“Ban Move”

Introducing a healthy lifestyle in Curacao;
Providing incentives for a healthier lifestyle by means of urban planning and architecture

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1. Introduction

Curacao
Location: Curacao
Capital: Willemstad
Population: 141,766
Area (total): 444 km²
Density: 319/km²
Climate: Tropical, with NORTH-EAST winds
The effect of urban sprawl and the built environment on health conditions

Urban Sprawl
As defined by Reid Ewing et al., urban sprawl is identified as the process in which the spread of development across the landscape far outpaces population growth. A certain amount of research done, by institutions and universities have taken the United States as an example for their studies. This is because, North America is one of the largest continents where urban sprawl resides and where the effects are visible due to the reigning level of people suffering from obesity. The overall people suffering from obesity are a staggering percentage of the world population and in some cases is even acknowledged as an epidemic. From the discipline of urban development and planning this problem has been connected to the existing urban environment.

Physical activity and patterns of land use
The consequences that urban sprawl brings on the population is the leading of an unhealthy lifestyle. With urban sprawl the land use is relatively homogeneous and has a low-density pattern, compared to the diversity found in traditional urban and or small town settings. In traditional urban cities and towns, there is a higher density and mix of functions, compared to the cities where urban sprawl prevails.

The presence of sprawl dwindles physical activity, because of the distances that have to be bridged in order to reach a certain function. In some cases (especially in the Americas) people have to take the car to get some milk or reach the closest convenient store. Different land uses are separated from one another, with the separation enforced by both custom and zoning laws (Frumkin, 2002).
Curacao - Character

Economy

ISLA - Oil Refinery  
Tourism  
Harbour

Architecture

Monumental building  
Public Building  
Colonial style housing
Curacao - Character

Food

Street Goodies

Market - tropical fruits and vegetables

Culture

Carnaval parade

Market - Food court

The Island has a very diverse cultural background. With a colonial history and the influence of many different ethnicities, Curacao has developed into a vibrant island. The main economic activities are that of the oil refinery (leased to Venezuela), the harbour (import/export and trading of goods) and of course all year round tourism.

A large part of the local economic activities have something to do with either food or leisure activities. Food and festivities are an important factor of the local culture and are also celebrated by all. The diversity of all these elements makes the island and interesting place to reside or visit.
Theoretical Position and Ambition

People are always on the move and influence life continuously. The dynamics of life have an immediate impact on the environment, the built or un-built environment. This always poses a challenge for the urban planner and designer. As an urban designer we are influenced by the issues that play a role in city development. Nowadays as global warming poses a threat, people from different disciplines are becoming aware of the health issues that consequentially form the problem on global health conditions of cities.

This project originates from the problem of health conditions on a global and local scale.

While many are not aware of the immediate consequence that urban planning has our lifestyle, it still poses a problem. This project acknowledges the fact that the residing situation of health is also a problem on the Island of Curacao. In Curacao, as mentioned above, the issue of health is related to obesity (which is the cause for hypertension (high blood pressure), diabetes mellitus and cholesterol).

After some research the conclusion can be drawn that Curacao does not have a up-date strategic plan for the future urban development of the Island and that the urban structure is partially responsible for the current health conditions. The department of spatial structures and urban planning is aware of the problem, but there are still studies ongoing, on how to approach this.

To contribute to these developments, this project will propose some design principles and a design study that can be approached as a case study for dealing with the health problems in Curacao. In the context of the health issues posing a problem a review paper is written. The subject of the review paper is on the effect of urban sprawl and the built environment on health conditions. This paper provides a theoretical framework that contributes to the body of knowledge on health and the urban environment. The paper together with the urban analysis and urban design proposal for health improvement contributes to the existing body of knowledge in the specialization on the subject.
10.9% of children from 5/6 year are obese (study from the GGD Curacao, 2005)

Three levels of fighting obesity: Downstream, Midstream and Upstream

**Downstream** (awareness):
Educate, motivate, mobilize individuals as well as families toward healthy lifestyles

**Midstream** (act in the community):
Improving the general quality of the natural and built environment.

**Downstream** (local and federal policies):
Providing incentives for individuals as well as communities to respond to this epidemic

Critical to allow and encourage healthy lifestyles
1835:
The first church village was resurrected at Banda Ariba by Martinus J. Niewindt. This was one of the first impulses for spatial development.

1920-1960:
The rural area around Schottegat becomes a city. Villages for the employees of SHELL were built, influenced by Javanese architecture and also different styles of interior architecture were of influence.

10 October 2010:
The Dutch Caribbean island of Curacao became an autonomous country within the Kingdom of the Netherlands.


Decline of the percentage growth from 50.8 percent in 1950 to 16.2 percent in 1970.

Evolutionary Map
Historical Analysis of Curacao

Foundation [1634-1836]

Willemstad was founded in 1634 by the Dutch West India Company after they conquered the Island from the Spanish. The Dutch were possibly the only colonizers who from the start built cities as settlements in the West India archipelago. The tradition of building settlements was a much practiced custom of the Dutchmen, an example of a similar establishment was the city called Batavia (105 acres, whereas Willemstad only consisted of 9 acres including the defence fort) in the East India archipelago. After the military garrison and the quarters of the senior government officials were built, the first residential quarters were built right up against the walls of the fort (Punda). After 1700 a second district, Otrobanda, was established on the far side of the bay.

Outside of the city walls there were plantations run by slave owners and small settlements of slave communities nearby the mansions. For a long time the plantations were the main economic income of the Island.
**Spatial expansion [1835-1910]**

Until now Willemstad was still the only actual city on the Island, this all changed when monsignor (formerly a priest) Martinus J. Niewindt set foot ashore. Beforehand there was only one church village, Santa Anna (1751), outside of Willemstad. Slowly, but surely, Niewindt successfully established a network of church communities in the vicinity of the plantations and not too far from Willemstad. This was the first real indicator for urban development into the urban primacy that the city is nowadays.
Stagnant development [1900-1920]

When slavery was abolished in 1836, most of the freed slaves stayed to work on the plantation. Some went to live in the city, trying to let go of their past and look for a brighter future. However the plantations declined in economic values and the wagers were barely enough to make a living. Having heard of the better working standards and wagers on other Islands were the agricultural industry was flourishing (Cuba and Haiti) many people went to seek a new living there. The population rapidly decreased and the economy of the Island was instable for a while. After the phosphate mining was halted, which restarted in 1913, the straw-hat industry had to help the economy back on its feet (in 1904 half a million hats were exported and in 1912 around one and a half million).
Industrial revolution [1920-1960]

in 1915 the plantation of Asiento was bought by SHELL (back then called the “Bataafsche Petroleum Maatschappij) and the oil refinery was built shortly after. The reason for this location was that the natural harbour of the Sint Annabaai was deep enough for oil tankers. There is however a small downside to the location of the oil refinery on the Island, it was the lack of natural water sources and lack of schooled workers. Because of this the search for suitable employees was focussed on immigrating workers from different countries, such as Suriname, Portugal, Netherlands and others. To accommodate this growth of population SHELL acquired some land for development. They created villages for the workers. The highly paid workers could live in Julianadorp and Emmastad. Another example is the Suriname village (Surinamedorp and Suffisant) residential quarters built specifically to develop a community for people with the same background. The less fortunate and lower class workers (mostly ex-slaves) had to provide their own settlements and hereby squatter villages were formed near the refinery. These two spatial developments have formed a basis for urban model of the Island.
Urban centralities [1960-2011]

Between the 60’s and 70’s the economic development by the oil refinery declined. After a while SHELL sold the refinery to the government of Curacao for a symbolic value of 1 dollar. Ever since the refinery was rented to Venezuela, the rent for the refinery is not high enough to be the main income of the Island. Economic developments afterwards focussed on offshore investing and tourism. Nowadays the local government and other foundations are aware of the consequences the urban development has on the inhabitants (alarming obesity rate). Different teams have been built to work towards finding sustainable solutions for improving the network public spaces and poorly developed neighbourhoods.
Problem Statement

Nowadays the notion of comfort plays an important role in the development of our society. In the past few decades the increased use of cars together with a decreased tendency to walk, bike or sport has brought contemporary urban societies all over the planet to face the problem of obesity, especially by the youth. Movement, in the broadest sense of the word, is dwindled as a result of increasing comfort for transportation. This has led to a paradigm shift in contemporary society, where movement throughout the day has changed from a (conservative) nine-to-five lifestyle to a 24/7 active lifestyle. Because of this shift there is also a continuous amount of stress.

