L.I.F.E. Landscape: A Co-created Healing Environment for Vulnerable Maasai Youth

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Abstract

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My thesis project focuses on co-creating a design for a children's home with a school, community center and healing garden for vulnerable Maasai children. The co-creation approach to the design process implies that the design and the project cannot be done without engagement from the local community in which the center will be built. According to the Kenya Demographic and Health Survey of 2015, 18% of girls between the ages of 15-19 have given birth or are currently pregnant with their first child. For a number of years, this particular Maasai community has wanted a children's home to address their ongoing need to accommodate a high number of orphaned and vulnerable children suffering the effects of cultural practices such as polygamy and female genital mutilation (FGM). Compounding these children's health issues are ongoing challenges of sanitation and malnutrition and more recently, prolonged droughts affecting livestock herds which provide the primary income and food source for the Maasai.

With factors identified in the co-creation workshops held in December 2015 and March 2016, the project examines how the co-creation design process can be used to facilitate access to modern systems that can improve the ecology and community health of the region. Given that environmental health and human well-being are intrinsically linked, this participatory design process aims to incorporate salutogenic principles.

This was a community-initiated co-creation design process which established a foundational development model that more fully responds to the needs of this Maasai group. The process builds a relationship between the community, children's health needs and landscape design, and potentially offers a successful model for other communities to adopt. The process uses criteria for co-creation health design, incorporating partnerships between the designers and the community. The intent of this masterplan is to guide the implementations of building a resilient healing landscape environment that will encompass a children's home.

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Acknowledgements

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Fig. 1.1 L.I.F.E. Children's Home Workshop

1 Introduction

My research into the benefits of therapeutic landscapes has illustrated the function landscape architects can serve in enhancing environmental and human health outcomes for vulnerable communities. Implementing a collaborative co-creation design process similar to our efforts in Kisharu, landscape architects can develop a platform or forum that represents the interests and critical issues particular to the experience of minorities, children and vulnerable community members. Furthermore, through literature review and working alongside an interdisciplinary group of designers, an ethnologist and community members, the process of co-creating a community center in a decidedly unique, rural environment has shown landscape architects to be an important catalyst in facilitating and supporting social change. By applying this participatory method, one has a greater ability to read the landscape through the lens of the indigenous people and work toward meeting the interests of community stakeholders who are, by definition, invested in the project. In an inclusive design exemplified by the co-creation process, the designer(s) seek to cultivate a democratic program through which each member of the community can exercise their voice, conflicts can be addressed and resolved and the overall needs of the community can be more readily tabled.

Fig.1.2 L.I.F.E. Team Locations

Fig.1.3 Kenya Context Map

Project Team Introduction

The founding partners of Project Livability Infrastructure for Everyone (Project L.I.F.E.) are Bettina Werner, a master's candidate in ethnography at the University of Copenhagen, David Freeman, a finance major at Endicott College and founder of Crater Creations, Daniel, a Maasai community leader and manager at the Mt. Suswa Conservancy and Katy Scherrer, master's candidate in Landscape Architecture at the University of Washington.

Bettina and I met working as interns at Cititek, a research and evidenced-based social design office located in Copenhagen, Denmark in 2015. Both in our final year of a master's program, we shared an interest in developing a thesis around health design, indigenous communities and the co-creation process that was emphasized at Cititek. Cititek was enlisted by Crater Creations, a startup nonprofit organization, to help design a children's home in a rural area roughly 150km from Nairobi, Kenya.

David, a former student of Cititek's principal, Bianca Hermansen, established Crater Creations after traveling through Suswa and meeting Daniel who, in conversation, expressed the need for a children's home for displaced and vulnerable youth in his region. Joseph, another Maasai community leader donated the land for the project.

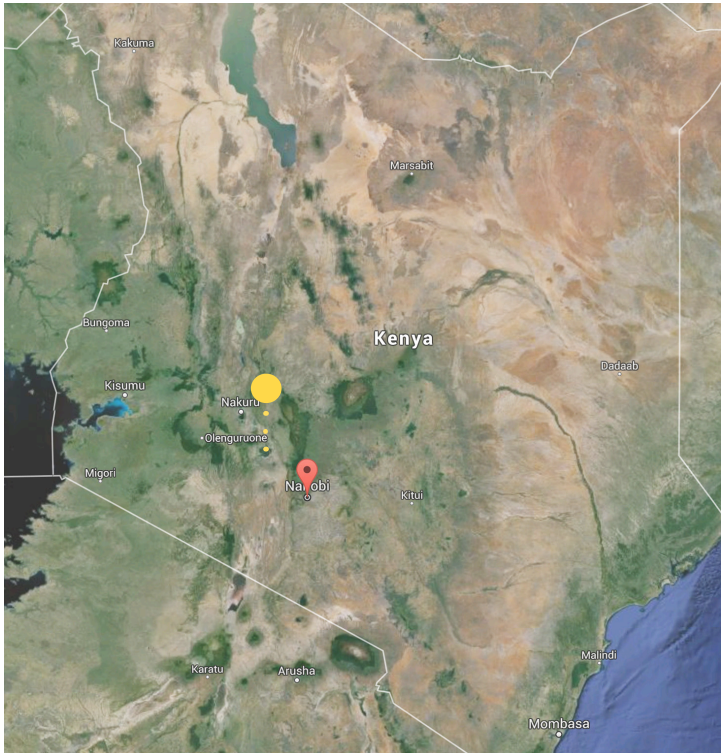


Fig.1.4 Mt Suswa

Fig.1.5 Nairobi to Mt Suswa 150km

Kisharu and Children's Home Context

The Project L.I.F.E. Children's Home and Community Center will be built in a nature conservancy on Mount Suswa, one-hour southwest of the nearest town, Suswa and located 150 km west of Nairobi, Kenya. Kisharu is an expansive, rural Maasai community of approximately 2000 people.

The Maasai of Kisharu are living a semi-traditional pastoralist life, although they are a society in transition. As pastoralists, the Maasai have been dependent on herding animals, particularly sheep, goats and cattle. They are semi-nomadic people who are becoming more sedentary as they are under the pressures of development, government restrictions, and changing weather patterns.

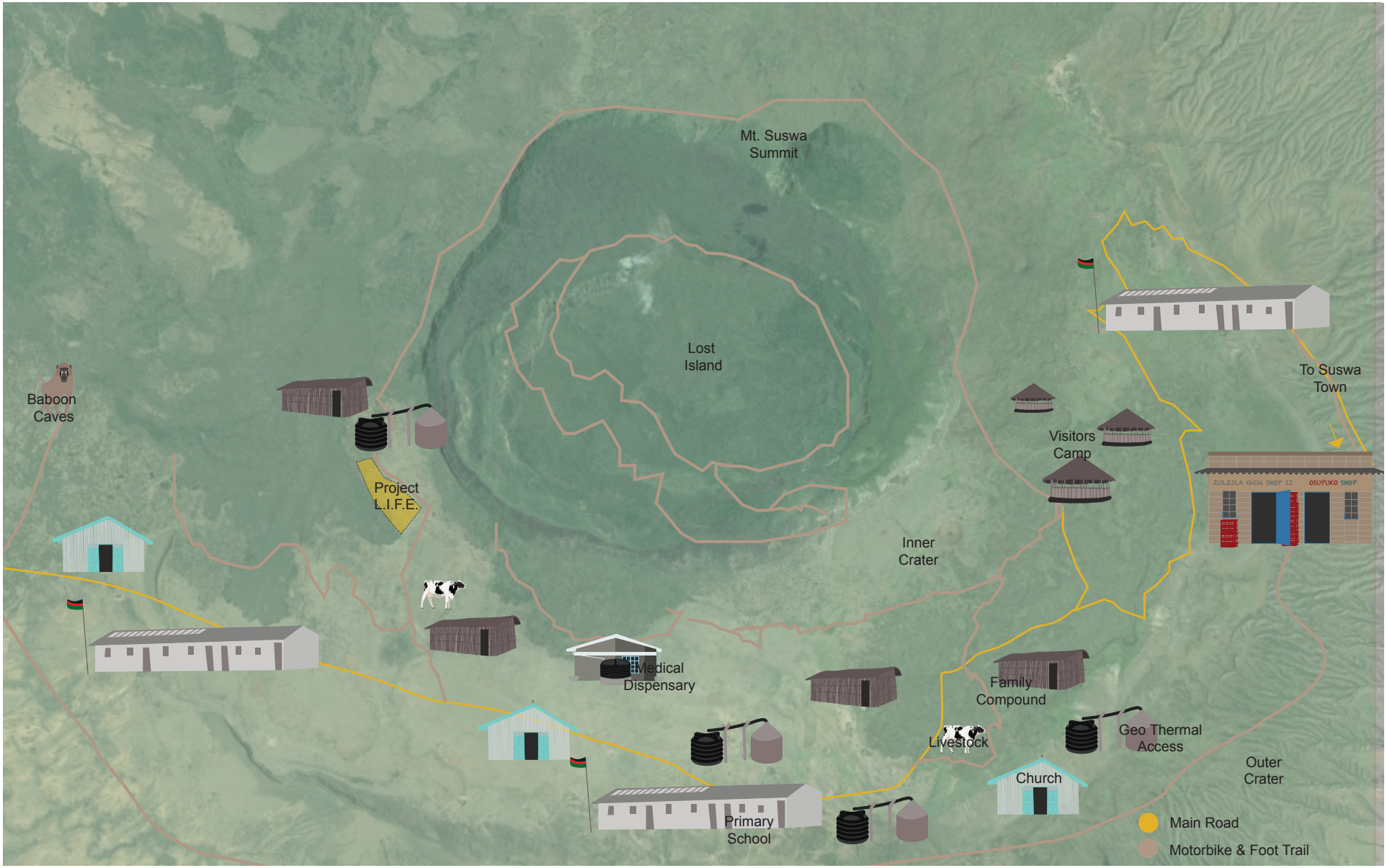


Fig. 1.6 Kisharu Context Map

Fig. 1.7 Common Maasai Territory (Boddy 2016)

The Maasai

The Maasai people probably arrived in East Africa during the 15th century A.D. (Narimatsu). Their settlements stretched from Lake Victoria to the Indian Ocean and from the highlands near Nairobi, Kenya to the Maasai steppe of Tanzania. They existed here as nomadic herders in a largely symbiotic fashion with their landscape until the late 19th century, when cholera, other diseases and British colonization critically altered their population, their herds of livestock and their access to open land. The Maasai are now restricted to smaller areas of land in Kenya and Tanzania (Cattle, 1). They all speak the same language which is Maa (Narimatsu).

The Maasai people are traditionally pastoralists, meaning that they move their herds of livestock around to give the land a chance to regenerate and to find fresh water. The Maasai tribes of Kenya and Tanzania have also endured a long history of colonization by the British. The British perceived the pastoralist Maasai and other tribes to be incompatible with the wildlife that inhabited the area (Narimatsu). Further institutionalizing a separation between people and nature, national parks in Kenya were created by the colonial government without consideration for indigenous communities (Cheeseman, 2). For the past century, Maasai land has been repeatedly overtaken and subjected to government exploitation. According to local Maasai elders, since the beginning colonization and the European exploration of Africa, the Maasai have continually been forced to move to adjacent lands for periods of time until a new project phase is initiated. Their displacement has limited not only their habitat and resources but has resulted in reduced grazing land for their livestock which is their mainstay (Koissaba). Since 2007, the World Bank reported that it has invested $409 million in geothermal development and in 2013 it announced plans to raise another $500 million for geothermal projects in the Rift Valley and other parts of the world (Koissaba). However, none of this budget has been allocated to fairly compensate the Maasai community, whose land has been usurped to make room for the projects (Koissaba). Suswa holds part of Kenya's vast undeveloped reserves of geothermal energy, which has more recently been open to exploration under a state-sponsored policy to move the East African nation to an industrialized, middle income status. Suswa alone has an estimated 600mw of untapped potential energy generation (Patinkin). At the Olkaria geothermal complex, about 35 miles north of Suswa and a place where 1,000Mw of potential energy lies beneath the fissured landscape, some 150 Maasai families, with about 1,000 people, were evicted and resettled in 2014 (Patinkin).


Fig. 1.7 Manyatta


Fig. 1.8 Kisharu Geothermal System


Fig 1.9 Mt. Suswa Crater

2 Project Overview

Issues facing Kisharu and Maasai Vulnerable Children

The primary goal of Project L.I.F.E. is to address the needs of orphans and vulnerable children, ages 3–17, who emanate from small Maasai villages around Mt. Suswa in Kenya. Highly valued traditions in the Maasai society affecting this group include long-established customs of circumcision for adolescent boys and female genital mutilation (FGM) for girls. After undergoing this operation/mutilation, they are considered adults by rite. Circumcised girls can then be married off to men in exchange for cattle, which can be understood as the Maasai's most prized currency. Though against the law in Kenya, FGM is compulsory in among the Maasai and marriage within the tribe cannot take place for a girl/woman who has not undergone the ritual, despite of the fact that FGM incurs life-long physiological, mental and psychological complications (Voices of Hope). A majority of the girls are married off as young as the age of ten, and usually become pregnant at a young age. After circumcision, many of the boys continue their education or cattle herding apprenticeships and may enter into arranged marriages as young as age 13 (Nanguri).

Due to FGM and combination of unreliable income generation, domestic abuse, water shortages and unknown HIV status, many parents lack the resources or are simply unable to provide for their families, resulting in a troublesome number of orphaned and vulnerable children in Kisharu. There is a dearth of medical attention available to the region and no established sanitation standards. Poverty and drought, arguably due to the effects of climate change, have negatively affected the Kisharu population and has distanced an increasingly susceptible population of orphaned and vulnerable children from schooling, physical safety, and food security (Montolol Interview). In 2014, 40% of the village's livestock perished, causing a spike in malnutrition and related economic woes (Sempui, 2015). Although Kisharu is a progressive Maasai community relative to neighboring Maasai in that they strive to be "gender neutral", the customary patriarchal hierarchy of the Maasai still influences their decision-making and daily routines (Sempui, 2015). For example, the one thing that Maasai women own and control is the cow's milk, as they do the milking and deal with the logistics of its storage. Pressured socially and economically, women often turn to selling their sole commodity in order to support their families, purchasing substandard foods in place of the traditional nutrient-rich milk, thus giving rise to a significant amount of malnourished and developmentally challenged children (Nanguri). In an effort to become a more cohesive community and to safeguard future generations, the Kisharu leaders have acknowledged this gender inequality and the pressing need to address, educate and house their community's displaced and vulnerable children. Through a series of encounters among Maasai and outside advocates, Cititek was contacted by a group of Kisharu leaders and sponsors to conceptualize, design and build a children's home attending to the needs of this population at risk.

Fig.2.1 L.I.F.E. Leadership Team

Project Statement

This project focuses on co-creating a masterplan for a sustainable L.I.F.E. children's home which includes a school, community center, housing and healing landscape for vulnerable Maasai children. The co-creation approach to the design process implies that the design and the project cannot be done without engagement from the local community in which the center will be built. This particular Maasai community has wanted to build a children's home for a long time, serving as a safe place for vulnerable children. The community has a high population of orphans largely due to Maasai cultural practices of polygamy, which has resulted in associated impacts on the health of the vulnerable girls. Through the community-led, participatory design process, salutogenic principles have been used to more fully respond to the needs of this Maasai group. Furthermore, an important goal of our project is to offer a well-documented, flexible and successful model for other communities to adopt.

3 Grounding: Review of Literature

More people are living longer, living with disabilities, as well as living with social, familial, medical, and environmental challenges. At the same time, the built environment often does not support opportunities for people to actively prevent or mitigate their particular health issues. There also exists a dichotomy between the ways in which urban and rural communities are able to build environments conducive to public health and healing. Whereas urban communities tend to focus more directly on the consequences of issues having to do with aging, disease, displacement and climate change through a more highly developed infrastructure and financial means, rural communities tend to be more exposed geographically, hold less economic sway, and have a weaker organizational ability to attend to public health issues, or even to brace against the variability associated with a warming planet. Providing health care and advocating for matters associated with health and welfare are well-documented obstacles in rural communities. However, this is set against a rural community's proximity to their natural surroundings. When designing spaces with health and well-being in mind, access to nature and a sensitivity to how the built environment both influences a group or individual's health and can enable a positive response is imperative to a therapeutic landscape project.

Specific to the Kisharu project, we chose to use a co-creation design process involving the local village and outside experts. In order to co-create therapeutic places of healing for children, designers must address the fundamental link between human and ecological health as situational and conditional factors governing that child's life. Understanding and documenting an ethnographic overview of these conditions and situations is a critical part of the co-creation design process. To be empathic, co-designing with the local community, including children, can produce a bigger picture of the built environment that surrounds each child, showing how the children use their built environment, their current psychological and physiological state, as well as their day-to-day situations. Furthermore, an understanding of that child's level of development might also help direct the child-centered co-creation workshops and design decisions. By observing children at play, their nuanced culture, psychology and development, we can propose design elements that will better allow for discovery, healing, interaction, choice and refuge.

Psychology of A Child

Bronfenbrenner's ecological system theory describes children's development to occur within linking systems In my research, the ecological systems theory put forth by Urie Bronfenbrenner best describes the psycho-social issues of these vulnerable children. The lives of the Kisharu children are dictated by tradition, paternalism, economic and environmental uncertainties, tenuous housing situations, and inconsistent educational opportunities. The Kisharu children are by and large prone to instability, but then add to that, malnutrition, developmental disabilities, gender discrimination, and an orphaned population, and a group of exceedingly at risk kids arises. As outlined below, the ecological systems theory is distinctive in its relevance to this group's situation.

