City of Wellbeing

Planning for Healthy and Inclusive Urban Environments

Master Thesis

Master of Science M.Sc.

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1. Introduction

1.1 Background issues

The places people live in have a strong impact on their wellbeing (WHO-EU, 2010; Barton, 2017). Conditions in the environment can increase or lower the risk of disease, injury or death; they can also provoke positive or negative feelings and reactions that can affect levels of stress, security, comfort, thus affecting mental; they can influence behaviors and choices, the time spent outdoors, the types of activities engaged in or avoided.

Human society is urban. More people live now in urban environments than ever before, a trend that will only continue to grow in the future considering the advantages and opportunities that urban life presents people. It is easier to find employment or start a business, find a house; there is access to more or better infrastructure, education, health care, and other basic services; but cities are attractive not only for practical reasons. People like to be among people (Gehl, 1971) and living in cities provides the best opportunities to see people, to talk to them, to develop personal relationships. These advantages might suggest that living in cities leads to a better quality of life, however, as attractive as urban life is, it has also been directly linked to an important and increasing decline in the different dimensions of people's health and wellbeing around the world (WHO-EU-Web, 2021). Chronic non-communicable diseases, like heart and pulmonary conditions, diabetes, among others, have become common among city dwellers. The risks of contracting communicable diseases by exposure to harmful substances, toxins or pathogens, are on the rise, with new types of diseases being the greatest threat (WHO-EU, 2010). Sedentary lifestyles, stress and isolation have very negative impact on mental and emotional health (Huppert and So, 2013), which can be manifested in physical health conditions as well (McCartney et. al, 2019).

The way cities all over the world are planned and designed is based mostly on models inherited from the 20th Century. Originally concerned with health issues and sanitation in the newly industrialized western world, planners of the time searched for ways to tackle those issues in a systematic and efficient way, much in the spirit of the time (Barton, 2017; Barton and Grant, 2011). As cities grew in population, they grew in complexity and so the issues to solve. This complexity was understood as chaos that needed to be tamed, which they approached with simplification, compartmentalization and standardization, that led to the planning model based on zoning and segregation of land uses, and so, by separating harmful industrial areas from residential areas, one of the major impacts of urban health was mitigated (Chinchilla, 2020). Another approach to dealing with 'chaos' was to escape from it, and so, residential areas outside of the city where another solution. As more and more people moved to cities and more residences were necessary, the cities grew ever outwards and spread out. This outward growth was aided by the proliferation of the car, a very important tool that helped bridge the inconvenience of living and working in separate areas of the city, and as population grew, more cars were necessary for daily life making people dependent on them (Newman and Kenworthy, 2015). But to accommodate cars, the city fabric was pulled apart to open space for them and as they grew in numbers more space was deemed necessary, separating communities and separating people from the fabric of the city.

The development of this model and its progression in time is a reflection of the industrial mindset of favoring productivity, efficiency, competition and growth that permeated into the way to build cities, not as a home or habitat for humans but a place where humans could produce – and consume – at rates that would make profit grow (Chinchilla, 2020; Trebeck et.al, 2019). The way cities are planned and developed is still based on the still prevailing, however outdated, economic paradigm that prioritizes economic growth over environmental and social wellbeing (Trebeck et.al, 2019, p.1). Under this paradigm, perpetual growth is a desirable goal that translates into urbanization of natural areas and productive land as the city continues to grow out of its core. It also creates an imbalance that has exacerbated larger issues such as social inequalities and environmental degradation (Laurent and Pochet, 2015, p.19), that also affect people at a personal level. Inequalities are a source of social tension with a direct link to stress and anxiety. They also generate more poverty which has been associated with serious mental illness. Environmental degradation has led to a loss of biodiversity – which is linked to the rise in communicable diseases –, and a changing climate, with its consequences such as extreme weather, scarcity of resources, that threatens people's health and livelihoods (Barton, 2017; Laurent and Pochet, 2015).

Under the productivity/competition/growth paradigm, the city has been shaped for work and, therefore, for the 'working man' and the most efficient ways for 'him' to move from home to work and back (Chinchilla, 2020; Kern, 2020). This simplified the complexities of city life, to a standardized 'user' and a standardized 'function'. The consequence of this simplification is exclusion, as most people don't fit the characteristics of this 'working' person and even those who do, use the city for more than their work. Along with the fragmentation and segregation caused by creating monofunctional areas, exclusion is a major issue affecting people's wellbeing.

Society has been changing. These changes a very contrasting to what life was like 50 years ago, let alone 30 years ago. Households have become smaller (OECD, 2011, p.9), which means that a person's social circle – the family – is shrinking and it becomes necessary to extend our social bonds beyond the family, as social relations and belonging to a [closed] group are basic for a person's wellbeing (Roberts et.al, 2015). The less opportunities to expand this circle, the more prone to isolation a person becomes. People live longer (OECD, 2011, p.18), and if the development models focus on a person's 'productive years', quality of life might decrease in the years after that, makes it necessary to re-evaluate the value those 'non-productive' years have in city life.

Technology has also changed life in cities. Throughout the past century technological advances have been aimed at improving life by making it easier, faster and more efficient to fulfill basic needs and have allowed for more free time. More recently, it has played a crucial role in the changing home-work dynamics, as work becomes more home-based for much more people than 10 years ago (OECD, 2011, p.22). Work used to be an important source social interaction but, as we move more into the digital world for work, other dimensions for human connection will become necessary, and new spaces beyond work activities need to be found.

The places people live in have made them grow detached from nature and detached from each other, and they are no longer suitable for all their changing needs. The models inherited from the past century are obsolete (Barton, 2017; Chinchilla, 2020; Trebeck et.al, 2019; Laurent and Pochet, 2015; Sim, 2019; Gehl, 2010), if a balance is to be found a radical shift in approach needs

to be a priority. ‘Radical’ because it requires change in the vision of what cities are, what they are for, who and what belongs in them.

Cities face many challenges and the way they have been planned, designed and developed so far has resulted in an urban environment no longer suitable to support the needs of people. Although it is tempting to look from above at the larger and [seemingly] more pressing issues like the climate crisis and its effects, often these issues appear too abstract to people and it is difficult to get them involved (Barton, 2017). However, people need to get involved in these collective issues for the strength of cities is in its diversity. More people living together means more diversity which needs to be channeled to address the many challenges cities face and create a new vision for the future. Changing the vision requires start looking at cities as “the human habitat” (Gehl, 2010) and transforming them accordingly. This can be done by re-focusing on people.

Turning the focus back down to eye level, to the human scale (Gehl, 2010), and to issues as personal as health, inclusion and wellbeing, has the potential to engage people to innovate, to participate and add to the solutions, that even at a small scale, would build up to also address the larger issues (Barton, 2017; Rydin et. al, 2012).

This thesis is a theoretical research into what human wellbeing is, based on concepts of inclusion and of human health; it will then propose how health, inclusion and wellbeing can be supported by the urban environment by determining essential elements to include or change; and what processes are essential in planning to improve the built environment to support wellbeing.

1.2 Research questions and objectives

This work is an approach to defining ways in which we can take action within our cities to transform or create urban spaces as environments that support and foster wellbeing, by focusing the research on people and the impacts the built environment has on their health and their inclusion in city life.

The main question driving this research is:

How do we plan for healthy and inclusive urban environments that support wellbeing in cities?

Answering these leads to the answer to the main question:

- What makes a city healthy and inclusive?
- What kind of urban environments support and foster wellbeing?
- What elements make up healthy and inclusive urban environments?
- What kind of actions can be taken to achieve urban environments of wellbeing?
- What implications do these concepts have for planning processes?

These are the objectives derived from these sub-questions:

- Explore the meanings and concepts surrounding inclusion, health and wellbeing.
- Understand how the built environment impacts, affects or influences health and inclusion.
- Define what a healthy, inclusive city of wellbeing is.
- Propose a simple conceptual model as a basis to support the following research.
- Analyze concepts in existing frameworks for healthy, inclusive and related types of cities.
- Extract elements that are most relevant to the city of wellbeing by assessing them through the conceptual model.
- Put together a series of components of the built environment that are necessary to transform or create a city of wellbeing.
- Choose best practice case studies that can illustrate the concepts proposed in each component.
- Draw key strategic actions for the process of planning that are crucial to achieve the incorporation of each component in the city.
- Discuss the implication of prioritizing these strategies in the planning process.

Table 1 shows the chapter in which the sub-questions are answered and the objectives for that chapter that are derived from the corresponding sub-questions.

Chapter	Research Questions	Objectives
2	What makes a city healthy and inclusive?	Explore the meanings and concepts surrounding inclusion, health and wellbeing.
		Understand how the built environment impacts, affects or influences health and inclusion.
	What kind of urban environments support and foster wellbeing?	Define what a healthy, inclusive city of wellbeing is.
		Propose a simple conceptual model as a basis to support the following research.
3	What elements make up healthy and inclusive urban environments?	Analyze concepts of existing frameworks for healthy, inclusive and related types of cities.
		Extract elements that are most relevant to the city of wellbeing by assessing them through the conceptual model.
	What kind of actions can be taken to achieve urban environments of wellbeing?	Put together a series of components of the built environment that are necessary to transform or create a city of wellbeing.
		Choose best practice case studies that can illustrate the concepts proposed in each component.
4	What implications do these concepts have for planning processes?	Draw key strategic actions for the process of planning that are crucial to achieve the incorporation of each component in the city.
		Discuss the implication of prioritizing these strategies in the planning process.
	How do we plan for healthy and inclusive urban environments in our cities?	

Table 1. Research questions and objectives by chapter. Source: made by author

1.3 Structure

The thesis is structured into five parts: (1) introduction, (2) concepts, (3) framework, (4) discussion and (5) conclusions.

Chapter 2 defines the concepts that will guide the analysis that leads to the component framework in chapter 3. Considering the main terms used throughout this thesis – health, inclusion, wellbeing – may have different meanings and interpretations depending on the point of view of the research field, it is important to start by defining what the terms will mean in the context of this research. As *Table 1* shows, the objectives of exploring the meanings and concepts surrounding inclusion, health and wellbeing and understanding how the built environment impacts, affects or influences health and inclusion, are aimed at answering the question: *what makes a city healthy and inclusive?* The objectives of defining what a healthy, inclusive city of wellbeing is and proposing a simple conceptual model as a basis to support the following research, are aimed at answering the question: *what kind of urban environments support and foster wellbeing?*

Chapter 3 develops a framework of components of the built environment. Rather than an exhaustive list encompassing all elements cities need, the framework presents the most crucial components without which a city could not support wellbeing as understood in this thesis. As seen in *Table 1*, the objectives of analyzing concepts in existing frameworks for healthy, inclusive and related types of cities, and extracting elements that are most relevant to the city of wellbeing by assessing them through the conceptual model, are aimed at answering the question: *what elements make up healthy and inclusive urban environments?* The objectives of putting together a series of components of the built environment that are necessary to transform or create a city of wellbeing, and choosing best practice case studies that can illustrate the concepts proposed in each component, are aimed at answering the question: *what kind of actions can be taken to achieve urban environments of wellbeing?*

Chapter 4 discusses the key takeaways from the results of the previous chapters. As shown on Table 1, the objectives of drawing key strategic actions for the process of planning that are crucial to achieve the incorporation of each component in the city and discussing the implication of prioritizing these strategies in the planning process, are aimed at answering the question: *what implications do these concepts have for planning processes?* This chapter then finally answers the main research question: *how do we plan for healthy and inclusive urban environments in our cities?* The chapter closes with final reflections and recommendations on further research.

1.4 Methodology

This thesis is based on theoretical research built through a literature review of secondary sources, interpretative analysis and synthesis. Although the research type is mostly theoretical, it is complemented by elements of applied research in the use of real-life case studies. The qualitative research approach is through grounded theory, based on theory and concepts found in literature sources that were categorized and analyzed to approach an emergent framework. The categorization strategy used mixed categories beginning with a list of predetermined concepts that led the research in the early stages and, as the information was collected and reviewed,

emergent categories were detected and the final categorizations adapted to the new findings. The results are presented with a simple conceptual model that frames what is understood as a city of wellbeing, a framework of components for the built environment aiming at those concepts, and finally, a discussion of implications to the planning process with observations of aspects that stood out through the research process.

The process was organized into 4 general stages, (1) a general overview of available information and literature on the broader topic and scoping review, (2) definition of the guiding concepts and development of the conceptual model, (3) development of the component framework and (4) final reflections and discussions of key findings regarding planning processes. This process was more iterative and non-linear than the logical order of the stages relay; as it advanced and new information was collected and reviewed, sections belonging to other stages were revisited and modified according to the new findings, constantly adapting to new concepts or elements found that pertained to other stages.

Publications were sourced online and through bibliographic databases, and included landmark book publications, articles in peer-reviewed journals, documents and reports issued by international organizations, non-governmental organizations or research groups and institutions, and publications of conference proceedings. Websites and other online sources were used for general information when other publications were not available, especially regarding general descriptions of the best practice case studies. In addition, in a process of chain-referral, sampling of other publications by key authors, articles citing in important papers and reference lists, were carried out to obtain access to more material and find other relevant sources.

For each of the stages, publications were searched in diverse professional fields depending on the subject at hand. Literature that addressed definitions of health, inclusion and wellbeing included health sciences (studies on impacts of the built environment on human health, articles defining health), psychology (impacts of the built environment on mental health), literature from planning and architecture (landscape architecture as it deals with the built environment in cities too) that addressed the link between the built environment and health (green spaces and health, play spaces and health, etc.), literature from the social sciences that explained the link between social aspects, economic aspects and ecological aspects of cities affected or influenced by their built environment. Literature that defined what cities for *all* people should be like (even if the publications dealt with particular subgroups first, like children or the elderly) and had proposals of what the city needs to have, including proposed frameworks, categories, recommended characteristics.

At the start of the research process, a broad review of publications was carried out. The purpose of this first step was to review what actually exists in the chosen topic – cities of wellbeing, inclusive and healthy urban environments – publications mostly in the fields of urban planning and design, landscape architecture and urban studies. This first step informed the scope, defining the boundaries around what kind of framework could be developed, its flexibility and the limitations beyond urban spatial planning. The base publications were identified as well as the type of approach to the more detailed reviews that will follow. Early on, it became clear that the definition of inclusion in the built environment needed to be constructed by reviewing sources that were in many cases not using the specific terms, or that were focusing on one particular group of people

(as opposed to *all* the people, which is the main aspect of inclusion) but that could be used to extrapolate to other groups. Health on the built environment, on the other hand, has been studied and address by many authors and studies so it seemed more straight forward. The challenge was finding which of those publications were key to defining health and healthy environments under the objectives of the thesis; in the case of inclusion, the challenge was identifying topics that could be connected and interpreted to build the definition of inclusion and inclusive built environments that were broad enough and wouldn't remain limited only to universal design for people with disabilities.

The process for stages 2 and 3 was similar, read through the literature to find key concepts, understand and extract the essence of the concepts and arguments in the literature, the concepts, and finally put together a unique order of elements as the synthesis of the process. The first synthesis resulted in the definition of a concept and a vision, that would serve as a guide, or a lens, through which to interpret other author's definitions and prioritizations, systems, frameworks or toolboxes, in order to decide what to keep, what to re-interpret, and what to discard, and finally put together a coherent set of components of the built environment into a framework (the second synthesis), that could be illustrated with best practice case studies.

Categorization was an important step in both stages; from the review and analysis of the definitions of health, inclusion and wellbeing, a number of key concepts were extracted and categorized into 4 key words that will define the guiding principles of the conceptual model. These final 4 categories were inspired in the works of Gehl (2010) and Jacobs (1961), and chosen to be easy to remember and would encompass the entire scope of the extracted concepts. For the component framework, categorization was defined by comparing the existing theoretical frameworks for ideas regarding cities for people, healthy cities, spaces of care, inclusive cities/spaces, healthy environments, age-friendly cities, child-friendly cities, and generally concepts aimed at better quality of life and wellbeing for all. All of these had a completely different approaches and some elements of their frameworks were not included when they were related to topics beyond the scope of this thesis (such as governance items). Patterns were found that defined the final categories, which were prioritized to define the order in which the framework would be presented.

Best practice case studies were researched and reviewed from the start of the process as they were deemed important to bring the concepts to a practical level. Although, there were several ways to use them for the objectives of the thesis, during the scoping review it was decided that best practices would illustrate the concepts put forth for every one of the components of the built environment. The process involved reviewing projects, initiatives, plans, ideas, that changed the built environment in favor of the concepts defined for the city of wellbeing.

1.4 Scope and Limitations

Although much has been published about healthy cities, health, wellbeing and urban environments, inclusive urban spaces or inclusive planning, none of the literature, to the best of the author's knowledge at the time of this research, has addressed these topics together from the perspective of city planning. The aim of this thesis is to center the research on people and the impacts the built environment has on their health and their inclusion in city life, and to find ways in which cities can be transformed to support and foster wellbeing.

This thesis focuses on aspects of spatial planning to propose interventions to the built environment and discuss strategies that are crucial to bring about those significant changes. It draws from a wide range of publications from different professional fields to put together a coherent conceptual model on which to base the main research objectives. It will produce a group of spatial elements or components that a city should have to improve health and inclusion and a discussion of actions or strategies to be incorporated or prioritized in the planning process to work towards creating these environments.

A "city" will be understood throughout this document as a physical unit, an urbanized area or settlement, and not the administrative body that governs this space.

This thesis has a theoretical approach, no empirical research or research applied to any particular urban setting research was carried out. It makes no claim to address everything that is important within the intense complexity of urban environments, however it suggests that the final elements of the framework and planning strategies highlighted are crucial in the effort to transform and develop cities into places aimed at their people's wellbeing. The proposed frameworks are built from knowledge obtained by reviewing and analyzing diverse authors' perspectives, therefore, although not exactly the same, there are significant overlaps and commonalities, as they draw heavily from a thorough review and interpretation of their theory.

Aiming to the synthetic frameworks, many concepts regarding cities, the built environment, city life and spatial planning will be addressed, however, given the time limitations, the depth of the research for each topic will be enough to achieve the objectives of this thesis. Topics in health sciences and the social sciences will inform and enrich the process, however issues regarding the struggle for human rights, relationships of power, complex economic theory or political discourse that very much influence outcomes of city development, will be kept out of the scope of this work. Similarly, topics of high complexity such as poverty, inequalities and crime are also beyond the scope, as they can be an emphasis in stand-alone research projects.

The concepts proposals and examples presented here will be at the city level (regardless of scale), so aspects of regional or territorial land planning will not be address in this work. The same is true for topics of governance and policy decision-making. It is not the purpose of this thesis to study planning process models or propose a framework of an ideal process for the city of wellbeing, however it will point out emergent strategies or actions that must become part of or given priority within the process.

Technology and its implementation in planning strategies will not be thoroughly researched for this thesis, since physical or "analog" solutions will be given priority. The author acknowledges;

however, the role technology can play as an important complement to any initiative to transform urban spaces, strategies for implementation, further research or follow-up and feedback

The chosen topics are not new, but they have taken the forefront of research recently, let alone in the past year pushed forward by the Covid-19 pandemic. A large number of major new publications such as books and research articles have been published in the last months that could not be reviewed or processed to be included in this thesis given the restrictions of time. The author is also aware that there may be information, potential case studies, new empirical studies or theories that have been published in the time after the results of this research were defined. Therefore, this thesis has been built upon key literature from both, seminal works of classic authors, and contemporary publications with state-of-the-art information to the date they were reviewed for this thesis.

2. Defining the City of Wellbeing

The main objective of this chapter is to come to a definition of '*a city of wellbeing*' through a simple conceptual model, which will be built by exploring the meanings and concepts surrounding *inclusion*, *health* and *wellbeing* [the main terms used throughout this thesis] and understanding how the built environment impacts, affects or influences them. Defining what the terms will mean in the context of this research is a necessary starting point to set a conceptual base that will guide the definition of the framework of components the *city of wellbeing* and will allow for a discussion into how the planning process should be modified or adapted in order to achieve those changes to the urban environment.

Wellbeing is an elusive term. It is used differently depending on the context, and can also be interpreted differently according to the background of the individual or their personal life experiences, which makes it a highly subjective term. However, what stands out is its positive meaning (Roberts, et.al, 2015). Broad definitions of wellbeing commonly associate it with 'feeling good and functioning well', and other positive emotions (McCartney et.al, 2019). In fact, the definition in the dictionary describes it as "*the state of feeling healthy and happy*" (Oxford, 2021; Cambridge, 2021), but all these only provide a vague starting point.

Often paired with the term *health* or used alongside it [in the common phrase '*health and wellbeing'*] it can be interpreted as being used instead of *mental health* or as a synonym of it, considering that health in those contexts is representing *physical health*[1]. This is not so, however, in the definition of health of the World Health Organization (WHO)[2], where it can be interpreted as '*being well*' to emphasize the positive aspects of the physical, mental and social dimensions of health.

In academic research, wellbeing has been a topic of interest for the fields of economy and psychology which equate the term to life satisfaction [economics], happiness [psychology] and meaning [philosophy] (Roberts, et.al, 2015, p.16-17). Studies in these fields have been focused on measuring wellbeing [as life satisfaction and happiness] as objectively as possible, however most studies require an individual's self-evaluation of their current life status or their life experience. Nevertheless, some literature describes wellbeing as having 2 dimensions, *objective* wellbeing and *subjective* wellbeing. This considers that objective wellbeing is based on assumptions about basic human needs and rights, including aspects such as adequate food, physical health, education, and safety, and so it can be measured through more objective aspects such as mortality rates, life expectancy or income status, unlike subjective wellbeing that requires personalized assessments (Roberts, et.al, 2015, p.18). However, several authors consider the subjective dimension to weigh more heavily in the definition and measurement of wellbeing, and even the objective aspects should be considered from an individual's perspective (Roberts, et.al, 2015; Barton, 2017; Andrews, 2014).

The challenge posed by these highly subjective and multidimensional approaches (Huppert and So, 2013) is defining the meaning of wellbeing within the urban context and how to understand

[1] The concepts of *physical health* and *mental health* will be discussed in section 2 of this chapter.

[2] "... a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" (McCartney et.al, 2019, p.23).

the ways the built environment affects and influences it, to finally define what a city of wellbeing is. The interpretations discussed above either center the concept on people and their life experience, which is a basic element of the concept of inclusion in society (Hamraie, 2013), or suggest a strong link to the concepts of health (McCartney et.al, 2019). Therefore, the concepts of health and inclusion will be explored first, considering them as the two strongest pillars on which to ground the definition of wellbeing in the context of cities.

This chapter answers the questions:

What makes a city healthy and inclusive?

What kind of urban environments support and foster wellbeing?

It is divided into four sections. The first section will address the concept of *inclusion*, first approaching it as a general definition, and then discussing how the built environment affects and/or influences *inclusion*. The second section will follow the same format but regarding the concepts that define *health*. The third section will revisit wellbeing having drawn relevant concepts from inclusion and health, inclusive built environments and healthy built environments. The chapter will conclude, in the fourth section, by proposing a simple conceptual model which will be defined by extracting the concepts previously explored, categorizing and synthesizing them under 4 guiding principles, to be used as a guide in the definition of the framework of built environment components [chapter 3] and the discussion on the implications to the planning process [chapter 4].

2.1. Inclusion

2.1.1 Defining inclusion

Inclusion is a socially-oriented concept. The term is most notably associated with topics of human rights derived from issues of exclusion, discrimination and marginalization. Because of this, it is commonly placed *in context* relating it to a particular social group or social issue. However, this is not the only perspective from which inclusion should be understood. The intension of this section is to analyze different definitions of inclusion and the concepts that are associated with it, to find a broader meaning that can later be translated into tangible elements and actions in the built environment. In order to achieve this, the first part of this section will approach the definition from a 'de-contextualized' point of view, this means without attaching the meaning to any particular group or social discourse. The second part will analyze those definitions that are related to specific social groups, or 'contextualized' within a particular human rights issue to complement and widen the final definition. Later, to give it a spatial perspective, the ways in which the built environment can affect or influence inclusion will be discussed.

Inclusion as 'being part of a group'

Human beings are inherently social. People need to be around other people (Gehl, 2010); being part of a group is an essential need (Jansen, et.al, 2014, p.370). Considering these statements and the definitions for 'inclusion' offered by the dictionaries as: "*the action or state of including or of being included within a group or structure*" (Oxford, 2021), and also as: "*a person or thing that*

is included within a whole" (Cambridge, 2021), inclusion can be interpreted as the satisfaction of a human need. According to Jansen et. al (2014, p.372) the way this need is satisfied is by being included in the group without losing personal identity. In order to explain this, they define two dimensions in the concept of inclusion, one as "*belonging*" and the other as "*authenticity*".

The first dimension refers to a sense of belonging and the need to feel connected to others. The need to belong is a motivation to maintain strong and stable relationships with other people (Jansen et. al, 2014, p.371). Developing a sense of belonging depends on both two aspects, from a practical perspective, having a "sense of group membership" – or the perceived strength of the relationship with the group, and the benefits gained from this relationship. From an emotional perspective, experiencing a "sense of group affection", which is the positive value of the relationship with the group, or the level relevance, safety and confidence they feel within a group (Jansen et. al, 2014, p. 372). From this perspective, the development of a community depends on the strength of the sense of belonging the members of the group have.

The second dimension of inclusion, is authenticity, which can be understood as having a sense of self, being genuine and true to oneself (Oxford, 2021) despite external pressures to conform to a standard (Jansen, et.al, 2014, p.371). When connecting 'authenticity' to a group context, there are two concepts to consider: uniqueness, which is a way of differentiating oneself from the group, and autonomy, which is the desire to experience choice and individuality, in other words, making decisions on how to express 'uniqueness'. These two concepts together give 'authenticity' means that an individual needs to feel 'unique' within a group, but they can also be similar to other individuals in the group and still feel authentic. Beyond these two aspects, there are two components to authenticity, having "room for authenticity", or being allowed to be oneself without restriction or expectation of fitting a standard, and the "value of authenticity", or being valued for being oneself, the acceptance of the group (Jansen, et.al, 2014, p.372). Authenticity can be understood as the freedom to express one's identity within a group and being valued for it.

Inclusion is also associated to integration Commins (1993, as cited by Kazmierczak and James, 2007, p. 354), there are four systems of integration, civic integration - or being an equal member of society -, economic integration - or having a valued functional within society -, social integration - or being capable within society -, and interpersonal integration - or having strong networks within society for support. All of these, fall within the concept of 'being integrated into a group', which in this case means society at large and each system feres to the role played by the individual in that particular system (Kazmierczak and James, 2007, p. 354). Notably, the last one can be interpreted as belonging to an established community or communities.

Establishing inclusion requires satisfying both the *need for belonging* and the *need for authenticity* (Jansen et.al, p. 373), and to this end, it is important to build a sense of community by strengthening social networks and developing strong personal relationships (Kazmierczak and James, 2007, p.355).

Inclusion is, therefore, about developing sense of belonging to a group and having the opportunity to express individual authenticity; it's about being part of a community with strong ties to its members. It's also about integration and building social cohesion through the interpersonal relationships and connections that support both the group and the individual.

Inclusion as "equal access to opportunities and choice"

In the previous section, the definition of inclusion was approached without attaching its meaning to any context, specific groups or locations, social issues or political discourse. Establishing this general view as 'belonging part of *a group*' means that the definition can be applied to any group at any scale, from familial groups, to neighborhoods, to companies, to society in general. However, this second part will be based on definitions that refer to a context or are defined with a group in mind, or deal with a social issue. These types of definitions need to be interpreted to find connections to other contexts or other groups in order for them to be valuable as a general definition. In some other cases, the opposite concept will be referenced as a way to find what inclusion means by exploring the 'lack of' inclusion. Opposite concepts like exclusion, marginalization and discrimination, refer to certain groups in society and their relationship to privilege and power; segregation and fragmentation, are more related to spatial qualities and will be discussed in the following section regarding the built environment.

As a starting point, the basic definitions offered in the dictionary that have been classified as 'social inclusion' will be used. According to Oxford (2021), inclusion is: "*providing equal access to opportunities and resources for people who might otherwise be excluded or marginalized*". Cambridge (2021) offers: "*allowing many different types of people to do something and treating them fairly and equally*". Notably, these definitions are closely related to concepts of equality and justice that are commonly used in the context of human rights advocacy and activism.