This is also the case in Curacao. With the coming of the oil refinery (Shell) around 1920 the Island started industrializing. The refinery was responsible for the large growth of the Island's population, because of the many immigrants it attracted from all over the world. This affected the economy in a positive way, resulting in a rapid economic and social development which lasted until the 1970's. The effect of this industry was that the lifestyle on the Island started developing into a more active lifestyle. Leisure and recreation became an important part of the culture and lead to a 24/7 active lifestyle.

However this 24/7 active lifestyle is most of the time not a healthy lifestyle. Due to the stress and the existing lifestyle that prevails, the current level of people suffering from obesity is alarmingly high. Movement on the Island is mostly limited by the usage of cars and the lack of a proper public transport system, whereas the infrastructure is also inferior. So there is limited space for walking and for public activities within the neighbourhoods. All the problems mentioned above (and more) contribute to limited physical activity and form a basis from which the problem statement is derived.

It is within this context that we can say that due to prevailing fragmented urban development and the lack of public spaces and facilities that obesity is the outcome to this problem. In Curacao the threatening problem of obesity is not yet seen as a treat and is more accepted as a cause of the prevailing lifestyle. Not a lot is done to prevent the gross majority of suffering from obesity, due to the fact that it is not taken too seriously as a problem. Also the ignorance of the mass prevents to make one realize that being obese can do physical damage to one's body.

On the other hand the biggest problem is that the state of public space is insufficient to allow people to actively move. The infrastructure is neglected because of financial shortcomings and ill planning. The importance of having shadowed walkways and playgrounds for people to use is undermined in the traditional planning. Nowadays the government recognizes the problem and tries to deal with it.
Design Methodology Theory

The research questions form a basis for the graduation project. At first a study on the collected literature will be done to clarify the knowledge that already exists. The study of the literature will be done in the form of a review paper, which will generate input for the design principles.

**Approach**

Integral to the studying of the literature, a typological and morphological analysis will give a better understanding of the situation in the context of spatial planning in Curacao.

For the empirical study, field research is necessary. Also interviews with different disciplines and organisation dealing with the subject of health and the urban environment on the Island, will prove useful for further information on the existing knowledge on the subject.

The main research question stated above can be answered by aiming to answer the questions for the two separate disciplines of architecture and urbanism. The method used is in a spiral movement starting at a certain point working your way down to the outcome (answer to the question) constantly re-examining the position taken at certain points.

The graduation product strives to produce the required methods and design principles for dealing with the health problem in Curacao. The project is site oriented on the “Cas Grandi” district, which poses a adequate location to use as a case study.

The approach for providing solutions to the problem are as follows:

**Design principles**

- An urban analysis of the urban environment and health conditions: by combining an analysis of the current situation of the urban environment and future planning strategies, the problems become visible. The design principles will contribute to designing and redeveloping the urban environment to improve health conditions

- An analysis of the social and economic position of the health problems: it is known that in Curacao the current lifestyle also contributes to the leading of an unhealthy lifestyle. By doing a literature study on the subject of leading active lifestyles and an empirical research on the location, design principles can contribute to creating an healthy environment for leading an active lifestyle

Master plan for a sport complex

- A morphological and architectural analysis: looking at the existing sport facilities and architectural means which contribute or decrease the means for leading an active lifestyle. And adapting the findings of the study to propose design principles for improving and stimulating people to become physically active.

The will be composed out of different approaches. First a literature and architectural study will be done to generate input for the design principles. After this, different urban situations dealing with the same problem (case studies for leading an active lifestyle) will be analysed. And to research the feasibility, the design principles will be applied in a design for a sport complex and different architectural interventions on the scale of neighbourhoods and communities. Both the analysis and the design will provide an adequate feedback on the affectivity of the design principles.

The initial stage of studies is done by providing mappings of the different activities on the Island. This gives an impression on how the urban situation relates to the health issues (obesity). These mappings are done on four different levels of scale: **XL, L, M, S**
XL | L | M | S

NATIONAL SPORT COMPLEX | SHOPPING MALL (SUIKERTUINTJE + BLOEMFOT) | COMMUNITY CENTRE (SUFFISANT) | MINI-SUPERMARKET

GLOBAL SCALE NETWORKS | METROPOLITAIN SCALE NETWORKS | CITY SCALE NETWORKS | LOCAL SCALE NETWORKS
Aims of the Project

The overall project aims at contributing to urban planning in Curacao by improving the qualities of urban areas and taking into account the problem of health. This will be researched by testing design strategies for a site specific project in the region of Montana.

Concept
Improve spatial, social and economic integration of the isolated areas in Montaña by programmatic interventions, improving public space network, create connections on the borders of fragmented areas.

Ambitions
The general strategy for this project is based on the interrelation of the following intervention strategies: connectivity, public space network, water management and means of production. These strategies are integrated into a strategic master plan which applies to the areas of Montaña. These interventions can be broken down in three layers. The analysis mappings on the specific topic form the basis behind the interventions. The strategy forms the second layer and the third layer indicates where specific interventions might take place as an outcome of implementation of the strategy.

Development goals
On the local scale the strategies are integrated into the design for a public park with the site specific interventions connecting the fragmented areas and creating opportunities for future developments. On the regional scale these strategies form the basic starting point to tackle the residing urban fragmented development and hereby create integrated communities which provide an impulse for the socio-economic and spatial development. Overall goal: strong economic, social and spatial position of the development areas in Montaña and the nearby centralities.

Impacts and risks
Impacts:
- Improved spatial conditions
- Improved living conditions
- Improved social and economic exchange
- Sustainable development of Montaña’s neighbourhoods
- Increased means of production

Risks:
- Spatial interventions must accompany economic and social strategies
- Resistance or no acceptance of the community (why change something that already works for us?)
- Gentrification: new developments will increase land values and attract private developer’s
- Social integration with surrounding neighbourhoods might not be desired

Problem statement
1. Due to urban fragmented development Montana is a subcenter constituted of spatially segregated areas.

2. Physical disconnections: infrastructural barriers, vacant undeveloped lots, transport

3. Lack of functions for public use: underequipped suburban development

4. Social cohesion but isolated from neighbouring areas

5. Lack of local means of production: few program for economic stimulation and development (informal as well as formal)
Research Questions

Research aims
The aim is to explore the possibility of implementing alternative facilities and infrastructure in an existing social culture so to trigger the revitalization of social cohesion.

Main question
How can spatial structures be used to foster a healthier lifestyle in Curacao?

Sub-questions

Urbanism
1. What is the relation between use of public space and the stimulation for physical activity?
2. How is public space used in a tropical environment?