Bronfenbrenner outlines five environmental linking systems that determine a child's development: the microsystem which includes the children's school, peers, neighborhood, family, and health services, the mesosystem which influences the child's interactions between the microsystem and the exosystem, the exosystem which includes the extended family, neighbors, government agencies, parents economic situation, and mass media, the macrosystem includes the attitudes and ideologies of the culture, and the chrono-system which includes the environmental changes that occur over the life course (Rhodes 2013). According to Brofenbrenner, the five systems influence each other during a child's development. All changes or conflict in any one system in a child's life will affect the other systems, making it important to consider not only the immediate environment but also the child's interaction with the larg-er environment. Bronfenbrenner states that besides the family home, the only setting that serves as a comprehensive context for human development from the early years onward is the children's school (Bronfrenbrenner, 1979).

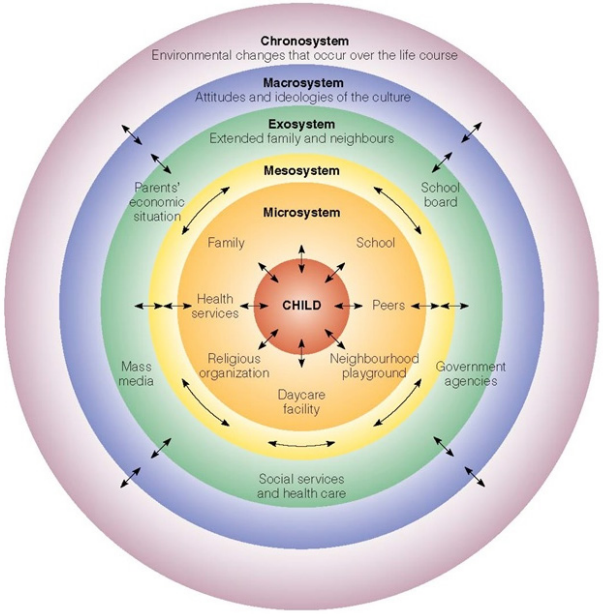


Fig 2.1 Ecological Systems (Rhodes 2013)

Salutogenic Design and Biophillia

Investigating the origins and effects of stress, medical sociologist Aaron Antonovsky developed the term Salutogenesis to describe an approach to human health focused on supporting a person's innate well-being, rather than on diagnosing the multitudes of influences causing disease (Antonovsky 1980). Antonovsky questioned a typically rigid medical model portraying health and illness as binary opposites. Instead he offered a model that is continuous and variable, what he called "health-ease versus dis-ease continuum (Antonovsky 1980). Adapting Antonovsky's medical theory to health design, the Salutogenic design process would seek to accomplish many ends through the conceptualizing and implementation of one cohesive plan. Most notably, Gale Souter-Brown has championed the process because it is cost-effective, promotes human and environmental health, slow paced, and considers an ecologically sustainable long-term solution over a strict deadline-based plan. Souter-Brown states, "there can be no human health and well-being without ecological health" (Souter-Brown 2014). The theory promulgates that ecological health and human health are intrinsically linked - an objective also supported by the term Biophillia. Biophilia was termed by a social psychologist Erich Fromm, which he defined as "the passionate love of life and all that is alive" (Fromm 1973, 365) and "love for humanity and nature" (Fromm 1997, 101). The roots of the word come from the word bio (life) and philia (attraction). The Biophilia Hypothesis can be attributed to Edward O. Wilson who states, "Biophilia, if it exists, and I believe it exists, is the innately emotional affiliation of human beings to other living organisms. Innate means hereditary and hence part of the ultimate human nature..." (Kellert and Wilson 1993).

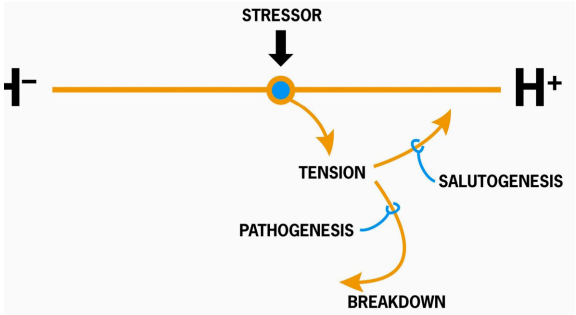


Fig. 2.2 Antonovsky's explanation of the health continuum and the salutogenic direction (Lindstrom 2010)

Health Design and Healing Environments

The innate affiliation of human beings to other living organisms is supported by evidence from the health design theory and research on healing environments. Roger Ulrich's Theory of Supportive Gardens proposes that positive health outcomes to reduce stress can be achieved through landscape design, for two primary reasons. First, when there is contact with gardens and natural elements in healthcare facilities and public places, stress is generally reduced among people afflicted with disease and caretakers as well. Second, many people (most who are not aware of the "evidence") seek out nature-dominated settings to reduce stress (Francis and Cooper Marcus 1991). Stephen and Rachel Kaplan's attention restoration theory identifies interrelated systems that support human health (Kaplan 1995). Directed attention involves concentration on a specific, often difficult or stressful task, simultaneously requiring blocking out distracting sensory stimuli. Such prolonged periods of directed attention without restoration leads to mental, and physical fatigue.

Therefore, recovery from mental fatigue caused by prolonged direct attention is essential. Kaplan's theory proposes that certain environments, including nature, are particularly effective at fostering recovery and part of the restoration comes from indirect attention, or involuntary attention (Cooper, Marcus & Sachs, 1991). Rachel Kaplan asserted that any sort of "nearby nature," whether experiencing directly or inadvertently, can contribute to well-being. Kaplan's characteristics of restorative settings include being away, extent fascination, and compatibility. To experience full physical, emotional, and mental restoration, all of these elements must be in concert (Kaplan, Kaplan & Ryan 1998).

Additionally, the prospect-refuge theory was central to Jay Appleton's theory of environmental aesthetics, based on the evolutionary psychology. In The Experience of Landscape, Appelton proposed that people's aesthetic preferences in art and in the landscape derive from perceptions of what is needed for survival (Appleton 1975). This theory points to an analysis of plentiful settings where one can feel secure, with ample protection at his orher back, and a clear view forward.

Play Therapy with Vulnerable Children

Play is an integral part of a child's healing process and psychological and physiological development. Spontaneous play and play therapy can be an important way for children to express themselves and "play out" what they are feeling inside. Typically, children do not have the cognitive development or the capacity for language to express themselves in a mature manner until age 11 or 12 (Cultural Issues in Play Therapy 2004). A child therapist might express a certain amount of empathy and relay their observations to the while they are playing so the child is then made aware of his or her unique way of relating to the world. The child therapist would thus create a safe environment in which the child feels free to express themselves. A landscape that supports informal and spontaneous play therapy as well, would be a safe place where the children would feel comfortable to accept limits and take personal responsibility for their choices. A crucial element of a healing landscape would lie in the protection of play opportunities by intentionally weaving these opportunities into the landscape itself. If vulnerable children and orphans experience confusion and adversities, they may experience issues of compromised emotional control, therefore offering an array of spaces may help them socially connect with others, support their recovery and introduce them to the healing, calming qualities of their natural world.

Cultural Issues in Play Therapy and Healing Environments

A culturally sensitive landscape would ideally support play therapy and spontaneous play for all (Axline, 1969). In order to be fully accepting and accommodating, one needs to understand a child's culture. To be an effective healer for vulnerable children, it is imperative that the therapist or designer gain cultural understanding by entering the children's village in an attempt to learn about the norms, values, and customs – and where appropriate, weave these into psychotherapeutic interventions (Gil & Drewes, 2005). Culturally-sensitive play interventions can build self-esteem and self-worth. Familiar board games can be both intellectually challenging and promote meaningful dialogue that kids can relate to their daily experience. Culturally sensitive play provides another strategy to affirm and strengthen a child's sense of self (Gil & Drewes, 2005). In many cultures, storytelling can be an effective way to teach and heal the younger generation. Therapeutic stories are effective because they speak to the unconscious mind which, unlike the conscious mind is alert during sleep, is able to hear and remember events, and contains memories from past experiences (Gil & Drewes, 2005). Healing environments should include places for small and large groups to share metaphorical stories with metaphors that match a child's issues with messages that convey self-love, power and the ability to heal from emotional pain. Metaphors can also be part of the landscape interventions.

Nature Play and Learning Places

Most of a child's day is spent outside of school and therefore, among other activities the child continues learning through play. The children tend to learn understanding and respect for one another and their environment when left to their own devices. Jean Piaget (1997) states, "For a child to understand something he must construct it for himself, he must reinvent it…if future individuals are to be formed who are capable of creativity and not simply repetition." Positive child development requires a social, high-quality physical setting where hands on natural learning and motivation through play is woven into the fabric of the formal curriculum (Piaget, 1997). Play can be a child's primary way of tangibly making sense of their surroundings. By observing children playing, teachers and peers can understand their personal learning styles more clearly and decide the learning activities necessary to reinforce the formal curriculum. "A designated managed location can be in an existing or modified outdoor environment where children of all ages and abilities play and learn by engaging with and manipulating diverse natural elements, materials, organisms, and habitats, through sensory, fine motor, and gross motor experiences." (Piaget, 1997).

Learning Places, Play and Montessori

The Montessori philosophy states that play is an essential part of a healthy child's development. More relevant than other competing pedagogies, the Montessori approach was first developed in the early 1900's by Maria Montessori around a child-centered philosophy with teachers serving as guides (Comparing Preschools). A Montessori environment is not organized according to a specific age which allows for children to learn and play together at their own pace and older children to serve as role models for younger ones. This philosophy supports the child to gain independence and leadership skills. According to Montessori the essential dimensions of play are: 1. Voluntary, enjoyable purposeful and spontaneous, 2. Creativity expanded using problem solving skills, social skills, language skills and physical skills, 3. Helps expand on new ideas, 4. Helps the child to adapt socially, 5. Helps to thwart emotional problems. Montessori said, "play is the work of a child", adding that the act of play should come from the child's own experiences and imagination. Montessori toys would teach children to 1. Figure out how things work, 2. Pick up new ideas, 3. Build muscle control and strength, 4. Use their imagination, 5. Solve problems, 6. Learn to cooperate with others. (Child Development Institute, 2015)

Montessori and the Orphanage Landscape

With the Montessori philosophy and principles, a school and orphanage would encourage individual and group play and work (Elkind 2009), preparing respectful, independent, responsible, and capable children. However, typically, orphanages have been associated with negative consequences for children's development (Johnson, Browne & Hamilton-Giachritsis, 2006) In many cases, young children in institutional care do not have the support they need and are more likely to suffer from underdevelopment, emotional attachment disorders, developmental delay, resulting in reduced intellectual, social and behavioral abilities compared to growing up with a family in a home. A more decentralized children's home resembling a family's home with a Montessori philosophy and a higher staff-per-child ratio would help to provide the grounds for children and community to positively grow together.

Evidence-Based Methods and Local Craft Traditions

Evidence indicates that large-scale dormitory style orphanages do not support healthy child development (UN-Habitat Global Housing Strategy Framework Document). Because of this, a child-centered design might use evidence-based methods combined with Montessori principles. Through a child-centered design, children can learn local vernacular craft traditions that might have a positive impact on self-esteem. Outside the home, children can experience this combination of vernacular and evidence-based methods in various landscape projects, providing opportunities for children to learn about their local traditions .band low-impact building. Communities and children may take ownership over their built environment when the built environment reveals legible vernacular interventions. Architect Dr. Anupama Kundoo stated, “By helping communities fabricate a simple set of building components, we can build knowledge and bring housing back to the people.” (2016).

Participation, Participatory Design and Co-Creation

Participation is the means by which citizens of a community gain power to shape their own environment and power in the process of decision-making, either through delegated power or partnership with the local government. Roger Hart says that the most sound approach to development lies in the establishment of a citizenry that understands, and care about, the management of the environment and which can operate in a highly participatory manner in democratic communities (Hart, 1997). In relation to place-making and social equity, participation is striving to empower members and contribute to the work of spatial justice (Udall & Holder 2013). Participatory Design then, as it emerged in the US in the 1970s was largely guided by two strategic values: to ensure that those affected by a design should have a say in the process; and to make sure that the existing skills of the community was made a resource in the design process, also accounting for the resource-weak stakeholders (Bjorgvinsson et al. 2012). The co-creation participatory approach to the design process implies that the design and the project cannot be done without engagement from the local community in which the center will be built.

A challenge with the co-creation process is that it is often time intensive requiring multiple interviews and site visits compared to a corporate for-profit design process with hard development deadlines. However, this participatory people-centered approach helps to build community and relationships instead of the corporate ownership of space. The participatory approach is aimed to understand what people want and how to develop a space in their interests versus a corporate for profit model where the ownership of space is in the hand of an individual or corporations instead of the people themselves. This community-led approach aims to understand the people’s needs, promoting inclusion and acknowledging the voices of individuals and communities in the design process. In the end, this approach might help build projects more suitable to community goals while building community in the process. Complementary to this approach is bringing together experts to help make decisions in the best interest in the community. When involving vulnerable groups in participatory research or design, especially children, there is often need for designers and researchers to be more creative and adaptive in their methods and approaches toward collaboration (Aldridge 2014). Moreover, inclusively, a central element to the co-creation process and is to enable people to tell their own stories and understand how children and young people, or the group in question, perceive and shape their environment (ibid, Kudva & Driskell 2009).

Co-Creation with Children

Children are rarely given the chance to shape their own environment and to take party of theparticipatory design process. Whereas adults are perceived by many architects to be limited in their thinking in a participatory design by the practical concerns of the everyday – from time pressures to the liability culture within the construction industry – children are able to concentrate much more on experiencing and exploring space, widening the scope of creative exchanges with the designers (Patsarika, 2014). Only through direct participation can children develop a genuine appreciation of democracy and a sense of their own competence and responsibility to participate (Hart, 1997). With the premise that no one knows their needs better than the users themselves, this idea becomes a central part of the philosophy behind a user-driven children-centered approach to interactive design (Saffer, 2010). Using the moto “design by doing”, where the development of low-tech prototypes is integral to the creative process (Nesset & Large 2004). ‘Design by doing’ is based on an interactive experimentation with hands-on design and learning by doing. Prior to the development of prototypes, a metaphor-based design is applied, where metaphors and prototypes present the desired results (Axelsen, Mygind & Bentsen 2014).

Co-Creation and Evidence-based Design

In Health Care Design, Kirk Hamilton explains Evidence-based Design (EBD) and how it can be applied to the design process. Hamilton formalized the concept of EBD stating, “Evidence-based design is a process for the conscientious, explicit, and judicious use of current best evidence from research and practice in making critical decisions, together with an informed client, about the design of each individual and unique project” Hamilton’s stresses that research, or evidence, is not just to be found in published work. The Center for Health Design (2008) defines EBD as the “process for basing decisions about the built environment on credible research to achieve the best possible outcomes.” “Outcomes” are defined as measures of a person’s condition (health, well-being, satisfaction) or indicators of healthcare quality (Marcus Sachs16).

Public Space Evaluation

For the past forty years, Jan Gehl has emphasized the evaluation and understanding of public space. The Gehl 12 Quality Criteria was used to create the Therapeutic Landscapes Quality Criteria for this project, using critical theory and principles of Therapeutic Landscape Design and Salutogentic Design. The Gehl 12 Quality Criteria was originally created to improve the pedestrian landscape, first ensuring reasonable protection against risk, physical injury, insecurity and unpleasant sensory experiences and to ensure that spaces offer good comfort, inviting people to the most important activities underlying their use of public space – walking, standing, sitting, seeing, talking, hearing and self-expression (Gehl & Svarre, 2013). The twelve qualities fall under the three categories of protection, comfort and enjoyment. Protection qualities includes protection against traffic and accidents – feeling safe, protection against crime and violence – feeling secure and protection against unpleasant sensory experiences. The comfort qualities include opportunities to walk, opportunities to stand/stay, opportunities to sit, opportunities to see, opportunities to talk and listen, and opportunities for plan and exercise, The enjoyment qualities include human-scale dimensions, opportunities to enjoy the positive aspects of climate, and aesthetic qualities and positive sensory experience. Gehl shaped the criteria to focus on the connections between environment and well-being through the development of specific therapeutic qualities. The evaluation criteria I suggest aims to accomplish small and large-scale public therapeutic landscapes in an urban context.

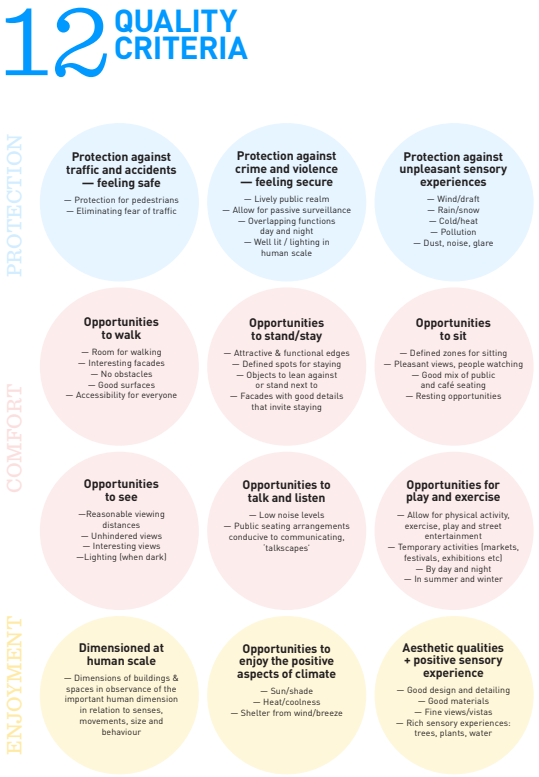


Table. 3.1 Gehl 12 Quality Criteria (Gehl & Svarre, 2013)

Conclusion

In the field of healthcare design, most practitioners commonly focus on the institutional treatment of patients in the doctor's office which is often sterile, isolated, and removed from natural settings. However, evidence suggests that in the future, a healthcare model emphasizing prevention and a 'whole body' approach that incorporates therapeutic landscapes will be critical to the successful treatment of physiological and psychological trauma. Furthermore, when possible, customizing healthcare to meet the specific needs of a community – bound by geography, ethnicity, and/or afflictions – can potentially foster better outcomes for the people seeking care. With this in mind, designers dealing with vulnerable communities should adopt a stance rooted in therapeutic landscape design, cultural/historical sensitivities, and a design process which cultivates a collaborative discussion built around the population's needs, vision, limitations, and abilities. The term co-creation describes this complex inclusive design process.

