The re-discovery of ordinary public places in an alternative urban architectural model for Chinese cities – The case of Chengdu

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– The case of Chengdu

Jasper Nijveldt
The Wall -

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Master thesis
Delft University of Technology
Faculty of Architecture
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Master Studio (U, A, BT, RE&H)
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Keywords
China, public space, density, landscape, architecture, urban design, air quality, placemaking

Vertical Cities Asia

The studio is part of the Vertical City Asia Competition. The results of the P2 were sent in to compete. This international competition is organized for five successive years - 2011/2015 - by the School of Design and Environment of the National University of Singapore, financially supported by the World Future Foundation. Successive locations will be in different Asian countries; Chengdu is the first. Each year there is a main theme. This year the theme of clean air will be researched. The Brief:

“Every year, for the next five years, a one square kilometer territory will be the subject of the Competition. This area, to house 100,000 people living and working, sets the stage for tremendous research and investigation into urban density, verticality, domesticity, work, food, infrastructure, nature, ecology, structure, and program – their holistic integration and the quest for visionary paradigm will be the challenges of this urban and architectural invention. This new environment will have a full slate of live-work-play provisions, with the residential component making up to 50% of the total floor space. In the first of this series of competitions, the theme of “Fresh Air” will be explored. In the congested cities of Asia, the problems of urban...
sprawl, traffic congestion and pollution have threatened the prospects of biodiversity, greenery, livability and general well-being of the inhabitants. The competition seeks design solutions for a balanced environment for urban life where public amenities and work opportunities are within easy access. It encourages efficient and clean modes of travels that contribute to clean and fresh air.”

Competitors are design studios from the schools of architecture of:

**Asia**
National University of Singapore
Tsinghua University, Beijing
Tongji University, Shanghai
University of Tokyo
The Chinese University of Hong Kong

**Europe**
Eidgenossische Technische Hochschule/ETH, Zurich
Delft University of Technology

**North America**
University of Michigan
University of Pennsylvania
University of California at Berkeley

Each participating school can nominate two competition entries. One teacher and two students are invited to the award seminar in Singapore, with lectures by the five members of the international jury and the ten international teachers. Each year, the proceedings of the seminar will be published together with the twenty students’ projects. Prices are € 8,500, € 5,700 and € 2,800.

The TU Delft multidisciplinary studio will involve students in the last year of their Master studies in Urbanism, Architecture and Real Estate & Housing. Aspects to be researched are future design, urban density, physical and social sustainability, feasibility and so on. The start in January 2011 will be an intensive design workshop; the competition entry has to be sent in by the end of June 2011. The emphasis during the first semester is on group work for the design and its argumentation. The project the Wall, the first design part of this thesis (h4.1 t/m h4.3), conducted together with Herman Pel and Bart van Lakwijk have won the second prize. During the second semester students will finish their Master thesis in their chosen discipline of Urbanism, Architecture or Real Estate & Housing.
the wall

The re-discovery of ordinary public places in an alternative urban architectural model for Chinese cities – The case of Chengdu

This thesis is a specific research about the city of Chengdu in China. The city of Chengdu is at the very heart of the dramatic transformation of China and can be seen as a perfect model city of Chinese recent growth. Together with the city of Chongqing it is one of the largest urban agglomerations in the world. In terms of GDP, FDI, infrastructure and living standards, it showed an explosive growth. The city almost doubled in size the last 15 years.

There are however enormous qualitative challenges for further growth concerning land use, domesticity, public space, biodiversity, water and air quality. The current city model, similar to numerous other cities in China, is however no longer durable, to cope with this. The result of the thesis is to propose an alternative urban model that will guide the city towards compact growth, giving at the same time ‘place’ to the millions of new migrants. Thereby it acknowledges public space as the crucial building block for a durable city. The hypothesis is that by improving the spatial quality of public spaces, other problems will mitigate as well. The thesis is unfolded in four parts: Introduction, Urban China, Theory, Design and Conclusion. The thesis is introduced by providing a framework, which describes the background and derives a problem statement from this. Urban China is a chapter with data in which the challenges will be researched in order to get a clear pictures of the matters at hand. The theory part discusses more thoroughly the problem of public space and provides a framework for the design part. A conclusion will be derived from this.

The thesis is written within the context of the studio Vertical Cities Asia. This means that part of the results were send in to the international design competition in Singapore in which it received the second prize. Thereby, it was obligatory to develop an urban architectural design for 100,000 people on 1km2 on the south of the city. At least the theme of clean air needed to be addressed in the design.

The problems in the case of Chengdu exist in large parts of Urban China. These cities are also faced with critical problems due to an uncontrolled dispersed growth and, thereby neglecting the importance of public space for the everyday lives of their residents.

Keywords: China, public space, density, landscape, architecture, urban design, air quality, placemaking
The Wall encloses space on every scale.
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Image credits
Acknowledgements
This chapter will describe the background and problem field resulting in a problem statement. A main research and design question and a set of sub-questions will be derived from this.
1.1 URBAN BILLION

China’s economic success and rapidly rising standard of living have resulted in a historically unprecedented surge of urbanization that is set to continue (1). If the current trend continues, nearly one billion people will live in China’s cities by 2025, requiring construction on a scale never seen before (2). China will have 221 cities with more than one million inhabitants - compared with 35 in Europe today - of which 23 cities will have more than five million people. Research by McKinsey (2008) projects that China will build almost 40 billion square meters of floor space over the next 20 years, requiring the construction of between 20,000 and 50,000 new skyscrapers (buildings of more than 30 floors) - the equivalent of up to ten New York Cities. The urban economy will generate over 90 percent of China’s GDP by 2025 (McKinsey, 2008).

As the economy grows, it is likely that China will continue to increase its prosperity. Even the recent global financial crisis will likely have small effect on the long-term perspectives on urbanization. In all likelihood the nation’s continuing urbanization will ensure that China will fulfill the ambitious economic growth target set out at the 17th Party Congress in 2007 (Hu, 2007) of quadrupling per capita GDP by 2020.
1.2 PROBLEM FIELD

1.2.1 Challenge
At the same time the expansion of China’s cities will represent a huge challenge. Of the slightly over 350 million people that China will add to its urban population by 2025, more than 240 million will be migrants (Woetzel, et al., 2008a). The recent announcement of land-reform measures will enable migrants to move even more easily to cities, what could increase the scale of urbanization even further. Urbanization along current trends will imply major pressure points for many cities including the challenges of securing sufficient public funding for the provision of social services, and dealing with demand and supply pressures on arable land, energy, public space, air quality, water, domesticity, work, food, infrastructure, biodiversity, greenery, liveability and health of residents (more in chapter 2).

1.2.2 Qualitative growth
All of these challenges will intensify in time, as China’s leaders acknowledge (Hu, 2007). Although China will likely achieve its GDP growth target in the timeframe it has set for itself, a focus solely on GDP growth will not achieve a qualitative and harmonious development that the Chinese leadership desire. An alternative urban architectural model, that will take into account a qualitative growth, will be significant for research to provide a balanced growth path for China.

* In this thesis an urban architectural model is understood, as a schematic description of a city, with statements on all levels of scale, from regional, landscape to the architectural scale.

инарный перевод:  

1.2 ПОЛОЖЕНИЕ ПРОБЛЕМЫ

1.2.1 Задача
С другой стороны, расширение китайских городов представляет собой огромную задачу. Сlightly over 350 миллионов людей, которые Китай добавит к своему городскому населению к 2025 году, больше чем 240 миллионов будут мигрантами (Woetzel, et al., 2008a). Недавнее объявление о мерах по реформе земельных отношений позволит мигрантам еще更容易 to cities, что может увеличить масштаб урбанизации. Урбанизация по текущим тенденциям будет иметь последствия для многих городов, включая вызовы по обеспечению достаточного финансирования для предоставления социальных услуг, и управлению спросом и предложением сельскохозяйственных земель, энергии, общественного пространства, атмосферного качества, воды, домашнего быта, работы, питания, инфраструктуры, биоразнообразия, зелени, живописности и здоровья жителей (более в главе 2).

1.2.2 Качественный рост
Все эти вызовы будут усиливаться со временем, как признают лидеры Китая (Hu, 2007). Хотя Китай будет в состоянии достичь целевого значения ВВП в этом временном интервале, о котором они зафиксировали для себя, акцент только на росте ВВП не обеспечит качественной и гармоничной развития, что требует лидеров Китая. Алтернативный городской архитектурный модель, который учитывает качественный рост, будет значим для исследований для предоставления балансированного роста для Китая.

* В этом исследовании городская архитектурная модель понимается, как схематическое описание города, с утверждениями на всех уровнях масштаба, от регионального, ландшафтного до архитектурного масштаба.
1.3 Central Business District of Chengdu.
Vertical Cities Asia Competition

Therefore the competition of Vertical Cities Asia, in which this thesis competes, promotes “the development of ideas and theories in urban growth and architectural form related to density, liveability and sustainability specific to the rapid and exponential growth of urbanism in Asia…it seeks design solutions for a balanced environment for urban life where public amenities and work opportunities are within easy access. It encourages efficient and clean modes of travels that contribute to clean and fresh air.” (NUS, 2011) But how will this model look like?

1.2.3 Alternative urban architectural model

As China seeks to handle the enormous challenges, there are in fact several urban architectural models open, which can, to a great extent, influence how urbanization plays out. McKinsey Global Institute (mgi) studied China’s urbanization and its future possible urban architectural model (2008). McKinsey developed and examined four urbanization models, each plausible outcomes of urbanization over the next 20 years (4 5).

Dispersed model

The current trend points to China heading toward a dispersed rampant urbanization model (4). However, the costs in this dispersed model, are
according to McKinsey unacceptably high. The arable land resources will shrink rapidly, the landscape and environment will further be affected and other problems will increase.

From a spatial point of view, public space is especially under pressure: Subtle pedestrian streets and courtyards, intertwined with its context are in contrast with a superimposed neo-corbusian landscape with enclosed islands and high-rise superslabs (Mars and Hornsby, 2008; Hartog, 2010). An interesting contrast, which gives considerable freedom to build, leading to a continuous promise of reconstruction and increase in living standards, but according to several scholars the public space is more and more separating Chinese society resulting in an alienated relationship with the city (Zhu, 2003; Hassenpflug, 2004; Miao, 2011; Abramson, 2008; Olds, 2001; Perry and Selden, 2010). Ordinary public space, which is space that is meaningful for everyday life of local residents and communities, is being neglected to be a basic building block in the city, fortifying the problems China is facing.
Expensive lakeside bought by speculators.

Sattelite Chenggong with 100,000 new apartments.

Half finished new town in the middle of the desert in Inner Mongolia.
New dispersed developments giving rise to a real estate bubble. Some estimate as many as 64 million empty apartments are on the market (Finance Asia 2011).
1.6 Generate highest per capita GDP.

1.7 Higher efficient use of energy, More effective control of pollution.

1.8 Contain loss of arable land.
Compact model

McKinsey (McKinsey, 2008) suggests that a more compact pattern of urbanization is most likely to reduce the pressures and increase the overall productivity of the urban system. In contrary, a dispersed growth model fortifies these pressures. Therefore McKinsey strongly recommends that new urban architectural models should guide China toward a compact pattern of urbanization. This compact growth would have many positive implications linked to higher productivity and efficiency (6 7 8). This would include:

- **Highest per capita GDP**. Compact growth models, would produce up to 20 percent higher per capita GDP than more dispersed growth models. Scale effects and productivity gains are larger in compact urbanization models.

- **More efficient use of energy**. Energy productivity would be about 20 percent higher.

- **Lowest rate of loss of arable land**. There could be a reduction in the loss of arable land to only 7 percent to 8 percent of the current total, whereas a more dispersed model would result in losses of more than 20 percent.

- **More efficient mass-transit**. Compact urban architectural models would attain the necessary public-transport capacity with lower costs and higher chances of successful execution.

- **More effective control of pollution**. Although megacities that develop in a supercities scenario would face extremely serious peak pollution problems (e.g. NOx), McKinsey research shows that enforcement of measures to regulate pollution is more widespread and effective in larger cities than in smaller cities. Moreover, McKinsey states that a dispersed urban architectural model would generate the greatest amount of emissions countrywide, and would produce more water pollution than would a compact urban architectural model.

- **Availability of talent**. While talent will tend to concentrate in big cities, we expect a significant shortage of these workers in small and midsized cities (the trend is already clear today). Compact urbanization scenarios would thus have the advantage of having an abundance of talent in centres that are the engines of economic growth, enabling a more rapid transition to higher-value-added activities.

Policy shifts are required but the benefits described above are enormous. Not only for China, but also for the rest of the world. Therefore it is important to research alternative urban architectural models that could guide Urban China towards compact urbanization. Not only investigating verticality is important, but also a new efficient planning system is crucial.
1.2.4 Hypothesis: Re-discovery of ordinary public places

The hypothesis of this thesis is that by re-discovering the fundamental role of ordinary public space in Chinese cities, several other problems can be addressed and even be mitigated. It can guide Chinese cities towards a more compact urban architectural model. This hypothesis is endorsed by several scholars. “Streets and their sidewalks, the main public spaces of the city, are its most vital organs” (Jacobs, 1961, p. 29). Others suggest that if “...we do right by our streets we can in large measure do right by the city as a whole – and, therefore and most importantly, by its inhabitants” (Jacobs, 1961, p. 314; Carmona et al., 2005; Gehl, 2001). Since ‘public place’ is such a broad and culturally defined term, an extensive theoretical study will investigate the meaning and perception of the term in China.