Architecture
1. Which ways of spatial planning exist to provide opportunities for stimulating social participation?
2. How can sport and recreation facilities help in creating stronger communities?

Research question Urbanism:
How can spatial planning stimulate physical activity in different neighbourhoods in Curacao?

Research question Architecture:
How can the building of a sport and recreation complex promote an increased social participation to sporting facilities and, at the same time, support the development of top sportsmen?

The overall aim of the project is: revitalizing the areas connected to the plan site and influencing the way of living by trying to achieve a healthier lifestyle. It is about creating awareness and opportunities for the inhabitants of the Island to influence their life by living healthier.

Hypothesis

By implementing socio-spatially integrative strategies based on public space interventions, aiming at the permeation of the borders which form the spatial segregation of Montaña, the conditions for a stronger social and spatial integration with the adjacent neighbourhoods within the district of Montaña will lead to a more physically and active lifestyle.
There are no design principles yet for dealing with the problem of obese people in Curacao. Therefore this graduation project will add new design strategies to the working field of the planning strategies of the Island. Also in this study designing with the influence of the climate and with sustainable principles in mind will give new meaning to the existing building systems that now exist.

Societal relevance
When the planners will exercise the design principles in the neighbourhoods, this will change the structure of the urban fabric and will have a direct impact on the lifestyle of the inhabitants. In the first place the possibility for physical workout is promoted and walking will become an attractive option, whereas in the existing situation there are not many options for the neighbourhoods. Exercising is expensive and not stimulated enough and the infrastructure is in a bad condition.

If the design principles prove to be effective this will increase the overall health situation of the inhabitants of the Island. More people would take the option of walking or biking seriously instead of living a car-oriented lifestyle. The goal is also to create an awareness of the problem of obesity so more people would start sporting.

Another possibility that may be that through the implementation of these design principles sport tourism would start to develop into a lucrative business. If this would be the case it would be a good stimulus for the local inhabitants of the Island.

Scientific relevance
Nowadays plans have been developed for solving the problem of the unhealthy situation which now prevails in the current lifestyle. But because of the lack of scientific studies on the subject of planning and creating a healthier lifestyle, the projects that are being realized tend to fail most of the time. The government agencies start to realize that there has to be a sound theory to support the design.

The research and design done in this graduation project will add new information to the existing data on this matter. It will give insight as to how the strategies can be planned and what design principles can be used in a certain situation. The design principles work as a guideline for efficient planning and will help to give advice about adaptation within the spatial context.

The research results will render a critical view on how the existing planning works and how it could be done in a more efficient and sustainable way, taking into account different disciplines dealing with the aspects of health issues to the economic situation.
Project Objectives and Hypothesis

Spatial objectives

The Montaña area is dividable into six neighbourhoods: Esperanza, Rehderlust, Montaña Abou, Montaña Rey, Hoenderberg and Montaña. Montaña is an area with consists of a majority of low-income households and has a homogenous development pattern consisting mostly of housing. This is increasing the island effect both socially and spatially. The influence by market driven urban development around in this part of the region is increasing the pressure on Montaña and surrounding neighbourhoods to be gentrified. To prevent this from happening, an alternate reinforcement strategy is needed in order to strengthen the position of the area from within.

Network of public space

The lack of public space and networks connecting these spaces prevents the social and spatial integration within. Therefor an improvement of integration, interconnection and interaction through a network of public space based on community activities, improved infrastructures and internal and external movement is required.

Connections

The areas which are vacant in the Montaña area form borders which fragment the neighbourhoods. Through interventions on these vacant plots (morphological alterations, relating program through public space, continuity of the streets) the neighbouring areas of Montaña permeates these borders into a spatially coherent area. By making use of the inconsistent vacant plots and by creating the possibility of communication and interaction, it is hoped to heal the spatially segregated areas.

Public space as a base for enhancing the development of a heterogeneous neighbourhood and for reinforced appropriation of the urban environment increases the sense of belonging. Implementation of ‘root projects’ could have the ability to take up a bigger scale and expand to neighbouring areas.

Hypothesis

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Mapping the economic activities

What we can conclude from the general distribution of economic activities is that most programs are connected to the roads which are the most important infrastructure. The commercial activities on the metropolitan scale (global distribution) are dispersed around the main ring road for easy accessibility.

On the smaller scale of the city network most economic activities are clustered and situated on the smaller road network. High schools and the university of the Dutch Antilles are close to the ring road, which makes it easier reachable from the different neighbourhoods. However the easy connection is also a reason for the traffic congestions in the mornings and afternoons.

Food is an important part of the local culture. There are a lot of fast food companies of local and city scale and are strategically positioned nearby busy intersections. The amount of international fast-food companies on the island is quite a lot considering the low density of the islands population. These companies are also clustered, which form a centrality within the highly active economic zones.
General Distribution of Program
Sport and Urban Density

The most developed part of Curacao is the east side of the island (we call this urban primacy). This is so due to the natural harbour and the refinery around which the morphological development took place over time.

There is a correlation between the density of the built environment and the use of roads. Due to the urban model of the island, which is comparable to the urban fragmentation found in different western countries, the island has developed a strong car dependent society.

This in turn led to the problem of obesity, which is one of the effects of the modern western society in combination with the fragmented urban development. This project focuses on stimulating general physical activities to reduce the percentage of obese people on the Island. As we can see, most of the sport facilities are situated in the densest part of the island. There is however no strong correlation between the scale of the facilities and the density of road usage.
Formal and Informal Sport Facilities on the Island
Car Dependant Behaviour

Local activities such as mini markets, primary/secondary schools and butchers are dispersed in the neighbourhood. The infrastructure for connecting these functions is not highly integrated into the network. However on the scale of the neighbourhood these activities are positioned on strategic places integrated with the way the local infrastructure works.

Contrary to most situations people are not always bound to use the functions in their neighbourhood, but are willing to drive to the other side of town for the diversity and quality of a product. Local activities are in a way also used on the city scale network.

Traffic
The traffic situation on the island has not changed over the last 20/30 years. Most jobs are in and around the ring road (Schottegatweg), so people all head into town and leave their job at the same time. The public transportation is not well developed and mostly used by the lower-income group of the population. There are two systems on the island, the ABC busses (similar to Connexxion in the Netherlands) and the small busses used to move within the local infrastructure.

Because of all the traffic at the same specific times on a daily basis, there are always congestions and this has the consequence of most traffic accidents happening on the same location. This issue is an important factor of understanding how the infrastructure works, because of the car dependency problem.
Correlation between traffic and program
Research Conclusions

Socio-spatial fragmentation
Until 1915 the land was mostly used for agricultural purposes and the urban development was limited to the primate city of Willemstad. After the abolishing of slavery and a steady declination of the population the establishing of the SHELL refinery, therefor introducing a new industry, was responsible for the rapid urban development of the suburban region. Proto-globalization and globalisation are the indicators for these events and as a consequence introduced an urban development pattern which resulted in the fragmented urban development as well as increasing the social fragmentation.

Infrastructure:
The rapid transformation of agricultural lands into industrial and homogenous dwelling areas has created increased amounts of vacant land that has led to new infrastructural developments. These new infrastructural developments have been adapted to accommodate the car dependency, thus creating isolated islands which in turn form a fragmented development of the urban mass. The existing and new connectivity’s are transforming the ‘city’ (the largest dense development of the island is considered as a region in this study) in a less positive way. On the city region we see pockets of disconnected and poorly integrated neighbourhoods.

