

TIBÁS - RIVER OF CLEAR WATERS

RECLAIMING A LOST CONNECTION BETWEEN THE
NATURAL REALM AND THE DENSE URBAN ENVIRONMENT





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RECLAIMING A LOST CONNECTION BETWEEN
THE NATURAL REALM AND THE DENSE URBAN
ENVIRONMENT

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ABSTRACT

The thesis aims at building spaces in the public realm that invite people to interact and that enrichen the users' experience. The thesis takes its point of departure in the effects of climate change on the dense urban environment. Hence, the design proposal incorporates the ecological cycles to approach a more resilient design in the public realm. The thesis explores how the human behavior effects and is affected by its relationship to nature.

The project aims to build a connection between the human life in the dense urban environment and the nature that is within the city through a participatory approach. Thereby spaces of the public realm that were previously left unused can be appropriated by the people.

MOTIVATION

For us the master thesis is an opportunity to explore the multidisciplinary profession we have chosen for our studies from a new perspective. As a group we share a common interest in a community-driven design and climate changes effects in the countries of the global south. This led us to explore a design process that addresses the person on site. We were interested in incorporating participatory analysis in our design. Choosing a different cultural and social context, gave us an opportunity to apply our knowledge in a different way from our previous projects. We wanted to expand our knowledge and perception, and explore how bridges can be built across cultures.

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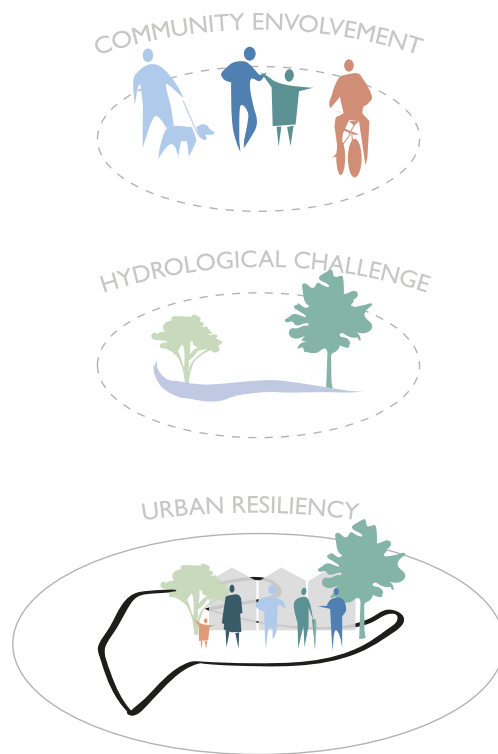


01 INTRODUCTION

This chapter will serve to introduce the frame of the thesis, including the focus and methodology. In addition a description of the geographical context is provided to better understand the social cultural setting of a dense urban environment in a tropical country.

THE FRAME

The thesis seeks a holistic approach that addresses hydrological challenges in the dense urban environment and suggests that approaching urban resiliency entails to study community involvement processes.



METHODOLOGY - ACADEMICAL CONTEXT

PROBLEM-BASED LEARNING

The thesis was elaborated within the frame of Aalborg University which promotes Problem-based Learning (PBL). A problem is formulated and explored by the group, which results into a solution proposal. The group's background is interdisciplinary and international, thus enhancing the ability to work across fields and to explore the problem from different perspectives. This provides the setting to develop a holistic approach to the previously defined problem (Kolmos, Fink, Krogh, 2006).

Further, inherent to the concept of PBL is the application of theoretical knowledge into the project (Kolmos, Fink, Krogh, 2006). This shall provide a solid foundation for the project, as the design is based on the literature review and further reflection (ibid.).

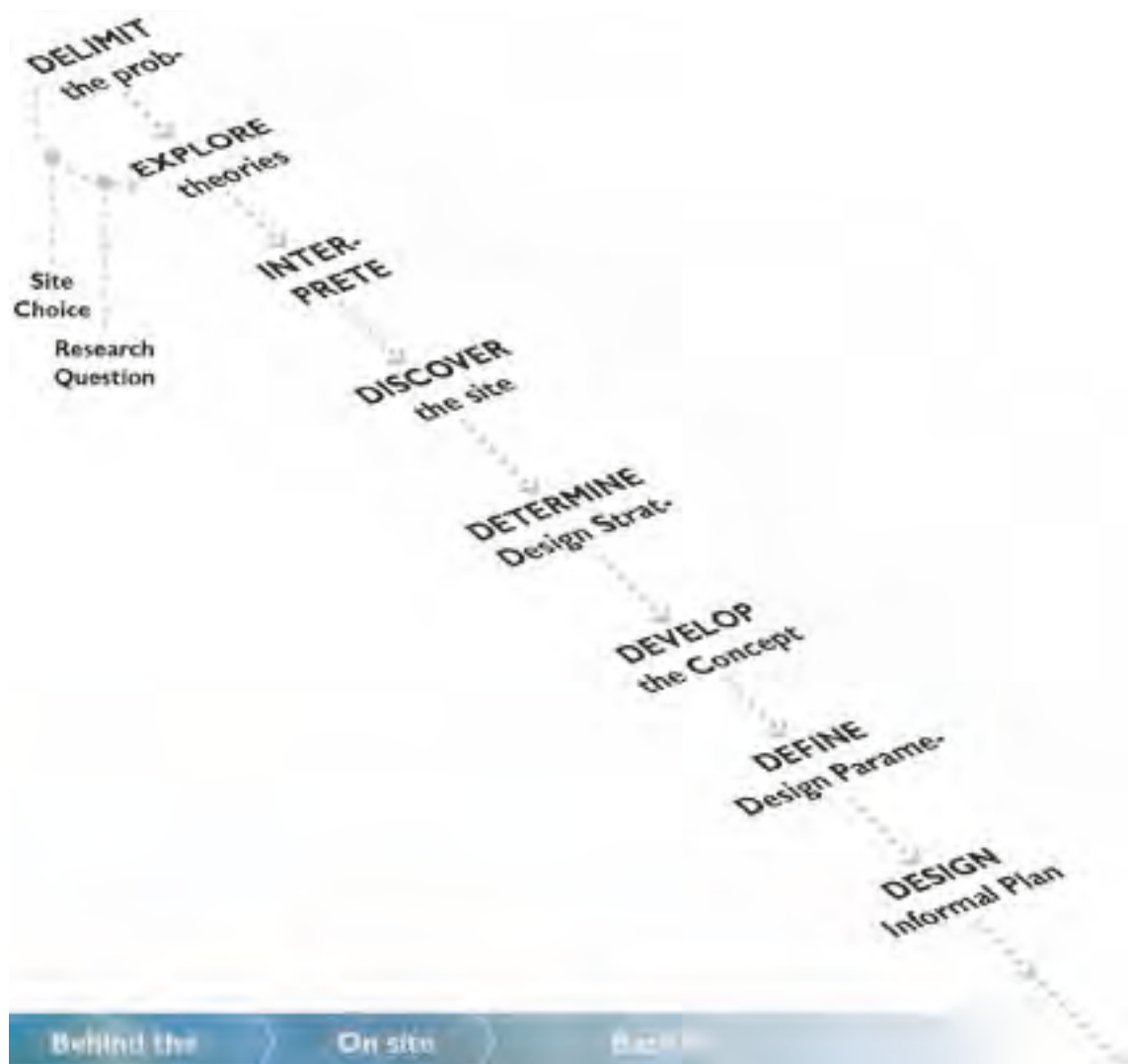
Integrated Design Process

Further, the challenges in the dense urban environment are very complex. The urban design field necessitates to shift between multiple levels, which keeps in mind the ecological and social tendencies. The different aspects shall be addressed with creativity and inventiveness through a design process that constantly shifts between the levels and the phases of the project. The constant process

of re-thinking, shifting scales and changing perspectives is described in the term Integrated Design Process (IDP), as developed by Hansen & Knustrup (2005).

Firstly, the problem is formulated, and the geographical context defined. The research question serves as a guiding tool throughout the thesis. During the process, the research question is continuously reviewed and leads towards the fitting solution. The following literature review is exemplified by case studies. In addition, the site visit holds a key role for applying on-field methods and collecting local stories which will be elaborated in the analysis chapter. The constant shift of perspective is energized by the site visit and by re-visiting the literature review throughout the process. The development of concept and strategy are based on both, the theoretical background and the results of the site visit. In-group sketching workshops set intermediate steps which are employed to approach a process-driven design proposal.

In the final part of the project phase, the different fragments of the project are laid out and assembled into the narrative of the thesis. As different methods contribute to the development of the thesis, a constant matching of the previous steps is a significant source of enhancement to the project.



ill. 2: Building process

THE PROBLEM

Global trends such as urbanization and climate change effects urban life locally. Especially exposed are the countries of the global south, where increasing events of pluvial flooding cause material losses and polluted run-off water contaminates nearby rivers or lakes. As depicted in the graphs to the right, flooding in Central America has increased over the past forty years alongside with higher urbanization levels.

Most vulnerable to natural risks are the low-income neighbourhoods, which often lack the resources to respond to environmental issues.

As a consequence of the contamination, the residents of the cities do not access the areas affected from it. Therefore those spaces can be forgotten by the people and disconnected from the urban environment. The lack of ecological awareness mentally separates people from the natural realm. Additionally, when urban green spaces are left unused, the human to human relations are weakened, and little social interaction between people from different backgrounds takes place in the city's parks and along the urban rivers.

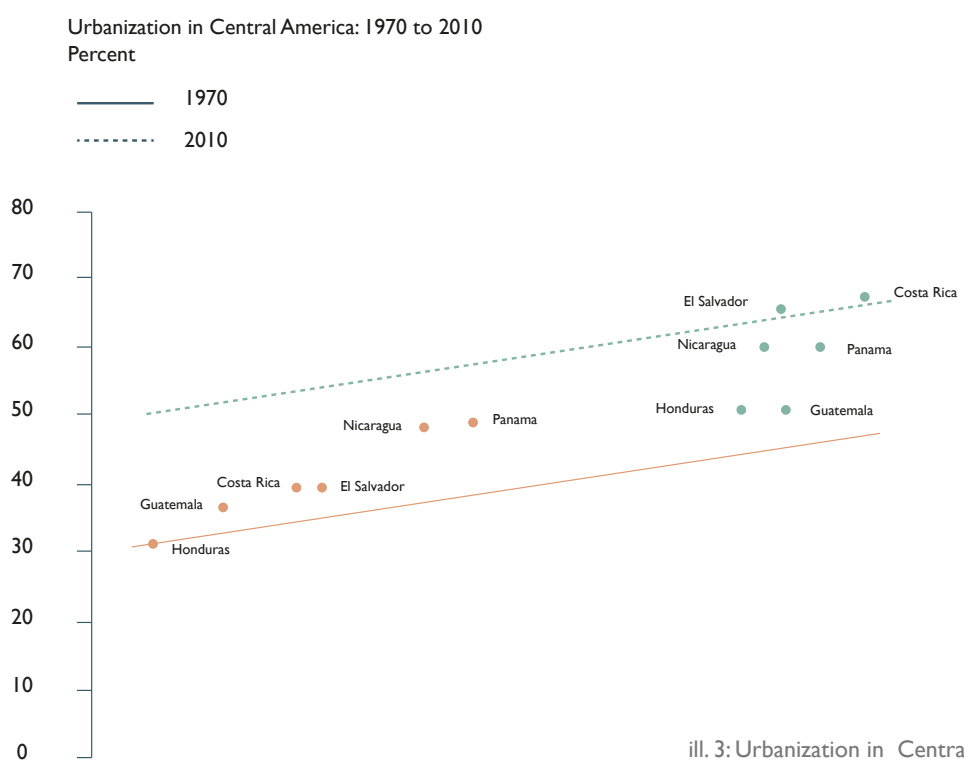
The Focus

The thesis touches the connection point between the city and its hydrological cycle. The presupposition is that global problems ought to be solved on a local level.

This implies rethinking the way nature is integrated into the city, as well as how water is perceived and handled in the dense urban environment. The thesis addresses the human relationship to the natural ecosystems and understands it as a process and a dialogue which has the potential to bridge social inequalities.

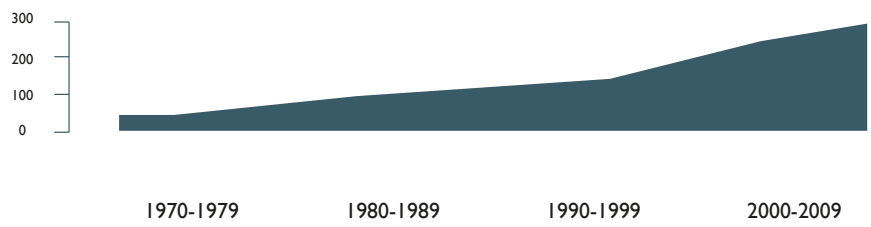
The project is chosen to be located in Costa Rica, Central America. A country vulnerable to the changing climate, with intense rainfalls during the rainy seasons, a rich biodiversity and yet dense urban environments, provides the suitable context for this thesis. Moreover, the planning and maintenance of biodiversity lacks in the metropolitan areas (Mora et al., 2013). The cities are treated as apart from the natural environments. Even though, Costa Rica takes dedicated efforts in biopreservation in biological reserves, little focus is on the ecological cycles within the city (ibid.).

More specifically the thesis is located in Tibás. A city located in the metropolitan area of the capital San José. Its dense urban environment is dealing with flooding issues.



ill. 3: Urbanization in Central America

Hydrometeorological Trends in Latin America: 1970 to 2010



ill. 4: Flooding in Latin America

GEOGRAPHICAL CONTEXT

COSTA RICA - BETWEEN UPTREND AND TENSION

Population: 4.8 million

Capital: San José

Independence day: September 15, 1821

Density of San José: 6.456 people/km²

GDP: 57.44 billion USD (2016)

20-25% live below the poverty line

(BBC, 2018; Bermúdez, 2018)

Costa Rica is one of the smallest countries in Central America. Particular to this nation is that almost all its energy is generated through renewable energy. About 80% come from hydroelectric power (Toomey, 2017).

ECONOMY AND DEMOGRAPHICS

Since 2013 it has the strongest gross domestic product GDP in the region (Bermúdez, 2018). Costa Rica is traditionally an exporter of agricultural goods, notably bananas and coffee. Some agricultural producers oriented towards high value-added goods, such as medical devices (CIA, 2013). The economy has further diversified, tourism, namely eco-tourism is now the country's most significant earner due to its rich biodiversity and opportunities for adventure tourism (BBC, 2018).

In 1849, after the country's six-weeks civil war,

the armed forces were abolished. The elected president, Jose Figueres Ferrer introduced a comprehensive social security system (BBC, 2018). The country benefits from the effort still today. "Through the government's sustained social spending - almost 20% of GDP annually Costa Rica has made tremendous progress toward achieving its goal of providing universal access to education, healthcare, clean water, sanitation, and electricity." (CIA, 2013).

Despite Costa Rica's relative economic and political stability, there are wide disparities concerning the living standard. Costa Rica's poverty rate has remained at around 20-25% of the population for nearly the last two decades (CIA, 2013). "Costa Rica's economy also faces challenges due to a rising fiscal deficit, rising public debt, and relatively low levels of domestic revenue" (ibid.).

URBANIZATION

As most Central American countries, Costa Rica is highly urbanized, with an urbanization level of 78.5% and one-fifths of the population residing in the capital city (CIA, 2013).



ill. 5: Map of central American

GEOGRAPHY AND CLIMATE IN COSTA RICA

4.5% of the worlds' biodiversity

*National parks and biological reserves
contribute 6.1% of the GDP*

(UNDP, 2009)

GEOGRAPHY AND GEOLOGY

Costa Rica is located between Nicaragua, Panama, as well as the Pacific Ocean and the Caribbean Sea. It is situated between the ninth and tenth degree latitude and has a complex geology consisting of three tectonic plates (Caribbean, Cocos, and Nazca) which results in regular earthquakes and the presence of active and dormant volcanoes (Alvarado et al, 2016).

BIODIVERSITY

Costa Rica is one of the countries with the highest density of species, with about half a million of species (UNDP, 2009). Every year around 160 new species are discovered. Climate change and deforestation pose a major threat to the native species (ibid.).

CLIMATE

The climate in Costa Rica is tropical year around (World Weather & Climate Information, 2018). The year is defined by

two seasons, the dry summer from December to April and the rainy winter from May to November. Due to its changing topography; the different geographic conditions generate a variety of micro-climates within the country (ibid).

Following the life zones by Holdridge, the Central Valley is located in the premontane moist forest (Alfaro et al., 2013). The temperature stays between 17°C and 24°C, the annual precipitation is in the range between 200 mm and 2200 mm. Because of the attractive micro-climate for human settlements and agriculture and a comparatively plane surface, the principal cities of Costa Rica are located in the Central Valley (ibid.).



ill. 6: Monteverde Rainforest

TIBÁS - THE URBAN CONTEXT TO THE THESIS

“Tibàs is very urban. It is chaotic and proactive at the same time, with many people, cars and a lot of noises.” (Madrigal, 2018)

These projects in Tibás show the potential for developing a more sustainable urban future that approaches the city holistically.

Tibás provides the platform for the thesis in a manifold of ways. Tibás has a very dense urban environment. The high imperviousness leads to pluvial flooding in the streets during the tropical storms of the rainy season. The city is surrounded by contaminated steep rivers. Informal houses, located on the slopes of the river, mark a stark contrast to the uprising residential towers in the city center.

Even though the distances in the city are short and walkable, cars are prioritized in the urban landscape. In addition, Tibás is in the periphery of the capital. Therefore, the city is influenced by the trends of the capital. New projects that further increase the density are being implemented.

At the same time, the city seeks out for a more sustainable urban future. During an interview Gabriela Madrigal, the director for urbanism in Tibás, pointed out in an interview (Appendix A) that various projects that promote recycling, cycling and activating urban parks in Tibás. Yet often the means are little, and the planners need to deal with the day-to-day problems first (ibid.).



ill. 7: San Juan - the center of Tibás

TIBÁS - A DENSE URBAN LANDSCAPE

previous	Tibás has an agricultural past, with sugar cane, banana plantations, etc.
1804	First general assembly in the Murciélago
1835	First church building to be built in San Juan del Murciélago
1838	Tibás was conceived to be the capital of Costa Rica. The wide roads and planned city blocks still bear witness from this era. The decree LXVIII repeals Tibás as the Capital
1840	The news mentioned that San Juan del Murchiélago was known for its good quality of coffee
1870	First parish church was constructed; five years later a well was built in front of it: It soon became a meeting point in the city
1970's	The central park was established; the well was transformed into an embellishing element of the park
2017	Construction start of the northern arc of the circunvalation - the peripheric highway around San José which had started in 1979 (Municipalidad Tibás, 2013; Bosque, 2017)

Density: 7.956 people/km² (2011).

100% urbanized

60.000 cars pass through the city daily

Social and demographic situation

The socio-economic level of the canton of Tibás lies mostly within in the middle class with some upper-middle class areas. However, two low-income neighborhoods are informally built and have been associated to crime and poverty. Tibás is a canton full of contrasts. On one hand the canton holds the 13th of 81 positions in the Cantonal Development Index, which considers the possibilities that its inhabitants have to realize their life projects [...]. On the other hand, Tibás holds the 59th of 81 positions in the Quality of Life Index of the cantonal competitiveness 2011, which takes into account the homicides and robberies" (own translation, Cascante, 2016)

Urbanization

Tibás is one of the two cantons in Costa Rica that are 100% urbanized. According to the National Institute of Statistics and Census of Costa Rica (Morales, et al., 2013), Tibás is the densest Canton of Costa Rica with 7.956 persons/km² (2011).



ill. 8: Location of Tibás

TIBÁS - RIVER OF CLEAR WATERS

Tibás – the name of the city supposedly derives from a local indigenous language and presumably means “River of clear waters” (own translation, Municipalidad Tibás, 2013). Historically, the rivers of Tibás were known for their recreational value. In his paper “A orillas del río Virilla en San Juan de Tibás” Jafeth Campos tells the story of the río Virilla being a core space of social stability in the early 20th century (2006). The shores of the river were a communal meeting point. People came to wash their clothes, to take walks, to have lunch with their families, to fish, to bath and swim or just to contemplate and listen to the sound of birds. Schools and associations took day trips to the river. Since the river’s shores were accessible to everyone, they were a shared space for people across all social layers and from all around the region (ibid.). “The Virilla river represented a central point to the social cohesion and played a key role to the small towns daily life as well as to the identity of Tibás” (own translation, Campos, 2006: 53).

According to contemporary witnesses, the situation changed in the mid-20th century when the urbanization reached close to the river and waste water was led into the river Virilla (ibid.:54). Over time the river became heavily contaminated. In addition, the perception of unsafety moved this previously fundamental place for sociability to the city’s

backside (ibid.:55).

RUTAS NATURBANAS

With the recent trends towards ecological thinking, projects emerged that aim at reactivating and cleansing the urban rivers in and around San José. One prominent example is the *Foundation Rutas Naturbanas*. The foundation proposed a design of walkable and cyclable paths along the main rivers in San José. The goal is to connect people through nature and to promote the conservation of ecosystems within the city. The design proposes 24km of connected routes, of which the first kilometer has been started to be built in 2017.

TIBÁS RECICLA

Another initiative with environmental focus is called *Tibás recicla*, set in place by the municipality of Tibás to give an impulse towards sustainable waste management to become part of the way of life in Tibás (Sandoval, 2018). The project encourages the citizens to recycle their waste, which is collected by *Tibás recicla* and further reused or sold. Furthermore, environmental education is conducted by the initiative (ibid.).



ill. 9: Tibás Reciclas.



ill. 10: Tibas Reciclas.

TIBÁS - CITY OF PARKS

The canton has a large number of green areas in various sizes throughout the city. The municipality aims at activating those, sometimes unused or unmaintained public spaces and to revalue them as a resource for the city's social life.

Gabriela Madrigal Garro, director of urbanism states that: "The aim is to implement the use of public space for people and try to involve them in the maintenance and the appropriation of the public space in different ways, then just installing a park in a city. We want to boost the use of the green space" (2018).

The work is centered around workshops with people, to understand the needs, but also to involve people in the maintenance of the parks in different ways. According to Madrigal, parks are not actively used in Costa Rica, the culture of seeing the public spaces as an integrated part of the city is lacking. Therefore, the municipality works hard to attract people to use the parks. The municipality sees a need to install a diversity of programming and to set in place events and activities in the parks. However, a challenge is the tight budget of the municipality. Not many interventions are possible to realize and mainly metal is used as a material for urban furniture and playgrounds due to its durability and low cost of maintenance. Yet the monotonous use of

metal creates an unappealing setting due to lack of comfort and kids hostility.

Additionally, the safety issue is predominant (Madrigal, 2018). All parks are fenced and closed at night. Urban furniture was previously stolen or damaged (ibid.). People also do not feel safe to use the parks at night. However, the use of fences is not ideal as it creates a barrier to use the public spaces.

The municipality puts efforts into bringing forward the parks. As an example, the park in Anselmo Llorente, located in the east part of the city, has recently been upgraded with sports facilities and a running path. Furthermore the inhabitants had built a few benches for the park. "We only have a little budget, so we tried to intervene with a little, but make the maximum impact. Here we installed a circuit where people can run, and we have some sports equipment" (Madrigal, 2018). The park is being supervised by a neighbor, who is responsible for the opening hours of the park.

The recent initiatives of the municipality give a starting point to explore new solutions perspectives towards a more activated public realm.



ill. 11: Sport tools in Anselmo Llorente



ill. 12: Wood bench by locals in Anselmo Llorente

RESEARCH QUESTION

How can designers adapt the spaces in the public realm to the effects of climate change with a process that will strengthen the sense of community?

How can pluvial flooding be alleviated in a dense urban environment in Tibás?

How can a design intervention in the public realm in Tibás affect the human - nature relationship?

How can a process-driven design approach bring together people from different backgrounds in the context of Tibás?



ill. 13: Asking questions to the locals



02 THEORIES

After identifying the geographical context and research question, we take a step back and explore themes and theoretical knowledge that will provide a background for the design proposal. The reviewed literature revolves around the themes of ecology, sociability and site specificity. They will be unfolded in the following pages.

DESIGNING FOR ECOLOGY AND RESILIENCY

CLIMATE CHANGE

The theoretical part starts with an introduction to climate change to highlight its relevance to the urban future. Climate change is widely discussed and unavoidable when researching urban challenges. Yet, planners can fail to respond to the issues as global problems may seem far away and it might not always be apparent how the local urban site should address global warming.

CAUSES AND EFFECTS OF CLIMATE CHANGE

According to António Guterres, the United Nations secretary general, climate change is “the most systemic threat to humankind” (Sengupta, 2018)

The consequences of climate change have been already visible on urban areas and around the world. Its effects include direct impacts on the environment, such as more intense tropical storms, glacier shrinks, loss of sea ice, accelerated sea level rise, more intense heat waves, more frequent wildfires and longer periods of drought (IPCC, 2014). The climate change induced storm and flood disasters are “further amplified by deforestation along the upper reaches of rivers, land subsidence in large urban areas and the ever greater spatial concentration of population” (WBGU, 2008: 3). In addition, climate change has “direct and

indirect impacts on the human system, like human health, food security and security of societal conditions” (Dodman, IIED, 2012) . Urban areas will face movements of people as result of climate which might cause additional stress as well as the spread of diseases (Ibid.: 2).

URBAN VULNERABILITY

Even though climate change is a global phenomenon, its consequences affect different areas in the world in numerous ways, depending on the existing local conditions. The works of Robert Whitman in the 1970s already emphasized “that damage was not only due to the severity of the natural phenomenon, but also to the fragility or the vulnerability of the exposed elements” (Cardona, 2004: 41). Evidently, most exposed are the countries of the global south. On the topic, R. Shubert in The German Advisory Council on Global Change (WBGU, 2008: 1), reports that “Rising global temperatures will jeopardize the bases of many people’s livelihoods, especially in the developing regions increase vulnerability to poverty and social deprivation, and thus put human security at risk”.

OVERLAP OF COMPLEX CHALLENGES

In their publication “An Overview of Urban Vulnerability to Natural Disasters and Climate Change in Central America & the Caribbean Region”, Gencer and Mattei note that Central America and the Caribbean Region “is one of the most hazard-prone areas in the world” (2013, 2). This is due to the variety of natural hazards, which include earthquakes, landslides, tropical storms and floods. Additionally, urbanization and concentration of population in capital cities or other dense urban areas “pose a major disaster risk in the Central America and the Caribbean region” (ibid.: 9). Increased risk of disaster in urban areas is related to the “concentration of population and assets, increased susceptibility due to physical condition of buildings and infrastructure and socio-economic composition of residents, and lack of institutional capacity” (ibid.: 9). Gencer and Mattei conclude that due to the complexity of challenges no single solution can be sufficient. Required are proactive local governments that are equipped with financial and technical resources “as well as public awareness, empowerment, and participation of urban residents” (ibid.:20). This regards the local action, as for the larger, global scale intra-national agreements are necessary to reach common goals.

PARIS AGREEMENT

The 21st Convention of United Nations reached a landmark agreement to combat climate change and to accelerate and intensify actions and to adapt to its effects.

The Paris Climate Change Agreement sets a target, between 150 countries, of holding the increase in the global average temperature well below 2°C, pursuing to limit the temperature increase to 1.5°C above pre-industrial levels, and increasing the ability to adapt to hostile impacts (UNFCCC, 2015).

The Paris Agreement highlights that climate change requires urgent and global action for the reduction of global emissions and implementation of adaptation actions. Moreover, it has strong inspirational value in terms of international cooperation beyond climate change, indicating that 195 nations (except for the USA) are willing to come together to address global challenges collaboratively. (Tollin & Hamhaber, 2017).

ADAPTATION AND RESILIENCE

MITIGATION AND ADAPTATION

Adaptation has been defined by the Paris Agreement as “increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production” (Article 2 of the Agreement) (Tollin & Hamhaber, 2017). This means that adaptation measures must be taken to prepare to the inevitable consequences of climate change which will impact on many urban centers.

Actions of mitigation such as reducing emissions, building for resiliency and adapting to rapid and slow climate events, must be taken by urban stakeholders in order to limit warming to less than 2°C (IPCC, 2014).

“Climate change mitigation includes a variety of actions, such as lowering the emissions of transport systems and of waste and energy sectors, as well as developing compact urban structures and the establishment of urban forests and green spaces to reduce urban heating.”

(Tollin & Hamhaber, 2017: 3).

Extreme weather events, such as floods and cyclones, heat waves and droughts decrease the functionality of a city and its capacity to recover, as they impact the economy,

infrastructure, livelihoods and quality of life. “Therefore, ensuring that adaptation measures are undertaken in the urban environment locally is critical in protecting health, safety and livelihoods.” (Ibid.: 4). When it comes to adaptation measures the local solutions are integrals part of different urban contents’ regions, together with modern technologies and technological transfer. (Ibid.: 12).

BUILDING FOR RESILIENCE

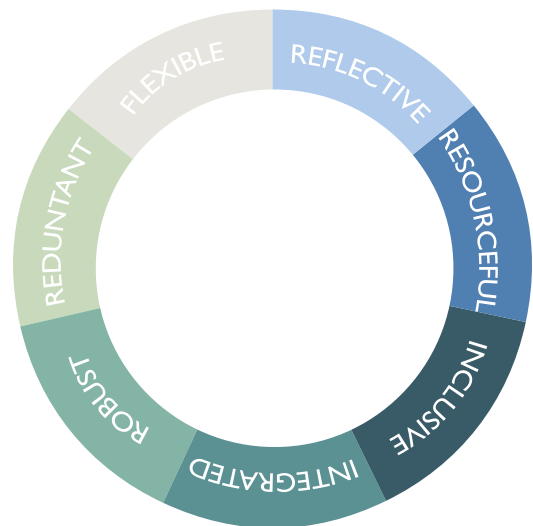
As mentioned before, mitigating to climate change requires adaptation to its effects and designing for resilience. The Intergovernmental Panel on Climate Change (IPCC) describes resilience as “the capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure, while also maintaining the capacity for adaptation, learning and transformation” (IPCC, 2014 : 127).

“Resilience looks for ways to manage in an imbalanced world. It’s a broad-spectrum agenda that, [...], seeks to imbue our communities, institutions and infrastructure with greater flexibility, intelligence and responsiveness to extreme events” (Zolli, 2012).

APPROACHING URBAN RESILIENCE

Observing the city holistically is the appropriate process to realize urban resilience: “Understanding the systems and its interdependencies that shape the city. By strengthening the underlying fabric of a city and better understanding the potential stresses it may face, a city can improve its development goals and the well-being of its citizens.” (100resilientcities.org, 2018)

The City Resilience Framework (CRF) classified seven abilities which provide a guideline for cities to adapt and grow, while being able to avoid shocks and manage risks. The ability of reflectiveness informs future decision from the past experiences. Resourcefulness helps to recognize alternative ways to use resources at a time of crisis in order to meet their needs. Inclusiveness can be reached by shared decision making. In order to achieve a resilient urban structure, separated systems and institutions should be integrated. Furthermore, a resilient city withstands shocks and external pressures. The abilities of Robustness, redundancy and flexibility, such as by adopting different strategies in response to changing circumstances, help to recover after a disruption (100resilientcities.org, 2018). The seven abilities, help to categorize the different challenges and plan for the future.



ill. 14: Characteristics of Resilient Systems

DESIGNING WITH NATURE

In order to approach a holistic design that is resilient and robust towards future challenges, it is important to understand how designers approach the cycles and environmental systems which shape the city. Therefore, the following chapter explores the role of the ecological understanding and the perception of nature in the city.

