

eVolo 2012 Skyscraper Competition: The Future of the Skyscraper

eVolo 2012 摩天楼竞赛

作为高水平、国际性的设计竞赛，eVolo每年都会吸引各国建筑师及著名设计机构参赛，自2006年设立起始终以摩天楼作为永恒的题目。近日，2012年eVolo摩天楼设计竞赛获奖名单公布，唯一的一等奖由哈尔滨工业大学建筑学院组成的师生团队获得，这也是中国建筑师首次突破欧美国家对此项世界顶尖建筑竞赛大奖的垄断。



The Himalayan Water Tower: Saving Water for the Future

喜马拉雅水塔——节水造福未来

设计者：中国 哈尔滨工业大学，郑植、赵洪川、宋冬白

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Case

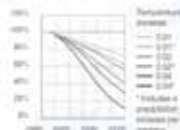
In 2007, when climbing the Mount Everest, Mountaineer Dawa Steven Sharpe realized that the ice and glaciers were disappearing right before his eyes, and said: "This is the treasure for us, but it is also vital necessary for billions of people who depend upon these glaciers for water."



Containing 40% of the world's fresh water, The Himalayas are the tallest mountains on earth, home to 55000 glaciers, and source to 7 of Asia's greatest rivers. The mountain glaciers at the highest Himalayas are the lifeblood of the Asia. The glaciers expand enormous geographic region, from Pakistan, through India, Nepal, Bhutan, Bangladesh and China. They are the source of water for some of the world's greatest rivers. The Indus, Ganges, Mekong, Yangtze and Yellow rivers all flow from the Himalayan Mountains, to the seas of Asia.

Glacier Volume Change Forecasts

Normalized volume reduction



Average
Source: Gettelman et al., Climate Dynamics

Glacier Lake Outburst Floods

Consequence happening at events



Source: reproduced from Rappach et al., Permafrost: An indicator of global warming in the Himalayas. Geophysical Research Letters 39, 2012



However, our most precious resource is disappearing one drop at a time. Climate change is causing significant mass loss of glaciers in Himalayas. The Himalayas are the water towers of Asia. Once the water tower dries out, 2 billion people's life will be affected, and there is going to be serious problem.

The people of Asia face an uncertain future. From Nepal to the Tibet Plateau, Bhutan to India and the Bay of Bengal, their way of life is under threat. The climate is changing, and life as we know it, from the mountains to sea, is falling out of balance. Glacier lakes can burst anytime, droughts threaten once lush farmlands. Weather patterns become unpredictable. Thousands of miles downstream, sea level rise, forcing coastal villagers into crowded inner cities.

Concept

The inconvenient truth is that the high mountain glaciers are decreasing while the global climate is becoming warmer. Therefore, future adaptations need to be planned to the Himalayan Meltdown.

We conceive the skyscraper located in Himalayas to store water for the future and to regulate future water supply. We know that solid ice is convenient to store and ice can be a part of load-bearing structures. Thus, the project's proposal is to collect water in rainy season, we purify it, freeze it into ice and store it for the future.

