

# CO-EVOLUTION

## Danish / Chinese Collaboration on Sustainable Urban Development in China

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**Abstract:** The processes of rapid and extensive urbanization have greatly improved the living conditions for a vast number of Chinese people during the past decades. But it has also put tremendous pressure on the environment, which can be experienced as increasing pollution and lack of natural resources. The project “CO-EVOLUTION” confronts the challenge of how to improve living conditions without exhausting the very resources needed to sustain a better life. It does so through international and interdisciplinary collaboration. For six months, four offices of the most talented young Danish architects have been working together with professors, PhD and postgraduate students from four of the most prestigious Chinese universities. In teams consisting of one Danish office and one Chinese university they have developed proposals for sustainable urban development in the four Chinese cities of Beijing, Chongqing, Shanghai and Xi’an. Proposals which at the same time describe a cross section through “urban China” – from its historic centre via the Central Business District and the post-industrial periphery to the post-modern sub city. The collaboration has revealed different cultural values, working methods and professional interest among the participants. But the teams have acknowledged and learned from these differences. In combination with the exchange of ideas, experiences and knowledge, it has sparked creativity and imagination, resulting in four highly visionary projects. The collaboration has not only opened the participants’ minds to different cultures but as well to the importance of sustainable thinking. In addition, it has created the basis for long term relationships among the participants. Thus, it is our hope that the four projects are not merely the end products of a process but as well the starting point for more collaboration, which we believe is essential to meet the challenges which really concerns us all.

**Keywords:** Collaboration, Sustainability, Urbanization.

### 1 The Challenges

How to improve people’s living conditions without exhausting the very resources needed to sustain a better life?

Urbanization can be seen as a means to improve peoples living conditions. In this respect, the achievements during the past decades in China are unparalleled in the history of human civilization. Due to radical economic reforms and massive urban development, about 400 million Chinese people were lifted out of extreme poverty during the period between 1980 and 2001), which account for roughly three quarters of the total number worldwide.<sup>1</sup>

However, while living conditions are greatly improved at one level they are seriously challenged at another. The current processes of rapid and extensive urbanization in China puts tremendous pressure on the environment, which may be experienced in everyday life as deteriorated environments plagued by smog and particle emissions, polluted water and water shortage, rising oil and gasoline prices and unstable power supply.

To meet the challenges of pollution and resource exhaustion, as well as the challenges of new forms of urban poverty, social disparities and the erasure of cultural heritage, we cannot (only) rely on existing solutions.

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<sup>1</sup> UNDP China 2005

### **1.1 Chinese and Western Models of Urban Development**

There is, beyond any doubt, much to be learned about sustainable urban development from the traditional Chinese city model, but it remains unclear whether this model, which was developed for a relative static society, can be adapted to a global market economy, individualized lifestyles and massive urban migration. The modernist Western model may be better suited for this, but it is far from a perfect solution. Urban development based on mono-functional zoning necessitates vast areas of land and extensive transportation. Because the individual zones are only active at periods of time, this results in an excess of energy production and underused infrastructure.

If the modernist Western model is employed to accommodate the massive urban migration in China, it may have enormous and unpredictable environmental consequences not only for China, but for the whole world.

Today, the World's total ecological footprint is already 1.2 times bigger than its biocapacity, but with continuous economic growth combined with shortsighted urban planning we may quickly reach a point where we would actually need two globes to support the population of one.<sup>2</sup>

## **2 Sustainable Solutions**

It is often argued, that sustainable economic, environmental and social solutions contradict each other. But is that really true? An example of the opposite could be the wind mill industry in Denmark. This industry was basically created by a few individual pioneers who used their skills as steelsmiths etc. to refine existing technologies and put them into new use. Later the development of this industry was supported by stricter environmental policies favouring renewable energy over other forms of energy. Today, more than half of all new wind mills in the world are produced by a Danish company and this industry is not only making significant contributions to a cleaner environment, it is also providing job opportunities, innovation and economic growth for the whole country.

To create sustainable urban development we not only need new technologies, but also new policies which integrate economic, environmental and social concerns, and which take into consideration individual and local conditions. Without such a holistic approach to planning, real sustainable solutions are not likely to occur. But we do not only need new solutions. More than anything, we need creativity and imagination to spark off new visions for sustainable urban development.

### **2.1 The Collaboration**

The issue of sustainable urban development is a global issue. Not only in the geographical sense, whereby we all depend on the same resources and are affected by the same pollution, but also in the professional sense in that no single discipline can solve these problems alone. Thus, sustainable urban development must be thought out in collaboration between various peoples and disciplines.

To meet global challenges we need international and interdisciplinary collaboration.

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<sup>2</sup> Global Footprint Network 2005

From March to August 2006 four offices of the most talented young Danish architects have worked together with professors, PhD and postgraduate students from four of the most prestigious Chinese Universities. The project teams, each consisting of one Danish office and one Chinese university, have received advice and consultancy from the Danish engineering company Carl Bro.

The project teams have developed proposals for sustainable urban development in the four Chinese cities of Beijing, Chongqing, Shanghai and Xi'an. They have had workshops in both China (twice) and in Denmark (once). In addition, the Chinese professors have lectured at the two schools of architecture in Denmark and a Danish professor has lectured at the four Chinese universities.

This kind of collaboration can increase mutual understanding and enable the exchange of different experiences, ideas and knowledge. But it also poses its own challenges in the form of different cultural values, working methods and professional interests. These differences can be seen as the source of problems, but they can also be seen as the fuel of creativity. To create a more harmonious society we need to acknowledge and take advantage of these differences.