SHIFTING THE PERCEPTION OF NATURE IN THE CITY

Nature was previously seen as the counterpart to the rapid urbanization of the 19th and 20th century. And even beyond, it was considered to provide liberation and respite from the deleterious effects of urbanization (Corner, 2006). However, the shift towards environmentalism and the awareness of the dependency between the built environment and ecological cycles, blurred the separation between city and nature (ibid.)

Thus, the relationship between city and nature is constantly changing. New ways of incorporating natural elements in the city are being developed with a stronger emphasis on the necessity of the blue and green networks in the urban fabric. The way the planner conceive the city also reflects how the urban residence experiences the nature in the city. Therefore the planners decisions can impact

the human behavior and the human perception towards nature. One can derive from this that the relationships between the human and the natural environment is influenced by the planners decisions.

LANDSCAPE URBANISM

The publication *The Landscape Urbanism Reader* reviewed the discourse of the relationship between city and nature. According to Waldheim, it was simultaneous to the rise of environmentalism that landscape architecture became the discipline capable of describing the condition for decentralized urbanization, which was increasingly characterized by horizontal sprawl and rapid change (Waldheim, 2006)

“Landscape replaces architecture as the basic building block of contemporary urbanism. For many, across a range of disciplines, landscape has become both the lens through which the contemporary city is represented and the medium through which it is constructed...”

(Waldheim, 2006: 11)

In this context, ecology is seen as a model for “understanding the complex interactions between nature and culture” (Doherty and Waldheim, 2016). Therefore landscape became a potential source of information for

urban design and planning. To cite Waldheim: "Contemporary Landscape Designers use ecology as a model of urban forces and flows, and as a rhetorical device for public reception and audience participation, thinking found appealing the traditional definition of ecology as the scientific study of species in relation to their habitats, but often in service of a larger design agenda." (Waldheim, 2006: 165). Consequently urban form is given not through design but through the agency of ecological processes directed towards cultural ends.

The idea of landscape as a model for urbanism was also articulated by James Corner, who perceived landscape as a matrix of a connective tissue that organizes objects and spaces, but also dynamic processes and events. Landscape is therefore seen as an active surface, structuring condition for new relationship and interactions (Corner, 1999).

To sum up, Landscape Urbanism renounces the binary opposition between city and landscape. The *Landscape Urbanism Reader* promotes the idea of an urban landscape without hierarchies and boundaries.

Yet, the *Landscape Urbanism Reader* has been criticized for its lack of "sound research" and for presenting "landscape urbanism as an exciting innovation, but it denies the movement

its rightful historic authority" (Thoren, 2007: 71). Landscape Urbanism provides inasmuch a valuable contribution because it gives a new perspective on the relationship between city and nature. However, the role of ecology in the urban environment shall be further elaborated through the works of Anne Spirn.

THE PERCEPTION OF NATURE EFFECTS URBAN RESILIENCE

In 2011, Spirn commented on the movements within ecological urbanism: "*Much is known about the urban natural and social environment [...]. Yet most of these examples are not known to the public, to natural and social scientists, or even to urban designers and planners. [...] researchers and practitioners repeatedly reinvent the wheel and/or stress novelty over the extension of a tradition; this has been a persistent problem in the literature of architecture and urban design (Waldheim 2006, Mostafavi and Doherty 2010)*" (Spirn, 2011: 1).

One may derive from this quote that the concepts of ecological urbanism have arrived at a point where the existing theories provide sufficient knowledge to be applied, while there still is a need to raise awareness for the practice. Further, as Spirn stresses, the importance of thinking in ecological terms in the city is closely related to the question "whether

we can adapt our behavior and settlements to meet the challenges we face (climate change and environmental contamination, for example, and by inequities in exposure to the hazards they represent)” (Sprin, 2011: 21). Adapting to the future challenges implies to think of the city integral to the natural world, as a constantly changing ecosystem: “urban ecosystems are dynamic and interconnected; every city has a deep, enduring context; urban design is a tool of human adaptation” (Spirn, 2011: 6). Already in 1984 Spirn has emphasized in her book the *Granite Garden* that “Nature in the city is far more than trees and gardens, and weeds in sidewalk cracks and vacant lots. It is the air we breathe, the earth we stand on, the water we drink and excrete, and the organisms with which we share our habitat... [...] The realization that nature is ubiquitous, a whole that embraces the city, has powerful implications for how the city is built and maintained, and for the health, safety, and welfare of every resident....” (Spirn, 1984: 4-5).

NATURE AS AN IDEA

Additionally she proposes a perspective shift from perceiving nature as a “place” to understanding nature as a “set of ideas” (Spirn 2011, 8). Once the presence of nature in the city is seen as dynamic and omnipresent,

“designers and planners can accommodate dynamic change, make connections among seemingly unrelated elements and issues, and can realize opportunities” (Spirn, 2011: 9-10).

NATURE AND RESILIENCE

Moreover, she points out that the concept of resilience is a powerful tool for urban designers to build for an urban environment which is “adaptable to changing conditions and needs” (Sprin, 2011: 20). “Urban form that is congruent with the “deep structure” or enduring context of a city’s natural environment will be more resilient” (Spirn, 2011: 21). Developing cities in coherence with their natural environments, might be undertaken by improving the design and maintenance of public open spaces, the study of the potential of abandoned urban land, as well as by promoting inner city gardening and in coherence with a water sensitive city, by developing ecologically adapted strategies for storm water management (Lane, 2002). In turn, this approach might aid cities at becoming more resilient to climatic effects.

WATER SENSITIVE CITIES

The methods of water sensitive urban design to handle storm water, give further insight into the application of resilient strategies.

IMPACTS OF CONVENTIONAL STORM WATER MANAGEMENT

The water cycle holds a crucial role in the urban life, however vast parts of the water-related infrastructure are hidden underground and prevents people from interacting with the water in day-to-day life in the urban context. Additionally, conventional storm water management systems have significant impacts on the urban ecology (Hoyer et al., 2011).

The impaired ability of the urban surfaces to infiltrate and evaporate water, effects the local climate negatively, increases the risk of flooding and water pollution and reduces the ability to adapt to “increased city development and climate change” (Hoyer et al., 2011: 11).

WHY WATER SENSITIVE URBAN DESIGN?

In response to the conventional methods, water sensitive urban design aims at rehabilitating the natural water cycle of infiltration and evaporation. Despite the multitude of roles water has in the city, the focus of water sensitive urban design is

mainly on storm water management because “stormwater is a key element, both as a resource, and for the protection of receiving rivers” (Melbourne Water 2005 in Hoyer et al., 2011: 20). The adaption to the ecological cycle is approached by increasing the permeable surfaces and by treating “water as close to the source as possible” (Hoyer et al. 2011: 19). The goals of water sensitivity are among others the following: To protect the water systems as well as the water quality; “Reduction of storm water runoff and [...] drainage infrastructure [...] Integration of storm water management into the landscape by incorporating multiple use corridors that contribute to the visual and recreational amenity of urban areas” (Hoyer et al. 2011: 20).

RAISING AWARENESS

However, lack of awareness for integrating the water in the city prevails among professionals as well as local residents (Hoyer et al., 2011). This goes along with the aforementioned observation by Sporn that the missing link is not the lack of literature but the public awareness. The social implications of water management systems are rarely addressed, which underscores the importance of increasing the visibility of water in the city, as well as responding to the local residents and designing flexible solutions (ibid.).

THE SOCIAL BENEFIT OF GREEN SPACES

BENEFIT FOR HUMAN HEALTH

Besides the ecological benefits and mitigating the effects of climate change, green in the city has important benefits for the human health and community life. Many studies exist found that investigated the effect green spaces have on people's well-being (Tomao et al., 2016). Natural areas "provide both physical and psychological benefits [...] reducing psychophysical stress, inducing positive emotions and facilitating the renewal of cognitive sources." (Tomao et al., 2016:116). The positive effects are gained through both being actively engaged in the outdoor green spaces, as well as simply viewing nature such as through a window while at work in an office (ibid.). Additionally, green spaces encourage people to use the outdoor public spaces. Already the distance from the every day routine benefits the well-being (ibid.:119). Similarly, fascination adds to the restorative effects the natural setting has on the human health (ibid.:121).

ENHANCING SOCIAL COHESION

Furthermore, increased activities in green spaces will bring people together, since they provide space for interaction. A study by Byoung-Suk Kweon, William C. Sullivan and Angela R. Wiley found that "exposure to

green common spaces helps to build social relationships with friends and neighbors and increases sense of local community for older adults in the inner city" (1998: 849). The increased social cohesion might increase the individual's awareness of social responsibility and the closeness to green spaces may bring about an educative factor and incite more environmental responsibility as well.

REDUCING CRIME

A third effect explored in studies is the reduction of crime due to green spaces in urban environments. Reduced stress level, might also reduce anger and anxiety which might have lead to crime otherwise. Therefore, one might deduct that reduced stress reduces a person's inclination towards criminal activity (Groenewegen et al., 2006). Further, the increased presence of people in the urban space due to attractive green areas, might result in the presence of more people in the green areas. This can in turn reduce criminal behavior. This effect does not only seem to be applicable when actual people are present, also the seemed or implied presence of people prevents a person to commit a crime at a certain place (Kuo and Sullivan, 2001). A well maintained park or carefully trimmed hedge might serve as a "territorial marker" because it shows territorial personalization. Therefore,

a potential criminal might anticipate to be more likely to be noticed and confronted (ibid.: 347).

THE TRIPLE BENEFIT

However, vegetation and shrubs have often been associated with crime (ibid.). Dense and complex structures of woods and greens spaces in general might reduce the feeling of safety (Tomao et al., 2016: 121). In contrast, simplified composition of greenery, vertical structures, or well-maintained meadows, flowers and low-growing shrubs do not interfere with the views. Therefore, Tomao et al. (2016: 345) “propose that widely spaced, high-canopy trees and other visibility-preserving forms of vegetation do not promote crime.”

To conclude, green areas can have a triple benefit for the human well-being. There is a positive effect on health, especially due to the nature’s ability to reduce stress, social cohesion can be enhanced and well-maintained and carefully designed green space can contribute to the reduction of crime as well.



ill 15: Human in the nature

DESIGNING FOR SOCIABILITY

WHEN ECOLOGICAL THINKING MEETS COMMUNITY LIFE

WHEN ECOLOGICAL THINKING MEETS COMMUNITY LIFE

The previous chapter has pointed out the importance of understanding the green and blue infrastructure as inherent to the urban environment and underscored the benefit of green spaces for human well-being and social cohesion. Even though literature is vastly available on this matter, public awareness remains a major concern. Hoyer et al. write in their book *Water Sensitive Urban Design*: “Professionals involved in the planning for water and city planning are not aware of the advantages and ideas of decentralised concepts.[...] Local inhabitants are not aware of the problems connected with rainwater management and the advantages of decentralised solutions” (Hoyer et al., 2011: 34). They suggest: “through community participation, the needs and wishes of local residents and other stakeholders can be known. This is crucial for ongoing WSUD development” (2011: 38). Furthermore, the conversation with the stakeholder provides an opportunity to inform “and hopefully to eliminate prejudices” (ibid.: 38).

GENERATING PUBLIC ACCEPTANCE

The link is evident: When people feel heard and involved, they are more likely to appreciate

and understand the role of ecological design in the city.

“In fact, some believe community-based projects are the best hope for restoring native landscapes, as opposed to setting regulations or acquiring land”

(Miller and Hobbs, 2002 in Phalen, 2009: 179).

CHANGING MINDS

A look into Community Psychology (CP) might provide further insight into the relationship between the human and the natural realm.

“The body of CP research on natural environmental issues demonstrates clear links between issues of community (social power, citizen participation), issues of the environment (pollution, conservation) and how communities can benefit from thriving natural environments, such as community gardens, trees and grass in residential urban areas” (Moskell & Allred, 2012: 2).

Firstly, if public involvement processes shall result in ecological benefits, the individual needs to take a conscious, meaningful and deliberate choice of engagement (Moskell and Allred, 2012). “If the activity of recycling, for example, does not acknowledge larger problems of overconsumption, then recycling functions merely as an activity, rather than an

environmental action” (Jensen and Schnak, 1997 in Moskell and Allred, 2012: 7).

Secondly, people’s perception or “cognitive map” is determinant when people decide if they want to become engaged in a community involvement process (Moskell and Allred, 2012: 10). Moreover, the change in the urban environment requires people to “build new mental models (perceptions) of the appearance of their street or community after new trees are planted, as well as models about the tree planting and tree care process” (ibid.: 10). Understanding and exploration are necessary to undertake this process (ibid.).

ENVIRONMENTAL INJUSTICE

Connected to an example of tree planting, Moskell and Allred write: “Urban tree planting interventions can also be implemented to address environmental justice issues [...]. Previous studies have shown a link between poverty, minority populations, and environmental degradation giving rise to the study of environmental justice issues” (Moskell and Allred, 2012: 11). Accordingly, environmental justice can be bridged by involving local residents and stakeholders into the decision-making and tree planting process. The process shall be transparent and targeted to the recipients. Communication

may connect people’s existing knowledge and positive associations of the urban trees to new information by the use of images and stories. Additionally, the involvement process can supplement the planners with local knowledge provided by the community (ibid.).

STRATEGIC INVOLVEMENT OF THE COMMUNITY

Environmental restoration shall serve as a further example, since little literature is found on community involvement projects that are directly situated in the urban context and focus on ecological goals. In her paper *An Invitation for Public Participation in Ecological Restoration: The Reasonable Person Model*, Phalen (2009) studied two examples of environmental restoration processes, of which one succeeded and one failed due to lack of public acceptance. One is the Chicago wilderness controversy and the successful example the Montrose Point restoration project. Phalen concludes the quality and not the quantity of the communication to the local community is critical. In the Montrose Point restoration project, focus groups were formed strategically. People were involved in the process before the final decision was reached.

For an effective communication, people’s perspective and opinions hold a key role as

THE PARTICIPATORY PROCESS

mentioned before. “People’s perceptions are slow to change and are built on many experiences. Therefore, hands-on experience and exploration are necessary for cognitive-map building. Guided tours and volunteer programs can provide valuable opportunities to enhance people’s knowledge, familiarity, and experience with ecological restoration” (ibid.: 184). Thus, experiences in the natural environment provide a cognitive connection to the natural world in people’s minds and builds relationship between the community and its natural surroundings. The experience can further be enhanced by inviting citizens to take ownership of restored areas, such as in urban gardening projects, where the participants are also involved in the maintenance and care the green spaces (ibid.)

A citation of Lambert shall serve as a conclusion to this line of thought:

“... in most if not all situations where restoration is being carried out, the well-being of the restored landscape ultimately depends almost entirely on the human community of which it is, in a sense, a part”
(Lambert, 1999 in Phalen 2009, 185).

THE ROLE OF CITIZEN PARTICIPATION

Even though the connection between community participation to ecological projects is not yet fully developed, many design and planning projects provide more insights into the role of participation, potential methods and also limitations of citizen participation.

“In their studies of public participation in design and planning, Kaplan and Kaplan (1978, 1982) found that people greatly appreciated being asked their input. This holds true even when the outcome is not their preferred outcome”
(Phalen, 2009: 180).

Connected to the term of participation are many definitions and methods. According to Arnstein (1969) the term citizens participation is synonymous with citizen power. Generally speaking, a participatory approach involves the citizens in decisions-making. Among the motives of participation are: involving the local community; generating a better understanding of citizens concerns and ideas; guiding through critical topics and building relationships between diverse groups. Thus, the overall goal is to empower the community (ibid).

METHODS OF THE PARTICIPATORY PROCESS

There are many ways in which participation is practiced in organisations. To approach the diverse methods, two organizations shall be depicted in the following.

Semillas is a Costa Rican NGO whose members have backgrounds within architecture, engineering, psychology, and sociology. Through a collaboration with communities, businesses, NGOs and academia, the NGO creates networks, which provides many benefits to the participation process (Baghdadian, 2017). In an interview (Appendix A), Daniela Calderón pointed out that every participatory process may include different stages involving diverse methods, depending on the community (2018). "Since everyone has a different target, the methods should then be related to that community. [...] We put out a big map or a piece of paper and start drawing and writing. We start by having a conversation with the people and talk about their neighborhood and its history." (Lira, 2018).

Related to the concept of citizen participation, is the idea to bridge the gap between politicians, planners and local community. In this process, it is important to interact with the different stakeholders as equals. "We work on an eye-

level with the participants, starting with a personal conversation. The aim is to create an environment where everyone can speak freely and be listened." (Lira, 2018).

Secondly, Participate in Design is an NGO "that helps neighbourhoods and public institutions in Singapore design community-owned spaces and solutions" (PID, 2018). The organization uses 21 different tools. To point out some: mapping workshops, interactive exhibition, walking conversation and art making. The goal is to "intentionally build up a person's capacity to contribute at higher level" (ibid).

However, the most common methods used for participation are questionnaires, interviews and personal conversations (Slocum, 2003).

LIMITS OF PARTICIPATION

It is also important to be considerate about when to involve citizens and to take into account political and technical circumstances. According to Federico Cartín Arteaga, principal and co-founder of SUM Consulting in Costa Rica, Cartín, stated in an interview (Appendix A): "We involved professionals from different areas. It wasn't so much as a community participation, because the scale was too large. Twenty-five km of bike path. You have to understand when to involve people and when

not to, in order to not create expectations and frustrations” (2018).

Hence, the participation process cannot and should not substitute professional knowledge. The extent and stage of involvement depends on the project. As the participation process builds up expectations, the suitable timing and careful communications ought to be chosen. This shall prevent discouragement and division in the involved community.

CREATING MEANINGFUL SPACES

However, when carefully applied, the participation process can create meaningful spaces (Calderón, 2018). A public space which reflects people’s dreams and opinions, is regularly maintained and used.

Moreover, a space that is designed by a group of people spurs social interaction and strengthens the ties in the community. As referred to in the term of sociability. The Oxford dictionary defines sociable as *“(of a place, occasion, or activity) characterized by friendliness or social interaction”* (Oxford, 2018).

The Caño Negro Project by Semillas is an example, where the communities took ownership of the community building that was designed in cooperation with different

organizations. The local community continued to keep the building safe and maintained. Even after the volunteers of Semillas left the project, the community continued to expand the project. Through participatory process, the community ties have been strengthened (Lira, 2018). Thus, the participants built up an attachment to what they build, because they have dedicated their time and strengths into the building process (ibid.).

THE BENEFITS OF PARTICIPATORY PROCESS

In a summary, the participatory process goes further than merely being a method to build a project, but also implies a process that impacts an area physically, socially and economically. However, as societal conditions can be very complex, the involvement process needs to be sensitive towards the conditions that surround the project. In the Caño Negro Project a space was created that is sociable and is meaningful to the community.

PUBLIC SPACES, PUBLIC DOMAIN AND ITS SOCIAL VALUE

An optimal outcome of the participation process is the creation of meaningful spaces. Often the citizen participation re-designs public spaces. Yet, one might consider, what is the value of public spaces?

“At their best, public spaces act like a self-organising public service; just as hospitals and schools provide a shared resource to improve people’s quality of life, public spaces form a shared spatial resource from which experiences and value are created in ways that are not possible in our private lives alone.”

(Mean et al., 2005 in Worpole & Knox, 2007).

As specified by Kayden (2002) a public space is open and accessible to all. It is a place for public gathering, which provides a mix of uses and activities (Varna, 2014). It is where individuals come together and through speech and action they share common interests and ideas (Whipps, 2008). On a broader level, Charles Montgomery accentuates that the purpose of a city is to be of benefit to the citizens achievement of happiness (2013). He focuses on the exchange within the community and underlines that trust to the neighbors is key for a stronger community. “Connected communities are happier, more resilient in hard times and better equipped to handle economic challenges” (Montgomery,

2013).

THE QUALITIES OF A PUBLIC SPACE

Based on The Place Diagram created by the Project for Public Spaces (PPS), a non-profit organization, there are four qualities that a public space should offer: accessibility, activities, comfort and sociability. If those ingredients are provided, it is possible to create a resourceful and successful space. And as specified by Kayden (2000) a public space is open and accessible to all. It is a place for public gathering, which provides a mix of uses and activities (Varna, 2014).

Taking the different factors into account, public space, in the sense of a space for people to meet and interact, can vary in its meaning. Over the last two decades the concept of public spaces have been refined.

THE DISTINCTION BETWEEN PUBLIC SPACE AND PUBLIC DOMAIN

The term public domain shall serve as an example of how different notions of the public space expresses its inherently dynamic and social character. According to Hajer and Reijndorp (2001), in order for a space to develop into a public domain, it must fulfill certain requirements. Firstly, an exchange

of shared experience between people with different backgrounds has to be met. Another criteria is the idea of ownership, where different groups can appropriate important spots. Lastly, the notion of public domain implies that people feel an attachment to a place. Therefore, a public domain may be seen as an exchange rather than necessarily being tied to a specific place (ibid).

“It is in this confrontation with other opinions that we develop our own ideas.” (Hajer and Reijndorp, 2001: 12). Social exchange happens where a change of perspective can occur and where the confrontation with the otherness takes place (ibid.: 129). Being exposed to others people’s reality, can counteract the stigmatisation of marginalized groups. That is why places of exchange are crucial for gaining new ideas and perspectives (ibid.).

Consequently, spaces which encourage meetings and debates are an valuable asset within the community. It contributes to the liveliness and the growth of a neighborhood, but also to the empowerment of the community (Dixon, 2014).

CULTURAL MOBILITY

Implied in the idea of exchange, cultural mobility contributes to the dynamics of public

domain and to the public sphere in general. Cultural mobility describes the idea to be given the chance to see things from a new perspective and in a different way (Hajer and Reijndorp, 2001: 16): “The sphere of social relations going beyond our own circle of friendship, family and professional relations. The idea of the public realm is bound up with the ideas of expanding one’s mental horizons, of experiment, adventure, discovery, surprise.” (Bianchini and Schwengel, 1991: 229 in Hajer and Reijndorp, 2001: 12). In that sense, public domains are places for surprise and reflection.

When a person experiences surprise, and reflection, she or he can gain new knowledge through the encounter. Correspondingly, the public sphere is a place to learn. Firstly, children can learn in the public spaces:

“In public spaces, small children can learn about social behavior by observing how strangers look and behave, how their carers interact with strangers, and how to behave themselves in public”

(Holland et al., 2007).

Secondly, adults also continuously learn. Assuming that surprise and reflection happens in a public domain, the person expands their perception. Through the interaction, the user of the urban space can gain new perspectives.

ENHANCING SAFETY IN PUBLIC DOMAINS

Furthermore, safety is another concept tightly connected to the theory of public domains. According to Hajer and Reijndorp (2001), a functioning public domain is where people have the ability to see others, but also let others see them. An increased presence of people may contribute to the public safety in the urban environment.

The chapter about the social benefit of green spaces, pointed out that a well kept green space can reduce crime. Evidently, this also applies for other public spaces in general as people tend to perceive well maintained public spaces as safe (Hajer and Reijndorp, 2001: 12). Additionally, community involvement can have the effect of people maintaining the spaces they took part of building or designing. Consequently, when the community cares for its environment, safety might improve as a result. Because people are the ones making the place, rather than the space is making people (Knox, 2007; Hajer and Reijndorp, 2001: 16).

A safe space is tightly connected to a welcoming space. *“Welcoming is a very broad term, since it talks about accessibility, it talks about different uses, and understanding demographics and safety. If you feel unsafe it is not being welcoming”* (Cartin, 2018).

KEY POINTS OF PUBLIC DOMAIN

Even though there are some differences between a public space and a public domain noted in the literature, no clear distinction between them has been defined (Hajer and Reijndorp, 2011). In some cases they may even overlap. The notion of public domain emphasizes the importance of exchange and diversity. This implies the transfer of ideas and perspectives, where different elements are brought into close proximity of one another. To employ the words public realm as a bridging term, the public realm as spaces of the people ought to be designed as welcoming, accessible and safe spaces. This calls for a second look back into citizen participation. The process brings together people from various backgrounds. Already this process of creating the public realm, serves as an anticipation to the exchange that shall take place in the built environment once it is physically manifested. To conclude, in order to create a meaningful place, the development of the design shall be meaningful in itself.

CATALYST ARCHITECTURE TO BRIDGE SOCIAL INEQUALITIES

If public realms are meaningful places for and potentially by, the people, which address diversity and exchanging ideas, how to approach social inequalities that prevail in the cities? In Latin America social inequalities date back to the colonial period (O'Donnell, 1996).

Due to the complexity of the issue, no simple solution can be found. However, change in a community might start with an initiator and architecture and design can unfold its creativity to invite people to change their perception, or cognitive maps, in a magnifold of ways. The principle of catalyst architecture, could provide a tool to bridge social inequalities (H. Kiib, G. Marling, 2015).

“Catalyst architecture deals with architecture’s ability to be a catalyst for physical, social and cultural change of place. The term covers architecture’s ability to connect with place, setting out a new framework for the site’s use and helping to transform place as both a physical and a social construction” (H. Kiib, G. Marling, 2015: 21)

What does catalyst mean? As specified by the Merriam-Webster dictionary, the word catalyst means (2018) “an agent that provokes or speeds significant change or action”. In this case, architecture could be used at this agent that could facilitate transformation within the community.

THE ROLE OF CATALYST ARCHITECTURE

Catalyst project interventions play a strategic role in the surrounding area of which the intervention is placed, they open up the city, they boost diverse city life, they usually present various programs and lastly, they renew the narrative of the place. These kinds of interventions are site-specific and they work with performative urban environments. The aim is to work as a catalyst for urban change in a mental, social and cultural way. Architecture as catalyst is strongly related to the idea of performance. “Architecture ‘can do something’ to and with their users’ commercial and experiential needs and ‘can do something’ to and with their environment” (H. Kiib, G. Marling, 2015: 23). The role of catalyst architecture is therefore essential to create vital street life in the area it will serve. It is central not to forget that in order to enhance various users’ experience, many different programs must be involved, in order to attract different social groups. Furthermore, architecture can be perceived as phenomena, which develops into a wider perception of it leading the user to an experienced architecture.

ROCHINA BRIDGE

An example is the Rochina bridge in Brazil. The symbolic significance of the Rochina bridge

can be defined as a dialogue between the gap among the poor and rich areas in Rio. Despite the colorful and the rich environment the favela has, it is an unsafe place. However, instead of displacing the favela, the bridge integrates it with the rest of the city. The development of community building and new public spaces, strengthens the unity with people. (Dykes, 2011; H. Kiib, G. Marling, 2015). "It's a piece of Architecture, which connects people and creates transparency to routine of everyday life. Here are different aspects of daily cultures on display, and interaction creates the basis for a richer understanding of the cultural diversity" (H. Kiib, G. Marling, 2015: 222).

Hence, catalyst architecture emphasizes on the experiences that unite the diverse users in the situation of encounter. It is an architectural performance that involves different senses to expand people's perspectives. Therefore, it can not only bring together people from different backgrounds but also raise awareness for issues the user might not have been aware of beforehand. The users attention can be guided, interrupted or opened to a new horizon.



DESIGNING FOR SITE SPECIFICITY

WHY SITE MATTERS

Climate Change is a global problem. In addition, the design practices are increasingly internationalized. Why should it be relevant to address a specific site - and design for a specific location?

FROM GLOBAL TO LOCAL

Firstly, the global processes cause site-specific problems. As mentioned in the first chapter, climate change causes problems on-site, such as flooding. The global trend of population growth leads denser areas (WBGU, 2008: 3). Lack of public spaces and as a consequence the emerging of social barriers.

Additionally, the reflections about site in the book *Site Matters*, edited by Carol J. Burns and Andrea Kahn (2005) provide new insights on the role of sites in design. Accordingly, physical design projects are always designed for a specific place (ibid., viii). To thoroughly understand the place, one should not see the project as detached from it. Hereby, the designer's work depends on how she or he understand the site. The relationship between the project site and the professional who acts upon the site will define the design output (ibid.).

SITES AND PLACES

At this point, one may ask: What is site? Is site different from place? According to *Oxford Dictionaries* (2018), site is defined as "An area of ground on which a town, building, or monument is constructed." Another suggestion by the dictionary describes site as "A place where a particular event or activity is occurring or has occurred" (Oxford dictionaries, 2018). Both definitions say in their essence that a transformation with a defined location needed to happen: first site was a place, through human intervention the place became site. And, in the words by Robert Beauregard in *Site Matters*: "All sites exist first as places" (2005:39).

Sites have often been seen as a "straightforward entity contained by boundaries that delimit it from the surroundings" (Burns and Kahn, 2005: x). The authors point out that this perception is oversimplified, as it neglects the role and impact the designer has. The designers shape the process of places becoming sites. And even beyond influencing the site choice and site transformation, examples like Fallingwater by Frank Lloyd Wright show how the landscape, and the atmosphere of a site can inform the design (ibid.: xi).

THE RELATIONSHIP BETWEEN DESIGNER AND SITE

If the expression and value of the place takes its roots from the relationship between the site and the designer (ibid.: xv), what is the nature of this dialogue?

“This relational condition of the site derives from uninterrupted exchange between the real and the representational, the extrinsic and the intrinsic, the world and the world-as-known.”

(Burns, Kahn, 2005: xv)

In other words, designers and planners represent the site, by mapping, photography or other means of visual interpretation and data collection. This requires a constant oscillation between apprehending the site from the inside and taking a step back to draw upon contextual knowledge. Therefore, the most benefit lies in viewing the site from different standpoints, in exploring different perspectives to apprehend most of the site (ibid. xxii).

This process implies to regard site through both, an objective and a subjective view. The objective perspective might be that of a planner and designer who analyzes the components and physical features of the site. Equally significant however, is to explore

the perspective of the (future) users, the community and individuals attached to the site (ibid.xxii). In the process the designer might go through the site with the perspective of the subject, to collect different experiences and stories that compose the site.

THE DYNAMIC SITE

The process of understanding a site is a dynamic process, since it reflects the dynamic character of the site itself. Site never stays the same. Site transforms from past, present to future and leaves its imprints on the place. How a place is read depends on the eye of the observer. While some elements and narratives might not be visible for some, there are visible to others (Lippart, 2005:1).

NON-HUMAN FACTORS THAT AFFECT SITE

Besides the built environment altering the site, also the ecological cycles of water and other elements transform site constantly. They regulate and sustain, but according to the nonequilibrium paradigm, the cycles can be disrupted by human intervention or natural catastrophes (Hill, 2005:132). Similarly, the topographical relief changes over time. The ground is transformed by the impacts of the natural forces (Dripps, 2005:69). The way cities respond to the natural characteristics of a site may differ and change over time as well.