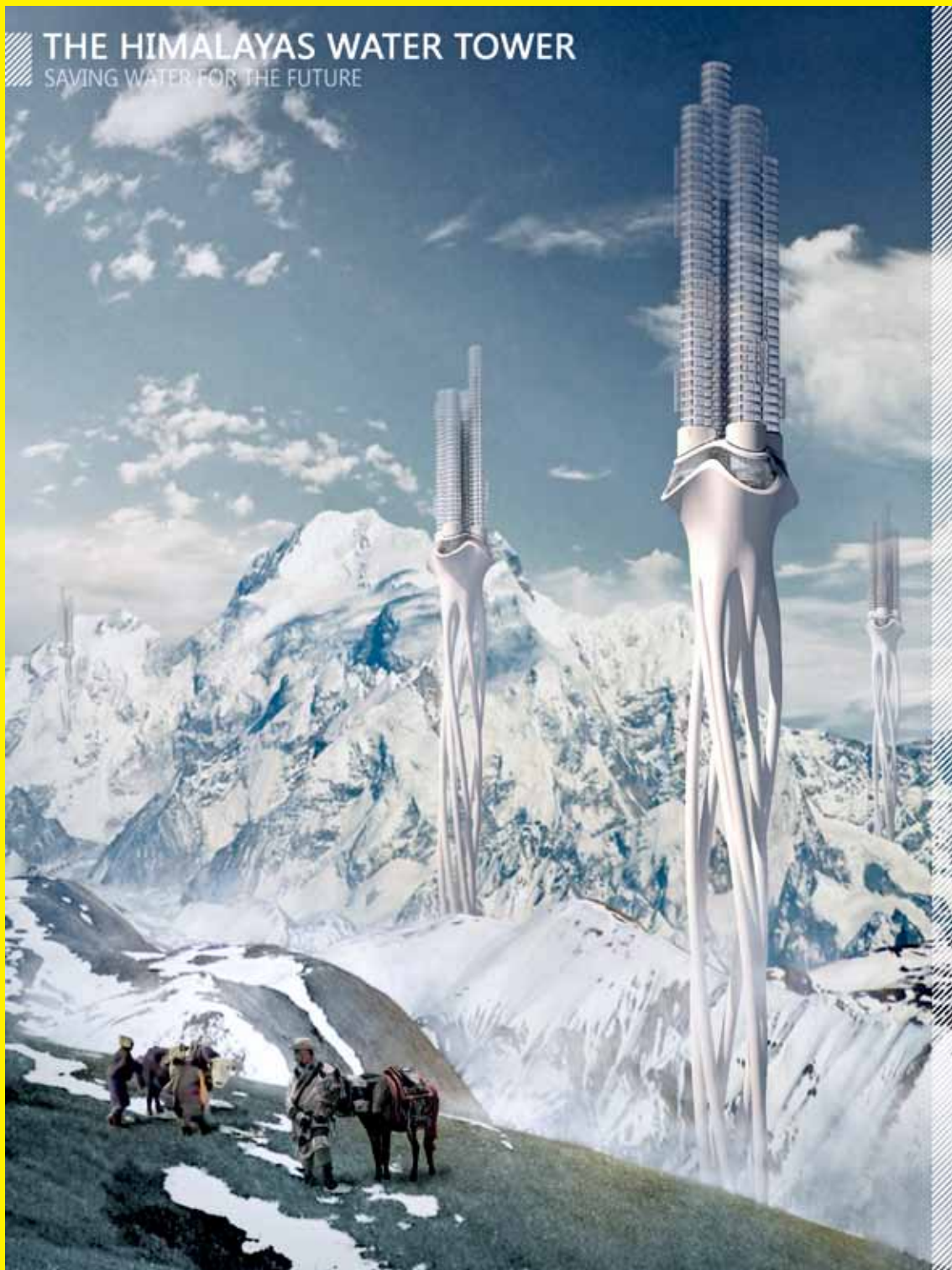
It mainly consists of four parts. The lower part which has stem-like structures is for water collection during the rainy season. The upper part above the snow line is the place to store the ice cube. What's between the two parts is the cooling equipment, it freeze the water into ice by natural and mechanical means. The transport system is responsible for regulating the supply of water, it's down to the ground and can solve traffic problems of local people as well.

Meanwhile, by observing the storage of ice in the lower can generally realize the surplus of the fresh water. It can be a warning to the world as well.



随着气候变暖，高山冰川的融化已经是不争的事实。因此，未来的规划应当把喜马拉雅冰川融化考虑在内。

我们在喜马拉雅山麓中构想了一座摩天大楼，用来储存、运输和分配水源。固体冰便于贮藏，且可作为承重结构的一部分。所以，在项目提案中，雨季收集的水经过净化提纯后，凝固成冰，储存起来供未来使用。

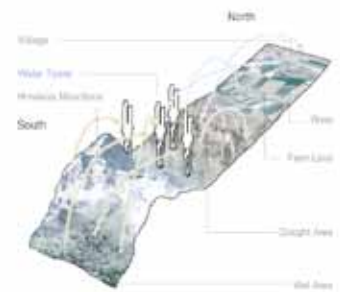


摩天大楼包括四个部分。下半部分像树根一样的结构用来在雨季收集水。位于雪线（0℃）以上的部分用来储藏冰块。两部分之间是制冷设备，它通过机械或自然的方法冻水成冰。运输系统直达地面，用来管理水源的分配，同时也能解决当地人的交通问题。