When designing therapeutic landscapes for vulnerable children, the designer must take into account the specific user group's immediate environment, as well as their interaction with the environment at large, since changes in one sphere will affect other spheres in that child's life. With a focus on the development of therapeutic landscapes exhibiting biophillic and salutogenic principles, a community-led co-creation design approach and evaluation process better addresses the relationship between environment and well-being for vulnerable children through careful consideration of the children's immediate environment and their interaction with the surrounding community. Therapeutic landscapes have proven to be essential for children's health and especially helpful to vulnerable children not in control of their lives who require places for recovery and restoration. Therapeutic landscapes can also afford opportunities for children to build resilience by improving and maintaining health through hands-on discovery and education. Research into children's health and biophillic response has shown that sensory-rich green space is a crucial component to a child's experience growing up and increasingly important for vulnerable children and communities without access to healthy green spaces. Giving children the opportunity to help design (co-create) their own therapeutic landscape can also be a fundamental piece to children's empowerment/education and in discovering adaptable, creative therapeutic design elements that reflect on what works both for the individual and for the group.

For this project, I have generated therapeutic landscape quality criteria, based on the Gehl criteria, as a way to structure a discussion around the necessity to promote scalable design ideas related to therapeutic landscapes. The quality criteria are tools that can be used by the designer to address how a community wants to address and/or prioritize protection, comfort and delight. A review of the literature shows that an inclusive design process is necessary when designing therapeutic places reflecting the needs of a particular community and if such quality criteria are used as a directive or toolkit in the design process, the co-creation process can be a critical part of health design in both rural and urban landscapes.

4 Design Process and Methodology

Co-creation Timeline Introduction

Over the course of 8 months, Project L.I.F.E. has evolved from its nascent concept stage to actual plans for future construction. This timeline summarizes the co-creation process from the beginning stages in August 2015, through the building phase, ending at the projected opening in Fall 2016. Each event marks an important part of the co-creation process that ultimately shaped the proposed masterplan. Following the timeline, I explain the short videos put together for this project and how the programming and multiple iterations helped inform the final masterplan.

August 2015

Crater Creations Contacts Cititek

Fig. 4.1 David and Daniel at Mt. Suswa Lookout

Bettina Werner, a Swedish ethnologist master's student, and I met working as interns at Cititek, a research and evidenced-based social design office located in Copenhagen. Both in our final year of a master's program, we were interested in focusing our thesis in health design, indigenous communities and a co-creation process.

Soon after our internships began, Cititek received a request by a startup non-profit organization, Crater Creations, to help design a children's home in a rural village outside of Nairobi, Kenya. Bettina and I undertook the project and I saw my involvement in this project as an opportunity to bring together my research into therapeutic landscapes, the Gehl quality criteria and design advocacy. Crater Creations was founded by David Freeman, a former student of Cititek's principal, after meeting Maasai community leader, Daniel Sempui who, in conversation, expressed the need for a children's home for displaced and vulnerable youth in his region. The land was donated by Joseph Tanin, a community leader. Without a precedent and not knowing the extent of the project funding, our initial goal for this project was to generate a community led co-creation process around the prospect of building a children's home and community center for vulnerable Maasai youth of Kisharu. As the process was set in motion and a funding model was actively being worked out, it became clearer that we could do more extensive, in-depth interviews and fully design and implement the co-creation process, hopefully seeing the project through to completion.

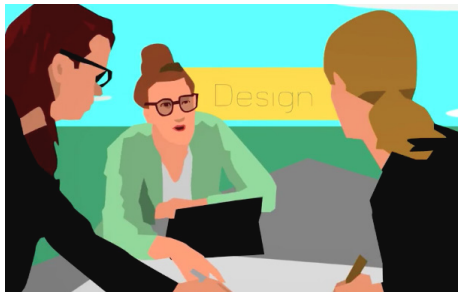


Fig. 4.2 Project L.I.F.E. Animation (Santos 2015)

December 2015

Community Leader Mind Maps

Fig. 4.3 Mind Map Drawing Session

Fig. 4.4 Mind Map Discussion

We conducted a group interview in which we asked a gathering of community leaders to illustrate their Kisharu community in pen/pencil on individual sheets of paper. We learned that only one of the four community leaders had experience with writing and drawing. Having a stance that 'everyone can draw', we decided to continue with the exercise which yielded interesting results. Through the exercise, we gained insight into how these men considered their home relative to the community, to certain landmarks, to other property owners and to some extent, how they communicate. Afterwards, we asked all participants to verbally describe their drawing while our interpreter translated. We did miss out on many of the details of discussion, since our interpreter had a tendency to translate the conclusions from the discussions rather than what led to certain conclusions. For future workshops, a separate translator not participating in the workshops will be needed. The crater was the central point of orientation in all drawings and town of Suswa was not included in any of the drawings, although the walking paths, circular housing formations, and churches were included on every drawing. These drawings informed the context map that I made of Kisharu, helped us determine the relationship of the Kisharu village to the crater and put in perspective the extensive landscape where the vulnerable children are coming from.

Following Agnes for a Day

We followed Agnes, Daniel's wife, for one day in order to observe her schedule, social engagement and work patterns. They live in a traditional Maasai culture though consider themselves 'modern Maasai' (in Daniel's words). Her day largely consisted of walking about a mile to fill a bucket of water, cooking, and gathering firewood. We also observed how the children help their mother and their daily routine, social lives, and duties. Agnes typically takes care of all the children during the day except when the boys heard livestock. The youngest children spend the most time with their mother and start helping with household chores when they are able to walk. Agnes's nine-year old daughter helped her cook, watched the children when she gathered firewood and water, helped clean and also played with her brothers when she had free time. Agnes mentioned that the only responsibilities the boys have is learning how to heard cattle and take care of the livestock whereas the girls are expected to help their mother throughout the day.

This was helpful for learning about a woman's typical daily workload, how she uses the space inside and outside the home and what everyday activities look like. The traditional Maasai dwelling is a small, semi-permanent, waddle-and-daub building called a manyatta. Ventilation is poor and they tend to be very smokey, cool and dark. Most mothers in Kisharu appear to be overworked and the daughters have many responsibilities. The boys learn how to heard when they can confidently walk and start herding on their own when they are around six years old. Agnes did mention that play is an important part of the day, however it appears, at least by our observation, that mothers and children do not have a lot of time to play.

A translator would have made our observations and interviews more productive as we had to rely on her oldest daughter and husband to translate for us. Agnes is Daniel's only wife, which is unusual for Maasai. If we were to do further investigations into the daily life of women and children, we would follow a more traditional group that might consist of several wives and, in some cases, more than 30 children.

Fig. 4.5 Water Transport Demonstration

Fig. 4.6 Daugher Helps with Dinner

Fig. 4.7 Fire for Cooking and Food

Children's Drawing Workshop

Fig. 4.6 Daugher Helps with Dinner

The first co-creation community workshop involved the community's children describing their daily routines and activities through a structured drawing activity. The children were asked to draw what made them happy, that with which they associated happiness, and also to illustrate their favorite activity. The majority of the kids associated happiness with water, cows, school, and green vegetation. Their favorite activities included soccer, running, playing tag, and hand clapping activities.

Most of the children were not in school because they were on break at the time of our visit. There were 13 participating children, aged 3-12. The subject children were sampled from 6 different families, none were considered orphan. Most had never held a pen or crayon before. The children were given paper, crayons, pens and pencils appropriate for the exercise. Looking over their drawings and discussing them through a translator, we learned that to these kids, happiness is apparently connected to their natural surroundings and traditional practices. We decided to observe further how their natural surroundings bears on their happiness and why traditional practices make them happy so we could incorporate these elements into the master plan.

HELGA & KDI Precedent Visits

Two research precedents from similar initiatives in Kenya were examined, the Maasai Girls Rescue Center and Kounkuey Design Initiative.

Maasai Girls Rescue Center (HELGA): Bettina and I visited HELGA, meeting with Director Priscilla Nangurai and her friend Angie Siparo who, coincidentally, had just dropped a girl off at the Center who was facing forced marriage. The leaders of this organization shared their thoughts and conclusions about how to provide children a safe space. Other homes had been built in Kenya to provide a refuge for girls suffering certain issues around marriage and customs. Several models of orphanages including the "home" model were discussed as possibilities for recovery centers or shelters. In the "home" model, each child lives in a small home with a parent figure like Priscilla. They mentioned other models of orphanages, mostly large scale Maasai dormitories designed and built by outside organizations, and programs to be problematic in that the children do not receive enough attention or support and that sometimes the high admission standards do not admit the children who really need a safe home. They said that the vulnerable Maasai children need as much protection and support as possible or else the families with strong Maasai cultural traditions will take the girls to continue to practice traditions of FGM, early marriage and child labor. They also described their programs used to empower the girls by teaching horticulture and farming and efforts to educate local community members how to grow their own food. Visiting HELGA, we were made aware of what Maasai women really face in terms of hardship and choices and introduced to innovative ways to protect and support these vulnerable children. Priscilla and Angie, together greatly experienced in successfully sheltering and raising vulnerable girls, also gave us their comprehensive opinions on preferred models of Maasai orphanages, that it depends on the staff, the building program and size and the acceptance the home(s) have in the community.

Fig. 4.9 KDI Kibera Sanitation Station

Kounkuey Design Initiative (KDI), we also visited the KDI, a grassroots design organization that develops low-cost co-creation projects in Africa's largest slum, Kibera, located in Nairobi. As of December 2015, they were just finishing a sanitation station project, an example of how to incorporate water reuse with sanitation within a limited amount of space. More specific to our project, we interviewed the engineers and design staff about how KDI works with the Kibera community from the beginning of the design process to the project's completion, using the co-creation design process. They showed their third public school project that was being built by the parents of those children who were hired by KDI and described to us how the parents and kids helped to design the school through meetings, 3D renderings and other workshops. KDI was an outstanding example of how a co-creation process can work and empower a very tight and challenging community. We learned that involving as many parents, community stakeholders, local craftspeople and children as possible throughout the design process leads to designs that the community are more invested in and more likely to be long term stewards of.

Fig. 4.10 Bettina and Katy with HELGA Girls and Staff

Fig. 4.11 HELGA Greenhouse

Home Workshop

Fig. 4.12 Women's Home Workshop

Fig. 4.13 Women's Home Workshop Results

Fig. 4.14 Men's Home Workshop

Fig. 4.15 Men's Home Workshop Results

Fig. 4.16 Children's Dream Room

We held place making workshops in Kisharu, which included separate groups of women, men and children. They were asked how they would lay out program elements (dorms, classrooms, etc.) as if it was their own land and homestead. In this workshop, we put out a blank paper and had prepared some post-it notes with drawn features common to both the school and home such as a kitchen, dormitories/ beds, classrooms, garden etc. We had the group discuss where to place the features on the paper in relation to each other and then create a floor map. We also left some post-its blank, to allow more facilities or amenities to be added. Each group's priorities became evident through this exercise and we cataloged each layout for reference in the programming stage of the project.

At a follow-up workshop we also staged a 'dream room' using sparkling straps of paper in a tree, under which the children were allowed to dream freely about the features of their dream school. This was a spontaneous exercise that we developed so that the children would feel unpressed and playful in their conceptualizations. They appeared happy and unrestricted while engaged in their 'dream' sessions. We found this exercise well received and helpful in getting a more 'free' unrestricted idea of their wants.

When interviewing the women, having a female interpreter was important in allowing the Maasai community members to express concerns about reproductive health and other gender sensitive issues they would not talk about among men.

This provided us with good insights into the differences between male-female criteria and their differing priorities. Women preferred that the kitchen and kids be close together, whereas men were mostly concerned with where the livestock would go. The group also added protective features like a guard post.

Site Analysis

Fig. 4.17 Daniel S. on Crater's Edge

With our key contact Daniel Sempui, we explored the community's landscape on hikes, motorcycles and in safari vehicles. We noted the indigenous flora, fauna, medicinal, and multi-use plants along with culturally significant places.

Together with an architect from Nairobi and two women, one of whom is Joseph's wife, Margaret Tanin, we extensively explored the site on foot to settle on three acres of land for the project. This was the first formal site analysis and was later followed by more rigorous documentation.

February 2016

Community Focus Groups

Fig. 4.18 Men's Masterplan Focus Group

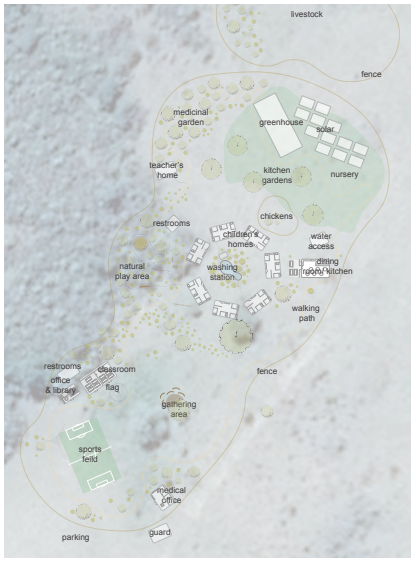


Fig. 4.19 Masterplan Option 1

The Kisharu community leaders separated into focus groups consisting of either men or women - not mixed - to decide on the final masterplan. The four plan options were sent from abroad via email and Daniel printed them individually to bring to each focus groups. Each focus group was presented four plan iterations based on the previous home workshop and precedent studies. All the focus groups agreed on the same plan option and had similar suggestions on what to add to the plan. The suggestions included having one continuous traditional acacia fence around the complex, a large combination kitchen/dining room, and locating the teacher's house in a private area distanced from the classroom.

March 2016

Community Leader Model Workshop

Fig. 4.20 Men's Model Workshop

We presented the community leaders with a scale model of the collaborative site design and held a discussion around how well it represented their vision and needs. The main concerns expressed by the constituents related to livestock, specifically that the most important animals in the first phase included healthy cows (milk and fertilizer) and chickens (eggs); sheep (meat) would be added at later stages. Suggestions included employing a livestock manager to take care of animals and making agriculture a part of the children's curriculum. Regarding agriculture, they emphasized the production of spinach, tomatoes, beans, maize and potatoes grown with a compost medium. It was also suggested that weekends be used for learning traditional livestock management skills and about Maasai culture. A poignant quote came from Simon, a community leader, who said, "the children can also grow in the garden."

Further suggestions included that we cultivate medicinal plants on the site for a separate medicinal garden and that a protected gathering area could be a place for storytelling at night. Simon added, "they learn about the land through storytelling." We also asked what is the father's role, to which they replied: to teach cleanliness, cooking, respect, and about the importance of marriage. We ended our session by asking where they see their children in 10 years. Overwhelmingly, the response was a hope that they will have better lives because of education, more knowledge, that the children will discover their talents, and that food security and women's rights will improve.

The model was instrumental in describing the proposed design and dynamics of how the spaces will work and as a touchstone for the subsequent discussions.

Site Analysis

Fig. 4.21 Camping Across from the Site

Our return visit back to the site in March revealed a landscape changed significantly by the dry season. The wet areas that were in the landscape were more obvious in the parched soils. We made more site analysis outings, notably a 25-kilometer hike/excursion around the inner crater rim to Mt. Suswa summit. We also visited a network of baboon caves a few kilometers from the site which there is an wide-ranging underground system of 70+ obsidian caves formed from ancient lava flows, a unique geologic feature of the area. Steam rises from various vents around the crater, showing the potential for clean hydro-logic energy systems, as well as clean water.

The plants on-site need to be drought tolerant. The trail around the summit could be part of the school activities and the cave system could be a place where children go to learn about geology and explore the flora, fauna and distinctive landscape.

Fig. 4.22 Daniel S. in the Baboon Caves

Children's Play Workshop

Fig. 4.23 Children Playing Soccer

Fig. 4.24 Children's Play Workshop

Play observations: Groups of kids preferred to play in the flat area of the field outside of Joseph's house (Joseph donated the land for the prospective site). Small groups of kids liked to play on top of the geothermal mountain. All ages are encouraged to play together. Small groups of children ventured off to places that offer prospect and refuge opportunities, as the geothermal mountain and crater's edge. Cooperative games included hand clapping and games of tag where kids participate sitting in circular formations. The children's favorite sports included handball and football (soccer), tag, dodge-ball, volleyball, clapping and running games.

Women's Model Workshop

Fig. 4.25 Women's Model Workshop

We discussed what equipment they would need to cook for 60 kids. Categorically, they agreed they would need 4 burners to cook, inside and outside cooking stations and ample storage for pots and pans. The women would primarily want to cook with onions, carrot, kale & cabbage and dill, pepper and chili peppers. Cows are the most important animals for milk. Chickens are good for eggs (boiled or made into pancakes). We asked what is important for young mothers to teach the kids. Together they said, "the mom's teach the kids everything" and "the men don't know anything about children." They stated that it is important, if there is space, for the homes to have a private bed/space for every child. They ended by restating how "play is good for children" and it is best when all ages of children play together and learn from each other (akin to a one room schoolhouse).