Urban Model:
The above have resulted in a new organisation of the urban structure from urban primacy model, a consequence of colonial influences (the same urban model can be found on other Caribbean Islands), to a regional one. New centralities (the subcentres) have been developed by local Government agencies, private developers and general companies and industries. These subcentres largely service the macro-region. The largest population resides in these subcentres which are largely homogenous dwelling areas with a low integration of formal economic activity. In terms of employment the lower class that live in the periphery are often oriented towards the mono-centric urban model (tourism) and established an informal economy, mostly in the vicinity of formal economic activities.

Housing system
On the regional city scale we see increasing homogenous/mono-functional urban development. Private companies don’t see business in the low income sector, which means that in result that most of the low-income housing units are produced with heavy government leverages. Private non-profit agencies (like FKP and Reda Sociaal) have created a financial model for low-income housing to be affordable and giving means for private ownership after a certain amount of years paying rent. However the developments still result in homogenous neighbourhoods with undifferentiated housing typologies. The aim should be to strive for socio-economic adaptability, better (sustainable) quality houses and increased social mobility.

Infrastructure
New infrastructural developments have led to a dual infrastructure and a hierarchy of connectivity’s, expressed in the development of highways related to purchasing power and the secondary road infrastructure. Infrastructural developments have created new conditions for gated communities, which are still increasing in amount. Car possession in Curacao reflects the socio-spatial segregation. The existing bus structure is insufficiently organized to meet the requirements for an alternative means of transportation, providing no alternative solution to meet the residing car dependency. The target group for public infrastructure is mostly for the people of lower-income. Therefor the aim should be to improve the conditions of public transportation as such that a more integrated use would occur, thus reducing pressure of the current traffic position.
Communitiy Needs and Problems

The demand for public space is foremost based on the need of the communities, in specific the community of Montaña. Empirical studies* on the site have made it possible to form a list of needs, which have been expressed by collaborative work of public authorities and the community itself.

- **Improvement of public space network**
- **Preservation and revitalization of the concerning neighbourhoods**
- **Introducing facilities for daily needs**
- **Increasing public sport and entertainment facilities for the youth**
- **Improving social cohesion**
- **Improving the physical conditions of the streets: paved walkways, benches, and shading among others**

*Interviews with local planners, public authorities (Dienst Openbare Werken, GGD Curacao), conversations on the street, site visits and analysis.
Urbanism

Montaña Region
Concept

Walkable Neighbourhoods

The concept for this project is based on tackling the (global) problem of obesity on the local scale of Montaña (a community on Curacao). The proposed solution and concept is pedestrian friendly neighbourhoods. The incentive to stimulate people to go out and walk more is by improving the existing neighbourhood infrastructure and adding new programs and alternative public spaces. According to studies, walking about 30 minutes a day and eating healthier is a good start to improve your health.

The intention is to understand what interventions need to be taken in order to make a disconnected neighbourhood walkable. The goal is to achieve a healthier neighbourhood.

What makes a neighborhood walkable?

- **A center**: Walkable neighborhoods have a center, whether it’s a main street or a public space.
- **People**: Enough people for businesses to flourish and for public transit to run frequently.
- **Mixed income, mixed use**: Affordable housing located near businesses.
- **Parks and public space**: Plenty of public places to gather and play.
- **Pedestrian design**: Buildings are close to the street, parking lots are relegated to the back.
- **Schools and workplaces**: Close enough that most residents can walk from their homes.
- **Complete streets**: Streets designed for bicyclists, pedestrians, and transit.
Existing Barriers

*Disconnection in the communities*

The existing situation on the Curacao of the urban development is a pattern determined by the excessive use of cars as a means for transportation. This reflects poorly on the communities, because of the fragmented and homogenous urban design.

The pattern of land usage led to disconnected communities and a dispersion of programs. Herein lays the problem of the declining health situation on the island. To improve living standards the neighbourhoods have to be connected and made pedestrian friendly.

Walkable neighbourhoods offer surprising benefits to the environment, our health, our finances, and our communities.

**Environment:** Cars are a leading cause of climate change. Your feet are zero-pollution transportation machines.

**Health:** The average resident of a walkable neighbourhood weighs 6-10 pounds less than someone who lives in a sprawling neighbourhood.

**Communities:** Studies show that for every 10 minutes a person spends in a daily car commute, time spent in community activities falls by 10%.

Land development has led to suburbanization of different areas, creating;
- **homogenous areas**
- **voids**
- **fragmented landscapes**
Existing Barriers

Poor Network of public spaces

The standard street layout not he island is one without sidewalks or possible consideration for pedestrians. The entire infrastructure is based on the use of auto vehicles, where parking and driveways use the excess space.

This current situation is one of the main reasons for the unhealthy lifestyle that so many inhabitants follow. These are basic necessities which are to be implemented in the early stages of urban planning and designing of the neighbourhoods.

The goal is to use the existing unused public space and transform it into a liveable neighbourhood. Improving public space is an action which might lead to an improvement which in turn might light to a more active lifestyle.

Typical street; lack of or no sidewalks

Section from a Neighbourhood
**Existing Barriers**

*Poor water management*

Dealing with the water management in Curacao is becoming more of a problem each year. It barely rains on the island, so normally there poses no threat.

The current water management system is a network of large open gutters composed of asphalt which is over dimensioned and often out of proportions. These systems usually form a physical barrier in many neighborhoods, separating them into different quarters.

Once every year the excessive rainwater causes the systems to overflow and the consequences are usually catastrophic. Houses are flooded and streets are thorn up into pieces. This usually results in domestic damage and has large financial consequences.
Existing Barriers

Existing visual and physical barriers
The problem of the fragmented neighbourhood can be solved by redesigning the existing fragments into a coherent community. This can be done by eliminating the unbuilt plots and segregated communities by the existing water management systems of gutters and proposing a new program that will stimulate the inhabitants to communicate more with the neighbourhood.

In the greater community of Montaña there are several options for reintegration, one being the densifying of the neighbourhood by implementing more social housing projects with the new strategy of an improved public space. And on the other hand there is the overall improvement of public space and facilities, which is primary to densification.

With the improvement of the public and physical space more projects will be triggered. The strategic project that is essential to trigger development is the designing of a neighbourhood park (the first park on the Island) which will facilitate public facilities.
Present state - Problem:
- Homogenous residential areas
- no green areas / parks
- no outdoor public space
- car dominated infrastructure
- low public transport connectivity
- low biodiversity
- low human comfort
- visually unattractive

Present state - Opportunities:
- lot’s of open space for development
- community participation actions
- the surrounding schools could benefit from a public space
- with few facilities in the area, new commercial functions can be introduced in the area
- the existing roads can contribute to new accessibility options of transport

Section from a Neighbourhood
Project Location

Montaña Region

The design is made as a projection of the strategies and interventions in a site specific area. The area of the project is between Redherlust and Montaña Rey. The choice for the strategic project location is because of the strong typological differences of the neighbourhoods. Both are of low-income to middle class housing, one being structurally planned and the other in a self-regulatory development. Also the strong difference between the built densities makes it an interesting choice to permeate the borders for new development or spatial typologies.