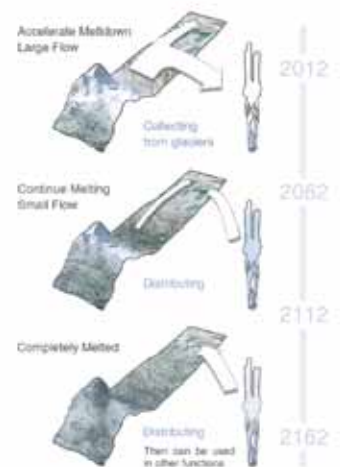
同时，通过观察塔中的冰储备量能够逐渐观察到淡水的盈余情况，这对世界也有个警示作用。（译/方朔，校/吴春花）

（具体请查看www.evolo.us）

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Meanwhile, the water towers are storing water for the next generations. The water collection and distribution strategy is adjusted base on time periods. We consider the worse possible situation in which the glaciers are completely disappeared.



二等奖

Mountain Band-Aid

山体创可贴

设计者：中国 Yiting Shen, Nanjue Wang, Ji Xia, Zihan Wang



MOUNTAIN DISRUPTION

The original village settled at the mountain side with their farmland nearby on lower lines.



With the exhaustive exploitation, the village was damaged and vegetation line fell back. And the mountain was deprived of its natural surface.



The natives were transit to other places, in modern buildings that no longer provide spaces for the original life mode.



CONCEPT



The customary type was pushed on the mountain structure shift level to level in possibility and structural system.



现今政府已经意识到山体植被退化带来的严重影响，一些在建项目正在尝试改变这种情况。但在这些项目中，安置人类定居点和恢复自然环境总是被单独考虑，不能很好地平衡两者的关系。有没有这样一种方式，既能考虑到苗族人民的生活传统，又能保护山体自然环境呢？我们认为，答案是肯定的。



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BACKGROUND
Today the deterioration of mountain has become the main disaster for both natural environment and human settlement in Southwestern China. Nowadays, the overwhelming industrialization in China has resulted in overexploitation of mineral resources. This is especially the case in Southwestern China like **Yunnan**, where heavy industry plays the major role in its economy and mountains are excavated in the search of minerals. Mining exploitation have imposed increasingly harm on ecological environment, including occupation of ploverland, initiating geologic hazards, destroying water equilibrium, physiognomy and vegetation. Moreover, in such mountainous provinces, many local residents like the **Hmong people**, who settled there for generations, have to move from damaged mountain site to block buildings, separating themselves from their previous living pattern.

CONCEPT
Now government has been aware of the seriousness of the deterioration of mountains and some zoning projects are designed to offer an opportunity to save the situation. But in such projects, the areas of recovering human settlement and natural environment are always considered separately. Is there a way to **recover both Hmong people's living tradition and mountain environment**? In our opinion, the answer is YES. One important issue in our task is to build a skyscraper on the mountain in order to help Hmong people recover mountain environment and their natural lifestyle. This is difficult because the steep slope of damaged mountain is not suitable for people to live on. However, in our design where **the skyscraper leans on the mountain**, this question is found easily because people can build their house standing on the surface of mountains. Beyond that, the steepness of the slope even become an advantage. Since the height of our skyscraper is mainly determined by the height of the mountain, we have more freedom in our design, therefore **strengthening the adaptation of our skyscraper**. Our design is also efficient for the **'dual recovery'**. On one hand, when Hmong people return to the mountain, their motherland, they can keep the unique organization of space in their formal village. On the other hand, the Hmong people living on the damaged mountain can take part in the environment restoration by, as an example, recycling domestic water for mountain irrigation. In sum, our proposed project creates a **win-win relationship, benefiting both human community and the natural environment**. Based on this win-win relationship, we are trying to translate skyscraper into a structural system to recover the damaged mountain.