HELGA Play Workshop and Interviews Part 1

The first workshop we had with the HELGA girls revolved around playing volleyball. Girls of all ages participated. Some of the older girls were more aloof, inclined to hang out on the grass and had to be called over by Priscilla Naisula, HELGA's director. Younger girls watched the older girls and then joined in. The girls did not require much equipment to engage in play. After the games, the girls ate outside and washed their own dishes. That evening, the girls had fun sharing their talents, dancing and singing together which appeared to be a good opportunity for them to learn to perform and take on leadership roles within the group. We noted that the girls seemed to really enjoy singing together.

The first group interviews with some of the older girls (13 girls, ages 3, 6 and 8), were about day-to-day routines. Some of their favorite activities were engaging with others outside of HELGA and visiting the nearby schools, going swimming at the river, and attending music and dance festivals, church and Friday games. They also mentioned they never go anywhere alone. If they see a new girl keeping to herself, they go talk to her and comfort her. These girls said they also love meeting visitors and getting to know others who come to visit HELGA. The girls saw themselves as one big family, depending on each other and caring about one another, and considered their mom to be Priscilla (the leader of HELGA). My impression was that the girls seemed happy and felt fortunate to be living at HELGA. The girls expressed a desire for a play field like the neighbor school where they occasionally go to play with other children.

Fig. 4.26 HELGA Interviews

HELGA
Play Workshop & River Walk Part 2

Fig. 4.27 HELGA River Walk

Fig. 4.28 HELGA River Exploration

Fig. 4.29 HELGA Riverside Slide

We asked the girls their favorite place to play and they brought us to a hillside along the river. The girls loved running up and sliding down the river banks. Some girls were more risk-takers than others. The girls mostly hung out and explored in small groups while some were more solitary. They also played music from their phones and were not shy about dancing anywhere. They enjoyed taking photos and using the river as a backdrop for their poses. They were more talkative at the river perhaps because of the comfortable, free atmosphere away from responsibilities and school. The girls used the river as a sort of stage to perform in front of one another, offering evidence of how the landscape can facilitate comfort and play. Clearly, we needed to design elements in the master plan where children of varying abilities would be inclined to take risks. It was also evident that we would need to have options designed into the landscape for children to go to retreat or be social.

HELGA
Drawing Workshop

Fig. 4.30 HELGA Drawing Workshop – Hills Drawing

Fig. 4.31 HELGA Drawing Workshop- Home Drawing 1

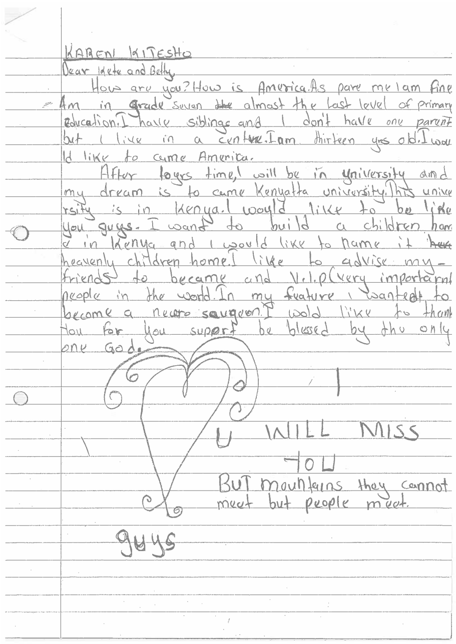
Fig. 4.32 HELGA Drawing Workshop –Home Drawing 2

This drawing section represents our interview with a group of girls currently living in the HELGA Maasai Girls Rescue Center, concerning their concepts of protection/comfort/happiness. The girls associated protection and safety with guards, dogs, a safe learning environment, staff members and rescue center management. They associated comfort with seeing their friends here, eating good food, feeling healthy, playing, interacting with teachers and director, and having older students and peers advising younger students. Delight and happiness was associated with playing games and spending time with visitors, the director, their guardians, participating in dance and singing competitions, singing in church, and going to the river. The girls were then asked if there was something about HELGA with which they associate protection, comfort or happiness. Most girls drew what makes them happy - the hills at the river, flowers and their concept of home. Most drawings revealed that their home and their surrounding community of girls contributes most to their happiness. A few girls drew hills like the ones they were sliding down. I observed that casual conversation was the best way for them to express what they associate protection and comfort with, since those ideas may be abstract at first, most girls had the ability to identify and express what made them happy.. Overall, this workshop was useful in identifying specific elements and systems at HELGA that contribute to the girl's overall well-being.

HELGA
Writing Workshop

Fig. 4.33 HELGA Writing Workshop 1

Fig. 4.34 HELGA Writing Workshop 2



KAREN KITESHO
Dear Kete and Betty,
How are you? How is America. As pare me I am fine
Am in grade seven almost the last level of primary
education. I have siblings and I don't have one parent
but I live in a centre. I am thirteen yrs old. I wou
ld like to came America.
After 10yrs time, I will be in university and
my dream is to came Kenyatta university. This unive
rsity is in Kenya. I would like to be like
you guys. I want to build a children hom
e in Kenya and I would like to name it
heavenly children home. I like to advise my
friends to became and V.I.P (very important
people in the world. In my feature I wanted to
become a neuro saugeon. I wold like to thank
You for you suport be blessed by the only
one God.

I WILL MISS
YOU
BUT mountains they cannot
meet but people meet.
guys

Fig. 4.35 HELGA Letter

We gave the girls a thought experiment: imagine10 years into the future and write us a letter about your lives as you imagine they will be. A majority of the girls understood the exercise. A few of the girls wanted to return to HELGA or similar refuges after college and be teachers and/or staff. Most girls saw themselves as working professionals with their own families. Only a few of the girls wanted to return to their traditional Maasai homes which could be challenging given their background. Through this writing exercise, it became evident that some of the girls could help to staff Project L.I.F.E. and be mentors for Maasai girls and boys coming from similar situations.

Priscilla Interview

In our interview, we asked Priscilla if the girls ever go home. She said that if there is an emergency or a request for a girl to return home, it's up to them whether or not they leave and she will help guide them through the process and offer support if they face challenges while home. We also asked if she regularly sees malnourished children entering her care. She described a common, precarious situation where a women's only property in the Maasai home is the milk so women often resort to selling their valuable milk and their kids end up drinking soda or whatever is available. Sadly, this results in many malnourished children. Women also receive secondary parts of a butchered animal - usually only the backbone pieces - while men get the prime cuts of the meat. The women are responsible for feeding the children, and with meager amounts of provisions, the children often suffer at the bottom of the food chain. We asked about the children's typical daily domestic responsibilities and duties at the home which included cleaning up after themselves in their personal areas and after meals. Priscilla described the importance of separating the men and women's restrooms and maintaining a clean hand washing station. Endemic to the community is widespread gender-related violence, rape, and suicide. Commonly, when the mother dies, a child is assigned a stepmother who usually treats the children poorly (especially girls) because the orphaned children carry a stigma and are secondary to the family's own children. Priscilla said these are the leading reasons girls seek refuge at the center.

Inspired by our interviews with Priscilla and her experience engaging vulnerable girls and designing a clean, safe, positive environment, we incorporated ways of fostering sanitation and nutrition through playful and transparent interventions into the L.I.F.E. master plan that aim to educate the children as well. The children will also have daily responsibilities and duties that are not tied to gender or gender-specific. It is also evident that each child should have privacy in their home/space which should be separated by gender from ages 6 onward. Also, restrooms will be separate by gender.

Fig. 4.36 HELGA Tree and Benches

Head Teacher John Interview

Fig. 4.37 Interview with Kisharu Head Teacher

We interviewed the Kisharu head primary school teacher, John. He has lived there every week Monday-Friday since 2014. He said the children primarily suffer from health problems related to hunger, being tired or feeling unwell in the morning, and from coughs/respiratory issues in the cold months. We asked what children do if they do not go to school, to which he answered, “they send another child to check on them and then work with the parents.” Not many children drop out of school entirely, but many do not attend regularly due to their parent’s inability to pay school fees. Usually teachers are local people who have finished secondary school or sometimes a teacher-training program. It appears beneficial to have teachers familiar with local family situations to keep the kids in school and not let them fall through the cracks. Most children live within 3km of the school and bring their own lunch, while a handful come from farther flung regions. There were two children specifically who were not doing well in this school, suffering from mental and physical issues and they tend to stay home often. He mentioned that it has been a long process of push/pull with the parents of vulnerable children and that he could use help with outreach and managing duties. Our interviews with john made clear that through partnering with local schoolteachers, we can be more aware of which children need help in the community and how to help them.

Primary School Interview & Drawing Workshop

We asked the children about their daily school routine. Before school, they have some chores such as dish washing and animal care. One child runs 40 minutes to school every day because it takes too long to walk. Most help their parents when they come home and usually do homework in the evening. We then asked them to draw/illustrate their dream school and to imagine what they would add to their existing school, they said, as a group, that they’d like more classrooms, water tanks, better toilets, a fence for the compound since cows and other cattle tend to cross through the playgrounds, a school bus and a staff room. They also wanted a food garden and more trees for shade. Their drawings included elements found in common schools along with many drawings of water cisterns, school buses and large fences. Water was the central feature of all the drawings and we noted its importance for the master plan. Another teacher mentioned that many of the girls probably wanted school buses because many are in danger of being raped on their long walk home from school. With these drawings in mind, we included back up and water-reuse systems in the master plan so the children could learn about the water cycle and how to harvest and reuse what they obviously understood as the communities critical resource.

Fig. 4.38 Primary School Drawing Workshop

Fig. 4.39 Kisharu Primary School

Site Analysis & Interview with Joseph

Fig. 4.40 Joseph Tanan and Bettina

Joseph donated the land for the site and is an expert on the area’s vegetation. We asked him what type of trees are best to plant and his recommendations were: Acacia, Whistling Thorn, and Sage trees. With respect to edibles, he suggested kale, potatoes, tomatoes, beans, maize, and carrots. Regarding irrigation, he’s a proponent of drip irrigation from the geothermal overflow and employing solar pumps. He said that in order to establish young plants, we should build a nursery and plant trees over the vegetable garden for shade as the temperatures routinely reach over 100F and heavy rains/hail can damage the crop. Some trees are planted directly in the ground from seed, while some are propagated, then uprooted and planted. He simply adds cow manure to water to spread as fertilizer and suggests not to plant where there is flooding, as the ground will be too rocky and the soil too thin. With Joseph’s guidance, we will increase the canopy coverage by planting trees and grow the same vegetables as he currently cultivates in his personal garden. Since he mentioned that the area does get flash floods, for the master plan, we noted the need to make an extensive drainage plan for the site and around major structures. The tree roots, once established, will also help with preventing erosion during flash floods.

Womens Building Workshop

Fig. 4.41Women's Model Workshop and Translator

Fig. 4.42 Women's Model Workshop Participants

We asked the women the question, "why do you build the traditional manyattas?" They answered that manyattas are affordable, fast and simple to build, durable, and importantly, the materials are readily available (sage and cedar sticks, soil, manure, water). Girls learn to build the structures from their mothers when they're around 8 years old. It usually takes a month to build a complete house or two months if the woman has a baby or a small child in her care. Surprisingly given the prosaic materials used, with proper maintenance a manyatta can last about 15 years.

It's important to note men and women live in separate manyatta's. The floor plan for the husband and wife's house is different: the man's house has a sitting room beside the bedroom and the wife's house has a cooking area beside her bedroom. The door of the house is as big as the biggest family member and each manyatta is individual to the woman who designed and built it - that is, each woman has a signature building style. We asked if they thought it's important to teach the younger generation these building skills and resoundingly, they said yes.

We then asked the women, "how do they address the concepts of protection, comfort and delight in their building process and home." Regarding protection, dogs are the family's alarm and protection. There's traditionally one window in the manyatta, more as a way to keep an eye on the outside than to let air in and it has to be small enough that a person can't get through. Regarding comfort, they emphasized "keep the home clean!" The women mentioned that cooking in the home creates hazards and dirty and that there needs to be ample drainage built into the landscape to protect from flooding. When we asked them about their favorite things about their homes, they listed in order: trees for shade, water nearby, and access to milk and grass.We asked the women, "what provides delight for you?" The women answered unanimously: have a garden and vegetables nearby, children helping with the garden and washing, having access for the children go to school, and for the children to socialize with people on 'the outside' since they consider play important and acknowledge the stresses felt by their children due to their circumstances might be alleviated by contact with those outside their own experience. We ended our session by asking, "what is the connection between the children living here and in the surrounding community?" Some concerns were that kids in the surrounding communities have families and parents, so children at the children's home may be jealous of going to the homes with intact families. However, they thought that kids from the surrounding community could also come to the home to play or participate in activities with the kids in the L.I.F.E. children's home, which may provide a good bridge between communities. The women mentioned that cultural activities could take place during the weekends and the surrounding community could all be invited.
Our women's workshop was particularly informative because we had a women translator and the women were already familiar with our proposal. With this in mind, we were able to dive into questions about protection, comfort and delight, their ideas/suggestions for the master plan and the connections the children will have to the surrounding community. With the women, we concluded that each manyatta should be distinct with similar dimensions to the traditional manyatta, there will be trees and water nearby for the children to access. Also, along with enough milk for the children and grass for the livestock, that the middle washing area should be in a private location away from the dust caused by other activities and weather. The women highlighted that play is an important part of the child's day and that we might include a teaching program for the children to learn about Maasai culture on the weekends and involve participants from the surrounding community.

Context Film

Fig. 4.44 Context Video Image

Bettina and I interviewed Daniel S. as he drove us around Kisharu and explained the geology of the area and traditional Maasai compounds.

Crafts Women Meeting

Fig. 4.45 Crafts Women Margaret Talan

We met with Margaret to go over designs and types of goods for an established crafts business that would support Project L.I.F.E. Everyone - all women - decided on a couple designs they'd like to make out of recycled shoes as well as traditional bead patterns incorporated into various bracelets and necklaces. Potentially, the knowledge and skills could be easily transferred to the children.

Margaret will head the women's craft business. The initiative will also host craft activities for the children at Project L.I.F.E. such as making traditional jewelry out of recycled items so children can learn about traditional beading methods and how to reuse materials. Margaret will continue to work on prototypes and sourcing materials. The proceeds will help fund Project L.I.F.E. along with Margaret and the other women in Kisharu that are employed by the crafts business.

December 2016

Construction Phase 1

Fig. 4.46 Project L.I.F.E. Animation (Santos)

A significant number of the Kisharu community have been hired to help build the first phase of the project with a local architect and construction company. So far, the community members have taken ownership of the project and have been organizing work parties. They expressed interest in teaching volunteers and children the traditional building methods and expressed interest in learning new construction methods. The kids have played an active role in building the garden and learning about agriculture with Joseph, the local community garden expert. Phase 1 construction includes building the children's homes, kitchen and dining facility, constructing the landscape infrastructure and greenhouses – all necessary elements in providing a safe home to the vulnerable children and meeting the primary needs of this community. Phase 2 construction, scheduled to happen next fall, includes the school, offices and library, teacher's homes and medical facility - which will all be used by the children, women's crafts business, and community. Before the second phase is completed, the children will attend schools closest to the site.

Opening Celebration

Fig. 4.47 Project L,I.F.E. Courtyard Washing Station

Fig. 4.48 Project L,I.F.E. Natural Play Area Manyattas

About 70 members of the Kisharu community, the project team and other community members joined together for the opening celebration. The local kids organized a traditional Maasai dance performed on the stage and the children cut the ribbon at the opening. The community leaders gave a speech and roasted goat for everyone involved in the project. At the end, the kids painted murals on the new children's homes. The crafts women had their jewelry on display and posters of the proposed the library and computer lab were on view for the public along with opportunities to leave comments. The community celebrated and welcomed the children and staff into their new home. The community appeared to demonstrate ownership, investment and pride at the project opening and Joseph, who donated the land, expressed that he was very happy to have been able to make the project happen.

Fig. 4.49 Project L.I.F.E. Animation (Santos 2015)

Project L.I.F.E. Animated Short

Originally, this film was put together by artist Joery Santoz to help with project fundraising and pitch our unique co-creation approach to donors, as well as stakeholders. During our first visit, we showed the Kisharu community the short animation that outlined our approach and highlighted the community leaders and project team leaders. This short preview was well-received by the community, so we decided to make an animation depicting the site in its imagined lively state. Without narration and using animated images, we were able to describe the co-creation process without an interpreter, however having an interpreter was very useful when getting/giving feedback and answering questions. After our initial visit with the wooden scale model and given our previous success showing the animation, we decided that adding an animation that explained our design objectives to the short animation would be an effective way to present our final ideas to the community from abroad and also act as a succinct package for others interested in the project.

Fig. 4.50 Kisharu Context Film Image 2

Context Film

For the context film, Bettina and I interviewed Daniel Sempui as he drove us around Kisharu and explained the geology of the area and traditional Maasai compounds. Daniel starts by explaining how Kisharu is located inside a double crater formation. He then goes on to talk about how the obsidian caves are very good for bee habitat and that the elder bee experts harvest the honey. He explains the geothermal condensation water systems that are found spread throughout the crater formation. The film ends with Daniel describing a modern Maasai family enkeng.