The process-oriented approach to design is further supported by Spirn, who was mentioned in the first chapter.

“There is a common tendency to focus on natural features (e.g. rivers and trees) rather than the processes that shape and structure

them [...] The key is to think in terms of the ways that human activities and urban form interact with natural processes of air (heat transfer and air flow), earth (geology and soils), water (water flow), life (reproduction, growth, and behavior), and ecosystems (flows of energy, information, and materials, succession of plant species and behavior of plants and animals)”
(Spirn 2003: 204-205).

To see site as a dynamic ensemble does not merely imply to look in its past, but rather to consider the recurring and oscillating cycles that constantly enact on the site.

DYNAMIC DESIGN PROCESS

Therefore, the design might not only be driven by the search of an aesthetical form, but rather driven by the process and the cycles. This implies that the representation is dynamic as well, such as modelling or simulation to unveil the discourse between the social and the natural processes, the past, present and potential future (Burns, Kahn, 2005:309).

“By focusing on the processes that shape and structure the environment, designers and planners can accommodate dynamic change, make connections among seemingly unrelated elements and issues, and can realize opportunities” (Spirn 2011: 8-9)

THE SOCIAL IMPACT ON SITE

To simply ignore the natural process can be damaging, this is already seen in dense and impervious urban areas that flood easily during heavy rain periods. A design that incorporates the natural cycles is more resilient and adaptive, and might “make connections among seemingly unrelated issues and phenomena” (Spirn 2003: 204-205). A design responsive to change does not necessarily reproduce “the shape of natural features” or utilizes indigenous materials, rather it is about adapting the design to the natural processes (Spirn 2011: 8).

Besides the aforementioned non-human impacts that important for design site-specific, we shall examine the question: How are the social and cultural dynamics shaping the site?

A RECIPROCAL RELATIONSHIP

“We shape our buildings and afterwards our buildings shape us,”

Winston Churchill in 1943 (Bond, 2017)

One could interpret that Churchill points out a relationship that goes beyond the dialogue between the designer and site, but also as a reciprocal exchange between the shaped site and society which will define then again how the site will be transformed in the future. The way a site affects the human behavior may be subtle. The effect might take place through human to human interaction that a place implies, especially in public spaces. For example, as stated in the previous chapter, the city can become a learning ground for children, who watch the behavior of adults in the public space (Holland et al., 2007).

In addition, social values, ideology and policy influence how society defines site. For instance, the condition of land ownership has been often perceived as static, controllable and identifiable (Jacobs, 2005: 19). However, depending on political systems and changing cultural norms, the control and rights an owner has on a plot of land might differ. Limitations might apply in most countries through zoning laws. Yet these laws depend on the control a society accords to a

government. How much individual rights does a landowner have, when do individual rights cease to the public interest? This shall point out how social and political concepts define characters of a site that might be understood as fixed or determined, in this case the one of property rights.

THE INTERCULTURAL FACTOR OF SITE

An important factor forming the recent society, is that of an increasing interconnectedness between people, countries, institutions, etc. on a global level. "Cultures today are in general characterized by hybridization. For every culture, all other cultures have tendentially come to be inner-content or satellites. This applies on the levels of population, merchandise and information. [...] Henceforward there is no longer anything absolutely foreign" (Welsch, 2000).

However, how does interculturalism or multiculturalism apply to site-specific design? The acknowledgment that a dynamic site is produced by society and that society itself is affected by changing cultural norms, may require the designer to consider the cultural understanding of the place. Thus, designing the site, with its social and cultural dynamics, entails to expand the dialogue with the site into the intercultural context. In The

intercultural City, Charles Landry (2008:11) states that the intercultural exchange "will require new outlooks, skills and aptitudes from politicians, professionals and ordinary people. The most important of these are cultural literacy and cultural competence."

AN INTERCULTURAL DESIGN PROCESS

The process of design, may itself be comprehended as a reflection of the intended design output. As stated in the beginning of this chapter, the design practices are increasingly internationalized. Approaching a complex, multi-layered and dynamic site, calls for innovative ideas, and a design team that may see a problem through different perspectives. Landry (2008:221) cites following passage of Johansson (2004):

"[Diverse teams] have a greater chance of coming up with unique ideas [as they] allow different viewpoints, approaches, and frames of mind to emerge... People who have experienced the innovative power of diverse teams tend to do everything they can to encourage them."

Hence, cultural diversity might build barriers that are difficult to overcome, however, when bridged with cultural competence, innovation; creativity and inclusion can be catalyzed.

A SITE DESIGNED FOR DIVERSITY

The same applies for the designed space. A place that appears welcoming to people with different backgrounds, in the sense of a public domain as discussed in the previous chapter, shall intend to bridge barriers with care. This implies designing for common interests and curiosities that will help to create linkages between people without forcing the interaction on people (Landry, 2008:215). “Top-down interculturalism alone will not work” (ibid., 215). Therefore, the challenge lies in finding the common ground.

Leonie Sandercock worked and researched extensively with the concepts of community planning and cultural diversity (UBC, 2018). One of the premises she poses in her is theory encourages citizenry as a common ground

“A sense of belonging in an intercultural society cannot be based on race, religion, or ethnicity but needs to be based on a shared commitment to political community. Such a commitment requires an empowered citizenry”
(Sandercock, 2004 in Landry, 2008: 65).

In her premises, she also emphasizes the dynamic character inherent to culture as well: “It is always evolving, dynamic and hybrid of necessity. All cultures, even allegedly

conservative or traditional ones, contain multiple differences within themselves that are continually being re-negotiated”(ibid.). In summary, not only the physical aspects underlie change, also the human impacts on site should be analyzed and understood with emphasis on the dynamic and constantly moving aspect of site and society.

SOCIAL COHESION – FINDING THE SPATIAL REFERENCE

To illustrate how an inclusive space is shaped, the Case of an association “Elsk Aalborg” that brings people from different backgrounds together shall be exemplified under the aspect where a civic association might find its space. Elsk Aalborg started as part of the church – Aalborg Valgmenighed as a place to express hospitality and encourage the citizens of Aalborg to be more friendly and engaging, to provide a place of encounter where friendships can be formed – across social and demographic layers (Elsk Aalborg, 2018).

The church building provides a place for regular meetings. It is in an old warehouse south of the city center. The building offers diverse facilities for assembly, playing sports, a kitchen, as well as rooms for children. Having the vision on a city level, the association seeks out the public spaces. For instance, during an event called

“Elsk Aalborg Ugen”, translated into English “Love Aalborg Week” (own translation, 2018) during the social sustainable festival, the volunteers encourage passengers to practice kindness and helpfulness, provide practical help and events that incite interaction between people from different backgrounds, such as the multicultural buffet and other activities. Throughout the year free Danish classes are offered for internationals from different backgrounds, such as students or refugees. The aim is not merely to pass on knowledge, but also to deepen intercultural relationships. Also, these activities expand into the public space and public institutions. Excursions will lead into museums, the local Zoo, the ice skating rink, etc. During these events encounters with other users of the public space occur and meaningful relationships may be formed throughout the continuity of the events.

The relationship between an association aimed to improve social cohesion and their spatial references shows that inclusiveness is specific to the needs of different people, for example a play area for children, as well as, open to new dynamics. The bottom-up initiative uses niches or temporary installations. The public space in the urban environment provides an open-minded platform that can be appropriated by an “empowered citizenry” to lend again the words of Sandercock. For a possible future

designer shaping the urban space it necessitates to explore those social relationships formed in the public realm to understand in which constitutes the specific character of the site, who shapes it and how the design may respond to the existing dynamics.



ill 17: Children playing in the street

STORYTELLING: A METHOD FOR UNDERSTANDING AND DESIGNING A SITE

How shall a design team tackle the complex task of comprehending a multi-layered site? How can we find a universal language in the complex and globalized setting? Leonie Sandercock (2003) accentuates stories and storytelling as a persuasive tool in the planning practice. Stories portray a process and draw linkages between the personal and collective. Through the meaning stories convey, they can be understood across the fields and across different backgrounds people are associated to.

DRAWING STORIES FROM SITES

Stories are significant when approaching a site. People have personal associations connected to a site. An individual might recall a specific occurrence at a place. The sum of individual may form collective memories, historic events that mark the meaning of a site. As Beauregard phrases this process in *Site Matters* (2005: 39) *"Standing between planners and designers and the sites on which they hope to act are socially embedded narratives"*.

DESIGNING SITES WITH STORIES

In terms of methodology, a designer can utilize those stories by collecting them. Historically designer and planners often made use of the local stories. By simplifying them and making

them more transparent, the stories became part of the design process (ibid.). "Planners and designers take control of a place by distilling its narratives" (ibid., 41). Inherent to this process of simplification is a political dimension: Which stories will be heard, which ones will be distilled, and filtered? Sandercock states that "The telling of stories is nothing less than a profoundly political act" (Sandercock, 2003: 26). Part of the design process is the balancing of those stories. Since those stories shall lead to continuation of the site and be written into the future. This is especially significant in participatory planning where it is relevant to see "how to turn a raft of community stories into a trustworthy plan, one that is faithful to community desires" (Sandercock, 2003: 16).

STORYTELLING AS A COMMUNICATION TOOL

Lastly, storytelling is a powerful tool due to its persuasiveness and inclusiveness. This can be an incentive to expand the language of planning, to be expressive and engaging towards the recipient, and to embrace the language of emotions (Sandercock, 2003: 12). This is especially applicable in the multicultural setting. It can enhance the understanding of a cultural heritage and provide a common language in a complex setting (ibid., 22). "The multicultural city cannot be imagined without a belief in inclusive democracy and the diversity

of social justice claims of the disempowered communities in existing cities—communities of migrants, indigenous peoples, poor people” (ibid, 22). Hence, by sharing stories, new stories can emerge, and mutual understanding can be enhanced (ibid., 26). The new stories may combine individual experiences with that of public life and value the meaning a community connects to a site.

CASE STUDY

LEARNING FROM LADAKH

WORKSHOP

Location: Ladakh, Indian Himalayas
Construction period: Jul / Aug 2011
Design: ASF-UK, SEEDS, participants

In August 2010 a major flood event occurred in Ladakh, in the desert region of the Indian Himalayan. Flood events are expected to increase in the region, due to climate change. Therefore, it is important to raise awareness about environmental issues. For that reason a workshop was set in place by local organizations, in a collaboration with the local community. This provided an opportunity for participants of the workshop to explore and investigate the potential of local materials and sustainable design (Learning in Leh, 2018). This is especially significant due to the environmental conditions of the area, which is six month of the year below freezing temperature and dry. The summers are hot and humid.

The workshop provided a valuable learning outcome for the participants involved. It also benefited the school. The workshop had several phases. During the participatory design workshop, the participants were included in the design process which responded to the local needs. It was based on a feedback session together with the students, the staff,

local NGOs and experts.

The workshop aimed at developing a better learning environment for the school, by creating a safer and sustainable building facilities for the children. The starting point was to raise awareness and educate the local residents (ibid.).



III 18:ASF-UK, 2018. Learning in Leh.

CASE STUDY

CHIWIÑAS SHADOWS: URBAN INTERVENTION IN BOLIVIA

Location: El Alto, Bolivia

Construction period: sep / oct 2011

*Design: Basurama, Xioz adi, La Paz Stencil,
Aymar Coppacatti*

The project Chiwiñas Shadows is strongly influenced by the cultural and the social context of the dynamic town of El Alto adjacent to La Paz. The increased urbanization caused a reduction in the public spaces. Chiwiñas Shadows became an example of integrating an urban intervention through community engagement (Adi, 2012).

The appointed site for the intervention was an unused railroad, situated between two-way street. The project provided a way of integrating the railroad into the public realm through different elements, such as structures and decks. They were collectively constructed from reused local materials. The intervention included benches made by car tires and woven decks used for shading. The process also included painting the elements. (ibid.).

The intervention was initiated by a design team together with the locals, through community engagement and workshops (ibid.). The intention of the project was to create a flexible place, that can be used for recreational purposes, markets or community

gathering. It became a place for the locals to enjoy (ibid.).

The intervention was not only inspired by the location and surroundings, but also the way different social groups established themselves in the city and how they used the public space (ibid.).



III 19: RUS, 2012. El Alto, Bolivia. Chiwiñas Shadows.

CASE STUDY

GEN EDUCATIONAL FARM: INCLUDING THE PUBLIC SPACES IN CHILE

Location: Antofagasta, Chile

Construction period: jan / feb 2014

Design: Mi Parque's Professional team

a space for educational and recreational purposes, it also encourages the people to take ownership of the public space (ibid.).

The Gen Farm is located east of the city in the region of Antofagasta in Chile. It was initiated to provide outdoor activities and accessibility to the green spaces, despite the climatic conditions of extreme heat. In this context, the idea of the Gen Farm was to provide a place where it was possible to observe and study the flora and fauna (Kadduri, 2014).

The farm operates as a place for education, where the visitor can learn about farming and cultivation. It impacts the human-nature relationship and provides a classroom and multipurpose hall for the students as well as the visitors. (ibid.).

This structure and the elements in the farm were made from recycled materials. Materials such as wooden sticks and wooden boards. The community designed a wooden pergola, creating comfort for both the animals and for the visitors. Seatings were also made out of wood, which were placed around the farm.

Since the Gen Farm started, it was a valuable asset to the city. Not only does it provide



III 20:Architecture In Development, 2018. Participatory planting

CONCLUSION THEORIES

The theories laid out in this chapter show that ecological issues are related to the human behavior and her or his social context. The ecological issues that are addressed in the thesis focus on increased pluvial flooding due to climate change. The human behavior that was pointed out relates firstly to the individual human being and her or his understanding and perception of nature and secondly to social inequalities that effect how an individual is exposed to adverse effects of climate change.

The interrelation between the natural realm and social conditions provides an opportunity to address climate change from two perspectives: The perspective of the planner and the perspective of the user of the urban site. Firstly, the planner can adapt a design by considering the ecological cycles in the design intervention, such as by applying tools of water sensitive urban design. Planners can show the storm water management visibly in the design, for the user of the site to experience.

Secondly, participation is an important tool that invites the individual to be involved in the transformation of the urban site. This participatory process shall address the ubiquitous nature in the city, raise ecological awareness and built a public realm that is sociable. A public realm that is designed for sociability incorporates the qualities of a good

public space: welcoming, comfortable safe and accessible. Yet, this concept goes further, designing for sociability also means that the design of the public realm invites people from different backgrounds – across age groups and levels of income. Therefore, it is a space to meet and to learn through the encounter. Catalyst architecture offers a mean to spur encounter, to guide the users' experience with the place and to incite interaction between people of different backgrounds.

Furthermore, the complexity of a site and its social situation requires the designer to study the site from different perspectives. A perspective from the outside through site mapping and other means is deepened by the perspective from the inside. Hereby the tool of storytelling can be powerful. On one hand, it can be employed to understand a site more in depth through collecting local stories. On the other hand, it can develop into a tool for communicating a design proposal.

The overlap between environmental and social issues is exemplified through the case studies. Even though they are taken from different places around the world, they all present the common goal to connect people through community engagement, invite them to take ownership of the public realm. In addition, the involvement process provides a

platform for ecological education. The process of involvement deepened the participants' understanding of environmental conditions that effect their neighborhoods.

RESILIENCY

Climate Change and Urban Vulnerability

IPCC, UNECC

An Overview of Urban Vulnerability to Natural Disasters and Climate Change

How to adapt to climate change?

Adaptation and resilience

100 Resilient Cities

Designing with Nature

The Landscape Urbanism Reader

Granite Garden

Water Sensitive Urban Design

Social benefit of Green Spaces

Vitamin G: effects of green space on health, well-being, and social safety

How to raise ecological awareness in the urban context?

Should one consider a local fix when addressing a global problem?

SOCIABILITY

Community and Ecology

Integrating Human and Natural Systems in Community Psychology: An Ecological Model of Stewardship Behavior

The participatory process

Expert Interview: Semillas

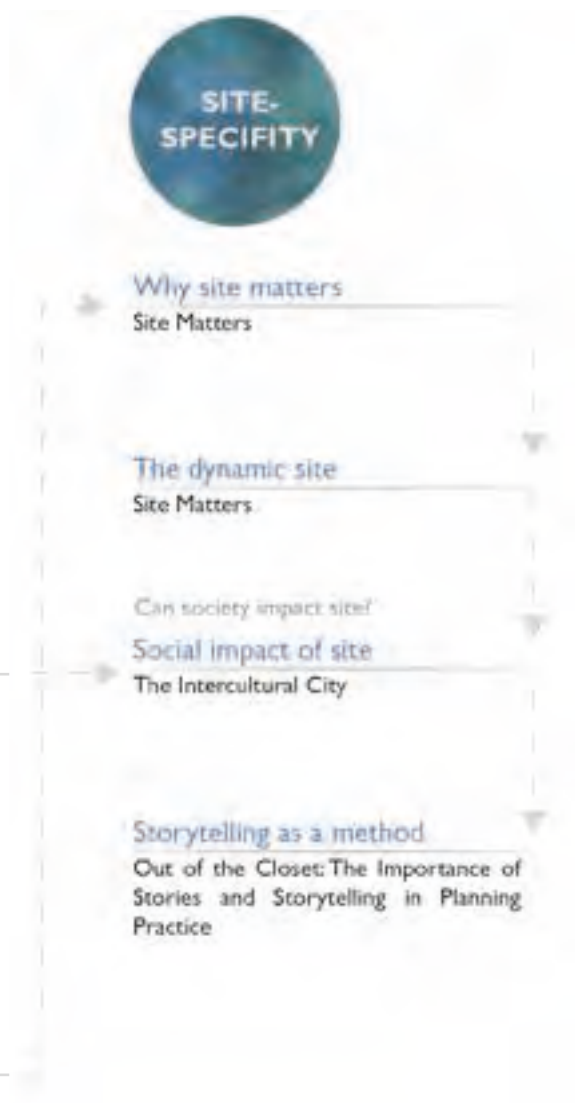
What can serve as meaningful places for the community?

The public realm

In Search Of The New Public Domain

Bridging inequalities

Catalyst architecture





03 ANALYSIS

The analysis forms the next step after the theories. They build on the background knowledge, and dive into the specific site. First, the site is explored through mappings. A focal point is the site visit which shifts of perspective and sees the site through the local eyes.

INTRODUCTION TO THE SITE

49 ha total

86% impervious area

4 ha of park

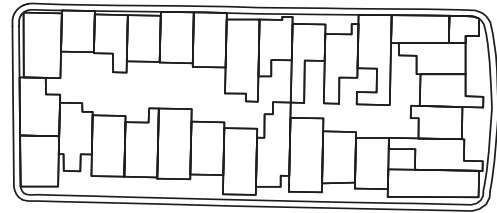
LOCATION

The chosen project site is in the western part of Tibás, in approximately 1.7 km distance from the city center. It is located in Cuatro Reinas and touches Las Rosas to the west, as well as Leon XIII to the east.

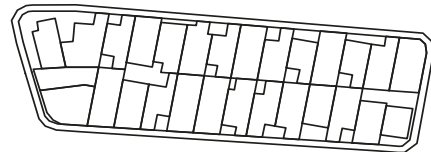
DEMOGRAPHIC CONTEXT

Demographically, the site finds itself in a unique situation: To the west is Leon XIII, a highly stigmatized neighborhood. The TicoTimes wrote “For many Costa Ricans, it’s the capital of crime, drugs and extreme poverty. Its name is synonymous with conflict and marginalization” (2010). Only 700m distance, on the east of Cuatro Reinas is Las Rosas, an affluent and quiet neighborhood, in fact the area of Tibás with the highest income. In Cuatro Reinas, the transition is felt. The perception of safety varies. Cuatro Reinas is a middle-income area, with a mini-center in the middle.

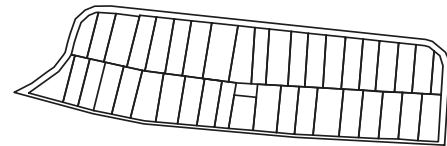
The demographic situation is noticeable in the layout of the residential blocks. In Leon XIII no space is left between the houses, whereas open spaces are visible in the affluent neighborhood of Las Rosas.



Block structure in Las Rosas



Block structure in Cuatro Reinas



Block structure in Leon XIII

Site Location



INTRODUCTION TO THE SITE





ill 24: Site photos

SITE MAPPING - CHARACTERISTICS OF THE SITE

The site mappings provide an outside-in perspective to the site. The main characteristics are summarized in the following: the site is characterized by residential uses. Solely in the middle of Cuatra Reinas, small shops and restaurants constitute a basic retail activity. The green spaces are disconnected from each other and partly unused.

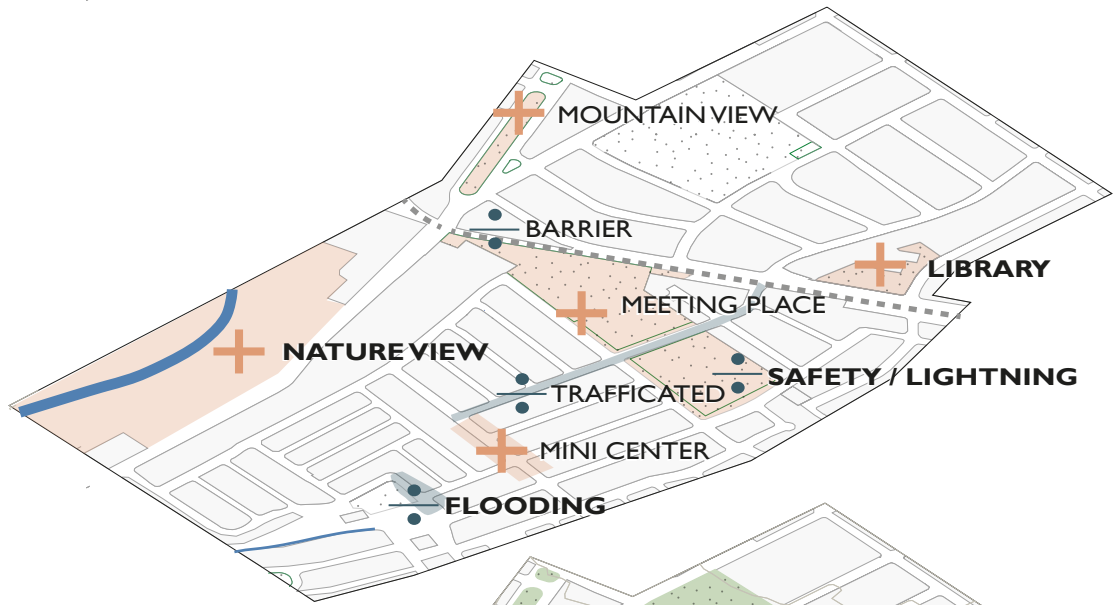
Four elements stood out from the analysis

The park Cuatro Reinas provides 2.9 hectar of green area. The park is distinguished by large trees that are scattered in its northern part. A trafficated road divides the park in two parts.

The streets, mainly residential, leave little space for urban trees. Space is predominantly given to the car lanes, pedestrian walkways are narrow, and bike lines are not introduced yet in Tibás.

Next to the red cross, a left-over green space is located. It functions as a transition between the districts of Cuatro Reinas and Leon XIII.

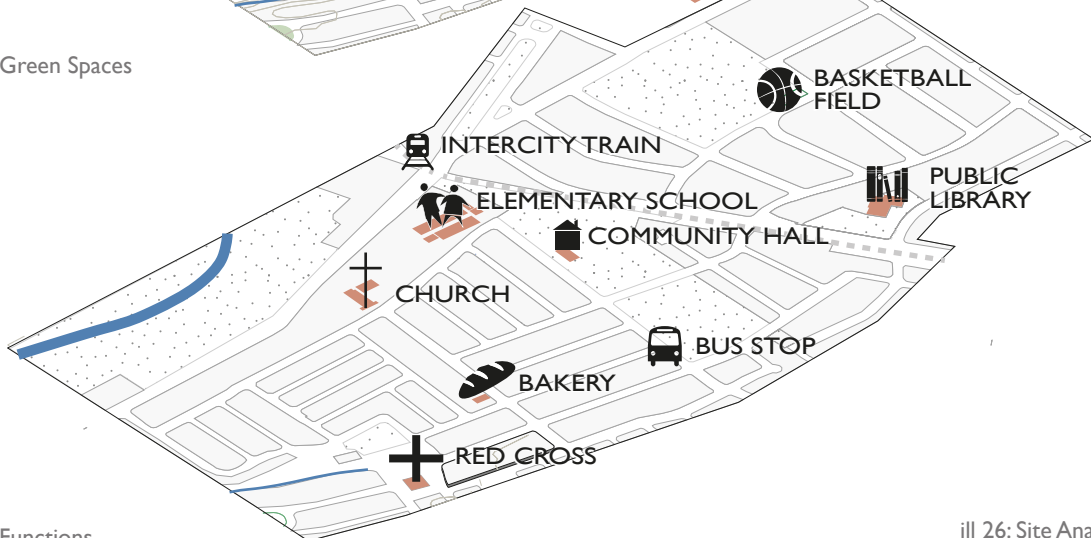
The River Virilla, located to the north flows in a steep valley beneath the city. No access to the river is provided, besides in the eastern part of the city where a small pedestrian bridge leads to the river.



Values and Problems



Green Spaces



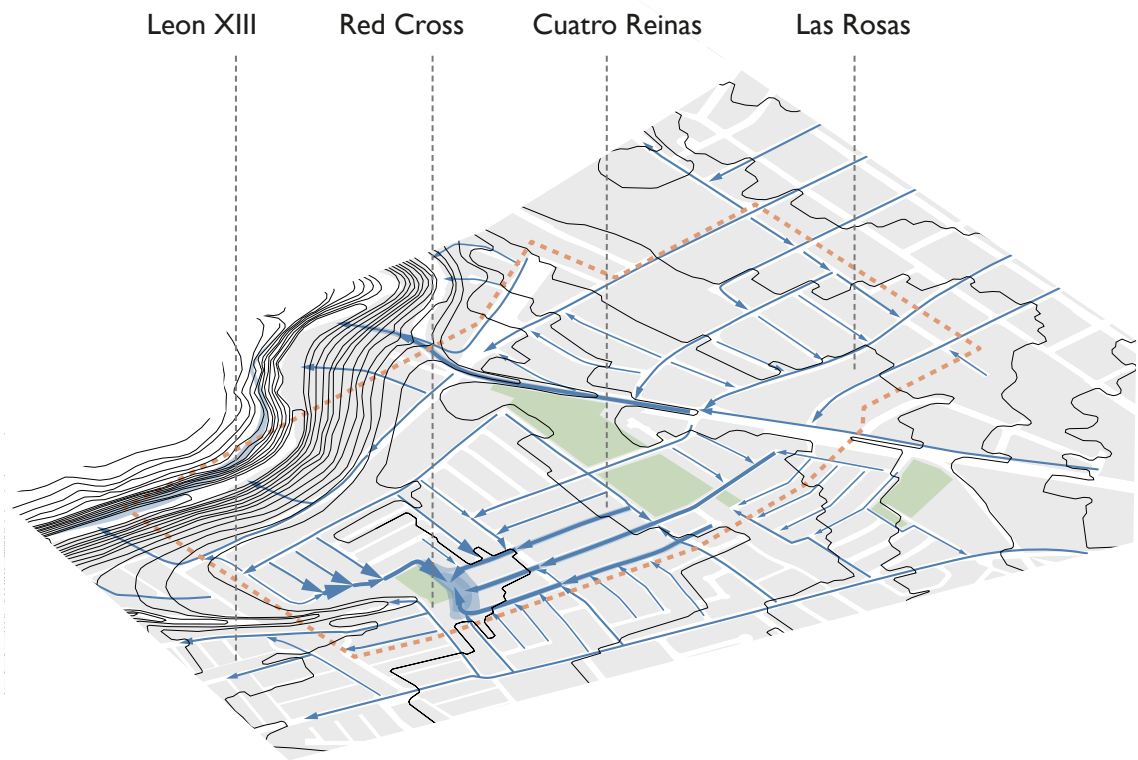
Functions

SITE MAPPING - RUN-OFF DIRECTIONS

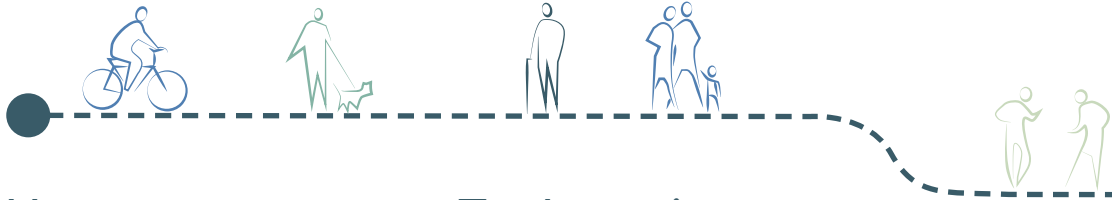
In terms of altitude, the site is situated below the main city, which could cause water to run down into the site. However, train tracks alter the path of the water and guide it into the river.

Within the site, the lowest area is at the Red Cross, and where water accumulates during heavy rain events. The green area at the Red Cross is slightly elevated, hence the water cannot run into the nearby stream.

Furthermore, water runs down into the neighborhood of Leon XIII. Poorly constructed houses are highly affected by the water arriving from upstream. The municipality struggles to enforce the building code in this area (Madrigal, 2018). Hence there is a need for handling the water upstream in Cuatro Reinas to protect the lower laying parts of the city.



ill 25: Runoff map



URBAN DATA COLLECTION: THE LOCALS' PERSPECTIVE

The site visit shifts the point of view towards a perspective of the site from the inside.

Through interviews and interactive experiments with people in Cuatro Reinas, Tibás and San José, local knowledge and wishes for the future are gathered. The interviews were based on a semi-structured interview guide with multiple choice as well as open-ended questions, as described in the article Qualitative research method-interviewing and observation by Shazia Jamshed (2014).

In addition, field observation is used to add or confirm previous research and literature review (Jamshed, 2014).

The interactive elements were carefully chosen to spur interests from people of different backgrounds whilst using simple materials that can be easily transported.