The vacant plots are the initiators for creating a stronger social and spatial coherency of the adjacent neighbourhoods, thereby improving the public space network and allowing conditions for a more active lifestyle. The specific design for this project is a public park with basic functions to meet the daily necessities of the inhabitants and by creating a walkable neighbourhood and easy accessibility.
Factors for choosing location

ANGELO model (Analysis Grid for Environments Linked to Obesity):

• physical environment (what functions are available, ex. safe playground for children)

• economic environment (what are the costs and available resources)

• the political situation (what are the rules and laws)

• the social-cultural environment (attitude and behaviour)

Fragmented development towards the east and west, a lack of clear structure

The lack of existing functions and activities (shifting the emphasis of daily life towards the city centre)

The open (unbuilt spaces) are suitable for developing programs that serve as an incentive to lead healthier lives
Views of the site


Mantem tum fit; nius consum ocul untea te estemus perferum publintrum percerdit, si consupi ocuperei perudendem sescerevis, que confecula L. Oti sedius nondissides horum avo, et pos, prarte- butem tatiam racerena, non sultod num que o- tus fuides obesesimnmorem ium, sulicit renretis im esim dio esteatra tem ur ur atque hos fure tabem postra poponvente quiu confectus, nocaeqvit vit; nicomno ccidentis postri il halegit quod Casdam. Erobus con sendium et adducere muspere talabu- line quo porei spientemus re niculos treheni men- tre, pernum detret ret restabu ntenic omnihil ves estam nuntiam inpir, Catuam, auctorum patiam iam, cupioereis, se te pecre nonsus ocum cre vo, noriamdisula caedees tarit; eo ut facienihi, cl
View of the middle part of the site

View of the upper part of the site

View of the lower part of the site
Strategic interventions

The design project uses three strategies to use in the design process. These strategies are a result from the conclusions of the research and analysis previously done.

New small scale economic activities
Small scale businesses in re-used sea containers for example a local market or a healthy food instead of the local junk food trucks.

Improving the existing public spaces and infrastructure
The existing streets lack, or have no, sidewalks and therefore are not pedestrian friendly. By adding a sidewalk and trees for shadows, more people might choose to walk to the grocery store instead of driving there.
And there are also no facilities for the youth. So by introducing sport facilities and cultural facilities the neighbourhood becomes more lively.

Improving the existing water management system
As seen previously the existing systems are not equipped to deal with excessive rainwater. By changing the asphalt and concrete gutters into an open bio-swale the rainwater gets filtered and can therefore be used for the vegetation. The bio-swale also functions as a green accessible space in the dry seasons.
Transformation of streets and spaces into pleasant (green) outdoor areas

Transformation of the existing water drainage system into sustainable swales

Public sport facilities in neighbourhoods

Indigenous trees and plants for shading

Bio-retention swale - sustainable rain water drainage

Street on the level of the neighbourhood
Connecting with the adjacent neighbourhoods

The overall strategy is to use the unbuilt area, separating the neighbourhood, as a means to connect and reach into the now fragmented community. By implementing the three strategic interventions the existing public spaces will give new meaning to the inhabitants.

The streets from both neighbourhoods form entrance points in the park. This creates physical as well as visual accessibility. By connecting the nodes from the nodes not only visually but also spatially a pattern starts to emerge.

By combining the two schemes an interesting pattern starts to emerge. This functions as an underlaying map for the design. All these elements are taken into account in the design and are a consequence from the existing spatial structure.
Physical and visual connections

Visual points of interest and access points
Reaching into the community
Views of the site

The voronoi mapping was used as a tool to map the existing spatial structure in order to create a pattern for the landscape design. All these different points forming a voronoi diagram (based on a Delaunay Triangulation).

"In mathematics, a Voronoi diagram is a special kind of decomposition of a given space, e.g., a metric space, determined by distances to a specified family of objects (subsets) in the space." (wikipedia)

This study allowed me to understand the relationship of the different elements of the infrastructure. Together these mappings for a correlation of cells which provides the basis for the design.

Because of the equal distribution of the cells, each within their own field of tension, there is no hierarchy in the park. This means that the park is accessible from multiple points and that there lacks a main and/or secondary route.
Within a voronoi model, space is a continuous medium filled with proximity fields generated by objects. The Voronoi model of space concords fairly closely with the perceptual and linguistic spaces of humans and hence Voronoi zones around objects are meaningful.
Spatial design layers

1. Theme gardens

2. Helophyte filters

3. Watersystem

4. Trees

5. Squares

6. Paved walkways

7. Existing morphology

8. Architectural elements
Distribution of program
Masterplan
Sections park design
Distribution of the islands

The programmed islands
- helophyte filters
- functional programs

The programmable islands
- bio-swales (waddies)
- garden islands (leisure)
Vegetation Diagram

HELOPHYTE FILTER
(tropical water plants)

BIO-SWALES
(natural indigenous vegetation)

VEGETATED HILLS / ISLANDS
(natural indigenous vegetation)
Material diagram

DARK GREY CONCRETE PAVEMENT

LIGHT GREY CONCRETE PAVEMENT (slabs)

ASPHALT GRANULATES (recycled material)
Section: park design

- bio-swale
- sidewalk
- vegetation (plants + flowers)
- plants + vegetation
- pergola
- sidewalk
- gravel border
- helophyte filter
- sidewalk
- sidewalk
- island
- vegetation (plants + flowers)
- concrete tiles
- tree landscape
- rolled gravel
- concrete tiles
- bassin
- native vegetation
- concrete tiles
Impression: public space park
Section: interior space community

tree landscape
pergola
new trees
bio swale

fence
sidewalk
driveway & parking space

sidewalk: concrete tiles
asphalt
native vegetation
tables + benches
vegetation suitable for filtering
Architectuur

Samenvatting
Kinderdagverblijf

Bibliotheek

Centraal plein

Gemeenschapelijke “living room”

Concept
Ruimtelijk functioneel
Programma samenstelling

Buurt centrum: 
640 m²

NGO werkrumte 
136 m²

Kinderbibliotheek 
510 m²

Kinderdagverblijf begane grond 
860 m²

Kinderdagverblijf verdieping 
265 m²

Opvoedingsdeskundige 
100 m²

overige ruimten 
200 m² 
(activiteiten ruimte / multi-purpose / workshop ruimte)

Programma = 2711 m²
Concept vormgeving

1. FYSIEKE VERBINDING/VERANKERING
2. ORIËNTATIE EXTERNE REFERENTIEPUNTEN
3. FYSIEKE VERBINDING/VERANKERING
4. VISUELE CONNECTIE
5. ZWAARTEPUNTEN MET PARK
6. FYSIEKE OVERGANG BINNEN-BUITEN
Toegankelijkheid

NGO’s krijgen een plek in de wijk om vanuit het hart van de barrio problemen op te lossen.

Integratie van het gebruik van het gebouw en dagelijkse activiteiten van de bewoners zorgt voor meer betrokkenheid.

informele ruimte (toegankelijk voor iedereen)
formele ruimte (beperkt toegankelijk)
Toegankelijkheid

*De kinderbibliotheek is een aanvulling op de onderwijsinstellingen van de buurt*

*ruimte voor ontwikkeling*
Routing gebouw

De ingangen van de ruimten zijn gekoppeld aan de openbare ruimte om de grenzen tussen binnen en buiten te vervagen

Als de deuren van de lokalen opstaan loopt de verdiepte gang over in de ruimte. Hierdoor kan interactie bevorderd worden
Routing gebouw

De plein staat fysiek verbonden met een routing door het gebouw naar de waddie van het park

Waddie wordt tevens ook gebruikt als buiten speelplaats

De route van het park loopt tussen en door de gebouwen heen
vervagen van barrieres
Maatvoering en geometrie:

hoekdraaiingen

variabel
Constructie principe

De verbingen kolom-liggers zijn scharnierend verbonden
Constructie principe

De verbindingen kolom-liggers zijn scharnierend verbonden
De constructie is geschoord op drie plaatsen voor stabiliteit in de langsrichting. En door toepassing van een stijf dak (2 multiplex platen) en kolom-ligger verbinding is de constructie in de dwars richting stabiel.
Materialisatie gevel