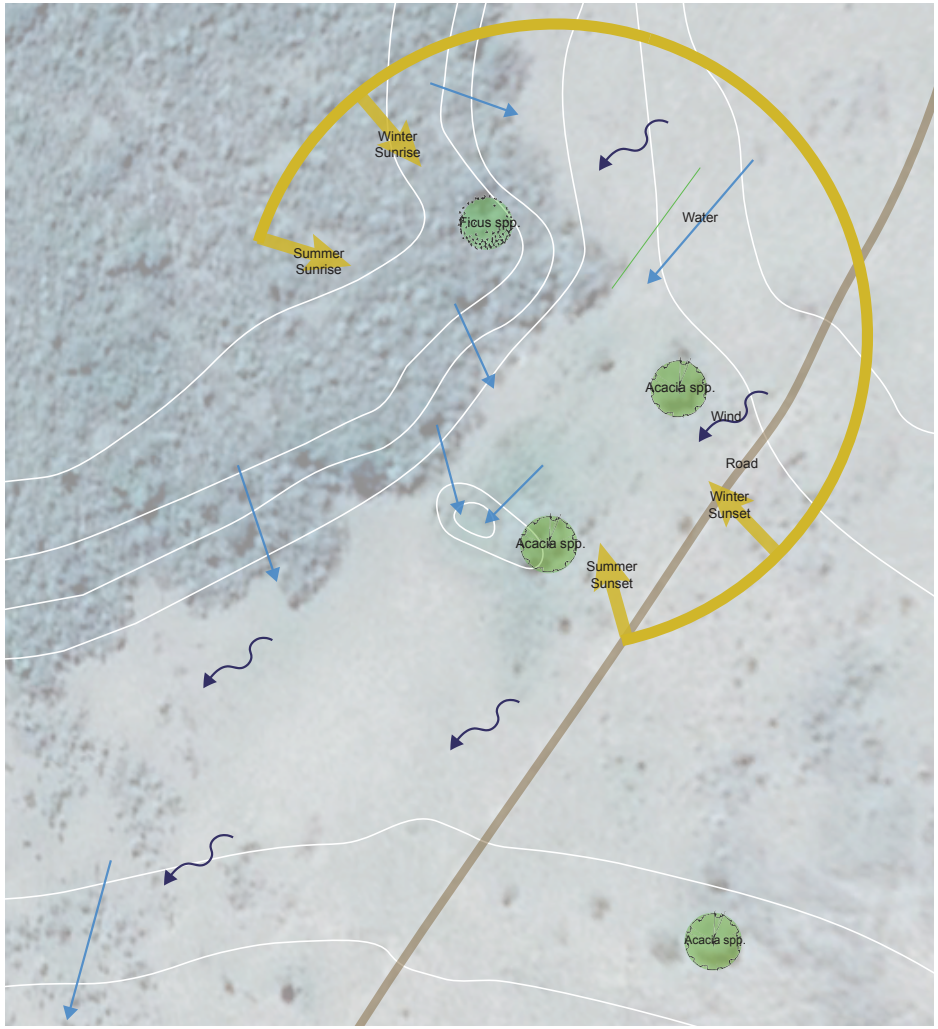


Fig. 4.51 Environmental Factors

Site Analysis

Situated in the Great Rift Valley region, Mount Suswa (elevation 2356 m) is a unique double crater, or shield crater, and contains a rugged and geothermally active landscape. The outer crater diameter is roughly 10 km in and the inner crater measures about 4 km. The largest population in the region lives in Suswa Town at 4,000 residents, sits on the outer rim of the caldera (the lowlands) and lies 124 km east of Nairobi. Southeast of Suswa Town, along a treacherous, often eroded and cattle-tracked trail is the village of Kisharu, population 2,400. Kisharu sits between the two craters on the northeastern grassland plain (considered the highlands) at roughly 1830 m.

Kisharu has a unique subtropical/dry forest/ temperate climate. The humidity level is generally above 80%, however this is seasonally variable. The days are typically sunny but the temperatures drop at night. The average temperatures are around 18.5C (mean maximum 34C, mean minimum 20C), Although inconsistent, annual rainfall averages 750mm. The rainfall is categorized as short rains lasting October-December and long rains which fall between March and May when the area commonly experiences flash floods.

The soils are well-drained, dark-brown volcanic ash, loamy, and highly fertile. The vegetation surrounding Kisharu includes acacia trees, grass, native shrubs and bushes. The inner crater is heavily forested by contrast. Although flat, the landscape is marked by erosion and run-off due to heavy rains and flash flooding. The most common grasses are cynodon dactylon and digitaria scalarum and the dominant tree species on our site is acacia tortilis. The environmental factors diagram shows the the sun, wind, light and existing vegetation on site. Wind comes from the east and the site is very exposed to the sun with three large acacia spp. trees providing shade. At the site, large flash floods occur every few years aso we have made plans for a landscaped drainage system field along with buildings that sit on piers.

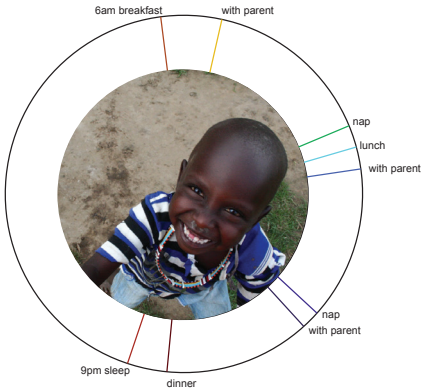
Fig. 4.53 The Site

Fig. 4.52 Arial Site View

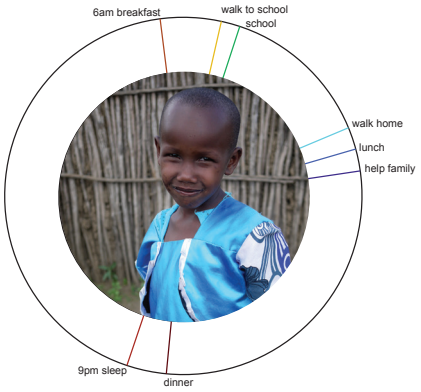
Typical and Proposed Daily Routines

The existing daily routines were identified by spending a day following Agnes, a Kisharu mother. As we followed Agnes around, we asked her about the responsibilities and daily routines in which she, her child, and father commonly engage. We then asked them about the typical vulnerable child's daily routine, however the vulnerable child's daily routine was not as clearly defined as the typical child's routine so we did not get much information. What we did identify is that the vulnerable children are most likely malnourished, overworked and with little time to play or participate in kid-style activities. It was also surprising how much the women work on an average day, fetching water by hand, taking care of the children and cooking, while the men were mainly responsible for herding the cattle. The proposed daily routine for the center include reasonable sleep hours, meals, school, games, some chore responsibilities, and these activities would change slightly as the child grows. The parent at the center responsibilities would be providing meals, supervision and would serve as a parent-figure for the vulnerable children.

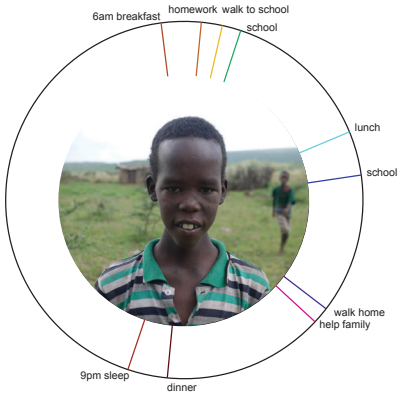
Typical Daily Routines



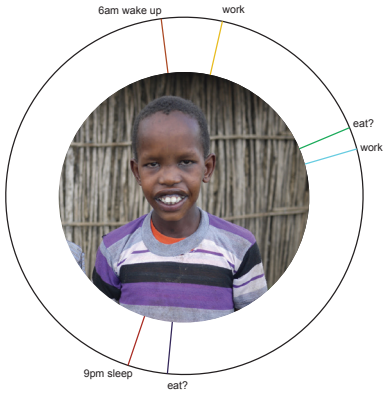
ages 3-6



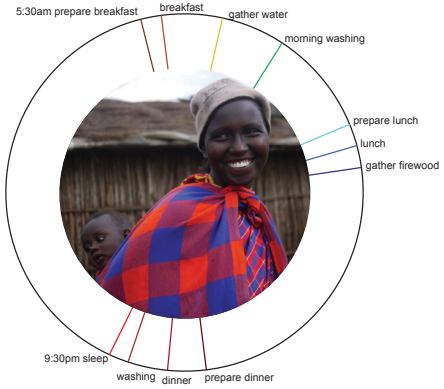
ages 6-7



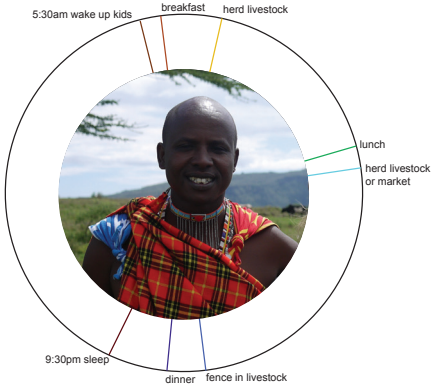
ages 8-14



vulnerable child

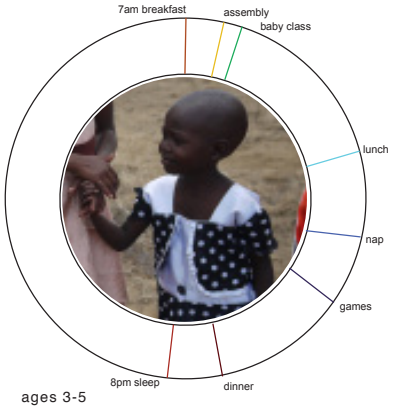


mother

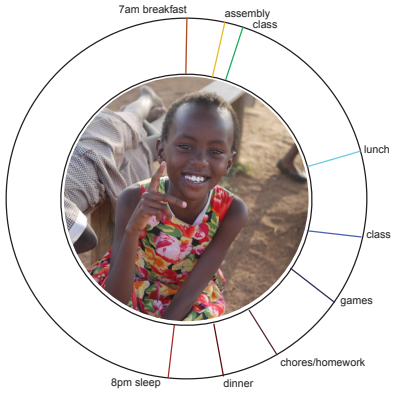


farther

Proposed Daily Routines



ages 3-5



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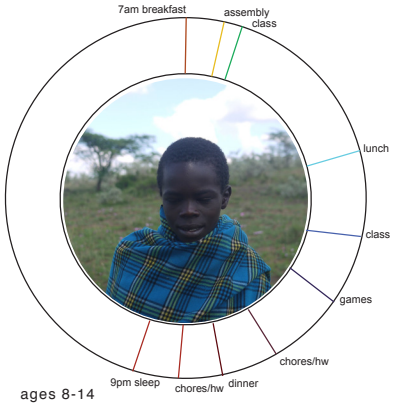

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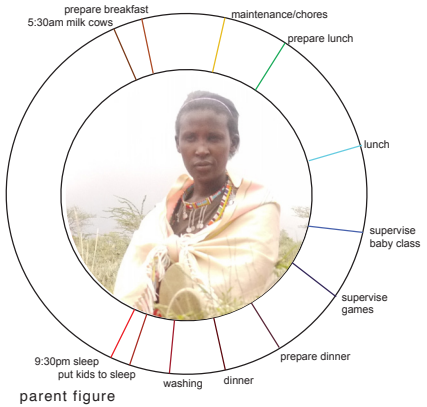

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Fig. 4.54 Typical and Proposed Daily Routines

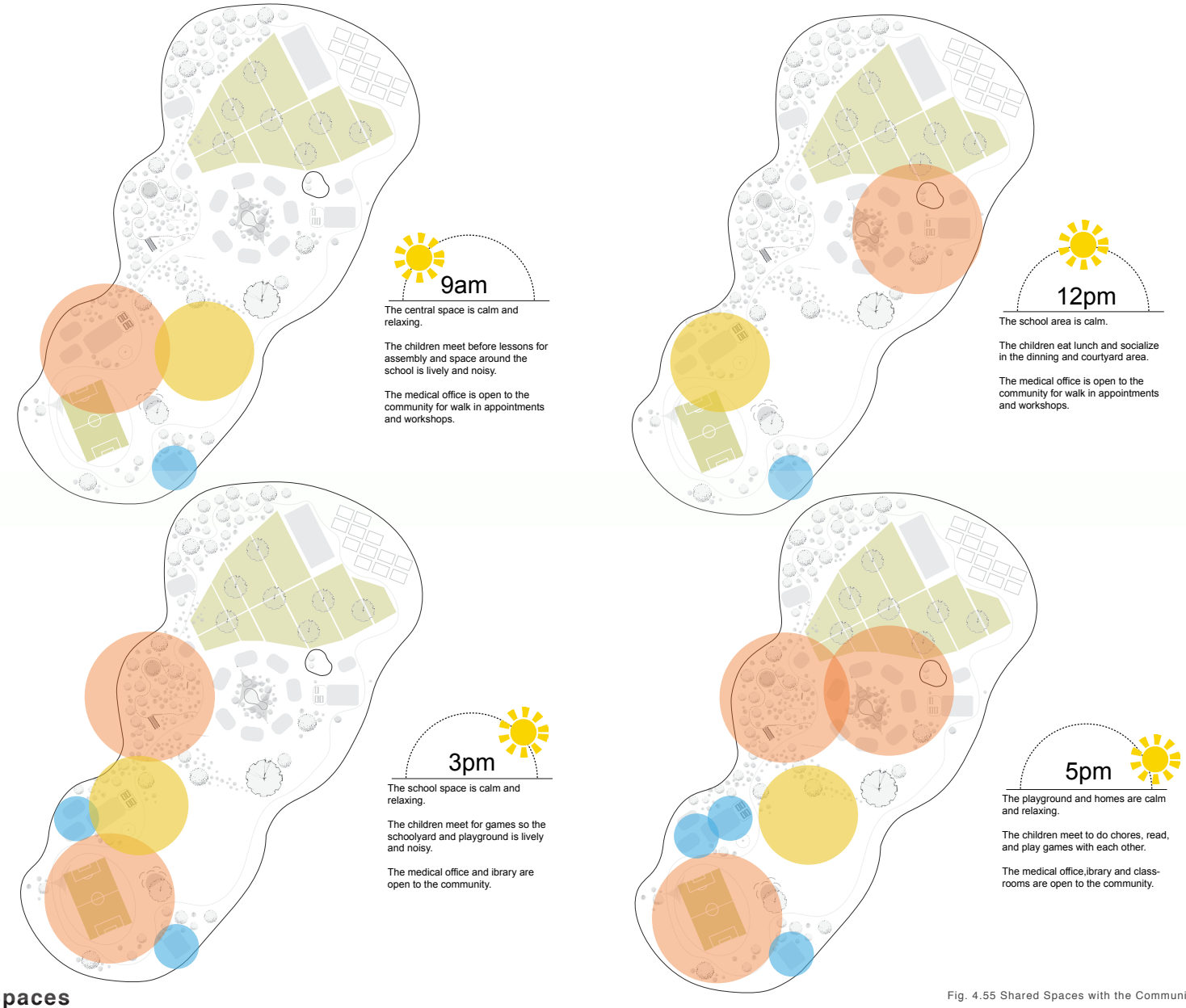


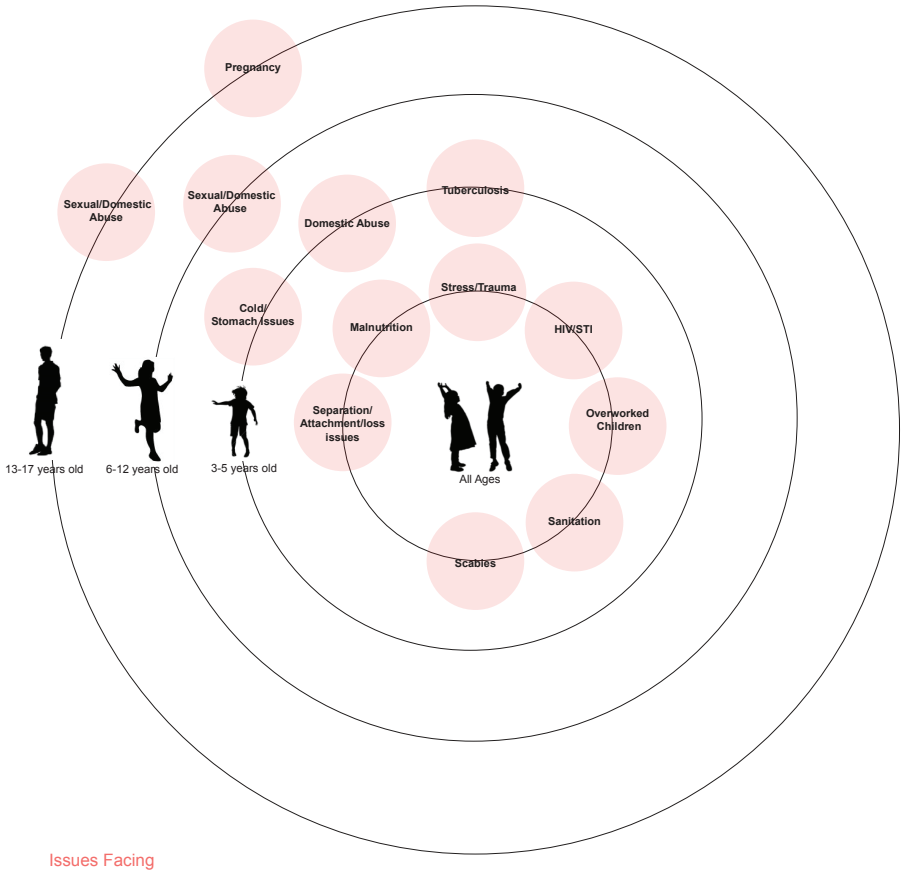
Fig. 4.55 Shared Spaces with the Community