1.2.5 Case-study Chengdu

In this thesis the city of Chengdu is used as a case-study. The competition assigned a small strip of land on the south of the city (9) to design a master-plan for 100,000 people per sqkm, whereby it was obligatory to address the air quality. The city of Chengdu is at the very heart of the dramatic transformation (10) of China and can be seen as a perfect model city of Chinese recent growth. It is also a city under pressure of an enormous amount of new migrants from the rural areas. Like in many Chinese cities, the recent growth is explosive, and a lot of valuable arable land is lost.
1.10 Comparative analysis of Chengdu and world cities. Chengdu sits in an emerging new region for important cities: interior China.
1.9 Chengdu surrounded by a mountainous area. The site to be investigated is located in the south.
1.9 Planned area, site comparison and site...
View on the site given by the competition.
1.3 PROBLEM STATEMENT

“In an age of ever increasing urbanization with massive migrations from the countryside to the city, China is at a crossroads. Existing dispersed urban architectural models can continue to be recycled to accommodate increased populations, but this at the same time fortifies problems in society, infrastructure and environment.

Therefore, the aim of this thesis is to propose an alternative compact urban architectural model that will take on the specifics of Chinese urban development, thereby fostering the spatial quality of ordinary public places. The city of Chengdu is subject for this research. The testing ground is a small strip of land in the south of Chengdu. The final result is a masterplan, with according to the competition assignment an obligatory density of 100,000 people per 1sqkm and ideas to increase the air quality.

The main research question derived from this problem statement is: “How to design an alternative compact urban architectural model for Chengdu, that fosters ordinary public places, resulting in a masterplan with a density of 100,000 people per sqkm?”
Urban architectural model

An urban architectural model is understood, as a schematic description of a city, with statements on all levels of scale, from regional, landscape to the architectural scale and design of public space.

Public space

Public space is a broad term and in various cultures differently perceived. In the theory part, the term will be further discussed. The general definition is: Any area of land or water, which is not located within an enclosed building, and which is set aside for the use and enjoyment of the public. It is the space, building or use that is equally open and available to all who choose to use it, and does not denote ownership.

Masterplan

The masterplan should consist of a general strategy on city scale, an urban design for the given site and an elaboration on the architectural scale.

1.4 METHODOLOGY

From the main research question: “How to design an alternative compact urban architectural model for Chengdu, that fosters ordinary public places, resulting in a masterplan with a density of 100,000 people per sqkm?” Several sub-research questions and various methods to answer them can be derived from this.

The research questions lead to the methods of:

1. What are the major threats and opportunities facing China and in particular Chengdu?
   *Data study (sources: Worldbank, McKinsey, Yearbooks, CIA World Factbook,)*
   *Interview with Robert Campbell, director of McKinsey Asia.*

2. What are the spatial problems of public space in China?
   *Theory study*

3. How is public space spatially perceived in China?
   *Theory study*

4. What spatial building blocks for the design can be derived from data and theory research?

5. What is the current urban architectural model of Chengdu?
   *Literature study, policies study, historical analysis*
6. What is the landscape system? Water, biodiversity, vegetation?

*Literature study + GIS*

7. What would be an interesting program mix for the site? What would be the best land use strategy? Which building typologies, should be part of the masterplan?

*Typological research, Parametric Urban Design methods (Rhinoceros+Grasshopper+Ecotect)*

8. What would be the planning guidelines for the masterplan?

*Policy study + Masterplan case studies*

9. Which overall framework can be proposed to meet the requirements of the competition and the problem statement?

*Research by design*

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**Methodology.**
1.5 RESEARCH SIGNIFICANCE

1.5.1 Scientific and societal relevance
What this research aims to add is a new urban architectural model that fosters public space quality. However, there are innumerable theorems and research about the state of urban China. This makes a humble position about the scientific and societal relevance of this thesis wise.

The competition of Vertical Cities Asia searches for an integration of density, verticality, domesticity, work, food, infrastructure, nature, ecology, structure and program. However the conventional building metric in the contemporary Chinese masterplan is rather limited. The research in this thesis questions the conventional metric. The hypothesis is that with alternative ways of masterplanning, with respect for the specifics of China and the environment will most likely mitigate the enormous pressures Chinese society is facing.

1.5.2 Ethics
Several critics state that because of Western intervention (11), Chinese cities are facing problems. Seog-Jeong Lee, director of city planning in Seoul in Atlantis 22.2 Urban Form (2011): “Increasingly, Asia seems to be the place for the experimental high-rise works of western architects who do not consider the local Asian context. I think that our cities need to discover alternative ways to combine high density with urban quality without resorting to verticality”. This would be a possible ethical problem arising this research and design. Therefore, the thesis relies heavily on statistics and in the theory part an extensive cultural study will be exhibited.
To avoid biases about Urban China, this chapter researches data about the development of China with specific attention to the city of Chengdu. The data sheets are highlighted with the text. Finally this provides a clear overall picture of the state of demographics, economics, transport, living and environment in Urban China and Chengdu in particular.
Demography
In 2010 1.3 billion people are living in China. Since 1960 population has doubled, while in the US and the EU the growth was only 140% (1). By 2030 the urban population will almost double from 572m in 2005 to one billion (2). In 2010 in China the life expectancy is 72 years, 4 years higher than worldwide, but still 6 years lower than the US and the EU and there is also an enormous aging process (3). After Shanghai, Beijing and Shenzhen, Chengdu is the fourth biggest urban agglomoration (4). There are about 12 million people living in greater Chengdu (5). While the population of Chengdu almost doubled between 1980 and 2010, the urban area became 5 times bigger (6). By 2013 the loss of arable land will go below the governments minimum. The main reason for this growth is immigration from rural areas to the city. Important reasons for migration to the city are obtain a job, better social services and reunite with family (7).
Economy
After 1978, China focused on market-oriented economic development and this has contributed to a more than tenfold increase in GDP since 1978. Still, per capita income is below the world average (8). The GDP growth of Chengdu is more fluctuating than the overall growth of China (9). As part of the total GDP the secondary and tertiary sector are rising at the expense of the primary sector (10). Chengdu’s most important export products are services, manufacturing and construction and agriculture (11). The FDI (foreign direct investment) growth is in 2008 twice times higher (12). By far the biggest investor in Chengdu in 2007 is Intel (13). Computer chips are made at factories like Foxconn. Most of the foreign investments still come from Hong Kong (14). Future international investments are expected. Business volume is exploding (15). In 5 years (2001-2006) the income by tourists in Chengdu has more than doubled (16). Chengdu is famous for its panda’s and scenery.
Transport
The price per litre of gasoline is in China more rising compared to the western world (♦ 17). By 2030 the current subway system need to expand eight times. The road space per car in Chengdu is extremely low (♦ 18). Only 141 sqm per car, while in Beijing this is 188 sqm per car. The average speed in the city centre of Chengdu is already under biking-speed (♦ 19). It is expected that in 2015 it will be near 0 kmph. Therefore Chengdu is in China the most inefficient city measured by working-living transportation. Car ownership of Chengdu ranks 3rd in China. There are 1200 new cars per day extra, with 2.4 million already on the road. The use of public transport in Chengdu is lower than average in China (♦ 20). A metro system serving the city is under construction. The first 2 lines are already finished (♦ 21).
The income and expenditure rates have tripled the last 10 years (22). The health expenditure as a part of the GDP in China is 4%. This is less than in the US (15%) and the EU (9%) (23). From 1990 an average Chinese person is eating more per day than an average person worldwide. But with around 3000 kcal, this is still 700 kcal less than the average in the US (24). By 2030 meat consumption will double in China. In 2008 the employment of China is 12% higher than in the US and 21% higher than in the EU (25). The female labour participation in China is high (26). About 70% of all the working females are of the age of 15+. But this number is decreasing. The household size is decreasing. An urban household in Chengdu had an average of 3.5 persons in 1990 and an average of 2.7 in 2008 (27). The daily diet of an urban person in Chengdu is more varied (28), but spend less on food (29).
Environment
From 2006 the co² emission per capita in China is higher than average worldwide, but still lower than in the Western countries (30). In China there is a strong rise of forest area (31). About 10% from 1990 to 2008. Worldwide this is getting lower (-2% from 1990 to 2008). The agricultural land in China was in 1990 only 37% of the total land area, in 2008 this is more than 60% (32). Which means that nature is being transformed to agriculture to still feed to growing population. Compared to the Chinese average the number of particulate matter (PM10), which causes bad air quality, of Chengdu is good (33), but compared to other world cities it is bad (34). Compared to WHO standards it is 2.5 times worse (35). Almost one third of China is hit by acid rain (36), leading to the worlds most polluted cities (37) and a polluted river in Chengdu (38).
China at the crossroads.


**Crossroads**

Learning from the data, it can be argued that the world is heading into two directions; the Western world can be characterized as a world of stagnation with a high GDP level but stagnation in population growth. Yet the Eastern world, South America and Africa are still growing in both GDP level and population. One can state that China is exploding and Europe and the US are imploding.

However China is facing economic, demographic, environmental, social and spatial challenges. Oil and wheat prices will rise. Water availability is dropping. Waste will increase. Rainfall will rise. Urbanization eats up its surrounding landscape. Biodiversity is dropping. The amount of cars is exploding. Energy demand will triple. There is an aging population. Income and expenditure are rising, therefore making the availability of cheap labor, the economic backbone of China, decrease. In short, Urban China is at the crossroads. In order to attempt to resolve the challenges, which path will China take? A choice is needed to counter the trends.

It is the hypothesis of this thesis, that the underlying framework of the city, its streets and public space is the basis for development, because these are a lasting foundation for years. By improving public space, the challenges facing China might be mitigated. Therefore it is crucial to understand space, the Chinese perception of it and how to structure it. The next chapter deals with that.
The data chapter showed that China is at the crossroads. The hypothesis of this thesis is that by improving the spatial quality of public spaces, the challenges facing China will be mitigated. But despite the increased attention given to spatial design of public space in China, the spatial quality of public space, both in the existing city as in new extensions, has not been improved, or even is deteriorated. It leads more and more to an alienated relationship with the city.

These spaces, meaningful for everyday life, are predominantly small places (<2 ha) in large amounts scattered through the urban fabric, such as pocket parks, small squares and courtyards. Notions of Heidegger provide a conceptual framework to understand the mechanisms behind these spaces and how they can become meaningful. Within this framework Chinese literature aimed at the perception of public space is discussed resulting in recommendations to improve the spatial quality of these spaces in the existing city or in a new urban design.
3.1 PROBLEM OF THE ORDINARY

3.1.1 Urban placemaking
Since the Chinese Communist government formally adopted market-oriented economic policies in 1978 levels of urbanization have increased from 18 percent to 50 percent (McKinsey, 2008). This growth is also mirrored by an incredible pace of change of ‘urban placemaking’. ‘The new significance, awareness and attention that is given to planning of open public space has already led to improvements, mostly with large scale urban designs’ (Hasenpflug, 2004).

Alienation
However, according to several scholars the spatial quality of public places, meaningful for everyday life, has not been improved proportionally and, is sometimes even deteriorated (Miao, 2011; Hasenpflug, 2004; Yang and
Volkman, 2010; Miao, 2001). The spaces therefore ‘lack to accommodate the local residents and community needs’. Chen & Romice (2009) argue that ‘the result for everyday life is the alienation with the relationship to the city’ and state that ‘the main cause is tactless reconstruction’. In the new Chinese city subtle collective typologies, green and pedestrian friendly streets are rapidly being replaced by a Neo-Corbusion landscape with large squares, impressive parks, eye-catching architecture, high-rise apartments and privatized compounds. More precisely, public space increasingly plays a separating role, and is being ignored to be a basic building block of the city (Zhu, 2003; Miao, 2011; Abramson, 2008). It is the hypothesis of this thesis, that if this becomes the new tendency of all future developments, it would be the absolute deathblow of public life and several problems facing China will be fortified.
Research question

Therefore it is crucial to learn from the current state of knowledge about how to foster public life in urban places and to understand what is a 'place' and what makes it meaningful for everyday life. Both in existing situations as in new urban designs. Therefore this chapter aims to answer the question what are recommendations for designing public places that serve local residents' and community everyday needs, in order to improve the spatial quality of these places in Chinese cities?

3.1.2 Theory structure

Remarkably, according to several scholars, there is a common urgent notion, but still a lack of contemporary Chinese literature and research about this subject (Miao, 2011; Zhu, 2003; Chen and Romice, 2009). However, several Western authors have written about making meaningful places and also China has a profound collection of classic architectural literature about the subject. In 2000 years of architectural history, China progressively developed its perception of space, both in urban as in rural settings, and its meaning for everyday life. Therefore classic Chinese literature about the perception of public space will be discussed.

Public places are in this thesis understood as spaces that mainly serve local residents’ and community everyday needs. The places do not necessarily have important landmarks, icons or other major symbolic structures, or are serving one dominant function, like highways and shopping malls. According to Miao (2011), these places in China are predominantly small places (<2 ha) in large amounts scattered through the urban fabric, such as pocket parks (3.1), small squares and courtyards. It can also be a linear space like a pedestrian street.
Since ‘public place’ is such a broad term, it is important to first discuss the
general definitions of ‘place’ and ‘public’ and how it can be meaningful for
everyday life, or in other words for ‘the ordinary’. Notions of Heidegger
and Western urban theory provide a conceptual framework to critically
define this (chapter 2). From there on an attempt will be made to under-
stand what ‘public’ and ‘place’ meant in traditional Chinese cities (chapter
3). This sheds some light on the current spatial problems of public space
and some tangible building blocks for a spatial framework can be derived
from this.

Certainly, spatial design alone has a limited role in the production of public
space (Lefebvre, 2000; Castells, 1977), but this theory review can help to
foster ordinary public life and reinforce the unifying role public space can
have. The results are an underpinning of the second part of the thesis, in
which a new urban architectural model is proposed for the city of Chengdu.