The global network on disability, inclusion and accessible urban development (DIAUD) defines 'inclusion' as a term that "*embraces all the people, irrespective of race, gender, disability, medical or other need*". Inclusion means giving equal access and opportunities [to all] and eliminating discrimination and intolerance [from society] (DIAUD & CBM, 2016, p.13). Equal access means the removal of barriers and obstacles – which can be physical like fences, stairs, walls, or psychological brought about by discrimination –, and the creation of an environment where everyone is enabled and empowered to fully participate in the social, economic, cultural and political opportunities that cities have to offer (DIAUD & CBM, 2016, p.14).

These definitions imply that action is necessary to achieve inclusion. Taking this perspective, one of the most important documents to reference inclusion is the Convention for the Rights of the People with Disabilities (CRPD) of the United Nations. Although this document was written to advocate for the rights of people with disabilities, this social group shares many of the consequences of exclusion and marginalization that other groups experience (Hamraie, 2016), and so, the concepts put forth by the CRPD can be generalized to other groups and to the benefit of all people. For this purpose, the principles of the CRPD (CRPD, 2007, p.5) will be used as a conceptual framework to broaden our view of the concept of inclusion.

Historically, the social definitions of disability have evolved from "*ableism*", the assumption that life *without* disabilities is 'better' than life *with* disabilities, a condition that is disqualifying for living, to the "*social model of disability*" which states that disability is an experience of discrimination resulting from *inaccessible* built environments (Hamraie, 2016, p.4). Ableism concentrated on the conditions of the [disabled] body and framed it as a deviation from normality and, therefore, a problem to be solved or eliminated basically as it didn't belong in 'normal' life. The social model,

rather than considering it an inherent pathology or impairment of the body (Hamraie, 2016, p.3) it is based on the acceptance of disability as an intrinsic part of life, and the understanding of the role of the built environment in creating disability. This paradigm shift meant that disability is an experience influenced by the environment, beyond the physical characteristics of the body, and regarding the urban built environment, disability can be linked to *inaccessibility*. In other words, when a space is inaccessible, a person can experience disability, therefore they are excluded or marginalized, or not allowed to fully participate of the space, or of the activities taking place in that space.

This generalization is possible to make wit the concept of "*affiliation*", that was adopted by human rights activists. It is a cultural understanding of disabled people as a disadvantage minority group that exists in relation to other excluded populations such as children, the elderly and people of different sizes (Hamraie, 2016, p.10). This concept pushes for "*collective access"*, by affiliating discrimination based on disability with other categories of social discrimination. It opposes the standardization of the human body as a reference in spatial design and has been used by disability activists and advocates to argue for accessibility for all people, even those who have no formal disability diagnosis (Hamraie, 2016, p.11). Consequently, inclusion can be understood as accessibility for all.

'Accessibility' is the CRPD's 6th principle (CRPD, 2007, p.5), however it will be addressed first due to its importance. Other principles will be discussed as they connect to the concepts of accessibility. In article 9, accessibility is linked to participation. It indicates that a person should live independently and be able to participate fully in all aspects of life (CRPD, 2007, p.9). This means having access to everything that will allow a person to live a fulfilled life, not only physical access to the built environment. The article also prioritizes access to the built environment [buildings and public spaces] as crucial to participating in society and public life. The 'independent life' concept, connects to the 1st principle (CRPD, 2007, p.5) which also mentions the concepts of freedom and individual autonomy, and the ability to make choices. The ability to choose can be linked to the 5th principle, namely, the equality of opportunity. Article 19 (CRPD, 2007, p.13) addresses independence and freedom, in connection with community life, understood as being included in a community and choosing which community, in a strong parallel to the main concepts discussed in the previous section. Here, the emphasis laid on being able to fully enjoy and participate in the community life that has been chosen. In other words, the opportunity to develop a sense of belonging is central to the concept of inclusion.

Finally, to achieve equal access it is necessary to recognize diversity in the population (Waller, et.al, 2015, 298). This idea connects inclusion to the 4th principle (CRPD, 2007, p.5), which refers to recognizing diversity and respecting differences. It emphasizes acceptance, following the idea that "*societies should embrace rather than eliminate or standardize*, [disabled] *people's unique ways of relating to and engaging with one another and their environment*" (Hamraie, 2016, p.7).

Waller et. al (2015, p.298), argue that in order to better understand diversity in a population, the polarized ideas of 'able-bodied' [the standard and mainstream] and the 'disabled' [the exceptions or special cases], need to be challenged. They introduce the concept of "*ability variation*" for this purpose, based on the idea that [dis]ability is part of the human experience. The concept considers that people experience different levels of 'ability' throughout their lifetimes, and that the

influence of the environment on those abilities also changes in different times of people's lives. This way, diversity can be understood in different contexts, lifestyles, aspirations, gender, past experiences, ages, capabilities, and social and cultural backgrounds. (Waller et. al, 2015, p.298).

Inclusion is, therefore, accessibility, diversity, participation in all aspects of life, access to physical spaces and life activities, individual autonomy, self-determination, independence, empowerment, freedom of choice, access to opportunities. It means harnessing diversity and removing of obstacles and barriers.

2.1.2 Inclusion and the built environment

The built environment plays an important role in the experience of inclusion. This section will discuss how the built environment affects or impacts inclusion.

Our current cities are the result of urbanization processes that respond to socio-economic models that shaped and influenced our urban life, which, especially during the industrialization era, have become globalized. As discussed in the introduction, the current development paradigm is based on growth, competition and productivity (Laurent and Pochet, 2015, p.22). *Perpetual growth*, the desired goal under this paradigm (Trebeck, 2019, p.9), is reflected in cities in the prevailing urban forms of sprawling urbanization and expanding road systems aimed at carrying as much vehicular traffic as possible. The development of this type of urban fabric (Newman and Kenworthy, 2015, p.174) was made possible after the 1950s, as cars became more available and made it easier to travel long distances. Independent of the walking and transit systems, the automobile city fabric became the main model of a *one-size-fits-all* approach (Newman and Kenworthy, 2015, p.176) that has shown to have opposite outcomes to the concepts of inclusion, generating exclusion, segregation and fragmentation.

With the possibility of spreading out into longer distances, separation of land uses was thought the most efficient way to organize city functions, making connectivity dependent on motorized vehicles, and investing, in turn, heavily on road infrastructure (Newman and Kenworthy, 2015, p.174). The fragmentation and car-dependency derived from this model, have made commuting one of the main functions of roads, and one of the main activities people partake on a daily basis. Segregating segments on the population into residential-only projects further and further from each other and from other city functions, along with the long commutes, has helped to reduce the quality of the relationships between people who, even when they live or work close to each other, they spend almost no time in spaces where otherwise they would meet and interact.

In their *Theory of Urban Fabrics*, Newman and Kenworthy (2015, p.174) highlight certain qualities such as density and mix of uses as related to the urban form, and social qualities as class differentiation (or segregation), social capital, safety and health, for the different types of fabrics (walking, transit, automobile). In all these categories, automobile cities present low density and low to no mix of uses, aspects that work against diversity (Jacobs, 1961, p.144). Social capital also ranks low, pointing to a reduced sense of community, as well as low in safety and health. Scoring high though, is class differentiation (or the difference between rich and poor (Newman and Kenworthy, 2015, p.180) an important sign that this type of urban fabric fosters exclusion.

This development model is also based on monofunctional areas, the large, identical built-up areas around a single function or group of people (Gehl, 1971, p.101). In these areas a single group of people, a single occupation, a single social group or age group is easily isolated from the other groups in society. The most "efficient" approach to planning has come with the price of reduced contact with the surrounding society, and a poorer and more monotonous environment (Gehl, 1971, p.102).

But not only this urban form or the large infrastructure elements (such as highways) can separate people. At a smaller scale, the presence of through traffic can have an important impact on human relations and the people's sense of place.

Between 1969 and 1970, the city of San Francisco's Panning Department carried out different studies concerning increasing traffic in city streets. Notably, based on field interviews and observations on three similar city streets with different traffic volumes, Appleyard and Lintell's (1972, p.84) study yielded results that showed how conditions in the urban environment can affect people's relationship to it, but also affect the relationship people can have with each other. Although small in scale and not aimed at obtaining statistical data, the study draws an important correlation between increasing traffic intensity and decreasing street livability (p.84). They describe the *aspects of perceived livability* as absence of noise, stress and pollution, high levels of social interaction and perceived territorial extent and environmental awareness, and safety (Appleyard and Lintell, 1972, p.84), all of which are relevant aspects in our understanding of the concepts of Inclusion (as discussed in this section) and health (as will be discussed in the following section), so this study is suggestive on the impact that *through traffic*[3] can have on human connections in urban spaces and the possibilities of developing a sense of community, affecting in turn the people's sense of belonging to a place.

The most relevant aspect to this analysis is their results regarding social interaction and home territory (Appleyard and Lintell, 1972, p.91-94), showing that in the street with the heaviest traffic there was less social interaction and street activity and more withdrawal of the people from the physical environment (p.97). Traffic acts as a barrier that thwarts opportunities to meet and stay in the public space and therefore thwarts the chances of making friends and building relationships, and makes it particularly repelling for children and older adults by creating an atmosphere of danger (p.87).

A similar study, following the approach of Appleyard and Lintell (1972), was carried out by Sauter and Huettenmoser (2008). In a different setting, Basel, Switzerland, and using traffic speed rather than traffic volume as a variable (p.68) they come to the same conclusion. Personal relationships were less in the street that allowed the highest traffic speeds, and the street with the slowest through traffic speeds, presented characteristics of a livelier neighborhood (p.78).

These studies show traffic as a barrier for community life and how its presence, volume and speed affects relationships, perception and appropriation of urban space, thus, affecting the development of a sense of belonging and limiting our interaction with our immediate environment and the people in it.

[3] traffic passing along the road to other destinations (Cambridge, 2021).

An additional interesting aspect that Appleyard and Lintell (1972) point out in different parts of their article on the above-mentioned study, is the reduction of resident diversity the more traffic a street presented – Sauter and Huettenmoser (2008) point out similar observations. While comparing the three streets, they noted that the street with heavy traffic had more homogenous types of residents (mostly renters, younger adults) and that the few families with children or elderly people that remained, were there because they couldn't leave. This tendency was observed also on the street with moderate traffic (considered by the authors' conclusion, a street in transition) as some of the residents noted that some of the neighbors that had moved away were families with children or elderly people, pointing to how the environment in the street with moderate traffic was becoming more repelling.

Existing diversity can also be impacted by what Jane Jacobs (1961) considers a force [of competition] working against diversity (p.242) which she refers to as "*self-destruction by excessive duplication*" (p.246). The process starts with an area of the city which has found a great balance in diversity of land uses which act as catalysts for the area's success (p.246), by drawing in a diverse population who, attracted by the convenience, interest, vigor and excitement product of the diversified mixture of uses, choose to live, work or visit the area, contributing to the area's liveliness as people are always present in the area. However, this success, generates ardent competition for space in this area (p.243) and [without regulation] those who "win" (manage to make the most profit) this competition represent a narrow segment land use, which as they are repeated and repeated, will make the area monotonous, both visually and functionally (p.244). This phenomenon happens also in residential uses, as many people will want to live in the area it becomes profitable to build, in excessive quantity for those who can pay the most, or are willing to pay more for less space (p.249). Accommodations for this narrow segment of the population will multiply at the expense of all other population (p.250), whilst eliminating the one thing that made it an ideal place to live, its diversity.

The culture of productivity that derives from the above-mentioned paradigm, has made everything dependent, or focusing only, on *work*, to the point where objects, spaces and actions are conceived based on the role they play in the productive sector. Vehicles are just transport modes, people are seen either as employed, unemployed or self-employed entities, and the environment has become a group of natural resources to exploit (Chinchilla, 2020, p.9). This makes our experiences in cities one-dimensional and excludes those who do not fit into this productivity roles. The Principle of Action (*principio de actuación*, Chinchilla, 2020, p.9) in city development, limits the many dimensions and experiences of city life and focuses exclusively on the experiences of those who traditionally have acted in the world of work (male adults, and to our understanding so far, also able-bodied and young). Although this is an overly simplified statement and there is more complexity in the profile of this "productive person", it is clear that it still represents a small proportion of the population, to whom uniform capacities have been assigned (p.11), excluding all those who don't fit within this assumption - the majority of the population (p.10) - from having complete experiences in the city or living full lives.

Productivity requires efficient systems, and one way of achieving efficiency is by standardization. Designing urban spaces and elements in urban spaces based on a "standardized" person, has led a built environment full of obstacles and barriers for anyone whose *body* doesn't fit into those standards, and the solutions to these obstacles have become afterthought also due to the

standardization of elements "*for people with special needs*" (Bannert and Elnokaly, 2013, p.2), making them "exceptional" and relegating them to corners away from the real activity of a city, giving no solution to the actual situation of exclusion and, in many ways, reinforcing it (Hamraie, 2016, p.9). Barriers and obstacles to navigating the built environment create functional limitations - or the environment's effect on a person's ability to engage in life activities, which as Hamraie (2016, p.6) explains, is a concept used to understanding levels of disability, beyond the person's physical impairment, by analyzing the obstacles in their built environment that will increase the difficulty to engage in everyday activities that for other people posed no problem.

Physical barriers are not the only types of barriers that create exclusion in the built environment. A wide range of people experience unease and distress when inhabiting or passing through urban spaces, triggering feelings of anxiety, with also creates the perception of being out of place. Dillon (2005) describes this as psychological exclusion and explains how spaces that fail to balance certain physical characteristics allow for social exclusion because the individual is not capable of participating fully in the activities of their immediate environment (p.10). These characteristics build on the need for a tension in the landscape between *coherence* – or how orderly the space is -, and *complexity* - the number of elements and activities -, and between *legibility* – or how easily can a space be navigated and understood - and *mystery* – or how much more there is to the space that can be discovered by exploring, the capacity of the space to stimulate interest (Dillon, 2005, p.11). Spaces with uncomfortable sitting, or without street furniture altogether become inhospitable, uninviting, inhibit a sense of presence, eliminates the feeling of appropriation (Dillon, 2005, p.12); spaces without landmarks or points of reference or without shelter that make you feel exposed, lost or insecure; empty spaces without identity, dull and monotonous (Gehl, 1971, p.117), illegible. Under this model of productivity, streets have only one purpose, to commute, to move, not to stay, they become repelling and deterring for people to stay longer than strictly necessary are designed to stay as little as possible and exacerbates the feeling of being out of place (Dillon, 2005, p.12).

The urban environment can impact inclusion in different ways. Traffic conditions can work against human relations. It affects community life by reducing the opportunities to create groups [of friends, of neighbors], to establish a sense of community, or to become part of an existing community. The chances of developing social cohesion and a sense of belonging to a place are lowered when there is no stablished sense of community. Urban form can segregate, separate and/or isolate spaces, places and, therefore, people. It can reduce connectivity and integration, which can generate exclusion of social groups, reduced human contact and prevent the development of diverse and vibrant communities. Diversity can also be reduced, hindered or eliminated [where it exists] by the homogenization of land uses. If this happens, all those who cannot compete, adapt or simply do not meet the standard are excluded, working against diversity which lowers livability. Standardization in design solutions for the built environment aimed at a a standardized body type, creates barriers and obstacles, and limits freedom and self-determination. It hinders the full participation of those who do not fit the standard. This lowers quality of life for all of the people left out, which happens to be the majority. Uncomfortable and inhospitable spaces can be repelling, generating anxiety and feelings of being out of place. This, situation thwarts the development of a sense of belonging to a place and attachment and appropriation are prevented by making it very difficult to spend time at that place regularly.

Consequently, inclusion can be understood as having a sense of belonging to a group and developing strong ties with the group, while at the same time keeping a sense of identity and authenticity; it's about belonging to a community, the networks and interpersonal relationships, and developing social cohesion, it's about connectivity, among people and between people and spaces, connections that support both the group and the individual. It's about home territory and the feeling of appropriation of our urban environments. It's about accessibility, in a way that supports self-determination, autonomy and freedom of choice, empowering all members of the population to participate in all the activities of city life. It's about diversity, and the strength that diverse populations and spaces bring to the livability of the city. It's about focusing on people, making everybody visible and relevant in our urban spaces. Inclusive urban environments must be friendly to all people, inviting, legible, easy to move around; they must be barrier-free, to move easily, to stay as a choice, to allow for the development of a sense of community. They should be comfortable, flexible and adaptable to social and cultural changes. A city focused on wellbeing should have these characteristics of inclusion that are about putting people first and recognizing diversity. Inclusion is, nevertheless, only one of the two pillars of wellbeing in the city. Health will be the focus of the following section.

2.2. Health

2.2.1 Defining health

The starting point for understanding health is the definition in the Constitution of the World Health Organization (WHO): *"… a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity*" (McCartney et. al, 2019, p.23). In 1948, this definition was forward thinking as it considers physiological, psychological and social factors in health, which is consistent with what would be known as the biopsychosocial model of health, which differs from the traditional medical model that defines health as "…*the absence of illness or disease…"* that was considered a simplistic definition for a multidimensional concept, that emphasized the role of clinical intervention, without considering a person's agency attaining or maintaining their own health (McCartney et. al, 2019, p.22).

The WHO definition is the most widely used and cited by health institutions and academic research, not only does it expand the concept beyond the absence of illness, but also emphasizes the positive nature of health using wellbeing [here, meaning "being well"], and addresses health as a multidimensional concept. However, there is one aspect of this definition that has been strongly criticized over the years, and that is the use of the word *complete* which gives the definition an absolutist tone, which implies that health exists or is attained when these 3 dimensions are complete, and makes it an unworkable goal (Card, 2017, p.128). Under this definition, people with mild and even well-managed chronic conditions or minor disabilities would be classified as '*unhealthy*', which is particularly problematic when considering the world's aging population or people born with permanent disabilities (Card, 2017; McCartney et. al, 2019).

To challenge the WHO's definition regarding this absolutist requirement, Card (2017, p.130) proposes to understand health not as a dichotomous variable [meaning either healthy or unhealthy] but as one that occurs along a line between '*more'* healthy and '*less'* healthy. This

aligns well with what Waller et.al (2015, p.298) argue, that in order to understand diversity in a population it is important to not to polarize people into 'able-bodied' and 'disabled' but to regard the range of ability variations within a population. They go further to determine that people throughout their lives move within this range of ability for different circumstances, one of them being age (Waller et.al, 2015, p.299)

In 1986, with the Ottawa Charter, the WHO revisited and expanded that original definition by adding: "…*to reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs and to change or cope with the environment*" (McCarney et. al, 2019, p.23). With these additional concepts, the social dimension of health gained more prominence and it highlighted the agency people should have in determining and improving their health outcomes. This idea of self-determination is also present in the concepts of inclusion discussed in the previous section.

Physical health is the physiological dimension of health. It refers to the 'proper' functioning of the body which can be objectively measured [a broken leg, heart failure, etc.] (Card, 2017, p.131). Even as the general definition has become more flexible, physical health is still considered closely related to the presence or absence of illness or disease, since these affect the body functions directly (McCartney et. al, 2019, p.23).

Broadening the definition of health has contributed to the understanding of the psychological dimension of health, ensuring that mental health is recognized as equally important as physical health. Mental health and physical health are inextricably linked, with evidence for a strong two-way relationship with mental health influencing physical health and vice versa (McCarney et. al, 2019, p.22). One of the most common connections is through stress responses [fight, flight or freeze] that are known to affect physiological processes regulated by the autonomic nervous system, including cardiovascular, respiratory, digestive, repair and defense functions, with a large number of medical conditions linked to stress (Huppert and So, 2013; McCarney et. al, 2019).

Positive mental health has been defined by psychological models as '*flourishing'* (Huppert and So, 2013, p.838) a concept that equates mental health to mental [or subjective] wellbeing and defines it as a combination of feeling good and functioning effectively. As mentioned at the beginning of this chapter, this is the strongest link between the concepts of health and wellbeing, making *wellbeing* [if understood as subjective] one of the dimensions of health. This relationship will be discussed later in this chapter.

Social health refers a person's immediate surroundings and social circles, considering that health is also influenced by a person's culture, physical and biological environment. Positive social health can be understood as a state of equilibrium between people and their physical, biological and social circumstances (McCarney et. al, 2019, p.23). While some authors consider this dimension as intrinsic to the definition of health, others argue that it should be viewed as separate from the definition but as a strong external influence on the other two dimensions of health (Card, 2017, p.132).

Health is, therefore, a state of being, a personal life experience, a bodily response, an outcome, having good health is not simply not being ill but a constant search for balance. It is also a resource for living that allows people to participate and function in society, which is an idea also

connected to the concept of participation discussed in the previous section. Framing health as an experience implies subjectivity and a need for a person-centered approach. While many health conditions can be objectively measured, health itself cannot (Card, 2017, p.131). A person's experience of health is inherently subjective, contextual and particular to the individual, that is influenced by the body's functional state and its responses to external determinants such as an individual's culture, circumstances and expectations.

2.2.2 Health and the built environment

The urban environment is a complex system in which many factors can affect or influence health outcomes (Rydin et. al, 2012, p.4). Although existing research hasn't shown direct causality linking people's health and the environment they live in, associations or connections have been found (Pineo et. al, 2018, p.34). The influence that the built environment can have on human health can be understood through two pathways: through exposure – by exposing people to pollution or harmful substances, and a number of stressors – and through behavior – by encouraging or discouraging people to behave in ways that may affect their health (Frank et al., 2019, p.321).

A city's environmental quality [air, water, waste management, noise levels, climatic comfort, presence or absence of natural elements] can have a direct impact on physical health [body functions] and an indirect impact on mental health, that in turn would affect physical health.

Urban air pollution is recognized by the WHO as the most significant environmental risk for health in cities, and it's associated to more than 2 million premature deaths a year (WHO-EU, 2010, p.36). Typical air quality analysis in urban areas addressed five pollutants: nitrogen dioxide (NO2), fine particulates (PM10), sulphur dioxide (SO2), carbon monoxide (CO), benzene, and ground level ozone, that can also have an adverse impact on health. Exposure to these pollutants increases the risk of serious health conditions such as chronic obstructive pulmonary disease, pneumonia, coronary heart disease and cancer (WHO-EU-Web, 2021). Sources of air pollution are multiple and context-specific, but generally include industry, motorized transport, energy systems in buildings and waste incineration (Barton, 2017, p. 137). Pollution can be tackled at source, through regulation to industrial processes and energy-efficiency in buildings. Land use zoning has been used as a tool for separating industrial areas from housing areas, which has contributed in the reduction of exposure to pollutants produced by industry, however, motorized traffic remains the main cause of poor air quality in many cities with unhealthy impacts of air pollution are greater in urban areas with high traffic levels (WHO-EU, 2010, p.36).

Exposure to waste can be brought about by improper waste management – presence of waste in urban spaces, improper handling and processing of waste – or proximity to landfills. Inadequately disposed of or untreated waste can have negative impacts on the environment as leaks from the waste may contaminate soils and water streams, and produce air pollution through emissions of heavy metals and persistent organic pollutants (POPs) and consequently create health hazards (WHO-EU, 2015, p.15). Living in the vicinity of a landfill increases risk of direct exposure to pathogens and pollutants through different pathways such as inhalation of substances emitted by the landfill site, contact with polluted water or polluted soil, or through direct consumption of

polluted water or products from polluted soils. Serious health conditions, such as cancer, congenital malformation, low birthweight, respiratory disease and neurological disorders, and premature mortality have been associated with exposure to waste and pollution by poorly managed landfills (WHO-EU-Web, 2021).

Environmental noise is unwanted or harmful outdoor sound created by human activities including noise created by road, air and rail transportation, industrial activities and urban life – car or house alarms, large gatherings of people, machines and engines, etc. – (WHO-EU, 2010, p.37). Exposure to chronic noise can affect mental health leading to negative behavior, anger, reduced attention span and anxiety. Noise can cause sleep deprivation which, in turn, can lead to a weakened the immune system, hyper-tension, and serious stress levels (Barton, 2017, p. 98). Other health impacts of chronic noise are on raised blood pressure, a raise in cardiovascular diseases, hearing impairment, tinnitus which at the same time impacts mental health and can produce cognitive impairment [problems with reading, recall, recognition and attention] particularly in vulnerable populations like children, or people already suffering from conditions (WHO-EU-Web, 2021).

The built environment can expose people to excess heat due to an effect know as Urban Heat Island (UHI). An urban heat island is characterized by the temperature difference between the urbanized area and its surrounding rural region, and has been noted as one of the most evident climatic manifestations of urbanization (WHO-EU-Web, 2021). Higher temperatures in urban environments are due to different reasons; the solar energy captured, stored, and released by urban surfaces; the effect of urban geometry on the release of heat, convection, and advection; evapotranspiration; and anthropogenic heat sources. Urbanized areas modify local temperatures, but also other meteorological variables such as wind speed and direction and rainfall patterns. The magnitude of the UHI for a given town or city tends to scale with the size of population, although smaller towns of just thousands of inhabitants can have an appreciable UHI effect. The UHI “intensity” (the difference in temperature between a city center and a rural reference point outside the city) is on the order of a few degrees Celsius on average, but can peak at as much as 10°C in larger cities, given the right conditions. Urban expansion will exacerbate the heat island effect, and urban land cover in a global sample of cities was shown to be increasing at more than twice the rate of urban population growth. When expansion takes the form of urban sprawl, it adds more area covered by impermeable surfaces, longer travel distances generating more vehicle trips and air pollution, and more buildings generating heat emissions (Rydin et. al, 2012, p.20). Urban heat islands contribute to higher daytime temperatures, reduced nighttime cooling and higher air-pollution levels, directly affecting health through heat exposure, which can exacerbate minor illnesses, affect occupational performance, or increase the risk of hospitalization and even death. During heatwaves – high temperatures and a lack of wind to provide ventilation and disperse the warm air – UHIs tend to increase temperatures in an additional 1 to 2°C, an effect that has been linked to substantial increases in mortality and morbidity (Rydin et. al, 2012, p.21).

Exposure to stressors in the built environment can have great impact on the three dimensions of health [physical, mental, social]. Stressors are those elements or situations that can “cause a state of strain or tension, great worry or emotional difficulty” (Cambridge, 2021), therefore, in the urban environment it includes forms of pollution and excess heat, as discussed so far, and spatial

quality. Stress is expressed physiologically through changes in the body with increased levels of circulating stress hormones, mainly cortisol, and even reduced immune system functioning (Ulrich, 1992, p.21). Prolonged and cumulative high levels of cortisol can lead to chronic diseases such as hypertension (Pinter-Wollman et.al, 2018, p.4). Psychologically, stress is manifested in a sense of helplessness and distress that may lead to mental health disorders such as depression and anxiety. Regarding social health, and behavior, stress is associated with a wide variety of reactions, including social withdrawal [leading to isolation], sleeplessness and abrupt mood changes (Ulrich, 1992, p.21).

Certain spatial properties of the built environment – such as urban scale, large [and mostly emptied out for car traffic] streetscapes, street layout based on long blocks paired with closed off facades and high-rise buildings, poor lighting at night, traffic intensity and density [and the noise and smell it produces], typologies of open spaces that make them empty of furniture or natural elements, architectural features apart from the empty facades in the form of high complexity [read as chaos] in facades, expanses of empty space, poor accessibility to buildings' entrances, and presence of multiple obstacles in sidewalks [or the absence of sidewalks all together] (Pinter-Wollman et.al, 2018, p.4), can cause people to feel insecure, uncomfortable, fearful, disoriented, dependent, inhibited and/or excluded, which fuel stress and anxiety levels (Phillips et.al, 2013, p.114). Ulrich (1992, p.21) recognized that environments characterized by what he calls '*low control*' [spaces where the user has little self-determination or independence] and '*high responsibility*' [spaces where the individual must work hard mentally and physically] were lacking adequate 'break areas' or areas to rest, reducing the sense of control and increasing stress by making it difficult to 'escape' briefly from work demands, although he conducted his research in interior spaces, his findings are applicable to exterior spaces at different scales, from a bench to sit on a street to larger natural areas to 'escape' the built-up spaces of a city. Many cities have what Chinchilla (2020, p.118) calls 'hostile architecture', which are design elements in urban space or urban furniture that are made to deter people from lingering long at a particular place, or make the space deliberately uncomfortable to sit enough time to rest. In general, Dillon (2005, p.11) summarizes the physical characteristics of spaces that are perceived as positive build on the need for a balance in the landscape between coherence [or how orderly or organized a space appears] and complexity [the number of elements and activity present that is not perceived as chaos but liveliness], and between legibility [or how easy it is to navigate the space] and mystery [how much more there is to the space than is initially perceived].