Shared Spaces

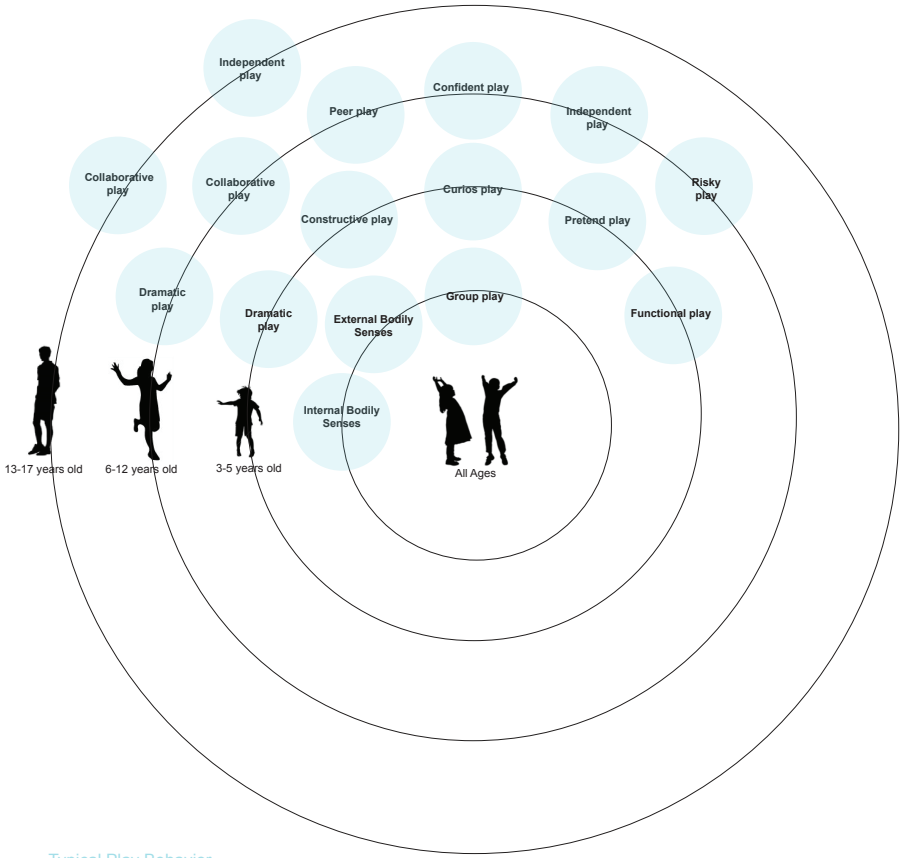
These diagrams show activity patterns for the site, including when the community will use the facilities and at what times of the day. The orange dots show where the children will be concentrated, yellow dots show calm areas, and the blue dots show where the outside community will be using the facilities and at what times of day on the average weekday. These routines are based off of the interviews with teachers and leaders of HELGA, needs of the community and typical routines of the children in Kisharu. The weekend might be similar however there will be no assembly and the community might use the school facilities, gathering space and stage.

User Group Information

These diagrams were generated by the user-group information table which was was especially helpful during the co-creation processes. Since all team members are now in different locations, this table acted as a way to compile the research and interviews we had done to find evidence-based affordances to use in our design. Although it was difficult finding research about developmental issues affecting the children, we were able to find research from other places about particular developmental levels and could compare what we found with locals familiar with these children. For the most part, these developmental levels seemed pretty universal and a helpful tool in finding evidence-based design.

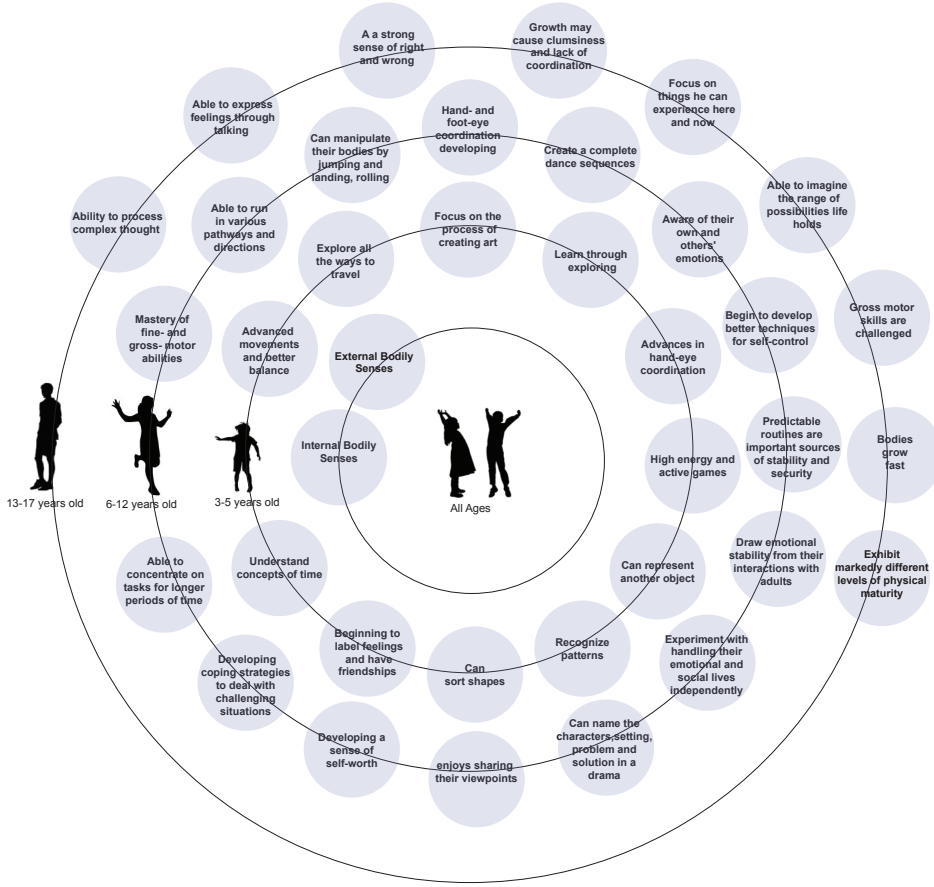


Issues Facing

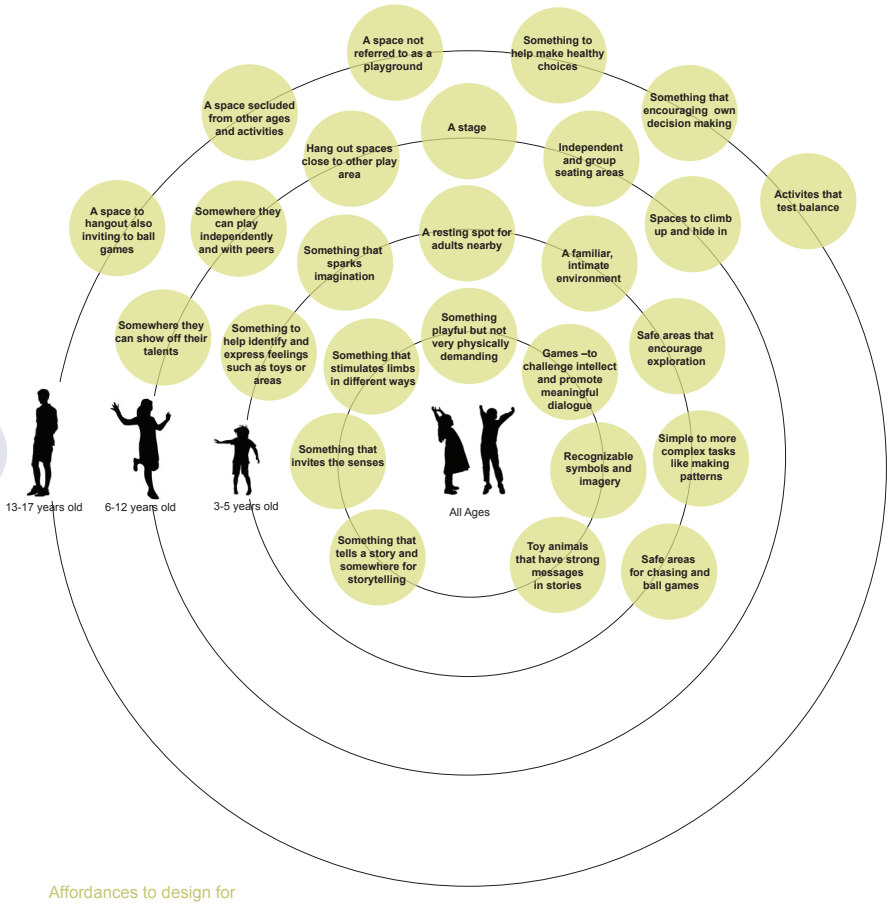


Typical Play Behavior

Fig. 4.56 User Group Information



Physiologica/Psychological Development



Affordances to design for

Affordances to Design for Based on Children's Characteristics Table Example

Age Groups	Issues Facing	Typical Play Behavior	Physiological Development	Psychological Development	Affordances to design for
3-5yr olds	**Separation/Attachment/loss issues:** This age group typically does not have the cognitive ability or the language to express themselves Their attachment behavior will weaken if not placed in the care of at least one adult At 3 years they really just need care and health is normal, nothing big (Community Leaders 2015) **Malnutrition**: This age group is vulnerable to the negative effects of poor nutrition and insufficient developmental care **Cold/diarrhea:** Sometimes just common cold, when there outbreaks of diarrhea it's really important to see a doctor at this age (Community Leaders 2015) - Also for slightly older children	Functional play and more advanced constructive play are most prevalent (the child is engaged in constructing something (Hughes 2009) Dramatic play becomes more advanced (Johnson et al. 1999) Simple games such as chasing and ball games and more play with peers (Perry 2003) Pretend and curious play. Approach the world with great curiosity and use their imaginations to help understand it (PBS 2003)	More advanced movements and better balance. Examples include the ability to skip and walk on stairs (Johnson et al. 1999) They explore all the ways to travel from here to there, including rolling, crawling, creeping, walking, running, jumping and climbing Use their motor skills to explore the creative arts. With art, they enjoy the sensory pleasures of the art materials and focus on the process of creating art, rather than the final product (PBS 2003) Three year olds learn primarily through exploring, using all the senses and are also able to listen to and understand conversations, stories, songs and poems Advances in hand-eye coordination help four-year-olds do puzzles, play with toys that have small parts Five-year-olds abound with energy and seek active games and environments. Their increased abilities to balance and coordinate movements allow them to ride a bike with training wheels, swim, jump rope and perform most ball-related skills. They show mature form in walking and running and are able to vary the direction, speed and quality of their movements (PBS 2003)	They can use a toy to represent another object, recognize patterns with daily activities and understand concepts of time like, "tomorrow" and "yesterday." Two-year-olds are just beginning to use logical reasoning to solve everyday problems. They can sort shapes, complete puzzles with eight pieces or less and stack a set of rings on a peg by size. (PBS 2003) Children this age are beginning to label feelings that they recognize in themselves and others. Controlling emotions is still difficult, however, so frustration may trigger emotional meltdowns. Comfort objects like blankets or teddy bears help two-year-olds cope with new situations or strong emotions Around three year olds children develop their logical reasoning skills as they play. As they develop more independence, these ages begin to have real friendships with other children. When conflicts arise with peers, three-year-olds will typically seek adult assistance. They are learning to recognize the causes of feelings and will give simple help, such as a hug, to those who are upset. Three-year-olds can better manage their emotions, but may still fall apart under stress. Emotionally, four-year-olds continue to learn what causes certain feelings and realize that others may react to the same situation differently. They can discuss stories and are able to tell their own tales. Children this age can manage feelings and social situations with greater independence (PBS, 2003)	Something that can be climbed, jumped upon, jumped down from, run on, and balanced on. Something the child can swing in, move, model, touch, and which appeals to the fantasy Something playful but not very physically demanding Something behind which you can hide, play a ball upon, or spin on and roll down on Something that invites to be looked at, sparks imagination, to be listened to, healthy to be eaten, to be smelled and to be touched. (Refshauge, Stigsdotter, Lamm & Thorleifsdotter 2015) Something to help identify and express feelings such as toys or areas to "play out" what they are feeling inside" (Gil, E., & Drewes 2005) Need familiar adults nearby for security as they explore and play (PBS, 2003). Note: The presence of appropriate adult care is particularly important for young children who require a significant amount of one-on-one attention to meet their basic developmental need for attachment (Hepbum) Design recommendations: Safety: care - familiar, intimate A comfortable intimate area Safe areas that encourage easy exploration Simple to more complex tasks like making patterns Areas for chasing and ball games

Table. 4.1 Affordances Table

A Quality Criteria for Therapeutic Landscapes in the Public Realm

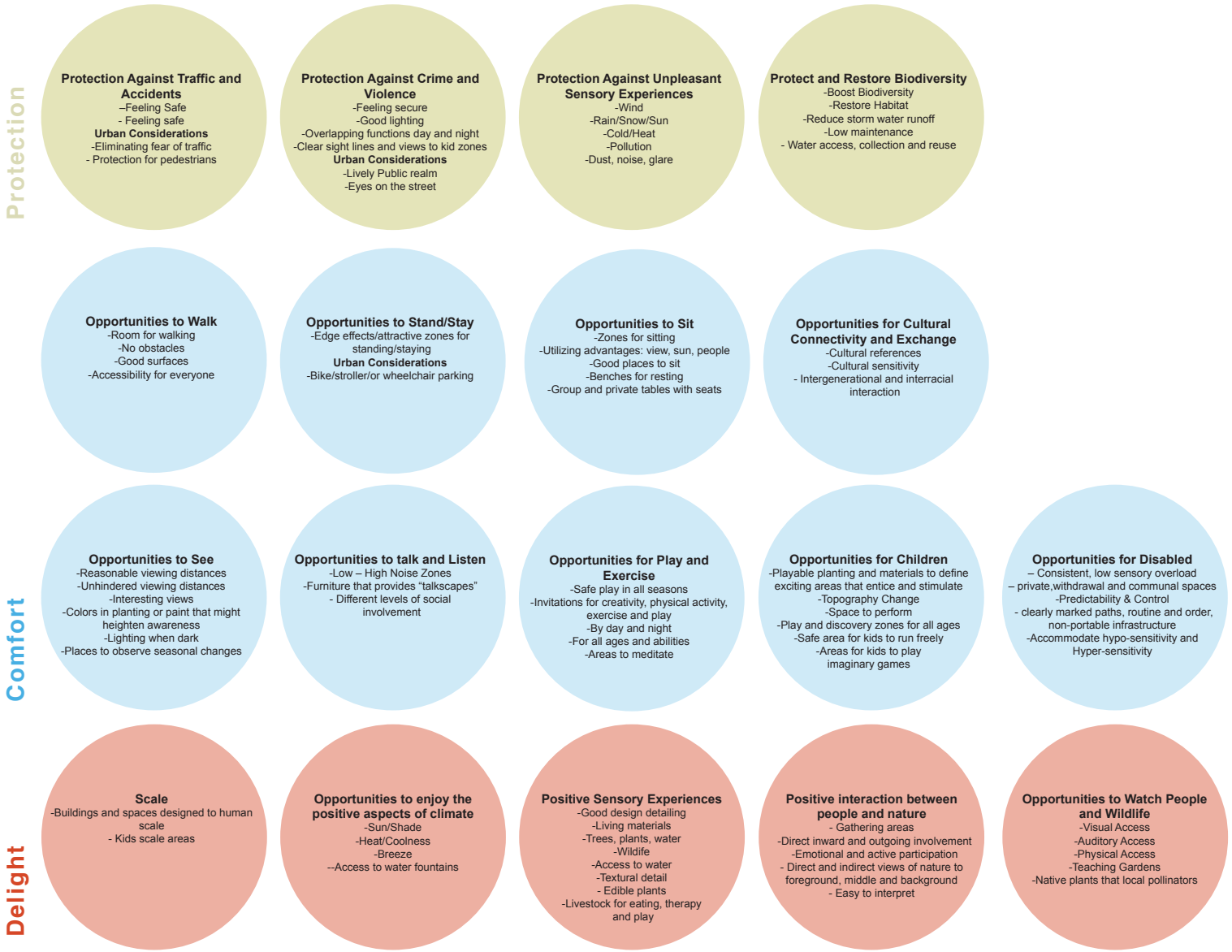


Table. 4.2 Therapeutic Landscapes Quality Criteria

Children's Drawing Workshops

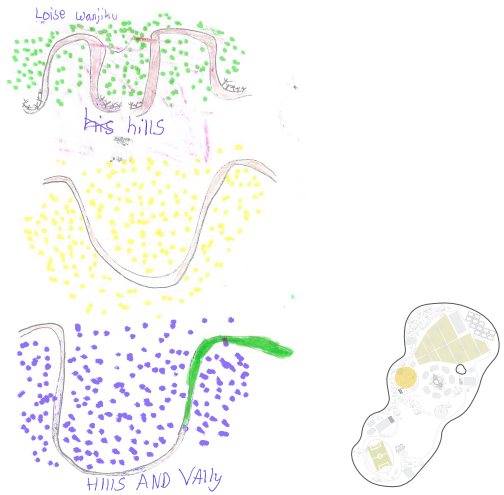


Fig. 4.57 HELGA Drawing Workshop – Hills Drawing 2

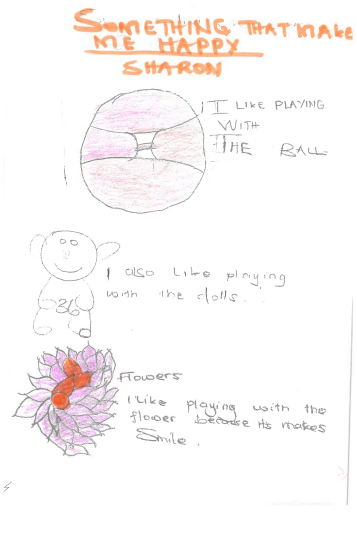


Fig. 4.58 HELGA Drawing Workshop – Flowers Drawing

Fig. 4.59 HELGA Drawing Workshop - Home Drawing 2

What is your favorite thing about living at HELGA?