TOOLS AND TECHNOLOGY NEEDED

Paper, pens, sketching materials
Maps and plans
Camera and videocamera
Printed forms for place evaluation
Stickers for self produced games
Collages and photos
Paperbox for collecting stories

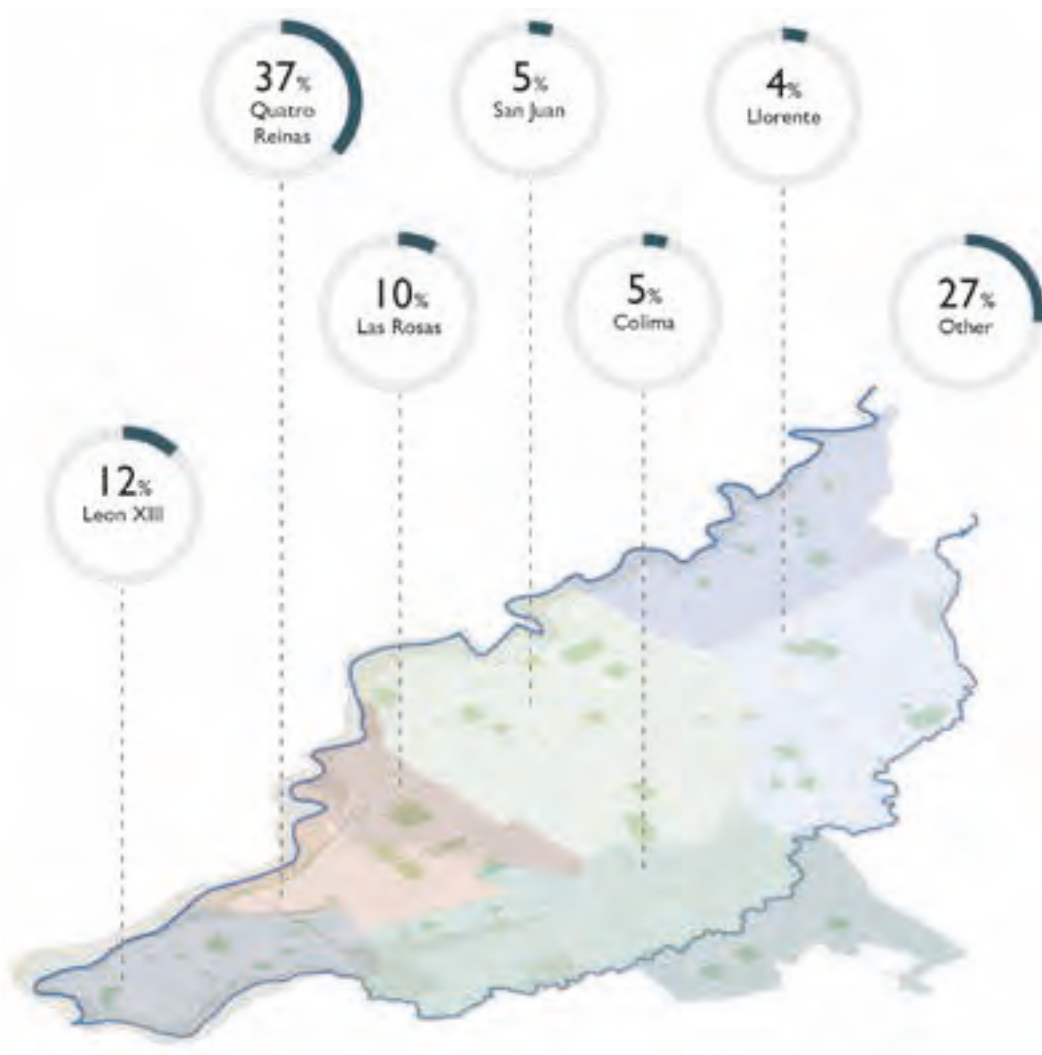
WEEKPLAN

week I	International womans day event
	Municipality Meeting & tour in the informal city
	Event at the Mall
	Rio Urbano Picnic
week II	UD Director Interview
	Interviews with locals
	Observations at the site
	Public Library events
	Local NGO interviews: Rutas Naturbanas Semillias



ill. 27: Interviewing the locals

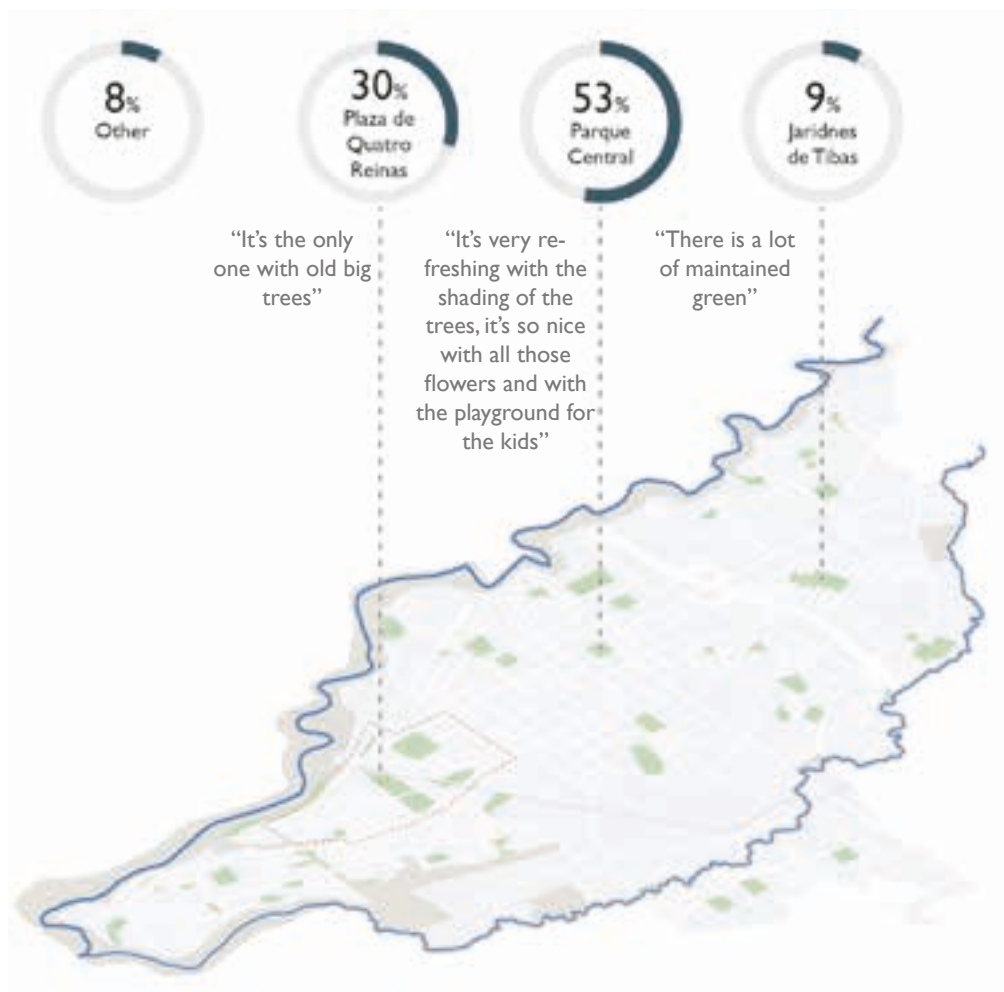
LIVING LOCATIONS



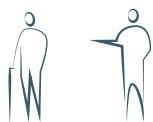
ill. 28: Living Locations of the interviewed



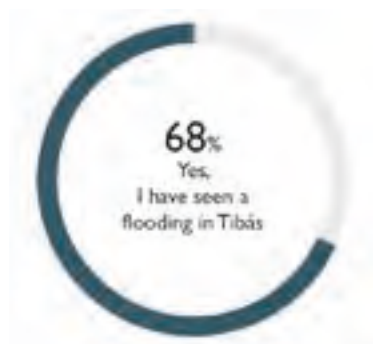
WHICH IS YOUR FAVOURITE PARK IN TIBÁS?



ill. 29: Favourite parks in Tibás



HAVE YOU EVER EXPERIENCED FLOODING IN TIBÁS?



"I was in the car and all in a sudden I could see the water coming out of the sewer system"

"once there was such strong rain, since there was too much garbage in the sewage that the road got flooded"

"At the Red Cross there was so much water that the street was flooded"

"The street Avenida 53 was flooded with ten centimetres. It was not possible to go out of the house"

"Many people lost material things"

"The main road running in front of the Library was flooded after heavy rains"

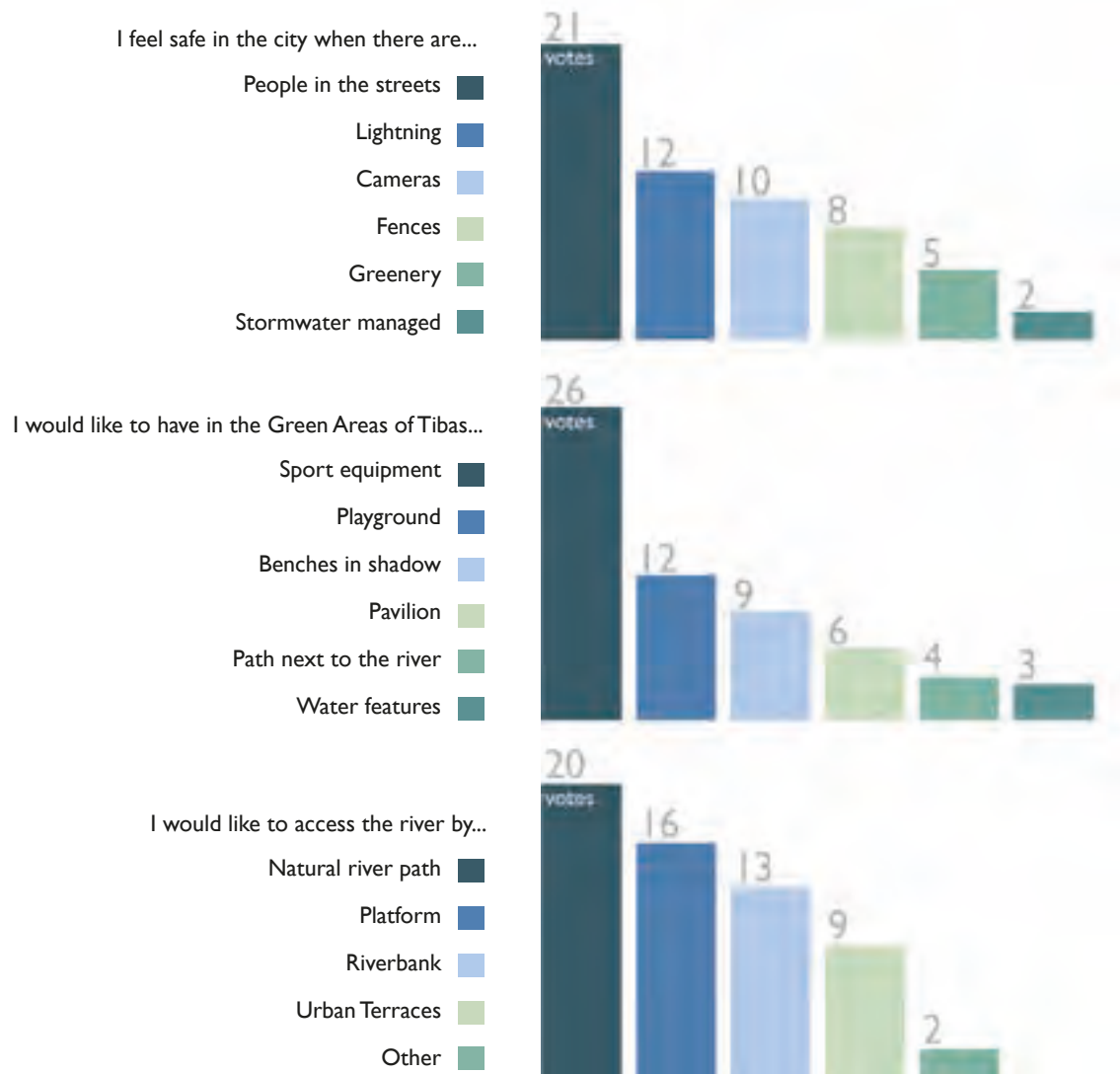
"There were a lot of trash in the pipes, all the rainy season it happens again"

"The pipes where blocked by trash"

ill. 30: Flooding experience Percentage



WHAT WOULD YOU LIKE IN TIBÁS?...



ill. 31: Park interventions and tools desired graphs



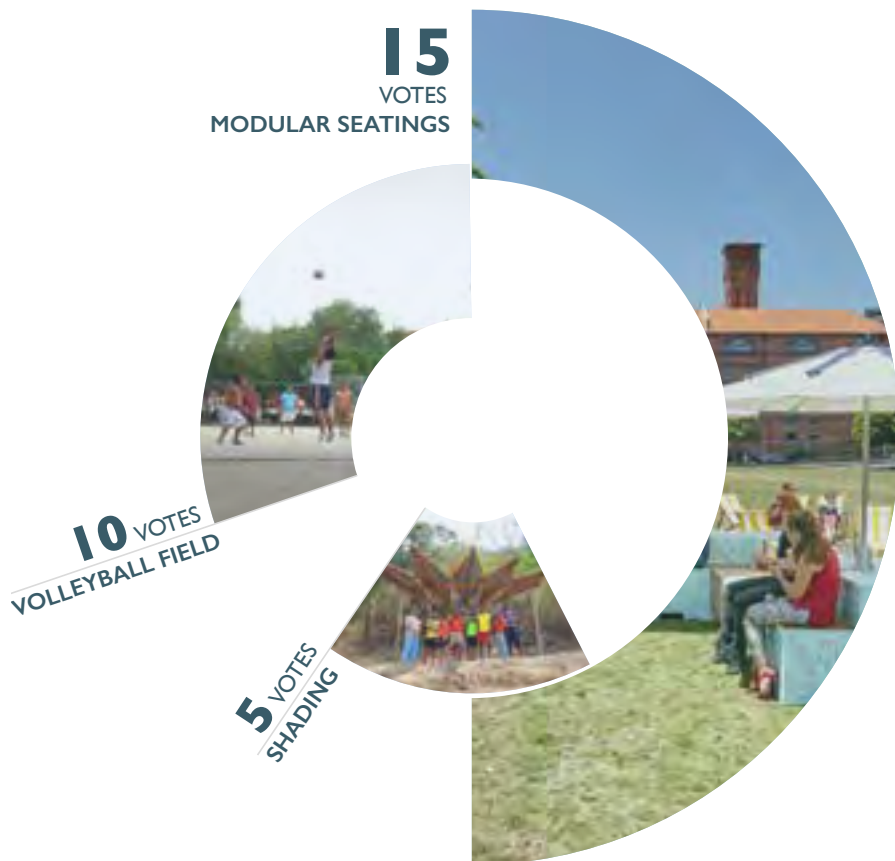
HOW WOULD YOU LIKE TO MEET THE WATER IN THE CITY?



ill. 32: Meeting the water in the city



WHAT WOULD YOU LIKE IN THE PUBLIC SPACE?





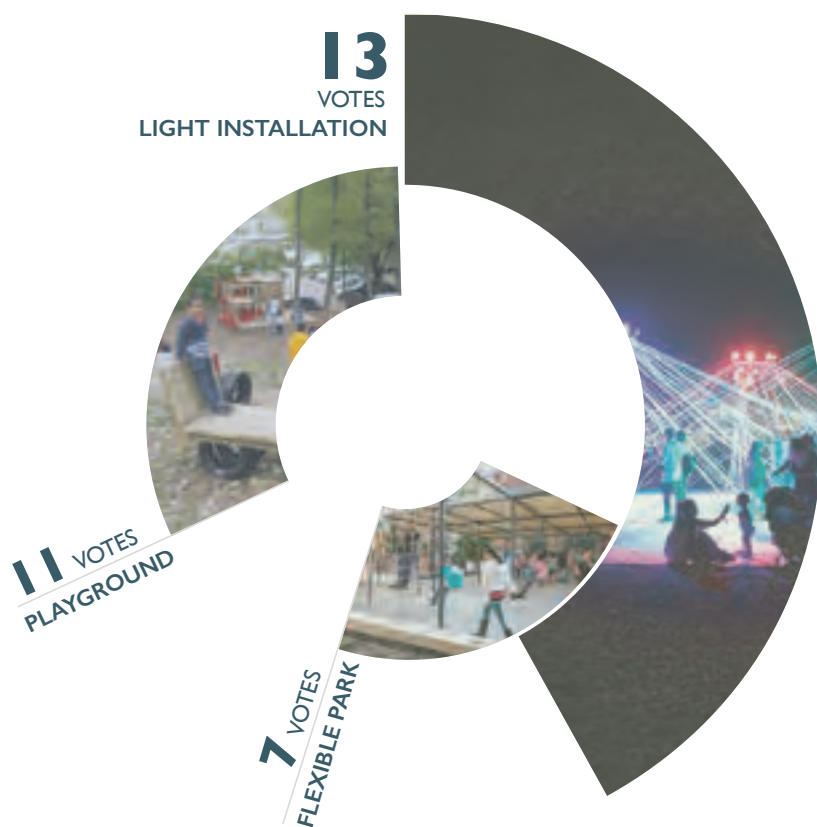
How would you like to meet the water along the river?



ill. 34: Ways of meeting the river



WHAT KIND OF PLAYGROUND WOULD YOU LIKE?



ill. 35: Playground installations



WHAT WOULD YOU LIKE TO HAVE IN THE PUBLIC SPACES ?

For the interactive photo collage photos of the site were printed in A3 format. Urban furniture elements, plants and other elements were given as cut-out images on cardboard. The participants, children, young people and adults from Tibás, placed the cut-out images freely on the photos.

We took pictures of the results and evaluated them statistically.

In addition, the interaction spurred interesting conversations that were very significant for understanding the local perspective. People expressed the desire for active and sportive uses of the park Cuatro Reinas. Urban gardening was also very much appreciated by the participants. People also wish for more lightning in the street and for a cleaner river.

"I like to play basketball."

"These are swings? How funny."

"The fountain looks so nice! I saw it in San José it is on the Plaza de la cultura."

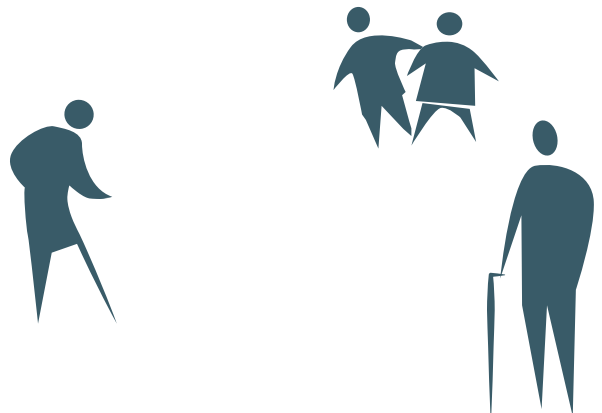
"Gardening is a very good thing to do. I would like to have more of it in the park!"

"Oh the that one here with the water looks so nice!"

"I like to have urban gardening near the river. There is the irrigation right next to it!"

"Oh that photo was taken just around the corner. I know where it is!"

"We need to have a lot of trees and plants in the city!"





Platform

Trees & Plants

Waterplay

Gardening

Seating

10

6

5

4

2



ill. 36: River

BY THE STREET...



Trees & Plants

Seating

Lightning

Sports & Play

Gardening

10

5

4

3

2

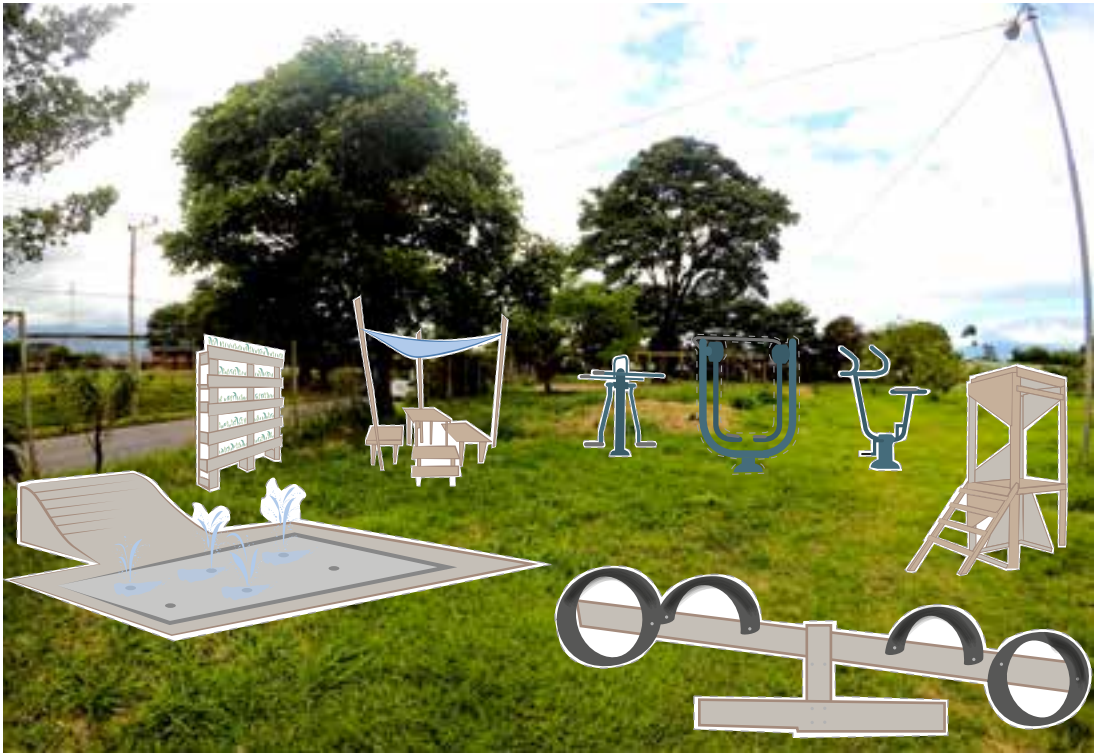


ill. 37: Street

AT THE PARK...



Sport & Play Trees & Plants Seating Gardening Waterplay



ill. 38: Park

INTERACTIVE MAP

The interactive map served as an important tool to see the site through the lens of the local residents and pass-byers. In the public library the map was set up in the size of an A1. Associations with places in and around Cuatro Reinas were written on little sticky notes, attached to tooth pickers and placed on the map.





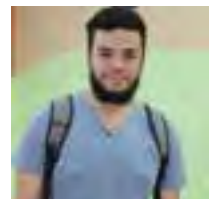
ill. 39: Interactive map

EXPERIENCES BY THE PEOPLE - PARK

"I go to the park Quatro Reinas with my family and share happy moments."



"Park Quatro Reinas is clean and nice, it allows people to walk their dogs and there are also tools for exercising, and it is safe."



"Park Quatro Reinas is well regulated. There is shadow. There are benches. There is security."

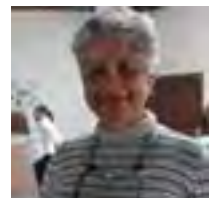
"I like park Quatro Reinas for its location. Also, the town hall is working to intervene to make it more pleasant."

"Because park Quatro Reinas represents my district. In addition, I am part of the association that helps the park of Colima."

EXPERIENCES BY THE PEOPLE - FLOODING

“The western part of Quatro Reinas it’s very low, so since there is garbage in the street, leaves in the drainage system, and the pipes of the sewer system are too small for the water capacity in the rainy season the street get flooded.”

“When it was raining very hard in my area, the sewer systems had too much water and the street was flooded with black water.”



“After the storm, there was much water in the streets of Quatro Reinas.”

“The Red Cross slope makes the lower street flooded and the houses get flooded as well. Streets around the red cross were like a lake. People make arrangements so that water does not enter into their houses.”

OUTPUT / REFLECTIONS

The site visit has given a central input, to approach the site, the local conditions as well as the perceptions and desires the local residents have for the future.

Concerning the perception of public spaces, it became apparent that most people interviewed did not feel a close relation to the public spaces of their neighborhood. For instance, most people would not refer to a street as a public space. Yet, parks are seen as a public space.

Furthermore, the parks have programs that are culturally associated to activities for men, such as soccer fields and basket ball fields. Less programming in the public spaces was targeted to women.

In addition, safety is an important topic that was addressed - perceptions of safety vary. Yet, the feeling of unsafety is for many people who we talked to, a reason not to use a public space.

Concerning the flooding, most of the local residents seemed to be used to flooded streets during the rainy season. However, people expressed concerns and worry for those people who live close to streams and on sloped river banks.

At the same time, the site visit showed an

active city. Many events take place in the library and the visitors enjoy to participate. In the library we met young and old people, as well as people from Las Rosas, Cuatro Reinas and Leon XIII.

People were open to participate in the experiments and showed interest in the discussion about the public spaces and their potential for activation.



ill. 41: Interviewing the locals

SITE-SPECIFIC PROBLEMS

The analysis reveals the interconnectedness of the various challenges on site.

CITY PERCEIVED APART FROM NATURE

On one hand, the human activities conceived the urban areas of Cuatro Reinas apart from its natural environments. The high imperviousness neglects the ecological water cycle. The rain water is hindered to infiltrate and evaporate in the urban environment. The disconnection to the natural realm is also reinforced by a car-based mobility, which prevents the direct engagement with the environment in the mobile situation. The conversations with people on site showed that the widespread association with “nature” referred to the natural reserves or the beaches of Costa Rica, which people enjoy during weekends or vacations. The lack of environmental awareness in the city leads to thoughtless littering in the public spaces. This in turn interrupts the attempt to drain the storm water into the river. The trash in the sewer system hinders the directed flow of the water. In addition, litter is dumped in poorer neighborhoods. The municipality also took note of informal landfills in Tibás.

LACK OF APPROPRIATION OF THE SPACES OF THE PUBLIC REALM

As the green spaces are not appreciated as

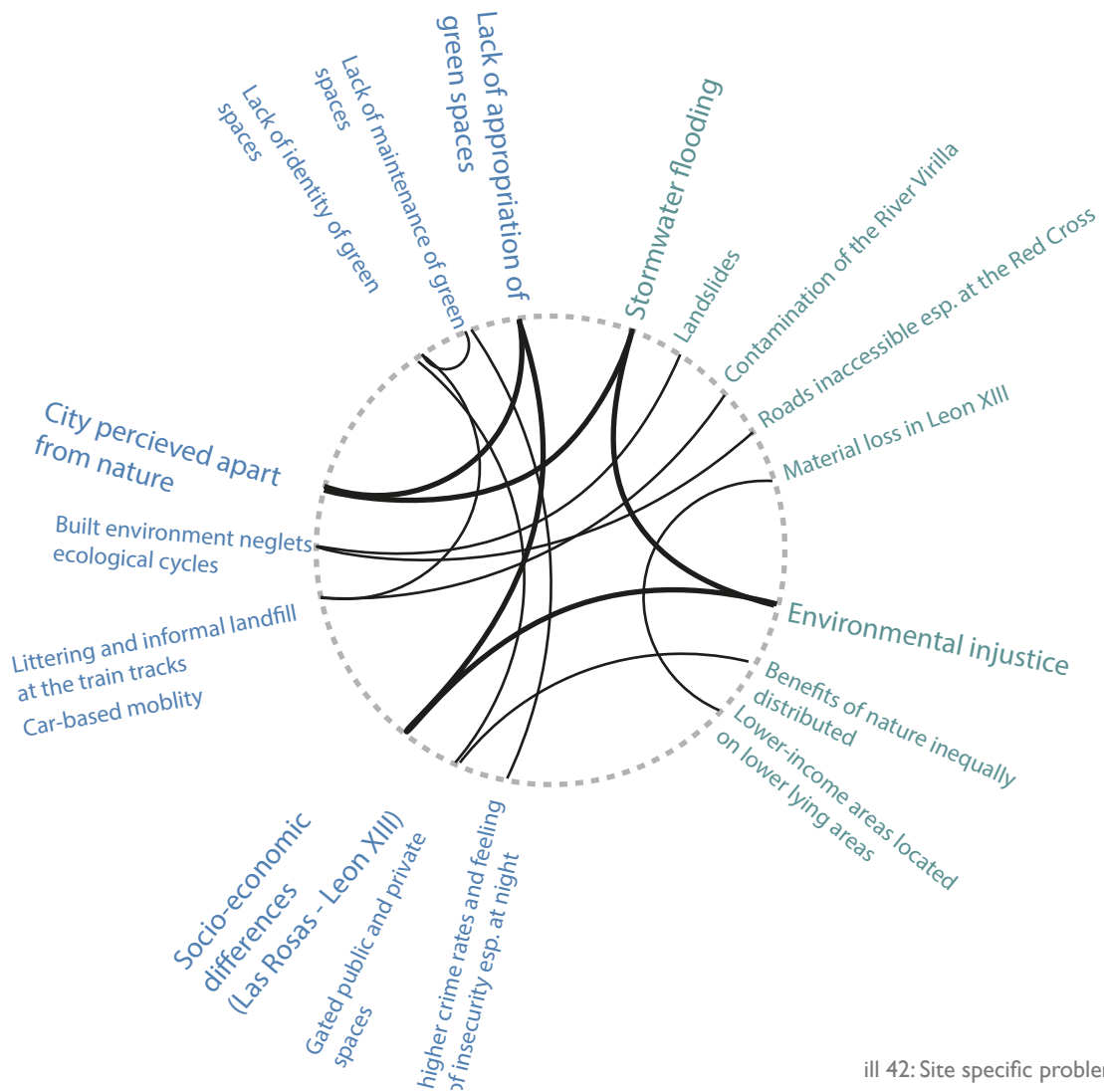
part of the natural realm, the local residents do not take ownership of the urban green. For instance, the park Cuatro Reinas is little maintained. Most people did not account of memories that they connect to the park. The disconnection is reinforced by the safety concerns. All houses are gated, and the parks are fenced. The public realm is not perceived by local residents as integrated part of the city life, neither as spaces for sociability. However, parks as gathering points in the public realm are appreciated when they are maintained and diversely programmed. For example, the central park in the city center of Tibás and the park La Sabana in San José are valued as spaces for sociability. They are places for encounter of people from different backgrounds and regular events animate those parks.

ENVIRONMENTAL INJUSTICE

In addition, as the green spaces are unequally distributed, the benefits of nature, such as stress reduction which could mitigate crime, are also unevenly accessible to people from the different neighborhoods. Moreover, the environmental impacts cause damages especially in the poorer areas, where landslides can lead to material losses. This furthers a cycle of building apart from nature in the urban environment.

HUMAN BEHAVIOR

ENVIRONMENTAL IMPACT



ill 42: Site specific problems

SITE-SPECIFIC VALUES

Considering the complexity of the problems of the site, it is imperative to detect the values and potentials that the site contains already.

EXISTING VALUES

Cuatro Reinas has a stable middle class, the commercial functions serve day-to-day purposes. Some programs for social encounters are already in place. Especially the public library stands out. Throughout the week, the library offers very diverse programs that are targeted to all ages. Visitors come from Cuatro Reinas, Leon XIII, Las Rosas and other parts of the city. The communal hall offers sports classes, such as dancing.

The park Cuatro Reinas with its high trees provides a very large green space in the neighborhood. Different green spaces are scattered around the site. On the sidewalks, local residents take care of small green patches that are in front of their houses.

Moreover, the city center is within walkable distance and the other neighborhoods of Tibás are easily connected in walkable and cyclable distances. The bus drives not only to the center of Tibás, but also arrives in San José within a 30 minutes bus ride. Some stops in Cuatro Reinas are formalized with sheds and seating, others are only in the minds of the community, connected to specific spots, such as a tree or a street corner.

POTENTIAL VALUES

The location between the high-income and low-income area holds potential for creating spaces that bridge inequalities. The social programs in Cuatro Reinas might serve as an anchor point.