Exposure [or lack thereof] to natural environments [green and blue spaces] can have restorative properties against stress and its associated issues. Research on this topic shows that contact with nature has an important positive impact on mental health, by considerably reducing levels of stress and anxiety. This contact ranges from just being able to see nature or natural elements from where the individual is, to immersing themselves in natural areas or reserves; this last one with the added value of physical activity which also lowers stress levels (Phillips et.al, 2013, p.114).

Ward-Thompson et. al (2012) conducted an interesting study to tie subjective measures of self-reported mental health and levels of perceived stress, with an objective measure using cortisol [the stress hormone] secretion levels and the circadian cycle as biomarkers of chronic stress. They measured cortisol levels of the research subjects before and after they were exposed to

green space, and controlled the experiment with days without contact with green space. Their findings showed that both the self-reported stress levels and the measured cortisol levels had the same result, the days people had contact with nature, stress levels were reduced. This supports previous experimental evidence that natural environments are associated with stress reduction, and that this association is not the result of physical activity [which was thought to be the main reason for lower stress levels while in natural areas], but only by contact with natural elements during regular visits to green space or just views of green space from where the people were located. Two other significant studies support this theory, particularly in the fact that only by being able to look at a natural setting, even from a window, anxiety will be reduced thus improving overall health. In his research, Ulrich (1984) studied patients that were recovering from a surgery [a type of subject that presents high levels of anxiety which makes the findings more significant] and noted that patients with a room with a view onto natural elements, recovered faster, stayed in the hospital less time and had a better mood during their stay than those that had a view to an empty wall. Kaplan (2001) conducted a similar study, considering the types of views from the windows of residential homes and self-reported mental wellbeing assessments from the residents. People reported less stress and more 'peace' when the view from their window was a natural setting or had natural elements. It is important to note, that her findings showed that it was not just looking at nature [as they were also showing printed images of nature to the residents of ideal natural spaces] but it is the awareness of the presence of nature in the vicinity.

Knowing what the presence and contact with natural spaces and elements can do for a person's mental health, it can be deduced that the lack of contact with green space has negative effects, with less opportunity to find balance, stress could only accumulate. In another study carried out by Ward-Thompson et.al (2008, p.136) they find that not only is the lack of green space contributing to prolonged periods of stress, but also it also prevents the development of a relationship with nature for children, and consequently thwarts the relationship adults have with nature and natural space. In their study they found that a very small percentage of children has frequent exposure to woodlands or natural environments and that the outdoor play opportunities afforded to previous generations are scarce and not easily available to most children, whom are increasingly relegated to backyards, basements, playrooms, and bedrooms, and for some, play time represents time with the TV, video games or smartphone. Some of their results suggest that children's contact with the natural environment is crucial to their social and cognitive development, as it provides them with space to play, to interact with each other, and to understand the outer world (Ward-Thompson et.al, 2008, p.134). The study, then, goes forward to understand the consequences of this lack of contact with nature in childhood on the relationship and behaviors towards nature and natural environments that people will have in adulthood. The findings in this regard suggest that lack of a green space experience in childhood may inhibit the desire to visit green spaces as an adult, pointing to a more complex relationship with the outdoor environments, that can have positive impacts into adulthood, especially regarding behavior. Making the link between childhood experience and adult behavior or perceptions, the study suggested that if children miss out on their "*earth period*" they may lose their bond with nature as adults (Ward-Thompson et.al, 2008, p.135). It is important to note that 'distance from home' was a very strong variable in determining how frequently and how long would people visit parks or natural areas in their childhood, and that, aside from their attitude towards natural environments and tendency to

visit, distance was also a major factor, underlining the importance of availability and accessibility to natural spaces and elements in urban settings.

The built environment affects health by encouraging or discouraging behaviors that benefit or hurt people's health, especially physical health by allowing for physical activity, but also mental health by provoking social isolation. Sedentary behavior has been linked to weight gain and obesity which are precursors to a range of chronic diseases like type 2 diabetes and other metabolic disorders, coronary heart disease, hypertension, osteoporosis, breast cancer, colon cancer, anxiety, depression and dementia, among others (Frank et al., 2019, p.321).

Luckily, the health benefits of physical activity typically occur at low levels and increase exponentially with more activity, so even small changes to lifestyle and behavior can have a significant impact on health. Walking is an activity that individuals across the spectrum can practice to reduce the risk of ill health (Frank et al., 2019, p.322). However, the sprawling development patterns that cities have followed are often car-oriented, and not convenient to access key destinations by walking or by riding a bicycle. Newman and Kenworthy (2015, p.175) call this development pattern the "*automobile city fabric*", with characteristics such as monofunctional uses like low residential density of mostly single-detached homes or separated 'islands' of commercial developments with large parking lots located in the edges of residential districts or highway intersections and poor street connectivity and permeability, which means large blocks, low intersection density and the need to travel long distances to access services and other infrastructure.

Streetscape design in favor of car traffic is the main deterrent to active everyday life. As street space was opened up for cars, pedestrians were pushed to the sides onto narrow sidewalks and up against building facades. This lack of room to walk creates crowded sidewalks where people are squeezed together and forced to walk in columns at the speed dictated by the stream of pedestrians (Gehl, 2010, p.122). The elderly, the disabled and children are the most affected not being able to keep up with this speed, basically forced into cars for safety and comfort. On top of the lack of space to walk, sidewalks are full of obstacles and barriers which pedestrians need to navigate in order to move around the city. All types of elements meant for car traffic crowd the sidewalks and reduce the already narrow walking surface: traffic signs, parking meters, traffic lights, lampposts, advertisements, even elements placed to improve the environment like planters or benches become obstacles because of the lack of space. Other obstacles are placed with the intention of keeping pedestrians from walking or crossing at particular points, such as fencing at intersections that detour people unnecessarily (Gehl, 2010, p.123), giving the car free and faster pass. Certain obstacles, however, are not as easily distinguishable because they have become part of a standardized street design that makes access for motorized vehicles as easy as possible, in detriment for the comfort and safety of pedestrians. Interruptions in the sidewalk surface and level in the form of vehicular entrances to buildings, garages, driveways, delivery gates, etc. are obstacles that are probably felt more by those that don't fit the standard of the productive, able-bodied, young worker, like people in wheelchairs, people pushing strollers, people with low mobility, the elderly, children and the visually impaired. On top of this, pedestrians face long waiting times at stoplights in busy intersections where they have to apply for the signal to change in their favor and be able to cross the street. Pedestrians re given such low priority that the waiting

time is long, but the crossing time is too short, which leaves people with low mobility, children and the visually impaired in a more vulnerable position against car traffic (Gehl, 2010, p.124).

Another way in which the built environment repels people is described by Gehl (2010, p.127) as "tiring length perspective" which happens when, while walking in a city, a person can see an entire stretch of their route at a glance and immediate feel tired from the walk, even before starting the journey. The physical characteristics of the route are similar to those described above when discussing spaces of anxiety, straight seemly endless route, repetitive, without any focal points or changes at the edges [building facades that are closed off or repetitive] and so the path appears longer than it actually is. This effect can be typical of homogenous, single-use areas with long blocks and little opportunity for turning the corner and changing routes (Jacobs, 1961, p.182). An urban structure that doesn't allow people choices in their routes [even if they choose the straight line] takes agency and self-determination away from them, and the feeling of being out of control and out of place creates more anxiety, impacting physical health in turn.

Cycling is another recommended form of physical activity that can be practical for everyday life, especially for short and medium distances. However, taking up cycling as a means of daily transport is made difficult, inconvenient and dangerous by the prioritization of motorized traffic (Gehl, 2010, p.124). Apart from the lack of adequate cycling infrastructure and bicycle parking, the speeds allowed to motorized vehicles in city streets make it a dangerous environment for cyclists, whom, if they choose to ride on the sidewalks, would then become either an obstacle of a cause of injury for pedestrians.

The combination of discomfort, annoyance and sense of insecurity, especially for those more vulnerable, causes people to look for alternatives to move around the city and avoid walking or cycling, extending the time that people spend sitting down.

There are different ways in which the built environment impacts people's health. It exposes people to environmental hazards that can impact the body and the mind, harmful agents and stressors that disrupt their good functioning. Poor environmental quality, air and water pollution, poorly managed waste, noise levels, excess heat, all have an important impact on health outcomes. Because of strong connection between mental and physical health, everything that affects body functions will trigger a psychological response and everything that bother the mind can have a physical manifestation. Urban scale can feel daunting and trigger negative mental issues, too large and empty spaces, multiple lane streets to cross, long blocks with closed off facades, high-rise buildings at the edge of sidewalks, poor lighting at night, traffic intensity and density, expanses of empty space, poor accessibility and multiple obstacles on the way, all these spatial features of the built environment can cause anxiety and other negative mental issues, and yet, the presence of too many elements, and the perception of chaos can trigger similar responses, so there needs to be a search for balance between complexity and order, between legibility and surprise. How much of the environment is natural [vegetation, wildlife, water bodies], also affects health. Less contact with natural elements prolongs the influence of stressors and it can impact human development since childhood. Physically by reducing the opportunities outdoor play and other physical activity, but also psychologically as the relationship with nature becomes weaker. The built environment can also influence the decisions and choices made, an inhospitable environment can deter people from engaging in certain life activities, provoking

isolation and sedentary lifestyles, which can lead to both physical and mental issues, but also, weaken the social dimension of health, the human relationships and connections of a person.

So, health is a person-centered concept. It is a positive state of being and a personal experience. It involves the body, the mind and what surrounds the body: the environment and other people. It is an outcome of biological and psychological functions and the of both. It's a resource for living that allows people to participate and function in society; it's the capacity to adapt to changes in the environment and respond with agency and control, to cope with adverse situations and to satisfy one's own basic needs. It is not an absolute state or a goal achieved but a constant search for balance.

2.3. Wellbeing

2.3.1 Defining Wellbeing

Wellbeing is a multidimensional concept, as such, the approach of this chapter was to build a wider understanding of it based on concepts of inclusion and health, and build a final definition.

As discussed earlier, the broader approaches to a definition of wellbeing either center the concept on people and their life experience [a basic element of inclusion] (Hamraie, 2013), or suggest a direct links to the meaning of health (McCartney et.al, 2019). The strongest link between wellbeing and health is with the second dimension of health: 'mental health'. Wellbeing and 'good mental health' have the same meaning and tend to be used indistinctively. In psychology, the term for 'good mental health' is "*flourishing"* which Huppert and So (2013, p. 838) define as the experience of life going well; a combination of feeling good and functioning effectively, synonymous with a high level of mental wellbeing, and it epitomizes mental health. Additionally, Andrews (2014, p.33) states that the concept of wellbeing broadly concerns the optimal functioning of an individual, which is linked to 'good physical health'. The links to 'social health' are not as direct, however, if health is considered a resource that allows functioning and participating in society (McCartney et.al, 2019, p.22), participation in society helps build relationships, the lack of this resource can lead to isolation, depression or anxiety, which are signs of a lack of wellbeing [lack of 'good mental health']. From this concept, though, health and inclusion are more directly connected, precisely because participation is a basic part of the definition of inclusion, and so inclusion and wellbeing can be linked this way. However, wellbeing and inclusion can be linked directly. Jansen et. al (2014, p.372) suggest that individual wellbeing is positively associated with perceptions of belonging and feelings of authenticity, which are the two dimensions for their definition of inclusion.

Beyond the concepts based on inclusion and health, three conceptual frameworks stand out that can complement these concepts, to define what will be understood as '*human wellbeing*' in this thesis. Roberts et. al (2015, p.15) suggest that wellbeing requires that a person's basic needs are met, that individuals have a sense of purpose, that they feel able to achieve important personal goals and participate in society. They propose using a conceptual framework of human wellbeing called *PERMA*, which stands for *P*ositive affect, *E*ngagement, positive *R*elationships, *M*eaning and *A*ccomplishment and the balance of these elements to achieve wellbeing. Here, 'positive

affect' is related to positive feelings or emotions [happiness, joy, contentment, peace]; 'engagement' refers to participation in society; 'positive relationships' are the connection developed with other people; 'meaning' is related to a sense of purpose and belonging; and 'accomplishment' refers to fulfilling goals and achieving full potential [from a personal perspective] (Roberts et. al, 2015, p17).

The second reference framework was developed by Huppert and So (2013, p.849) for concept of 'flourishing'. They propose this framework to evaluate a person's state of wellbeing at any given time in their lives. It has ten features that derive from PERMA's five elements, and are complemented by adding 'emotional stability', 'optimism', 'resilience', 'self-esteem' and 'vitality'. 'Vitality' would depend on the person's circumstances, and it's related to how active a person is, and how much energy and strength they feel. 'Self-esteem' can be influenced by the capacity to participate, the autonomy one has and a sense of individual self. 'Resilience' refers to the capacity a person has to "bounce back" or recuperate after serious illness or issue, but also the capacity to endure that issue, it can demonstrate how adaptable a person is.

The third reference framework is the result of extensive research conducted in Australia by the Royal Melbourne Hospital Foundation. It is based on actions that should be taken in order to improve wellbeing. The framework called "*Five Ways to Wellbeing*" proposes balancing 5 elements: connect, be active, keep learning, be aware and help others. 'Connect' is related to social interactions and relationships, the importance of developing connections with family, friends and neighbors for support and to strengthen a sense of belonging. 'Be active' refers to lifestyle choices, and physical activity adapted to people's circumstances, particularly related to being outdoors with an emphasis on walking in nature. 'Keep learning' encourages discovering what is out there, learning new things and stimulating the mind. It is related to a sense of achievement, competence and confidence. 'Be aware' refers to noticing the surroundings and the activities and situations happening outside the usual places. It is bout engaging with the new and unknown. 'Help others' is about finding a sense of purpose by becoming part of a community, participating in a cause, and finding a group or community to support. (Pinter-Wollman, 2018, p.4).

The concepts in these three frameworks coincide with each other, and they can also be connected to concepts of health and inclusion. *Table 2* was made in order to better understand these connections.

WELLBEING FRAMEWORKS				
PERMA	FLOURISHING	5 WAYS	HEALTH	INCLUSION
				human scale; inclusive
				accessible
				safety; care
				short distances; proximity
				legibility; permeability
				barrier free
				diverse, mixed, dense
				choice, opportunities
				integration; multifunctional
positive emotions	positive emotions		balance	connected; connectivity;
engagement	engagement	be aware		inviting; engaging; lively
meaning , purpose	meaning	help others		sense of belonging; identity
relationships	positive relationships	connect		social interaction; cohesion
	resilience			flexible; adaptable
	self-esteem		autonomy; independence	self-determination; freedom
	vitality	be active	active lifestyle; physical activity	
accomplishment	competence	keep learning	active learning	
			people-centered	people-oriented
			livable; full of life; lively	
			easy mobility; active travel	
			enjoyable; play-full; leisurely	
			extensive green and blue	
			quality air, water, food	
			pollution free	
			adequate soundscape	
			comfortable microclimate	

Table 2. Conceptual connections between wellbeing frameworks, heath and inclusion. Source: made by author.

2.3.2 Environments of Wellbeing

Having analyzed the way the built environment [negatively] impacts inclusion and people's health– and therefore, their wellbeing, it is possible to define what kind of environments are supportive of wellbeing.

Environments of wellbeing support human relations, they offer opportunities to create groups or to become a part of one, to develop a sense of belonging and allows people to consolidate social cohesion. They are inclusive, they permit different types of people to come together and interact; they are free of obstacles and barriers, are accessible. They offer a variety of spaces, for different types of activities, there is always something happening. They spark interest, are inviting, welcoming and accessible to many different types of people. They are comfortable and convenient; they help people feel safe and calm. They have a human scale, they are easy to navigate, easy to get to and to move about. They promote healthy behavior, people from different age groups can find plenty of options for physical activity, leisure activities and they will not feel out of place. They contribute positively to the three dimensions of health, they have good environmental quality, good soundscapes, clean air and water. They are flexible and adaptable, and are constantly evolving, improving, striving to include more people. Environments of wellbeing are made focusing on the needs and wants of *all* the people.

2.4. Conceptual Model: Guiding Principles for the City of Wellbeing

After having defined the concepts of wellbeing based on health and inclusion, and understanding what environments of wellbeing are, a simple conceptual model can be proposed to synthesize all previous knowledge into 4 principles. These principles encompass all the concepts derived from wellbeing and guide the analysis and definition of the spatial components an environment of wellbeing should have, which is the objective of the following chapter.

Figure 1 is a diagram of the model showing the relationships between the different concepts and their categorization into the four key words of the guiding principles.

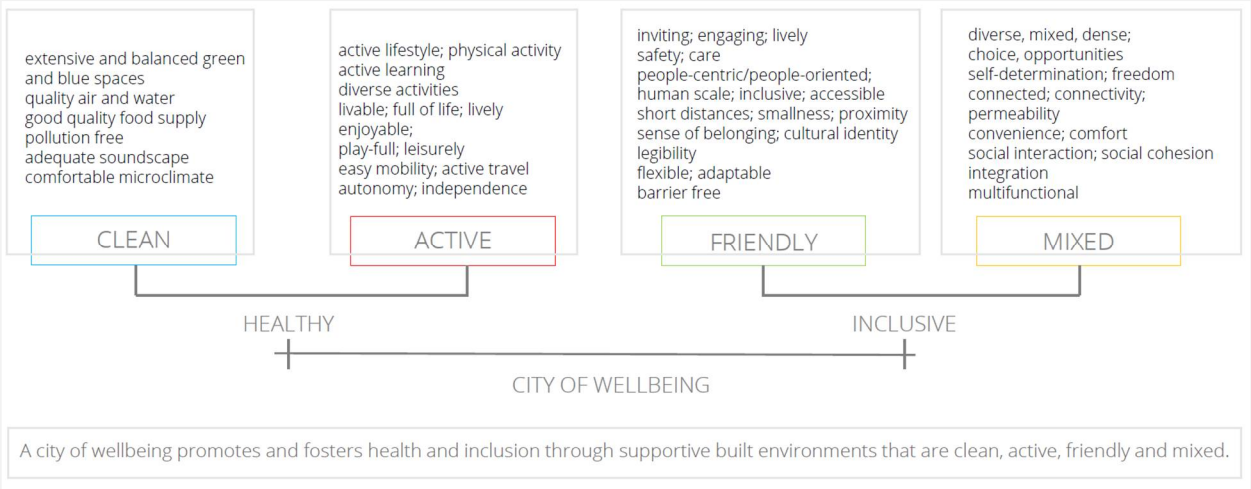

Figure 1. Conceptual model for the City of Wellbeing. Source: made by author.

A city of wellbeing has a large variety of green spaces, quality blue spaces, and offers different opportunities to come in contact with nature, nature is everywhere; the air is as free of pollution as possible, it has a comfortable microclimate, and adequate soundscapes; it is constantly improving and evolving to find balance. It is a city that is clean.

A city of wellbeing is a lively city; there is always something happening, something that sparks interest, it is a play-full city, people of all ages can find spaces for leisure activities of their interest, it is enjoyable to spend time there, there are diverse activities and plenty of opportunities to lern something new. It allows for autonomy and independence and encourages physical activity with inviting and comfortable spaces. It is a city that is active.

A city of wellbeing is inviting and engaging, everyone wants to be there and feel comfortable, feel like they belong. It is people-oriented, it has a human scale, people can move at human speeds, people feel safe and at ease. Distances are short, places are accessible and there are no

obstacles for all types of people to feel to enjoy the city. It is legible, it is easy to move about without getting lost. It is flexible and adaptable to people and their activities, and constantly evolving to include more people. It is a city that is friendly to all.

A city of wellbeing is diverse; there is diversity of people, places and choices; it is multifunctional, different activities all mingling together; everything is close by and conveniently connected, it's easy to access. It is dense [not overcrowded] and it offers plenty of opportunities to see people, to interact with them, and this opens the possibilities to develop social cohesion, to build a neighborhood. People feel comfortable, free, integrated in the community. It is a city that is mixed.

A city of wellbeing is a city focused on people that promotes and fosters health and inclusion through supportive built environments that are clean, active, friendly and mixed.

3. Shaping the City of Wellbeing

The main objective of this chapter is to present the components[4] that are essential to a city of wellbeing for a healthy and inclusive urban environment. These specific objectives define the steps taken in order to arrive at the framework proposal:

- Analyze concepts in existing frameworks for healthy, inclusive and related types of cities.
- Extract elements that are most relevant to the city of wellbeing by assessing them through the conceptual model.
- Put together a series of components of the built environment that are necessary to transform or create a city of wellbeing.
- Choose best practice case studies that can illustrate the concepts proposed in each component.

The components are based on elements of other frameworks found in eight fundamental pieces of literature from authors dealing with related topics. These elements were classified and analyzed and finally assessed using the conceptual frame developed in Chapter 2. The components are put together into a framework that is the synthesis of this process. It is organized into categories that prioritize the smallest scale in city planning – the human dimension (Gehl, 2010, p.6) – in order to maintain the focus on [all] the people in cities. This categorization is also an attempt to understand the components as connected pieces that build on the previous one towards healthier and more inclusive urban environments.

This is an open framework and does not pretend to have all the ingredients for a functioning city. However, the components presented in this chapter have been identified throughout these research as being indispensable elements in order to transform cities into environments of wellbeing under the guiding principles of the proposed conceptual model. The order in which they are presented is also considered important since it prioritizes those that should be addressed first.

These components need to stay flexible enough and interpretative enough for cities to apply them according to their own context and realities. The case studies that will be presented in this chapter are chosen to represent what have been good practices, innovative ideas and successful referents, to illustrate the key concepts in each component.

This chapter answers the questions:

What elements make up healthy and inclusive urban environments?

What kind of actions can be taken to achieve urban environments of wellbeing?

It is divided into three main sections. The first section is based on the first two specific objectives of this chapter and will describe the process of defining the components and putting the framework together. The second section will present the framework structure and the third section will present the components. The third section is divided into three parts, each of them corresponding to a categorization of the components with the description of the components and their corresponding best practice case studies.

[4] an ingredient or a constituent part that combines with other parts to form a larger whole (Oxford, 2021).

3.1 Developing the component framework

The components and their framework are the result of a process of classification, analysis and synthesis based on elements found in the literature. The literature works were chosen for this process considering the approach of the authors is focused on quality of life and deal with inclusive topics; their compatibility with each other's proposals that although not having the same subject there are commonalities that point to possible solutions; the authors present their own frameworks for their vision; the topics developed are compatible with the objectives of this thesis, they either address the main topics of these thesis directly [health, inclusion, wellbeing] fit well within the conceptual frame of this research. Some of them form the basis of the original thesis proposal. Most importantly they put people at the center of their research and proposals and that is in line with the original premise of this research.

The authors also define their own set of elements within frameworks that, although not meant to address all aspects of city planning and development, emphasize the crucial impact these elements can have in producing important changes in the way cities are developed. This is in line with the purpose of this thesis and the type of framework intended.

From these frameworks, the elements that fit well with the principles of the conceptual model were extracted and classified into public space topics, mobility and systems topics, and built form and land use topic. Some elements in the authors' framework deal with the topics of this classification together, so these have been divided into separate items in order to match the categories. Elements of governance, public service provision, politics and purely sociological issues were not considered as they are beyond the scope of this thesis. Depending on the commonalities found among the elements in the authors' works, further classification within these categories was done. The subcategories found are the basis of the component concepts. It was found that within the original classification, some

Table 3 is the final classification of the concepts of the authors that form the base criteria to define the components in the proposal framework. In the table the different elements are grouped in rows to better read the commonalities. Spaces are left blank where the author's work does not address an aspect in that classification.

Several commonalities stand out as they are address by all or almost all the authors, which are in line with the inclusion and health concepts: green space, compactness and mix of uses, diversity and flexibility. These most common aspects guided the prioritization [order] of components in the framework. Other elements, although not common to all authors, constitute important aspects of the conceptual model so they were considered for the components as well. One element stands out because all the authors address it, and this is the prioritization of pedestrians in public space, and the end of car hegemony. Although they use different vocabulary to refer to this item, this evidences the important of this element as the first step towards a significant change in cities. It reflects the spirit of all these works that put the focus back on people, making it the first stepping stone in the framework's prioritization.