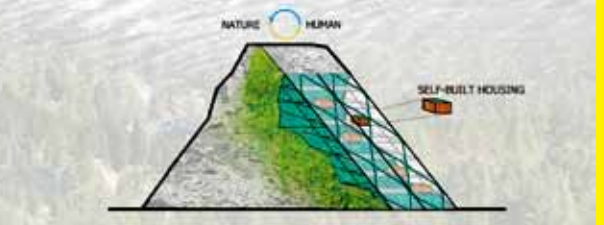
SYSTEM
In order to create the possibility of the interaction between the mountain and the newly built society, our project has established the double layer green surface of the mountain—**the "outer layer" and the "inner layer"**. The outer layer provides the Hmong people with a new inhabited environment. Our design, which stretches a modern high-rise building along the surface of the mountain, emulates the space organization of traditional Hmong village. This incorporation of original mountain village pattern helps keep the Hmong people's **'mountain lifestyle'**. At the same time, the inner layer invades the mountain. This inner layer is formed of **irrigation system** for stabilization of soil and growth of plants. With the help of this inner layer, we would have chances to green the destroyed region.

CONSTRUCTION
Constructed in the traditional Chinese Southern building philosophy known as Chuan Dou style, the **framework** that our skyscraper provides is focusing on the local construction technique. In this framework, Hmong people could remain their village patching strategy and expand or organize the area freely as if the traditional village is proposed. In the construction, we use the traditional Hmong village, which is a framework contains the organization of blocks into different rooms, acting as the blueprint in traditional Hmong village. Therefore, the skyscraper is re-produced and rebuilt in the new mountain Hmong village model.

Mountain Band-Aid

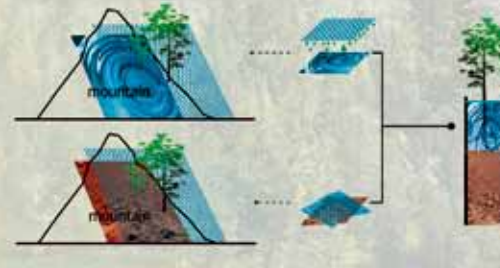


PROGRAM RESULT
The concept and strategy was bonded together to create new life pattern in the damaged mountain area. The native Hmong people was driven away from their village for an overwhelming power and this skyscraper provided a solution, a possible life mode for these Hmong people.