## 2.2 The Projects

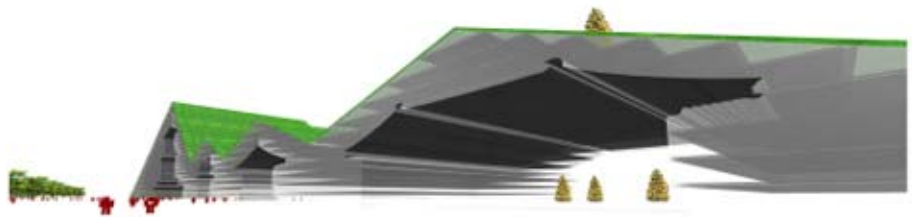
Together, the four projects can be said to describe a cross-section through "urban China" – from its historic centre via the Central Business District and the postindustrial periphery to the postmodern subcity.

### 2.2.1 Team: TRANSFORM and XAUAT

#### Location: CENTER

This project attempts to explore the economic potentials of mass tourism to support the preservation of historical sites, without the tourists destroying those sites and the local environment. It does so by proposing a "meta-wall" around the historic city wall of Xi'an. A continuously differentiated perimeter structure intended to concentrate tourist accommodation, but also to provide public facilities for both the tourists and the local population. In addition, the project offers an environment friendly transportation system located in a green buffer zone between the two "walls".

Figure 1 Xi'an project



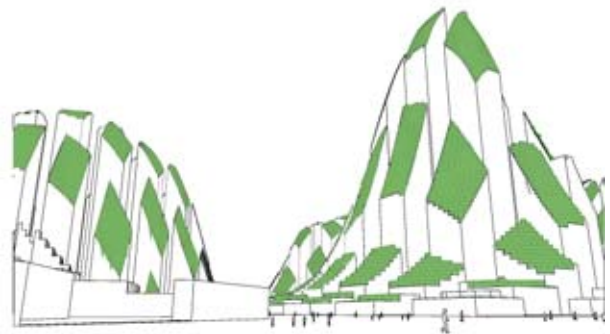
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### 2.2.2 Team: COBE and CQU

#### Location: INTERMEDIARY

This project sets out to explore the image of Chongqing as a mountainous city to create a new "green CBD", located at the intersection of the Yangtze and the Jialing rivers. A number of so-called "5 minutes cities" for approximately 10.000 inhabitants each, are spread across the sloping site facing the existing downtown in Chongqing. These programmatically mixed mini-cities are shaped like mountains to reduce energy consumption by supporting passive cooling in summer and passive heating in winter time. They

Figure 2 Chongqing project



are interconnected by an intricate system of bicycle and pedestrian paths, and a well-functioning public transport system to reduce the need for car transportation.

### 2.2.3 Team: CEBRA and Tsinghua University

#### Location: PERIPHERY

This project has set itself the task to transform a heavily polluted site, located between the 4<sup>th</sup> and 5<sup>th</sup> ring road in Beijing, into a green living environment for various social segments of the fast growing population in Beijing. The project is concerned with the treatment of contaminated soil (4.000.000 m<sup>3</sup>) left behind by the huge industrial complex which occupied the land before, the implementation of Transit Oriented Development, water recycling and mixed housing for the new postindustrial city.



Figure 3 Beijing project

### 2.2.4 Team: EFFEKT and Tongji University

#### Location: BEYOND

This project attempts to reinvigorate Shanghai's decade old strategy of decreasing the population density in the city core. It does so by proposing a combination of "super-nature" and "super-urbanity" in the sub-city of Anting, located 30 km outside of Shanghai. Thus making this postmodern themepark-like city, which already includes a Formula One racing track, several major car manufacturing companies, and both a "German" and an "English" town, attractive to the metropolitan population. The project taps into the existing but largely unused infrastructure and proposes a large infotainment park about sustainable transportation.



Figure 4 Shanghai project

## 3 The Results

CO-EVOLUTION has primarily been a learning process. One of the things we have learned is that there is no simple or single way to create sustainable living environments for us all. But that there are an almost unlimited number of possibilities.

As the title indicates<sup>3</sup> the project is based on the assumption that by working together, making use of different experiences, ideas and knowledge, but as well by acknowledging and taking advantage of different interests, methods and values, we may be able to envision entirely new models for sustainable urban development. The four projects are the results of how each project team managed these differences and how they managed to combine local knowledge and low-tech solutions with cutting edge expertise and future technology.

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<sup>3</sup> In Biology, Co-evolution is the mutual evolutionary influence between two species that become dependent on each other. (Wikipedia)

With this project we have attempted to open up the minds of the future generation of architects to the importance of sustainable thinking. A general understanding and awareness among the users, planners and producers, is the first step in the direction of a viable future.

Finally, we have tried to create the basis for long-term relationships among the participants. Thus, it is our hope that these projects are not merely the end products of a process but as well the starting points for more collaboration.

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## Figures

Figure 1 Xi'an project by TRANSFORM /XAUAT 2006

Figure 2 Chongqing project by COBE/CQU 2006

Figure 3 Beijing project by CEBRA/Tsinghua University 2006

Figure 4 Shanghai project by EFFEKT/Tongji University 2006

## Credits

CO-EVOLUTION: Danish / Chinese Collaboration on Sustainable Urban Development in China, is a joint Sino-Danish contribution to the 10th Venice Architecture Biennale. The concept of the project is developed by UiD (the curator team) together with the Danish Architecture Centre (the commissioner). The participants are CEBRA (DK) and Tsinghua University (CN); COBE (DK) and Chongqing University (CN); EFFEKT (DK) and Tongji University (CN); TRANSFORM (DK) and Xi'an University of Architecture and Technology (CN). Consultants are Carl Bro (DK). The project is sponsored by the Danish Ministry of Culture and exhibited in the Danish Pavilion at the biennale in Venice, at the Danish Architecture Centre in Copenhagen, and at various venues in China, all during September / October 2006.