		Jacobs Life of Cities	Kenworthy Eco-City	Gehl Cities for People	Barton City of Well-being	Chichilla City of Care	Sim Livable urban density	Gill Child-friendly City	Jackish *et. al* Age-Friendly City
Built Environment – Built Form / Land Use	Urban Form	**Small blocks**. Frequent streets and opportunities to turn corners. Walkability and connectivity.	**Compact, mixed-use urban form.** Reduce urban sprawl and create more transit-oriented communities. People-scale, walkable development.	**Shorter distance, more people.** Carefully locate the city's functions for shorter distances between and a critical mass of people and events.	**Diverse neighborhoods.** Social networks and community. Locality, compactness and identity.	**The forest city** but dense and with public transport. Sustainable balance of greenspace, density and mobility. Compact districts.			**Regeneration of neighborhoods.** Accessible, walkable, safe and attractive outdoor environments, walkways and infrastructures.
Built Environment – Built Form / Land Use	Mixed Use / Density	**Primary mixed uses**. Multifunctional areas. People use them at different schedules. **Concentration**. Density specially in residences but also employment and leisure activities.	**Human centers.** The central city and sub-centers within the city emphasize access and circulation, high proportion of employment and residential growth.	**Integrate various functions.** Versatility, wealth of experience, social sustainability and a feeling of security in individual city districts					
Built Environment – Built Form / Land Use	Buildings	**Aged buildings**. Mingled and varied in age and condition. Close-grained distribution. **Subsidized dwellings**. Affordable housing options but within the city fabric. Support diversity in residence.		**The city at eye level.** Design the ground floor. Open up the edges between the city and buildings.	**Housing and social mix.** Quality housing availability and affordability.		**Diversity of Built Form.** Broad range of building types in close proximity. Visual variation. **Human Scale.** Concentrate on the eye level multi-sensory experience. Density in smaller spaces.		**Housing options.** Broader range of accessible housing options that cater to older people needs.
Built Environment – Public Space	Green Space		**Access to green space and food security.** The natural environment permeates and embraces the city. Protection of biodiversity and food-producing areas.		**Nature, greenspace, sun and sound.** Biodiversity enhanced by a network and variety of greenspace. Green roofs, walls, street trees. **Local food production.** Communal and easy access to fresh food. Convenient allotments.	**The pixel garden.** Small areas of green all over the city. Proximity or adjacency to community and public buildings and places. **Layered Landscapes.** Network of connected green spaces. Add small interventions as part of a larger scheme.	**Greater Biodiversity.** Natural life in the city layout with a multiplicity of smaller outdoor green space, and in the shape of buildings with green walls and roofs.	**Green play space.** Multifunctional green infrastructure and community gardens.	**Green spaces.** Find opportunities to introduce more usable green space for community use, like community gardens.
Built Environment – Public Space	Legibility	**City visual design**. Legibility and robustness by vitality and diversity. Landmarks and nodes at different scales.	**High-quality public realm.** Legible, permeable, robust, varied, rich, visually appropriate and personalized spaces.			**Shared Patterns.** Creative wayfinding embedded in the street design. Landmarks, nodes or patterns for place identity,	**Sense of Control and Identity.** Sense of identity. Aid orientation and navigation. Useful edge zones.		
Built Environment – Public Space	Flexible/Multi-use				**Active recreation.** Increase provision and variety of play spaces and space for leisure activities.	**Home without a house.** Spaces of social interaction with food production and preparation. Not-for-profit leisure activities.	**Diversity of Outdoor Spaces.** Interconnected, flexible and multipurpose variety of spaces. **Flexibility.** Buildings and spaces responsive to change at different scales. Multipurpose spaces.	**Intergenerational spaces.** Diverse, equally distributed play and social spaces that can be used by a variety of people. **Flexible space.** Multi-use community spaces, Playable spaces and Play streets	**Open social spaces.** Buildings and meeting places that serve as a location for health promoting physical and mental activity.
Built Environment – Public Space	Elements			**Invite people to stay.** Strengthen the elements that invite longer stays in city space.		**Loose-pieces urban furniture.** Flexible elements for people to reconfigure the space to their needs.		**Pop-up elements.** Bring the public space to life with playful encounters such as public art or creative elements	
Built Environment – Mobility / Systems	Mobility	**Traffic.** Reduce car traffic drastically. Street space sharing and road diets to add play space and walking space.	**Mobility priority.** Favor transit, walking and cycling infrastructure, with a special emphasis on rail.	**Reordering Priorities in mobility.** City space that is inviting and safe for pedestrians and bicycles.	**Transport priorities.** Accessibility. Adequate public transport and cycling infrastructure provision. **Active travel.** Walking and cycling for practical purposes. Closeness, safety and attractiveness of routes.	**Mobility á-la-carte.** Pedestrians first. Cars as guests. Shared streets and street space redistribution.	**Walkability.** Easy access and connectedness. Walking as the most convenient option for short distances.	**Pedestrian priority.** Remove or calm traffic. Traffic measures such as colorful crossings or shared spaces.	**Road safety.** Reduce through traffic and speeds. Increase cycling paths, walking paths. **Walkability.** Pavements free from obstacles. Accessibility of public spaces and buildings
Built Environment – Mobility / Systems	Systems		**Closed loop systems.** Technologies for water, energy and waste management.		**Sustainable urban water systems.** Comprehensive water management. Water sensitive planning. **Air quality.** Reduce pollution radically. Combat bad smells and traffic.				
Planning Process		**Analytical methods.** Use smaller scales and areas. Start from the neighborhood not the region. Learn from local people.	**A "debate and decide" process.** Involve different actors. Avoid "predict and provide", computer-driven processes. **Decision-making is sustainability-based.** Democratic, inclusive, empowering processes.		**Community engagement.** Making decisions in a pluralistic society. Equals providing information. Involvement of local people in development.	**Public engagement first.** Avoid paternalistic practices of participation. Local knowledge feeds expert research.		**Be opportunistic.** Act at the neighborhood level with activities led by children. **Engage children effectively.** Develop a sense of ownership of public space through co-creation.	**Civic participation.** Working groups in the district for actions, who lead or supervise projects
		Jacobs, J., 1961. *The Death and* ***Life of Great*** *American* ***Cities***. New York: Random House. p. 150 / p. 321	Kenworthy, J., 2006. The **eco-city**: ten key transport and planning dimensions for sustainable city development. *Environment & Urbanization*, 18(1), pp. 67-85. p. 68	Gehl, J., 2010. ***Cities for People***. Washington DC: Island Press. p.232	Barton, H., 2017. ***City of Well-being****: A radical guide to Planning*. New York City: Routledge Taylor and Francis. part III p. 79	Chinchilla, I., 2020. *La ciudad de los Cuidados: salud, economía y medioambiente* [*The* ***city of Care****: health, economy and environment*]. Madrid: Catarata. p. 55	Sim, D., 2019. *Soft City.* ***Building Density for Everyday Life***. Washington DC: Island Press. p. 339-341	Gil, T., 2017. *Cities Alive.* ***Designing for Urban Childhoods***. London: ARUP. p. 52-53	Jackisch, J., Zamaro, G., Green, G. & Huber, M., 2015. Is a healthy city also an **age-friendly city**? *Health Promotion International*, 30(S1), pp. 108-117. p. 114

Table 3. Categorization of elements of the built environment from the literature. Complete table. Source: made by author.

			Jacobs Life of Cities	Kenworthy Eco-City	Gehl Cities for People	Barton City of Well-being
Built Environment	Built Form / Land Use	Urban Form	**Small blocks**. Frequent streets and opportunities to turn corners. Walkability and connectivity.	**Compact, mixed-use urban form.** Reduce urban sprawl and create more transit-oriented communities. People-scale, walkable development.	**Shorter distance, more people.** Carefully locate the city's functions for shorter distances between and a critical mass of people and events.	**Diverse neighborhoods.** Social networks and community. Locality, compactness and identity.
		Mixed Use / Density	**Primary mixed uses**. Multifunctional areas. People use them at different schedules. **Concentration**. Density specially in residences but also employment and leisure activities.	**Human centers.** The central city and sub-centers within the city emphasize access and circulation, high proportion of employment and residential growth.	**Integrate various functions.** Versatility, wealth of experience, social sustainability and a feeling of security in individual city districts	
		Buildings	**Aged buildings**. Mingled and varied in age and condition. Close-grained distribution. **Subsidized dwellings**. Affordable housing options but within the city fabric. Support diversity in residence.		**The city at eye level.** Design the ground floor. Open up the edges between the city and buildings.	**Housing and social mix.** Quality housing availability and affordability.
	Public Space	Green Space		**Access to green space and food security.** The natural environment permeates and embraces the city. Protection of biodiversity and food-producing areas.		**Nature, greenspace, sun and sound.** Biodiversity enhanced by a network and variety of greenspace. Green roofs, walls, street trees. **Local food production.** Communal and easy access to fresh food. Convenient allotments.
		Legibility	**City visual design**. Legibility and robustness by vitality and diversity. Landmarks and nodes at different scales.	**High-quality public realm.** Legible, permeable, robust, varied, rich, visually appropriate and personalized spaces.		
		Flexible/Multi-use				**Active recreation.** Increase provision and variety of play spaces and space for leisure activities.
		Elements			**Invite people to stay.** Strengthen the elements that invite longer stays in city space.	
	Mobility / Systems	Mobility	**Traffic.** Reduce car traffic drastically. Street space sharing and road diets to add play space and walking space.	**Mobility priority.** Favor transit, walking and cycling infrastructure, with a special emphasis on rail.	**Reordering Priorities in mobility.** City space that is inviting and safe for pedestrians and bicycles.	**Transport priorities.** Accessibility. Adequate public transport and cycling infrastructure provision. **Active travel.** Walking and cycling for practical purposes. Closeness, safety and attractiveness of routes.
		Systems		**Closed loop systems.** Technologies for water, energy and waste management.		**Sustainable urban water systems.** Comprehensive water management. Water sensitive planning. **Air quality.** Reduce pollution radically. Combat bad smells and traffic.
	Planning Process		**Analytical methods.** Use smaller scales and areas. Start from the neighborhood not the region. Learn from local people.	**A "debate and decide" process.** Involve different actors. Avoid "predict and provide", computer-driven processes. **Decision-making is sustainability-based.** Democratic, inclusive, empowering processes.		**Community engagement.** Making decisions in a pluralistic society. Equals providing information. Involvement of local people in development.
			Jacobs, J., 1961. *The Death and* ***Life of Great American Cities***. New York: Random House. p. 150 / p. 321	Kenworthy, J., 2006. The **eco-city**: ten key transport and planning dimensions for sustainable city development. *Environment & Urbanization,* 18(1), pp. 67-85. p. 68	Gehl, J., 2010. ***Cities for People***. Washington DC: Island Press. p.232	Barton, H., 2017. ***City of Well-being*** *: A radical guide to Planning*. New York City: Routledge Taylor and Francis. part III p. 79

Table 3. Categorization of elements of the built environment from the literature. Part 1 of 2 Source: made by author.

		Chichilla City of Care	Sim Livable urban density	Gill Child-friendly City	Jackish *et. al* Age-Friendly City
Built Environment	Built Form / Land Use – Urban Form	**The forest city** but dense and with public transport. Sustainable balance of greenspace, density and mobility. Compact districts.			**Regeneration of neighborhoods.** Accessible, walkable, safe and attractive outdoor environments, walkways and infrastructures.
	Built Form / Land Use – Mixed Use / Density				
	Built Form / Land Use – Buildings		**Diversity of Built Form.** Broad range of building types in close proximity. Visual variation. **Human Scale.** Concentrate on the eye level multi-sensory experience. Density in smaller spaces.		**Housing options.** Broader range of accessible housing options that cater to older people needs.
	Public Space – Green Space	**The pixel garden.** Small areas of green all over the city. Proximity or adjacency to community and public buildings and places. **Layered Landscapes.** Network of connected green spaces. Add small interventions as part of a larger scheme.	**Greater Biodiversity.** Natural life in the city layout with a multiplicity of smaller outdoor green space, and in the shape of buildings with green walls and roofs.	**Green play space.** Multifunctional green infrastructure and community gardens.	**Green spaces.** Find opportunities to introduce more usable green space for community use, like community gardens.
	Public Space – Legibility	**Shared Patterns.** Creative wayfinding embedded in the street design. Landmarks, nodes or patterns for place identity,	**Sense of Control and Identity.** Sense of identity. Aid orientation and navigation. Useful edge zones.		
	Public Space – Flexible/Multi-use	**Home without a house.** Spaces of social interaction with food production and preparation. Not-for-profit leisure activities.	**Diversity of Outdoor Spaces.** Interconnected, flexible and multipurpose variety of spaces. **Flexibility.** Buildings and spaces responsive to change at different scales. Multipurpose spaces.	**Intergenerational spaces.** Diverse, equally distributed play and social spaces that can be used by a variety of people. **Flexible space.** Multi-use community spaces, Playable spaces and Play streets	**Open social spaces.** Buildings and meeting places that serve as a location for health promoting physical and mental activity.
	Public Space – Elements	**Loose-pieces urban furniture.** Flexible elements for people to reconfigure the space to their needs.		**Pop-up elements.** Bring the public space to life with playful encounters such as public art or creative elements	
	Mobility / Systems – Mobility	**Mobility á-la-carte.** Pedestrians first. Cars as guests. Shared streets and street space redistribution.	**Walkability.** Easy access and connectedness. Walking as the most convenient option for short distances.	**Pedestrian priority.** Remove or calm traffic. Traffic measures such as colorful crossings or shared spaces.	**Road safety.** Reduce through traffic and speeds. Increase cycling paths, walking paths. **Walkability.** Pavements free from obstacles. Accessibility of public spaces and buildings
	Mobility / Systems – Systems				
	Planning Process	**Public engagement first.** Avoid paternalistic practices of participation. Local knowledge feeds expert research.		**Be opportunistic.** Act at the neighborhood level with activities led by children. **Engage children effectively.** Develop a sense of ownership of public space through co-creation.	**Civic participation.** Working groups in the district for actions, who lead or supervise projects
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Table 3. Categorization of elements of the built environment from the literature. Part 2 of 2 Source: made by author.

3.2 The component framework structure

The synthesis of the previously described analysis is a framework composed of six items aimed at shaping the built environment to be supportive of people's wellbeing. The components of the framework are organized into three categories. The purpose of the categories is to classify the components into the three basic elements of cities: spaces, buildings and people.

The order in which the categories are presented is important. In line with the premise of the thesis, that the city of wellbeing is a city focused on people, the framework prioritizes the human dimension and the notion that life [people] in cities is the first building block above spaces and buildings (Gehl, 2010, p. 198). This order reverses the common approach of 'solving' for buildings and spaces first, leaving people for last and sometimes considered inconsequential. Traditionally, planning is managed at three scales, the city scale [large], the site scale [medium] and the human scale [small, or those details that the people experience firsthand and at eye-level], where this last scale tends to be paid less attention or not tended at all (Gehl, 1971; Gehl, 2010). This perspective ['life' first] puts the human scale as a first priority.

Consequently, this framework starts with the components that focus on putting people in the center of issues and prioritizing their needs, to then move on to other components that continue to build spaces that contribute to improving people's wellbeing.

This prioritization is important because cities around the world, although they share very similar issues, they don't share the same geographical, cultural or economic realities and will need to decide within the scope of components which ones to address first and this is the purpose of the categorization of this framework. *Figure 2* illustrates the categorization and order of components.

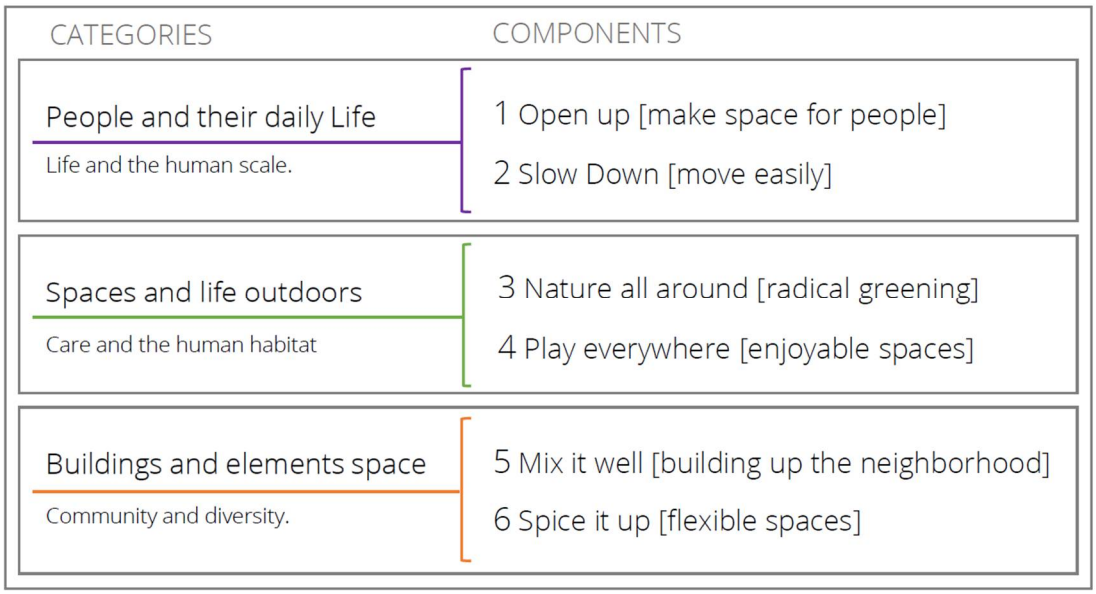

Figure 2. Diagram of the structure of the framework with categories and components. Source: made by author.

Having set the priorities, the components follow an order based on the assumption that one can be built upon the previous one to shape the urban environment for wellbeing.

The components in the first category focus on people and their daily lives. The first component focuses on removing barriers and obstacles [physical and psychological] to open up space for people to go about their daily lives conveniently and safely. Out of these barriers and obstacles, car traffic is the most crucial, so there is a need to radically reduce the presence of traffic in cities and make people the protagonist of the street. In order to go about their daily lives, the most common activity people undertake in streets in moving from one place to another so the second component argues that variety in mobility choices is key to moving easily and freely around the city. Mobility options made for many different types of people and connections between modes of transport thought for all types of people and all types of trips. Reducing traffic means slowing down to promote walking as the first choice. These components respond to three of the four principles of the conceptual model. Drastically reducing the traffic in a city contributes to clean air, reduced noise pollution, safer streets; removing barriers and obstacles encourages more people to go outdoors and be more active; spaces become more inviting, more people-friendly; there is space for more variety of people using the streets and for more variety of activities and this allows for more social interaction, for people to mix more, as people walk around and have contact with each other, there is more opportunity to build personal connections.

The components in the second category are essential elements to include in public space to improve its quality and encourage people to spend more time outdoors. The third component argues that green spaces are the most beneficial for a healthy environment, so the city needs to be re-envisioned with a great variety of green spaces and natural elements to form a network that weaves throughout the city. People should be able to encounter nature all around the city. This component responds to all the principles. Natural elements clean the air, the soil, the water, they regulate the internal microclimates of the city, they buffer noise, which enhances comfort and feelings of safety. Contact with nature reduces stress and encourages physical activity, so there is a tendency for people to become more active the more contact they have with natural spaces. Green places are more inviting and friendly to all types of people, and spending more time outdoors opens opportunities for social interaction and making connections. A mix of green spaces of different scales and purposes builds up the necessary networks that should be accessible everyone.

The fourth component argues that cities should allow for a better balance between ‘work’ and ‘life’, by changing the way spaces are used. ‘Play’ [and leisure activities] should be a part of everyday life experience for everyone in the city and people should be able to find opportunities for play everywhere in the city. This component responds to three of the principles. By allowing ‘play’ to be a possible activity throughout the city people would have more active lifestyles without changing much of their daily routine; places would become livelier and more enjoyable; creating play spaces friendly to all age groups encourages social interaction and contact. Creating a network with a variety of play opportunities mixed throughout open spaces creates choice that caters to a diversity of people.

The components in the third category focus on buildings’ and built elements’ contribution to community life and strengthening of local identity. The fifth component argues that all districts of the city have a potential to become a neighborhood and that people should be able to live everywhere in the city by making the city a ‘mixed use’ area [with only the critical exceptions]. In order to live everywhere, housing needs to become more diverse in options and styles, to cater

to all types of people of different incomes, households and lifestyles. Diversity of uses in close proximity to home contributes to building a sense of community with the people living close by. To enhance these human connections, the place should have elements that makes it stand out from other places, defining a unique identity. These components respond to two of the principles by arguing that diversity in the built form [by both buildings and smaller elements including art pieces] makes a place more lively, more engaging and contributes to further develop the people's sense of belonging to a place. Diversity can be enhanced by mixing in different uses and adding the necessary elements to act as landmarks or referents make spaces friendlier to navigate, more accessible, and inviting.

The framework is not a comprehensive and does not include every detailed aspect of city planning but together these components are the most relevant concepts that should be incorporated and/or given priority in city spatial planning in order to achieve a built environment that supports and fosters inclusion and health and wellbeing, and can contribute to a robust process of planning for wellbeing.

3.2 Components of the built environment

There are six components in this framework. The concepts for each component are drawn from the analysis of literature and synthesized to maintain the ones that better addressed the concepts of the guiding principles in the conceptual model. The chosen components address at least two of these principles, with most of them actually addressing three or the four principles.

This section is divided into three parts, each corresponding to one category, and their order is based on prioritization, making the first component the base upon which the rest can be built from. The first part, 'people and their daily life' addresses what is considered most essential to re-focus the built environment on people, the components in this category are the most important first steps to achieve environments of wellbeing. The second part, 'spaces and being outdoors' is comprised of the second building blocks of this city, that address what kind of spaces are crucial for a healthy and inclusive urban environment. The third part, 'buildings and elements that define space' are the third building block for a city of wellbeing, it will not define the exact types of buildings or elements to include, instead will point the ways in which these buildings and elements should work to define spaces focused on people, and how they contribute to community building.

The concepts defining each component will be followed by best practice case studies. The purpose of these is to illustrate the concepts presented, to further clarify what the component is set to achieve, and show what some cities have achieved and how they achieved it. These best practices are not presented as a thorough study of the case, but rather as examples of what the concepts behind the component can look like in a real-life case study.

3.2.1. People and their daily life │ Life and the human scale

This first category contains two components that are the first building blocks into a transformation of the built environment of cities towards wellbeing. As a first step, the city needs to be restructured so that it reflects that its main focus are people and their daily life activities. Because most cities have been planned and designed with another focus, urban structure has lost the human scale (Gehl, 2010), has relegated people to crowded sidewalks, scattered plazas or fenced playgrounds and given most of the space to motorized vehicles [specially the private car]. All of the experts in the literature agree that a city that wants to put people first can no longer be planned, designed and developed with the spatial and functional needs of motorized vehicles.

Urban space needs to be opened up for people, so they can go about their daily lives safely and comfortably. With more space, more people will be outside and it will be clear that their daily lives are not unidimensional, and that moving around the city is one of the most basic daily activities. However, in a car-oriented city, moving around conveniently, safely and freely is sometimes only possible if people drive [or ride in] a car. Not only are cars not an available choice for most people but they're speed is not compatible with the human scale. Human walking speeds should be a priority in cities, so slowing down is the next step in building the city of wellbeing.

1 Open up [make space for people]

This component is the first building block towards a city of healthy and inclusive urban environments. In the previous chapter the built environment was discussed highlighting the different ways in which it can affect inclusion, health and hinder wellbeing. The objectives of this component are to open up space for people by removing all barriers and obstacles that people face to go about their daily activities safely, freely and conveniently. The main driving idea is that people should be the focus of city planning. In order to re-focus on people it is necessary to change the hierarchy of street users, open up space for people walking, redistributing the use of streets and scale down [to a human scale] the spaces that are not proportioned to people walking.

As discussed previously, barriers and obstacles can be physical or psychological, and how much they keep people from participating fully of the city depends also on the people themselves and their personal circumstances. One particular source of both physical and psychological barriers is traffic. Parked cars on rows in the streets or stopped in a congested street can be a physical barrier for the free movement of people on foot. More impactful that that, car traffic can be a strong psychological barrier, making people avoid the streets all together, or certain parts of the city, or creating an environment that hinders social interaction.

Throughout the literature, authors agree that in other to return protagonism to the people in cities, the process must start by changing the hierarchy of users of public space, and since streets are the largest area of public space in cities, this change needs to happen there first. Streets are the backbone of a city, they define its structure, its functioning and they are design to offer connectivity

between and among buildings. This last function of connectivity is very important, however, not the only use a street should have. Since the automobile has had hegemony in the streets, their main use is that of mobility. Changing the hierarchy of the users of streets also requires re-distributing the street space to serve the multiple functions required for people to go about their daily lives easily.

Traffic is not the only important source of obstacles in streets for people to move about safely and freely, however, many of the elements in streets that also pose as obstacles to people are those related to traffic control [signage, entrances to buildings that cut through the sidewalk, etc.] If the streets are no longer designed for car traffic only, there will be more opportunity to remove these obstacles and to re-design public space to allow people with all levels of ability to move conveniently through the city.

Once cars are reduced dramatically, there will be out in public space, out in the street. More space available for people, will bring more people and the spaces will become full of life. More types of people will go about their different types of daily activities. This is a way of making people visible, and making their activities visible, and so, there will be better understanding of the diversity of a city, and the fact that there is much more happening in a city than 'productive' activities, more happening in the street than just 'driving'. After re-claiming all that new space, it will be necessary to adapt the spaces to the human scale again, to design them for more than moving from one place to another.

People going about different activities in the city, so their daily activities also become visible and it becomes clear that most do not fall into the standard [drive to work] scheme. By making the diversity of people and the diversity in their activities visible already within this newly opened space [which in most cases will be 'too large and empty' for 'just people' but it will allow for the proposal of new uses to the space, uses that will complement and respond to those activities people do, and also will allow for other activities to flourish adding to the city's diversity.

Streets need to be redefined as public spaces; as habitable places; as community spaces; as an extension of housing territory; as a space for games, greenery, history and local life of neighborhoods. Rethinking the city through new ways of grouping, based on traditional blocks, allows us to reconsider the role played by streets and, also, to foster interaction and social groupings. Streets have to go back to being guarantors of vitality throughout the entire urban fabric, to creating opportunities for the establishment of greenery and to promoting positive community life among local residents of all ages and origins.

For this component, two cases have been chosen as best practice examples of how to envision a new street order in a city with a strong focus on people and the belief that the street should be suited for more that mobility; the Barcelona *superblock* model and the Dutch *woonerf* model. The superblocks restructure the city, the woonerf re-imagines a multifunctional street with a clear priority on people and their activities. One of the models has inspired the other but it is worth looking at them separately because there are lessons to learn from both.

Re-organize the city: *Superilles* – The Superblock model – Spain

Superilles, or Superblocks, are a conceptual model for the reorganization of the city. Streets, as the first building block of urban structure, make up the highest percentage of public space in a city (BCN, 2016, p15). For much of history, human life in cities happened mostly in the streets, however, today's city streets mostly accommodate traffic activity and, in most cases, exclusively motorized traffic. The superblock concept aims at redistributing street space so that the majority of it is dedicated to people for their daily activities. It basically takes urban surface space now devoted to one use [automobile traffic] and opens it up to multiple uses [walking, cycling, hanging out, what have you]. In order to preserve adequate circulation of people, goods, and services using fewer vehicles on fewer streets, people need to be given other choices with more options of public transport and a good cycling network; at the same time channeling vehicular traffic that remains onto strategically chosen through routes (Vox, 2021). In order words, requires re-imagining the entire transport system, why shows that the superblock model cannot work in isolation but rather as an element of a larger plan of redistribution.

The superblock model was envisioned in 2002 for the city of Barcelona in Spain as an "*urban cell*" (Valerio, 2016) made of 9 of the square city blocks. 'Inside' the cell, traffic would be restricted and 'outside' the cell, traffic would be organized to prioritize public transport (Vox, 2021). *Figure 3* is an aerial view of the orthogonal grid of streets in Barcelona with a diagram of the traffic dynamics in and around the 'cell'.

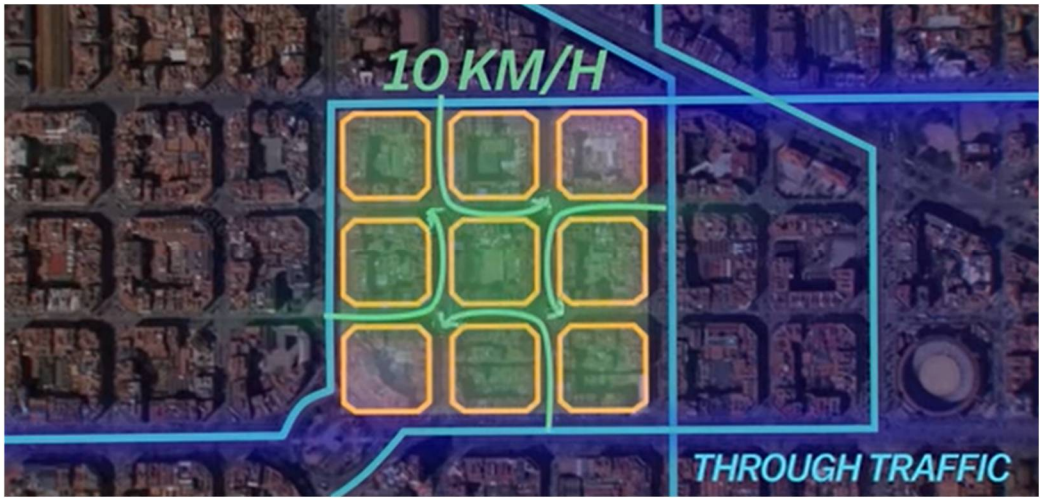

Figure 3. Superblock concept using the Barcelona grid. Source: vox.com (2021).

On the periphery of the cell, traffic would move freely, but within the cell, the driving speed would be limited to 10km/h (BCN, 2016, p. 15). This makes for a highly walkable area, reducing the risk of car accidents. Also, traffic inside the cell would be allowed only to give neighbors access to their garages and parking spaces (Valerio, 2016). With only one entrance and one exist for each block, as shown in *Figure 3*, through traffic is eliminated and inner streets remain for local use only.

On-street parking would be eliminated from the inner streets and replaced by underground parking (BCN, 2016, p. 15), and with reduced traffic moving within, the superblock's interior becomes a large shared space suitable for all sorts of elements and activities, that is safer, quieter and cleaner (Vox, 2021).

This scheme allows to liberate the most surface by reducing number of vehicles in circulation in a small percentage. For Barcelona, for example, the estimate is that with 13% less car traffic there will be a gain of 70% of free space. (Vox, 2021).

Barcelona is a very special city; it is compact and dense and has an urban fabric with a very regular and well-proportioned grid structure, characteristics that many cities in the world don't have (BCN, 2016; Vox, 2021). This means the superblock scheme, when applied in Barcelona, it is the idealized form, however, the model is designed to be generic and flexible enough to be adapted to any city structure (Mazumder, 2018). In fact, the first of the superblocks to be implemented in Spain was in a smaller city located northwest of Barcelona called Vitoria Gasteiz (Vox, 2021). Conceptually, rather than measuring city blocks, the superblock should cover an area of roughly 16 to 20 hectares, with distances between 400 and 500 meters along the borders of the area [the periphery of 'the cell'] in order to keep the area walkable to implement public transport stops on that periphery (Mazumder, 2018).