3.2 DEFINITION OF THE ORDINARY

In Western urban theory places that are meaningful for ‘the ordinary’ or
‘the everyday’ is a concept often being reflected about. On one hand as a
basis for an attitude towards design, or on the other hand as a background
for criticising the assumed increasing ‘placelessness’ in the modern metrop-
olis. The underlying premise in these theories seems to be taking the exist-
ing situation and something elusive as ‘the spirit of the place’ as a starting
point for design and reflection, in order to create meaningful ordinary
places in the city, while in new developments this is often neglected. Sev-
eral authors endorse this, while others criticise this basic premise. There are
however similarities between the current critiques on contemporary Chi-
nese cities and critique in the last three decades on the Western metropolis.

3.2.1 Importance of ordinary public places

The theoretical roots of the importance of ordinary public places for every-
day life can be found with Heidegger. Heidegger argues that a fundamental
element, in the social construction of a place, is the existential necessity for
people to define themselves in relation to the material world. Heidegger
argues that human beings originate in an alienated condition, and define
themselves, through their social spatial environment. The creation of ‘place’
roots them in the world, their homes and localities becoming biographies of
that creation (Heidegger, 1971). Central in Heidegger’s ideas is the notion of
‘dwelling’. ‘To dwell’ is to live a life that is informed by a particular experi-
ence – the experience or feeling of being ‘at home’ in one’s world.
Body and material world

Our capacity to dwell allows us to construct meaningful places. So a ‘place’ is much more than just an urban form. According to Aravot (2002) ‘it structures the daily routines of economic and social life; it provides opportunities and constraints; it provides an arena in which everyday knowledge and experience is gathered; it provides a site for socialization and social reproduction and an arena for contesting social norms’. Madsen & Plunz (2002) add a crucial concept namely, that people can conduct their day-to-day public lives without having to make it an object of conscious attention. The experience of everyday ordinary routines in familiar settings leads to a shared meaning of a place. People become familiar with one another. Often this carries over into people’s attitudes and feelings about themselves and their locality and to the symbolism they attach to that place. Entrikin (1991) adds the notion that ‘these places are dependent on perspective: Places are constructed by their inhabitants from a subjective point of view, while simultaneously they are constructed and seen as an external ‘other’ by outsiders.’ Also places can be temporarily and made by events like music, exhibitions, festivals and can be meaningful for a fixed amount of time.
Overall, a place is both a centre of meaning and the external context of people’s actions. Williams (1975) concludes that when this happens, the result is ‘a collective and self-conscious ‘structure of feeling’: the affective frame of reference generated among people as a result of the experiences and memories that they associate with a particular place’. Or in Heideggers’ terms ‘to form a unity between the body and the material world.’

**Contextual meaning**

Heidegger uses the example of a bridge that can create from an undefined space a meaningful place. The bridge, in his terminology, ‘collects the square’: it collects the earth as landscape around the stream; the bridge makes the power of water, wind and rain tangible, it points towards the sky; the bridge provides access to people and it has a symbolic meaning which brings the divine into memory. In short, the bridge makes by using its context possible that a meaningful place arises. The sculptor Eduardo Chillida captures this idea in his modern sculpture ‘Praise of the Horizon’ (3.2).
3.3 Tao Ku Presenting a Lyric to Ch’in Jo-lan Tang Yin (1470-1532), Ming Dynasty.
The notions of Heidegger match with early ideas in Chinese philosophy. Ancient Chinese scroll paintings depict this. In these landscape paintings people are encompassed by the environment as they go about the various activities. T’ang Yin, one of the great Chinese painters, depicted for example a scholar sitting on a daybed amid the trees, while listening to some music played by his daughter (3.3). The trees and stone, bamboo and plantain, and potted flowers, as well as the daybed and painted screens are all painted carefully. The enclosed composition creates an intimate setting. The goal of these landscape paintings, is to depict the environment not as an object of a subjective act of contemplation, but as something that is continuous around people; the very condition of living.

3.2.2 Situate the ordinary
Creating places that are meaningful for everyday, became also a major theme in Western urban theory and architecture. Gregotti (1966) for example makes the existing landscape the central element in his architecture. He argues that ‘architecture cannot constrain itself to a mere object focused approach. Architecture is actually a construction of landscape’. Thus, the objective is ‘to make nature liveable, and so it needs to acknowledge the materiality of the existing context as its main inspiration source. Technology can never be the starting point, but it should be the interpretation of the landscape and the interaction with it’, according to Gregotti. Norberg-Schulz points directly to Heidegger and his concept of ‘dwell’ and ‘place’ (2003): “A place is a space which has a distinct character. Since ancient times the genius loci, or ‘spirit of place’, has been recognized as the concrete reality man has to face and come to terms with in his daily life. Architecture means to visualize the genius loci and the task of the architect is to create meaningful places where he helps man to dwell’ (Trancik, 1986, p. 114).

Place theory
Trancik (1986) synthesizes these notions in his ‘place theory’ (3.4). He argues that, the essence in spatial design lies in “understanding the cultural and human characteristics of physical space. If in abstract, physical terms, space is a bounded or purposeful void with the potential of physically linking things, it only becomes place when it is given a contextual meaning derived from cultural or regional content” (1986, p.112). “For designers to create truly unique places, they must more than superficially explore the local history, the feelings and needs of the populace, the traditions of craftsmanship and indigenous materials and the political and economic realities of the community” (Trancik, 1986, p. 114). The role of the urban design is then to increase the capacity of the city to foster a positive ‘sense of place’. This ‘sense of place’ is always socially constructed, but in ordinary places, it is especially important, because it affects everyday life.
Designing the ordinary

According to Tranciks ‘place theory’ often the most meaningful design of places comes from minimal interference in the social and physical setting instead of radical transformation. It “often includes history and the element of time and attempts to enhance the fit between new design and existing conditions’. This ‘ecological approach’ to design (McHarg, 1992) aims at discovering and working with the intrinsic qualities of a given locale and is diametrically opposed to the internationalism advocated in the early Modern Movement.

These publications can be seen as a theoretical underpinning for designers who also dealt with ‘the ordinary’ like van Eyck, Hertzberger, Kahn, Venturi and Chermayeff. Venturi, for example, argued that a building or a place derives meaning from its context, and different contexts require different forms of architectural expression (1977) (3.5). Also in British architecture and art in the 1950s, with people like Nigel Henderson, Richard Hamilton, James Stirling and Alison and Peter Smithson ‘sought the essence of the everyday trough a sensitivity to the hardships and charm of life in the raw’ (Lichtenstein, 2001). The Smithsons (1970) for example were searching for the ordinary in the meaning of a place in the relation between house, street, neighbourhood and city, in which ‘the street stands for a community of bodily contact, the neighbourhood for a community of acquaintances and the city for a community of intellectual contact.’ (3.6)

Hertzberger adds another dimension to this notion of placemaking for the everyday: ‘Designing is nothing more than finding out what the person and object want to be: form then makes itself. There is really no need for inven-
tion – you must just listen carefully (Trancik, 1986, p. 114). This suggests that, like Heidegger’s notion of dwelling, a site or location already embodies the necessary information for design to take place.

Another development that emphasises the importance of ordinary places and how to foster that is ‘critical regionalism’. Frampton argues that “a hybrid ‘world culture’ will only come into being through a cross-fertilisation between rooted culture on the one hand and universal civilization on the other” (1993). Frampton states that “If any central principle of critical regionalism can be isolated, then it is surely a commitment to place rather than space, or, in Heideggerian terminology, to the nearness of ‘raum’, rather than the distance of ‘spatium’.” (Nesbitt, 1996, p. 481). This is important because of the emphasis on “raum,” or room, as a condition of place making. Therefore critical regionalism emphasizes site-specific factors such as topography, climate and the play of light.

3.2.3 Synthesis

Learning from these theoretical contemplations, it can be argued that in order to let a place be meaningful for local residents and communities, to become a part of everyday life, the basis should not only have the lineaments of good urban form, but in Sherman’s (1988) terms, must go beyond ‘surface appearance’ to foster what Whyte (1980) documented in The Social Life of Small Urban Spaces: routine encounters and shared experiences. Therefore the role of urban design is not to merely manipulate form to make ‘space’ but to create ‘place’ through a synthesis of the qualities of the total environment, including the social. It is not a falsifiable and tangible conception, but the goal should be ‘to discover the best fit between the existing physical and cultural context and the needs and aspirations of contemporary users’ (Trancik, 1986).
3.3 LOSS OF THE ORDINARY

3.3.1 Socio-spatial dialectic
Heidegger’s notions and the discussed Western conceptions provide a framework to better understand the current Chinese situation in cities. Public places are constantly under social construction by people responding to the opportunities and constraints of their particular locality (Groth and Bressi, 1997; Jive and Larkham, 2003). As people live and work in places, they gradually impose themselves on their environment, modifying and adjusting it to suit their needs and express their values. At the same time, they gradually accommodate both to their physical environment and to the values, attitudes and behaviour of people around them: the socio-spatial dialectic (Soja, 2000). People are slowly but constantly modifying and reshaping places, and places are constantly coping with change and influencing their inhabitants.

3.3.2 Radical transformation in China
This thesis argues that it is precisely at this point where problems start in Chinese public spaces. China’s urban development over the past five decades has been the direct outcome of national political strategizing, state articulation and reconfiguration, and shifts in global capital accumulation. In the last twenty years, some 225 million rural people have flocked to China’s coastal cities (McKinsey, 2008). As a result, the cities have been confronted with radical transformation on an unprecedented scale and at an extraordinary rate, mostly neglecting the existing context (3.7). In 1998 alone some 27 million people moved from the countryside to China’s cities, more than the sum of all European immigration to America between 1820 and 1920. In Shanghai alone, more than 80 million square metres of commercial floor space was erected between 1990 and 2004 – the equivalent of 334 Empire State Buildings (Campanella, 2009). This hasn’t come without a cost. Campanella recalls that ‘China has razed more old neighbourhoods

3.7 tills from the Urban void series by Ai Wei Wei.
- and displaced more urban residents - than any nation in peacetime’. In Shanghai, ‘more people were displaced by redevelopment in the 1990s alone than by thirty years of urban renewal in the entire United States’, according to Campanella.

Superimposing Le Corbusier
Spatially this has led to an explicit rejection of the street (3.8) - the traditional public space in China - in favour of functionally distinct travel ways, dispersed towers and loosely defined open space. Inspired by the Modern Movement, the superblock is becoming the unit of inner-city development, even as the block itself begins to fragment and lose its definition. The street is reinterpreted as a set of distinct pathways segregated in space according to the speed and mode of travel they support (Abramson, 2008) (3.9, 3.10). It is in fact the superimposing of Le Corbusier’s Plan Voisin over the existing urban fabric, leading to a mix of contrasting urban forms. This process is associated with land speculation and physical planning controls. This results in scattered forms of land development, containing a heterogeneous mix of urban and rural employment and land-use. Traditional forms are closely situated next to high-rise apartment blocks: A Neo-Corbusion landscape.
| Road class | Design speed (km/hr) | Section type | Number of lane | Lane width (metres) | Breakdown lane each side (metres) | Non-MV lane each side (metres) | Sidewalk each side (metres) | Service road one side (metres) | Total paved width (metres) | Centre median strip (metres) | Side median strips (metres) | Green strips (metres) | % of Total paved width green | Note: Section Type I refers to low-volume motorized and non-motorized traffic, and densely built-up old city conditions; Section Type II refers to high-volume motorized and low-volume non-motorized traffic; Section Type III refers to high-volume motorized and non-motorized traffic; Section Type IV refers to high-speed, high volume non-motorized as well as motorized traffic. |
|------------|---------------------|--------------|----------------|---------------------|-------------------------------|-------------------------------|----------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------|------------------------------| 3.10 Table of Key Elements and Parameters of Urban Street Sections’, Beijing Urban Master Plan 1991-2010 |
| High-speed | 80                  | IV           | 6              | 3.75                | 3                             | 9                             | 3                          | --                        | 52.5                      | 2                          | 5                         | 1.25                       | 31                          | 3.10 Plan for street widening overlaid on existing street network in Beijing’s West City District, 1997. |
|            | 70                  | III          | 6              | 3.75                | 3                             | 3                             | --                         | 14                        | 48.5                      | 2                          | 10                        | 1.20                       | 36                          | |
| Arterial   | 80                  | IV           | 6              | 3.75                | --                            | 7                             | 3                          | --                        | 50                        | 2                          | 3                         | 1                          | 35                          | |
|            | 60                  | III          | 6              | 3.75                | 6                             | 3                             | --                         | 40.5                      | 1.5                       | 3                         | 1                         | 29                         | |
| Sub-arterial | 50               | III          | 4              | 3.5                 | 6                             | 3                             | --                         | 32                        | 2.5                       | 1                         | --                        | 32                         | |
|            | 40                  | I            | 4              | 3.5                 | 5                             | 3                             | --                         | 30                        | --                        | --                        | --                        | 0.75                       | 37                          | |
|            | 35                  | I            | 2              | 3.5                 | 4.5                           | 3                             | --                         | 22                        | --                        | --                        | --                        | --                         | 37                          | |
| Branch     | 30                  | I            | 2              | 3.5                 | 3.5                           | 3                             | --                         | 20                        | --                        | --                        | --                        | --                         | 33                          | |
|            | 25                  | I            | 2              | 3.5                 | 2.5                           | 3                             | --                         | 18                        | --                        | --                        | --                        | --                         | 24                          | |
This Neo-Corbusion landscape works as a pragmatic flywheel for improving living standards. Apartments and basic amenities like electricity, toilet facilities, wastewater outlets and safe drinking water can be built fast and cost-effective. The city has become hyper-adaptable for the demanding market with a permanent state of change and promising better future. A new sort of ‘Eastern fatalism’: little planning, but according to Knight (2010) with a ‘receptive and optimistic attitude towards the future’ (3.11). On the other hand, the question rises, does the city still provide in Heidegger’s terms a tangible framework ‘to dwell’, or to form a framework that fosters ‘a unity between body and material world’?