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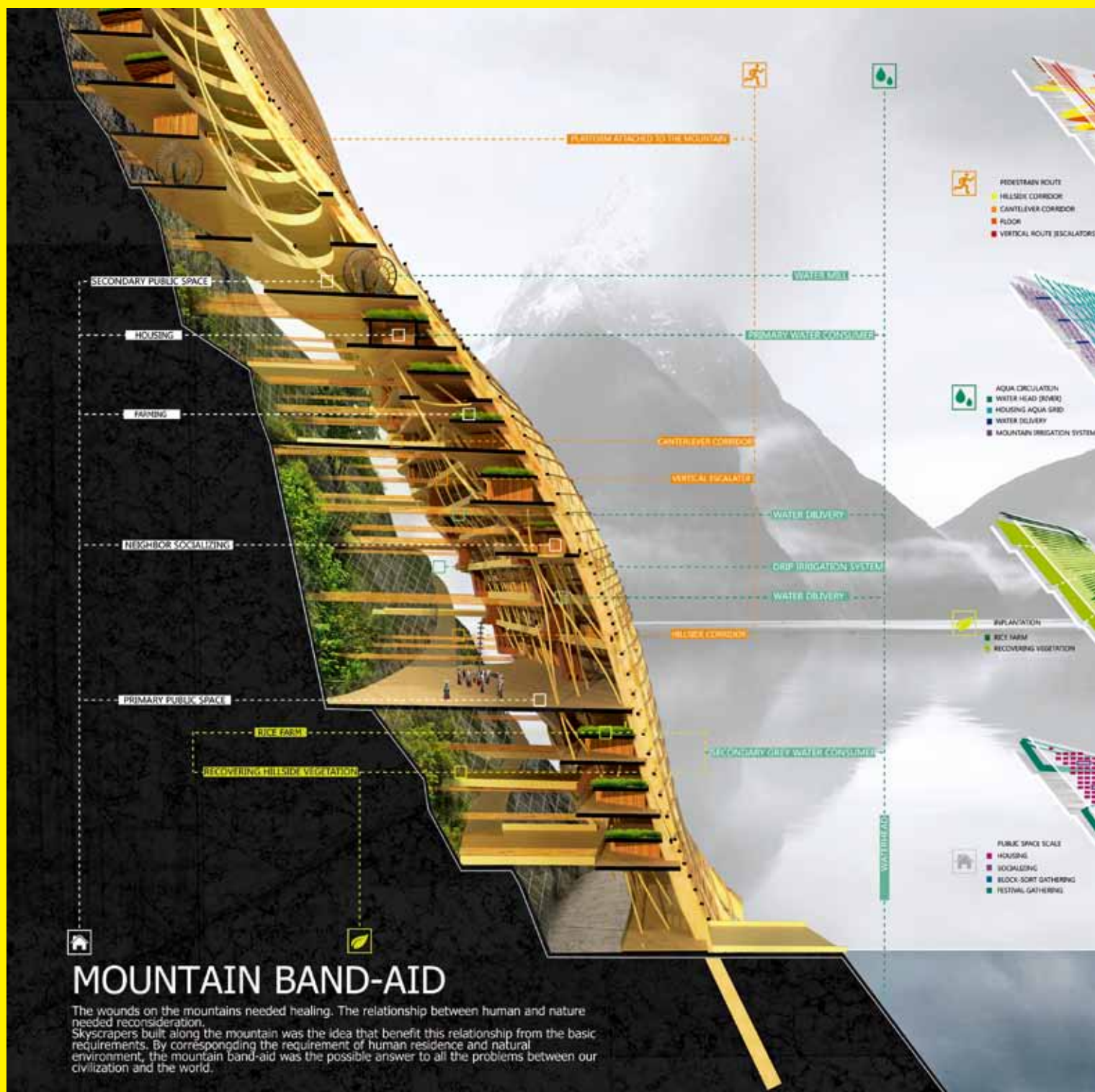




Irrigation was brought to the system to revive the vegetation implanted onto the mountain surface. This was realized by the design of a drip irrigation system that flows along the mountain.

This grid holds the arable soil in their position to maintain an adequate condition for the plants. This also stabilized the soil and water system in the whole mountain.

为了既保存苗族人民的传统生活方式，又能保护山区环境，我们的一个重要提议就是在山中建造一座摩天大楼。受损山体陡峭的斜坡给人类居住带来了难度。但是我们设计的摩天大楼是倚靠在山体上，这就使问题迎刃而解，因为人们可以把房屋建造在山体表面。除此之外，斜坡的陡峭度甚至成为了一个优势。由于摩天大楼的高度主要由山体高度决定，这样我们的设计就有更多的自由度，可以更彰显摩天大楼的适应性。



我们的设计充分体现了“双重保护性”。一方面，当苗族人民返回祖辈之地——大山中时，他们可以继续保持原有独特的村落空间组织形式。另一方面，在受损山体中生活的苗族人民能够身体力行参加环境保护，例如回收生活用水用以灌溉。总之，我们提出的项目既使苗族人民受益，又有利于自然环境的恢复，在两者间创造了一个双赢的关系。（译/方朔，校/吴春花）^{AT}