Vitoria Gasteiz is a great example of a city without Barcelona's 'advantages' that has successfully implemented the model using its city center as their "central superblock" [*Figure 4*]. In 2006, the city decided to adopt the model as a response to a crisis point, they had reached with traffic congestion, pollution and accidents, so their central superblock was completed in 2008. *Figures 5* and *6*, show how much space proportionally pedestrians now have compared to the space left for car circulation.

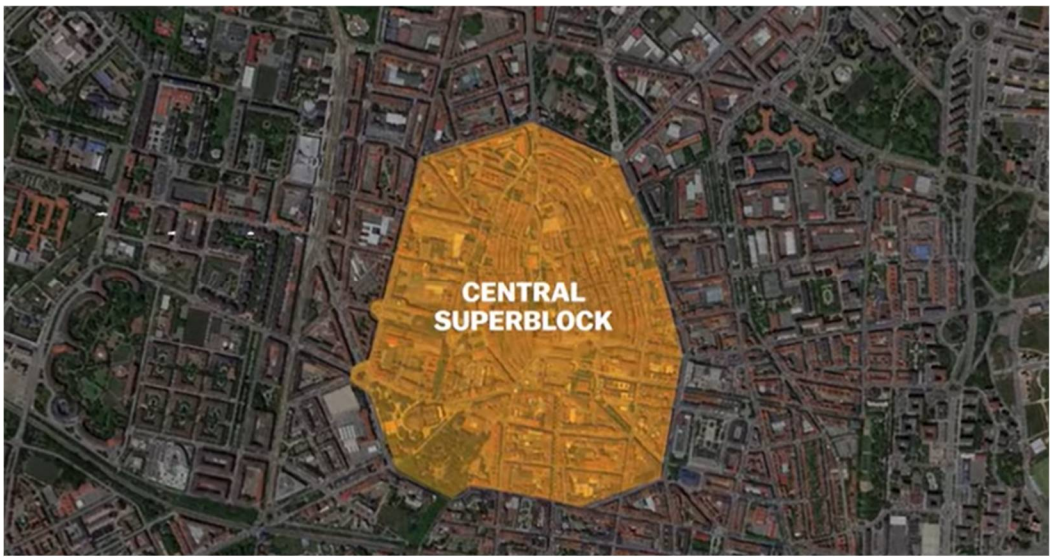

Figure 4. Vitoria Gasteiz Urban fabric and Central superblock. Source:civitas.eu (2021).

Figure 5. Vitoria Gasteiz central superblock. Source: ec.europa.eu/research (2021).

Figure 6. Vitoria Gasteiz central superblock. Source: ec.europa.eu/research (2021).

Expecting to address traffic related problems like air and noise pollution, the city gained more by reducing social isolation and improving public health with increased physical activity, and so, their original development plan that included all projected superblock continued to be developed, now projecting one of the largest and more ambitious superblocks towards the west of the city. *Figure 7* shows the map of the plan, with the 'periphery' streets marked in blue, and the other completed superblocks in green.

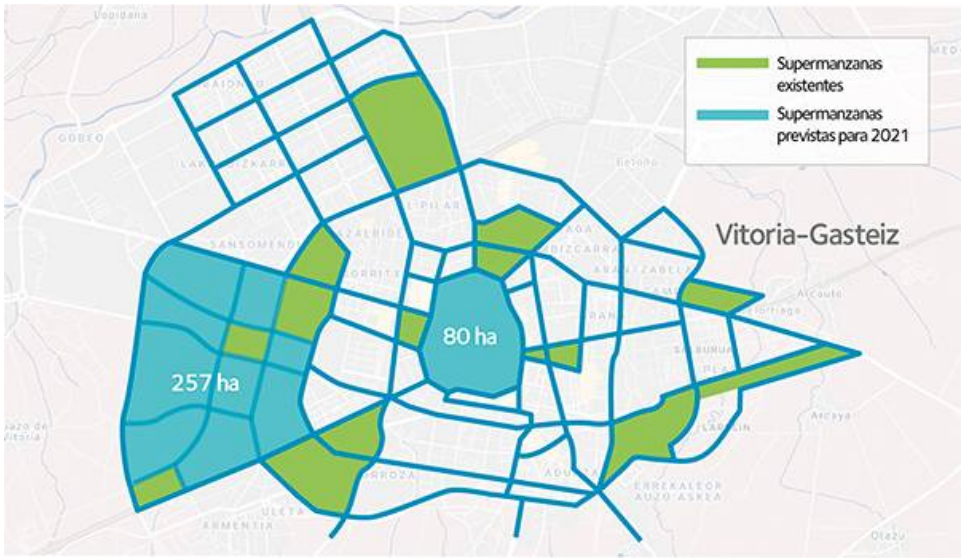

Figure 7. Vitoria Gasteiz. Superblock Masterplan. Source:civitas.eu (2021).

The results of the implementation of the central superblock were, by 2016: noise reduction from 65 decibels [dBA] to 60 dBA, nitrogen dioxide (NO2) has been reduced in 45% and particle pollution in 38%. The total car trips made in 2008 was 37%, reduced to 23% in 2016 and now with a goal of reducing the trips to only 16% by 2025 (Vox, 2021).

Pedestrian space increased from 45% of total public space to 75%, with only 12% less vehicles in circulation (Vox, 2021). With so much space gained, the city only needs to propose uses that will benefit its citizens further, and anything is possible, gardens, playgrounds, sports facilities, food courts, picnic tables, gyms, outdoor concerts, etc.

In Barcelona, the first superblock was implemented in 2017 in the neighborhood of Poblenou, a lower income area of the city with a very diverse population, which has enough public housing buildings that the decision to start with the implementation there was also to experiment if the presence of public housing can act as a deterrent, or stop altogether, any process of gentrification (Mazumder, 2018). At the beginning, there was very strong opposition to the changes, probably because they happened overnight without warning to the neighbors (Vox, 2021). A lesson the city learned to approach the next superblock differently.

Because of its block design, the intersections in Barcelona are very large, so all that free space needed to be built fast and inexpensively. The city chose to approach this with techniques of tactical urbanism, using creative elements and paint, and working together with designs schools of the University. The resulting spaces soon convinced the neighbors of the quality of their newly found space (Vox, 2021). *Figures 8* and *9* show some of the spaces designed.

Figure 8. Superblock in Poblenou. Intervention. Source: vox.com (2021).

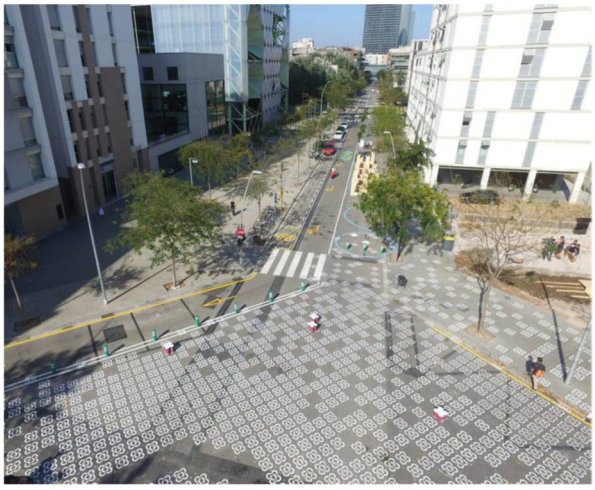

Figure 9. Superblock in Poblenou. Intervention. Source: vox.com (2021).

The risky experiment of Poblenou paid off for both residents and city, one gained a space that, after their fierce opposition to what they saw as an imposition, gained their right to organize and decide the types of activities that would take place in their neighborhood. The city gained insight into how to successfully approach implementation: have the neighbors be a part of the process. The second superblock to be implemented in the Sant Antoni neighborhood will advance more smoothly with the implementation of participatory processes and strategies, that have also been added to the city's development plan for the next ten years (BCN, 2016)

Streets for living: the Woonerf – The Netherlands

The *Woonerf* is a concept of a street in which people have priority over cars. In fact, the most basic idea is that children have priority about all and any form of transport (Appleyard, 1980, p.414). The concept has its origins in the 1960s as a response to increasing through-traffic in neighborhoods – and the subsequent accidents – and the loss of freedom to use the street for anything else but driving. At the time, cars were not so ubiquitous but their presence and domination of street space was already being felt by people, specially near their homes (Paja, 2015). Some authors attribute the concept to a document produced in the UK called the Buchanan Report (Karndacharuk et. al, 2014). However, it is in the Netherlands where the woonerf ['woonerven' for plural] was detailed and implemented, hence the use of the Dutch term, which is roughly translated as 'residential yard' (Paja, 2015). The official translation to English is 'Home Zone' in the UK and 'Shared Street' in the USA. Other countries have their own interpretation and adaptation of the woonerf, which is the case of the 'commercial shared street' in the USA, or the Wohnstrasse in Germany (Paja, 2015; Mazumder, 2018).

As its name says, woonerf is a street in a residential area that has been modified to have several uses, not jut the transit of vehicles. One of the most important uses of this street is children playing, so the design must be such that cars entering the zone are aware that they are [uninvited] guests and will be held responsible for any accidents or injuries (Appleyard, 1980, p.415).

In order to achieve this, the design should have several basic characteristics: (1) there shouldn't be a difference in the levels of the entire surface of the street [no curbs], (2) the space available for circulation should not be a straight line but rather curving or zig-zagging to avoid speed increases, (3) cars can only circulate at speeds that match people walking speeds or a maximum of 10km/h, (4) pedestrians can use the entire street, walk, cross or stay and children can play anywhere, however, motorized vehicles should be allowed to pass, and access to emergency vehicles should be maintained (5) clear 'access' and 'exit' points should be marked with signage, (6) apart from the winding transit surface, other traffic calming measures must be implemented like speed bumps, cushions, narrow lanes or small radius in the corners, (7) on-street parking for the residents is allowed at intervals so cars are not parked in long rows, (8) introduce elements that add comfort, aesthetics and invite to stay such as street trees, flower planters, good lighting and pavers. Paver design and color can be used to distinguish surfaces for different uses, transit area, house fronts, parking, play spaces, (9) whenever possible a play area should be introduced on either side of the street, as well as other street furniture that encourages to stay and rest such as benches (Appleyard, 1980; Karndacharuk et. al, 2014; Paja, 2015). *Figures 10* and *11* are graphic representations of the concept for residential areas. *Figures 12* and *13* are examples of the woonerven in the Netherlands.

Figure 10. Concept of the woonerf as a shared residential street. Source: (NACTO, 2016).

Figure 11. Concept of the woonerf as a shared residential street. Source: (NACTO, 2016).

Figure 12. Traditional Dutch woonerf. Source: linkedin.com (2021).

Figure 13. Traditional Dutch woonerf. Source: midtowncommunityworks.org (2021).

The woonerf has been the basic concept behind different iterations of what is now most recognized as 'shared streets', that keep the same principles of a space [a street] where pedestrians, cyclists and vehicles can co-exist peacefully and safely (Mazumder, 2018) and prioritizing the pedestrian. The iterations around the world also vary in names, scope, types of elements and types of restrictions [some allow a speed of 30km/h], depending on street characteristics and the country's legislative, economic and cultural environments. They are usually classified as "road user integration schemes" and are designed as part of a network of street hierarchy (Karndacharuk et. al, 2014). The most common one is the 'shared street' that has been used in commercial areas, with different amenities to the original woonerf, more space for restaurant tables, bicycle parking and vehicle parking only for temporary parking of delivery trucks, but the rest of the features are maintained (Paja, 2015). *Figures 14* and *15* are examples in the Netherlands.

Figure 14. Woonerf in a commercial city center. Source: midtowncommunityworks.org (2021).

Figure 15. Woonerf in a commercial area. Source: midtowncommunityworks.org (2021).

The benefits of these pedestrian-priority schemes are many. They improve the feeling of safety and the quality of life. They improve air quality and reduce noise pollution and road accidents. They create valuable living space for everybody within the community and promote greater use of public space by bringing more people out on the streets to walk, bike, play and interact with each other (Appleyard, 1980, p.415).

2 Slow down [move easily]

Removing traffic requires strategy and vision. In many parts of the world, the car is the only option for people to move from one place to another. If this 'radical' change should happen, people need to have enough options available for them to prefer other means of transport and make the car a last resort, or an option for special occasions. Variety of mobility options should become a priority together with the radical reduction of car traffic for the benefit of people and their daily activities.

Changing the priorities for street users putting people first means putting walking also as the first priority. Prioritizing walking also changes the image of streets and the way to design the space to respond to that. The previous component was about removing obstacles in general, for this component it becomes crucial to understand the minutiae of physical obstacles that can deter walking and address them so the space in streets becomes inviting and friendly to all types of people.

Considering that the average person walks at 4km/h but this is the average person, a child can walk between 3 and 4km/h but can also be faster than the average adult. Elderly adults are slower, but 4km/h remains a good median to judge the first speed that needs to eb addressed. At this speed, people who require special devices to move around such as wheelchairs, crutches or canes are counted also as the pedestrian, or the person moving on foot. Even the fastest

electric wheelchair will be at its fastest between 4 and 5 km/h (Pinna and Murrau, 2018). For the purpose of this thesis, the terms pedestrian and walking will also encompass people using devises such as wheelchairs to get around.

With newly gained space that has been opened up for people and prioritize walking. Making walking as easy and convenient in a city is key to people's wellbeing. Walking is the basic form of movement and it can be done by everyone, making it the most accessible way to move. In order to walk freely around a city, spaces need to be free of obstacles on the potential routes people will take so attention needs to be taken when placing elements in this open space so there is no interruption to the free flow of people walking.

There are two main activities that people do in public space, moving through it or staying, and the most common of these activities in streets is moving through them, going from one place to another. If the intention is taking cars off the streets for people to be able to use them, people still need convenient and accessible ways to move around. Walking would certainly need to be prioritize to determine the qualities of the space, however to move faster or farther, other means of transport are necessary.

Prioritizing walking is turning the transport priority triangle, where people on foot represent 'the first speed'. The following speed can be achieved when people use non-motorized vehicles to move around. The bicycle stands out as the best form of private transport because it remains within human scale in sizes and speeds. Although professional cyclists can go faster, the bicycle is so adaptable, that it becomes easy to control.

Cycling helps people move about faster than walking, covering longer distances and adding the value of physical activity to their health, but that is not the only benefit that aligns well with the principles of wellbeing. Connection with the surroundings, independence, freedom, etc. are all associated with the ability to use a bicycle to travel between the different places in the city for daily activities. It gives autonomy for all age groups.

Perhaps for longer trips a motorized means of transport will be necessary, and this should be available. However, the choices available must make it more convenient to choose public transport over private transport for longer trips. A robust public transport system, a well-connected system, is key is also key in the city of wellbeing. Transit is the preferred mode, but a BRT system well planned and connected can also work. Each city and region should decide on the types of public transport systems that can be adapted to their urban form, geographical conditions, economic and cultural context, but it is clear that it needs to be given priority alongside the development of networks for cyclists.

At the end of this pyramid comes the private car (which can be in the form of privately owned vehicles, shared schemes, taxis or rentals) and the transport vehicles such as trucks. These, although at the end of the priority of space in cities, should be considered since they perform services that are necessary in the functions of life in cities.

This component is also about moving easily, which means that there need to be a variety of options of mobility for people to choose, ideally the ones that pollute less their surroundings. With this variety of choices people can also make convenient combinations to find the best routes and

the best solutions to go where they need to be, which makes multimodality another priority for inclusive urban environments. More choice, more combinations, that will respond better to the diversity of the people's needs at different times of the day or the week. In a city that emphasizes people's wellbeing, the car becomes just another option of transport that can be convenient for certain occasions but will not be the only choice.

Multimodality is successful when it is well-connected and the facilities are designed for any type of person to access them. Being able to start your journey with one mode of transport and then change modes in the process efficiently and conveniently, adding choice to your everyday activities is part of the principles of the conceptual model.

For this component, two cases have been chosen as best practice examples for two important concepts discussed above; walking as a priority over any other mode of transport and how to modify a city's fabric over time so it works for all pedestrians first, using the city of Pontevedra's walking culture; and the advantage of the synergy between cycling and rail travel for more sustainable door-to-door mobility.

The walking city Pontevedra: Spain

Recognized as the pioneer city in terms of pedestrianization, the city of Pontevedra in Spain has prioritized walking in the city over any other form of transport. For over 20 years, it has been transforming its urban areas into pedestrian-priority, car-reduced areas, with a clear vision of giving the city back to children, the elderly and the disabled, to the benefit of all the citizens (Doig, 2019).

Pontevedra's administrative structure is made of 3 scales. The compact city and oldest part with 4.5 km2 and 65,000 inhabitants. The Municipality with 117km2 and 83,000 inhabitants, and the urban territorial area with 700km2 and 160,000 inhabitants scattered in smaller satellite villages surrounding the municipality (Pontevedra, 2021). The changes in mobility have been done in both the compact city and the municipality areas.

It has been a gradual transformation that started with a radical move. In 1999, after the plan was approved, the city pedestrianized 300,000 m2 of the medieval core within one month. From that point on, the city has continued to build "the walking city" by adding more pedestrian areas and creating shared streets with more space for walking and no street parking.

Shared streets represent now more than 700, 000 m2, and are more common outside the medieval core and immediate surroundings, but within the Municipality area (Velazquez, 2018). *Figures 16* and *17* are contrasting images from the 1990s and current status of the these 'shared streets', *figures 18* and *19* are current images in the compact city.

Figure 16. Before and after images of Pontevedra's shared streets. Source: (Pontevedra, 2021).

Figure 17. Before and after images of Pontevedra's shared streets. Source: (Pontevedra, 2021).

Figure 18. Pedestrianized streets in the city center. Source: farodevigo.es (2021).

Figure 19. Pedestrianized streets in the city center. Source: farodevigo.es (2021).

The benefits to the environmental quality of the city are clear. 65% reduction of CO2 emissions and other pollutants. 70% reduction in traffic throughout the city and road accidents reduced by half (Wiebes, 2013). Other benefits include crime reduction of about 30% which continues to decline and an increase in the population of residents (Pontevedra, 2021).

Pontevedra is the second largest of the cities in the region of Galicia, a region that since the 1990s has struggled with a shrinking population rate. However, Pontevedra has managed to increase their population specially those living in the medieval core and inner city, and has attributed this success to their pedestrianization efforts (Velazquez, 2018). In the past 15 years, the population has increased 10% and most of the new residents have been young families with children [*Figure 20*] or people looking to start a family (Pontevedra, 2021).

Families feel the urban environment is good for raising children; they can go to school on their own, play safely in the streets [*Figure 21*] and the community at large takes care of them. As part of the city's strategy for work-family balance, schools are kept in the city center and the maternity and pediatric services have been moved from the big hospital complex outside town to a smaller facility right in the pedestrian area. Families with children in Pontevedra also benefit from a wide range of cultural activities tailored for kids (Velazquez, 2018).

Figure 20. Families and children in the pedestrian areas. Source: pontevedraviva.com (2021).

Figure 21. Families and children in the pedestrian areas. Source: pontevedraviva.com (2021).

Cycling is allowed all over the city, in shared streets with priority over motorized traffic, and in pedestrian zones yielding to people on foot (Pontevedra, 2021).

Cars haven't been completely banned from the city. In the compact area and specially the medieval center, the residents, service and emergency vehicles are free to circulate and park no more than 15 minutes. Driving speed is 30km/h most everywhere, and 10km/h in the pedestrian zones (Velazquez, 2018). Most people coming from further can arrive via buses that connect with the entire region or drive and leave the car in the outskirts of the municipality in one of the 'park-n-ride' lots (Doig, 2019).

An important ingredient in the scheme is eliminating car parking (Velazquez, 2018). In the 90s, all the streets in the city were packed with parked cars, and in a city with narrow streets that meant more congestion and insecurity for the people on foot. Removing car parking has been the key to allowing car traffic and still experience a reduction in car use of around 90% in the medieval core, and 70% everywhere else (Pontevedra, 2021). Underground parking was built for the residents, business and institutions, but generally on-street parking is prohibited. The city had found that 60% of the cars circulating in the inner city were just looking for parking, and by eliminating the option, people have chosen other means of transport to come to the city (Velazquez, 2018).

One of the most interesting elements of Pontevedra's pedestrian-oriented scheme is the "walking distance map" *Metrominuto*, introduced to further improve walkability within the city (Doig, 2019). Designed as a metro map with color lines and transfer points [*Figure 22*], it shows the rough locations of landmarks, common places and buildings and important intersections, and the

walkable routes to connect them, specifying distances in both meters and minutes, hence the name *Metrominuto* [that translates into 'meters minutes'] (Wiebes, 2013).

The design makes it easy to read and the walking distance information encourages walking and exploring the city as people are able to plan routes and itineraries with this information. Signage has also been installed throughout the city to aid in orientation [*Figures 23*]. Also, to further complement the map, there is a *Metrominuto* app with several functions. Besides the digital map, the app has a function called *Pasominuto* ['steps minutes'] that is based on step-tracking so people can record the steps and calories spent in their itineraries, making them aware of the health benefits of different routes. The marked distances in the map are based on the standard walking speed of 4km/h, so with the app, people can record their own times, and give feedback to the system (Doig, 2019).

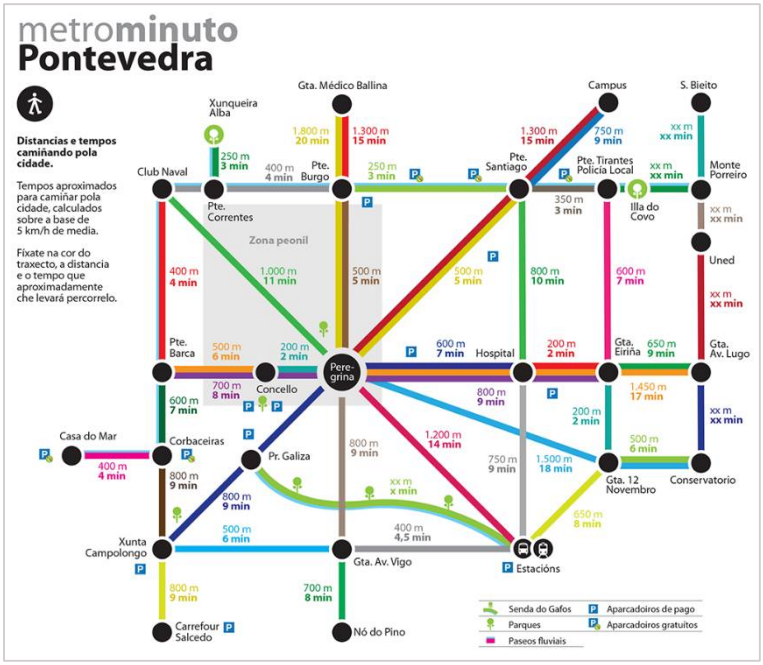

Figure 22. Pontevedra's *Metrominuto* walking distances map. Source: Metrominuto.info (2021).

Figure 23. Types of street signage. Source: Metrominuto.info (2021).

Thirty other cities in Spain and several in other countries in Europe have produced walking-distance maps inspired in Pontevedra's design, including all walkable areas of the city and possible routes, not only their pedestrianized zones (Doig, 2019). Innovative solutions like this shows the result of a policy of years prioritizing pedestrian mobility and formalize the pedestrian network as a legitimate 'active transport' network, and providing an accessible navigation tool. Knowing where to go and how long it will take you will make exploring the city by foot a lot more fun and relaxing (Wiebes, 2013).

Sustainable multimodality: Bike-Train-Bike combination - Netherlands

Cycling is the most sustainable mode of private transport. It is the most energy efficient mode for short distances, and particularly attractive for utilitarian trips of up to 5km. This makes it primarily suitable for trips at a neighborhood- or city-wide scale, which is why small to medium-sized cities are considered the most conducive to cycling for everyday trips. Larger conurbations mean longer trip distances and then motorized or public transport become more attractive options (Nello-Deakin and Brömmelstroet, 2021), although in some cities around the world, public transport is not as efficient or convenient as driving, so many door-to-door trips are made just by car.

There are different modes of public transport, and the rail travel can be particularly attractive for long distances since it is the most energy efficient transport mode operating at a larger range. However, the accessibility it provides is largely restricted to the vicinity of the train stations, or the infrastructure to access the station. In places with a node-based form of urban development [or Transit-oriented development] (Nello-Deakin and Brömmelstroet, 2021), residence in the vicinity of the station would be convenient but limited, and it is more typical to have the need of a connection between the point of departure, the station and then between the station and the destination.

The combination of bicycle and train as part of a trip chain provides a way to overcome the limited reach of transit-oriented development, and can dramatically expand both, the spatial reach of cycling, and the door-to-door accessibility of the train (Nello-Deakin and Brömmelstroet, 2021). The synergy between bicycle and train leads to a hybrid form of transport which combines the spatial flexibility of cycling with the speed of train travel should be understood as a distinct multimodal option (Sim, 2019).

The bike–train combination potentially offers both, a means of scaling up cycling-based mobility beyond the local scale, so people don't need to use their car to travel long distances, and optimizing regional train travel, so people don't have to use their car to catch a train at the station. This combination of speed and flexibility makes the bike–train combination a promising alternative to potentially replace many car trips (Nello-Deakin and Brömmelstroet, 2021).

The Netherlands is a pioneer in this combination. *Figure 24* is the scheme proposed as BiTiBi [Bike-Train-Bike] by the EU based on the experiences in the Netherlands.

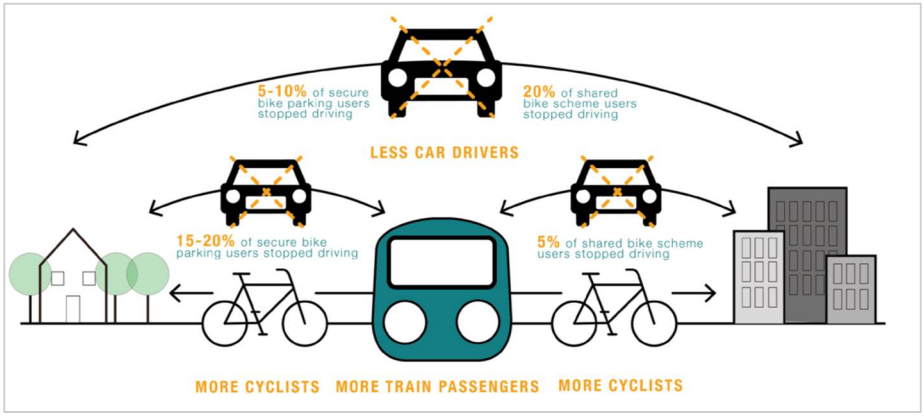

Figure 24. Bike-Train-Bike combination concept. Source: BiTiBi (2017).

The Netherlands is the country where the bike–train combination is most advanced. With the highest cycling rates in the world, the country's broader cycling culture [*Figures 25 and 26*] is considered the main reason for the development of this hybrid, cycling system that is consolidated, connected and convenient, extensive (Sim, 2019). At the same time, their train network is particularly well-developed and high quality, with frequencies of up to 10 min between main cities in the Randstad area [the conurbation including Amsterdam, Rotterdam, The Hague and Utrecht]. In addition to this, the increasingly diffuse, polycentric urban structure of the Randstad results in large commuter flows between its main cities and surrounding areas, and this seems to contribute to the scale of the bike–train travel culture (Nello-Deakin and Brömmelstroet, 2021).

Figure 25. Comprehensive cycle networks in the Netherlands. Source: archdaily.com (2021).

Figure 26. Cycling culture in the Netherlands. Source: archdaily.com (2021).

The Netherlands has years developing their cycling system which has paid attention to the way the public transport [in this case trains] attends to the needs of cyclists. In recent years they have been dedicated to the improvement of bicycle parking at train stations across the country (Nello-Deakin and Brömmelstroet, 2021). This includes, the construction and expansion of large-scale bicycle parking facilities with advanced designs in major cities like Utrecht [*Figures 27 and 28*] or creating landmark designs in smaller cities like Alphen aan den Rijn [*Figures 29 and 30*]. This makes the experience and connectivity seamless and attractive.