3.3.3 Placelessness

Some authors’ answer to this question is positive (Lin, 2007; Faure, 2008). They acknowledge that due to the radical transformation a modern consumption society is arising. This makes mobility and individual freedom of choice possible resulting in the idea that identities and places are more loosely related which surely brings a certain liberation and emancipatory potential. Koolhaas writings (1995) puts this in perspective by explaining the idea of ‘the generic city’. A city which can be understood as a generalization of the non-place. These are places of permanent transit, in where the preliminary and the transitory take the lead. It is a city that is ‘liberated of identity, place and history’. This would mean that places are outdated and placelessness is the inevitable destiny of the urban condition.
Third District South, Changping District, Beijing photographed by Sze Tsung Leong.
To the contrary, several other authors argue that modernization of Chinese cities more and more ignores to form a tangible framework ‘to dwell’. The radical urbanization has not only changed the environment, but also the relationship of people and their interactions with it. For example Chen & Romice (2009) and Abramson (2008) argue that it leads to a decline of the quality and use of ordinary public places, and on a subconscious level to a feeling that cities are becoming ‘placeless’. Byung-Eon (2011, p. 4) diagnoses that ‘the capitalized modernization of China leads to a loss of authentic meaning in the characters’ daily lives, thus distancing them from their social and natural environments.’

_Echo of 80s and 90s_

This recent Chinese critique can be seen as an echo of earlier Western critiques in especially the 80s and 90s with a more negative tone on the modern metropolis (\(\text{\textdagger}\) 3.12). Several authors linked the latest developments in modern urban space to a rhetoric of the loss of place. For example, Cacciari (1993) means that a radical alienation, the alienation from a place, is the basis of all developments within modernism. According to Virilio (1982) cities become more and more ‘passages, as it were permanent transit spaces’. A network space replaces thus the logics of a place. Augé (1992) confirms this diagnosis of increasing placelessness, by stating that recognizable

\(\text{\textdagger}\) 3.12 The cover illustration on Cullen’s book shows a man in a ‘non-place’ environment drawing a compact city. Cullen: ‘A victim of the prairie planning traces out his public protest, the reminder of a properly concentrated town.’ And ‘the diagram city has been split into parts ( ... ) all that remains is to join them so that we can build the house of man.’
places, that are meaningful for her inhabitants, come under pressure due to
the increasing importance of non-places, like airports and parking places.
Sorkin (1992) as well means that recent developments de-attach cities from
their geographical location. The new city, according to Sorkin, is based on a
‘disappearance of stable relations with a physical and cultural geography of
a place’, on a ‘weakening of the ties with any particular place’. This wave of
publications has made it seem as if (public) places has suffered permanent
erosion and loss of quality, and is no longer a matter of concern to designers.

However, several authors discussed in this chapter acknowledged the cru-
cial importance of a place for everyday life. But is it still possible to design
‘places’, especially in a radically transforming Chinese urban society, with
more and more ‘non-places’? How to escape from this paradoxical situ-
tion? Or in Heideggers terms, how to re-unite the body and the material
world?

3.3.4 Body and environment
One of the clues to answer this question is the notion that, the way people
use and value places is highly influenced by their perception of space
(Aravot, 2002). Therefore, in order to improve or create ‘places’, a broader
view on the environment and the human body becomes significant.

The significance of perception of space is underpinned by Merlau-Ponty.
He stated that rather than a mind and a body, man is a mind with a body, a
being who can only get to the truth of things because its body is, as it were,
embedded in those things (Merleau-Ponty, 2004). Merleau-Ponty empha-
sized the fundamental role of perception in understanding the world as
well as interacting with it. Our body becomes the medium to know and
experience our surrounding physical environment and therefore the experi-
ence is dependant to each individual. Not only our own body, but previous
experiences, cultural background and expectations influence significantly
our spatial perception as well.

Perceptual experience of space
Therefore the perceptual experience of space represents a key issue in the
success of any urban design. This is even more important since according to
several authors Chinese people, more than Western people, tend to see the
world in a perceptual and intuitive way (Xiaodong and Kang Shua, 2007).

The quality of urban space is ultimately determined by the extent to which
it is able to provide answers to specific questions at all levels of scale. Space
and the perception of it is the starting point of urban design. This is dif-
ferent than the recent urbanization in the Neo-Corbusion landscape where
it is more focused on the spectacle and the object, than on space itself. By taking the perceptual quality of space again as starting point of design, an alternative is provided to the abstraction of space as an autonomous phenomenon that does no more than form an ‘image’. It is an awareness of the experience of scale and materiality. This notion will form a key element in designing public places in this thesis. So, what can be said about the Chinese perception of space that influences the quality of public places?

3.4 PERCEPTION OF THE ORDINARY

3.4.1 Perception of space

In order to understand the Chinese perception of public space, one would have to understand how a culture perceives and formulates the idea of space and public. This is not the same in every culture. The essential differences in Western and Eastern cultures render superficial 'generic' appearances irrelevant. The cities of China are rooted in so-called 'Chinese values' - stress of a Confucian ethos, collectivity over individuality, consensus over dissent, pragmatism over ideology, state control over private enterprise, conservatism over radicalism and a profound attachment to the family as an institution. In terms of built form, this translates to a series of key elements and phrases that capture the essence of the way Chinese people perceive space.

The main focus of the chapter is not a study of tradition, or on political systems, but it is trying to understand the fundamental perception of space that shaped China for centuries and still is affecting Chinese people's everyday life. It aims at formulating some tangible building blocks for a spatial framework.

Urban and rural China

The development of Chinese architecture and its culture is the process of accumulated evolution, rather than outright revolution. This continuous tradition knows no bound. The specific pattern could take place anywhere, whether on rural open land, a farm house or in a theatre, whether in an official building or a tea house in a common street. This chapter is based on Chinese literature about the cultural values and the conception of space (Miao, 2001; Miao, 2011; Miao, 1990; Gaubatz, 1996; Chen and Romice, 2009; Wang, 2008; Wang, 2002; Yang and Volkman, 2010; Gu and Whitehand, 2006; Xiaoxie, 1985; Li, 2002; Xiaodong and Kang Shua, 2007; Kostof, 1991).
3.4.2 Principles

Zhouli and Feng Shui

Based on the literature, two sets of theory about the Chinese city dominate. The first is recorded in Zhouli (Western Zhou dynasty, tenth to seventh BC). Its rational principles shaped most of China’s important cities which appear in several physical characteristics. The theory advocated a centralized government and Confucian philosophical and cultural traditions. Chinese culture is still deeply influenced by this. It therefore modelled a general city layout, building codes and the proportions of public space († 3.13).

The second theory is recorded in Guanzi (Zhou and western Han dynasty, fifth and first century BC). It is also known as Feng Shui (meaning wind and water). This document advocates a natural philosophy that ideal human settlements should be coherent with their environments. To the Chinese it is the art of living in harmony with nature. In building a city, ‘the natural conditions can be relied on, and the productive advantage of the land can be beneficial, which will support the people’s life there and provide for raising livestock’ (Xu, 2000, p. 40). An example is that cities and buildings should be built with mountains to the north. This protects the building

† 3.13 The generic model as documented in Kao Gong Ji.
from cold winds and bad ghosts. A river to the south brings warm breezes and friendly wanderers with it. These two elements together represented the original meaning of yin and yang. Feng Shui is still an important part of today’s urban design and architecture.

The rational and the natural principles emphasized by Zhouli and Feng Shui complemented each other and together they form the theoretical basis for traditional Chinese urban forms, and the cultural perception of it. Miao (1990) extracts five major values from this, and several perceptual principles can be associated with this: honouring the monarchy and relation to the public (Linearity), maintaining the social hierarchy (Hierarchy), strengthening the importance of family and kinship (Unity), making full use of natural opportunities (Human scale) and thus creating an holistic environment (Enclosure).

These five perceptual principles lay at the roots of the experience of public space in China. The meaning of these principles will be discussed, and to better understand, in contrast with Western forms. By understanding these principles, the building blocks for a spatial framework can be formulated.

3.4.3 Linearity
Centrality in relation to the cities power and public life is differently perceived in the West than in China. In the west large central and static nodes play an important role in public life, while in China small, scattered places and linear streets are crucial. A patchwork against a network.

Definition of two city centres
Western pre-industrial towns often had two large major public open spaces, namely the market square and the square in front of the church. Both spaces were used daily by all residents. The two squares worked together to serve everyday public life. The two squares are however mostly physically connected, creating a two-part nucleus. Therefore one can speak of one central place which acted as a hub for political, cultural and religious life.

Chinese pre-industrial city centres had however two squares, functionally and spatially separated (3.14). The local Yamen (administrative centre) was often placed in the geometrical centre. It lacked accessibility and was thus more symbolic to local residents. It was to honour the centralized monarchy. The civic centre, however was often a combination of commercial streets and a few public buildings. The commercial streets provided a good scale for pedestrians. Canopies along the street edge protected people from rain and hot summer sun. The more exclusive semi-private areas were placed in a back building behind a courtyard. This pattern created many
voids behind the facades of the streets. These voids relieved the psychological pressure of the linearity of public space.

This structure had a symbolism as well. Traditional Chinese people tended to view the world in a perceptual and intuitive way. The network of streets, for example, was thought of as ‘the arteries and veins of the human body,” where any choke point “will cause diseases in the nature and human society”. (Li et al., 1883, p. 43). This is similar to Western comparisons with the city and the human body. For example de Solá-Morales (1995) argues that the classical western theory is based on the Vitruvian notion that beauty of architecture, represents the beauty of the human body. In an urban environment or building there is harmony in which all parts are related, just like the parts in the human body.

**Linear public space**

A central ‘square’ is a type of public space, represented in western cities. It is a comparatively large open space, architecturally defined, with several buildings along it (3.15). Such a type of space was not in favour in pre-industrial Chinese cities. Here, the public realm was not centrally organized but took a linear form, that of a commercial street, with some smaller nodes along it.

**Motion**

The perception of these open public spaces was mostly that of forward or backward motion. ‘Static’ public activities took place in a different pattern, such as small nodes along the street, like the ends of a bridge or in front of a temple. Also semi-public places like teahouses and in courtyards of public institutions were meeting places. Public open spaces did exist, but were different from western squares. Their size was small and scattered through the urban fabric (3.16). Also unifying design elements, such as ground paving or similar treatment of facades, were absent. More importantly, the
very few large open spaces were not used by the public. Commercial activities were prohibited, and the centralized government showcased there their power. The predominantly linear public space demanded transverse elements that could create manageable sections. Decorative gates were used to break the linearity.

3.4.4 Hierarchy
Chinese pre-industrial cities are hierarchical organized. This hierarchy was the result of a written code which specified a set of rules for an ideal city. The rules were not only about general city lay out but also with specific dimensions, heights, materials, decorations and colours of the buildings. It reflected a 'good' society according to Confucian doctrine. Which in first sight seemed to be a chaos was in fact a very organized hierarchical system.

Influence of an orthogonal model
The general lay-out of ancient cities in Europe, like Athens and Rome were often a collage of highly individualized volumes and irregular leftover spaces. No overall spatial hierarchy could be found. Most medieval and renaissance towns shared some common elements. It displayed many non-orthogonal configurations of public space like amphitheatres, piazzas, radial streets. Overall the towns show a high variety of architecture and urban layout.

In contrast, cities in China exhibited a certain similarity in general layout. Several features distinguishes it from European cities. Major circulation routes, like streets and canals, tended to form a orthogonal, hierarchical network in the shape of a “+”, “T”, or a “#” grid (¶ 3.17). Also the network was oriented toward the primary directions. The most important street, was a major axis which often ran north to south and the building orientation suggest that south was the most important side of the city. The administrative centre, was often located near the crossing point of the “+”, “T”, or a “#”. Finally buildings were quite uniform in their rectangular plan and primary
orientation. This overall orthogonal model, which was a result from the Zhouli theory, had as much influence as other more local factors such as topography, climate and population.

**Hierarchy on every scale**

This hierarchy was implemented on every scale (Fig. 3.18). From city scale to the most private parts of the house. For example, this led to a fish-bone or tree-like structure in the hutongs in Beijing (Yang, 2004). These are hierarchical systems leading from the public to the very private. Lanes, usually running east-west, and alleyways are used to connect neighbourhoods,
3.19 Walled courtyard houses in the bustling urban area with diverse commercial activities, depicted by Zhang, the painter of Song Dynasty (960-1279 AD), in his famous drawing ‘Qing Ming Shang He Tu’.
which themselves are made up of one or more smaller blocks. The hierarchy is emphasised by varying the width of the lanes so that, in general, they become narrower as they become shorter and closer to the houses.

**Existing natural topography**

This led to a uniform composition. Since there were so strict regulations, inevitably, the identity of each town could only be created with limited means: the existing natural topography. This meant that every town in China had a similar basis, but a different spatial outcome according to its topography (∗3.19).

### 3.4.5 Unity

Chinese culture is deeply influenced by Confucianism (∗3.20). Confucian philosophy valued family and kinship as the basic unit of society. A famous Chinese phrase like “we fight together with brothers and sisters” reflects this ethical order about the importance of the collective. When Chinese are surprised or shocked by something they rather say ‘O mother’, than the American phrase of ‘O my god’ (Wei-ming, 2008).

**Microcosmos**

On the level of the individual dwelling, this also can be traced back. The domesticity of a Chinese family is build up as a micro cosmos (∗3.21) of Chinese private life, with walls serving to enclose, protect and define the dwelling. Old houses, from the countryside as well as in the city, like the hutongs in Beijing or the Minxi clay buildings in the Yongding County consist of courtyards with the family elderly living at the sunny part and their children living on the side parts. Such a physical pattern strengthened the image of self-containment. Naturally, the family became the basic unit of society.

