prototype for future high-rise housing developments or modelled on a previous project. Also, To understand successful spatial elements or design features that worked best in previous or current high-rise housing developments.</i>	
IF YES: What features from this project are likely to be included in future projects? Can you describe some of the features? Why did those features work well? IF NO: Was this project modelled on a previous project? What features of previous project(s) were incorporated into this project? Why did those features work well?		
In the design and planning of this high-rise housing development, what was taken into consideration with respect to children's needs, particularly, young children?	<i>To understand the factors considered for children in the design and planning of the overall project.</i>	
KEY INFORMANT'S PLAY VALUES		
What was the primary motivation for including children's play space in the design of the high-rise housing development? Was it financial or response to consumer expectation or personal belief as play being important for children?	<i>To understand motivation behind the provision of play spaces in high-rise housing developments.</i>	
How important do you think is the design of play spaces in the building? Why do you think so? Can you tell me more?	<i>To understand play values of the key informant</i>	
Would you say play spaces were considered as important to your team or was it not as important?	<i>To understand if play spaces were important to related key personnel.</i>	
ENVIRONMENTAL FACTORS INFLUENCING DESIGN AND PLANNING OF CHILDREN'S PLAY SPACES		
How did you or the design team generate ideas for play spaces for children in this project? Did you visit other high-rise housing developments or parks or play spaces? What were they like? Did you speak to or hire any consultants to help with the creation of play spaces? What was their advice or opinion? Did you speak to parents? What did they say? What design standards or books were used to help in the design of play spaces?	<i>To understand sources that influenced the design and planning of the play spaces.</i>	
Did you think about the different age groups in designing play spaces for children? What were your design considerations for children of different ages? Particularly, young children?	<i>To understand if key informant provided different facilities to children of different age groups, particularly, young children.</i>	

What safety features were considered in the creation of play spaces?	<i>To understand safety features incorporated in the design of the play space.</i>	
What location criteria within the project site was considered for the placement of children's play space? Were the play spaces designed and planned for at the beginning or was it added later to the layout?	<i>To understand logic behind the location of the play space in the project</i>	
Did you incorporate any natural elements in the design of the play spaces? (For e.g. garden spaces, water, etc.) Are these natural areas or garden like spaces made accessible to children for play?	<i>To understand children's ability to access natural elements in the project.</i>	
CULTURAL OR SOCIAL FACTORS INFLUENCING DESIGN AND PLANNING OF CHILDREN'S PLAY SPACES		
According to you, what are middle-class families looking for in high-rise housing projects, particularly, for their children? How important do you think children's play spaces are with respect to people renting or buying the property?	<i>To understand key informants' perspective of middle-class families requirements for their children in high-rise housing developments</i>	
ECONOMIC FACTORS INFLUENCING DESIGN AND PLANNING OF CHILDREN'S PLAY SPACES		
Did any market or commercial trends influence the design of play spaces for this project? Was there any specific type of play equipment or material used based on popularity in the market or availability? What was it? Can you tell me more?	<i>To understand market or commercial products/materials that influence the design of play spaces.</i>	
Typically, what is the budget (in percentage) allocated for play spaces in high-rise housing development when compared to other open spaces or amenities? Is this number fixed or does it vary? If it varies, under what situations does it vary?	<i>To understand the cost allocated for play spaces in the project.</i>	
SELF-EVALUATION OF THE OVERALL DESIGN OF THE PROJECT		
Since completion of the project, have you visited the building? Can you tell me about your observations during these visits?	<i>To understand evaluation of the project from the key informant's perspective.</i>	
Based on your observations, are there any spaces in the project that you would have done differently or would like to do differently in future projects?	<i>To understand possible changes or improvements key informant would like in this project or future projects.</i>	
CONCLUDING QUESTIONS		

<p>Do you have any personal memories with this project that you would like to share? Are there other people related to the design and planning of play spaces in this project that I should meet? Who? Can you share their names/contact information? Is there anything else you would like to add?</p>	<p><i>To provide the key informant an opportunity to share additional information that previous questions did not ask. Also, to gather names and contact information of related key informants who influenced the design and planning of play spaces in this project.</i></p>	
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Final Statement: Thank you very much for your time. If I need any clarification, I will get back in touch with you. Also, please feel free to contact me if you have any questions about this study.