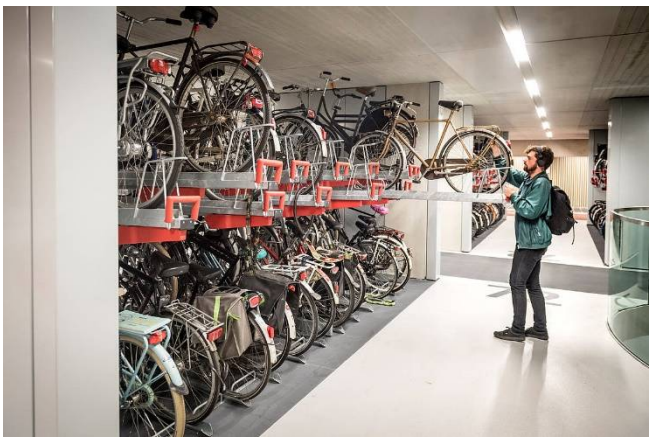

Figure 27. Utrecht Centraal bike parking facilities. Source: archdaily.com (2021).

Figure 28. Utrecht Centraal bike parking ride-in access. Source: archdaily.com (2021).

Figure 29. "The Apple" at Alphen aan den Rijn station. Source: archello.com (2021).

Figure 30. "The Apple" interior. Source: archello.com (2021).

By contrast, car parking in most urban train stations is scarce, building on more general policies restricting car use in city centers and making it an uncompetitive option for last mile trips to and from the train stations (Nello-Deakin and Brömmelstroet, 2021).

In an empirical research conducted in the Netherlands by Nello-Deakin and Brömmelstroet, (2021) shows that many people actively prefer to commute by bike–train despite owning a car, both for utilitarian reasons and affective ones [health and family connections], which is good support to the idea that bike–train travel can provide a more attractive alternative for interurban travel.

Cities without a cycling culture like the Netherlands shouldn't think that they have to develop first the cycling culture and then the train system, to then combine then or the other to then develop the second and connect them. Multimodality is in fact the convenience of choice in modes of transport and trains are not the only option for this combination, there are many opportunities to include other forms of public transport, including Bus Rapid Transit (BRT), light rail and metro systems. This modal hybrid can be a goal that is built simultaneously, and in places without one system or the other, developing them can increase quality of life significantly.

The purpose of the components in the previous category was to reclaim space for people by restructuring the way the streets work and allowing a variety of choices to move around and go about their daily activities easily and comfortably. As it was shown in the examples, there is a lot of space to gain for people, therefore, the components in this category propose the two most important types of spaces a city must have in a generalized and well-distributed way.

There are many types and ways in which cities can address their open spaces, however in the city of wellbeing there are two clear priorities, all spaces should offer the opportunity to be in contact with nature and all spaces should also give the chance to engage in play and leisure activities that are free and open. These last two characteristics, free and open, are very important in an inclusive city. Commonly, open spaces in cities will find a way of offering services that are paid, restaurants with outdoor sitting, fairs and festivals, outdoor market places. All of these are very good elements to promote social interaction and develop a sense of place, however, only those who can afford the service would be able to participate, and this would not work well in an inclusive space. Economic activities tend to follow after a place is made attractive for people to stay in it, so developing free and open opportunities for social interaction will not hinder the economic functions of a city.

Nature and natural elements in a city of wellbeing are weaved into the urban fabric, and not only in its outskirts or limited to a few parks and street trees. It needs to be accessible to all the people living, working and visiting a city. Uses for public space don't need to fall into the 'park' category but rather, creative ways of integrating greenery into any type of space need to be found t bring nature into all spaces. Natural spaces are also associated with leisure, so the combination of uses, the development of multifunctional open spaces, is an important ingredient in this city of wellbeing. In order to have a wider impact on the environmental quality of the city, green [and blue] spaces shouldn't be planned in isolation, even though their implementation may require that. Building networks of green and play-full open space is also a basic concept within this category.

3 Nature all around [radical greening]

For a cleaner city, different scales of greening interventions should work together towards a larger network. Each type and scale of green area brings benefits. Different scales mean different impact levels. Managing different scales give the opportunity to build the network step by step, manage costs and execution times, it can even work to develop different types of participatory processes with the community. Smaller scales are more manageable at the hyper-local level. Envisioning a network in which all green spaces are working together can make a change in the city at large.

The benefits of green space are many but one of the most important ones is that they clen the air. The radically improve the environmental quality of cities for the benefit of people's health, a

radical approach to greening is required. Green spaces can be designed and developed individually, but they should be planned under a larger scheme projected to build up a network.

The benefits of green space can be felt even at the smallest of scales, so all types of projects should be part of this grand scheme of greening. Scale matters because the larger the scale the bigger the [positive] impact an area can have, however, when land is scarce, or the processes of urbanization are very fast, cities need to work on every scale available to them, considering that every small part counts towards weaving the green fabric through the city.

If we consider that in every open space there should be natural elements, the cities we live in will start to look very different to what we are used to. Softer, more embracing, cleaner. Working towards a city of wellbeing it is necessary to re-imagine what a city is like and envision it as the human habitat. This is where people spend most of their lives in, and for some people, all of their lives. If cities continue to be arid, concrete jungles, detached from the natural environment, we will continue to exacerbate the problems we have discussed previously on the impact the built environment has on people's health, let alone the larger problems of urbanization on the planet.

Most green spaces are multifunctional. One space type can provide multiple benefits. By multiplying well-planned green spaces and bringing green elements in a strategic way to the cities, major changes can be felt with time. There are different types of green spaces that can be part of the green network of a city. Those related to the provisioning of food like urban gardening or farming to deal with food independence or food scarcity; cultural green spaces, like parks and other formally designed green spaces, even protected areas that form part of the city's heritage, and are commonly associated with leisure activities; and those that have regulating capacities like green infrastructure that is designed to manage the water cycle and other 'engineering' functions in cities but through natural green space, like bioswales or constructed wetlands.

Radical greening, requires that cities propose innovative ways in which to re-introduce natural environments and elements into the cityscape. Each city needs to be responsive to their own geographical location, cultural and economic situation, and understand the species that are native to their environments and how they can be integrated into the urban fabric. Having this clear, it is easier to develop projects of greening that are adapted to the local environment.

Natural elements, such as plants and trees, are living organisms and so they need to be tended, and given space and time to grow and flourish. This makes the task of greening a very challenging one that requires the involvement of people, and many other stakeholders in a long-term effort not only to start with particular projects, but to monitor and understand the evolution through time and to increase and improve the networks.

Cities tend to measure the number of square meters of green space 'per capita' looking for a number that will mean 'enough' green for everyone. Provision of green spaces cannot be limited to fulling a quota of m2 per inhabitant. It is not easy to define how much green is enough green and maybe it is not a matter of quantity. Green space should be valued for all the benefits it brings to the health of a city and the health of its inhabitants. However large the green spaces in a city are, and even if the provision of green space is generous, there needs to be an evaluation regarding accessibility. If green space is accessible only to certain sectors of the population [for example the wealthy areas of a city] then the city has a lot of work to do to evenly distribute green

space. Access to green space is not only about proximity and connectivity but also about physical features, so there are no obstacles for people of all types to make use of the space.

Diversity of outdoor green spaces for everyday life. Spending time outdoors can connect people to their surroundings and to each other. It's about having more kinds of outdoor space to accommodate more kinds of outdoor life. Using outdoor spaces should be part of everyday life. It's not just the pleasure of gardening or trips to the park, but all of the everyday things that have to be done; waiting for the bus or putting out the garbage should be opportunities for pleasurable encounters. Spending time outdoors means fresh air, physical activity, and meeting people, all of which can contribute to better physical and mental health.

Greater Biodiversity is a multidisciplinary effort with science leading the projects. There are clear benefits to health and well-being for urban dwellers with richer and more-diverse nature in otherwise built-up areas. Vegetation has an acoustic effect, absorbing and masking amidst the many hard surfaces of walls and paving in the urban context [and hence reducing stress]. It also has the ability to help mitigate pollution, cleansing the air by absorbing dangerous nanoparticles. Vegetation is also practical as visual screening, increasing privacy as well as reducing and mitigating wind, and protecting from strong summer sun. Vegetation can help to mitigate the heat-island effect.

The more easily accessible the outdoor spaces are, the greater the likelihood of frequent and regular use, and, in turn, a sense of care that invites tending and nurturing behaviors, perhaps resulting in shared community-garden work and even community harvesting. Therefore, a scale and division of land that makes courtyards, gardens, and allotments possible, with clearly defined private and shared spaces, allows for responsibility and connection to the natural world.

Humans have an instinctive affinity with the natural world. To children, contact with nature enhances child development by encouraging recovery from stressful experiences and providing opportunities for exploration and play. For adults, contact with nature stimulates feelings of relaxation, autonomy and competence. Gardening is one good way of being active in nature. Urban community gardens and farms, apart from providing fresh food, exercise and contact with soil and living plants, they help build a social fabric that cuts across socio-economic status.

Green Infrastructure. At the city scale, the current term to convey the significance of ecosystem services is green infrastructure. infrastructure. Green infrastructure is not simply green open space. Green infrastructure works at a variety of scales, from city region to site, always accepting the principles that the world is a system of networks and that everything connects to everything else. The built form should generate spaces to accommodate soft landscaping as well as local water management and filtration of rainwater, for natural water management. There should be numerous and frequent places with deeper soil to allow natural drainage.

Green infrastructure has a key role in mitigating air pollution. Urban vegetation acts to reduce ozone pollution, absorb sulphur dioxide and remove dust, including heavy-metal particles, from the atmosphere. Soil micro-organisms reduce the amount of carbon monoxide. While plant and tree species vary in their tolerance of pollution.

The radical greening of cities together with the radical reduction of traffic can produce a very positive [and very significant] impact on the environmental quality of the city, and thus on people's wellbeing. Clearly a network of green spaces is a long-term process but every piece, every project, no matter the scale will add onto the whole and will benefit the immediate surroundings and the people in it.

At any scale, nature benefits health. Even only looking at nature and natural elements out of a window can be good for people's health. So, any intervention at any scale can have an important impact to people, at a human scale. Naturally, if a larger impact on the urban environment is to be made, there needs to be a braver approach to city greening, and it should be part of many strategies and policies of different scales and scopes.

A small park in an otherwise deprived neighborhood can bring more benefits for interaction and social life, than a large riverfront project [a more expensive and long-term project] and although those large projects re also important to the network, the smaller scale interventions at the neighborhood level when replicated and developed together with the residents, they can prove more impactful in the short term and build up to a larger goal in the long term.

The strategy has to point to different fronts. Efforts should come from different directions, with different actors and technologies. There are technologies for the most complex types of projects, like rooftop and vertical gardens, or cleaning river banks. All these should be considered and applied; however, the level of complexity and cost may delay many of these types of projects so the strategy has to be, trying to find as many opportunities for smaller scale, faster to build projects in which the residents can get involved. This can contribute to the long-term maintenance of these smaller spaces, while the larger spaces are planned and executed.

There is an opportunity to enhance the identity of a place by bringing back their native species. In general cities that have lost the biodiversity the land they sit on once had, probably don't have examples of the species native to the area. Bringing native species in will give the city a new image, and one that is tied to the land which is a very strong form of identity. Certainly, the city can be imagined as a lush tropical garden but every city has its geographical location and weather conditions so none should look alike, natural elements would be another distinctive feature of the city or they can be used as landmarks within the city.

For this component, one city has been chosen as the best practice case study because it presents a collection of initiatives, policies and ideas to introduce and maintain green spaces in a constantly growing city: Singapore.

Radical city greening: Singapore

Singapore is a small island city-state in Southeast Asia of around 600m2 of land with a growing population of 5.7 million inhabitants, which makes it the city with the second largest population density in the world. Since its founding and specially after its independence in 1959, nature and green spaces have been an intrinsic part of the city-state's vision of its future (Tan, 2006). However, this vision has evolved with time and each iteration has brought different layers to the development of what the city is today [*Figure 31*].

Figure 31. Singapore city aerial view. Source: qz.com (2021).

From the 1960s to the end of the 20th Century, the city's greening strategy was not based on preservation but rather on an extensive and highly landscaped green coverage. This meant a replacement of species with a well-ordered and manicured mantle of gardens and lawns that provided the comfort of a clean city but sacrificed almost all its biodiversity. Unfortunately, this vision led to the destruction of natural habitats, leveling of hills, canalization of streams and rivers and other engineering projects that took an environmental toll (Dawson, 2005, p.241). However, the city remained 'green' while massive urbanization and infrastructure development was taking place (Dawson, 2005, p.242).

The pressure from urbanization posed two pathways, to continue the trend or to trace a new path to ensure what was left did not disappear and devise strategies to reforest, re-introduce and protect new green. Considering the rapid urbanization process and the scarcity of land, the city was challenged with weaving a green fabric amongst its high-density urban environment (Tan, 2006). The first step was a tree planting campaign launched across the country, which gave way to other larger and more ambitious projects that, after 50 years, have become an interconnected network of green streetscapes, gardens, parks, nature reserves and vertical gardens, and it has transitioned from just green space provision to the development of a sustainable urban ecosystem which has contributed to the people's new found affinity for nature (Er, 2018).

Green spaces and natural habitats continue to be the foundations of the landscape matrix that make up Singapore's urban ecosystem. Over the past decade, especially, they have sought to further connect and enhance these elements with different initiatives, and to better integrate nature into the built environment defining a vision of a biophilic city (Er, 2018).

Four **nature reserves** and 350 **parks** constitute the basis of the entire green network. The natural reserves are the only areas that were left untouched after the rapid urbanization process of the end of the century. They are the city's main source of biodiversity containing most of the original

native species and are the most important elements of the network. As such, strategies to preserve and connect them have led to the great variety of green spaces that make up Singapore's green cover (Tan, 2006).

In order to increase the resilience of the nature reserves, a network of nature parks [*Figures 32 and 33*] has been set up as a buffer to mitigate the impacts of urbanization, reduce wind and heat at the edges of the reserves, and act as barriers against invasive species. They also provide complementary habitats for native biodiversity and allow for recreation for the residents (NParks, 2021).

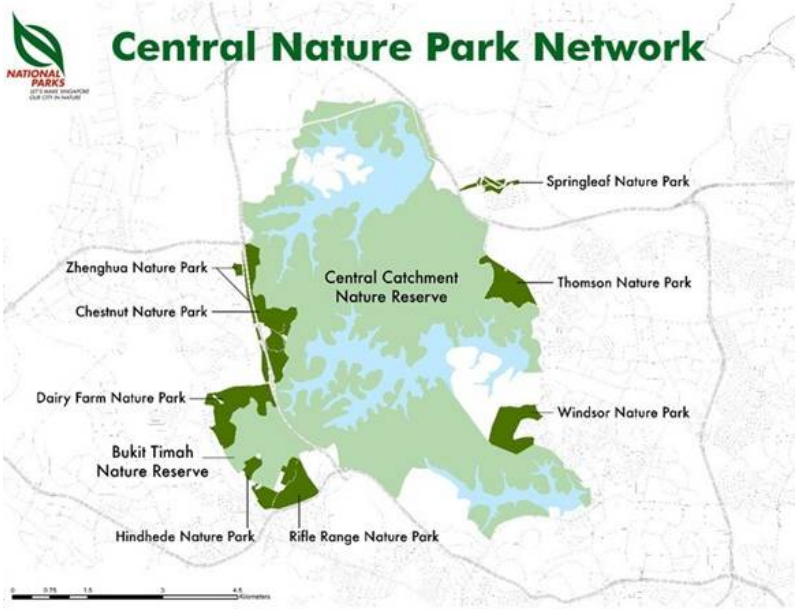

Figure 32. Nature Park Network reserve concept of buffer parks. Source: National Parks Singapore NParks (2021).

Figure 33. Extensive parks and green spaces. Source: finbarrfallon.com (2021).

Although some parks make up this network of buffers, most of them are local and easily reachable in 10 minutes or less from where people live, and have been designed with different purposes. There are 6 therapeutic parks are designed to meet the physical, psychological and social needs of park users, incorporating design principles derived from scientific evidence (NParks, 2021). There are also 20 nature play gardens [*Figure 34*] are designed within nature with play features using natural materials in an environment where children can connect with nature while playing and exploring, thus developing a sense of adventure and discovery, and increasing their self-esteem and independence (NParks, 2021).

Figure 34. Nature play gardens in Singapore. Source: NParks (2021).

Two types of **green corridors** – park connectors and nature ways – connect the parks and nature reserves with each other and with the residential areas of the city (Er, 2018). Park connectors are a network of walking/running/cycling paths that connects the various parks and other green spaces all across the city (NParks, 2021). In 1991, the park connector network was approved as part of the action plan of the vision of the time. The first one was implemented in 1995 connecting 2 important regional parks and forming the first 'loop' (Tan, 2006). By 2015, more than 300 km of park connectors have been completed in 6 loops [*Figure 35*] (NParks, 2021). Some of these connectors run along recovered canals [*Figures 36 and 37*] (Tan, 2006). A new corridor that will run around the entire island is being completed, connecting parks and existing connectors into a continuous 150-kilometer route that will link communities together and providing opportunities for recreational activities such as cycling, skating, jogging and hiking (NParks, 2021).

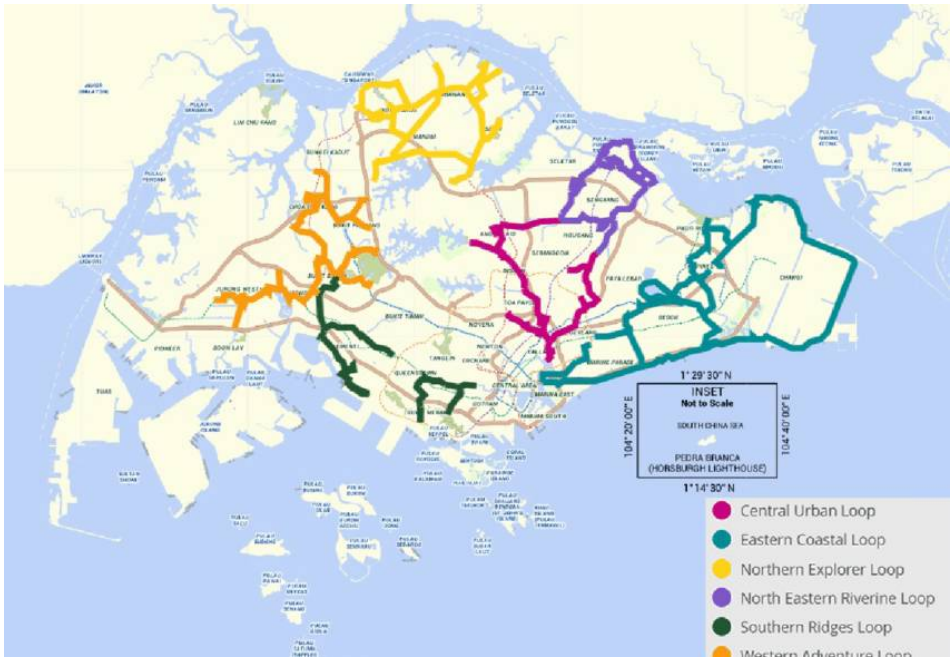

Figure 35. Current loops of the Park Connector Network. Source: NParks (2021).

Figure 36. Park connectors. Source: NParks (2021).

Figure 37. Park connectors. Source: NParks (2021).

Nature ways are routes that also connect parks and nature reserves to urban communities, however, they are design to create immediate habitats and bring nature closer to the residents. Planted with specific trees and shrubs to facilitate the movement of birds and insects between green spaces, these 39 special routes are designed to replicate the natural structure of forests as well as possible (Tan, 2006). Nature ways are planned to include four important layers, which are illustrated in *Figure 38* on the left: an emergent layer, made of fully matured rainforest trees, a canopy layer, made up of existing roadside trees, an under-storey layer, with smaller fruit-bearing trees, and below, a shrub layer, planted especially with flowering shrubs (NParks, 2021).

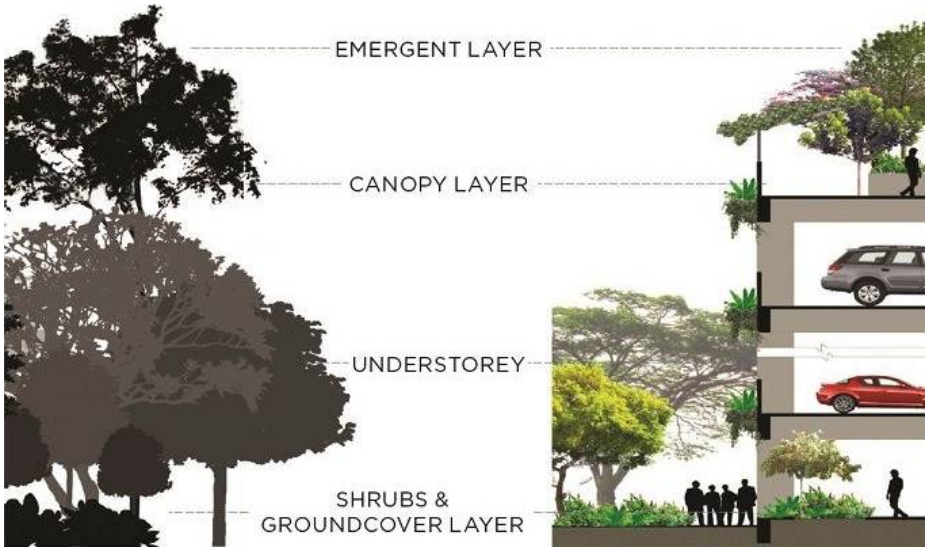

Figure 38. The layered planting scheme imitates the natural configuration of a rainforest. Source: NParks (2021).

Over the last decade, more species of native trees and shrubs have been introduced, in an effort to attract biodiversity, encourage ecological connectivity and enhance sustainability. This restoration program seeks to recover native species by replicating a naturalistic structure within the urban landscape. Plantings along streetscapes and parks now look more natural with the adoption of a tiered structure. This extends into the built environment in the form of vertical and rooftop gardens [*Figure 38*] that mimic epiphytic plants that adorn the trunks of dominant trees and emergent tree cover respectively (Er, 2018).

Mature trees are considered natural heritage of Singapore and serve as important green landmarks of the city, contributing to a sense of identity, history and continuity. There are 259 individual "Heritage trees" [*Figure 39*] in different locations all over the city, the rest are located in "Heritage roads" [*Figure 40*] which are roads lined with trees that have scenic and historic significance. Once a tree is declared a heritage tree, it is protected by law against removal or vandalism, a plate and a register are produced. Heritage trees on heritage roads are further protected by a 10-meter green buffer on both sides of the road (Tan, 2006; NParks, 2021)

Figure 39. Heritage road. Source: finbarrfallon.com (2021).

Figure 40. Heritage tree in a park. Source: finbarrfallon.com (2021).

LUSH and the Skyrise greenery. Due to its limited land space, its growing population and a significant increase in construction projects, the city's Urban Redevelopment Authority introduced in 2009 the Landscaping for Urban Spaces and High-Rises [LUSH] program as the basis of a new vision of the "Biophilic city". The program is a package of initiatives that encourage greenery to be integrated back into the built environment, of which the Landscape Replacement Policy plays a significant role. It requires landscape areas equivalent to the development site area to be reintroduced into the site after the development is built (URA, 2021). This has allowed for vertical and rooftop gardens to become a staple in the city's landscape [*Figure 41*], and for innovation and landscape design to become major players in the city's identity. In 2014, LUSH was extended to cover more geographical areas and development types under LUSH 2.0. By 2017 the area of vertical and rooftop gardens had reached 100 hectares, and in 2019, LUSH 3.0 is introduced to refine the landscape replacement area requirements in order to support rooftop urban farming (URA, 2021).

Figure 41. Vertical and rooftop gardens are a staple of the city landscape. Source: finbarrfallon.com (2021).

Urban farming. As an island with only 1% of its territory dedicated to conventional farming, Singapore depends on imports for 90% of their food supply. This makes it vulnerable international conflicts and natural disasters. Aware of their food insecurity and land scarcity the city has set an ambitious goal, to produce 30% of its own food by the year 2030, in alternative locations within the city using the concept of "land use multiplicity". This concept means diversifying the classification of agriculture as a land use, to include practices like hydroponic gardening, agrotechnology parks and other forms of urban farming that can be co-located in non-agricultural land (Diehl et. al, 2020, p8). The plan considers the land available and the potential for technological advances and calls for everyone in the city to grow what they can, pushing to support urban farming [*Figure 42*] and community gardens [*Figure 43*] in innovative locations. With the new provision in the LUSH program [LUSH 3.0] urban farming technologies are the next iteration in Singapore's consistent evolution of their green network.

Figure 42. Rooftop urban farm. Source: bloomberg.com (2021).

Figure 43. Rooftop urban garden. Source: bloomberg.com (2021).

Among Singapore's strategies to achieve these 'radical' greening goals is the development of a vision of the future and clearly communicated paths to get there. From the "Garden city" vision of the 1960s (Dawson, 2005) to the "Biophilic City" (Tan, 2006) and the "City in Nature" (NParks, 2021) of today. The city continues to evolve, working on how to strengthen the layers they have got and making an ecosystem using the concept of biophilia – a relationship with nature, the feeling of being within and around nature – in a dynamic process, that is not just about 'adding more' but how to add it intelligently. It is also nurturing a biophilic community, getting the people involved through various programs and opportunities, beyond community outreach and participation to active stewardship of our natural heritage (Er, 2018).

4 Play everywhere [enjoyable spaces]

Play evokes childhood memories. In fact, most people associate the word play or 'play spaces' just with small children in them. Two concepts should become obsolete from that view. One, that 'play spaces' are a particular dedicated area [for kids] and the other, that play spaces are for children 8 years and younger.

For this component, 'play' will be understood as 'leisure activities' particularly those that are active, that for children are spontaneous play [jumping, running, climbing] for adults are considered 'sport' activities. Widening the view of 'play' as a fun activity that requires to be physically active, can increase the options of the ways people use public space. 'Play' can also be understood as other leisure time activities that are fun, that don't require physical activity, like art, music or just sitting together with friends outside [events that are plan or spontaneous].

Certainly 'play' from an adult's point of view may be boring to a teenager, and what is fun for a child might me too strenuous for an older adult. There should be as many options of 'play' as there are types of people.

In the introduction to this thesis an important change in society was mentioned, that people have now more free time, and there are more people now living longer 'beyond their productive years', so if 'play' is understood as leisure time and that is understood as 'out-of-work time', then there is a large proportion of the population with more 'leisure time' and the potential for the city spaces to satisfy this new need is great.

In today's urban world, with the emphasis of life revolving around work and productive activities [work or study], leisure time or 'free time' becomes a last priority. This can only accumulate stress in people's lives and further affect their health.

Generally speaking, in the 'work-life' concept, 'life' refers to everything else happening in people's lives besides work. It seems unbalanced if this is considered a 50-50 divide of people's time. Finding this balance is a personal endeavor but the built environment can be a place that supports choices for other activities beyond work to be fulfilling.

Play is considered crucial for a child's development because it stimulates the mind and allows the child to discover the world around them, develop relationships and skills, self-confidence. However, as people grow older, these activities shouldn't dimmish or disappear from people's daily life. Cities should find ways to offer play spaces and activities to all the population in the vicinity of their homes.

Planning for a network of play spaces is an interesting idea. However, in the city of wellbeing, spaces should be as multifunctional as possible, so this network should be integrated with other functions in the city. A common pairing for 'play spaces' is green spaces. Adults can play sports and children can play in areas that are more natural. Play elements can be built within parks or other green spaces.

When planning for play spaces it is common to forget that teenagers have very different needs to those younger children have and those of adults. Teenagers are not an easy group to cater to regarding spaces for leisure. They want to be left alone and yet to be seen, they are mostly loud so when they congregate, older adults might feel unsafe. Balancing space uses so that different age groups can co-exist is necessary for successful play spaces.

Playground design has become industrialized. Although it is a convenient way to build play spaces, there are many ways to create play spaces with elements that were not 'designed' as a playground toy. However, the best way to create play spaces that are fun and fulfill the needs of children, are those design together with the children.

Time is very important in people's lives, and 'free time' is the most valuable of all the time of the day. The way a city is built and functions can either contribute or obstruct the good use of people's time. Time is equitable because regardless of income, age, gender, place of residence or any other difference, everyone has only 24 hours a day to live their lives. Once work [or study] is done, whatever is left is the 'everything else' time.