∗3.21 The dwelling as microcosmos of family live.
Street relation
This also had influence on the relation to the street (3.22). Narrow, winding streets are both present in pre-industrial western as well as in Chinese towns. However, the relationship between the street and the house is different.

In European cities the relationship is between the solid of buildings and the void of the street space. Moreover, the interiors of the house are often opened directly to the street through doors and windows. Domestic activities easily flow into the public domain, using the street partly as a front yard.

In contrast, Chinese streets within the quarters and blocks were more separate from the house. The courtyard house, the standard traditional Chinese residence, showed thus a bare façade. No display of a front yard, and a min-
imum of window openings are displayed. Not many activities happened in a residential street. The pre-industrial Chinese city always contained some form of private open space such as a courtyard between the main room of a house and the street. This meant that walls, not buildings, defined the residential street. Behind the walls, there was a minimum separation between rooms and private open space.

3.4.6 Human scale
Since the cities were formed with walls, this had influence on the scale and proportion of the city, which can be seen back in the traditional morphology (3.23).

*Horizontal city*
Courtyards, gardens, small open areas and other forms of open space are shallow hollows in the structure. The buildings around them were only one or two stories high (3.24). Since the dimension of the building mass between courtyards rarely exceeded 7 to 10 metres, the shallow hollows were distributed evenly in the urban fabric. Every house, thus enjoyed a piece of open private space, and since the streets were orientated on the south, the open spaces took full advantage of sunshine in winter and prevailing winds in summer. Deep eaves of the traditional architecture sheltered the house from the sun in the summer. The city as a whole was canopied under trees rising out of the small open areas. A horizontal human scaled city was the natural outcome.

![3.24. The low building and evenly distributed small open spaces.](image)

This is fundamentally different than in the west. The west, starting with the enlightenment, emphasised core values of individuality and a devotion to heaven and god. The architecture reflects this with buildings that are elegant, open, impressive and vertical. From Gothic churches to modern skyscrapers. Dwellings in European pre-industrial towns were closely built to a height of at least three to four stories, and private open space was scarce. Mostly the solid buildings were not integrated with void garden spaces. The garden spaces were often consolidated in a large piece in the centre of each block.
3.4.7 Enclosure

The different perceptual principles of linearity, hierarchy, unity and human scale are synthesized with the key principle of enclosure, which aims to create an holistic environment. Even, the Chinese word for space itself, kongjian, represents ‘the creation and ordering of empty volumes as a result of the ‘enclosure’ or bounding, of three-dimensional elements (walls, windows, thresholds, screens, roofs)’. This works on every scale. From country to bedroom.

Series of walled enclosures

Space is fundamentally perceived like a series of enclosed worlds, and the smaller units repeat on a reduced scale the forms of the larger one (ﬁg. 3.25). A building may be viewed as a city on a tiny scale, while the town is a huge building on a vast scale. Even the boundary between city and countryside and country and world was formed through enclosures, like the Great Wall. Chinese cities have internal walls, isolating forbidden cities, monas-
teries, parks and other precincts. Even sometimes smaller walls further sub-divide these places. It thus makes a series of walled enclosures. The variety and significance of walls is evident from the number of words in Chinese describing their different forms and meanings. For example, high walls around courtyards were called qiang, implying something used to shield oneself; house walls and part walls were called, bi, connoting something that warded off and resisted the wind and cold; and low walls were called, yuan, suggesting something one leaned on and thus took as protection. Even the Chinese word for city and wall (cheng) was the same.

**Sense of mystery**

Walls are the most prominent physical manifestation of enclosure, since they manage transitions across the threshold by means of openings that can be consciously experienced. Within a walled enclosure, the tangible presence and solidity of the walls and the balance between space and mass, also impart a sense of security. A wall as a form of enclosure is differently perceived in the west where it was more a form of protection of its burghers. In China, the ‘wall’ operates also on the psychological level; an order that could be kept in accord with the ideal order of the cosmos.

![3.25 Series of enclosed worlds in Wenzhufang, Chengdu.](#)
The spaces that are enclosed by a series of walls are not perceived as fixed entities. Space is never an absolute ‘object’, and for this reason it necessitates movement, a going into space itself, rather than a viewing of space from the outside and from a distance. The enclosing of space is appreciated in terms of movement from one space to another; it is dynamic. Space is therefore experienced through a crossing of various enclosures and different spatial sequences. The next space is always unpredictable which creates a sense of mystery (3.26 3.27). It thus presents space little by little (3.27).

**Wall as key element**

By enclosing with boundaries a general public and private space becomes a particular place. A wall provides a key element in creating meaningful places for everyday life. It provides a structure for one’s position in space, time and society and a tangible spatial reference for everyday life. It makes the infinite ‘natural space’ comprehensible, enabling meaningful human interrelation with it. This principle of enclosure is central to the perception and appreciation of ordinary public space.

![Bamboo path, Dufu Cottage, Chengdu.](image_url)
3.4.8 Understanding Chinese cities
Overall it can be concluded that Chinese traditional cities are conceived both as a whole, tend to look like a chaos, but are usually based on a plan which is consistently applied on the existing topography. It is a collective work of art, in contrast with the individual way of building in western cities. A few principles are systematically applied following precedents established long before. This has evolved for centuries. Only until recently, they have been exposed to foreign models. Even the modern word for city changed from cheng (wall) to chengshi, which is a composite of the words walls and market. Almost as an expression of the new found relationship with the global market. Although this new found relationship has brought variations and freedom influencing what has been an almost closed architectural style, it also produced a difficult relationship between the traditional principles and the contemporary forms (Hee, 2007).

A few examples illustrates this. Contemporary urban projects in China have since 1980 been characterized by large-scale demolition of existing buildings and pedestrian streets (\(\text{\textbullet\ 3.28}\)). Public space is not linearly organized anymore, mostly neglecting existing topography and designed with large dimensioned squares to showcase the governments accomplishments (\(\text{\textbullet\ 3.29 \& 3.30}\)). A study found that the 12 squares in the largest Chinese cities had an average of nearly 13 hectares (Wang, 2002). The relation towards the street is also fundamentally different, with parking lots and high-rise apartments (\(\text{\textbullet\ 3.31}\)). The buildings itself are more conceived as individual objects, instead of being part of an urban context (Zhu, 2003, p. 9).

\(\text{\textbullet\ 3.28} \) Ignoring existing topography.  \(\text{\textbullet\ 3.29} \) Versized open space Changzhou.  \(\text{\textbullet\ 3.30} \) 1.4 km long Olympic Boulevard Beijing.  \(\text{\textbullet\ 3.31} \) Sidewalk condition Shanghai.
Misinterpretation
The cause of these problems may be a misinterpretation of the Chinese perception of space and the ignoring of the tangible signs of the past. The result is a loss of meaningful public places.

The misinterpretation seem to be derived from a Western perception of public space, hence the baroque axis, the Parisian boulevards, the modernistic extensions with apartment blocks, symmetric and uniform designs of squares and the popularity of big architectural western manifestoes (Yang and Volkman, 2010; Miao, 2011; Yu and Padua, 2007; Ren, 2011; Abramson, 2008; Olds, 2001). There is however a fundamental difference that cannot be ignored. Western culture makes a separation between built environment and nature and breaks it up into bigger pieces, distributing it on important nodes in the vertical city. Thus strengthening the importance of individuality. On the contrary, when learning from Chinese culture, Confucian values, which are still deeply rooted in today’s society, prescribe a unity between manmade open space and nature and blends it into smaller pieces distributed evenly throughout a human scaled and horizontal city. It thus strengthens the importance of family and kinship.

Therefore it can also be argued that, the ‘Vertical Cities Asia’ as a starting point of the competition, is a contradiction, biased by western perspectives on cities (3.33). Cultural perceptions of space, like linearity, hierarchy, unity, human scale and enclosure are being neglected.
3.5 THE RE-DISCOVERY OF THE ORDINARY

3.5.1 Discussion
This theory chapter aimed to answer the question what are recommendations for designing public places that serve local residents’ and community everyday needs, in order to improve the spatial quality of these places in Chinese cities?

The first step undertaken to answer this was to get an idea of what a ‘place’ is, and how it can be meaningful for everyday life. Heidegger’s notions and Western urban theory discussed in this chapter argue that people require a relatively stable and continuous system of places in which to develop themselves, their social lives, and their culture. From the theories it can be learned that urban design must respond to that and, if possible, enhance environmental identity and the ‘sense of place’. Taking the existing situation as a starting point for design would be the easiest first step to create a ‘place’. However, despite the importance of a ‘place’, whether it is made by an event or an urban setting, authors like Koolhaas argued that the meaning of a place is diminishing in modern metropolises. So the question rises how to design ‘places’, is it even possible, especially in a radically transforming Chinese urban society?

One of the clues to answer this question is the notion that, the way people use and value places is highly influenced by their perception of space. Therefore it becomes significant to have a broader view on the environment and the human body. The perceptual experience of space represents a key issue in the success of any urban design and therefore this chapter discussed fundamental perceptual principles of linearity, hierarchy, unity, human scale and enclosure in traditional Chinese cities.

But is falling back on these historical principles a useful step? Can they be still useful in modern fast growing Chinese metropolises? Goethe wrote about his attitude towards history, and stated that “Incidentally, I despise everything which merely instructs me without increasing or immediately enlivening my activity”. Or in other words, a merely historical attitude can lead to dogma’s, passivity and misinterpretation. In an increasingly competitive world, ‘placemaking’ have become an important element of consumer culture. Responding to this, developers have promoted and re-invented traditions and historic districts. As the United Nations Centre for Human Settlements (2001, p. 38) noted: ‘The particular historic character of a city often gets submerged in the direct and overt quest for an international image and international business...Local identity becomes an ornament, a
public relations artefact designed to aid marketing. Authenticity is paid for, encapsulated, mummified, located and displayed to attract tourists rather than to shelter continuities of tradition or the lives of its historic creators.

The ‘sense of place’ can become a valuable asset. In China the re-creation of traditional districts and settings is becoming widespread that they have become a mainstay of a ‘heritage industry’. As a result, as depicted in the book of Den Hartog (2010), these ‘degenaritive utopias of global capitalism’ (Harvey, 2000) often copied images and symbols derived from historic styles. This isn’t necessarily a problem, but space is seen as an autonomous phenomenon that does no more than form a static ‘image’ that looks historical. The spectacle and the object itself are rather important. It becomes a ‘materialized utopia’. Harvey (2000, p. 196): ‘These spaces are closed, often authoritarian, ultimately undialectical as soon as they are rendered concrete’. Thus begins a quest for an alternative. Harvey writes: ‘The task is to pull together a spatiotemporal utopianism – a dialectical utopianism – that is rooted in our present possibilities’. Or, a spatio-temporal framework that provides a relatively stable system that shelters continuity.

3.5.2 Conclusion: Form places by enclosing spaces
The discussed principles can provide building blocks for this framework. The principles can be considered as the ‘tangible signs of the past’. They form the durable elements which can continuously take on new functions. They form continuity in Chinese cities which are confronted with discontinuity and can contribute to the elusive ‘soul of the city’, or ‘sense of place’, which is so important for everyday life.

Enclosure, with the wall as its symbol, forms the key element in this, thus mysteriously presenting space little by little. It touches the core of Chinese city life. By enclosing with boundaries a general public space can become a particular space, a ‘place’ that can be meaningful for everyday life: Form places by enclosing spaces.

Concluding, playing with enclosure on every scale in urban design and taking the existing situation as a starting point would be the main recommendation derived from this theory chapter. This will be further studied in the next part Design of this thesis, in a study in Chengdu. In this way local people and communities may easier attach meaning to their environment. It can ultimately lead to Heidegger’s understanding of ‘to dwell’, or a feeling of being ‘at home’ in one’s world, to form a unity between the body and the material world: It would be the re-discovery of the ordinary.
Building blocks

Linearity

- small scattered
- network of streets
- public space is the street

Hierarchy

- hierarchical system
- similarity in volumes

Unity

- collective inward
- focus on family

Human scale

- small scattered private spaces
- horizontal city
Enclosure

- space is perceived as a series of walled enclosures
- presenting space little by little
- form meaningful places by enclosing spaces
- local context determines outcome
4

DESIGN

The data and theory chapter showed that Urban China is at the crossroads and public space in under pressure. The next chapter a new urban architectural model will be proposed to counter the challenges by investigating the building blocks of enclosure, hierarchy, unity and human scale on a specific site in Chengdu. The first part was send in to the competition in Singapore. The zoom in, chapter 4.4, is a detailed working out of the Wall.
4.1 **DIAGNOSIS**

4.1.1 **Chengdu**

*History*

Chengdu is an ancient city with origins dating back more than 2500 years. The city started in a safe basin flanked by mountains along a strategical position near the Mintuo river (4.3). The basin is similar in size of Germany. The fertile part of the basin is called the Chengdu Plain, on which the city is located. The combination of rich alluvial soils and a subtropical monsoon climate makes the Sichuan (4.1), plain the most fertile in southwest China and ideal to support a large variety of crops, including rice, wheat, and rape seed. The fertile Chengdu Plain is historically called Tianfu, which literally means “the Land of Abundance”.
4.1 Mountainous area in Sichuan province.
4.2 Most western big city. Urban China is developing on 1/3 of the total land mass.