**Appendix D:
Field Visit – Researcher Protocol**

AIM:

To identify spatial features, layout, surface materials and design and planning elements of the high-rise housing that afford or restrict young children’s play.

FIELD VISIT PROTOCOL:

I will walk around each open space/designated play areas in the high-rise housing development answering the questions below and taking photographs (preferably, aerial) or videos to document the spatial features and elements.

If children are using the play space, then photographs will be taken after seeking parental permission.

Further, if children are willing to speak to me, then I will ask them the following questions:

Do you like your play space?

What do you like about your play space

Why do you like that?

FIELD VISIT GUIDE	Researcher Notes
Sketch or mark on the layout plan, areas where young children play. Is this a designated play space or other open areas? (e.g. parking spots, refuge areas, etc.) What is the age group of children using this play space? Where are girls and boys playing?	
Describe the available play equipment in the play area.	
Check the physical elements and surface materials in the play area: <u>AREAS:</u> Cut grass Tree(s) (climbable) Hardtop Rubberized play surface Wild green space but no shrubs and trees (could be grass if it is not mowed) Wild green space including shrubs and/or trees Dirt or fine gravel surface Sand surface Sand table Water at ground level (paddling) Water table <u>FIXED EQUIPMENT:</u> Shelter/play “house”/”store” etc Swings Slide Climbing frame or climbing wall Integrated play structure (climbing/sliding/running) Water spray <u>MOVEABLE EQUIPMENT AND MATERIALS:</u> Wheeled vehicles Building materials	

What unique design features exist in this space?	
Is this play space in viewing distance for parents?	
Are there any management rules posted as signage in the play area?	
Does the play area feel safe?	
Is the play area well lit?	
Is the play area used in the day or night?	
What time can you access this play space?	
Is the play area accessible easily to parents with young children?	
Are there other organized activities for young children in these play areas? What and how often?	

Appendix E.

Semi-structured open-ended interview protocol for Parents (and caregivers*) of young children

** Caregivers include domestic help, grandparents, aunts and uncles*

Preamble statement:

Hi *(name of key informant)*! Thank you for willing to speak with me. I am conducting this interview to understand the play opportunities that parents provide and value for their children living in high-rise housing developments. Since, you have young child(ren) and live here *(insert name of study site)*, it would be great if you can share your experience. I will take no more than one hour of your time. Also, I will audio record this interview. I will not identify you, your child(ren) or the project by name in any of the publications that I may write. You can choose to stop the interview at any point in time. Also, if you wish that I delete some parts of this recorded interview, please let me know and I can do so. Lastly, I will share the preliminary findings through a presentation and a report with all of you prior to finalizing my dissertation. Before we begin, I request you to sign a consent form that documents your willingness to participate in this study and for the interview to be audio-recorded.

Background information about the study site:

Study Site ID:

Background information about the Parent:

Parent Study ID:

Name of parent/Age/Gender:

Number of children, their age and gender:

- 1 – 2 years (boy / girl)
- 3 – 5 years (boy / girl)
- 6 – 8 years (boy / girl)

PLAY RHYTHM MATRIX: (To understand a child's general play pattern at different times of the day)

1. Before beginning the interview, let's begin by understanding your child's general pattern of play. Please provide information below based on your child's play on a typical school day:

At what different times of the day, did your child play? (check that apply)	Where did your child play?	Who supervised your child?	Did your child play with other children at the space mentioned? (yes/no)	Did your child engage in any other activities? (yes/no) If yes, what activities?
<i>e.g. evening</i>	<i>Play space downstairs</i>	<i>Care taker</i>	<i>yes</i>	<i>Yes. Painting class.</i>
Before breakfast				
After breakfast				
After lunch				
Later afternoon (3 pm)				
Evening (5 pm)				
After dinner				