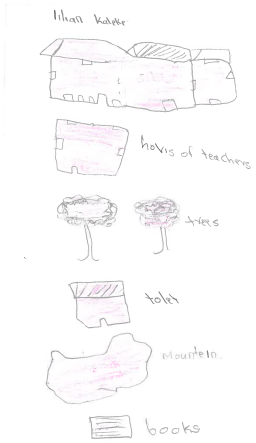


Fig. 4.60 Kisharu Dream School – Drawing 1

Fig. 4.61 Kisharu Dream School – Drawing 2

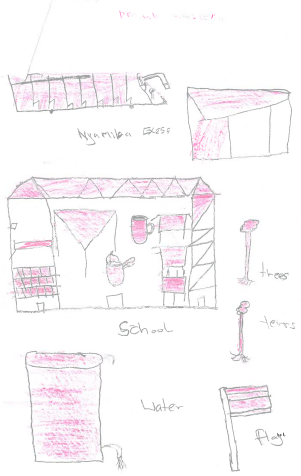


Fig. 4.62 Kisharu Dream School – Drawing 3

What is your dream school?

5 Proposed Design Strategies

Concept Background

The Kisharu community identified two pressing issues in our meetings. First, the community would like Project L.I.F.E. to provide a safe home and educational opportunity for a growing population of orphaned and vulnerable children. Kisharu has a school dropout rate of 65%, consisting principally of females facing early marriage and young pregnancy. According to the Kenya Demographic and Health Survey in 2015, 18% of girls between the ages of 15-19 have given birth or are currently pregnant with their first child. Second, the community asks that Project L.I.F.E. provide employment and offer financial empowerment training to women through its proposed community center and 'grassroots' crafts business incubator.

Fig. 5.1 Eco Manyatta Concept

Concept

The main focus of the master plan will be to address the needs of the vulnerable children, as they are the community's top priority. The concept for the landscape design is a 'children's village' - the parti being a traditional enkang or arrangement of manyattas. The circular arrangement is a familiar configuration to the children. A washing area will be placed in the center for equal access and to protect, comfort and delight the children with clear site-lines, visibility, generous space, and playful pumping mechanisms. All development in the master plan is low-impact, utilizes vernacular building methods and, when possible, employs available materials such as wood and recycled goods. Our concept of the 'eco-manyatta' and the other related buildings are above ground for drainage, airflow and minimal footprint and all vegetation on site is protected/enhanced through appropriate planning, shading, and our comprehensive grading and drainage plan. Our proposed village development will include a closed-loop water system with low-tech condensation/purification systems and composting toilets. One key directive is to keep maintenance low and to provide continuing education for those community members interested or already having skills/knowledge in repairing the buildings, water systems, solar electric systems and the like. Project L.I.F.E. will be powered by a solar array adjacent to the greenhouse. The greenhouse will be the major food source for the 42 children and will be regulated by the geothermal network. The geothermal water network is potable and will be used for cleaning/hygiene and irrigation. These methods in addition to farming on the rich volcanic soil ensure a low-impact development for the village of Kisharu.

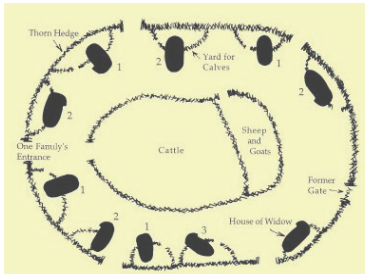


Fig. 5.2 Traditional Maasai Enkeng (Cattle)

The site master plan offers choices for children to be active or find quiet/safe spaces and for different levels of learning and social engagement. The girls at HELGA mentioned that one of the most comfortable places was their classroom, so we developed a plan to extend the classroom environment into the landscape and provide an inside/outside infrastructure for learning.

"It takes a village to raise a child."
-African proverb (Sankan 1975)

"You must treat the earth well. It was not given to you by your parents. It is loaned to you by your children."
-Maasai proverb (Sankan 1975)

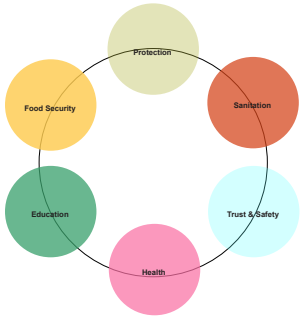


Fig. 5.4 Project L.I.F.E. Village Concept

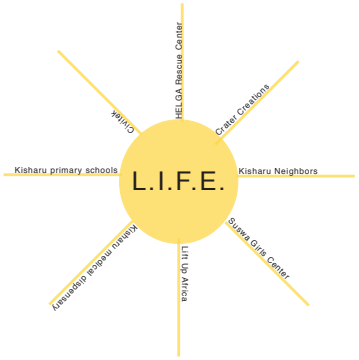


Fig. 5.3 Project L.I.F.E. Community Partnerships

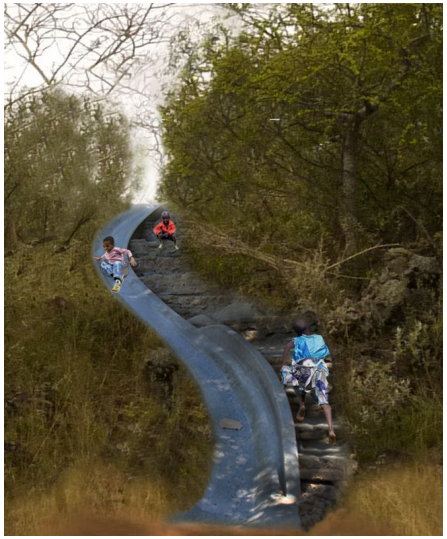


Fig. 5.5 Project L.I.F.E. Natural Play Area Slide

Fig. 5.6 Project L.I.F.E. Natural Play Area Manyattas

L.I.F.E. Landscape: A therapeutic landscape that inspires creativity, fosters play and educates through hands on discovery

Fig. 5.7 Project L,I.F.E. Courtyard Washing

L.I.F.E. Home: A courtyard oasis celebrating the connection between water, protection, sanitation and play with clear site-lines and human-powered pumps

Proposed Therapeutic Spaces

Natural Play Area

Inspired by the slide at HELGA, this area would provide all ages with options and opportunities for taking risks, free play and physical exploration. It's an area where children's mental fatigue can be alleviated, where they can build a healthy self-image and discover their natural boundaries. In 2003, Wells and Evans studied 300 children and found that access/proximity to nature had a buffering effect on stress and adversity, improving their sense of resilience, mastery, and self-worth. Another 2006 study, demonstrated the effectiveness of wilderness programs, showing an increase or improvement in decisiveness, interpersonal skills, self-esteem and self-confidence, feeling of being in control, ability to concentrate and having a positive outlook (Faber, Taylow & Kuo 2006).

In the Kisharu Women's Workshop, the women also identified play as being an important part of the children's daily routine and for the children to socialize with people on 'the outside' since many of the children in the home come from a stressful environment. This play area next to the children's homes can offer a place for children from the 'outside' community to feel welcome, socialize and play with the children living at the center. Play is an important activity that will be encouraged and accommodated in various elements of this landscape.

The exploration area has seating and trail areas for individuals and groups. This area affords opportunities for children to test their balance, explore the landscape, build social skills, retreat into a calm place, or be in an outdoor classroom. The trees to climb and sit on and other affordances offered in the landscape will help to encourage exploration and are related to an individual's physical characteristics. as well as capabilities, perception skills, previous experience and the cultural meaning of their environment (Refshauge, Stigsdotter, Lamm & Thorleifsdotter 2015). Through pretend play and physical exploration, these children can potentially escape memories that trigger anxiety and sadness and engage in more improvisational and carefree social exchanges (Wagenfeld & Winterbottom 2015). This area helps encourage children to build relationships with other children, peers and nature which combined, can help relieve the loneliness and anxiety associated with trauma.

The child-scale traditional manyattas will be part of the school curriculum. Children will learn about traditional construction styles and building methods and have the freedom to design and construct their own manyattas. The child-scale manyattas also provide an opportunity for kids to play "house" and create their own spaces. Swings near the play area and a circular wood bench on the top of the hill offering opportunities for prospect and refuge. The quiet shaded space of the bench and the hammocks in this area offer the child a rocking motion and sense of enclosure. The rocking motion of swings, a quiet shaded space, and sense of enclosure are appealing to children feeling stressed, socially challenged or seeking a calming break from intense activities (Wagenfeld & Winterbottom 2015).

Children's Courtyard

The children's courtyard is meant to display concepts supporting human and environmental health, including a washing station with treadle pumps, water reuse, opportunities for play, education and sanitation. The ideas were generated in the community focus groups during the design process. In the initial co-creation workshops, the children of Kisharu identified water and green vegetation with happiness, as many have suffered through recent prolonged drought in the area. In 2014, the village of Kisharu lost 40% of their livestock (their main economic staple) due to drought.

The washing area also encourages cleanliness, helping to improve one of the biggest public health challenges in this community – sanitation. The children's homes are designed in a circular plan similar to the traditional Enkang, the circular Maasai family compound. The children's homes are inspired by a family model orphanage and include five kids per home with one parent figure. The children and local women have helped design each home according to that with which they associate protection, comfort and delight. Each home is unique, and the sense of home is promoted through it's signature design. This suggestion came from the Maasai women who have individually designed and built each home in Kisharu. For protection, the women suggested having small windows so people cannot see into the space and having watchdogs to fend off wild animals/intruders. For comfort, the women suggested the home and washing areas should always be clean. They recommended keeping the homes and courtyard comfortable, give the kids cleaning responsibilities, as well as keeping the cooking activities and smoke in the separate kitchen building away from the homes. It was also suggested to plant more trees for shade during the hot season. For delight, the women suggested having a vegetable/flower garden and water nearby and having the children help in the garden. Seeing the children socialize is also a source of delight for the Kisharu women.

Gathering Area and Stage

The Play and Social Gathering area includes a stage and seating area for performances, a flagpole and gathering area in front of the school. Located close to the main entrance, it is also a safe, convenient place for community gatherings. Inspired by the dance performances and singing at HELGA, the stage provides a place for the children to perform for each other. The stage also offers an area for play therapy and for children to act out their past experiences (psycho-drama). Children can also use the stage for pretend play and self-directed meetings. In the evenings, children can enter into traditional storytelling. Simon Muntolel, a community leader, said, "the Maasai children learn about the land through storytelling." The tree provides comfort and protection for such events. The flag pole area is where all students will gather for attendance every morning before school.

Medicinal and Vegetable Garden

The Vegetable Garden is a place for children and staff to grow food to feed the center. In addition to providing vegetables for the village, the medicinal garden is where kids can learn about traditional Maasai plant remedies. Simon Muntolel, a community leader, said, "the children can also grow in the gardens." The garden is an area to provide all ages and genders with an opportunity to cultivate something on their own and to be stimulated by nature. For children with emotional and social challenges, helping to care for and cultivate a garden offers distraction from memories of pain and loss (Wagenfeld & Winterbottom 2015). Another study suggests that master gardeners and gardening activities at crisis shelters can play an important role in helping children mitigate their psychological trauma and develop a restored sense of dignity (Pierce & Seals, 2006).

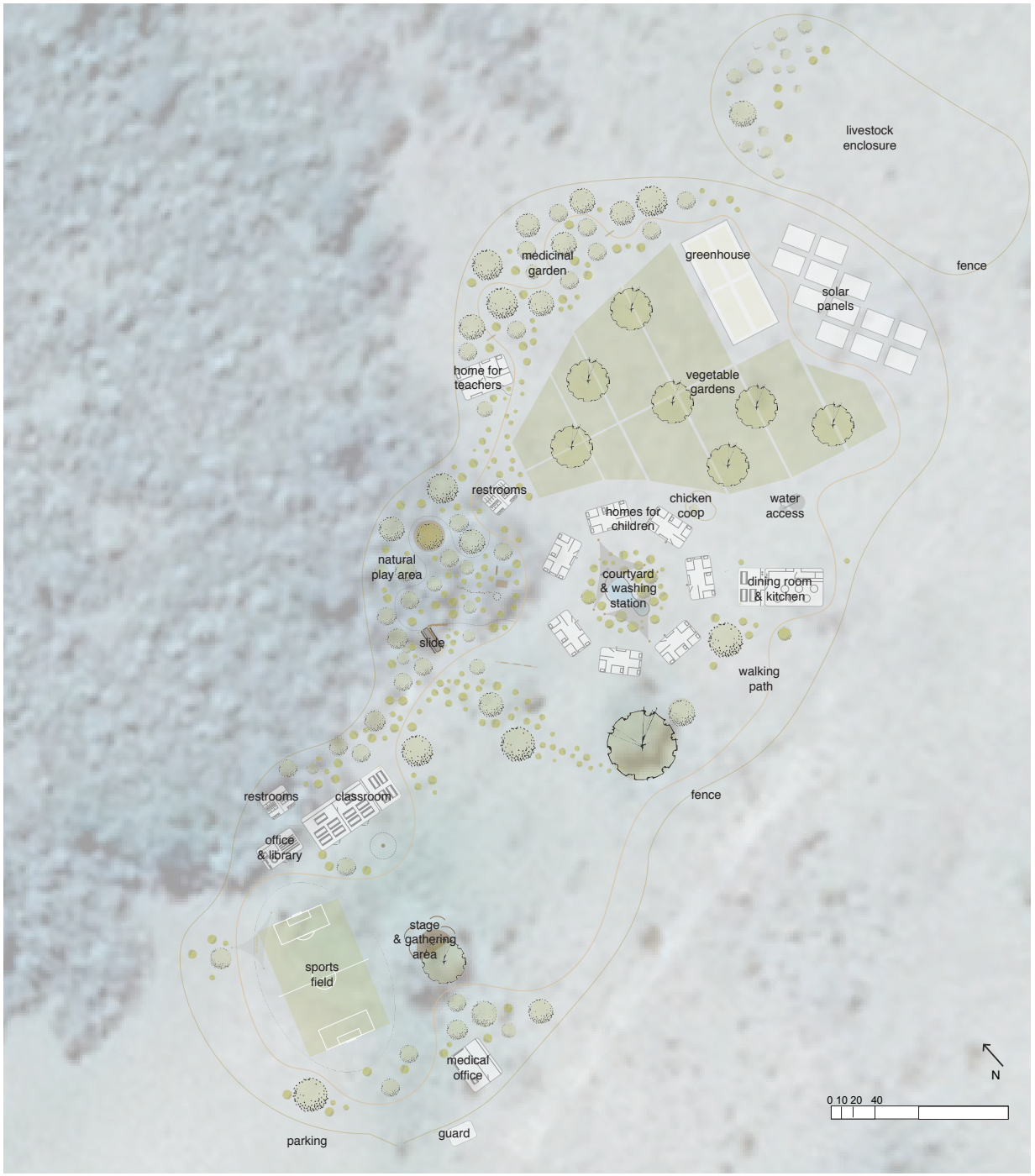


Fig. 5.8 Project L.I.F.E. Masterplan

Fig. 5.9 Project L.I.F.E.
Masterplan Section Lines

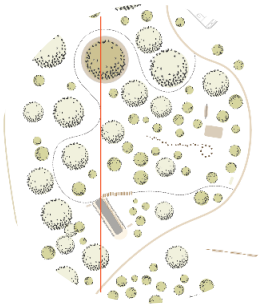
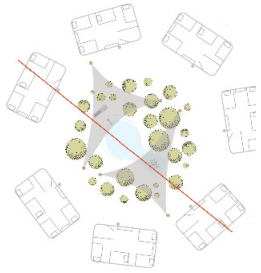


Fig. 5.10 Natural Play Area



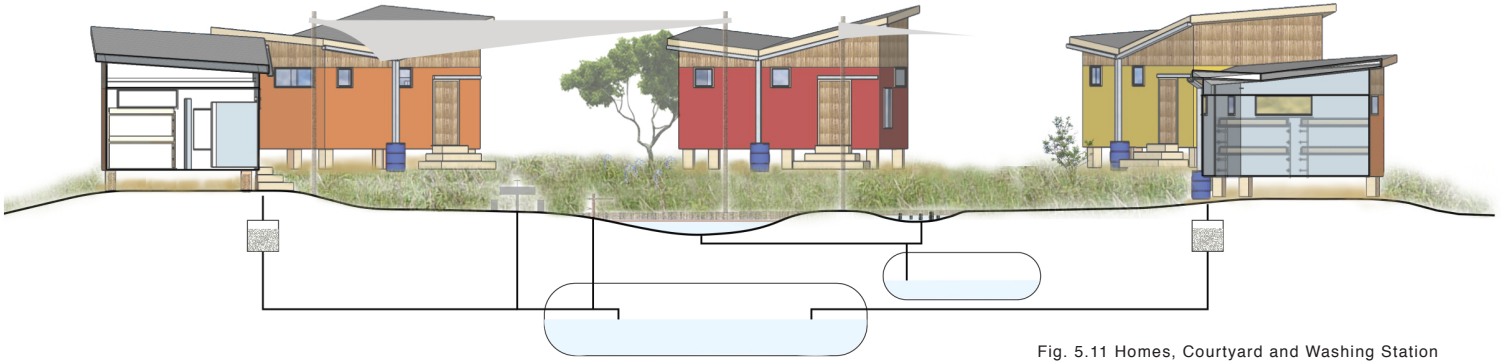


Fig. 5.11 Homes, Courtyard and Washing Station

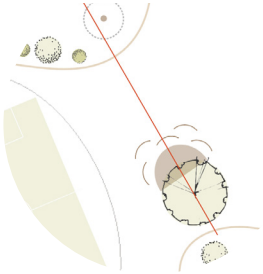


Fig. 5.12 Gathering Area and Stage

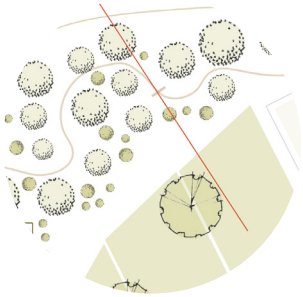


Fig. 5.13 Medicinal and Vegetable Garden

6 Reflections

Original Goals and the Design Process

Initially, the Gehl quality criteria, with its focus on developing healing landscapes with salutogenic principles, largely informed our design approach. The original goal was to use the Gehl criteria and perhaps modify it to help conceptualize Project L.I.F.E. and evaluate other similar projects. Through our research and attempts to apply the public-space oriented quality criteria to this rural project, we concluded that presenting the criteria to the co-creation workshops was limiting and too abstract for the Maasai community members (who were unfamiliar with the such design processes). In the final model workshops, the Gehl criteria proved to be a useful tool to discuss the actual design and to direct the conversation toward how the Maasai think about and address protection, comfort, and delight in their built environment. Our experience in this project suggests that if the quality criterion is used as a set of guiding principles in the design process and perhaps not as a rigid checklist, it can be a helpful tool/touchstone for other co-creation design processes in the future requiring flexibility and a sensitive user-group.