（具体请查看www.evolo.us）

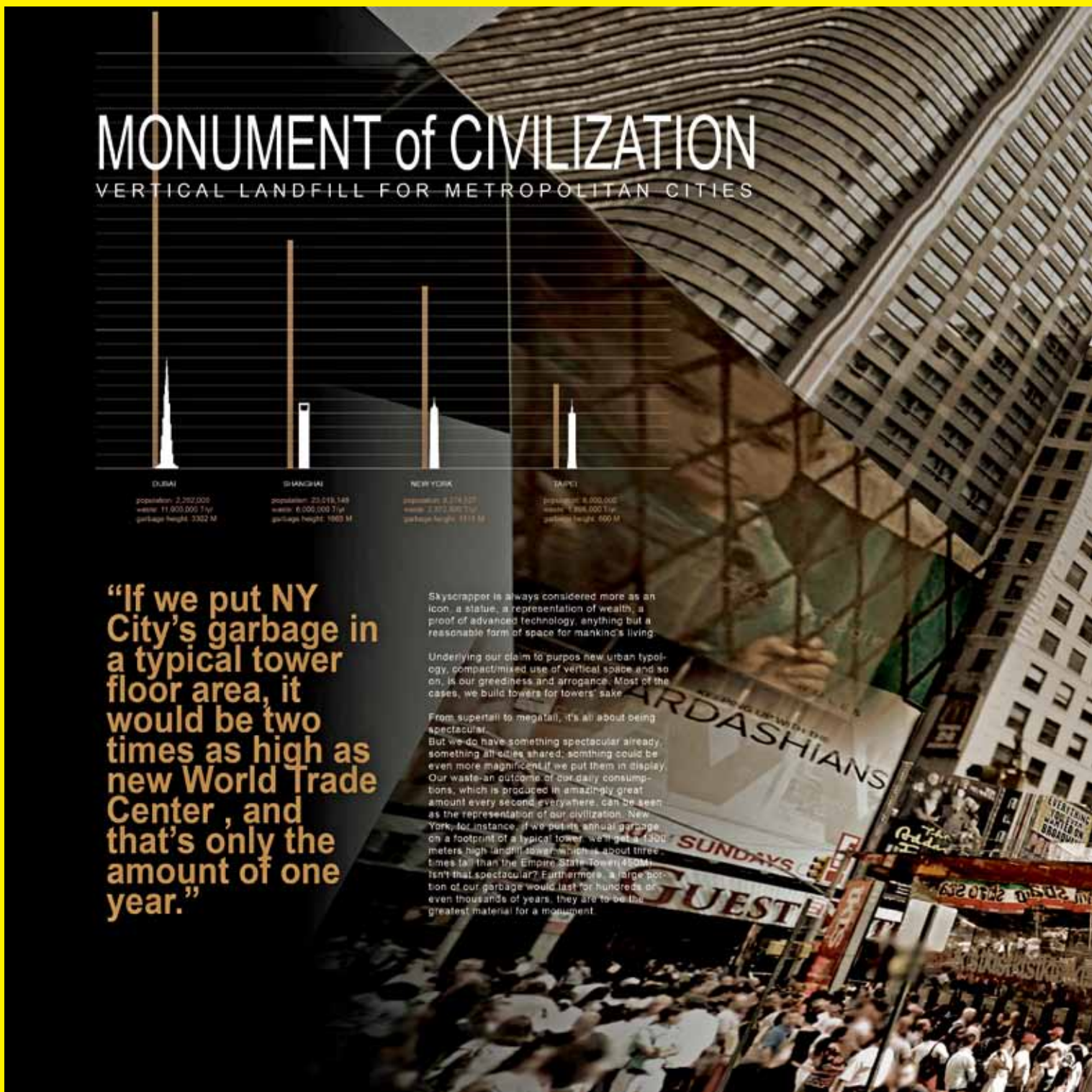


三等奖

Monument of Civilization: Vertical Landfill for Metropolitan Cities

文明纪念碑——都市的垂直垃圾场

设计者：中国台湾 Lin Yu-Ta, Anne Schmidt



如果我们把纽约的城市垃圾以标准的楼层面积堆积起来，那将会是两倍的新世贸中心的高度，而这仅仅考虑了一年的垃圾量。

摩天大楼总被认为是一种象征，一尊雕塑，一种财富的代表或一个先进科技的佐证，唯独没有人把它当作供人类生存的一个合理的空间形式。



凭借超高层建筑建立新的城市象征或紧凑/混合利用型的垂直空间等，在这些雄心勃勃的目标下是我们的贪婪和傲慢。大多数情况下，我们是为了建造超高层建筑而建造超高层建筑。

从超高层建筑到超级高层建筑，一切只与标新立异有关。但我们已经有了一些引人注目的、所有城市共有的、可展示的宏大事物。我们日常产生的垃圾，在世界各处以每秒惊人的速度和数量在不断产生，它可以被视为我们文明的象征。举例来说，如果把纽约的年产垃圾放置在一个标准高层建筑里，我



(具体请查看www.evolo.us)