This reflects directly on our quality of life, because the few precious hours left over every week is the time, we have to spend on what we consider truly meaningful and worthwhile—building relationships with friends and family, playing with the dog in the park, contributing to community

life, learning and personal development, hobbies, cultural experiences, volunteering, and any other fun simple activities.

The urban environment should be designed to give people more time for the things that give life meaning. Beyond having everything in closer proximity; the in-between times and in-between places need to become more enjoyable and fulfilling, places that are loaded with opportunities to better connect people to where they are and the people around them.

Play is what children and young people do when they follow their own ideas and interests, in their own way, and for their own reasons. Play should be fun, uncertain, challenging, flexible and non–productive. These characteristics of play are relevant at all ages. 'Intent' is the key difference in the play of children and the play of older children and adults. Teenagers and adults make a conscious decision to go somewhere 'to play', there is a plan and normally there are some sort of rules. Spontaneous play comes more difficult for adults.

There are wider benefits associated with play that have a very broad reach, including social and environmental. Play spaces provide different settings and environments to explore, exposure to different challenges, a social setting to play with other children and adults, and a place to discover what they can and cannot do. Play spaces provide for the physical, cognitive, social and imaginative development of children, with design and environmental setting key factors in maximizing the potential benefit to the child.

Play can be a learning experience. If one aspect of wellbeing is to keep learning and active learning, the urban spaces should offer the opportunities to discover new things for other age groups as well. There are different approaches to this, it can be in the form of urban gardening and planting workshops, it can be by adding signage in natural areas with names of plants and trees, it could be done with place-making activities.

Play can be 'incidental', this means it can 'happen anywhere'. This is what children do spontaneously when they encounter an interesting object they can climb or modify. Incidental play for adults is more complex. Adults need instructions, a purpose for their play or exploration, so art and design objects [with instructions] can be objects that attract different age groups and add to their daily experience of the city on their way to other places.

Thinking about incidental play is important in cities because there is a lot of time of the day dedicated to other activities, that if opportunities for play 'appear' on the way to do errands, to work, to school, then the journey and the experience of the day is enhanced.

So, the city of wellbeing should offer opportunities for play and make play a priority for all ages. Considering the different needs for play, and mobility issues of different people, we realize the average playground is obsolete and inadequate.

For this component, two cases have been chosen as best practice examples to re-imagine ways to introduce play and play spaces in the city. The growing *play space network* of Wellington New Zealand, and the *CicloRecreovia*, a way to temporarily transform city spaces for leisure activities.

Play spaces network: Play city - Wellington

Over 14 years since the development of their first playground policy, Wellington's playable space has grown into an extensive city-wide network. It started as isolated formal playgrounds that the city built under this policy with certain standards near or as park of existing public spaces and parks. For the city of Wellington, the value of public space is in its multifunctionality and has put a lot of effort in making 'play spaces' fit within them. Using their existing network as an asset, the city has set new goals in their development plan, recognizing the importance of providing for a wider range of play spaces, the plan outlines an expansion from formal, dedicated play areas through to incidental playable space within other multifunctional space, such as large parks or urban squares, and other public space, a provision of play is broader than formal playgrounds.

The network is actually made up of all public spaces in the city and the pathways that connect them. *Figure 44* is a map of the network, which up to 2016 consisted of 4207 hectares of open space, including Wellington Town Belt, the Outer Green Belt, coastal reserves, 250 neighborhood park spaces, 43 sport and recreation parks, the Wellington Botanic Garden, the Otari–Wilton's Bush natural reserve, 107 public formal playgrounds and 330 kilometers of tracks and pathways. There are only six skate facilities, six bike skills areas and 22 outdoor basketball courts (WCC, 2017, p.20).

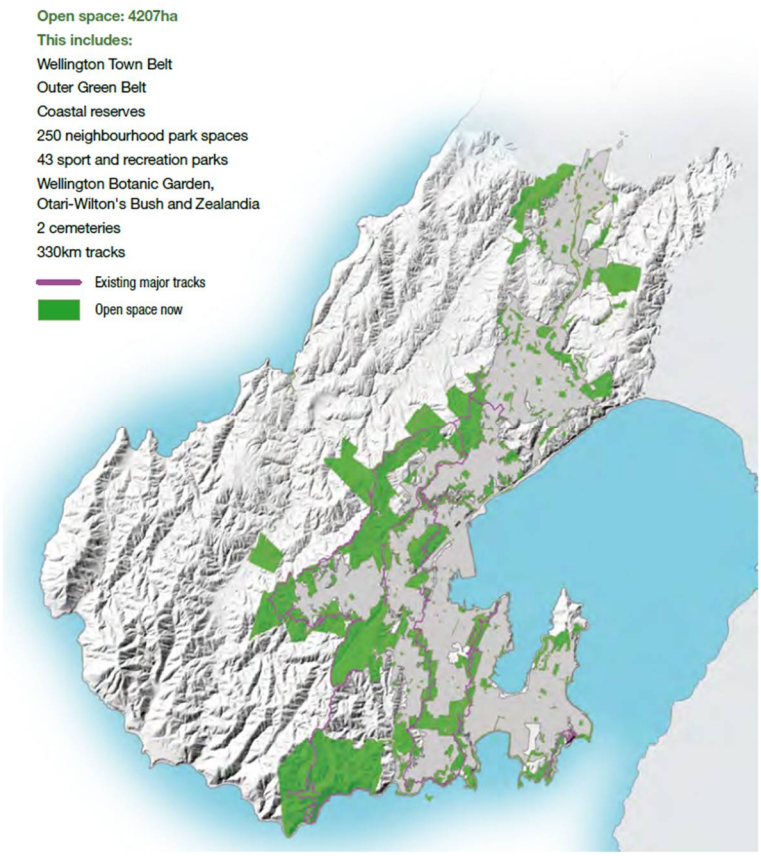

Figure 44. Wellington city open space and play space network. Source: Wellington City Council (2002).

Their vision is to treat the entire city as one large play space that offers a wide range of options for recreation and play opportunities evenly distributed throughout the city and accessible to all. In addition to public play space there is a network of school playgrounds that is available to the general community to use outside of school hours. 93% percent of primary schools in Wellington allow public access to their playgrounds. Public housing common spaces are also open to the public and many of them have their own playgrounds. Considered among the wider network are also private housing backyards and playgrounds in shopping centers as additional places where children have opportunities to play.

The city recognizes two types of play space, dedicated and incidental. Dedicated play space is a space where play is identified as the main function. Incidental playable space can happen anywhere, only the space must be safe and attractive and provide elements that could be used for play. A small slope in a park that could be rolled down, a tree that can be climbed. It could also be a non–natural environment like a low wall that could be walked along or a high wall to jump off. Backyards, house frontages and road verges can also function as local networks of incidental play space. High–quality public art and civic space is often playable. Wayfinding and place–making improve opportunities for adult and youth socialization through incidental play.

Although their dedicated play space is considered “the people’s favorite” it is already consolidated and well-distributed, with 66% of its citizens living within a 600m perimeter of a neighborhood playground [*Figure 45*] or a 10 or 20-minute walking distance to larger community playgrounds [*Figure 46*]. The city is more interested in extending the incidental play opportunities by investing in other public spaces. Opportunities to encourage incidental play throughout the city include park space, road corridors, inner city public places, such as city square and streets, and the waterfront (WCC, 2017, p.19).

Figure 45. Margaret Mahy neighborhood playground. Source: nzjane.com (2021).

Figure 46. Botanical Garden community playground. Source: nzjane.com (2021).

The most important addition to the network regarding incidental play are the “play trails”, a concept of natural elements placed in green spaces, parks or tracks, for the children to explore and play while having more contact with nature. Natural landscape play elements might include balancing, climbing, living huts, and tunnels. The pilot project in Mount Victoria-Matairangi natural park [*Figures 47 and 48*] was designed as an exploration experience with trails and elements located in points of interest, the trail is open to everyone and the exploration elements cater to children. These exploration elements will also be made available within the city by bringing vegetation into already existing playgrounds that are lacking green space (WCC, 2017, p.25).

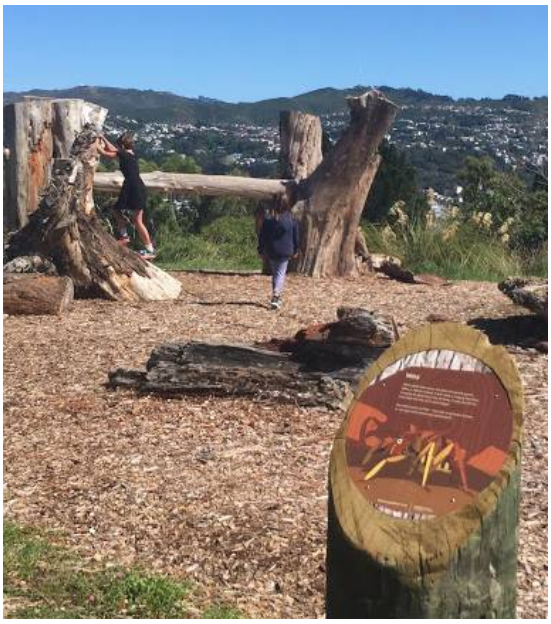

Figure 47. Mount Victoria-Matairangi nature play trail. Source: Wellington City Council (2002).

Figure 48. Mount Victoria-Matairangi nature play trail. Source: Wellington City Council (2002).

In order to achieve their goals for their extended network the city has implemented strategies of place-making activation which are activities organized by different groups in public spaces that are normally not recognized as playable spaces, for the image of the space to change and then be able to implement formal changes. Place-making has also become a tool to get children and other age groups engaged in the design of new nature trails or even modifications to existing formal playgrounds (WCC, 2017, p.35)

Leisure networks: *CicloRecreoVía* - Chile

The *CicloRecreovia* is a city-wide event that happens in Santiago, Chile on the weekends, in which a series of streets are closed to motorized traffic allowing people and foot and on non-motorized vehicles to transit freely. Santiago is not the only city in Chile or in South America to implement this alternative use to its streets, in fact it is inspired by the *Ciclovia* in Bogota, Colombia, a weekly event that extends through the network of the largest and better-connected avenues in the city center. *Ciclovia* started in Bogota in the 1970s as a form of protest in reaction to the excessive presence of cars in the streets and increasing number of accidents. People took to the streets in the very center of the city on a Sunday, demanding safe space for leisure activities. Forty years later, the number of streets that are closed for *Ciclovia* has increased dramatically, and the event is now organized in several cities across the Americas (Welch, 2021).

In Chile, the weekly event takes a different shape. Despite its history as a type of protest, nowadays its most important objective is recreation and sports, so beyond walking or cycling through the city, they organize different sports activities and children's play activities all along the largest avenues. The most popular activity is riding a bicycle through the city followed by other recreation activities that are organized along the way – hence the name '*CicloRecreovia'* or 'cycle-recreation path'. A very important aspect is the emphasis on leisure activities and socialization, so competitions are not allowed during this time.

The network of streets chosen for this activity is based on connectivity to public spaces, major landmarks, parks and other natural spaces. *Figure 49* is the map of the current network showing the main routes and their connections. Santiago's development plan includes an extensive increase in the number of streets that will make up this network, extending it beyond the city center and its surrounding districts (STGO, 2019, p.129). The network also includes the most important streets connecting the city center to its surrounding districts and their centers. This creates space not only in the historical center of the city, but also at the neighborhood level, it makes spaces available for the residents to organize activities.

Figure 49. Map of CicloRecreovia and park network. Source: ciclorecreovia.cl (2021).

There are several benefits to this initiative. A study conducted in Santiago in 2018 showed that since it began, residents get 75% of the recommended weekly physical activity by attending the *CicloRecreovia* and 56% of those have also been motivated to extend their use of the bicycle at least 4 more times a week (Mora et. al, 2018, p.456). This means that, although it is a weekly activity, people engage in it and has influences their behavior beyond the event.

Other important benefits are related to social connections and improving contact with nature. Santiago's metropolitan park is a major landmark that is connected to this network. On a regular day, the park is only accessible by car, as the route there has no sidewalks (*Figure 50*), so during the weekend it becomes one of the most popular destinations.

Figure 50. Streets and highways closed to vehicles. Source: ciclorecreovia.cl (2021).

According to the study mentioned above, the most important motivation to attend the event is for health reasons, to engage in physical activity [32%] but just as important as that, people attend for entertainment and recreation, and to socialize [31%]. Others use the space to get to know parts of the city they don't normally visit [15%] while others attend just to be outdoors [12%] (Mora et. al, 2018, p.458).

Different generations use the space so it is very important for integration and inclusion. It also provides an important opportunity for those who have little access to open spaces close to where they live. It is accessible to a broad range of people since it is possible to just walk along the streets and stay around the points where activities have been organized. All the activities organized during this time allow for all kinds of people to participate [*Figures 51 and 52*].

Figure 51. Streets and highways closed to vehicles. Source: ciclorecreovia.cl (2021).

Figure 52. Streets and highways closed to vehicles. Source: ciclorecreovia.cl (2021).

For the residents of the surrounding districts, it is an opportunity to visit the city center, and are encouraged to discover places they don't normally go to. It is also easier to reach natural spaces and parks that are further from their neighborhood. It also offers people the opportunity to visualize their city without cars, spaces where there are alternatives for active transport showing people what is possible in their own city. *CicloRecreovia* is now a part of Santiago's resident's lives they don't want to change (Mora et. al, 2018, p.458), in fact there have been several attempts to permanently change the traffic priorities in the network but it has been difficult to achieve. Currently, though, Santiago's development plan includes an extensive dedicated cycle routes network that follows most of the streets of the *CicloRecreovia* and extends further to connect with other projects aimed at adding green space to the city [*Figures 53 and 54*] (STGO, 2019, p.129).

Figure 53. Section of the new cycle routes along one of the streets of the CicloRecreovia network. Source: Santiago mobility plan (STGO, 2019).

Figure 54. Section of the new cycle routes along the Mapocho river linear park. Source: Santiago mobility plan (STGO, 2019).

Activities like the *CicloRecreovia* that since 2006 sees 40,000 people use the space every Sunday, make the use of streetscape more flexible, allowing for a vision of what is possible, creating a culture of socially engaging leisure time and exercise and promoting life outdoors within the city.

3.2.3 Buildings and elements that define space │ Community and diversity

The components in this category are the final two building blocks for the city of wellbeing. Open space is defined by the elements in and around them. Buildings and other built elements define space. Buildings determine the functions of different areas of the city based on their uses, or the way their uses are distributed. Building facades are the edges of open space that not only define its geometry, but also its scale, functions, identity and image. Smaller elements placed in that space, such as furniture or lighting, besides having a particular useful function, can define a place's identity and image.

Cities around the world have been planned under some form of zoning scheme that separates all the functions or uses of the city, and puts those considered 'compatible' adjacent to each other. This has been a way to simplify urban life, and try to avoid conflict [a normal occurrence in complexity], however, its consequences affect people's lives more than they solve their problems.

In order to support diversity, every use in a city, with a few exceptions, should be able to organically co-exist. Every part of the city should be a neighborhood. No more isolated 'business district' with no resident population and no more residential 'dormitory' districts.

Elements should complement space for it to be flexible, adaptable, beautiful and fun. They should help people navigate the city and add to the identity of neighborhoods, districts and the city at large.

5 Mix it well [building up the neighborhood]

Cities need to move beyond the single-use zoning schemes, and incorporate a mix of uses all over the city. This represents a complete change of mindset of what a city can be and the spirit of certain areas that were designed to be like islands within the city. Interventions to 'mix' uses within different areas of a city need different strategies. Most importantly for the development of community life, people should be allowed to life everywhere in the city [certainly there will be exceptions with particularly hazardous uses like landfills]. If people live everywhere in the city, there is potential for diversity and for community life to flourish. Some places are already residential but they need other complementary uses. Financial districts need housing, not just temporary rentals that are not affordable to most people; these places need a variety of housing options so there is life after the offices close in the evening or during weekends. Hard industry has moved away from the cities, but some of the areas left behind have been turned into 'islands' of projects designed for show and not to tend to the residents' needs.

Mixing housing is not only a matter of designing buildings that look different, or designing a building with commercial and residential uses in itself, it's about offering different types of housing that will make it affordable for people with different backgrounds, incomes and ages to live in the same neighborhood or district. There needs to be balance in the housing stock, with different options of affordable housing for different levels of income [social housing, private rental, co-op housing], options that support 'mixed housing' to create or reinforce a diverse community.

One of the most important aspects for the city of wellbeing is diversity, and mix uses in the building functions is a very important aspect of allowing for that diversity. A variety of building types means affordable options for small businesses and for families and people with varied levels of income. When the space has little diversity, other strategies need to be thought of. Particularly for areas that are residential only, 'creating' a center is a delicate balance. People are used to their privacy and a center made for people's interaction will bring more noise and other situations the people

are not used to. Ideally the creation of this spots of multifunction within a residential area will be planned together with the neighbors.

Generally, there are two typical scenarios, the centers that have little to no residential uses, but have different commercial, educational, cultural and even industrial uses, that have networks of transport that connect them, but yet, no residences. Bringing people back to live in the centers has been a topic for some time, and many examples can be found of new projects of residential use, or even buildings of mixed commercial and residential use.

At the other end, are the residential districts have characteristics in common, they are monofunctional since their main function is that of residence, and at the same time, services and amenities that could be used by the residents tend to be far away from them, making for a landscape of houses or buildings that are repetitive with nothing else to offer. These areas vary from country to country, but in many parts of the world the American suburb can be found one way or another.

Mixing the uses in these areas is more challenging. You want to bring amenities and identity to the residents without pushing them away. You want to give them a chance to feel that they belong in their neighborhood and that the neighborhood belongs to them. One way of approaching this is by either distinguishing potential “centers” such as cultural buildings, or schools or even commercial centers that can be changed and connected so that it starts becoming a center.

The human environment is about relationships between people and planet, between people and place, and between people and people. A neighborhood is a state of being in a relationship. Of course, being a neighbor is not always easy. People have different perspectives and needs, values and behaviors. All over the world, cities are not only densifying, but also diversifying. It is precisely the diversity and the differences that create opportunities. The simplest way to tap into everything society has to offer is to have neighbors, close neighbors.

For different activities to coexist in a neighborhood, the broadest range of building types need to be accommodated in close proximity to each other. Trying to find a balance between public- and private-sector activity is also necessary. Diversity of building types means different typologies, shapes, dimensions, and spatial conditions, different kinds of tenure and management. The diversity of buildings and their combination should create visual variation. This can contribute a sense of place, making for more interesting experiences and a greater feeling of identity, both for individuals and for a community. These visual differences make a street or neighborhood more distinct and recognizable, which aids orientation and makes walking more enjoyable.

For this component, 2 cases have been chosen as best practice examples of specific actions of good city ‘mixing’. The first one, is a development model for housing projects that, if applied extensively beings more advantages than diversity in housing options. The second one is a small project in an attempt to create public space in a large residential area that lacked a ‘center’, as an example that even small-scale projects can have big impacts on the dynamics of the city.

Collaborative Housing model: the *Baugruppen/Baugemeinschaft* Model - Germany

The current housing development models in most cities has been dominated by the real estate market resulting on building activity exclusive to a limited number of professional developers (Firley and Hogrebe, 2015, p.2). This results in options that are standardize, repetitive, impersonal, sometimes out of touch with innovation and often times unaffordable to the great majority of people, which works in detriment of inclusion and diversity in cities. Alternative development models are necessary to introduce more diverse housing options that in turn will bring more diverse groups of people to live in the city.

In Germany, a cooperative housing model has become increasingly popular being replicated with success in cities throughout the country. Over the past 20 years, it has reached maturity and become a market power, leaving its original 'niche' position and becoming a real development alternative (Firley and Hogrebe, 2015, p.2).

The *Baugruppe* or *Baugemeinschaft* is a group of people that come together to develop their own housing project (Firley and Hogrebe, 2015, p.2). The groups are small and legally constituted as cooperatives. They could be formed in one of two ways. The group applies to the city to develop a site, which means the group is already fully formed before applying, has chosen their architect and are looking to build and live in the city. Alternatively, the city announces the development of a new district or develops a plot-based master plan in available land and calls for expressions of interest (Coates, 2013, p.276). The city also publishes the costs of the plots [which are fixed] and releases a brief of standards to be met by the developments (Sim, 2019, p.44).

Because of the size of the plots and having a fixed price, this mode allows for payments on plots to be deferred until the groups are constituted. It makes the offer less attractive to larger developers and prevents them to enter a bidding war that usually leaves smaller developers out (Coates, 2013, p.276). This benefits the groups by making the purchase of the plot more affordable.

This model also allows the groups, as future owners of the housing project, to become involved in all the process. Member of the *Baugruppen* work together with their architect in the design and configuration of the housing unit and all their living spaces (Coates, 2013, p.265). There is no 'typical' or 'standardized' *Baugruppe* house, everyone is unique in financing and social make-up. This, in turn, results in projects that are architecturally [*Figure 55*] and socially diverse. Because the group decides together on everything looking to fulfill their needs and desires while complying with the city guidelines and standards, proposals often result in creative and innovative solutions.

Figure 55. Housing diversity. Source: innovation-academy.de (2021).

Housing in the district of Vauban in Freiburg, Germany, is an example of this type of development [*Figure 56*]. The city of Freiburg wanted to attract families to live in the city and chose this model. The district grew largely designed and developed by many different *Baugruppen* of ecologically and socially progressive homeowners whose joint efforts have also made Vauban reknowed as a sustainable district. The most palpable presence of the *Baugruppen* is in the diversity of the bult environment. Every project is unique and together they contribute to the district's unique identity.

Figure 56. Vauban district aerial view. Source: theurbanist.org (2021).

In addition to being an affordable alternative that brings diversity and interest to the built environment, the Baugemeinschaft have the important added benefit of creating the spirit of a neighborhood (Sim, 2019, p.44). The members of the group basically choose each other as neighbors when forming the group and in the process of design and development, they collaborate towards common interests. At the end of the process, they have produced a building that better responds to their needs and aspirations and so are more likely to take care of it (Coates, 2013, p.276). Developing a sense of belonging and attachment to the place and the people comes easier, and this is the foundation of a stable community.

From Monofunctional to Multifunctional: The Bokaler - Sweden

The Bokaler is a small project with very strategic purposes, that has had a strong impact in the gradual transformation of a housing district in Malmö, Sweden. The word *Bokal* [of which *Bokaler* is the plural] is a combination of the words: '*bo'* meaning '*to live*' [or home when interpreted as "Bostad"] and '*lokal'*, meaning '*workspace"* (Parker and Madureira, 2016, p.596).

It is located in Rosengård, a modernist-style housing district developed in Malmö during the 1960s and 1970s as part of the Swedish 'Million Homes' program, and one of the largest housing areas in Scandinavia (Gehl People, 2009). *Figure 57* gives a general view of the type of project and architecture. Like many similar projects of the time, it has deteriorated, physically, socially and economically and become isolated from the rest of the city (Parker and Madureira, 2016, p.595). The district houses 10,000 apartments and 25,000 residents of122 different nationalities and its most culturally diverse area in the city Unfortunately, the mono-functional scheme of Rosengård, lacks common spaces for social interaction. According to a study by Gehl People (2009) less than 1% of the area are open spaces and the distribution of the high-rises creates areas devoid of people and life, with no places to it or protection against the wind.

Figure 57. View of Rosengård from the Bokaler project. Source: rosengardfastigheter.se (2021).

The small-scale project was developed by the Swedish public housing company MKB as a strategic intervention with clear goals: provide an alternative to activate a local economy, create affordable commercial space for rent for the local people, re-activate the area, generate a point of gathering and reference in an area devoid of individuality (Parker and Madureira, 2016, p.596).

The project took one of the 3-storey residential buildings of the area and converted it into a mixed-use building. The apartments on the ground floor were extended outwards to create commercial space that opened directly to a semi-public space at the front of the shops. This semi-public space, intended as an extension of the shops and a meeting place, has provided lively interaction, mutual monitoring [provided 'eyes on the street' (Jacobs, 1961)] and a good visual connection to the [later developed] public space right across [*Figure 57*] (Parker and Madureira, 2016, p.597). The exact location of the project was chosen so it could contribute to providing a sense of direction and connection with the city center. The cycle path that runs in front [*Figure 58*] is part of a larger project to connect Rosengård to the city center (Gehl People, 2009).

Figure 58. Bokaler [right] and cycle path. Source: rosengardfastigheter.se (2021).

In an area profoundly marked by unemployment, a key goal was to enable local entrepreneurs to start a small business within their own neighborhood. Therefore, besides providing the neighborhood with a new land use and space for development of local business, this project introduced a kind of actor that proved to be a key node in local social networks and in the development of a lively city space, the resident-entrepreneur (Parker and Madureira, 2016, p.597). In order to obtain long-term tenement to support these goals, the project provides the resident-entrepreneur of highly visible space, well-equipped amenities, low rent combining apartment and shop, lower financial risk, proximity to their target market, closeness to family and access to their support networks. In turn, the resident-entrepreneur provides local, 24-hour commitment, contributing to the area's safety, liveliness and cultural identity.

The project has also had a huge impact beyond the original goals by sparking integration within the neighborhood since it is located at the edge between two segregated social groups. The

semi-public space of the Bokaler, together with the cycle path that runs in front have become their common meeting place, and across from the project, the unused parking lots were made into public spaces. The neighborhood now has a more readable scale that fosters a sense of ownership and belonging, liveliness and social activity, and the Bokaler have become a type of 'town center' allowing for the success of other new public spaces [*Figure 59*] connected by the cycle path (Gehl People, 2009).

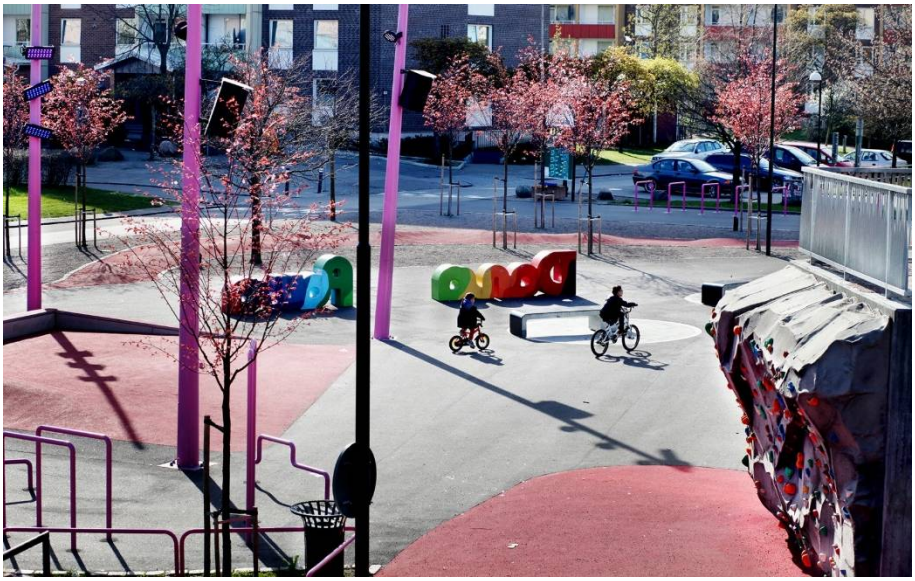

Figure 59. *Rosens röda matta* Public Space. Source: nosegregation.tilda.ws (2021).

6 Spice it up [flexible spaces]

Elements in space can establish the image of a place, they can create identity. These objects can vary in scale and use and can be landmarks, architectural elements, and even the smallest objects of urban equipment and furniture; they can be elements of public art like sculptures, they can even be a type of pavement, or natural elements set in unusual ways within the urban fabric.

These details are sometimes an afterthought but they can be small investments with a big impact on the people's wellbeing. When used strategically, they can help transform the use an image of a space by offering something people haven't seen before. These elements can make a place unique and recognizable. They can improve the legibility of an area, making it easy to find the way.

These elements can be utilitarian [like seating] or just provoke the senses [non-interactive art], but if they are well distributed and well-placed within a city, they can complement the space and create a sense of identity for the community living there.