Collaborating with an international team in different locations and living 11 time zones away from site has been a challenge. The design team formed in Copenhagen and had several Skype meetings with the founding partners based in Kenya before (and after) the team's first community/site visit. When I returned to Seattle to complete my thesis in December, it was even more challenging to coordinate meetings with the three different time changes. To overcome this challenge, our team used creative communication techniques - Google Drive, Skype, conference calls - and data entry strategies like the affordances table as well as the animations to send to interested parties/donors in an effort to 'package' the project. I believe our limited time in Kisharu compromised a thorough site analysis. In the future, we might work more closely with the government to hasten some aspects of the planning process and to get a community-based organization certificate (CBO) fast-tracked (knowing who to go to and how to officially or unofficially proceed continues to be a challenge to any community project in Kenya). The people of Kisharu are also hesitant to work with the government since they are protective of their geothermal resources, so in the interest of trust, they may need to deal with getting the project CBO. Furthermore, the road up to Kisharu is only accessable by motorcycle or off-road vehicle, which makes getting to the site a challenge (plus, they do not want the government rebuilding the road because of this fear of exploitation).

Since this is not a very common development project to rural Kenya, funding has also been an obstacle. We have had to learn about start-up/alternative capital funding and made a "pitch-deck" - a quick way to present an idea to a funding agent - to pitch the concept of co-creation and our unique design methodology. Compiling a pitch-deck has been helpful in defining our goals and mission, keeping the team on the same page and the message concise. Although most community members involved in the project appeared to understand the co-creation process, some were very surprised that we were not ready to build the project when we returned three months after our first community visit. When we returned, in the first men's community leader model workshop, it was mentioned that they did not know why we were there if we were not ready to build the project. Traditionally, this rural community has experienced quickly built projects - often without much local input - by missionaries or NGOs that are turned over to the community right away (such as churches and the abandoned medical dispensary). We explained the co-creation approach and how it may take longer than other development processes, so we could collaboratively design a place that better suits the needs of the community. Most of the men understood this process but were still very disappointed and appeared unsure this project would actually happen. In the women's community leader model workshop, they seemed to understand the planning process and why we were there from the start. The women appeared not to be disappointed with the co-creation process, perhaps because they are in charge of planning and building their homes and more aware of the need for a safe home for girls and other vulnerable children in their community.

To base the design decisions on more substantive evidence, another initial goal was to identify the health issues that the vulnerable children were facing in this community. However, having clear or documented diagnoses were not practicable, since few people in Kisharu can afford to see a doctor. Finding out what children are facing and at what ages was also challenging and therefore, designing affordances to help them deal with these issues remained a problem. Recorded evidence and research having to do with vulnerable children and design in this area of Kenya was scarce, however, after many interviews, we were able to identify pressing health issues and record basic information about the children's age/developmental levels. We also had planned to visit with and work with the vulnerable children but many of them stay at home and were very hard to contact. With the construction of the L.I.F.E., our goal is that the health issues facing Kisharu vulnerable children and the community will be better diagnosed, eventually properly treated and hopefully prevented down the line.

My efforts in this area supports that the co-creation design process has facilitated the empowerment of women's voices in the community, providing hope for them, and that given diligent and appropriate research, our design could improve their lives and the lives of future Maasai children. Traditionally, the Maasai women have little control over their body, home and day-to-day schedule. Through this design process, we were able to identify and help them visualize what a safe home might look like and realize options for future generations of women in Kisharu. Considering many women in this community are illiterate, having a women translator was an important part of clarifying what type of assistance the women wanted and what they want/see for future generations of Maasai women. The Maasai men and women of Kisharu expressed an urgent need for stopping young marriage and FGM, however they emphasized that it will be a difficult shift away from the current norm. Since these customs are so widely practiced and there is such a stigma against deviating from tradition, there remains a deep social pressure that will be hard for these girls to escape. Of course, herein lies a big reason why vulnerable children need a safe home that supports the children to make their own choices and not be in a pressured environment. Many elders may look down on disrupting traditional roles and customs, however the Kisharu community has shown interest in a cultural shift towards gender neutrality. Through this collaborative process, we hope to offer a democratic platform for children, women and men in the community to have equal rights and voices.

Fig. 6.1 Final Women's Model Workshop

Further Explorations

When making masterplans for children's homes and helping to build and rebuild resilient communities that can preserve their culture and better withstand a changing climate, the stereotypical model of western development associated with top down solutions will need to change. With the increasingly erratic and damaging consequences of climate change, a need surfaces to actively develop place-based climate action plans that merge participatory, community-led development models for urban and rural places with careful examination of communities that are most vulnerable to climate change. Communities at risk should be given the highest priority.

The Maasai are one of many indigenous communities that have endured a long history of oppression and colonialization. In addition to directly suffering the effects of climate change and at risk of being exploited for their land resources due to economic pressure and a rapidly expanding urban population to the east, an inclusive, collaborative model of development might help to mitigate such threats. The co-creation process outlined in this document encourages empowerment by giving voice to the community as a whole but emphasizing the roles of women and children who have not traditionally been given the privileges or forum in the decision-making realms. Transparency throughout the design process and tailoring one's information-gathering methods to serve all voices in the community may make this development model more flexible with various phases of development and in both long-term and short-term programming.

Ultimately, this community-initiated project and co-creation design process aims to establish a foundational development model that is singular to the needs of this Maasai group. Responsive, inclusive, and thorough, this process attempts to bridge relationships between the community, children's health needs and landscape design, and potentially offers a successful example that can be adaptable to other communities in East Africa and other similarly vulnerable communities in other regions.

8 Bibliogrpahy

Antonovsky, A. (1980). Health, stress, and coping. San Francisco: Jossey-Bass.

Appleton, J. (1975). The experience of landscape. London: Wiley.

Bjorgvinsson, E., Ehn, P., Hillgren, P., Faculty of Culture and Society & Malmo University (2012), “Agonistic participatory design: working with marginalized social movements”, CoDesign, vol. 8, no. 2, pp. 127-144.

Bjorgvinsson, E., Ehn, P., Hillgren, P., Faculty of Culture and Society & Malmo University (2012), “Design Things and Design Thinking: Contemporary Participatory Design Challenges”, Design Issues, vol. 28:3, pp. 101-116.

Boddy, A. (2016, March). Maasai Ethnic Group in Kenya. Retrieved June 09, 2016, from http://africanhistory.about.com/od/Kenya/ig/Kenya-Peoples/Maasai-Map.htm

Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. Cambridge, MA: Harvard University Press.

Brown, L. L. (n.d.). Comparing Preschool Philosophies: Montessori, Waldorf and More. Retrieved May 31, 2016, from http://www.pbs.org/parents/education/going-to-school/choosing/comparing-preschool-philosophies-montessori-waldorf-and-more/

Cattle People (2000, October) (Online). http://www.survival.org/uk/maasaibg.html

Child Development Institute. “It’s More Than Just Fun! Child Development and Play Are Related.” Child Development Institute, LLC. 2015. Web. 31 May 2016. https://childdevelopmentinfo.com/child-development/play-work-of-children/.

Children of Kisharu.(Dec. 2015). “Focus Group with vulnerable children of Kisharu.” Personal interview. Designing with Children: A Participatory Design Framework for Developing Interactive Exhibitions (Axelsen, Mygind, and Bentsen 2014).

Eriksson, L. (2010). Salutogenesis – an introduction. Lecture presented at Early Childhood Council Annual Conference “Valuing Care” in New Zealand, Christchurch.

Elkind, D. (2009, May). Play and Work in Montessori Education. Retrieved June 09, 2016, from http://montessori-training.blogspot.com/2009/05/play-and-work-in-montessori-education.html

Full fill Home Instillation http://www.designboom.com/architecture/venice-architecture-biennale-anupama-kundoo-full-fill-home-installation-arsenale-05-29-2016/

Francis, C. and Cooper Marcus, C. (1991) ‘Places people take their problems’, in Proceedings of the 22nd Annual Conference of the Environmental Design Research Association. Mexico.

Fromm, Erich. (1964) “The Heart of Man: Its Genius for Good and Evil.” New York: Harper & Row

Gehl, J., & Svarre, B. (2013). How to Study Public Life. Island Publishing.

Gehl, J. (2010). Cities for people. Washington, DC: Island Press.

Gehl, J., & Svarre, B. (2013). How to Study Public Life. Island Publishing.

Gil, E., & Drewes, A. A. (2005). Cultural issues in play therapy. New York: Guilford Press.

Grahn, Patrik, and Ulrika K. Stigsdotter. “The Relation between Perceived Sensory Dimensions of Urban Green Space and Stress Restoration.” Landscape and Urban Planning (2009): 264-75. Web. 9 Dec. 2015.

Hart, R. (1997). Children’s participation: The theory and practice of involving young citizens in community development and environmental care. London: Earthscan.

Hughes, F. P. (Ed.). (2009). Children, play and development. London: SAGE.

It’s More Than Just Fun! Child Development & Play Are Related. (n.d.). Retrieved June 06, 2016, from https://childdevelopmentinfo.com/child-development/play-work-of-children/

J., Santos. (2015). Kenya, Project L.I.F.E.. Retrieved June 08, 2016, from https://vimeo.com/154174769

Johnson, J. E., Christie, J. F., & Yawkey, T. D. (Eds.). (1999). Play and early childhood development. New York: Teachers College Press

Johnson, R., Browne, K., & Hamilton-Giachritsis, C. (2006). Young Children in Institutional Care at Risk of Harm. Trauma, Violence, & Abuse, 7(1), 34-60. Retrieved May 31, 2016, from http://tva.sagepub.com/content/7/1/34.short

Kaplan, R., & Kaplan, S. (1989). The experience of nature: A psychological perspective. Cambridge: Cambridge University Press.

Kaplan, Rachel, Kaplan, Stephen and Ryan, L. Robert. 1998. With People in Mind Design and Management of Everyday Nature. Washington, D.C.: Island, Print.

Kaplan, Rachel, Kaplan, Stephen. 1995. The restorative benefits of nature: Toward an integrative framework. By Kaplan S. in Journal of Environmental Psychology
Kellert, S. R., & Wilson, E. O. (1993). The Biophilia hypothesis. Washington, D.C.: Island Press.

Kenya Demographic and Health Survey (Rep.). (2015, October). Retrieved May 29, 2016, from Kenya National Bureau of Statistics, Republic of Kenya website: https://dhsprogram.com/pubs/pdf/FR308/FR308.pdf

Kisharu Leaders.(March, 2016). "Community Leader Workshop."Co-Creation Workshop.

Koissaba, B. O. (2014). Campaign Update: Kenya- Maasai Protest Against New Land Concessions for Geothermal Extraction in Kenya. Retrieved May 31, 2016, from https://www.culturalsurvival.org/news/campaign-update-kenya-maasai-protest-against-new-land-concessions-geothermal-extraction-kenya

Learning, E. (2003). Child Development Tracker. Retrieved May 30, 2016, from http://www.pbs.org/parents/child-developmenttracker/one/socialandemotionalgrowth.html

Lindström, B., & Eriksson, M. (2010). The Hitchhiker's Guide to Salutogenesis: Salutogenic pathways to health promotion. Helsinki: Folkhälsan.

Maasai Villages : 344-352. (n.d.). Retrieved June 09, 2016, from http://www.johntyman.com/africa/27.html

Marcus, Clare Cooper, and Naomi A. Sachs. Therapeutic Landscapes: An Evidence-based Approach to Designing Healing Gardens and Restorative Outdoor Spaces. Hoboken: Wiley, 2014. 28. Print.

Moore, R. C., & Wong, H. H. (1997). Natural learning: The life history of an environmental schoolyard: Creating environments for rediscovering nature's way of teaching. Berkeley, CA: MIG Communications.

Mutolol, S. (2015, December 4). Community Leader Simon Interview [Interview by K. Scherrer & B. Werner].

Mutolol, S. (2016, March). Community Leader Model Workshop [Interview by K. Scherrer & B. Werner].

Nangurai, P. (2015, December 7). Personal Interview [Interview by K. Scherrer & B. Werner].

Nangurai, P. (2016, March). Personal Interview [Interview by K. Scherrer & B. Werner].

Narimatsu, J. (n.d.). Environmental Justice Cast Study: Maasai Land Rights in Kenya and Tanzania. Retrieved May 31, 2016, from http://www.umich.edu/~snre492/Jones/maasai.htm

Nesset, V. and A. Large. 2004. Children in the information technology design process: A review of theories and their applications. Library and Information Science Research. 26(2), 140-161. doi: 10.1016/j.lisr.2003.12.002

PBS. “Child Development Tracker.” PBS Parents. PBS, 2003. Web. 30 May 2016. http://www.pbs.org/parents/childdevelopmenttracker/one/socialandemotionalgrowth.html.

Patinkin, J. (2014). Kenya conundrum: Kick out Masai herders to develop geothermal energy? Retrieved June 06, 2016, from http://www.csmonitor.com/World/Africa/2014/0910/Kenya-conundrum-Kick-out-Masai-herders-to-develop-geothermal-energy

Patsarika, M. (2014, August 26). What Kids Can Teach Architects about design Washington Post. Washington Post. Retrieved June 1, 2016, from https://www.washingtonpost.com/posteverything/wp/2014/08/26/what-kids-can-teach-architects-about-design/

Parish-Plass, N. (2008). Animal-Assisted Therapy with Children Suffering from Insecure Attachment Due to Abuse and Neglect: A Method to Lower the Risk of Intergenerational Transmission of Abuse? Clinical Child Psychology and Psychiatry, 13(1), 7-30. doi:10.1177/1359104507086338

Perry, J. P. (2003). Making sense of outdoor pretend play. Young Children, 58,26–30.

Pierce, C.A., and L.M. Seals. 2006. “The Importance of Community Gardening for Homeless Women: A Pilot Study.” Journal of Therapeutic Horticulture 17: 20-26.

Refshauge, A., Stigsdotter, U., Lamm B., & Thorleifsdottir, K. (2015) Evidence-Based Playground Design: Lessons Learned from Theory to Practice, Landscape Research, 40:2, 226-246,

Rhodes, S. (2013). Bronfenbrenner’s Ecological Theory [PDF]. Available from: http://uoit.blackboard.com [Accessed January 2015].

Saffer, D. 2010. Designing for Interaction: Creating Innovative Applications and Devices, second edition. New Riders. Berkeley, CA. USA.

Sankan, S. S. (1975). The Maasai. Nairobi: East African Literature Bureau.

Sempui, D. (2015, December). Community Leader Interview [Interview by K. Scherrer & B. Werner].

Sempui, D. (2016, March). Community Leader Model Workshop [Interview by K. Scherrer & B. Werner].

Stevens, P. (2016). Venice architecture biennale: Anupama Kundoo interview. Retrieved May 31, 2016, from http://www.designboom.com/architecture/venice-architecture-biennale-anupama-kundoo-full-fill-home-installation-arsenale-05-29-2016/

UN-Habitat Global Housing Strategy Framework Document (Publication). (2013). Retrieved June 1, 2016, from UN Habitat website: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SHS/pdf/Workshop-Social-Inclusion_UN-Habitat.pdf

Wagenfeld, Amy, Winterbottom, Daniel. 2015. Therapeutic Gardens: Design for Healing Spaces. Timber. Print.

Wells, N. & Evans, G., 2013. Nearby Nature: A Buffer of Life Stress Among Rural Children. Environment & Behavior [Online], 35(May 2003). Available from: http://eab.sagepub.com/content/35/3/311.abstract [Accessed January 2015].

Who Are the Maasai. (2015). Voices of Hope. Retrieved November 18, 2015, from http://voicesofhopeafrica.org/the_need/who-are-the-maasai/