In addition, city-wide projects are already in place and hold potential for expansion. For example, Tibás, – city of parks - seeks to strengthen the parks in the city. Tibás recicla collects the trash by residents that separate their trash, also on the site. Environmental education is carried out by Tibás recicla in Leon XIII as well.

The proximity of the site to the river gives opportunity for a reconnection to the river which is now a back side of the city. The steep banks of the river are characterized by a dense vegetation.

Lastly, the topography gives variation throughout the site and offers different views to the mountains that surround Tibás and San José.



ill 43: Park Quatro Reinas



04 DESIGN STRATEGY

The design strategy builds a bridge from to that leads into the design. It provides tools and guidelines for the design proposal

DESIGN STRATEGY

The design strategy serves to facilitate the transition from the theoretical and analytical frame to the design chapter.

The aim is to base the design on the theoretical knowledge, as well as the site analysis and the local perspective. The preliminary process disclosed that the challenges of the site are on multiple layers that are tightly interconnected. The design proposal shall respond to the problems. However, the project is limited in its scope. Complex social and environmental issues shall be approached. However, to be strategic, the design shall build on the values of the site, develop existing potentials and inspire with new perspectives.

The proposal contributes through a catalogue of interventions that remains flexible during the possible process of community involvement and implementation.



ill. 44: Design strategy

DESIGN CONCEPT

The design concept embraces the values of the site: the varying green spaces, the potentials for connection between the neighborhoods and the dynamics of the community. Those values form the point of departure which are enriched by inspiring new perspectives. A perspective that gives the nature in the city a stage to perform.

The flow of the water is an inspiration of continuity through the site. The flow of the water represents the underlaying layer. Water functions as a resource. Water nourishes plants and people and can be enjoyed in the urban landscape.

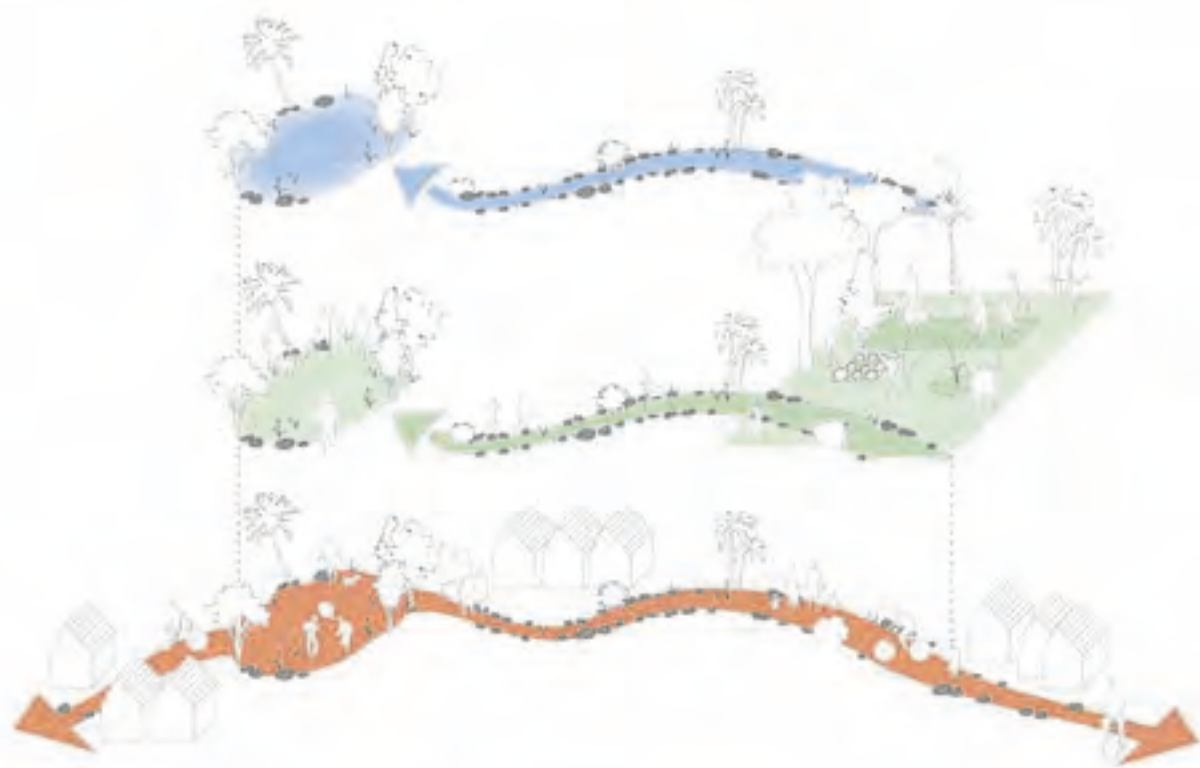
The park, street trees and all kinds of urban green elements embody the next layer of the concept. New green connections weave the urban green into the city context. They activate and accentuate the urban spaces.

The flow of the people creates a continuity through the urban spaces designed for sociability. Even beyond the neighborhood's boundaries, new connections can be formed. The flow is rhythmmed through stopping points along the urban spaces. They provide meeting points and direct the attention to the natural surroundings.

FLOW OF WATER

FLOW OF GREEN

FLOW OF PEOPLE



ill. 45: Concept layers

DESIGN PARAMETERS

The last step before the design chapter is reached. The design parameters activates - to guide through design decisions.

The design parameters emphasize the value of the water, invite for a dialogue with the site and highlight the nature in the urban fabric.

DIRECTION

OF ATTENTION TO THE NATURE IN THE CITY

INTEGRATION

OF THE DESIGN INTO THE WATER CYCLES

REVALUATION

OF THE RECREATIONAL RESOURCES OF THE WATER

RESPONDANCE

TO THE SITE-SPECIFIC STORIES



ill. 46: Design parameters



05 DESIGN

The design proposal builds on the theory, analysis and is set in place through the strategic guidelines. However, the design is part of a continuous process - and the process itself informs the design.

THE PIONEER PLAN

PROCESS-DRIVEN DESIGN

The pioneer plan sets up a process-driven design proposal. The goal of the plan is to provide a basis for discussion during a community involvement process. The design proposal enriches the discussion with a variety of elements that aim at strengthening the understanding and appreciation of the nature in the urban environment.

The pioneer plan remains flexible during an implementation process. An element can stand alone, even if another might not be possible to implement. In that sense, the plan is sensitive to the low-budget of the municipality. The implementation process, which will be unfolded later in the chapter, holds the key role to invite the local community to take ownership of the spaces of the public realm and to take part in the changes that will occur in their neighborhood through the physical intervention. Accordingly, the outcome of the projects' process goes beyond a physical design.

STORM WATER MANAGEMENT

The storm water management strategy constitutes a distinct element. In the involvement process, this component of the design proposal shall be dealt with by professional experts. This is necessary to ensure an effective management of the storm

water.

ZOOM-IN CATALOGUE

The discussion is deepened by a catalogue of four zoom-in areas. The shift of scale moves the conversation from a strategic level towards small-scale interventions. The four elements that were detected in the analysis were chosen for the deeper focus.

The park: This zoom-in brings the park Cuatro Reinas to the attention and accentuates its values for the community in Cuatro Reinas.

The street: Intervening in the dense urban environment is reflected through a change of perception of a typical residential street in Cuatro Reinas.

The pond: The today, left-over green space is rethought and brings in new features that highlights sustainable storm water management in the discussion.

The river: This zoom-in opens up a door to a new perspective of the now disregarded urban river. It ignites a spark to revalue the relationship between the river and the urban context.



ill. 47: Process-driven design

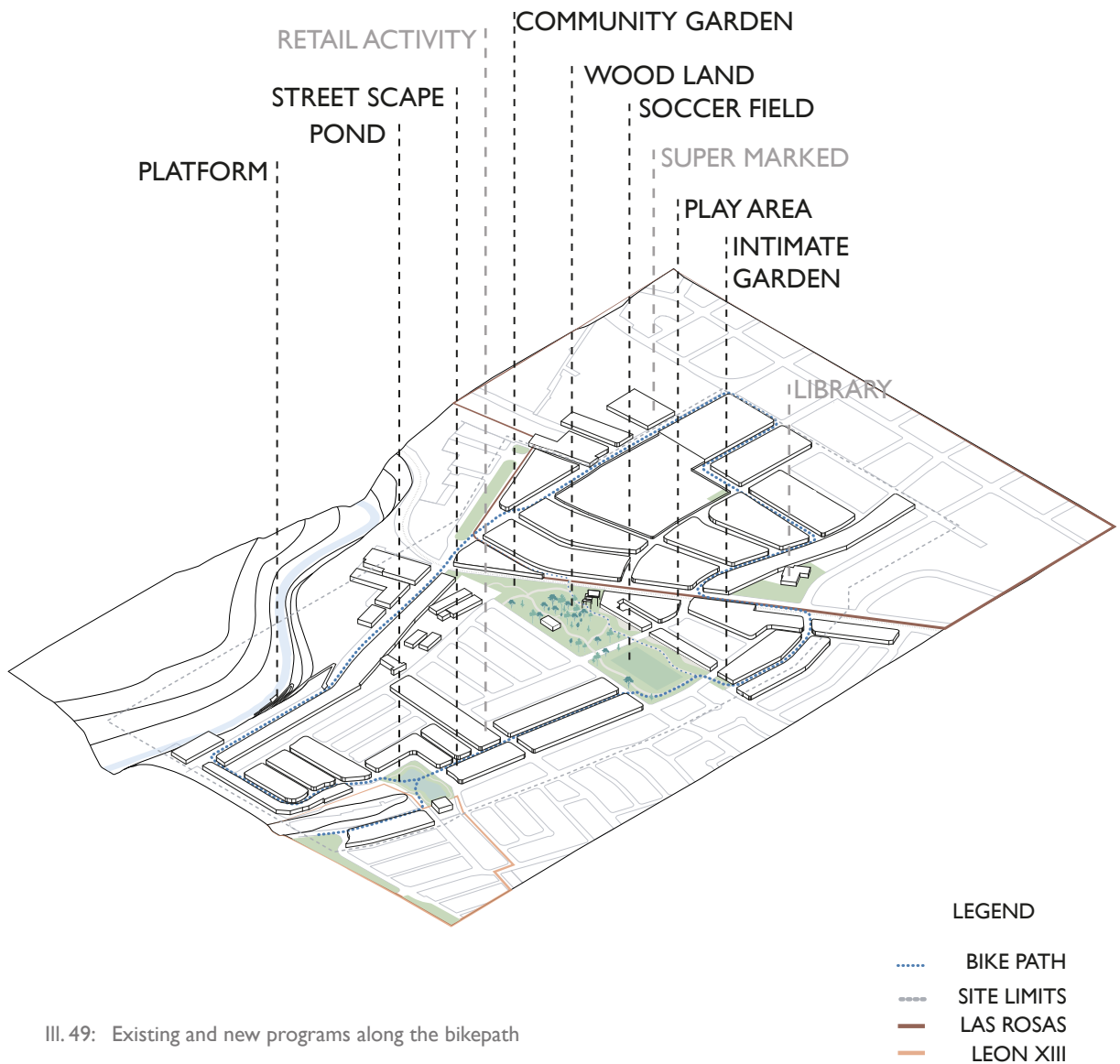




ill. 48: Pioneer plan scale 1:2000 (here adapted to A3) ▲

PROGRAMS ALONG THE BIKE PATH

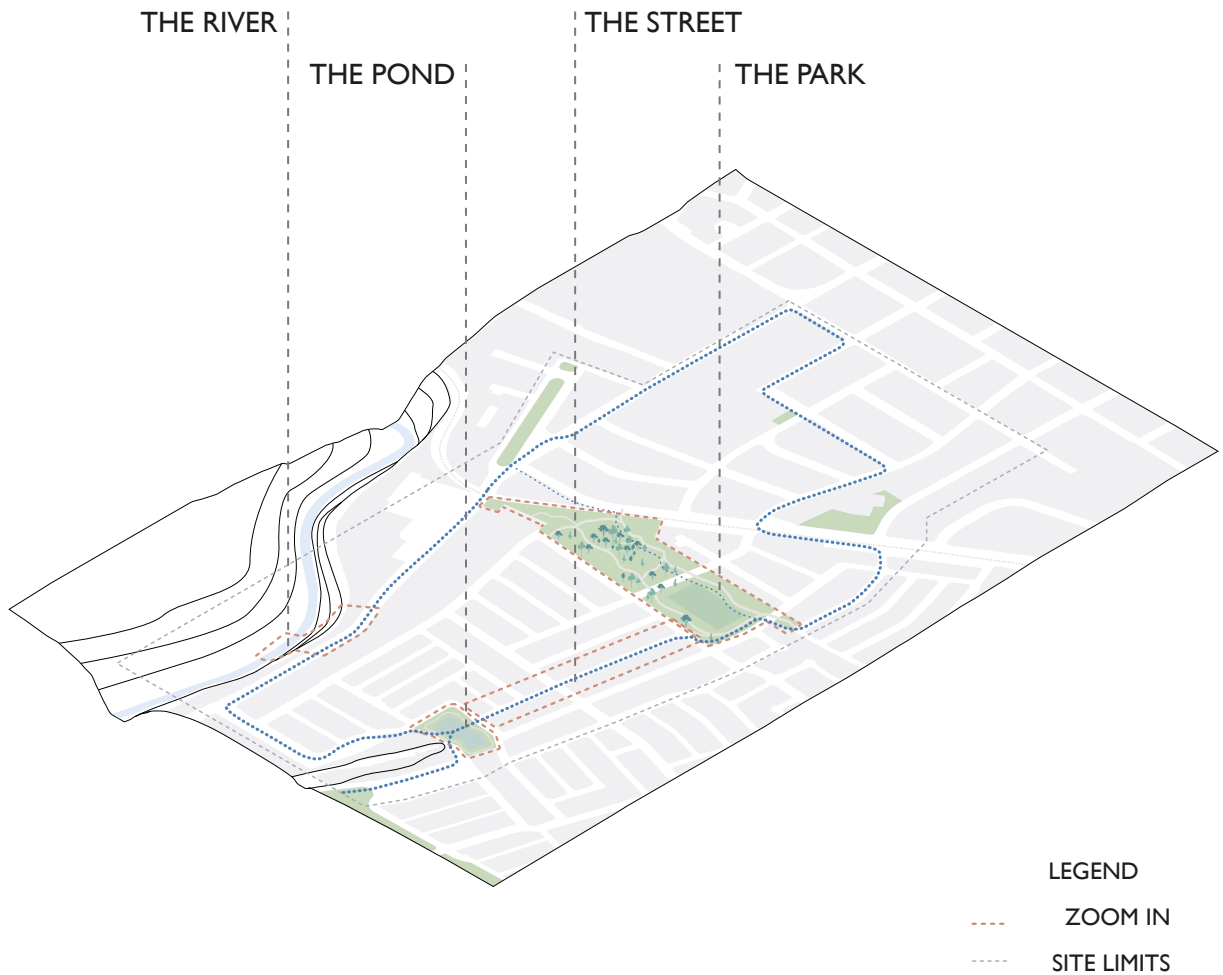
On the neighborhood scale, a bike path suggest sustainable mobility: It serves as a connector between the three neighborhoods and links existing key functions, as well as new programs.



III. 49: Existing and new programs along the bikepath

ZOOM IN AREAS

The four zoom in areas will be elaborated within this chapter. They are connected through the flows of people, of water and through the green connections.



WATER MANAGEMENT STRATEGY

The overall goal of the water management strategy is to approach the natural water cycle, increase infiltration and evaporation on site and to apply decentralized solutions to relieve the sewer system, according to water sensitive urban design as described in the chapter 2.2 Designing with Nature.

The four zoom-in areas have distinct characteristics, due to their elevation, relief, permeability and function in the urban context. Therefore, the strategy is specified for the zoom-in areas.

THE PARK

The park features rain water harvesting, which is made visible to enlighten the park users about the possibilities of rain water harvesting. Urban gardening provides an opportunity to reuse the water directly from its source. In case landslides occur during flood events in Tibás and people need to be evacuated, the soccer field which is in the slightly elevated park, gives space to place temporary shelters.

THE STREET

In the street a bioswale delays and drains the run-off water. In addition, permeability of the sidewalks is increased by the usage of permeable asphalt and increasing the grass strip along the street.

THE POND

The pond is designed as a dry pond to delay the water before it is lead into the streams. This intervention does not only guide the water that is flooding the area close to the red cross into the river Virilla, it also protects the downstream areas located in Leon XIII from the water.

THE RIVER

The above measurements all contribute to a reduction of the polluted run-off water that flows from the streets directly into the river. However, the issue of littering that fills the urban river requires a shift in the human behavior. Therefore, reducing the contamination of the river is tightly connected to building up a deeper understanding of the repercussions of littering in the urban environment on the natural water cycle.



ill. 51: Water Catalogue, based on climateapp.com (2018)

CONTAIN, FRAME, MULTIPLY

THE CUBE CONNECTS TO NATURE

On one hand, the water management needs to be handled with the engineering solution. Yet, the question remains: How to address a lacking awareness for the natural world in the urban landscape?

This question can be approached in a manifold of ways. A response shaped in a physical design requires simplicity when the process itself ought to build consciousness for the matter by building together with local residents.

Nature manifests itself in a variety of manners. An intervention that draws attention to the non-built shall be versatile.

In order to direct attention to a ubiquitous, yet unseen element; a stop in the movement needs to occur.

The simple shape of a cube distinguishes itself from the organic shape found in the natural realm. It creates a break in the flow of people in the urban environment. A cube is versatile, a variety of interpretations can be derived from it.

Consequently, the shape of the cube is employed to create an iteration along the flows of people. Throughout the site different cubes are placed at chosen spots. Three categories are derived from the cube.

First, the cube frames nature: The view is directed to plants, trees, water and other

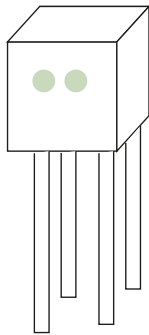
elements through a carefully chosen opening and closing of the cube's sides. With a size of two by two meters, the cube creates a miniature space that functions as a piece of urban furniture. One can seat and rest in one cube or observe the sky in another cube that opens up its roof.

Secondly, the cube contains nature. The cube transforms into a container for plants for urban gardening or into a water tank for rain water harvesting. It can release water in a playful element that serves as a little fountain at a play area.

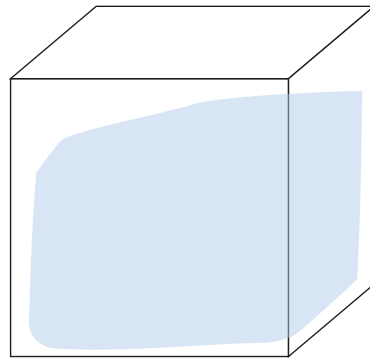
Thirdly, the cube multiplies in nature. The cube multiplies vertically or horizontally. Interaction is incited when small cubes invite to play on or grow with a tree into the sky. An elevation of stacked cubes forms a space for contemplation, placed right next to the river. Spontaneous encounter between people can be stirred through the interaction with the cubes.

The cubes are inscribed in the projects aim to address the water management in the urban environment. A blue drop which is painted on the cube does not only refer to the flow of the water that is made visible on the site, but also connects to the meaning of the city's name, Tibás: river of clear waters.

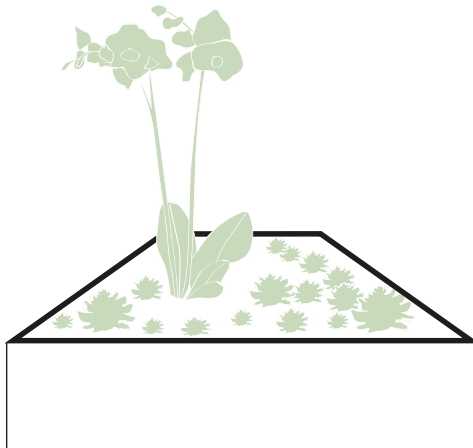
CONTAIN



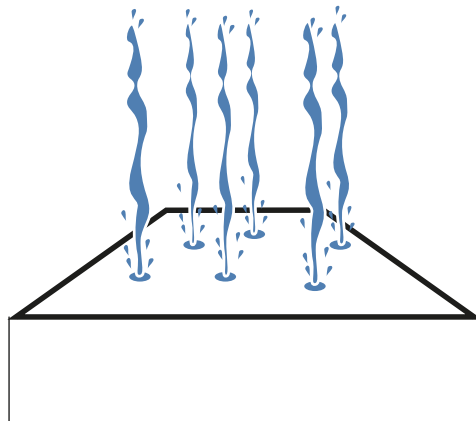
The box contains surprises // Close view to nature



The box purificate water // Water tank



The box contains the plants // Urban gardening

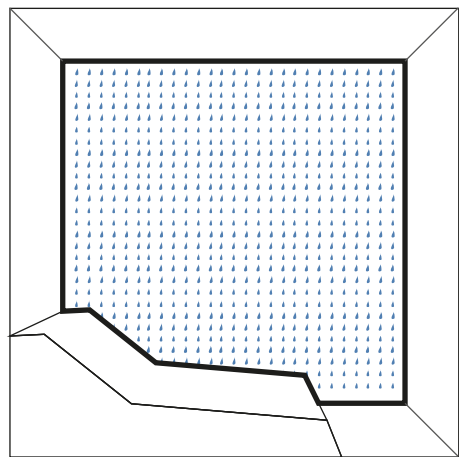


The box liberates the water // Water play elemnt

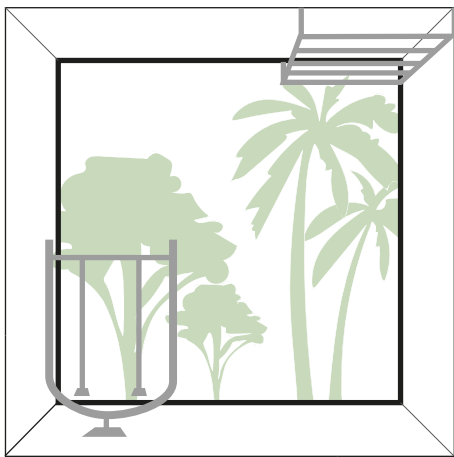
FRAME



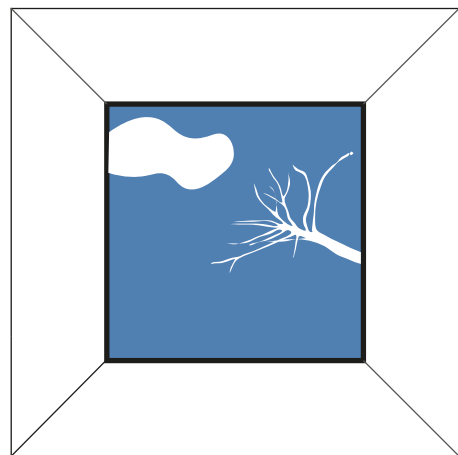
The box frames the plants // Look-out point



The box displays the water // Seating area

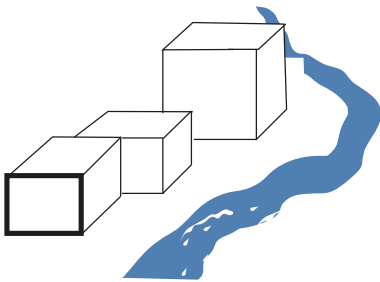


The box displays the plants // Workout area

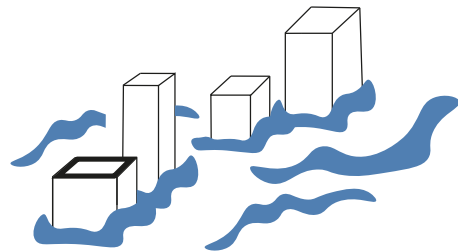


The box frames the water // Look-up point

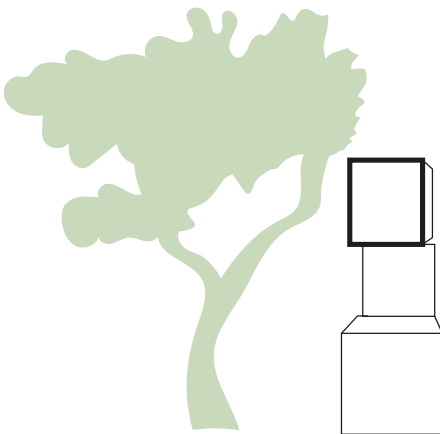
MULTIPLY



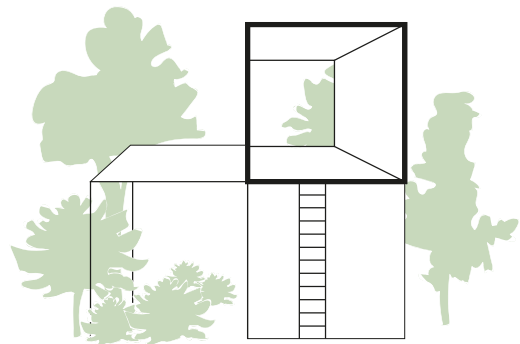
The box follows the water // Play element



The box crosses the water // Water play element



The box grows with the plants // Play element



The box elevates from the plants // Contemplation point

THE PARK

The first zoom-in area focuses on the park Cuatro Reinas.

VALUES

The park Cuatro Reinas is used for its sport facilities, which includes a soccer and a basketball field. Around the soccer field an informal running track was formed over time by the people running around it. The communal hall is located in the park, even though it turns its backside to the center of the park. Varying spaces provide potential for different programming.

DEFICITS

The park lacks maintenance. In fact, the municipality intervened and refurnished the park, however the elements were stolen shortly afterwards (Madrigal, 2018). The perception of safety varies. Some people in Tibás might not use it because they associate it to drug problems and crime, others enjoy using the park for sports activities or walking the dog. Furthermore, the park is divided in two by a much frequented street.

In the following a design proposal with diverse programming shall be unfolded. How could a user experience the park in the future?



ill. 55: Park Quatro Reinas



ill. 56: Park Zoom-in area context

THE PARK

New programs activate the park and a pavilion constitutes a new landmark for the community.

Based on the tool of storytelling as described in chapter *Storytelling: a method for understanding and designing a site* - a story is told to communicate the design proposal. A potential user of the park - the fictional character of Anna from Las Rosas goes for a run in the park.

Towards the end of November, the rainy season ceases. Saturday afternoon, the air is still fresh from the last rain, but it has stopped now. A few days ago, Anna went to the library where she saw again all the pictures of people building benches and all kinds of elements for the neighborhood, she recognizes a lot of people on the photos. Last year, she helped building a little wooden cube to put in plants for gardening. It was a lot of work. Tomatoes are growing in the cube that she looks forward to harvest. Now the bridge that leads close from her home into the park has been built as well. Normally, she drove by car to the gym on Saturday. Today, she ties her shoelaces for a run in the park. As soon as Anna enters the parks, she sees the little trees that has been planted and will grow soon. She runs by her tomatoes to check on them. The open structure of the pavilion catches her attention. Where the path passes underneath a pavilion, people sit under the shadow of the wide roof to take a rest. Anna sees her neighbor

at the water tank at the pavilion and greets him. He fills up his water can to water his plants. Anna continues her run on the path and feels the gravel of the path beneath her shoes.

She runs alongside an area with different playful elements for children. Four years ago, it was just a wall – the backside of adjacent buildings. Anna continues running, the park slopes down, stairs lead her onto Avenida 57. Previously, it was a trafficked road where cars were only stopped from speeding up by speed bumps. The atmosphere changed with wider green strips and a bioswale with little bushes. The speed bumps are widened to speed tables that are now part of the park's paths. Painted blue drops on the speed tables lead Anna over the street and up again towards the soccer field. She runs around the soccer field, back to the stairs to finish her round.

For a second Anna stops: The fences of the park are gone – now she remembers, they were removed. How can the park be closed at night? Only at the entrances of the park the structure of the fences is left – and transformed into gates that are hold up by strings of light that illuminate at night. Were the fences removed on purpose? More people enjoy the park now, and Anna even met a lot of them in the past three years. That makes her feel safer using the park now.

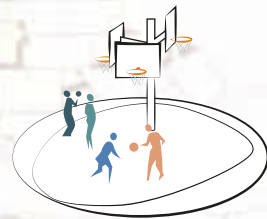
Her round in the park is finished for today, she just wants to get some bread in the bakery later today.