4.3 Basin the size of Germany in which Chengdu is located.
Unique

During the early days, Chengdu was, just like other Chinese cities, a walled city. It was a fairly typical inland city (4.2.), with a long historical and cultural tradition. A local intellectual wrote of its special position: “Sichuan overlooks China, and Chengdu is the center of Sichuan, with fertile lands, rich natural resources, high population density, well-developed production of silk, many historical sites, and beautiful scenery’ (Wang, 2003, p. 35). Until around 1900 the West had little impact on Chengdu; as an English traveler declared, “It is a city which owes absolutely nothing to European influence” (Bird, 1899, p.350). Compared to the cities of coastal, northern, and even central China like Shanghai and Beijing, Chengdu maintained a much more traditional and relaxing culture and lifestyle, with tea houses, areas to play mahjong and places to eat traditional chicken feet.

Climate, flora and fauna

The average daytime is in July and August around 30 °C, with afternoon temperatures sometimes reaching 33 °C (next page for a detailed graphical analysis 4.4). The average lowest temperatures are in January are around 2.8 °C, with sometimes dropping below freezing. Rainfall is common year-round but with peaks in July and August. Chengdu also has one of the lowest sunshine totals in China (less sunshine annually than London), and most days are cloudy and overcast even if without rain. This is especially so in the winter months, when it is typically interminably grey and dreary. Spring (March-April) tends to be sunnier and warmer than autumn (October-November). Due to the mild climate there is no special need in building construction, to resist extreme situations. Also there is no direct sunlight and almost no wind. This has the benefit that there is light in narrow situations just to the ground floor, which allows to build dense. The inexistence of wind forms a problem for fresh air circulation.

The Sichuan basin is also known for its unique biodiversity, which today contains 80% of the Chinese vegetation being represented and of all endangered flora and fauna, like the Giant Panda (Wu, Yu, & Yang, 2009) (4.5). But this fairly safe and hot haven changed the last decade radically under influence of forces from outside.

80% of Chinese vegetation and 1/5 of all endangered flora and fauna is represented in the area of Chengdu.
Average temperature in Chengdu

Optimal building volume orientation
Optimal building orientation in order to accumulate the most solar radiation.

4.4. Detailed graphical climate research with Ecotect.
Average Wind Speed (km/h)
low
windspeeds 1.3 m/s

Relative Humidity (%)
humidity in morning

Maximum Temperature (°C)
average daytime July 30 - 33
average per year 15 - 16

Minimum Temperature (°C)

Direct Solar Radiation (W/m²)
low sunshine total
(less than London)

Diffuse Solar Radiation (W/m²)

Average Cloud Cover (%)
cloudy year-round

Average Daily Rainfall (mm)
Sichuan rural area around Chengdu.
Growth path projected on the soils. Chengdu started as a stop on the Great Silk Road where the rivers crossed. The growth happened mostly on the grey warp soil which was less fertile than the surrounding soils.
**Explosion**

After the first Five Year Plan in 1953 the first government planned and funded developments started. From 1980 onwards the city exploded after the economic reforms introduced by Deng. This process was strengthened by the Go West policy in the nineties. Western China became the focus of development efforts in China. The policy was initiated in 1999 to compensate for an earlier emphasis on coastal development. During the period from 1990 till today the urban land almost tripled (2009) (4.6), eating up valuable and rich landscape. The population grew from 8 million in 1990 to 12.2 million today (Press, 2009). This growth contains mainly manufacturing, businesses and producer services, airport developments and residential zones (4.7 4.8 4.9). Also, in recent years Chengdu showed an enormous growth rate of Foreign Direct Investment (FDI) of 50% each year (Lan and Yin, 2009) far more than the Chinese average (4.10). This FDI even further accelerates urban growth and generates far more growth than earlier forms of industrialization (4.11). As a result the city almost doubled in the last 5 years. Since Chengdu attracts more and more FDI, inevitable the urban sprawl will continue.
4.6 Recent explosion in growth.

4.7 Business volume growth.

4.8 Residential growth.

4.9 Industry growth.
Toll

However this enormous growth has its toll. Especially the increase in air pollution (§ 4.12), the loss of valuable nature and arable land and the public space and collective typologies being under pressure. When comparing the air quality measurements of Chengdu (Chengdu Statistical Yearbook, 2007) with the standards given by the World Health Organization (Krzysztoflianowski and Cohen, 2008), it can be seen that the main particles that are responsible for bad air quality (SO2, NO2, PM10) are found three times more than the WHO guidelines (§ 4.13). It is not as bad as the Chinese average and big cities like Beijing and Shenzhen, but still when comparing to other world cities, Chengdu is far behind. The bad air quality becomes even more visible since Chengdu is located in a large basin, and is enclosed by mountains. The city is therefore known for the always present grey skies. The haze is pervasive and a popular saying is “if a dog sees the sun, he will bark at the intruder” (Block, 2008, par. 1) (§ 4.14). Thus the city’s ambition is to increase the air quality and its vision is to become a ‘world-class garden city’, that is ‘environmentally sustainable, surrounded by beautiful rural scenery and enhanced by modern features’ (Qing and Guo-jie, 2007, p. 123). So how to achieve this?

4.1.2 Doomsday

If we would project the estimated population growth in the same space-consuming manner as the last decade, the ‘world-class garden city’ would be totally infeasible. We would need to lay out a square of 20 by 20 km (without even taking into account the fact that the average floor space use per person now is 26 m2 and will probably increase drastically the coming years). Almost a second city need to be built (§ 4.15). According to the masterplan of Chengdu the fingers in the fingermodel will be extended and new hubs will be layed out outside the city. But these fingers will grow out of proportion (now already 25 km between the outer edges and the CBD), leading to urban sprawl and traffic congestion (§ 4.16). The new airport between Chongqing and Chengdu will even accelerate this process. Pre-
4.12 Air pollution projected on map.

4.13 Air comparison with WHO guidelines.
4.14 Sichuan basin under permanent haze.
cious land will be eaten (§ 4.17). Old typologies focused on Chinese family live and the community is being replaced with privatized islands far outside the centre. These big compounds are mainly accessible by car. Thus, more ring-roads will be built and inhabitants become more dependent on cars, resulting in traffic jams and increase in air pollutants. The cities development will gradually slow down, become more congested and will decrease in livability and efficiency. Research suggests that Chengdu is already the most inefficient city in China measured by the time it takes for people to travel to work (Sankhe et al., 2011). The average speed by car in Chengdu within the city centre will soon be lower than just walking (§ 4.18). The finger model is no longer sustainable (§ 4.19). We have to look for a new urban architectural model that cater to a greater population without compromising the quality of life.

§ 4.15 Growth direction.
### 4.16 Expected growth in urban km².

### 4.18 Average speed city centre, Chengdu (kmph).

### 4.19 Doomsday.
4.17 Gradually eating up farming land.
4.2 CONCEPT

4.2.1 The Wall
What if we stop the urban sprawl by densifying the current city edge? By taking radically the existing city form as a starting point. The proposal is a new dense urban zone around the city that will tackle urban sprawl. This new zone is called the Wall (4.20). The Wall encloses the space of the city and makes the transition between landscape and city manifest. In the Wall dwellings, local and global companies, industry, parking, community services, public transport and all other sorts of program can be carved in. Big openings and vistas make sure the Wall feels porous and open.
4.20 Proposal: The Wall.
By proposing a strong counterpoint at the city edge, the area in between the CBD and the new urban Wall will gain value. The suburbs which are today on the edges will be upgraded to green lungs in the middle of the city. Lines towards the wall will be upgraded. The projected growth of the region is 10 million more inhabitants in 2025. If we propose to make the Wall 500 meters wide, drape it around the cities edge, the area that can be build is 156 sqkm (4.21). This is equivalent to the area of two and a half Manhattans. If we house the maximum of 100,000 people per sqkm, almost 16 million people could potentially move into the new Wall (4.22).

4.2.2 Framework
The Wall can not only give the opportunity to further densify the city, accommodate the projected population growth, but it can also function as a framework for applying ideas in a larger context. The Wall will not be dealt with as separate masterplans or buildings with air purifiers, air conditioners or other building techniques, but is more a series of parallel strategies that truly can have the potential to tackle bad air quality. According to the Environmental Protection Agency of Chengdu (2009), the main contributors to bad air quality today are transport and industry (including the coal industry) (Streets and Waldhoff, 2000) (4.23). Research (2009) shows that China could bring its cities to a Level III air quality standard (defined as China’s “safety level”) through a combination of transport and industry strategies including increased density, expanded public-transit provision, the conversion of public fleets to clean technology, the implementation and enforcement of industry emissions standards, and congestion measures such as restricting vehicle ownership (4.24). A case study by McKinsey of Shenzhen shows this can cut nitrogen oxide concentrations dramatically by 90 percent (2008). The Wall accepts this as the basis of its new planning system, in order to decrease the air pollution radically. The Wall can integrally tackle the two polluters of transport and industry at its source; it will cut emissions and capture before it blows freely into the air.

4.2.3 Increasing air quality

Transportation
The first air polluter that the Wall addresses is transportation. Air pollutants from transport include nitrogen oxides, particles, carbon monoxide and hydrocarbons. All have a damaging impact on the health of people, animals and vegetation locally. The private car is the main contributor to this. Cars have a major impact on the environment through their construction, use and eventual disposal. It is estimated that of the CO2 emissions produced over a car’s lifespan 16% come from its manufacture and 5% from its disposal, with the remaining 85% coming from fuel use and servicing operations (Guan, 2008; Woetzel et al., 2008).
• 4.21 Unroll the Wall.

• 4.22 Keeping Urban land en potential accomodation.

• 4.23 Main air pollutors.

• 4.24 Decreasing bad air quality.
In Chengdu, 1200 new driver licences are issued each day. It is now already the third biggest city, after Shanghai and Beijing, of private car ownership in the country (Li et al., 2010). In addition to these emissions of carbon dioxide and other air pollutants, the vehicle and related industries (e.g. fuels) consume large amounts of raw materials, and produce significant quantities of waste. Chengdu has a large automobile manufacturing industry, with firms like Volvo, BMW, Mercedez-Benz and Toyoto. When analyzing the cities transport system, it can be seen that the outskirts of the city are not well connected by public transport, making people dependent on car use.Congestion is therefore increasing (§ 4.25). The millions of new migrants, who most of them do not have a private car yet, will accelerate this process.

Public transport system as backbone

So a radical choice in public-transit provision will be inevitable for the city’s future. By connecting the existing metro system (§ 4.27) with the Wall, an expanded public-transit will be provided, thus decrease dependency on the car. The existing metro system and the Wall will be connected with a localised feeder system (§ 4.28). This is a rapid hop-on hop-off system, similar to the Light-Rail-Transit (LRT) in Singapore, which ‘feeds’ the Wall and existing metro network (§ 4.29). The system is closer to an automated people mover system such as those found in many airports around the world than a traditional light rail system. All the lines are fully automated and elevated, and run on viaducts in order to save scarce land space. Train arrival and departure times are almost guaranteed this way. Walking distances are no longer than 10 minutes. This means a 500 metre radius. It is also cleaner as the trains are electrically powered, and therefore lessens the effects of air pollution. In addition to that Wall Trains will run all along the Wall, providing faster travel times from one part of the Wall the another (§ 4.30).

This new transport system will be the backbone of the Wall. It provides people a fast and reliable way of transport. When comparing travel times with the car the effect is enormous. It can cut travel time from one part of the city to another by half (§ 4.31).
4.27 Existing metro system.

4.28 Connecting with localized feeder systems.

4.29 Localized feeder systems.

4.30 Wall train.

4.31 Travel time comparison.
Clustered system of industries

The second main polluter is industry. Today industries are randomly added on free strips of land and set up as separate systems. Chengdu has had an enormous growth of manufacturing and construction industries, including giant plants of Foxconn, Siemens and General Electric. On Google Earth these industries are easily recognizable by the blue roofs scattered around the city (\(4.32\)). By tightening the separate emission-standards the industry already become cleaner, but the Wall can even further increase this. By clustering industry in the Wall the total system becomes more sustainable (Singh and Evans, 2009) (\(4.33\)). Sharing energy, waste, heat and CO2 capture systems will have a large influence, compared to only tightening the standards per factory separately. By providing a total cycle system, waste of one factory can be used by another factory. During the transition period between fossil and clean energy a CO2 capture system can work. Dwellings or offices can also benefit from clustering industry. For example, dwellings need warm water for showering and other personal use and factories can provide warm water as a remainder of the cooling of machines. Because distances in the Wall are not too big, heat can easily be transported without loss of energy.

So, next to the new transport backbone, one dense clustered system of industries in the Wall will be the second contributor to improve air quality. This results in a theoretical generic model of the Wall (\(4.34 \, 4.35\)).
4.32 Satellite images from various industries in Chengdu.

4.34 The Wall - integral system of industries and transport will greatly benefit air quality.

4.34 The Wall - generic model of integral system.
4.2.4 Generic becomes specific

This generic model of the Wall will have different spatial outcomes on each specific location. It reacts on the local soil, vegetation and program in the city. Sometimes the shape of the Wall is a clear line, sometimes it splits into two lines. At other parts it is a dotted or a gradient line. At interesting places it makes a loop or embraces special places (4.36). The spatial appearance of the Wall in Chengdu can be divided into three parts (4.37). In the northern part of the city the main soil type is grey warp soil with forest as the main identity carrier (4.38). In the south west the Mintuo river gives possibilities to shape the Wall radically and merge it with drinking water retrieval, storage and the existing dam (4.39). The site of the competition, in the south east of the city, is shaped by the paddy fields and the Tianfu High Tech Park. The landscape structure consists of a hilly pattern with rice fields and small ribbon villages on the higher parts. The high tech park is build up with top global technology firms. Shape and program of the Wall reacts on this.
4.37 The wall reacts on soil types and the city.
4.38 Forest Wall in the north.
4.39 Water Wall in the south-west, integrated with dam.
Program

The high tech zone can be extended to our site. It will be the end of the high tech zone (4.40). The site can coordinate between government agencies, private companies and academic institutions to build up Chengdu’s role in the high tech market. Furthermore by adding local communal program, like a market hall, opera, restaurants, wellness, and shared facilities for businesses like, small start-up support, education, a convention centre and exhibition hall the global and local will be connected (4.41). In that way institutionally controlled, developer-driven (top-down) and small business and local communal facilities, will merge in this part of the Wall and makes it specific.