+5420

+4220

+2300
open klapbare luifels (hour)

+700

+6270
hoofden gevel bekleding

+3500
+3014
betalen (ondersteuning bovenmuur en balkbaan)

rammed earth muur 600mm

Peil = 0

100 1300 100
1500
4000
100 900 900 100
2000
100 300

Materialisatie gevel
Doorsnede
Constructie principe

_Dakconstructie_
1 kolommen diameter 300 mm
2 liggers 2 x 10m gelamineerde dakligger verbonden met ee gelamineerde kromme ligger van variabele lengte
3 gordingen balk afstand (hart op hart) 900 mm gezaagd hout, 120 x 300 mm maximale overspanning van 5500 mm
4 dakplaten 2 x 25 mm multiplex platen
Natuurlijk klimaat systeem

Hete lucht stijgt naar het plafond

Sedum dak functioneert als isolatie

Ventilatie (NOORD-OOST wind) door lamellen zorgt voor afvoer hete lucht

Hete lucht blijft tussen de dakbalken

Een spouw tussen het sedum en de dakliggers zorgt voor een continue ventilatie
Natuurlijk klimaat systeem

In de avond daalt de warme lucht

Door een strook van vaste lamellen bij het dak komt er in de avond koele lucht binnen
Draagconstructie opzet
Draagconstructieve elementen
7. Literature List
Literature and references

Books:


Papers:


Appendix A

Review Paper
Healthy cities

The effect of urban sprawl and the built environment on health conditions

Review paper  AR3U021

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1168738
June 2009

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Healthy cities
The effect of urban sprawl and the built environment on health conditions

Abstract
Nowadays the notion of comfort plays an important role in the development of our society. In the past few decades the increased use of cars together with a decreased tendency to walk, bike or sport has brought contemporary urban societies all over the planet to face the problem of an unhealthy lifestyle. Movement, in the broadest sense of the word, has dwindled as a result of increasing comfort for transportation. Health in the urban environment is a problem caused by the impact of the built environment on social, mental and physical health [Jacobs, 1961]. This paper reviews the existing research and theories that deal with the problem of the unhealthy state of cities. The theories on the subject of the urban environment and health issues do not yet constitute a body of knowledge that can extensively contribute to the residing problem. In the context of the problem of the decreasing health situation some theories have emerged (New Urbanism, Healthy Cities Programme) which prescribe improvements to increase city health. This paper attempts to provide a theoretical framework for integrating these movements. The result is a foundation for further research that can be used for designing healthy cities.

Keywords: environmental health, urban sprawl, active living, globalization, health policies, sustainable development
Setting the scene

Everyday an estimated 180,000 people move into urban areas according to studies done by the United Nations. About one-half of the world’s population reside in urban areas compared to only about 2% in 1800 and 17% in 1950 (UN, 2006). [In 2009, the number of city residents outnumbers the number of people residing outside of cities] This concept of urbanization has always existed, for the city is seen as a place for development and prosperity. In the past 25 years, mega-cities such as Bangkok, Cairo, and Lima have absorbed more than twice as many people as London or New York did at the peak of their growth at the end of the 19th century through the middle of the 20th century (Brockerhoff & Brennan, 1998).

The counter trend is nowadays the situation has changed where in developed countries people move out of the city into suburban areas to seek more peaceful lifestyles, whereas in the developing countries an exponential amount of people migrate to the cities.

In both cases the problem of the health situation can, partially, be brought back to the development of obesity as a health problem caused by the built environment. Many people globally suffer from obesity, but the sincere danger of the fact is not yet acknowledged. For example obesity poses a danger for the people suffering from it, because it induces physical damage to the body. The effects can range from hypertension (high blood pressure), diabetes mellitus and cholesterol. On the other side obesity has a direct effect on people suffering from it. There are also other problems that come with the health situation created by the built environment that effect the public health indirectly which are caused by global events (for example globalization).

The consequences that lie in the growth of these cities brings the subject of ‘health’ related to ‘urbanization’ to mind and has an affect on the global urban population. The issue of health in cities is not a new problem, but has been the center of discussions for hundreds of years. But in these times the urbanization contributes to the developing op urban sprawl areas, where some theories link the worsening situation of health due to urban sprawl. Still there is a lack of scientific basis that underpins the problem of healthy cities. However “in ‘focused’ fields (e.g. environmental health, infectious disease public health, and increasingly lifestyle-related behavioral health) there is a considerable body of knowledge, but theories covering the complex relationship between the concepts that both at best can be defined as ‘fuzzy’ are yet only in the early stages of development” (de Leeuw, 2001).

This paper deals with the issues of health related to urbanization of cities by reviewing different studies and research done on the matter of this subject. However the studies of urban health is analyzed and brought back to the scale of cities, because of the complexity of the issue. A lot of study has been done on the subject of ‘health’ and ‘cities’, but in this paper the focus will be mainly on the effect growth has on the development of city or regional structures. Subjects such as the affect of globalization will be reviewed and brought back to the phenomena that is called Urban Sprawl. Some established movements dealing with the problem of defining and creating healthy cities already exist. So developed theories have been the input for the further development of future city planning.

Globalization and the impact on the health situation

With the coming of the industrialization in the 18th century new principles in urban design were created due to a change in lifestyle. The migration from the rural land to the city, people looking for a better life, led to an exponential growth of the cities. Because of the limitation of space within the city’s core, expansion took form by forming new districts around the center. The urbanization of these regions led to the growth of the megalopolis or super urban regions. In some countries this led to a transformation of the cities influenced the social situation. There was a difference in the developed countries then in developing countries.

In developed countries the super urban region was made up of different districts that sought a connection to central city. In contrast to the city centre’s the urban situation in the district was built up in a homogeneous pattern, creating what
we now know to be suburbs. This is has been termed as “urban sprawl”, a “rapid expansion of metropolitan areas referring to a complex pattern of land use, transportation and social and economic development” (Frumkin, 2002). In a sense the same can be said about developing countries. But the most important difference lies in the fact that these urban areas surrounding the cities, mostly constituted of slum dwellings. In both cases the impact of growth in the metropolitan areas has an impact on the health situation of the population inhabiting the areas.

After some decades of city expansion the phenomenon known as globalization - the estimated time is 1980, but opinions differ – the economic and political situation of many countries experienced a paradigm shift in policies. Some countries adopted the policy change brought by globalization and witnessed a change in domestic deregulation, trade liberalization and privatization (cross border acquisitions by multinational firms). Around 1990 the process intensified, bringing with it “the removal of barriers to international trade, foreign direct investments, and short-term financial flows” (Cornia, 2001).

Another effect of globalization led, for example in the United States, to an abandonment of many large industrial sites. The manufacturing corporations had the possibility to move to developing countries where labor was cheaper and the access to human capital could be profited from more than in their current locations. These sites are now left empty and form a problem for urban development strategies.

Globalization in itself forms a complex situation in the affect it has on urban health. Since manufacturing corporations were located near or in cities, their departure led to reduced municipal revenues, unemployment and population loss (S. Galea et al., 2005). On the other hand a new urban economy of services and information emerged (Castells, 2000). The down side to this development is that with the coming of the global economic network, much more financial crises have occurred. This influences the progress of the health situation in a negative.