Urban gardening



Play area along the wall



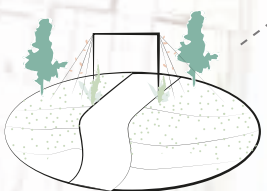
Basketball field at the wall



Quiet area for contemplation

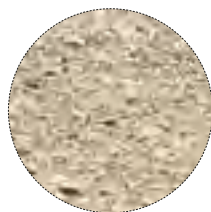
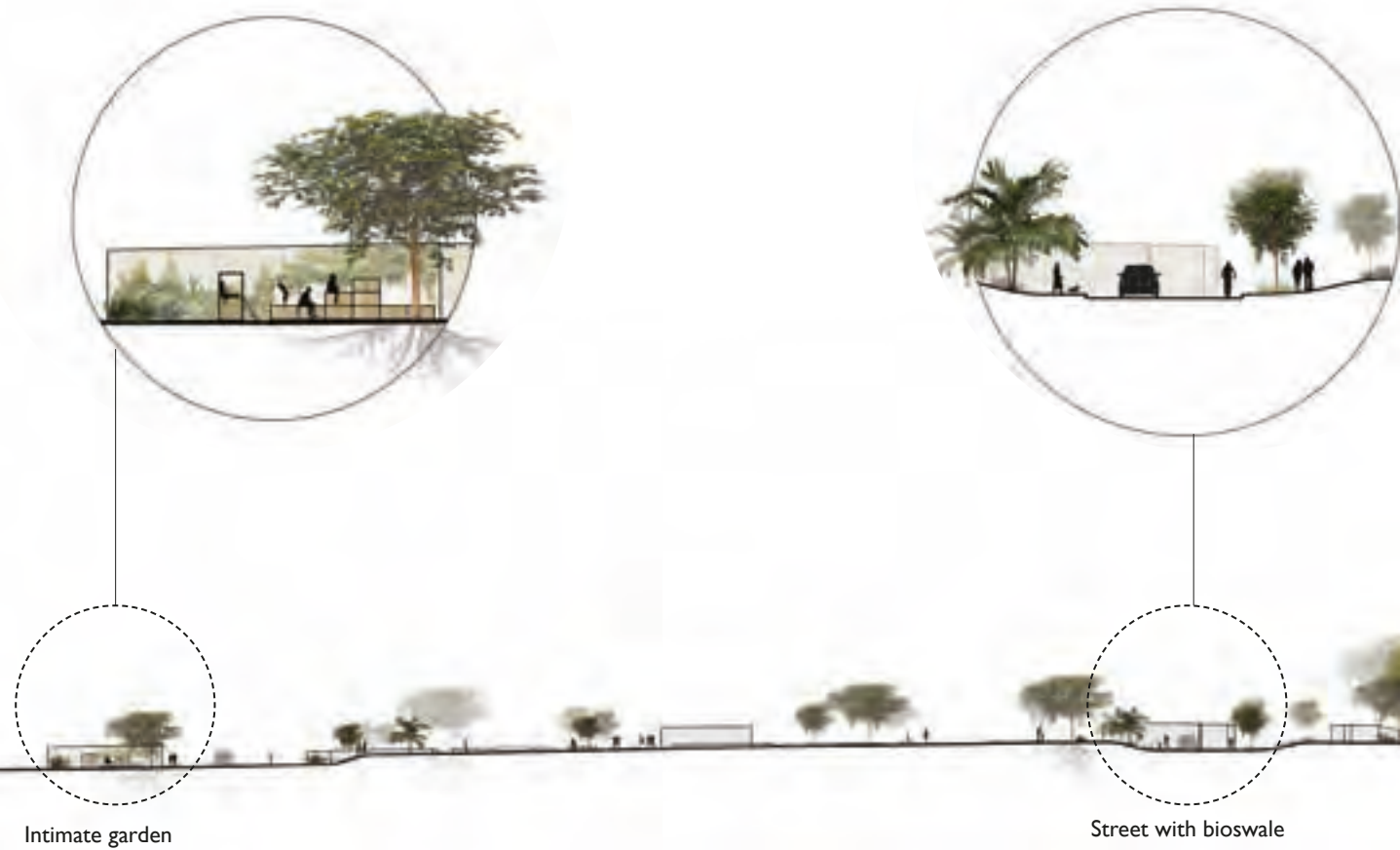


Play area on grass



Entrance to the park

THE PARK - SECTION



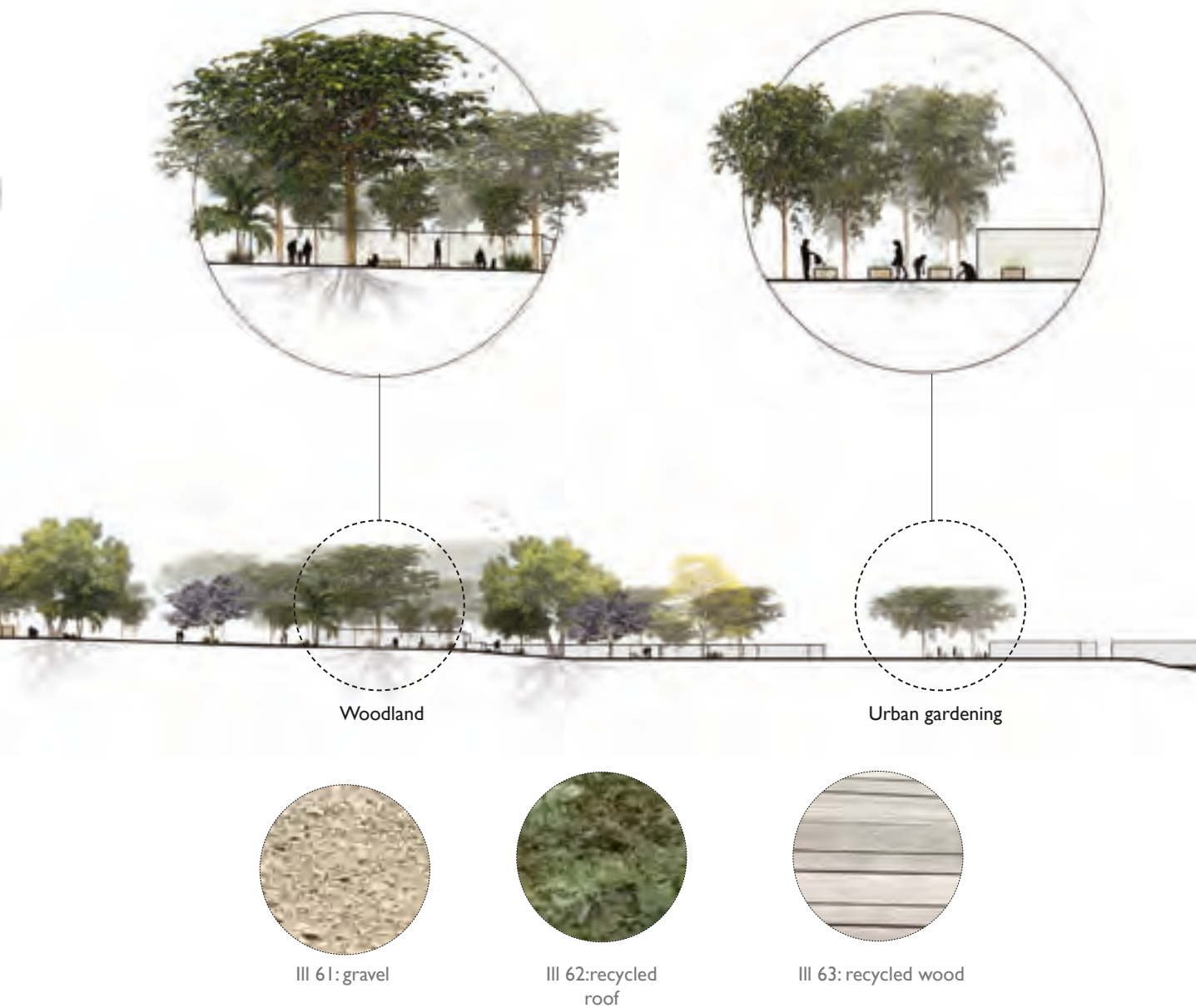
III 58: rubber cover



III 59: grass



III 60: permeable
asphalt





III. 65: Park Program and Events



III. 66: Pavilion area Vision

THE STREET

Avenida 55A connects on the west side to the park Cuatro Reinas and to the east the street leads to the pond.

VALUES

Trees in the green areas on both ends on the street are visible in the street. In the middle of the street crosses Calle 30. Close to the intersection, the bakery is located which is meeting point in the community

DEFICITS

Only few plants grow in the street. The street is not actively used as a sociable space of the public realm, cars are given priority and the walkways are little maintained. Even in the retail area, little urban furniture is placed.

However, how could the atmosphere in the street change in the future?



III. 67: Avenida 55A



III. 68: Street Zoom in area context

A STROLL THROUGH THE STREET

The design proposal for the zoom-in of the street activates the street with a diverse programming, uses permeable materials, such as grass and permeable asphalt on the sidewalk and gives priority to soft mobility.

Now let's return to Anna, it is time to go to the bakery. Anna still feels fresh from her run, in five minutes she is at the Avenida 55A. The street feels alive. Children playing, a man rests at on a seat, plants grow. Water runs through the bioswale from the rain shower earlier today. And there is Carlos, an elderly man who goes every Saturday to the tree he planted in the street. He enjoys taking care of it. Anna stops to chat with him. But then she needs to go to buy the bread. So, the story will continue with Carlos.

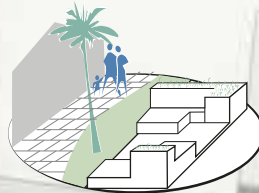
He lives in Cuatro Reinas. He enjoys strolling through the street sometimes. He was annoyed by the people who throw they trash on the streets which clogs the sewer system. Now less people are doing that, at least not close to his tree, he makes sure of that.

Sometimes Carlos likes just to rest on a little cube in the street. Today he can observe the water running through the bioswale. Carlos enjoys the sound of water mixed with the voices of the people that animate the street. The street follows the serpentine shape of the bioswale. The lane is shared by bikes and cars, priority is given to the cyclists. They continue along the blue drops on the street for a full circle around the neighborhood.

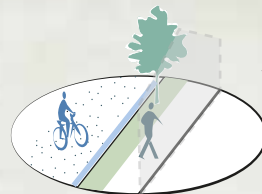
When Carlos walks down the street, he turns at the intersection close to the library and waves to Anna. Anna did not go home after she bought the bread. She sits on the sitting cubes in front of the bakery and enjoys a coffee with friends. Carlos buys some fruits in the vegetable store that is across the street from the bakery. Then he will fetch his grandson who is playing in the street.



III. 69: Vision Avenida 55a



Extended sidewalk with sitting areas



road lane integrated with bike path

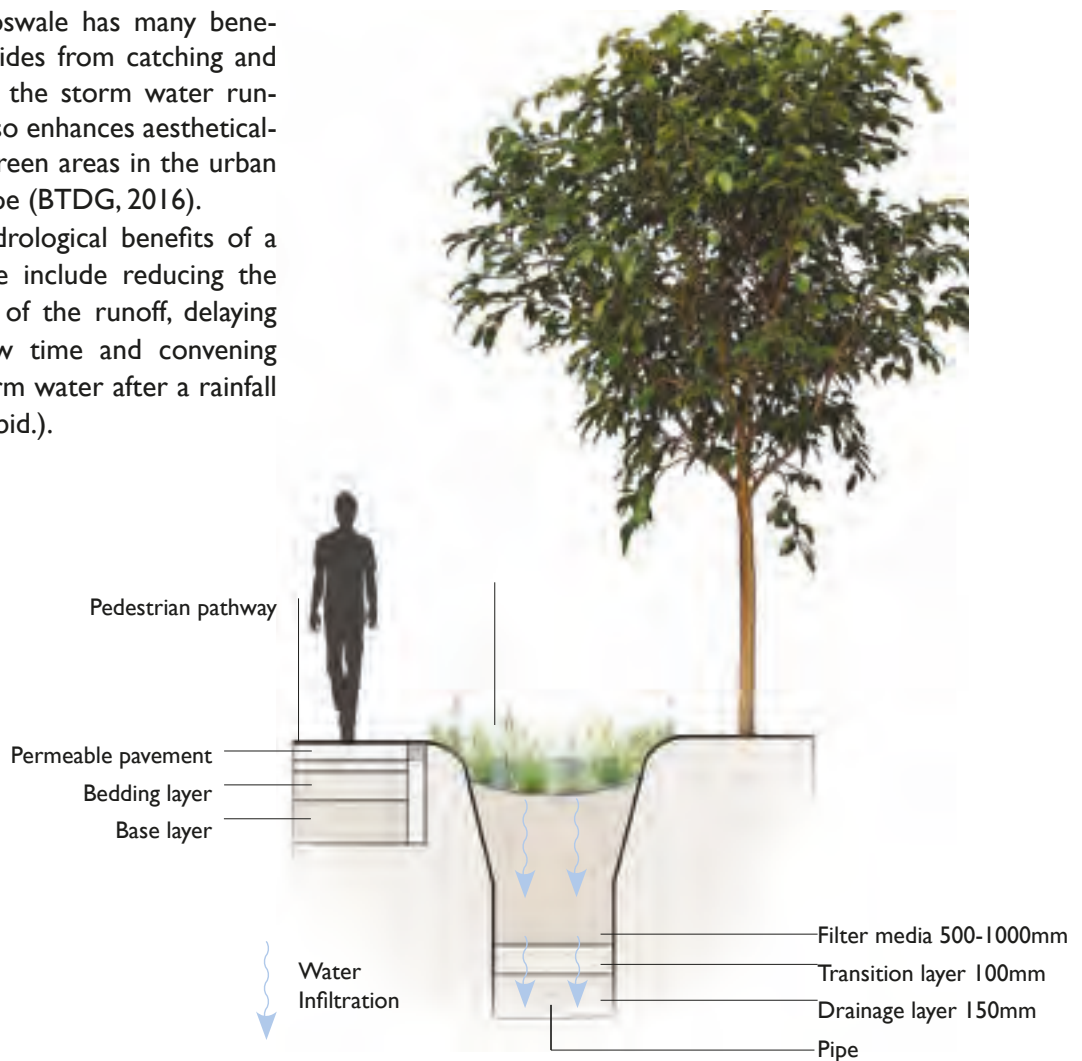


Green area next to bioswale

BIOSWALE

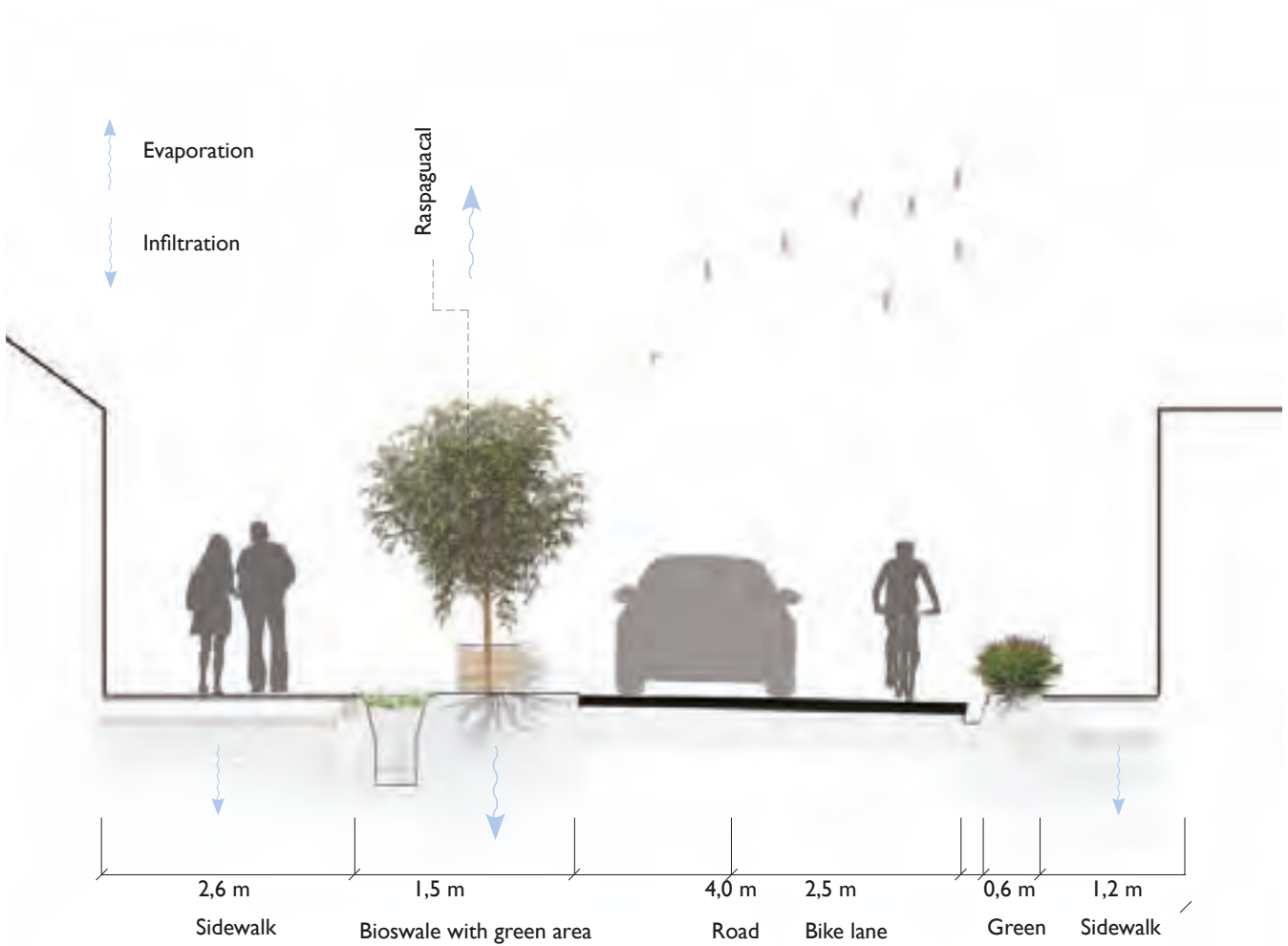
The bioswale has many benefits. Besides from catching and treating the storm water runoff, it also enhances aesthetically the green areas in the urban landscape (BTDG, 2016).

The hydrological benefits of a bioswale include reducing the volume of the runoff, delaying the flow time and conveying the storm water after a rainfall event (ibid.).



III. 71: Biowale Section

THE STREET - SECTION



ill. nr: Street section (own illustration)

THE POND

Currently, the area, where the pond will be located, is an elevated green space without programming, solely a fence marks the space.

VALUES

The area is already appreciated by dog owners when walk their dog. The green space is surrounded by trees. A now inaccessible and presumably seasonal dry stream runs to the river Virilla. This provides a potential for guiding the storm water to the Virilla river.

In addition, the zoom-in area lies in the transition zone between the neighborhoods of Leon XIII and Cuatro Reinas. This can provide a potential place for meeting between the neighborhoods.

DEFICITS

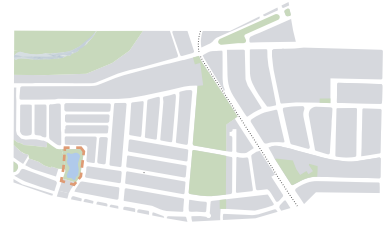
As mentioned beforehand, no programming, paths or a like are provided. Hence, the area appears to be a left-over space.

Lastly, the topography prevents storm water to flow from street to the stream.

How could the area be experienced if sustainable water management strategies are applied to the site?



III. 73: Green space at the Red Cross



III. 74: Pond Zoom in area context

A PLAYFUL DAY AT THE POND

The zoom-in transforms the area into a dry pond that stores the water temporarily and leads it afterwards to the river.

Let's return to Carlos who needs to find his grandson, Luis. He didn't see him anymore in the street. Luis probably went to the pond. After the rain it still has the water inside, before it runs down into the little stream that is right behind it. First, Carlos was very sceptical when someone told him planting trees can help to solve the flooding problems in the low area at the red cross during the rainy season. Of course, it was not just about planting trees. Last year, Carlos went to a very interesting event, the Waterwalk. Together with other people from Cuatro Reinas, Leon XIII, Las Rosas and even other parts of the city, he followed the flow of the water through his neighbourhood. At the pond their had a pic nick and met a lot of different people. He is glad that the water does not flood anymore at the red cross.

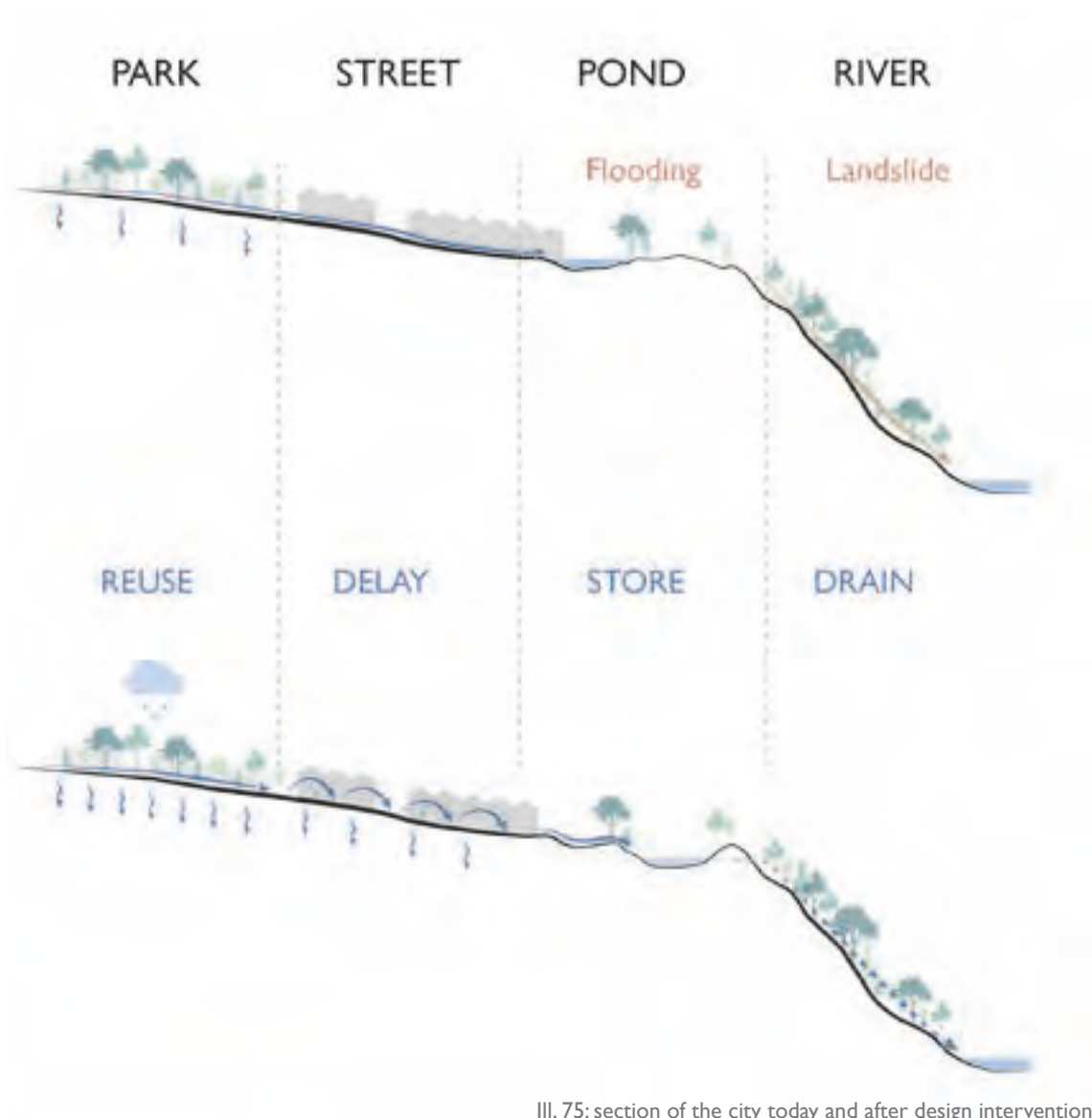
And there is Luis, playing with the water. When he sees his grandfather, he walks towards him. Luis tells his grandpa that some friends are coming to join him. Carlos tells him just to come home in half an hour and says good bye. Luis' friends Carola and Marcela arrive with the bike. The bike around the park until they are tired.

The bike always runs smoother where the wood crosses the path. There are special points along the path where a cube is placed and elevated on a platform, just high enough to comfortably

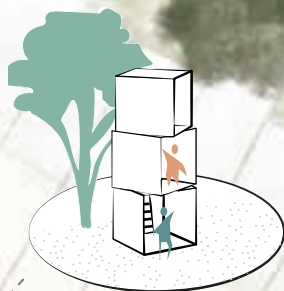
sit on. The material of wood that is used for the cube also expands into the path and marks those special spots. At one cube the three friends are stopping. Inside is a little seating area. Two sides of the cube are open. On one side they entered. Now, Luis looks outside. He sees the trees around. He never noticed how many trees there are here.

Marcela realized that the water that was in the pond earlier is now gone. It took around half an hour.

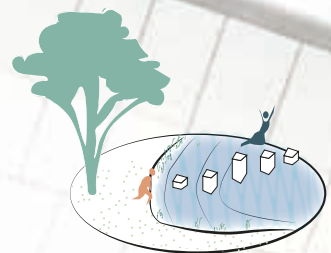
Then Carola suggests going to the river. She signed up for an extracurricular- class at the river – she will get extra points for biology class. The teacher said, they can bring along friends. Marcela will join but Carlos needs to go home now.



III. 75: section of the city today and after design intervention



playcube tree area



playcube water area



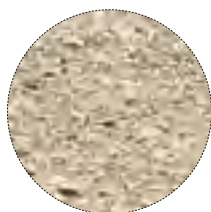
Bikepath over the pond

Cube stop along the path

THE POND - SECTION



materials / path and furniture



III 77: gravel



III 78: recycled wood



ill. 79: Section of the pond scale 1:500

THE RIVER

The river Virilla forms the norther border of Tibás and runs on the bottom of a valley.

VALUES

Dense vegetation grows along the river. In the past, the river were important places for gathering and recreation, as described in the introduction chapter Tibás - river of clear waters.

DEFICITS

Due to the steep river banks, the river is difficult to reach. The photo on the right was taken in the western part of Tibás, where a pedestrian bridge leads over the river.

In addition, the river is contaminated and contains trash of different sizes, from plastic bags to pieces of furniture.

However, how could the life in the street change in the future?



III. 80: Revera Virillia



III. 81: River Zoom in area context

AN ADVENTURE AT THE RIVER

The steep access to the river has the potential for an adventure. The journey along the path is rhythm through the varying cubes that provide spaces for rest.

Marcela and Carola can not wait for the adventure to start. They bike to the path that leads to the river. The class is already there, the teacher writes down the names. The walk down the gravel path starts. The path winds down the steep valley through trees and bushes. Along the path are the small cubes again, just like in the pond.

Carola notices that they all have a blue drop painted on them. The teacher explains that it is because Tibás probably means “River of clear waters” in the language of the indigenous people that lived in the central valley, where Tibás is located. Marcela wonders why they named the river: “clear waters”. Her mom always says the river is dirty.

Marcela sees a class mate entering a cube that seems to be closed to all sides. Only his feet are visible, because the lower part of the cube is open. She enters the cube as well: How funny, it is open to the sky. Marcela can see the clouds between the leaves of the trees. Eventually they arrive at the river. Carola sees first the platform with a roof that leads water to plants that are placed on the platform. Carola is proud, she had helped planting some of the flowers inside.

The teacher has prepared a little workshop where

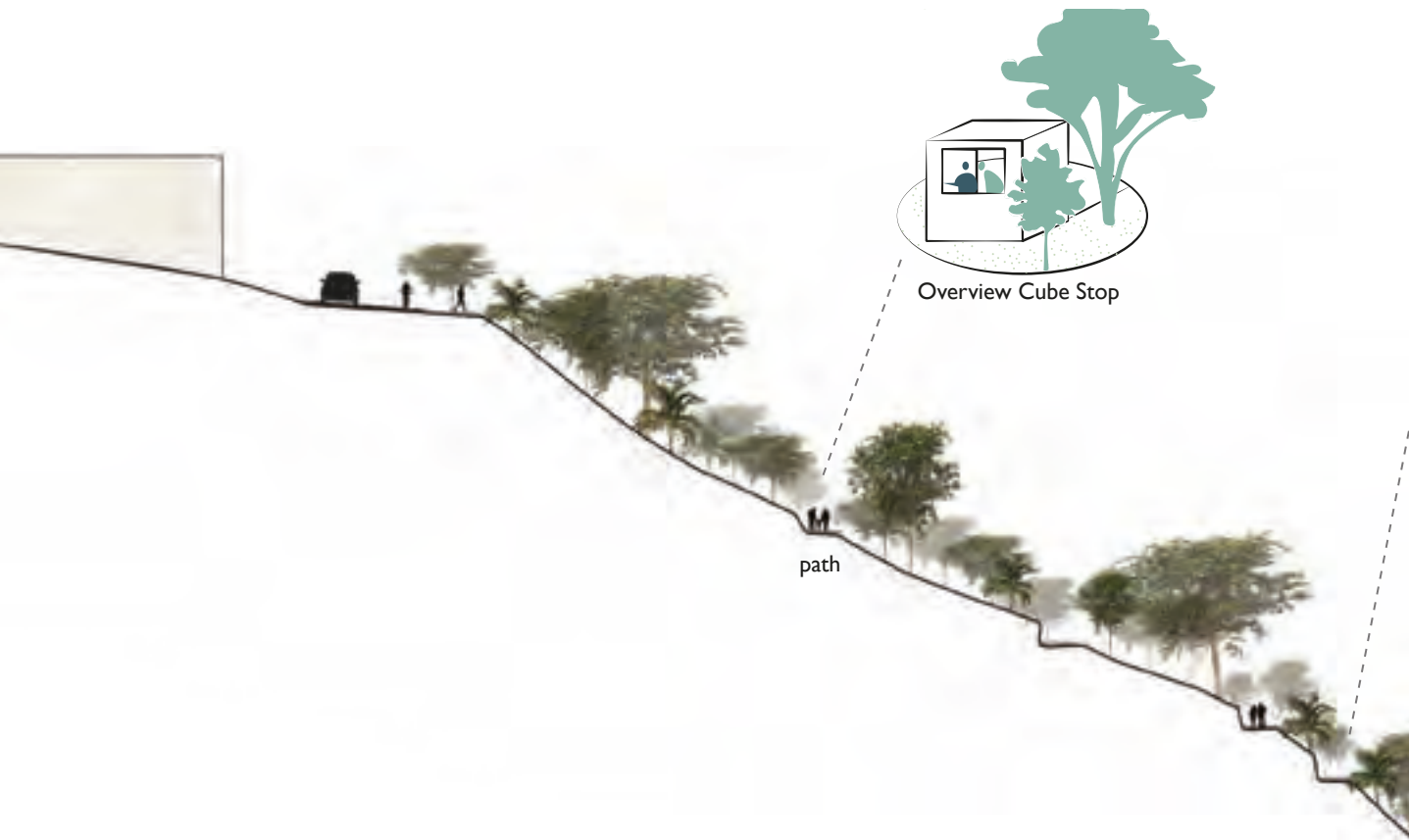
the students learn how the trash that is thrown in the street can end up in the river. As soon as the teacher explains that, everyone looks at the river. They all can see trash on the river shores. What a pity!

The adventure at the river is over fast, now they have to get up the path. The class makes a bet: The first person who arrives at the highest cube on top will get a package of cookies.