![Program with FAR of 5.3.](image)

100,000 people
50% residential
(100,000 x 26,90) x 2 = 5,380,000 m²

FAR 5.3
4.40 Specific program on the site given by the competition.
4.3 FRAMEWORK

4.3.1 Building the wall

The competition requires to investigate 100,000 people for 1 sq.km. According to Chinese planning documents one person needs 26.90 sqm of floor space. The residential component should make up to 50% of the total floor space. This means a floor area ratio of 5.3. (4.41 p. 114) If we add our desired program to this and would build one big form we need to build a 250x250x260 meters cube. Our first step consists of laying out the generic Wall. This means an urban zone of maximum 1000 meters wide (a radius of 500 metres from the metro station) with the public transport as a backbone. (4.42). The 500 meters radius width is derived from research of public transport engineer White (2008) stating that this is a desirable 10 minute walking distance to the nearest station.

Grid

The second step is to come up with a grid that can be flexible as well as specific to the Asian context. The grids of Barcelona, Paris (4.43), Tokyo and New York are interesting, but are yet too sparse or too generic. Western grids like the famous Manhattan grid of New York (4.44) are based on western values. That means that values derived trough centuries value verticality greatly. In the theory chapter (3) of this thesis it is stated that China’s traditional principles value horizontality more (Wang, 2008). Starting with Confucian values of the collective, the architecture responds to this more in forms that emphasize enclosure. The domesticity of a Chinese family is more build up as a micro cosmos of Chinese private life, with walls serving to enclose, protect and define the dwelling. This means buildings do not have to be necessarily vertical and high towards the sky, but are rather focused on the collective and can grow accordingly. Flexible grid plots are needed.

The inspiration for a flexible grid that will take on the specifics of China’s urban development comes from the possibility to click different collective typologies together (4.45). Different block sizes are possible with a basic block size of 30x80 meters (4.46), allowing to build higher, but always demand for collective places. Different studies showed that with this grid grain it is possible to realize the desired FAR of 5.3.
4.42 Public transport as backbone.

4.43 Paris grid FAR 3.5.

4.44 Manhattan grid. FAR 8.

4.46 30x80 grid.
4.45 New collective typologies based on 30x80 grid. Inspired by traditional typologies.
4.46 30 X 80 Grid.
4.46a. 30 X80 Grid.
Program
Because the Wall asks to build 3km² of the total site, it is necessary to spread out 3 cubes of 250x250x260. The first option is to place the public services and offices in the middle of the Wall, close to the public transport and the residential on the edges. Everybody is living on the edge, but the central strip with offices and public services will probably not be used 24/7. The second option to lay out the program is to cluster it in zones, but this strengthens the separation of living and working. The third option is more feasible to mix the functions (4.47). With an emphasis of living at the edge and offices and commercial zones near the metro station.

Density
The second question is where to densify. Again there are several options. A higher density in the middle strip will block the views and have no focus point. On the other hand the densest part is close to public transport. By densifying in clusters, the Wall will feel more porous allowing openings to the landscape. The preferably option will be a combination. Clusters near focus points like the metro and less dense parts at edges (4.48). These first steps are to set up the basic lay-out of the site.

4.3.2 Integrating the wall
Now the Wall will react on the specifics of the site and the landscape. The first intervention will be connecting with the planned metro system (4.48). A big ring of a dense urban district, called the WBD (Wall Business District) will follow. Since there are planned important places like governmental buildings, parks and business in the masterplan next to the site, big piers will connect these to the landscape (4.49). Like duck tape the Wall will be stitched into its context, breaking the linearity of the Wall. The piers embrace the landscape into the site.

Secondly all this will be connected by a big spine trough the Wall (4.50). This spine is the main public space in the Wall. The public transport, shops (IKEA), offices, industry (Foxconn), governmental buildings and leisure (Sichuan opera) are all placed next to or under the spine. The spine will form a route architecturale with different densities, vistas and program. The final form of the Wall itself is shaped by the landscape and the city (4.51). Lower, wet parts in the north and south carve out big ponds in the Wall. The highest part of the mountain will cut a hole in the WBD, providing a central park. And the spine will follow the topography of the paddy fields.
4.47 3 cubes of 250x250x260 spread out.

4.48. Different densities and ring around metrostation.

4.49 Connecting places.

4.50 Central spine.

4.51 Final masterplan reacting on landscape and existing city structure.
4.51 Final masterplan.
Edge of the Wall.
Model of final masterplan.
Program on the spine.

Program of the site.

Densities of the site.
Biggest parts of the Wall.
4.4 **ZOOM IN: THE SPONGE**

The Wall itself forms not only a way to accommodate future residents, but also encloses the existing space of the city. One part of the Wall will be worked out in detail in this chapter. This part is called the Sponge. The theory part of this thesis recommended to form places by enclosing spaces, and take the existing situation as a starting point for design. The building blocks formulated in the theory part form sustainable elements which can continuously take on new functions and can contribute to the ‘soul of the city’, or ‘sense of place’. In this way local people and communities may easier attach meaning to their environment.
Photos of the site.
4.4.1 Existing context

*Public transport parameters*

The first parameters in the design are based on the public transport as backbone of the wall (4.52). On the particular site there are 3 metro stations planned. A radius of 500 metres sets the maximum allowed building area, in order to maintain a maximum of 10 minute walk from house to metro station.

*Valley*

The second step is to build up a framework based on the existing landscape and building structure on the site (4.53). The landscape on the chosen part of the wall has some interesting features. It is made up of a terraced agricultural landscape which produces rice, wheat, vegetables, beef, pork, tea, medicinal herbs, tobacco and silk.

The site has a significant difference in heights which goes from 560 metres to almost 610 metres. Central on the site is a valley with a high production in grain (4.54). The first articulation of the framework is articulating the topography. This valley will be maintained and will form a new green and lush backbone on the site. During summer this valley will form impressive yellow colours, due to the growing of the grain, while in winter a nice green valley will emerge. It changes colour with the harvesting. The valley can form a natural park system throughout the site.
4.52 Public transport parameters.

4.53 Landscape structure.

4.54 Valley.
4.54 Valley.
Bamboo hills and water ponds

Another interesting feature of the site are the hills with bamboo forests (Moso bamboo or Phyllostachys pubescens) (↑ 4.55). Besides the spatial quality, bamboo has some major ecological benefits. With its fast growth rate and high annual regrowth after harvesting, the bamboo forest has a high carbon storage potential. A high annual rate of carbon accumulation means that the bamboo forests are one of the most efficient types of forest vegetation for carbon fixation. Bamboo forests have an extensive rhizome system (horizontal stems) , a thick litter layer, highly elastic culms, and a dense canopy. These characteristics give bamboo forests a high capacity for erosion control, soil and water conservation, landslide prevention, protection of riverbanks, and windbreak and shelterbelt potential. Since Chengdu is known for its rainfall and moisture, the bamboo forests can help with this, since they have a strong capacity for rainfall interception and moisture retention.

Finally these bamboo hills will form natural ‘oxygen bars’ for the site, and can therefore clean the air and reduce noise. It maintains wildlife biodiversity by providing food and habitat for numerous species of insects in the soil and tree layers, as well as for spiders, butterflies, birds and other higher life forms (Lou et al., 2010). Socially, local residents harvest the bamboo, and use it for a wide range of products. This does not harm the ecological benefits described above.

The existing water ponds form water storages and air purifiers (↑ 4.55). The primary function is to collect water from strong rainfall. As an additional effect the evaporated water cools air and enforces a circulation of the air through the city on warm summer days. This rain will be collected at the ponds and the vegetation (reed as halophytes) will purify this in a natural way. The sun evaporates this water again, but then cleaned, or the water infiltrates in the aquifer, also cleaned.

↑ 4.55 Bamboo hills and water ponds.
Natural ventilator

The valley, bamboo hills and water ponds will have an interesting effect on the everyday living quality and especially the air quality of the site. Since Chengdu has practically no winds, alternatives need to be fostered, the landscape can work as a natural ventilator for the new build areas. Build areas have higher temperatures, which is called the heat-island effect, and a lower air pressure, than the landscape. The water ponds will cool air and enforce circulation of air. From the landscape a cool and humid airflow will work as a natural ventilator in the city (4.56). So, the valley, the bamboo hills and water ponds will form retreatment and refreshment areas, both socially as ecologically on the site.

![4.56 Natural ventilator.](image)

Upgrading existing network

The existing roads connect places in the city and landscape. These well paved streets can be maintained and form an infrastructural framework for the site (4.57). The existing buildings along these roads, can be integrated in new blocks. These roads will form the primary arteries in the hierarchy (4.58, p.159). Therefore a symmetrical profile with a clear distinction between private and public is prescribed. A continuity of the facade, no setback, a (semi-) public first floor and a maximum of 6 stories and mixed land use will provide a flow of people and goods.

![4.57 Existing network.](image)
4.4.2 Series of enclosed worlds
What results is a framework build up from the existing situation. The next steps will interpret the building blocks formulated in the theory part in this particular site.

Linearity
The main intervention is adding new lanes to the infrastructural network, by placing these in a east-west direction (4.59). These lanes will follow the terraces, and will mimic the rice paddies. These south facing streets will take full advantage of sunshine in winter and prevailing winds in summer. These roads will form the secondary arteries focused on the flows of daily life. An asymmetrical profile emphasizes this (4.60, p.150). A transition zone of 5 metres which can contain porches, veranda’s and front yards, with in the street public spaces consisting of sitting elements, planting, vendors and street stalls. To improve the interaction between street and block within every 7 metres there need to be an entrance. First floors are accessible with shops, restaurants, teahouses or other semi-public facilities. The blocks are recognizable and controllable entities.
- symmetrical profile
- continuity facade
- no setback
- transparency 1st floor
- max 5 stories
- land use mix
- max 12 m between each entrance
- max 25% open space on plot

4.58 Primary arteries.
- transition zone 5 m (porches, veranda’s, frontyard)
- 3-4 stories
- asymmetrical profile
- height differences
- max 7 m. between each entrance
- sitting elements
- land use mix
- vendors and street stalls
- planting as space-makers

4.60 Secondary arteries, asymmetrical profile.
Hierarchy

What results is a hierarchical system leading from the public to the very private. The hierarchy is emphasised by varying the width of the lanes so that, in general, they become narrower as they become shorter and closer to the houses. Within this framework building plots can be pointed out (4.61). This framework makes the spatial and social readable and transparent. Different programs can emphasise this hierarchy, with around the valley a mixed program of living and leisure (4.62). The main arteries carry commerce, offices and dwellings, while the secondary arteries are mainly dwellings. At strategic spots, meaning where landscape, main arteries and metro stations come together, special buildings can form focus points.
Unity
To develop the plots into urban blocks, the idea of collectivity is leading. The domesticity of a Chinese family is built up as a micro cosmos of Chinese private life, with walls serving to enclose, protect and define the dwelling, therefore the blocks need to provide private spaces. In contrary with Western blocks and High-rise free standing towers, private spaces should be distributed evenly throughout the block. The goal is to form a unity between manmade open space and nature and blending it into smaller pieces distributed evenly throughout a human scaled and horizontal city.

Human scale
By placing walls of 6 metres on the edges, which are steady soils of clay and sand, of the existing rice paddy structure, a possibility emerges to create these private spaces (§ 4.63). The plots will be divided into manageable smaller plots in which individual units can be developed. On the smaller plots a maximum of 60% is allowed to build, no higher than 4 stories. Every house enjoys thus a piece of open private space. Since there is no direct sunlight in Chengdu, light will reach the ground floors easily. Developers are allowed to build within one block a maximum of 10 plots including the walls at once. This prevents the emerging of large gated compounds and allows for a bottom-up development. Farmers who live on the site can sell their land to investors or government and buy a new walled house or can expand their existing house. Certain plots will be reserved for semi-public accessibility (§ 4.64). 20% of these plots are allowed to be build, which results in small alleyways penetrating the block. Walls on these plots will be cut with holes which can be consciously experienced. Entrances of the individual units are located on these alleyways, with bamboo screens in front of the doors, to make a semi-private front.
4.62 Valley

4.62 Building plots

4.63 New walls.

4.64 Collective spaces
4.65 Final model of development.
4.66 Different building typologies
4.65 Final model of development.
Enclosure

The structure that results is called the Sponge. It is a structure that can grow or even shrink easily and is highly adaptable to the market. It is a framework that is formed radically by the existing natural topography (4.66, p.160), and an interpretation of the building blocks from the theory part. The result is a series of enclosed worlds with human scaled courtyards, gardens, small open areas and other forms of open space, alternating with the main roads, bamboo hills, water ponds and valley (4.67, p.162).
4.66 Existing terraced landscape structure with paddy fields.
4.67 New development.
4.69 Birds eye perspective
4.71 Birds eye of the edge.
4.72 Inzoom of the spine.
4.73 Birds eye of the spine.
4.77 Inzoom
4.79 Section 1:500. Movement through enclosed worlds.
Also in materialization this can be emphasised. Rainwater runs on 1 metre wide water gutters in public space through the enclosed worlds to the water catchment ponds (4.81). These water gutters are filled with stones and marbles, therefore intensifying the sound of the streaming water (4.82). This has a cooling and calming effect on micro level. The walls itself can be build from white concrete blocks. This maximizes sunshine reflection and keeps the adjacent spaces cool in the summer. Indigenous plants like Ligustrum wallichii, Liriope spicata and Aconitum carmichaeli and herbs like Gentiana scabra, Duchesnea indica contain healing effects for body and air and function like natural incense (4.83 p.190). Bamboo screens can further subdivide spaces. By planting differently in colour and effect in each space, the sequence of enclosed worlds will also be emphasised with touch and smell. The pavement can be made of brick baked from the local soil. This results in a colour range from dark brown to yellow and grey.