Art and design elements can have transformative effects. They add interest to a place and stimulate the senses. They can add character to a place that lacks it. They can be designed based on the culture of the area to strengthen identity. Having a shared identity with your community, is a feeling of belonging can be seen in people's pride in their city, in its places, its public buildings, parks, and streets, and its athletes and artists. Local urban identity is often stronger [and perhaps more relevant] than national, cultural, or ethnic identity. Local identity is inclusive nature and makes for one of the healthiest forms of community building.

The view of city life and people is by far a city's main attraction for people. People want to be around people. People want to sit near other people, but not too close. People want to sit and watch people walk by. Being able to stay in public space depends on how inviting and how well-equipped it is. One of the most basic elements in space is seating. Good seating is important because it allows for social interaction but also aids people in their everyday routines, to rest from a long walk or to wait for another person to arrive. Sometimes sitting is just about enjoying the city. So, quality seating is part of this component, too. Seating can be fixed like various types of benches, but can also very well be moveable chairs. These moveable chairs provide flexibility to users, who can move them around and decide where to sit, or what to look at. The freedom to move chairs around is not only an opportunity to arrange the space for specific situations, but also can give the chance to experiment with different forms of using the space.

When the movable objects are not chairs, per se, but other elements of design that can serve as informal sitting, but also as informal tables, or blocks to climb on for children, then the space gains a lot more interest. Elements in space act as a catalyst to enhance the sociability of the public spaces and generate a sense of place among the residents. Prototypes of urban furniture or temporary urban interventions are based on three characteristics: flexibility, sociability and compactness. Because they can be easily moved and transported to different places in the city, they can change the use of a place in a short period of time, with low cost. When people have to interact with these elements placed in public space, they create mutable and flexible spaces.

This component is so flexible and creative there are many examples of best practices out there to choose from. The two chosen best practice examples are projects that were conceived as a temporary intervention of high quality that with time, people have decided to keep. One uses loose pieces [individual elements] and opts for the gradual and experimental approach to radically changing all the streets in a city. The other uses art and design, and its implementation was so successful that the technique has been incorporated into the development plan of the city.

Plug-in elements: The street moves project - Sweden

Street Moves is a project part of Sweden's urban experiment known as the "*one-minute city*". It was inspired by the functionality of the San Francisco parklets, the dynamic modular system of LEGO and the concept of "hyper-locality" behind Paris' *15-minute city.* The project aims at transforming the street from a space reserved for cars to something that can provide amenity for the whole population (O'Sullivan, 2021).

The project has two features, one is a physical object that is placed in public space and the other is an interactive participatory process that gets people involved in decision-making and design (O'Sullivan, 2021). The physical object consists of kits of modular parts that are installed on top of a deck forming a unit. The unit is designed to fit in the space of a parked car at the curbside. Replacing parking at the curb is the main aim of the *one-minute city* concept that tries to diversity of uses to the spaces 'right outside the door' [*Figure 60*].

Figure 60. Visualization of the Street Moves unit at the curb. Source: (O'Sullivan, 2021)

The unit consists of a deck made of pine wood, which is a material that is widely available in Sweden [locally produced] and very affordable, that can be leveled with the street. Easily installed, replaced, adapted or removed depending on the need, these deck units can be stand-alone [fits on a parking spot] or interlocked to flank an entire street (Dickson, 2021). On top of the deck, the modular parts are placed according to the design and can be seating elements like benches, tables to sit and eat, bike racks, charging points for shared electric cars and scooters, children's play spaces, outdoor gyms, lighting, planters and a variety of other options (Dickson, 2021). *Figure 61* is an image of the process of design of a proposed configuration. *Figures 62* and *63* are the finished product on location.

Figure 61. Conceptual diagrams for possible combinations. Source: (O'Sullivan, 2021)

Figure 62. Street Moves. Bike and scooter parking. Source: (O'Sullivan, 2021)

Figure 63. Street Moves. Sitting spaces. Source: (O'Sullivan, 2021)

The idea of the modular design is not about including every feature on a street, but instead taking sections of it to make places for social connection increasing the diversity of uses by getting a diverse group of people involved (Dickson, 2021).

The second feature is more intangible but of great significance to the transformation of public space into a place for community. Through workshops and consultation, residents decide how much space is left for parking and how much is used for the new amenities. They also participate in a process of prototyping, in which the people select from a library [like a menu] of kit parts that is facilitated by the design office, and then configure the unit with the chosen parts. The process is backed and facilitated by two government offices of architecture, design and innovation. The main goals of this process are to create identity, community bonds and a manageable scale that can be replicated all over the city and eventually the country (O'Sullivan, 2021). The prototyping process can create identity by adding elements to public space that are varied and unique to that place because it was designed by the people. This process can also strengthen community relationships.

Transformative art: Paseo Bandera – Santiago, Chile

Bandera is a street located in the heart of the city of Santiago, Chile and it's one of the most important connectors between the northern and southern parts of the city. Historically it was occupied by buses and delivery trucks and was considered one of the streets with the worst noise pollution in the city (Herrmann and Mora, 2017, p.5).

In 2017, construction began on a new metro line in the city center, and an area along 3 blocks of the street were closed of to traffic. The space was deserted, motorized traffic couldn't pass but now with the space for themselves, people would not walk in that area. Construction work, material, debris and other annoyances kept them away. The city decided to make a temporary intervention to activate the area and help the commercial activity that was affected by this closing. In December 2017 the work began on what today is one of the most recognized fully pedestrianized streets in downtown Santiago, Paseo Bandera (Pallares et. al, 2020, p. 281).

The project was envisioned as a fully pedestrianized area, were art and culture were the main theme. The installations were charged to a collective of art and design studios, and their proposal was a space where people could sit and rest outdoors, but also a place for entertainment and social contact. They used mostly paint but there are elements installed along the stretch of the street that complement the designs painted on the surface and function as urban furniture (sitting spaces and planters) [*Figures 64 and 65*], signage was included for wayfinding and other sculptural elements [*Figure 66*] to mark intersection points (Pallares et. al, 2020, p. 281).

Figure 64. Paseo Bandera. Santiago, Chile. Source: (Pallares et.al, 2020)

Figure 65. Paseo Bandera. Santiago, Chile. Source: (disenoarquitectura.cl, 2021)

The studios designed and executed a detail design that made an important impact on all the people that came in contact with the street, the workers, residents and visitors. The original intervention was only 3 blocks long, so each block has a different design, given it an identity of its own [*Figure 67*]. With time, people started recognizing the area they were in, so the designs and elements became landmarks in the city (Pallares et. al, 2020, p. 281).

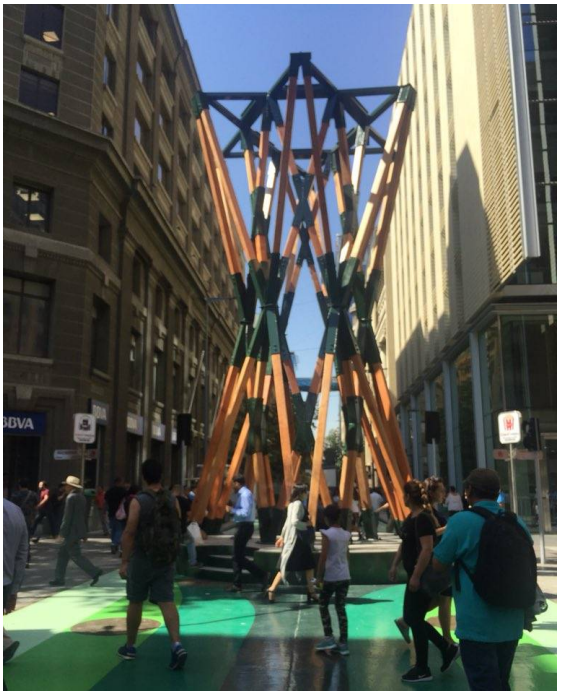

Figure 66. Sculpture at intersection. Source: (disenoarquitectura.cl, 2021)

Figure 67. Paseo Bandera first stretch. Source: (disenoarquitectura.cl, 2021)

The project had an advantage of location. On that street, many banking institutions are located, which, when the local government approached them for financing, agreed happily considering the benefit they would gain from that temporary activation (Herrmann and Mora, 2017, p.4). This financial push helped complete the project in record time and the street was opened to the public. Immediately becoming a new landmark in the city.

The impact was very clear, the space saw an increase in use of about 325%, with more than 88,000 people using the street daily. Commerce registered an increase in sales of 20% and registered their satisfaction level with the city higher that any in the historical center. Considering these positive results, the city decided to consult if Paseo Bandera should remain a permanent feature of the city [it was scheduled to be dismantled a year after its inauguration]. Not only did the people ask for the space to be made permanent, but the city decided to extend the pedestrian area further (Pallares et. al, 2020, p. 282).

The second part of the project followed the same idea as the first one, art and design collectives led the effort but this time, the people participated in the painting efforts and in some design workshops for certain parts of the way. The extension to Paseo Bandera also included an underground tunnel [formerly for traffic] that leads to the vicinity of one of the most important public plazas of the city. This tunnel [*Figures 68 and 69*] will become an art gallery and is nowadays one of the most popular spots in the city because of activities that are planned there related to art, design and culture (Pallares et. al, 2020, p. 284).

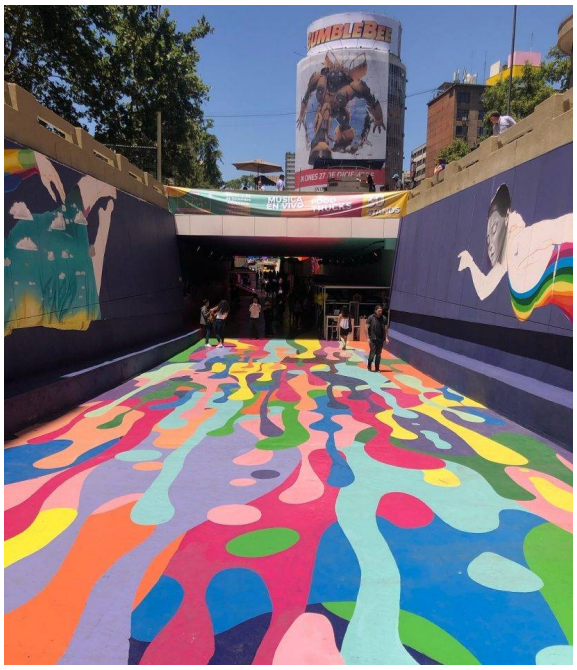

Figure 68. Extension to Paseo Bandera into a tunnel/art gallery. Source: (Pallares et. al, 2020).

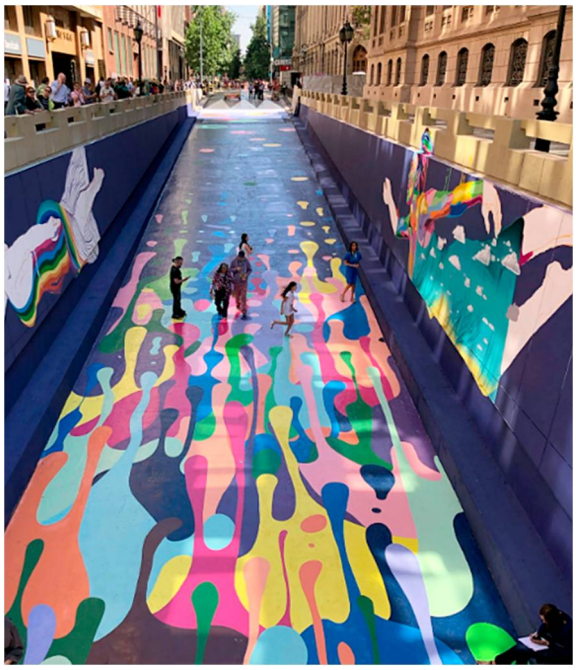

Figure 69. Extension to Paseo Bandera. Source: (disenoarquitectura.cl, 2021)

These types of interventions where a space is changed by painting the street and adding elements that function as furniture in a temporary fashion are not new in Latin America, in fact, it is a very accessible way to change the use of a street, modify the right of way and create different spaces on the space, in a practice called 'tactical urbanism' ['place-making' in Europe and North America]. This type of practice began as a form of disruption, or intervention by the people and the government would not be involved; with time, given its success and support from the people, certain government offices started to use it as a strategy that is affordable and effective. In Santiago, what is important about the success of Paseo Bandera was the subsequent incorporation of 'tactical urbanism' as a step in the city development plan. The plan outlines how and when this strategy would be used, to avoid imposing changes on the people, but rather letting them test it and decide if the project works or not for them, just as they did with Paseo Bandera.

All the concepts behind the components of the built environment require a radical or dramatic change in the direction we've set for the development of our habitats, to be able to envision possible cities challenging what we know or experience or consider normal and 'unchangeable'. But this shift should not be in the hands of planners alone, it should be the people in cities who should also be involved in its development and maintenance, in its planning and design. This will be discussed in the following chapter.

4. Discussion: Planning for a city of wellbeing

The main research question of this thesis is:

How do we plan for healthy and inclusive urban environments that support wellbeing in cities?

After learning what wellbeing means by analyzing concepts of inclusion and health in detail and defining a vision of the city, and after researching, defining and illustrating the kind of components the built environment should have in order to develop cities into those that focus on people and their wellbeing, this question can be answered.

Planning for people requires planning with people. A city that fosters inclusion and is supportive of people's health would allow for its people to be involved, to participate, to build together. Planning with people means engaging them to become active participants in the planning, designing, development, implementation, and even in research, of initiatives, plans or projects that have transformative potential in their immediate built environment and consequently an impact in their lives.

The most important of the findings is how the idea and practice of citizen's participation permeates through all the topics of this thesis. Participation is necessary for inclusive environments. The ability to participate in everyday city life, to have agency and make decisions about one's life is crucial for inclusion. Regarding health, active participation in community life and the subsequent development of relationships is key to mental health, and consequently to wellbeing.

Building the city of wellbeing requires the implementation of the components of the framework and the best practices show, not only what is possible to achieve with these components but also how to achieve them. The best practice projects show how ideas that have the potential to radically shift the way cities are viewed and used require the involvement of people for the successful implementation of the project, and also for people to appropriate it as their own, building the potential for long-term success.

All of the components proposed for the framework are innovative ideas that can be considered radical since they question the image and pre-defined concept of what cities are for, who are they for, and what belongs and doesn't in a city, or even how should city dwellers feel while living in the city. Most people would not be able to visualize this to support potential changes in their way of life and the spaces they live in, even if these are negatively affecting them. With this in mind, the second main takeaway is also related to this idea of people being agents of change and development in their communities, that is the need to have room for experimentation in the planning process.

Changes are not easy to accept for many, and being able to experience it can make the transition easier. Experimenting on site also has advantages for the professionals involved and local government before policy is made, or large amounts of money invested, while testing what is on paper to see what it actually looks like and how well it works with the community, modifications can be made before it becomes permanent.

Participation and experimentation can work together as strategies for plans and designs that are responsive to people's needs and wants, to the culture of the community and its diversity, and are

key to the planning process for a city of wellbeing. In some cities they have been used in different ways and for particular types of projects, however, the results of this research suggest that these should always be part of the process, and they should either be introduced or prioritized if they are already part of the process. As previously stated, proposing a framework for all the necessary steps in a planning process is beyond the scope of this thesis, however, it becomes clear that adding or prioritizing these two strategies has implications to the entire process, and challenges not only what the process should be like but also the role and skills planners should have in order to carry them out and lead the process.

There needs to be a paradigm shift in the way cities are planned. It needs to change from a top-down approach to a bottom-up approach where the people are put first in the process. There should be research about how people use the space in order to make decisions about that space. Experts need to become facilitators and not the ones that have all the answers. Cities are complex systems, no one has all the answers and no one knows all the places in the city enough to propose changes. Local people need to get involved. They need to get engaged so they participate in the process of planning, design and even implementation, but above all in the time after implementation for the success of any transformation over time requires that the people care and tend to their neighborhoods. Planners also need to be bolder and find ways to experiment on site the ideas that haven't been tried before in that area.

4.1 Participation through engagement and inclusion

The most important message throughout this research is that of getting the people involved. Levels of involvement vary depending on many variables and there are experiences from different parts of the world to pay attention to.

The strategies for people's participation can take many forms and different objectives, however, what should be different about the planning process is the inclusion of these strategies as fixed practice throughout the process. Many planning practices still assume that the knowledge of the experts [in planning] is enough to make decisions about city development [or redevelopment], if anything has become clear is that the knowledge of a few actors is limited and only by including more actors in greater varieties of age, gender, social status, professional status, technical expertise, etc., can the complexities of city planning be tackled to the benefit of the greater majority.

Multiple types of actors also mean multiple ways of approaching an issue. Involving children in the process requires different kinds of strategies than involving older adults. Professionals and politicians also require a different way of getting involved and the types of things they can feed into the process. The neighbors on a street are a varied enough group to assume they can get engaged the same way as people who don't live there but have commercial interest in the place. One aspect is clear for participatory process, considering the people's [any group] vote on any issue [a 'like' vs 'dislike' or a 'yes' vs 'no'] is not a productive way of obtaining support for a project.

Throughout the literature and case studies analyzed in this research, the difference between 'public participation' and 'public engagement' [to use the terms used by Chinchilla (2020),

although other authors have other names for processes that yield similar outcomes (Quick and Feldman (2011)].

In a common or simple public participation process, the dynamics between the public [people] and the planners [experts] is through a one-way communication process. People are told or shown how a project would be and asked for their opinion, or people are asked what they want [even through design workshops] and the experts listen, take note and apply at their discretion. This process, although of value, has several disadvantages. Either people grow detached from a project that might impact them directly or skeptical of the process if they don't see it manifested as envisioned in a workshop. Therefore, what the literature suggests for more lasting results is a process of public engagement, which is an inclusive, two-way communication process. It aims at engaging people with the project [or plan at large] for a long-term relationship with it; it involves knowledge exchange from both parties, from the experts, knowledge on technical and theoretical aspects that will gave the people the tools and a wider perspective on the particular urban matter; and from the people, empirical knowledge of corners and realities of the city that the experts would have no other way of acquiring, expanding also on data and information that can prove valuable down the line for other projects or areas of the city. Relationships forged can lead to a prolonged engagement of people, which is crucial particularly after the implementation process, for the future maintenance of the project, or if it is a prototype to be repeated in the future, or if it is the commitment for a long-term development plan.

Public engagement is not a simple process and requires recalibrating strategies within the entire planning process but it is the one ingredient that must be adopted for success in the implementation of ambitious changes like the ones proposed in the framework.

4.2 Room for experimentation

Research and engagement processes should result in a prototype for the design intervention. Testing out ideas using low-cost, temporary installations can be useful to assess their successes and adapt as necessary. This phase of the process should continue to seek in order to improve the outcome. Often, temporary installations are made permanent, which points to the value of allowing room for experimentation in the planning process.

Experimenting adds dynamism to the city's development. A city that is alive is constantly changing, something is being built, something is happening. Private projects dominate this dynamism because public projects tend to have long planning, design and execution processes. That is a disadvantage because it can make people skeptic or apathic towards certain projects, that even if made in the best interest, could spark strong opposition, repulsion or even the feeling of 'nothing happens here'.

Prototyping and experimenting can be done at any scale, however, the strategic value of experimenting in place relies on 'how real' the prototype is; is this 'exactly' how the space will look and feel when [and if] it is permanently implemented. Smaller scales are more manageable and cost effective but medium scales allow for more people to experience the space. Many times, a project or intervention seems too abstract or difficult to visualize to all parties involved, especially

those who are not trained in design visualization tools. A 'real life' prototype has the advantage that it is inclusive and anyone can get involved.

Certainly, technology can play a role in visualization [through virtual reality for example] but tools like tactical urbanism and place-making activation that use creativity to envision plans and changes, can be used to also build a relationship with the community and not only gain approval for permanent change but also for the maintenance of the project in the long-term.

4.3 Final reflections and recommendations for further research

How do we plan for healthy and inclusive urban environments that support wellbeing in cities? Urban environments should be planned to be green, to be playful, to be inclusive, to be clean, to be diverse, to be engaging, to be accessible, to be safe. They should be planned to made for people at their scale; they should be planned together with those people and plan them step by step but as flexible as they require to evolve. They should be planned, experimented on, tested and then planned again, in an iterative process.

A city is an unfinished project. It's in constant construction, constantly evolving, therefore plans and planners don't need to have all the answers all the time, but they need to be flexible and adaptable enough to respond to the naturally changing nature of cities.

Every city is different, and this is especially evident when studying the best practices; these cities were all tackling challenges of their own and using existing elements in their city as assets within planning. The city of Wellington is an example of this. They had been building a series of formal playgrounds that after 14 years were the jumping-off point for the development of their 'Play City Wellington' concept that envisions a city with play-full spaces everywhere. They have used the concept of incidental play to communicate the potential of any public place becoming a play space and the citizens involved in the process of creating them. Even Singapore's modification to their LUSH program to foster urban farming is a decision based on their most important asset [their biophilic city concept that they have been building for years] and a pressing need that is closely linked to people's wellbeing, fresh and healthy food supply.

When a community lacks clean air, water and green and waste is not managed correctly, and pollution from gases, chemicals and other harmful substances are affecting them, it's clear where the priority starts. Clean the river, regulate pollution, plant trees, but by keeping the 'big picture' - *people's health and wellbeing* – clear, interventions, investments and projects can be designed to tackle several issues at the same time. Eliminating cars from the dense areas cleans the air but also changes the public space dynamics and allows for more people to participate in the economic and social aspects of life in the city. Shutting down a pollution [non-compliant] factory but using its grounds for a different use [housing, entertainment, sports, etc.] brings the opportunity of giving more leisure time areas and play-full spaces while adding green. Recuperating river and its banks from pollution and degradation, can also open the opportunity to create more public space, more connection with nature, while at the same time giving access to basic resources to all the people in the community.

Many cities and urban places will need to address the most basic needs to achieve physical health of the environment [clean air, clean water, and access to both], but there shouldn't be a prioritization of these over spaces of play for example. Initiatives that can address the basic needs [clean water] and the other important aspects should be incentivized. For example, recuperating a river and transforming its banks in a protected green area with strolling and biking opportunities. Creating a transport line that connects these green areas with the cultural centers of the city. If a city has a waste management problem, it is not enough to address it by building a treatment plant, there could be a way of including the people who live there to be creative about waste management, and so get engaged and be aware

Cities are all different, and yet, are all very similar because they are all made of people (Gehl, 1971; Gehl, 2010; Sim, 2019); people who generally have similar needs and wants no matter their cultural backgrounds. The vision of a city focused on the wellbeing of people is so personal it has the potential to be prioritized before other schemes that put other things first. This approach of tackling issues very close, very personal to people can have an important advantage. Sometimes complex and large challenges are difficult to prioritize as they are difficult to envision or seen less urgent because of their scale, but bringing the attention to something so personal as the people's own wellbeing can have a positive effect on support and prioritization.

Future research on this topic could address the planning process in detail, exploring in which ways it needs to be changed to add or prioritize public engagement and experimentation strategies to the process and propose a step-by-step framework for it based on the principles of the conceptual model. Further research can also test the concepts presented in the thesis in context on a particular case study city, to propose specific interventions based on the components of the city of wellbeing.

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4. Conclusions

This thesis is a theoretical research into what human wellbeing is, based on concepts of inclusion and of human health; it will then propose how health, inclusion and wellbeing can be supported by the urban environment by determining essential elements to include or change; and finally discuss what processes are essential in planning to improve the built environment to support wellbeing.

The built environment has an important impact on people's wellbeing. As a result of development models that are obsolete today's cities are no longer working for the great majority. A paradigm shift is necessary in order to affect change in the built environment. Cities need to be re-imagined because the image of the city we have now is based on the old models of development that don't serve the majority of the people. In order to make a change is necessary to re-focus on people.

Wellbeing, health and inclusion are very personal topics. By focusing on them, change can be affected at a personal level but when scaled up can produce important changes.

A city of wellbeing has a large variety of green spaces, quality blue spaces, and offers different opportunities to come in contact with nature, nature is everywhere; the air is as free of pollution as possible, it has a comfortable microclimate, and adequate soundscapes; it is constantly improving and evolving to find balance. It is a city that is clean. There is always something happening, something that sparks interest, it is a play-full city, people of all ages can find spaces for leisure activities of their interest, it is enjoyable to spend time there, there are diverse activities and plenty of opportunities to learn something new. It allows for autonomy and independence and encourages physical activity with inviting and comfortable spaces. It is a city that is active. It is inviting and engaging, everyone wants to be there and feel comfortable, feel like they belong. It is people-oriented, it has a human scale, people can move at human speeds, people feel safe and at ease. Distances are short, places are accessible and there are no obstacles for all types of people to feel to enjoy the city. It is legible, it is easy to move about without getting lost. It is flexible and adaptable to people and their activities, and constantly evolving to include more people. It is a city that is friendly to all. It is diverse; there is diversity of people, places and choices; it is multifunctional, different activities all mingling together; everything is close by and conveniently connected, it's easy to access. It is dense [not overcrowded] and it offers plenty of opportunities to see people, to interact with them, and this opens the possibilities to develop social cohesion, to build a neighborhood. People feel comfortable, free, integrated in the community. It is a city that is mixed. A city of wellbeing promotes and fosters health and inclusion through supportive built environments that are clean, active, friendly and mixed.

In order to change the built environment, there are 6 basic components that every city needs to implement to build the city of wellbeing up.

The city needs to be given back to the people. In order to open up space for people to go about their daily lives in the city, all physical and psychological barriers need to be removed. Traffic is a very important barrier for the free and safe movement of people in the city. There needs to be a radical reduction in car traffic. Once traffic is reduced, there will be a lot of space available for people to go about their daily activities. People will once again be the protagonists of urban life and more people will be visible. Removing most traffic also means slowing down to more human scale speeds. There needs to be a variety of choices of mobility for people to move conveniently and safely in their everyday activities and only rarely need to use a car.

Once space has been gained, it needs to be brought back to the human scale and re-imagined as multifunctional space, streets not only for mobility, and open spaces for a variety of activities. There are many elements that can be included in public space, but for a city of wellbeing there are two crucial types of spaces, green spaces and play spaces. Nature needs to be all around the city and the city immersed in natural areas as much as it can. A radical greening scheme is necessary to produce a new image of cities, one that can be considered the human habitat and that reflects the culture and environmental qualities of its geographic location. Play spaces are not limited to children's playgrounds but they are a starting point. People should be able to play everywhere in the city, and to achieve this, play spaces should be re-thought as places for activity and interaction that can be anywhere in the city and can form a network so the people have new things to discover in every part of their city.

Buildings and built elements in the city need to be re-considered in their role of building community and identity. People should be able to live everywhere in the city. The current model of segregated uses is no longer sustainable. All the areas of the city, except for some special uses, should be 'mixed use'. Transforming monofunctional areas into multifunctional areas is a complex task but it is rewarding. Every area of the city can become a vibrant neighborhood, they just need to get the 'ingredients' that they need. There must be variety in all the uses, variety of housing so there will be variety of people. Diversity is the strength of cities. More diverse uses mean proximity, there are more options closer to home and more chances to meet the neighbors, more chances to develop a community. Elements in space can help define the identity of a neighborhood. They can be landmarks, points of reference, they can be works of art, useful elements. They can transform the space temporarily making it flexible and adaptable. Strategically thought of elements and public art add the 'finishing' touches to the city of wellbeing.

Planning a city for the people requires planning the city with the people. There needs to be a paradigm shift in the way cities are planned. It needs to change from a top-down approach to a bottom-up approach where the people are put first in the process. There should be research about how people use the space in order to make decisions about that space. Experts need to become facilitators and not the ones that have all the answers. Cities are complex systems, no one has all the answers and no one knows all the places in the city enough to propose changes. Local people need to get involved. They need to get engaged so they participate in the process of planning, design and even implementation, but above all in the time after implementation for the success of any transformation over time requires that the people care and tend to their neighborhoods. Planners also need to be bolder and find ways to experiment on site the ideas that haven't been tried before in that area.

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I hereby declare that the Master Thesis, which I am handing in today, is my own work, produced independently, using no other sources and means of support than those specified.

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