III. 82: Vision Platform at the river

THE RIVER - SECTION



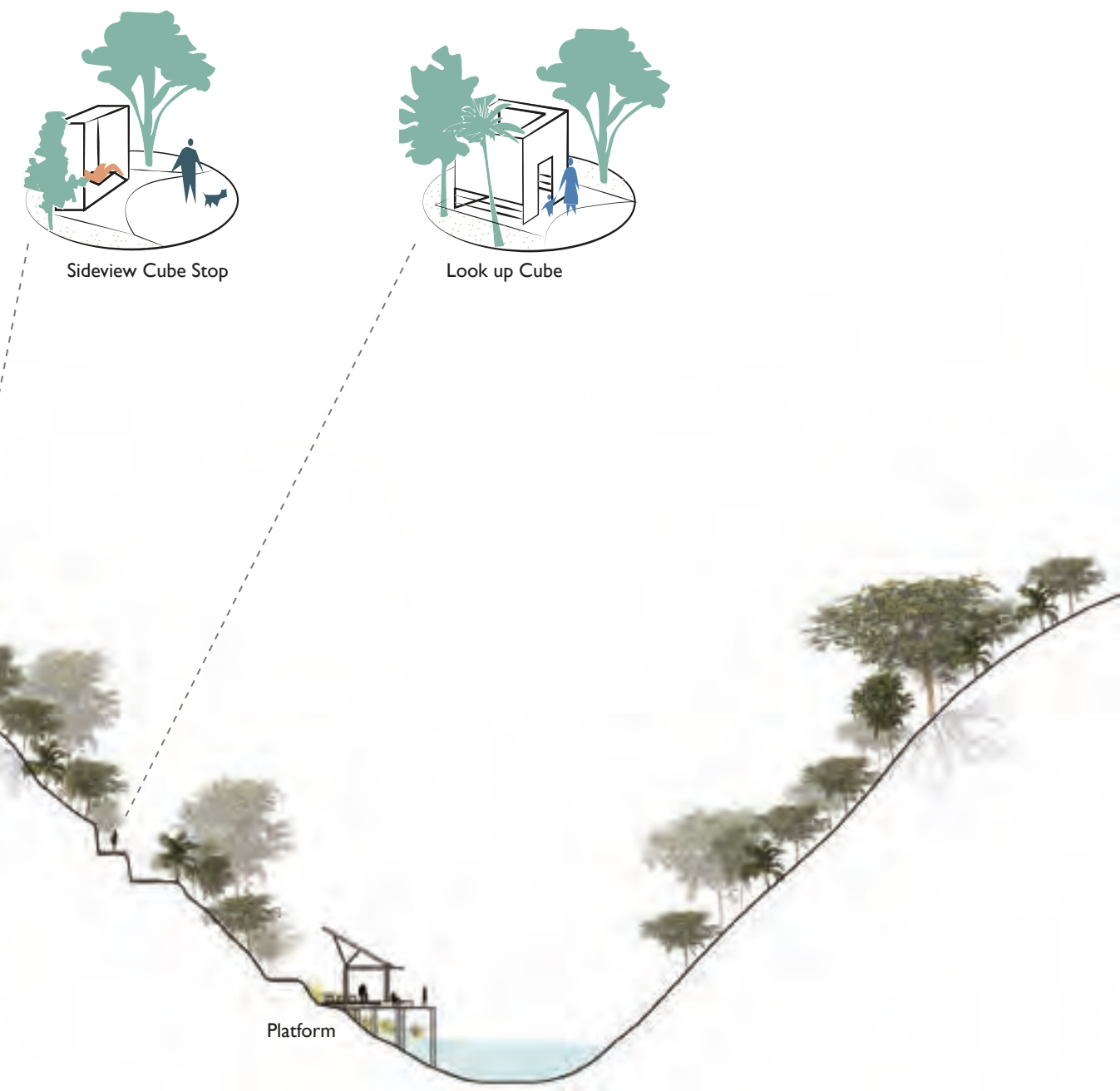
materials / path and platform



III 83: gravel



III 84: recycled wood



III. 85: Section of the River scale 1:500 (here adapted to A3)

THE PROCESS

The building process invites the community to take part in decision-making and to take ownership of the changes that will occur in the neighborhood. Workshops that accompany the building sessions give room to exchange ideas, acquire new knowledge and gain new perspectives. The pioneer plan will be adapted during the workshop process. For the frame of the thesis, the process is based on the pioneer plan proposed earlier.

The process sets off with the pioneer phase. It is the most intensive phase of identifying stakeholders, inviting experts and welcoming the community. The focal point of the process is the “Park blossoms festival” that invites people from Cuatro Reinas, Las Rosas, Leon XIII and interested to build together elements of the park, chat and enjoy the park together. Over time, the involvement of the community will increase, while designers and experts take a step back.

The engineering work is developed by experts and precedes the building sessions with the community.



III. 86: Interactive map

BUILDING PROCESS

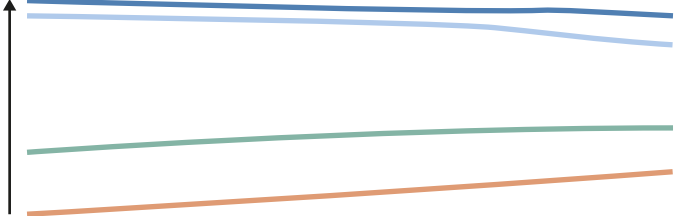


STAKEHOLDERS

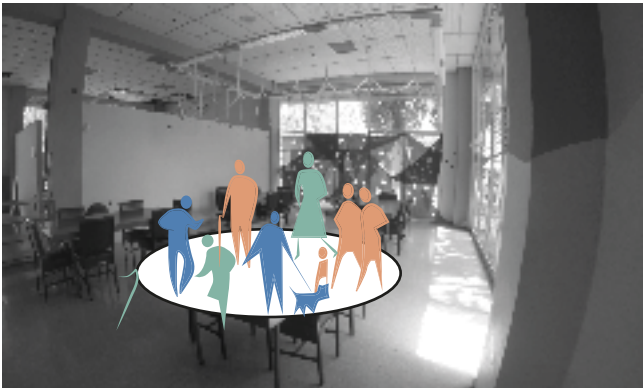
Level of involvement in the different phases



COMMUNITY INVOLVEMENT



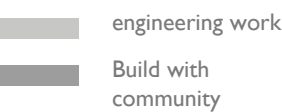
PIONEER PHASE



COMMUNITY EVENTS

- **ICEBREAK EVENT**
Welcome and raise awareness for the water cycles in the city
- **FEEDBACK WORKSHOP**
interactive design discussion and identifying focus groups

PHYSICAL STRUCTURE



RAINY SEASON



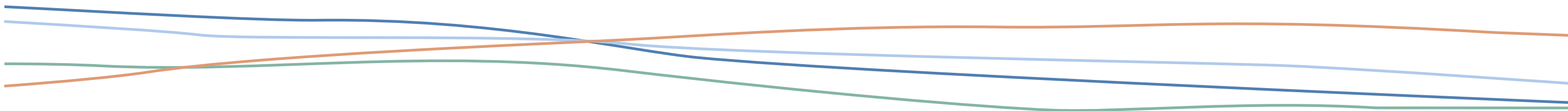
WATER FLOW 160

2

3

4

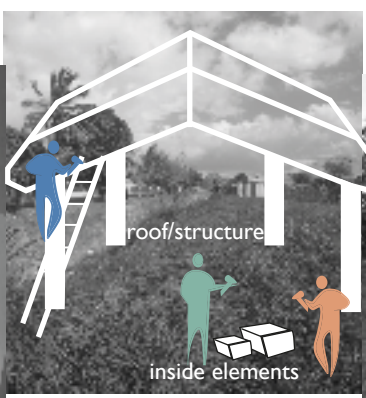
5



BUILD TOGETHER THE PAVILION



BUILD TOGETHER THE PARK



BUILD TOGETHER THE STREET



BUILD TOGETHER THE POND



BUILD TOGETHER THE LOOKOUT POINT



● **SHARE THE DESIGN**
Discuss the re-design and prepare the community for the building process

● **"THE PAVILLION SETS OFF"**

● **"THE PARK BLOOMS FESTIVAL"**

● **START OF PARK-PROGRAMS**
market yoga

● **"THE WATERWALK"**



● **"THE KAYAK RACE"**



● **"THE BIKE RACE"**

foundation of the pavilion

sediment basin and retention basin

bioswale

bike path

pavilion structure

river path and platform

trees, urban gardening, furniture, playground

planting trees, street furniture, paint

plant, urban furniture

maintain

Harvest

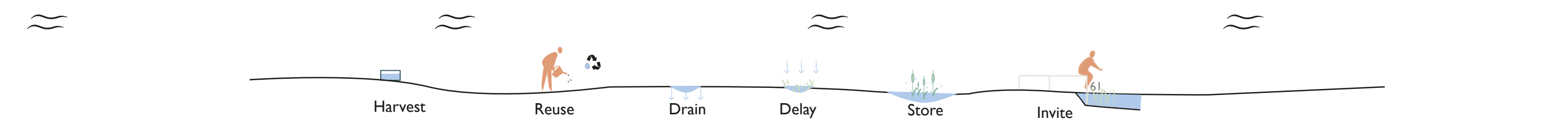
Reuse

Drain

Delay

Store

Invite





06 CONCLUSION

The conclusion rounds off the project and reflects for the future. It takes a step back and explores possibilities for the future.

CONCLUSION

A look back to the research question will guide through the conclusion.

How can designers adapt the spaces in the public realm to the effects of climate change with a process that will strengthen the sense of community?

How can pluvial flooding be alleviated in a dense urban environment in Tibás?

How can a design intervention in the public realm in Tibás affect the human - nature relationship?

How can a process-driven design approach bring together people from different backgrounds in the context of Tibás?

The project has addressed the global issue of climate change and its effects on the local situation. Climate change has many aspects. Therefore, it was necessary to delimit the frame of the project. In relation to climate change, we focused on the issue of increased pluvial flooding. We reflected theoretical knowledge in a design proposal that is located on a specific site. For the site location Cuatro Reinas in Tibás was chosen. The dense urban environment of the site is characterized by impervious surfaces and flooding occurs during the rainy season. Hence, the approach of water sensitive urban design was addressed in the design proposal. The aim is to approach the natural water cycle in the dense urban

environment, where rain water can infiltrate on site. In addition, the flow of water is considered in the design proposal.

The thesis has pointed out that environmental issues are interrelated to social conditions. The environmental conditions can pose a natural threat, especially when the exposed urban structure is already economically or socially fragile. Vulnerable urban environments, such as low-income neighborhoods that are located on slopes can be affected through landslides and flooding. A response ought to strengthen the community from within.

At the same time, the natural surroundings are vital for human life, as the human is part for the natural realm. The thesis builds on the theories of Anne Spirn who understands nature as ubiquitous. The project expands the concept of ecological understanding as an integrated part to the urban environment into the community involvement process. The participation process can not only be applied to projects within the urban environment or to ecological projects outside the city, but local residents can also be involved in ecological projects within the city. An increased awareness of the natural environment can incite a change in the human behavior eg. reduce littering on the street. Raising awareness is a process that cannot merely built on passing on information. For a person to change behavior, a change of

perception is required.

Community involvement invites the members of a community to participate in decision-making and the building process. This can build the sense of ownership of changes in the neighborhood. Concerning the involvement of residents for ecological goals, the pioneer plan suggests connecting rain water harvesting to urban gardening, as well as planting vegetation in the urban environment. Workshops in association to the involvement process raise awareness for the effects of littering and address the contamination of the river. In addition, the design proposal addresses the human-nature relationship by directing views, inviting for contemplation and inciting active play.

In addition to the ecological benefits, the involvement process provides a platform for the members of the community to meet and form new relationships. Cuatro Reinas is situated between Leon XIII and Las Rosas, which vary in their economic and social structures. A shift in the demographic situation, on a small scale, provides potential to invite people from the different neighborhoods and to encourage social exchange between the neighborhoods. To inform the discussion of an involvement process, the design proposal is envisioned as a pioneer plan that remains flexible in the future.

Furthermore, the design proposes places for sociability, through elements that invite to meet and interact.

EXEMPLIFYING THE PROJECT

The thesis reflects on the human-nature relationship in the urban context. In the context of climate change, cities around the world need to rethink how they integrate the natural cycles into the urban context. The thesis suggests that climate change adaption shall be implemented visibly in the design. And the process might be more resilient to the future if it involves the community and strengthens the community from within. Because of the involvement process, the urban residents will gain a deeper understanding of the natural cycles that effect the urban environment and take ownership of the project.

In addition, the thesis approaches the social injustice issue not by searching for a “fixing” solution, but rather suggests that when dealing with a stigmatized neighborhood, the designers ought to meet the different neighborhoods on eye-level.

To sum up, ecological action can enrich the community life and community involvement can have positive effects on the natural environment.

REFLECTION

The thesis is a result of a process of continuous exchange and negotiation between different perspectives. The theoretical frame has considered overall topics: ecology, sociability and site-specificity. The conversation identified overlaps and highlighted the transitions between the topics. Hereby, the nature-human relationship developed to be a central concept which is reflected in the design process. Nature refers to Spirns' notion of nature of being an "idea" rather than a place. The thesis searched for the user's perspective of nature in the city, with a focus on the element of water, and how this might influence her or his social behavior. How can the experience of nature be translated by the designer? Nature can be experienced in a manifold of manners. For example, the cube points at different elements of vegetation, the sky or water and invites for contemplation and interaction. Yet, it remains up to the user how the cube is experienced and what will be perceived.

If the thesis project can be followed up in the future, it would be insightful to build a prototype of the cube and use the city as a lab to explore how people will interact with the element. It can be adjusted according to the new insights.

Moreover, workshops with the community can inform the design in the future. The outcome of the design proposal will adapt

to the results from the workshop. For the frame of the thesis, simple experiments were chosen to gain an initial understanding of the residents' perspective.

Additionally, the thesis respected that the site location requires to consider a small budget if implemented. Therefore, mostly small-scale interventions were proposed. The thesis itself can be seen as a source for inspiration – can the conversation about dealing with flooding in the dense urban environment be shifted towards an ecological approach? The thesis also draws attention to environmental injustice issues that are visible in Tibás. Evidently, social inequalities cannot be solved with a simple design solution – however the thesis suggests that changes in the public realm should address people from different background. A community involvement process ought to specifically invite people from the different neighborhood to build bridges between the neighborhoods and counteract the stigma that is attached to Leon XIII. The individual experience of nature, such as a feeling of relaxation when looking at a tree is independent from the social or economic background of a person.

Furthermore, the project was developed through an international design team, yet aimed at a specific site. The inter-cultural exchange provides different perspectives and combines knowledge and experiences.

However, the exchange with the local experts, in particular with the municipality of Tibás was crucial for the project. The international setting is at times limiting. Access to data can be difficult when designing from afar. Moreover, our education was based on the European climate and European conditions. Consequently, a follow-up of the project would require the exchange with local engineers to further develop technical aspects of the project. However, the outside perspective of the international team also contributes with new ideas that might not have been considered on the site beforehand. And vice-versa, the change of perspective to the setting in Tibás, changed our perception and inspired us with new ideas and creativity.

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 ill. 33: Park tools (own illustration)

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ill. 35: Playgrounds installatios (own Illustration) used photos: Basurama, 2017. Wonderfruit festival. Cym Temple. [image online] Available at: <http://basurama.org/proyecto/wonderfruit-festival-cym-temple/> [Accessed 20 May 2018].

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TIBÁS - RIVER OF CLEAR WATERS

RECLAIMING A LOST CONNECTION BETWEEN THE NATURAL REALM AND THE DENSE URBAN ENVIRONMENT

APPENDIX



MATRIX OF CASES

BISHAN-ANG MO KIO PARK

Location: Singapore

Challenge: Adapting to Climate Change



Available at: <http://www.landezine.com/index.php/2012/06/kallang-river-at-bishan-ang-mo-kio-park-by-atelier-dreiseitl/>
Photo owned by © Ramboll Studio Dreiseitl

COMMUNITIES IN MEDELLIN

Location: Columbia

Challenge: Safeguarding Informal Settlement



Available at: <https://medium.com/cities-taking-action/integrating-informal-communities-ed223a18c8a>

AALBORG OPENING OF THE STREAMS

Location: Denmark

Challenge: Transformation over Time



Available at: https://www.licitationen.dk/article/view/271549/nye_anlaegsopgaver_pa_vej | Photo: Polyform

SEMILLAS - CAÑO NEGRO

Location: Costa Rica

Challenge: Dynamic S Wite Process



Available at: <http://arquitecturaencomunidad.org/cano-negro.html>

ROCHINA BRIDGE

Location: Sao Paolo, Brazil

Challenge: Urban Catalyst



Available at: <http://gl.globo.com/English/noticia/2010/06/pedestrian-bridge-designed-niemeyer-inaugurated-rocinha.html>

WiMBY

Location: Hoogvliet, NL

Challenge: Activating Obsolete Spaces and Empowering People



Available at: <http://www.spatialagency.net/database/crimson.architectural.historians#>

WATER SQUARE BENTHEMPLEIN

Location: Rotterdam, NL

Challenge: Recreative Possibilities



Available at: <http://www.urbanisten.nl/wp/?portfolio=waterplein-bentheplein>
Photo Jeroen Musch

WEST PHILADELPHIA LANDSCAPE PROJECT

Location: Philadelphia, USA

Challenge: Enhancing through Green



Available at: <http://web.mit.edu/4.243j/www/wp/p/p-sms-gardens.html>

CALCULATION STORMWATER MANAGEMENT

CALCULATION DETENTION BASSIN

Calculation of the volume of the new detention bassin in the green area next to the Red Cross for a 5 year rainfall event with a duration of nearly 15 minutes. The outlet of the pond is assumed to be 200 l/s

$$Vol = Q_{in}(t) - Q_{out}(t)$$

$$Q_{in} = i \cdot F_{red}$$

$$Q_{out} = a \cdot F_{red} \cdot (t)$$

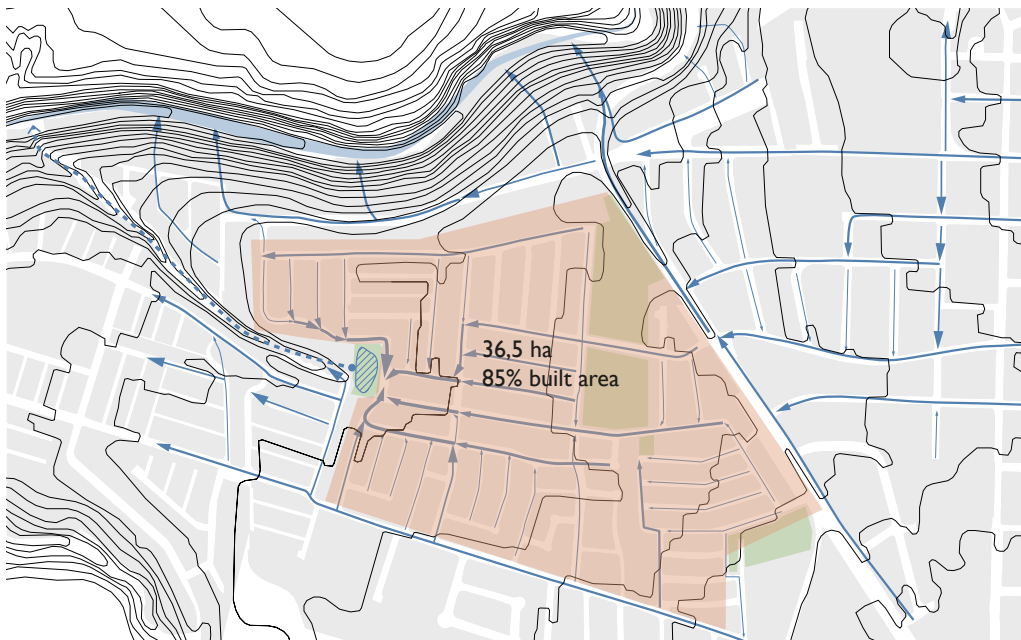
Total Catchment Area	36,5 ha
Permeable Area	5,5 ha
Area Imperviousness	31,5 ha
Reduced Catchment Area	31,025 ha
Outlet	200 l/s

Rainfall Intensity = 0,11271 (m³/m² h)

$$Q_{in} = 8'742 \text{ (m}^3\text{/s)}$$

$$Q_{out} = 5'584 \text{ (m}^3\text{/s)}$$

$$Vol = 3'158 \text{ (m}^3\text{)}$$



CALCULATION OPEN CHANNEL

Calculation of new Channel for the detention bassin which will transport the outflow water to the River bed. Since it will take place in steep valley zone which today has a slope of 17%, the build Channel will have the same slope. It has been assumed that the Channel will be a Stoned Armed Channel with a rectangular section.

Manning Number	50 $\text{m}^{1/3}/\text{s}$
Pond Outlet	200 l/s
Slope Channel	0,017 m/m
Channel width	2 m
Channel height	0,85 m

$$Q = A \cdot M \cdot R^{(2/3)} \cdot \sqrt{I_0}$$

$$A = b \cdot h$$

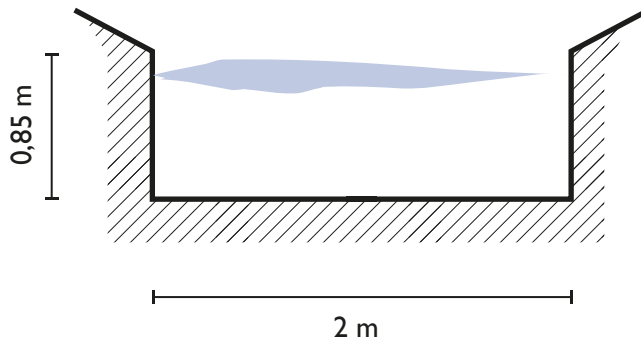
$$R = b \cdot h / 2h + b$$

$$Q_{\text{pipe}} = \gamma \cdot F_{\text{tot}} \cdot i(t)$$

$$Q_{\text{pipe}} = 6,205 \text{ (m}^3/\text{s)}$$

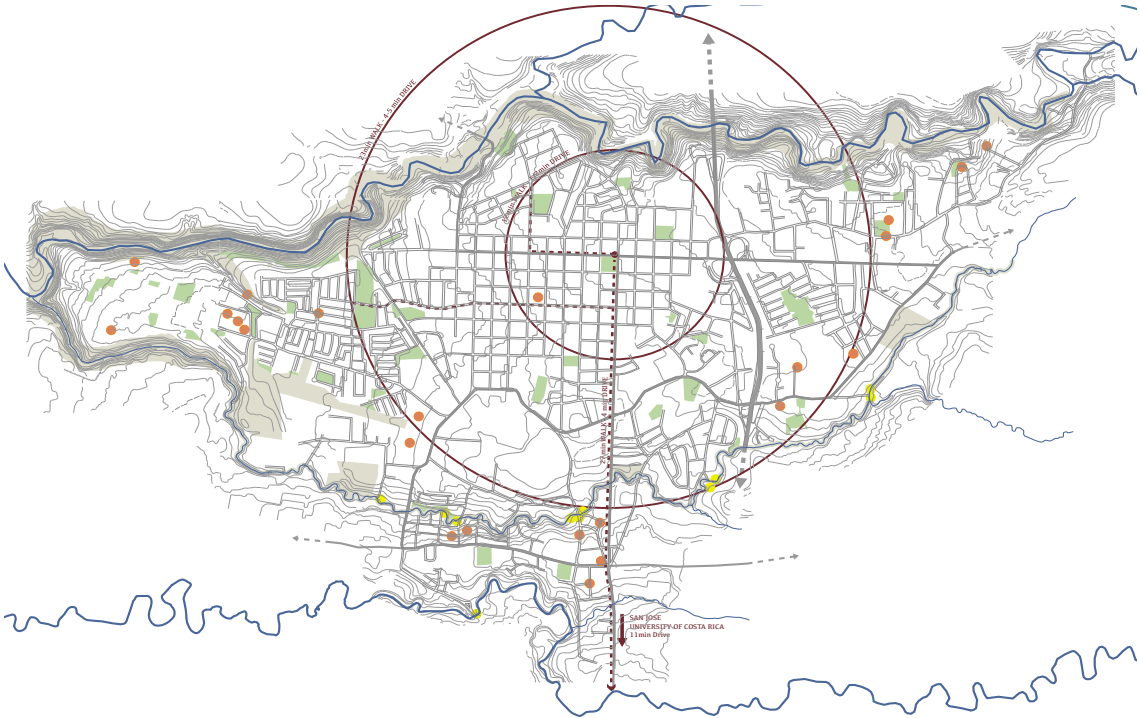
Assume Channel $b = 2$ and $h = 0,85$

$$Q = 6,579 \text{ (m}^3/\text{s)}$$

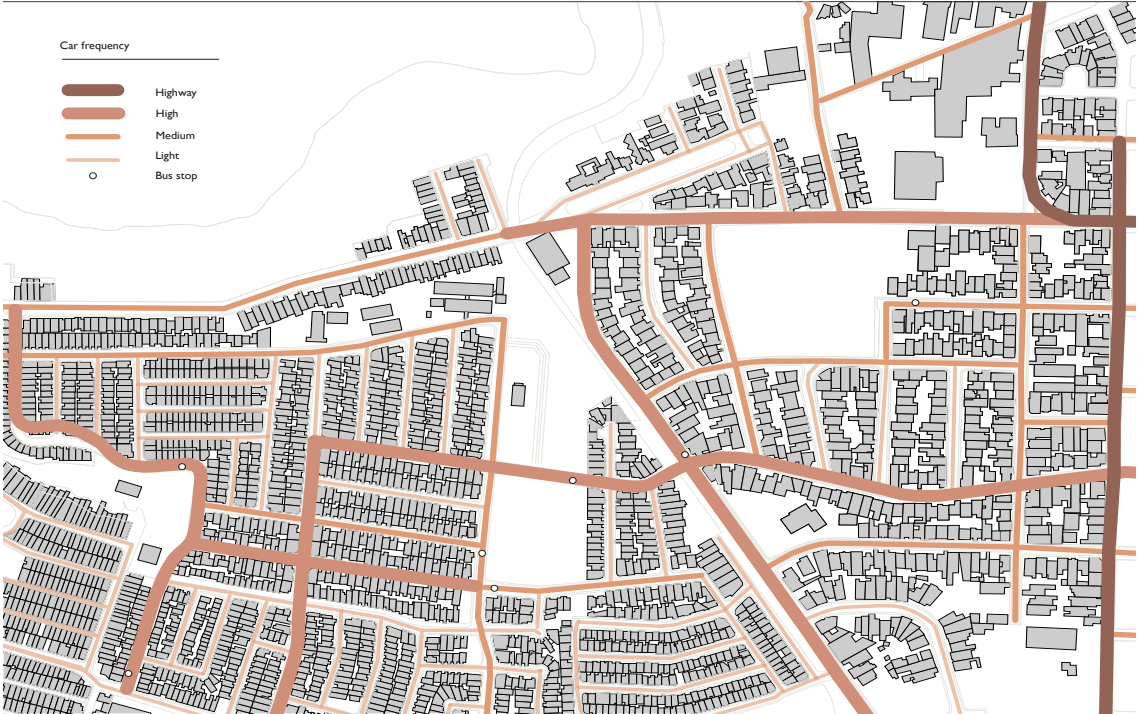


APPENDIX - ANALYSIS

Distances from the city center



Car frequency on the site



APPENDIX A - EXPERTS INTERVIEW

15.03.2018

Interview with Semillas

What methods do you use in your workshops?

We don't have a strict form of methods to get information. It depends on the community, since the communities are different. Everyone has a different target, so every method has to be related to that person or that community.

The first step is having a conversation with them. Walk around the neighbourhood together and listen to what they have to say about what they need, what they want and what they have.

It is an intense process of complaining. The say for example that they don't like their neighbours or they don't like this neighbourhood. But then, they tell us about how nice the parks and the plants are. So, it is a process to start recognising what they like and what they don't like.

"We try to be friends with them and have a friendly environment."

We also try to get them to see us as their peers. We don't want them to see us as outsiders. So, having these conversation and listening to them, allows us to feel like they have our trust. And it can help with the stuff that they deal with. When they have a question we don't want to impose our point of view, our knowledge or our technical skills. We try to explain to them as simple as we can, so they can understand us. They can also learn and we learn.

We try to focus on their main issue. For example, we work for a community in ---

They told us recently that they like to start a new project, but they don't know how to. So, in this point we will try to guide them how to start a project in a best way and how to plan.

We focus on their main issue and then we start to plan the best way how to start a workshop. We also find the best method to share the information with them.

In the past, we applied different methods. We put out a big map or a piece of paper and start drawing and writing. We are having a conversation with them about their history and their neighborhood. And then they also start having conversation with each other. We were not having an involvement in that type of situation, but we would record it. With that dynamic between them, helps them grow as a team and as community leaders.

Maybe we just said the right questions for them to start their conversation. Discovering themselves. In the first meeting we try to identify topics, that we need to understand deeper. On the next workshop we try to come up with different activities depending on how they react and feel. Because people can be shy when they have to speak loud. Giving them possibilities to do stuff with their hands allow them to be more free about.. With the korks allowed them to express their opinions without having to speak out loud.

It was about what safety meant to them. We had random words which they had to match together. if we are working with children, it is good to know what they associate with safety.

It depends where you are in Costa Rica. We have worked with rural areas. They have a lot of knowledge about their work, food and constructions, but when

you reach out to them, you have to be present stuff to them, because they might not have an education or a type of a formal job that give them ability or skills to allow them to understand the issue.

We are flexible with our methods. We try to find the best way to reach them and to know each other. To be as piers, and not the technical guys that know everything.

“We try to learn from each other. That is the key point.”

The thing that separates us from other participatory processes, is that we try to make people build. Put them to work. So we call them *hands at work*. They create attachment to what they build. That helps us a lot, keep us in the same level and work towards the same target. But it is still their own. So when we leave, they will keep it safe and keep it maintained. Since they need to get the infrastructure build, it will be more cheaper since they don't have to hire someone to build it for them. It is a way for us to strengthen the community sense and for us to share our experiences with them.

Where do you get the materials from? From local communities?

Both cases. We have been working with two communities that don't exist on the map. The land between them is a wetland. For example in Caño Negro (close to Nicaragua), which is a rural area. We just get the materials from there, like bamboo. It is very hard to access the area, since it is situated close to a wetland. So materials there are very specific, so we couldn't use concrete or wood. Or even metal. It is also very heavy to transport and bamboo is a material they know how to use.

How did you get in touch with these communities?

There was another group of sociology students that worked with them and they reached out to us. Since they had a community process. In their diagnoses they said they needed a physical space. So, they called us.

Sometimes the local government gives some money to give the materials. Or we try to get executive business program. Company building programs and they build with us and we can buy materials with them.

Sometimes we try to recycle, but it isn't so easy. The whole idea is to be between private and local government. To be between these institutions we can make something happen. With few money and resources, it can be difficult to make something happen.

The thing with cooperation is something we just started using. A great way to found this projects. The community need the work and the companies have the money. They need to give something back. So, we reach the gap. Since we help to make it more sustainable.

How much of the methods is trying to get information? How long does it take to talk to people?

Each community has its own rhythm. We have to adapt to their timetables. We have to do two or three sessions. The ideal would be two weeks to a month, but often it takes up to two months. If we don't have resources it takes longer time.

They do this on their free time, so it varies. But we try to have one or two workshops. And these workshops takes up to one to two months, depending on the timeframe.

Usually three sessions. We plan more on the different workshops.

For the first session we already mention topics related with design. We do some initial sketch and we have a workshop where we present it to them. From that we listen to their feedbacks. Then use the feedback to work further with the design and correct it. The size of the project and the scale, might vary towards the construction.

From the commission to the construction might vary because of the resources.

With the involvement that they might have, they may have an impact to change the design. We had a design, but then they started building it differently. It really changed a lot.

Which exercise help you the most to design the project?

We go there and propose our ideas and listen to their feedbacks. We do try to make our presentation legible as possible. It is a technical language. If we present them blueprints, they won't understand it. So, we make videos, graphics and renderings.

We have some volunteers and we form groups that can help us with some work. The renderings should be a certain level when you present it for professionals, but for the people they just want to feel the place and know the design. It is how they understand the space that is important.

Do you have some experiences or stories from people with different background meet? And something changed after they met?

We were contacted by the contemporary art foundation, called Theoretica.

They called us because they were a part of a festival for an entire day of cultural activity, but they had some issues. The founders and the neighbors are present, but we don't have a deep relationship or deep bond with anyone of them. We don't have any designated role in the community. We created a study group to understand what the relationship should be. Created focus groups where we invited architects, artist, neighbors, the non (a church close by). We created five focus groups and in each focus groups we talked about different topics. It wasn't bettering the public creating a relationship with the neighbors.

The first focus group, included the vice president of the neighborhood and fellow architects. We talked about gender design and sexual diversity. We talked about other people, like prostitutes, transgenders and homeless people. This way, they could meet other type of neighbors.

The project turned into a podcast. It became the foundation or the platform for people to speak out. The podcast talked about different issues, where you could share this conversation with fellow neighbors. Through this process, they learned that maybe this people aren't so dangerous, and that they are also just people.