**Urban sprawl versus City densification**

City densification in developing countries

On the other side globalization has led to a rapid increase in density and population outcome in some cities in developing countries. Studies have linked this rapid change and growth with cities that have witnessed an exponential growth in population density to the geographical position on the global scale. A lot of the cities, now experiencing this effect of large immigration, are located on the southern half of the globe. In contradiction to wealthier cities, the cities experiencing exponential growth (also in development of slums) do not have the financial capabilities to counteract the decreasing quality of public health.

Despite of the foreign interaction, investing time and effort to improve the quality of life and the health situation, this is not sufficient for increasing the standards of life. Most households do not have the means to lead a healthier lifestyle. For some countries, many of them in Africa and Latin America, globalization has not yet lived up to its promises, because of a combination of weak domestic structures and the persistence or even an expansion of global asymmetries for market access (G.A. Cornia, 2001). For these countries immediate globalization is not the answer to the problem. The question still resides if it is possible to improve the quality of health by creating better accessibility to the global economic network. The question of health in developing countries is a subject that needs more research before pragmatic solutions can be given for future development.

**Urban sprawl in developed countries**

In developing post-industrial cities the population started decreasing, mainly after the second world war and accelerating in the 1990’s, as the migration towards suburban counties took place. As said before this led to several changes in the municipalities, which consequentially brings the problem of the decreasing of city standards. In the context of urban health, a higher unemployment rate and population loss brings substantial loss in the social standards. Indirectly this brought about impoverishment in
the urban health situation, which in turn increased poverty, racial and class segregation, and education contributing to economic inequality. The economies became more dependent on international trade and more capable of moving capital from one part of the world to another (Scholte, 2000). In some cases this can lead to a increasing mortality rate in a city, or in the worst case, a region or country. The quality of urban health or the overall health of the population in cities are the connection between the diminishing health quality. Diseases and epidemics are spread from the city toward the less dense urban environment, because the immigrants usually arrive in the cities. Immigrants also affect the health situation on a city. Studies show that immigrants bring lifestyles and support systems that protect them against some of the adverse outcomes that other low-income urban residents experience (Morales et al., 2002).

As defined by Reid Ewing et al., urban sprawl is identified as the process in which the spread of development across the landscape far outpaces population growth. A certain amount of research done, by institutions and universities, have taken the United States as an example for their studies. This is because, north America is one of the largest continents where urban sprawl resides and where the effects are visible due to the reigning level of people suffering from obesity. The overall people suffering from obesity is a staggering percentage of the world population and is even acknowledged as an epidemic. From the discipline of urban development and planning this problem has been connected to the existing urban environment.

**Physical activity and patterns of land use**
The consequences that urban sprawl brings on the population is the leading of an unhealthy lifestyle. With urban sprawl the land use is relatively homogeneous and has a low-density pattern, compared to the diversity found in traditional urban and or small town settings. In traditional urban cities and towns, there is a higher density and mix of functions, compared to the cities where urban sprawl prevails.

The presence of sprawl dwindles physical activity, because of the distances that have to be bridged in order to reach a certain function. In some cases (especially in the US) people have to take the car to get some milk or reach the closest convenient store. Different land uses are separated from one another, with the separation enforced by both custom and zoning laws (Frumkin, 2002).

With the separation of land use, less people have the tendency to make use of transportation hubs, bike or even walk. It is not feasible to pursue the goal to pursue people to put in more effort for physical active movement if the pattern in land use is not redesigned into a mixed pattern. The movement form compact neighborhoods to spread-out automobile-dependent communities has meant a decline in daily physical activity. Urban planning research shows that ‘urban-form’ – the way streets are laid out, the distance between destinations, the mix of homes and stores – is linked to physical activity because it influences whether people must drive or are able to choose more physically active travel, such as walking. More physical active movement reduces the chances of obtain diseases and it also prevents obesity.

Research show that in relatively sprawling regions, the average car use is much higher than in places with lower than average sprawl (Frumkin, 2002). Not only does the high percentage of car use affect the health situation of communities, but it also brings about air pollution and a higher rate of car accident casualties. Studies have indicated that communities and cities in a higher sprawling area also have a higher rate of fatalities caused by car accidents. Existing street patterns in sprawling communities are mostly car oriented and focus on effective movement by automobile. Not having effective walkways or special bike lanes (like the Netherlands have) contributes to the fact that movement is limited.

On the scale of cities and metropolitan centers, the land use patterns differ in density and functionality (heterogeneous program). Metropolitan centers are concentrations of activity that help businesses
thrive, and support alternative transportation modes and multipurpose trip making. The academic literature associates compactness with centers of all types, and sprawl with the absence of centers of any types (Ewing et al.)

The built environment and health promotion
In this paper the built environment is seen as the part of the physical environment made by people for the use people. The remainder of the physical environment is the natural environment, which is untoucched and un-built by man. While the natural environment is perceived as a fundamental factor determinant for health and well-being it does not determine the urban health, for the built environment is dominant to the natural. The way cities where and are planned indirectly defines the overall situation of health. It influences the social context of the ‘place’ and is a factor in defining the physical activity. Because urban planners work at the interface between the built environment and social context applying the knowledge of social science and urban design to generate the physical configurations of cities, it is believed that stronger collaborations between urban planners and public health practitioners may prove effective in designing and planning for healthy cities (Northridge et al., 2003).

After extensive research and studies, A.J. Schultz and M.E. Northridge have proposed a model for the social determinants of health and environmental health promotion. The model posits that three domains – natural environment (including topography, climate and water supply), macro social factors (including historical conditions, political and economic orders, and human rights doctrines), and inequalities (including those related to the distribution of wealth, employment and educational opportunities, and political influence) – contain the fundamental factors that underlie and influence health and well-being via multiple pathways through differential access to power, information, and resources (Northridge et al., pg. 558-560). This model illustrates the interactive and dynamic nature of the proximate factors and health and well-being domains.

While cities are growing nowadays, may it be because of globalization or immigrations trends, it is important to take into account the fact that cities alter as changes occur. To balance the fast changes that take place the built and social structure need to be sustainable in order to meet these changes. The model mentioned above gives incentives for further research in the field of health and environmental health promotion. Integrated with other multilevel frameworks and theories, this model can contribute new and existing theories that deal with health and the built environment.

The built environment and physical activity
The built environment presents both opportunities for and barriers to participation in physical activity, thereby influencing whether or not we exercise. According to some studies, one or more determents for physical activity is the immediate surrounding of an individual. The physical health of a person, in research and studies, is not determent by the active movement done in leisure-time, but rather by the transportation methods they make use of. Environmental variables such as sidewalks, bicycle lanes or public space (namely parks and squares) are an important factor for daily physical activities. Studies have shown that there is no concerning difference in the amount of physical activity done in the leisure-time, when comparisons were made between sprawling cities or high density city centers (this study is done in the US). This is because people take time for their activities. However this is not the same when it comes to comparing the difference between daily activities, such as walking or biking to a certain location or even walking up stairs. The US Surgeon General have recommended that getting 30 minutes of moderate activity at least five days a week is sufficient enough to maintain a basic level of health. This means the simple act of walking to a store, to work or to other places that are part of their daily routine, should result into an ‘active lifestyle’. People tend to get less exercise as the outlaying suburbs are further developed and the distances between schools, places of employment...
and residence increase. Most of the data has been from studies done on the counties and cities in the United States, because the level of urban sprawl and the direct effect it has on the health and environmental health is clearly visible.