2. Are your weekends different and in what way? Who takes the lead in taking care of the kids during the weekend?

INTERVIEW QUESTIONS	WHY?	RESEARCHER NOTES
ASSESSMENT OF AVAILABLE PLAY OPPORTUNITIES		
Where else do you take your children to play in this society? Why? What do you let your children play with? And with whom?	<i>To learn about play opportunities that parents provide for their children within the high-rise housing development.</i>	
Are there other play spaces in this society that you do not use for your children's play? Why don't you use those spaces? Can you explain? Is it related to safety or distance or maintenance? Anything else?	<i>To understand the factors that discourage parents from taking their children to play in certain places within the high-rise housing development.</i>	
Are there any society's rules and regulations about children's play? Are some places restricted for children? Why?	<i>To understand management rules and regulations that support or deter young children's play.</i>	
Which floor do you live on? Do you feel the floor you live on has an impact on how much or where your children play?	<i>To understand if building height influences children's ability to play outside of their homes.</i>	
With respect to children's play what features are important to you in the play space? Safety? Types of play equipment? Material of flooring or play equipment? Time of children playing? Company of other children? Anything else?	<i>To understand the different elements and features of a play space that are important to parents</i>	
In what ways do you monitor your children's leisure time inside the house? What about using gadgets? Do you set rules on gadgets use? (I-Pads, phones, etc.) Are there other ways you try to engage your child?	<i>To learn about the different ways in which parents monitor their children's leisure time.</i>	
PLAY OPPORTUNITIES OUTSIDE OF HIGH-RISE HOUSING DEVELOPMENT		
Do you send your children to extra-curricular classes? Please explain which classes and why? If no. then why? What was your child's first structured activity class? How old was your child? Why did you choose	<i>To learn about parents' perceptions about structured or extra-curricular activity classes for their children.</i>	

that activity class?		
Do you travel to and participate with your children to extra-curricular classes? Please explain your role at those classes.	<i>To learn about parents' involvement in the extra-curricular activity classes.</i>	
What types of public or private facilities do you use for children's play in your neighborhood or in the city (e.g. malls, indoor play areas, etc.)?	<i>To learn about other play area such as soft play zones, etc. where parents take their children to play.</i>	
MIDDLE CLASS DEMOGRAPHIC**		
Do you consider yourself as middle-class or upper-middle class or upper-class? Can you explain why? Is it because of your working salary? Or your lifestyle? Or certain values? Can you elaborate?	<i>To understand what income, lifestyle choices or personal values form the middle-class in the current Indian context.</i>	
PLAY VALUES		
Do you think play is important for your children? If so, Why? Is this different for your different aged children?	<i>To understand parents' perception of young children's play. Also, to understand parents' perception of young children's play in comparison to older children's play.</i>	
How was play in your childhood different than what it is today? Do you like how it was earlier or now? What is better or worse? Why?	<i>To learn about parents' childhood experiences of play and how they feel about the change.</i>	
What do you think would be an ideal play space for your child?	<i>To understand the types of play spaces and opportunities that parents would like to provide for their children.</i>	
Do you have any ideas to improve the existing play spaces for your children in the housing development?	<i>To learn about the changes parents may want to make to the existing play space.</i>	
CONCLUDING QUESTIONS		
Would you like to share any special memories you have with respect to your children's play in this housing development? Are there other people with young children living in this housing development that I should meet? Is there anything else you would like to add? Would you like to continue in this	<i>To provide the parent an opportunity to share additional information that previous questions did not ask. Also, to gather names and contact information of other parents who have young children and live in the same high-rise housing development.</i>	

study and participate in a ten minute online survey? Can you please share your contact number with me so I can send the survey link for you to participate in the online survey?		
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Final Statement: Thank you very much for your time. If I need any clarification, I will get back in touch with you. Also, please feel free to contact me if you have any questions about this study.