APPENDIX A - EXPERTS INTERVIEW

12. 3. 2018

Interview Municipality of Tibas Gabriela Madrigal

L: You're the director of Urban Development in Tibas. How long have you been working here at the municipality?

G: I have been working here since 1 year and 7 months

L: How would you describe Tibas in one sentence? Which is the main characteristic?

G: Tibas is very urban. It is chaotic and proactive at the same time, with a lot of people, cars and a lot of noises.

L: You started the project 'Tibas city of parks', What is the goal of the project?

G: The aim is to implement the use of public space for people and try to involve them in the maintenance and the appropriation of the Public Space in different ways, than just installing a park in a city. We want to boost the use of the green space.

L: How can you make people appropriate the park?

G: We are working with people through Workshops! To understand a site, we try to know which are peoples of the area needs and the problems they have in the community; therefore we can implement the use of the specific public space.

L: What do you think the public spaces of Tibas are still lacking?

G: Nowadays people and Municipality are not involved in the public space. In Costa Rica we don't have the culture of using public spaces, therefore we need to do a lot of work to attract people to public spaces. We need to implement activities for the space of people, and not only having urban furniture and trees.

L: Is the community involved in the process of decision

making of public space?

G: Yes it is, but the Municipality doesn't have much time to do those type of workshops. This kind of workshop needs time, between 6 to 12 months, and after we need to process the results and apply them in the design of the new space for the community. Therefore, the Municipality has to get the workshop in 2-3 months, so we can enter in the time plans and budget, but in this amount of time we cannot have enough information from the people of the community. Unfortunately, The Municipality doesn't have enough time and will therefore work hard to try to get the best out of 2-3 months workshops.

L: How do you involve people? how do the workshops look like?

G: Since I have been working in the Municipality, the workshop consisted in talking with people in specific day and time; therefore It is easier to understand what they do for living, in their free time, where they live, how it is composed the family so that it is easier to understand the users of the public space and which are their needs. After this we ask about what happens every day in the site in day and night time, so that it would be easier to design a 24/7 space. After the Municipality got all the information, we could involve them in the development of the project like painting or planting. When people are involved in the design process they become interest in the project, and they will take care of it!

L: Is there any project that involve people in San Jose?

G: Yes, Art City Tour. Every Three months there is a free bus in the city, which allows people to get to Museums in San Jose till 9pm. Thanks to this service more people can now enjoy the culture of San Jose after their working hours. Moreover, this weekend 'TransitarTE' there are concerts, markets and different activities.

L: Are there any neighborhood association, or ngo that

take part in Municipality decisions?

G: At this moment, it is not implemented the work with the associations, because they don't have enough involvement with the Municipality yet. At this moment, Municipality starts working with them, there many activities.

In the new project, Tibàs city of Parks, we are trying to involve associations. (see pag Lydia has) she states the way they should work with the associations, in the whole picture is involved the Municipality, the social department, the ambient department and planning area together with the associations per district and the sports association, the commercial association of the area and the public institution and the police department. When we involve the big sportive associations since they have money to invest in public project for their social responsibility for the community.

L: Are students from universities involved in these projects?

G: Not in the project 'Tibàs city of Parks'

L: Are in Quatro Reinas projects that aims to bridge the different demographics?

G: Not yet, but I hope that with 'Tibàs city of Parks' project we will have a good start. Your project seems to have a solution for that, so I cannot wait to see it!

L: What about the green area between Leon XIII and Quatro Reinas?

G: We have a specific project intervention for that area, it will be mostly for dogs. While the project regarding Parque de Quatro Reinas will have sports programming. Unfortunately, we don't have any project which involve streets and park connection, since the department of mobility is in charge of projects in the streets and we usually don't work together.

L: In San José there are project about river thanks to Rio Urbano and Rutas Naturabanas, Do you think in Tibàs you could learn from those projects?

G: I believe we need to learn from those projects, trying to involve those association as well, especially for the Rio Quebrada since it is very polluted.

Involving those associations to work together with the Municipality would be a good implementation for the project.

L: Do you think making the rivers in Tibàs accessible for people?

G: It would be a great project but so far the political part is not interested in those kind of projects, because of the culture of public spaces in Costa Rica. I am aware of the problem in Costa Rica of perception and use of public space and that is a reason why I need, as a urban designer, to boost and make the municipality invest on public spaces. Associations like Rio Urbano and Rutas Naturabanas have projects along the river of San Jose it's because they are associated with the Municipality of San Jose and they have a bigger budget than us.

L: How come most of the Public Space are fenced? do people really feel more secure with those?

G: Parks are fenced because of the culture and the perception of security locals have, I believe as urban designer that fenced green areas segregate and separate people, while open spaces and different programs in the park will activate and attract more people. The safety feeling here is very important people are afraid of being robbed or murdered therefore they fenced their own houses.

Cameras and fences are not a guarantee of safety but people now believe that, while only some of them realize that they feel safe in a public space when people are around.

L: How would you attract people to green spaces of

Tibàs?

G: I believe projects with different activities for a various public would be the best way, once people will start participating in the different activities they will appropriate the park and using it everyday!

L: Is the Municipality financing the activities so far?

G: Yes!

L: Does the city of Tibàs have an agenda or a strategy to adapt to the effects of Climate Change?

G: Not really. The only national project is called 'Bandieras azul' (blue flags), it aims to reduce the use of artificial lights, or the use of the toilets water. We are trying to implement, the LEED Constructions guarantee building in Tibàs and making more permeable floor in housing. Moreover the Municipality is trying to implement the reduction of the Built area of the Overall area.

L: Is there any program that promote the use of permeable materials?

G: Not in Tibàs. I know that other Municipalities are detracting taxes from the inhabitants who use permeable or sustainable materials in their own house.

L: What were the effects of increasing precipitation during the raining season?

G: Nate hurricane in October 2017 cause many flooding, this caused the loss of some informal housings in Tibàs. Now the Municipality is trying to give them new housing since it is not safe living in the area of Geronimo and along the landslides in Leon XIII.

APPENDIX A - EXPERTS INTERVIEW

10.03.2018

Tibás Recicla

Interview with Kosuke and Ingrid

“Leon XIII no es tan peligroso, pero si peligroso”

Teaches children about environmental issues

Q: Do children have access to nature?

A: No, we would like to take them out of the city, but in terms of getting the documents and permits it is very difficult

“Tibas does not have natural areas”

Q: Are there projects to bring the nature into the city?

A: “Having a project and then making the project a reality is very hard for us. Because there is not a lot of money and there are a lot of obstacles. We have to take a lot steps. It is very hard. So I do not think these projects are going to be real.”

Q: are there projects to put trees into the city?

A: “Yes there are. For example, there is a project to put 80 trees at the cemetery. There were some trees in bad conditions so we are doing some maintenance. For the planting of the trees we wait until the rainy season because if we are planting them now the trees will die. [...] We try to put trees especially in the streets because Tibás has so many little green areas. Our main area is the trees, we are trying to put trees especially next to the trees, because, of course to make them more pretty but also to make them more cold, to prevent against the sun, for shading and to get some birds and insects. But we have some difficulties. In the environmental department I am the only person. We also have the volunteer who is helping. But finally I am the only person in the department. And I have to deal with all the day-to-day issues.”

“Every year in January I sent a letter to the mayor to ask for me people. But every year in February I receive a letter that says that they cannot.”

“We are making like miracles half of the time.”

Tour with Gabriela

Q: How do you perceive 4 reinas?

A: “There are good and bad people like everywhere. We have upper, lower and middle class. But it is better in 4 Reinas. Here in Leon XIII we only have the lower class. [We were driving through Leon XIII] And the houses are better than here.

Q: We also thought that cuatro reinas is an interesting place for our thesis because it is between the higher and lower class. Do you think the public spaces in 4 Reinas can be a place for people from different backgrounds to meet?

A: “Yes, that is what we are working for, what we are trying to implement. That people from here [Leon XIII] can go there. And people from a better position can go here as well.”

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This is one of the parcs we are trying to implement with the “Bueno Communal”

Q: Do people use the parks here?

A: “We have many drugs here. So here is very insecure. As you can see the houses here are very different.”

Q Do you think people from Leon XIII would use parks in 4 Reinas if there are activated?

A: “I am not pretty sure about that. Maybe they use the park maybe they do not. It depends on the people.”

Q: Is Leon XIII very much affected when it is raining a lot?

A: “Yes”

Q: When we look at the topography, Is it rain that the water is also coming from the other parts of Tibas into Leon XIII?

A: “Yes.”

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“This is a project we implement here in Leon XIII.

[Playground with workout equipment] Because they do not have areas for the Kids to play.”

Q: Why is there a gate?

“Everything is with the gate because of security. Even public space. We have to close the gates after 5'o clock

so nobody can use the space.”

Q: If you introduce public space without a gate – would that be accepted?

“We have the problem that equipment was destroyed. Machines and playgrounds were broken so that children could not use it anymore. The interaction of people here in Costa Rica with the public space is not ready – yet.

Q: People rather go to the mall if they have the money.

A: “Yes. That is the “public space” here in Costa Rica. We do not have a mall in Tibas, the nearest is in Moravia.”

“Look at the playgrounds. People do not take of them”

Q: What is this? [Construction work at the street]

A: “That is the project to close the city ring. A project that is almost from the 70ies.”

Q: Are there projects to bring more green or trees into the streets?

A: “As I told you, I would like to. But I cannot. These are not priorities for the mayor. It is very hard to implement that. At least for the municipality. If the government can make a project like that it might work.”

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“I would like to tell you something about this park [Quatro Reinas]. This was a project by the municipality, but everything was stolen within a month, such as benches. Now the municipality has a project to make an area for dogs, we have an architect who is doing the design.”

Q: So are materials like wood not so good?

A: “No, the mayor does not like this kind of materials. He prefers metal. That is the material that we are going to use because it is low maintenance and costs less money. It will persist 10-15 years. We do not use a lot of wood because it needs a lot of maintenance, which will also cost a lot to pay people.”

Q: What would you say are the priorities of the mayor in terms of building projects?

A: “Parks, that is what we are working with. We are trying to implement some public spaces. I will try to fight with the mayor to avoid the gates. But as I told you, because of the security, it is not something that we can do now. It will take from now like 5 years. It is very difficult, because we also have to avoid that little kids would run on the streets.”

Q: So one could create a barrier with plants for example?

A: “Yes that could be an option.

Q: What does the mayor has in mind when he speaks about parks?

A: “He has in mind parks like you have in Europe. But we do not have that culture here. That is why we can not implement that kind of parks. At least not yet. Or not here maybe in other places where there are other people. What the people might say is that they would like to have a secure place to have. Such as to play football, which is what the boys, or most of the boys here like to play. Or something to sit to have conversations maybe with trees for shading. That is the perception that people have of the park. Instead of places with other kinds of activities, like exercises or yoga. We do not have the mindset with the people to implement these kinds of places in a park.”

Q: Are there cooperations between the municipalities here?

A: “No we do not work together.”

Q: How about international partnerships?

A: “Yes, but there are only interested in prestigious projects with which they can promote themselves.”

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[Parque en llorente]

“We only have a little budget so we tried to intervene with a little but make the maximum impact. Here we installed a circuit where people can run and we have some sports equipment. We implemented them two years ago. The people here are different, they will not steal it.”

“I also would like to do a park with cross fit, because it is a very popular sport in Costa Rica.”

APPENDIX A - EXPERTS INTERVIEW

15.03.18

Interview with Federico Cartin
Rutas Naturbanas

“Connecting people through nature”

Where did you have the inspiration or insensitive in the first place to start the project? Why in San José?

Our metropolitan area is highly fragmented and it is made out of 31 municipalities. However, only two are hundred percent urban, San Jose and Tibás.

We understand and recognize that Tibás was conceived and created to be the capital. If you have noticed the street pattern, some of the streets are basically San Jose. The blocks and the street are a bit larger in San Juan than in San Jose. Wider streets creates opportunities, but also threats, due to more cars.

If you only interview the people from Colima and Las Rosas, all the negative view will be on Leon XIII. But if you interview people from Leon XIII, they might see their neighborhood more positively.

About Leon XIII: I like to build from assets, not that you shouldn't recognise the problems. Look at the theories about “appreciate of inquire”. Basically, you ask people about strengths and what has worked and how we can make it work even better. Maybe in a community there are ten things that doesn't work, but maybe one thing works. So, how can you take elements that made that thing work and bring that to other places?

“Look at things that work and try to identify how you can strengthen that and use that as your red thread.”

Inspiration to start a project in Costa Rica

- come back and help my country
- getting involved through my expertise; consulting
- bring people onboard
- looked at different project, related to Climate Change
- feasible, higher impact, large investment Rutas Naturbanas
- leverage the communities
- San Jose; urban area, set the tone for other cities
- Small and medium sized cities in Costa Rica, look at bigger cities that they know, like San Jose (use as a reference)
- Starting the conversation that nature and cities are not separated
- Live in cities and not in the tropical forests - misconception that nature is not in the city - let the nature thrive the city
- Mantra: remind people suddenly that there is nature in us
- How the river can help to clean the city
- Two sides: nature is a source of pride / mobility is frustration
- Protecting water, about water and climate change
- Our ability to protect the rivers, the surroundings
- Where rivers are born, where rivers cross and making sure that the sewers are being filtered by the toxins that pollutes the river
- Strategy for water protection

How do you raise awareness for the importance of green recreational spaces in the urban environment?

Are there obstacles because of people/politicians/ companies who do not want to invest in public spaces? Many ways in which you raise awareness, but most important is to whom do you raise awareness to. If you raise awareness to people, the vehicle of raising the awareness is different than raising the awareness to mayors and professionals. The tactics are different. Only 10 % of the public spaces should be enough. It is a misconception. The 10 % are used for park space, municipality library, school and basically social infrastructure. 10 % are misconceived or sufficient. We have to consider this, since cities are getting to become more denser and vertical. And they grow very quickly in just 5 to 10 years. There is also a misconception, since people are living in single detached houses or

single family residences. There is also less of a need or perceived need that they need green space, because they have their own backyard. People starts moving into denser living spaces.

Another perception, is that it will shift with time and starts creating the imperative. I think here, the lack of officials are clear.

If we look at Las Sabanas here in San Jose. It is used by many. It doesn't have to be a big metropolitan space.

Elected officials and municipality will invest in parks when they can see that it has a retirement investment and that it will attract investment. They are fighting for development dollars.

(Looking at our map) There are different socially strout out. This is not going to be a high end condo area or a middle income condo area. When I look at the park, the main street, the cemetery and also the river, and if I think as a realtor, I will think these are areas for potentially investments. This is a part of creating awareness from the municipality part.

I think for the peoples sides, a big part of it has to be with children. And other part has to do with senior citizens. More and more children are not being able to play. A big issue is that park has sports facilities and they tend to be directed to men.

It can be a culture thing that women were not allowed to play in sports and that they are more afraid. A fact, after age 10 women starts to disappear from public spaces in Latin America. When you look at spaces, does it call for women to also use them? There is a gender gap in sports. But how can we create public spaces where women feel appropriate in those places? Since, with women comes with children.

Costa Rica is aging more faster than the rest of America. Our labour population rate (LPR) are

going beyond two percent, that means that the next generation will have less workers. The workforce is decreasing in the pyramid including the children and the old people. We are having less children and the workforce is starting to shrink and we are getting more older people.

What will that mean for the old people using the spaces? In Rutas Naturbanas, the first kilometre was to allow to use the set back of the spaces closest to the river. Those spaces was an old people home. 90 % of them are in a wheelchair and they dont leave their home. So, the promise of being able to walk to the public parks and to the farmers market was positive. By using Rutas Naturbanas and not having to cross the streets for them was super good news. I think of 50 years down the road. What will happen to us old people? Will we be confined to our homes? And the reality is that, as a young person, i can have people coming over, but if I'm old or a widow, I will probably have a small space. And the access to the public, will not be there. Those are the awareness we have to look at. And we can tell it from a humanity perspective.

In your opinion, what makes a good public space?

A good public space is where people are welcome regardless of, if they are from that community or somewhere else. I should be able to walk into a skate park or park that is for skaters and not feel that I don't belong there and not be completely alien to it. If there is a sporting facility that has a more exclusive use, it should always be welcoming.

Public space define more as a park. Public space is a very broad term, you can have private public space like the food court or the mall. The road and the sidewalks are a public space. So it depends of how you wanna look at it.

What we really need in cities are nature. There is a reason why stress level in cities are big and there is a reason why people feel retired to go to the beach and the mountains. We are creators of the forest and the water and we need that.

When cities are in a gated environment and we have the cars, with the natural environment I think we are setting us up for failure. In a cooperation with the natural environment, whether more artificially, putting trees, shrubs and bushes or more actively by engaging for example natural assets, directly into the city that are already there and cooperating them. Those are way of doing it.

So, I think that welcoming is a very broad term. Since it talks about accessibility, it talks about different uses, understanding demographics and safety. If you feel unsafe it is not being welcoming. Including the nature aspects. I think another piece, maybe it is related to the welcoming, it is these whole notion of flexible spaces. Where a space can be used for multiple purposes and understanding that people have different needs and that communities will also change over time.

Keywords

welcoming - accessibility - different uses - demographics - safety - flexible spaces

Example: Templo de la musica in downtown San Jose is like a gazebo (a small decorated building or temporary structure, usually in a garden). What is cool about it, is that during the day time, skaters are basically going down the steps and using benches on the side. But, during the weekends you see couples making out in the park while children are practicing breakdancing and at night time, bands are playing. All different cultural and dance activities are present at night.

One temple that was originally received as a statue, is

really utilized by everyone. When you look at public spaces, can we create spaces that are not just soccer fields or not just benches. "Maybe people can play and discover something new and maybe create something that was not there."

Safety is a major concern in public spaces in Central America. Do you feel safe to walk in the city after 7pm in San José?

I do, in certain areas, but it depends on where. (Talks about map of Tibás) This is an area which is mostly residential and it is one single use and not 24/7 activity. Where I live is right here in downtown San Jose. Seven o'clock and there is still something going on. I think there is a stigma related to the city, to the central city. And a lot of these areas which are residential communities, a lot of them are a manifestation that have outgrown its border. Are not cities within themselves. Basically, it is suburbs that has been de suburbanised. The reality with this inner city suburbs is that a lot of people left because of fear. Or maybe they wanted more space or did not want a bus in front of their house. So the importance of safety has a lot to do with the fact: number one is a historic reason and another fact is being single use and lack of eyes on the street. Basically, it makes them feel less safe. The fact that they have Leon XIII with certain unrest, there is a lot of issues with safety.

Keywords

safety - history - single use - eyes on the street

Do foreigners feel safe?

In terms of feeling or in terms of reality? I don't know the history of violent encounters in Tibás. There could be a good reason for it, but maybe it doesn't have to do with the fact that you are foreigners,

but the fact that you are women. I think the safety perception for men versus women are different.

How do you activate people to not be afraid to use the paths along the rivers?

They don't exist yet. But during the day time it is less of an issue and a part of it is trying to create an activation of the space. That is why some of our partners (Chepe Cletas) work on cultural activation, but also walking and biking activation. Reason for that partnership, one this is open, they will play an important role in creating those shifting behaviour and shifting movements through those places. A negotiation which is on its way are light, we don't have that yet. Also, the careful balance that we have to deal with light in terms of the animals. We have done a lot of research in terms of that front. We also have potential donation for light post, but I can't accept it until I know who can pay the electric bills. That is a part of the negotiations. Shifting the city, but instead of the city giving back to the river, we see it from upfront. So, getting for example one the schools onboard would be great.

We actually mapped out all the schools that are connected to the river. That are either specifically on the river or 400m distance. You could actually have a facade towards the river. And the entrance from the river. For example, kids can start walking and biking to school and actually enter their school from the behind and now actually can become the front. If we start encourage that kind of use, it is a simple eyes on the street.

“Buildings can have their eyes on the river. By doing that, you are promoting that activity that makes people feel safe.”

Just in San Jose we have over 90 schools and university close to the river. If we get the university of Costa Rica alone, it is like 35000 students using the space for walking and biking. This is a way of creating enough

volume for people to feel safe. When children are using space, it is an important asset.

“When children use public space, they become safe.”

Why? When children use public space, parents are looking for them. The community is always protecting children. When you have children utilizing the bike path or walking to school, you would probably have parents walking with them. When you don't see presence of children, it doesn't mean that the community is not safe. It just mean that the space can be taken by somebody else.

Keywords

cultural activation - walking - biking - schools - university - eyes on the street - presence of children

On the website it says that you worked on a collaborative process. Who do you involve in the process and how do you involve people in the process?

There are different phases. For the masterplan, we did a co-design session (check out the website). We involved professionals from different areas. It wasn't so much as a community participation, because the scale was to large. 25 km of bike path. You have to understand when to involve people and not to. In order to not create expectations and frustrations. This project was a secret when the presidential elections were going on. We didn't wanted the project to be touched. In case he was my enemy and therefore I would just say that the project is s'f#*t, before even having them work. We had a concept and we had a developer.

The second phase which was one kilometer and we had funding. We out fort the first kilometer proposal. And that has been open to online consultation and we also had the plan being viewed. Very few comments of negative feedbacks. Taking comments from communities

in terms of what they wanted and etc. We also had an exposé at the central bank museum. So people who don't necessarily live there will come and actually see it. We look at it as a geographic community, a community of interest and virtual community (being able to comment online). They are also technical things that you don't put up for consultations, that is why we did an exposé. We are looking at slopes and location of trees. But where should the road be since the tree is here and the slope is this? (gestures with the hands)

This is the third phase. Community engagement and empowerment initiative which is running. They are going into their second session now. Where the next kilometres will be set up as contest as public design for proposals. People will vote online where the companies or professionals can submit their proposals anonymously and only with numbers. For them to give an proposal, we provide them with a base map, topography map and a the hydrological studies and also what the community perceptions and needs are. That what we are doing with this engagement communities. If there is 50 companies that want to build and all of them wants to talk to the community here and drive them crazy. We are doing a lot of the groundwork to document and understand what the needs are. Where are areas where people feel safe or where do they feel unsafe and what are great places to go to. So we can start planning more specifically the paths and that designers can then take that in consideration. So it is a participatory approach and not a consultation approach.

To make people in these communities as co-manager of Rutas Naturbanas. So there is a whole education and training program around climate change, around tree planting. We want to plant trees so we want them to maintain them and etc. But, the third and most important point is that they through training, they will understand the process of creating Rutas Naturbanas,

which means that instead of alone going around to get signature from hundreds of people, they will allow us to construct that.

The first kilometers it was me together with the other volunteers, knocking on door to doors and explaining the project to them and they will eventually sign. But, we can't do that for 24 km, it will be to much work. But if these communities know about Rutas Naturbanas and they start talking to their neighbors and they start getting each other onboard. Maybe there is a mall or a huge business close by and they knock on their door. Here are 80 property owners and we are willing to do this, will you help us out? Maybe they find some founding through that. Then they approach me and I can go to the world bank or the government and say that I have 1 km, 80 property owners and two businesses behind this and I have 50% of the cost, can you put out the other 50%? They will effectively become a local branch for the community and Rutas Naturbanas. This is the dream.

1. Knowing whom to involve and when to involve them
2. Founding and proposals (online consultation og open to the communities)
3. Community engagement
 - competition/proposals
 - citizens becomes co-manager
4. Who are engaged?
 - property owners
 - Rutas Naturbanas
 - businesses
 - government

Keywords
geographic community - community of interest - virtual community

Has someone said no to signing the project?

We haven't encountered yet that people don't want

to help, because they understand the project and what they can gain from it. People are exhausted of cities they are not proud of. I try to have emotional conversations with them and ask them questions like: what cities are we leaving behind for our children? for us? when we grow into senior citizens? If I am in a wheelchair I want to be able to walk out without any problems, to feel safe and have a pleasant city. There are people that are afraid, afraid of us taking their property away. It depends on their neighborhoods too. But, the renderings are a good tool to persuade them and help us marked.

What effect did this process have on the design proposal (compared to just elaborating the design only in an office)?

With Rutas Naturbanas was still we are still documenting communities I've had experiences with that before there are things that won't change

- where you provide access too
- what are you connecting to?

They see the connection from A to B a bit different. These streets are where children are playing and not not those streets. Maybe that is where we connect it to? Our engagement will tell us where to connect.

What, who and why do we need to connect?

If you engage people in participatory processes, you ask a children what do they want. And if they want a soccer field. Or if you ask certain communities who hasn't left their bubbles, what they want, and they just want benches since they don't have any other references. Like how other smaller communities look at San Jose at their benchmark. "Participation is important, but maybe in understanding context." Perhaps, it may give an idea for interventions.

Your project aims to bring people close to the rivers, but how do you intent to clean the rivers and how do you end the contamination?

Rutas Naturbanas will not alone solve this and that is something I am completely aware of. "When you don't see something, you don't care for what you can't see." If you can't see it, it doesn't exist. So bringing people to the river is the number one part of awareness and act of awareness. We have a connection with something, something that you love and therefore you want to protect it. There is a change of behaviour and another thing is to be vigilant (be aware). They will see that their pipes will be throwing into the rivers and they will probably take actions. And there is different mechanism for doing that. People don't walk down to the rivers to throw their garbage, but if they throw their cigarettes on the ground, these cigarettes will flow with the water into the rivers when it floods. It rains, it drains and it go to the rivers. So starting to make the connections with streets and river are important. Solid waste management is another thing that has to change in our cities. When you put your garbage disposal on the street and when it rains, you see the plastics bags floating and then it goes into the rivers.

Another part the government are working on is the sewage systems.

Rio Urbano are working on biological corridors, there are natural corridors which are connected to natural parks. You can see the first biological corridors in our time. (website)

Keywords

contamination - waste management - sewage systems - biological corridors

APPENDIX - CITIZENS EVALUATION FORM
SAMPLE

1. Toma una photo!

2. sexo (gender)

☐ femenino ☐ masculino

3. Edad (age)

☐ 5-14 ☐ 15-24 ☐ 25-34 ☐ 35-45 ☐ 45-64 ☐ +65

4. Ocupación (occupation)

5. Cual es su plaza o **parque favorito** en Tibás? Y Porque? (Which is your favorite square or park in Tibás? Why?)

6. Con qué **frecuencia** y con quien utilizan las parques en Tibás? (How often and with whom do you use the parks in Tibás?)

7. Tienes **una historia** o experiencia que te haya pasado en una plaza o parque que recuerdes? (Do you remember a story or experience that happened in a square or park?)

8. Has visto una calle o casa **inundando** en Tibás? (Did you already see a flooded street or house in Tibás?)

☐ Si ☐ No

9. Que sucedió? (What happened?)

10. En que lugar o situación te sientes **seguro** en la ciudad? (In which place or situation do you feel safe in the city?)

☐ Cuando hay gente en la calle



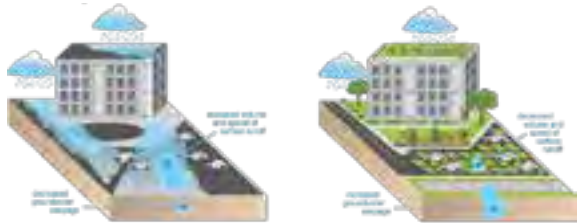
☐ Muros o rejas (walls and fences)



☐ Flores o árboles bonitas en la calle (Flowers or nice trees in the street)



☐ Cuando el agua pluvial es gestionada en la ciudad para prevenir las inundaciones (When the storm water in the city is managed to prevent flooding)



☐ Flores o árboles bonitas en la calle (Flowers or nice trees in the street)



☐ Iluminación en la ciudad (lighting)



11. Cuales espacios/**equipos** quieres que hay en Tibás? (Which places/equipments would you like to have in Tibás?)

☐ Equipo deportivo (Sport equipment)



☐ Pabellón (Pavilion)



☐ Espacios verdes con bancos de parque (green with benches)



☐ Sendero proximó al río (Path next to the river)



☐ elementos con agua (water features)



☐ zona de juegos de niños (children playground)



12. Cómo debe ser un acceso al río (How should an access to the river look like)

○ Plataforma (Platform)



☐ En las orillas del río (At the Riverbank)



☐ Un sendero natural (natural river path)

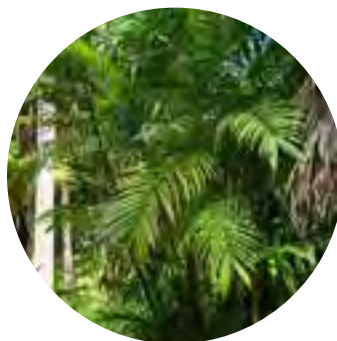


○ terrazas urbanos (urban terraces)

☐ otro[illegible]

APPENDIX - VEGETATION IN THE CENTRAL
REGION OF COSTA RICA
TREES AND SHRUBS

Refer to page 143 ill. 72: Street section scale 1:100



Pacaya



Corteza amarilla



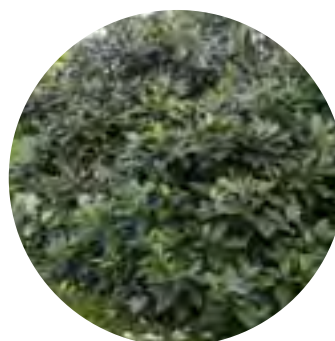
Raspaguacal



Lotería



Palma bruja



María

Images used for CITIZENS EVALUATION FORM SAMPLE:

People in street, <https://www.livablecities.org/blog/designing-successful-neighborhood-squares-part-3-size-and-shape>

Water management

<http://www.georgetownclimate.org/adaptation/toolkits/green-infrastructure-toolkit/introduction.html>

Camera <https://br.depositphotos.com/7085240/stock-photo-security-camera.html>

Light in the street : <http://www.lavanguardia.com/local/2012/10/09/54352753925/a-la-grena-iluminacion-badalona.html>

Sport equipment : <https://www.timeout.com/sydney/sport-and-fitness/the-best-outdoor-gyms-in-sydney>

Pavilion (Own by Raumlabor) <http://raumlabor.net/sammlers-traum-2/>

Park (Own by Turenscape) <https://divisare.com/projects/206402-turenscape-qinhuangdao-red-ribbon-park>

Path next to the river <http://rutasnaturbanas.org/primerkm/>

Water Features (Own by Turenscape)

<http://www.landezine.com/index.php/2012/01/ecological-coridor-landscape-architecture/>

Children Playground (Own by Carve Landscape Architectue)

<http://www.landezine.com/index.php/2013/09/osdorperover-by-carve/>

Platform (Photo by Kongjian Yu) <https://www.domusweb.it/it/architettura/2012/01/19/natura-infrastruttura.html>

Riverbank (Own by Turenscape) <http://www.landezine.com/index.php/2014/08/minghu-wetland-park-by-turenscape/>

Natural Path (Own by SLA) <http://www.sla.dk/en/projects/roskilde-raw-material/>

Urban Terraces Photo Credit: cc by 3.0 <http://teamprojects.nz/te-papa-otakaro-avon-river-precinct-and-east-frame/>

Images used for trees:

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