To get a better understanding of the seriousness of this problem, a global comparison is made with different countries in the European Union. There is a striking difference between the obesity and physical activity level, even though the date cannot control for that many other variables that influence the activity and health on the two continents. In Europe, transportation systems do far more to provide and encourage people to walk or bicycle to get around. The density of housing in a random sample city in Europe is in average three times higher than a random sample of American cities. The levels of walking an bicycling for daily transportation is five times higher in Europe than it is in America. The percentage of trips made by foot or bicycle is 33 percent compared to 9,4 percent in America (B.A. McCan and R. Ewing, 2003). This date is to give an indication about the perception of health and active living on a global scale. It differs per country or even continent and is linked to many different variables, like historical context, or social context and political development. It establishes the fact that urban sprawl is an indicator for health problems and diminishes the physical activity that is needed to maintain a healthy lifestyle.

Interventions dealing with sustainable urban space and continued growth
Researchers, practitioners and both governmental and non-governmental organizations have long been involved in efforts to address the unique social, political, economic and health challenges of concentrated urban populations (A. Neiman and M. Hall, 2007). There are now many new initiatives or movements that try to combine the body of knowledge on the matter of the subject with practice based projects. There are a few of these movements, but the movements trying to make more efficient, sustainable use of the limited urban space and address the continued growth are: New Urbanism (NU), Traditional Neighborhood Development (TND), Transit Oriented Development (TOD), Smart Growth, and the Healthy Cities Programme (HCP) from the World Health Organization (WHO), just to name a few. These movements are most often used as tools for new development. The most interesting movements that try to achieve a healthier urban space and corresponds to the review done in this paper are New Urbanism, Smart Growth and the Healthy Cities Programme. Active living and health concerns have become integrated aspects of urban planning and development, which address the issue of urban sprawl and the increased rates of chronic disease. All these movements address these issues and strive to promote environmental sustainability for active and healthy living.

New Urbanism
“New Urbanism is an urban design movement that arose in the United States in the early 1980s. Its goal is to reform many aspects of real estate development and urban planning, from urban retrofits to suburban infill. New urbanist neighborhoods are designed to contain a diverse range of housing and jobs, and to be walkable. New Urbanism can include (neo)traditional neighborhood design, transit-oriented development, and New Pedestrianism. New Urbanism is the re-invention of the old urbanism, commonly seen before the advent of the automobile age, while New Pedestrianism is a further elaboration of less common, pedestrian-oriented, urban design experiments that date to the early 20the century.” (Wikipedia.com, 2009).

The new urbanist seek their inspiration often in historic towns and urban areas. Their designs philosophy focuses on development in compact, pedestrian-oriented town centers. The main focus of this movement is to increase an active lifestyle and thereby contribute to realizing a healthy urban environment. New urbanism encourages walkability, connectivity, mixed use and diversity, and many other sustainable methods for developing urban areas. This increases safety, and encourages outdoor lingering and walking and decreases air pollution and traffic accidents, among many other factors (NewUrbanism.org, 2009).
Smart Growth

Smart Growth is a Western-based conceptual idea in urban design, much like New Urbanism, that is used to encourage policies that revitalize neighborhoods and promote economic development while balancing and preserving the natural environment (A. Neiman and M. Hall, 2007). Some variables that Smart Growth planning promotes are land use pattern that are compact, transit-oriented and walkable, etc.. The movement is based on 10 principles that address the community in 7 broad “issue” areas.

Just like New Urbanism, Smart Growth strives to improve the existing quality of land use pattern by creating a more diverse program. They acknowledge the effect of urban sprawl on the health situation of the population inhabiting the sprawling communities and try to improve the urban areas by means of designing urban areas that induce active living.

Healthy Cities Programme

Healthy City Programme (HCP) is a long-term development program that places health on the agenda of cities around the world, and builds a constituency of support for public health at the local level (Tsouros, 1995). Healthy cities promotes the development of comprehensive healthy public policies at the local level to address the physical, social, environmental, and mental well-being of communities (A. Neiman and M. Hall, 2007). The program of Healthy Cities is process that involves the participation of many people in may different settings in order to bring unique and non-traditional community members to local partnerships. Some have argued that HCP is not a program, but a process due to the unique nature of each program. Over 1200 cities and towns from over 30 countries in the WHO European Region are healthy cities. These are linked through national, regional, metropolitan and thematic Healthy Cities networks, as well as the WHO European Healthy Cities Network for more advanced cities (www.Eur.WHO.int). The concept emerged as a response to deteriorating health conditions associated with urbanization; it aims at improving the health and wellbeing of people, particularly low-income urban dwellers who work and live in urban areas. The Healthy Cities concept is based on a number of principles: health should be an integral part of settlement management and development; health can be improved by modification of the physical, social and economic environment; conditions at places where people live and work (settings—villages, cities, schools, workplaces) have profound influence on health status of the people. A Healthy Cities programme therefore provides a framework for action based on public policy, supportive environments, personal skills, community action and re-orientation of health services. This approach is both top-down and bottom-up.

Healthy cities framework

The literature provided a theoretical framework for further studies. The theoretical framework can be used for future case studies and designs which aim for creating healthy cities. The focus of this framework is on existing practice based initiatives (for example New Urbanism, Smart Growth, Healthy Cities Programme) who have developed theories and methods on designing healthy cities. The scheme below gives an overview of the existing theoretical body of knowledge and practice based organization which deal with the problem of urban sprawl and slum development (from the perspective of health).

In conclusion

This paper has reviewed literature (New Urbanism, Smart Growth, Healthy Cities Programme) that addresses the influence of urbanization on the public health of the urban environment. The two main topics dealing with this problem give an overview on the current extensive knowledge that has been acquired over the last two decades. The source of the problem of an unhealthy environment can not be dated back to one or two particular events, but it is the natural course of history and the development of society that have made this issue debatable. This paper provides a theoretical framework formed by the existing literature and studies done with the purpose of contributing to
the problem of influence of health on the public health.

In the context of the social and political development of cities, globalization has contributed to improvements on an economical, political and social level. But globalization influenced the urban and public health of cities directly as well as indirectly. It lead too a paradigm shift in the post-industrial cities, where the manufacturing corporations seized this opportunity to move to developing countries where human capital is better accessible and more profitable. On the other hand in developing countries there has been a large immigration process going on, which in turn more slums and squatter cities.

Indirectly the act of globalization has lead to the discussion of how urban sprawl should be dealt with. Urban sprawl has the affect of homogeneous land use and decreases the public health, due to the limitation of movement that improves active living. This results in chronic diseases that have dire consequences for the overall population health.

Movements like New Urbanism, Smart Growth and Healthy Cities Programme, address the problem of the decrease health situation that is caused by factors like globalization and urban sprawl, and strive to move past the theoretical knowledge and orientate their efforts on designing and developing the urban area. Nowadays quite a lot of projects have been realized and slowly improvement of the environmental and public health achieved. Next to the physical improvement of the built environment, some groups state that policies and social studies should promote an active lifestyle and create awareness for affect a healthier lifestyle.

**Recommendations**

This framework can be used in future research and planning, whether the problem is linked to urban sprawl or densification issues. The Healthy Cities Programme gives a good example in how to reach our common goal for improving the urban environment. This is based on the flexibility that the HCP has for adapting the strategic plan on the context of the problem. No solution is the same, because the program has an integral approach as how to reach its goal.

Most of the available knowledge base that we have is based on Western literature from the most economically developed, high-income countries. It is not to say that the other organizations (like New Urbanism and Smart Growth) are not effective for urban development. These theories focus more on a smaller scale and strive for the direct effect of a health improvement by using a set of design methods and tools. However, the ‘Healthy Cities Programme’ integrates different disciplines and practitioners which make the program more effective in creating the sustainable healthy city.
References