By enclosing with walls and emphasizing this with the distribution of materials, plants and streaming water a general public space can become a particular place. It provides a structure for ones position in space, time and society and a tangible spatial reference for everyday life. It makes the infinite ‘natural space’ comprehensible, enabling meaningful human inter-relation with it.
4.83 1:5 Wall section with water transport
Prefab concrete
Coated steel gutter

Water
Gravelbed

Prefab concrete with constructed gutter

Concrete
Gravel
Helophytes
4.84 Different plantation in sections.
4.85 Public space section water gutter
4.86 Public space section Bamboo screen
1.7 FSI

60,000 people on 1 km²
4.4.3 Walking from metro to bedroom

From eye-level this results in a sequence of walled enclosures. Movement through these walled world forms the key experience of space. Space is experienced through a crossing of various enclosures and different spatial sequences. The next space is always unpredictable which creates a sense of mystery. It thus presents space little by little.
4.89 Spine with public transport.
4.90 Small public space and teahouse.
4.92 Overlooking water pond and existing building.
4.93 Collective space with water gutter.
4.94 Private courtyard.
4.95 Bedroom.
4.5 EVALUATION

4.5.1 Hypothesis evaluation
To fix the value of the results the initial design brief is recalled. “The development of ideas and theories in urban growth and architectural form related to density, liveability and sustainability specific to the rapid and exponential growth of urbanism in Asia…it seeks design solutions for a balanced environment for urban life where public amenities and work opportunities are within easy access. It encourages efficient and clean modes of travels that contribute to clean and fresh air.”

The design brief seeks an alternative urban architectural model for Chinese cities. This thesis adds the significance of public space to this, with the hypothesis that by re-discovering the fundamental role of ordinary public space in Chinese cities, several other problems can be addressed and even be reduced.

4.5.2 Critique
However, a few critical comments can be made when evaluating the results. These comments can be better explained by putting The Wall in a short historical perspective.

The theoretical roots of the Wall can be found with the concept of ‘the linear city’. The linear city concept was an urban plan for an elongated urban formation. The linear city was first developed by Arturo Soria y Mata in Madrid (4.97) during the end of the 19th century, but was promoted by the Soviet planner Nikolai Alexander Miljutin (4.98) in the late 1920s. The concept had a revival in the 1950s and 1960s (4.99).

Interesting is to see that the argumentation used for The Wall come close with earlier argumentations in Linear City concepts. Collins, a planner who wrote firstly about the concept in 1959: “A linear city is one that is formed - and grows - along a line. This line is usually its artery of transport for people, for goods, and for services: roads, rails, pipes, and wires (note the similarity with the central spine in the wall). A city of this sort can grow freely - infinitely - in increments that are repetitive in character. Its internal circulatory system is planned for the utmost efficiency: all its parts are, presumably, of easy accessibility to each other and share the same urban amenities. Since the extensions of the growing city are narrow in width, all its
4.97 Soria y Mata, 1882. Linear city.

4.98 N. Miljutin, 1930. Tractorstoi, Stalingrad

4.97 Soria y Mata, 1882. Linear city.


220 points are in close confrontation with natural landscape, and the country-side in turn partakes of the advantages of modern city life, brought to it by the linear corridor.” (Collins, 1959, p. 2). Collins describes and categorizes a great variety of linear-development concepts and designs. A few arguments can be constantly derived from this:

- Limited extension of the city;
- Efficiency in building;
- A fordist mass production. The linear city is like an assembly line;
- Landscape on one hand and city on the other. Best of both worlds;
- Orientation on transport.

Especially in the increasing mobile society in the 1950s and 1960s, just like is happening today in China, the concept gained popularity. But Collins also pointed out that “it should be kept in mind that, regardless of the artists’ renderings by which they may on occasion be presented, linear planning is primarily a schema, a process, a system, and not a physical or architectural actuality”.

4.100 Le Corbusier. La Ville Radieuse
Thus, the linear city is mainly a modernist concept and can be regarded as an urban/spatial expression of modernist (fordist) production, inspired by repetition, mass production, and the development of the train, highway and the assembly line. The basis of the concept is the rather blueprint like approach (4.100). Besides the blueprint approach there is an approach based on scheme’s. Problematic is that these schemes are rarely made tangible. Also possible hidden burdens can be named like, how to stop sprawl with a build wall? What will be additional urban rules, and can there be rules, or are economic forces to strong? And what will happen to people if they are living their daily life on the edge of the city?

Mostly these schemes ignore local differences. In the main concept of the Wall this is tried to be prevented, but it still ignores some very crucial small-scale local characteristics like bamboo forests, farms, water ponds and existing roads. Also from the main concept of the Wall the critique can be that it remained a scheme. In the Zoom-in the Sponge (chapter 4.4) it is tried to make the concept more tangible and respect local characteristics. The sponge takes the existing context radically as a basis, resulting in a from birds-eye rather irregular form, but from eye-level some qualities are presented that touches the essence of Chinese perception of space.

### 4.5.3 The Wall as integral design

Can the Wall be seen as an integral design and be an answer to the rapid and exponential growth of urbanism in Asia (4.101)?

![Graph showing various urban metrics over time]

*4.101 Challenges facing China.*
In the Wall the challenges will not be dealt with as separate tasks but, rather as an holistic strategy (§ 4.102). Not only the flow of people, but flow of energy, waste, water, fauna and flora. Traffic congestion and sprawled industries are decreased therefore having a major effect on air quality. Water can be purified and used as drinking water or for other uses like the shower or toilets. Wast can be collectively dealt with throughout the whole Wall. Biodiversity and vegetation in the landscape can be untouched. Migrants from rural areas can move to the Wall, overlooking the farmland on one hand, and on the other hand see the opportunities of the city. Food can still be produced in the landscape and collectively transported in a short distance to the Wall. This more technical approach to the challenges, is complemented with attention to the design and experience of spaces. The Sponge investigates this deeper. Crucial principles like collectivity and enclosure form the public spaces, therefore putting emphasis again on ordinary public spaces.

The integratity in the design is highlighted by the jury comments: “An original and ambitious vision. The wall is a strategic approach that starts with a detailed site-specific analysis but culminating in a robust and general solution for the entire china. The sense of balance in the design, scale and depth of thinking is most impressive. The wall plays many roles both functionally and metaphorically; it goes beyond being a physical and metaphorical boundary and dwells on the typology of courtyards and Chinese cultures.”
4.5.4 New Chinese Walls

The Chinese cities grew enormously last decades, spreading to almost infinity. The idea of the Chinese Wall can be projected at different cities (4.103). 350 million people will be added to China’s urban population by 2025. 40 billion sqm of floor space will be built. The urban Walls can accommodate this growth, making the urbanization more compact and sparing the scarce landscape. The cities would grow to dense super cities. This generates the most GDP per capita, is more energy efficient and it would contain the loss of arable land. Implementing the Wall as a new urban architectural model could be easier than it might seem as the current dispersed model approaches its limits. In fact, the Chinese national leadership recognizes and implicitly supports a sharp, radical and significant course change to a new urban architectural model; it calls for an industrial and economic rebalancing to achieve a more harmonious society in the 12th Five Year Plan. These new Walls can guide this rebalancing. They can be the second Great Chinese Walls to be erected, therefore preparing China for its urban billion!
CONCLUSION
This research started with the question: “How to design an alternative compact urban architectural model for Chengdu, that fosters ordinary public places, resulting in a masterplan with a density of 100,000 people per sqkm?”

**Alternative compact urban architectural model**

350 million people will move from the countryside to the Chinese cities in the coming decades. However the current dispersed model is no longer durable to cope with this. The arable land resources will shrink rapidly, the landscape and environment will further be affected and other problems will increase. From a spatial point of view, public space is especially under pressure. This thesis takes the city of Chengdu, part of one of the world’s biggest agglomerations, as a case study.

If the excepted growth rate in the city of Chengdu continues in the same space-consuming manner as today, the city will doubled in size by 2030. The Wall takes the existing situation radically as a starting point, thereby mitigating the pressures the city is facing. The Wall can be seen as an alternative that fosters compact growth. This thesis formulated some fundamental principles of Chinese culture that cannot be ignored in an alternative city model, thereby challenging the underlying premise of the Vertical Cities Asia, that only high-rise can be a solution.

**Ordinary public place**

The principles of linearity, hierarchy, unity, human scale and enclosure can provide building blocks for this model. The principles can be considered as the ‘tangible signs of the past’. They form the sustainable elements which
can continuously take on new functions. They can form continuity in Chinese cities which are confronted with discontinuity.

**Masterplan**

The Wall tries to form a unity between manmade open space and nature and blends it into smaller pieces distributed evenly throughout a human scaled and horizontal city. It thus strengthens the importance of family and kinship. Enclosure, which forms the key element in this, touches the core of Chinese city life. Walls are the most prominent physical manifestation of enclosure, since they manage transitions across the threshold by means of openings that can be consciously experienced. From eye-level perspective a movement through a series of enclosed world forms a fundamental quality in the new masterplan.

Concluding, enclosing spaces and taking the existing situation as a starting point would be the main conclusion derived from this thesis. By enclosing with boundaries a general public space can become a particular space, a ‘place’ that can be meaningful for everyday life. It provides a structure for ones position in space, time and society and a tangible spatial reference for everyday life. It makes the infinite ‘natural space’ comprehensible, enabling meaningful human interrelation with it. This principle is central to the perception and appreciation of ordinary public space. It would be the rediscovery of the ordinary.
Samenvatting

In de afgelopen decennia zijn Chinese steden zonder enige rem, met een enorme snelheid gegroeid. In 2025 zullen naar verwachting bijna één miljard mensen in China in de stad wonen. Dit brengt enorme uitdagingen met zich mee op het gebied van economie, demografie, leefbaarheid, natuur, transport en milieu. China is op dit moment op een kruispunt: Doorgaan met de huidige verspreide groei, of zoeken naar alternatieve compacte stadsmodellen om de uitdagingen tot een integraal geheel samen te smeden.

Het is de hypothese van deze thesis dat de publieke ruimte van levensbelang is in deze missie. Het bindt de stad en het geeft een duurzame structuur voor de komende jaren. Echter deze publieke ruimte staat onder druk. Plekken die belangrijk zijn in het dagelijkse gebruik worden vervangen door imponerende stadsassen, verkeerswegen en pleinen. Een op modernistische, pragmatische leest geschroeide en op Westerse stadsmodellen geïnspireerde stadsontwikkeling zorgt voor een gefragmenteerde en snel uitdijende stad. In de stad Chengdu komen deze krachten de afgelopen jaren extra sterk tot uitdrukking.

Als de verwachte populatiegroei op Chengdu geprojecteerd wordt en de stad op dezelfde ruimteverslindende wijze hier mee om zal gaan, zal het stedelijk oppervlakte in 2030 zijn verdubbeld. Dit zal resulteren in een verdere urban sprawl met als gevolg, onvermijdelijke verkeersopstoppingen en een toename van luchtvervuiling zal volgen. Dit terwijl de huidige luchtvervuiling al 2,5 keer hoger is dan de WHO richtlijnen. Met het project The Wall wordt een integraal plan geboden waarbij de urban sprawl een halt wordt toegeroepen en tegelijkertijd een op de Chinese perceptie van ruimte gerichte publieke ruimte weer centraal stelt.

resulteert in een van vogelvlucht perspectief schijnbaar chaotisch ontwerp, maar heeft een duidelijke hierarchie en levert op ooghoogte verrassende ervaringen. Hierbij word de muur op verschillende schalen als fundamenteel ruimte-ervarings element ingezet.


**Juryrapport**

‘The Wall’ weet volgens de jury van de internationale prijsvraag Vertical Cities Asia op ingenieuze wijze verschillende schaal niveaus van Chengdu aan elkaar te knopen en kende het plan de tweede prijs toe. Volgens de jury worden vernieuwende en tegelijkertijd praktische ontwerpen voor de stad voorgesteld. The Wall werd bovendien geroemd om het feit dat het ontwerp was gebaseerd op gedegen architectonisch en stedenbouwkundig onderzoek. Het jury rapport over ‘The Wall’: “An original and ambitious vision. The wall is a strategic approach that starts with a detailed site-specific analysis but culminating in a robust and general solution for the entire china. The sense of balance in the design, scale and depth of thinking is most impressive. The wall plays many roles both functionally and metaphorically; it goes beyond being a physical and metaphorical boundary and dwells on the typology of courtyards and Chinese cultures.”
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This thesis is a specific research about the city of Chengdu in Western China. The city is at the very heart of the dramatic transformation of China and can be seen as a perfect model city of recent growth. Together with the city of Chongqing it is one of the largest urban agglomerations in the world. The city showed an explosive growth in GDP, urban area, infrastructure and living standards. There are however enormous qualitative challenges for further growth concerning land use, domesticity, biodiversity, water and air quality; The city is at the crossroads. In order to attempt to resolve the challenges, which path will it take?

It is the hypothesis of this thesis, that the underlying framework of the city, its streets and public spaces, is the basis for development, because these are a lasting foundation for years. The thesis takes on the perspective of ordinary public places that are meaningful for everyday life. Therefore it is crucial to understand space, the Chinese perception of it and how to structure it. The result of this thesis is a proposal for an alternative urban architectural model that will guide the city towards compact growth, giving at the same time ‘place’ to the millions of new migrants.