*** Question does not apply to domestic help.*

Appendix F: Combinations of spatial arrangements

I.	One-Zone + One-Level Variation + No Repetition	6
II.	Three-Zones + One-Level Variation + No Repetition	3
III.	Three-Zones + Two-Level Variation + Repetition	3
IV.	Three-Zones + Three-Level Variation + Repetition	1
V.	Two-Zone + Two-Level Variation + No Repetition	18
VI.	All Zones @ One-Level + One-Zone Variation + Repetition	27
VII.	All Zones @ One-Level + Two-Zone Variation + Repetition	27
VIII.	All Zones @ One-Level + Two-Zone Double Variation + Repetition	18
IX.	All Zones @ Two-Level + One-Zone Variation + Repetition	27
X.	All Zones @ Two-Level + Two-Zone Variation + Repetition	9
	Total possible combinations of spatial arrangements	139

I. One-Zone + One-Level Variation + No Repetition = 6

	1	2	3	4	5	6
+ 1	SA	SA	RB	P	P	RB
0	P	RB	SA	SA	RB	P
- 1	RB	P	P	RB	SA	SA

II. Three-Zones + One-Level Variation + No Repetition = 3

	1	2	3
+ 1	SA P RB		-
0	-	SA P RB	-
- 1	-	-	SA P RB

III. Three-Zones + Two-Level Variation + Repetition = 3

	1	2	3
+ 1	SA P RB		-
0	-	SA P RB	-
- 1	-	-	SA P RB

IV. Three-Zones + Three-Level Variation + Repetition = 1

	1
+ 1	SA P RB
0	SA P RB
- 1	SA P RB

V. Two-Zone + Two-Level Variation + No Repetition = 18

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
+1	SA RB	SA RB	P	P	-	-	SA P	SA P	RB	RB	-	-	RB P	RB P	RB P	RB P	-	-
0	P	-	SA RB	-	P	SA RB	RB	-	SA P	-	RB	SA P	SA	-	SA	-	RB P	RB P
-1	-	P	-	SA RB	SA RB	P	-	RB	-	SA P	SA P	RB	-	SA	-	SA	SA	SA

VI. All Zones @ One-Level + One-Zone Variation + Repetition = 27

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
+1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	P	-	P	RB	-	RB	SA	-	SA
0	P	-	P	RB	-	RB	SA	-	SA	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB
-1	-	P	P	-	RB	RB	-	SA	SA	-	P	P	-	RB	RB	-	SA	SA

	19	20	21	22	23	24	25	26	27
+1	P	-	P	RB	-	RB	SA	-	SA
0	-	P	P	-	RB	RB	-	SA	SA
-1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB

VII. All Zones @ One-Level + Two-Zone Variation + Repetition = 27

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
+1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA RB	-	SA RB	SA P	-	SA P	P RB	-	P RB
0	SA RB	-	SA RB	SA P	-	SA P	P RB	-	P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB
-1	-	SA RB	SA RB	-	SA P	SA P	-	P RB	P RB	-	SA RB	SA RB	-	SA P	SA P	-	P RB	P RB

	19	20	21	22	23	24	25	26	27
+1	SA RB	-	SA RB	SA P	-	SA P	P RB	-	P RB
0	-	SA RB	SA RB	-	SA P	SA P	-	P RB	P RB
-1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB

VIII. All Zones @ One-Level + Two-Zone Double Variation + Repetition = 18

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
+1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA RB	SA RB	SA P	SA P	RB P	RB P	SA RB	SA RB	SA P	SA P	RB P	RB P
0	SA RB	SA RB	SA P	SA P	P RB	P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P	RB P	RB P	SA RB	SA P	SA RB
-1	SA P	P RB	P RB	SA RB	SA RB	SA P	SA P	RB P	RB P	SA RB	SA RB	SA RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB

IX. All Zones @ Two-Level + One-Zone Variation + Repetition = 27

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
+1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB
0	P	P	P	SA	SA	SA	RB	RB	RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB
-1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	P	P	P	SA	SA	SA	RB	RB	RB

	19	20	21	22	23	24	25	26	27
+1	P	P	P	SA	SA	SA	RB	RB	RB
0	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB
-1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB

X. All Zones @ Two-Level + Two-Zone Variation + Repetition = 9

	1	2	3	4	5	6	7	8	9
+1	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P	SA RB	P RB
0	SA P	SA RB	P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB	SA P RB
-1	SA P RB	SA P RB	SA P RB	SA P	SA RB	P RB	SA P RB	SA P RB	SA P RB

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