Content

6   Project Details
8   Summary of the Work and its Significance, Originality, and Rigor
16  Originality
22  Rigor
28  Dissemination and Evidence of Peer Review
36  Bibliography
Cast concrete models of houses
An aerial view of the newly constructed Jintai Village
Project Details

Designer
John Lin
  Co-Designer (Community Center)
Joshua Bolchover

Landscape Design
Dorothy Tang

Title
Jintai Village Prototype

Function
22 village houses and community center

Location
Jintai Village, Sichuan Province, China

Client
Jintai Village Government

Practical Completion
September 2017

Funding body
Nan Fung Group
**Budget**
600,000 USD (4,800,000 RMB)

**Area/Size**
4,000 m²

Site formation of Jintai Village
1. Site plan
2. Jintai village and surrounding landscape
Summary of the Work and its Significance, Originality, and Rigor

In 2008 the great Sichuan earthquake struck China resulting in damage to over 30 million houses. 46 million people were affected. The total reconstruction effort was immense and involved rebuilding 47,789 villages. The Jintai Village Prototype was unique among all these villages. From October 19th -20th, 2018, as part of the ten-year anniversary of the earthquake, over 100 provincial leaders and other government officials participated in the The Sichuan Provincial Rural Culture Conference - an official tour of key reconstruction projects in which the design and planning of Jintai was highlighted.
The green roof collects the channels rain water behind the screen wall and directly into a water channel stored underground.

The exterior walls are a composite of brick with a layer of compressed straw and plaster on the inside. Straw is an excellent thermal conductor, keeping the building warm or cool throughout the year.

The facade is a series of brick infills into the concrete frame structure. Each section has a different pattern, texture or structure, reflective of the interior condition.

The screen wall extends up from the courtyard to the roof; allowing light to flood into the house whilst aiding cooling and ventilation in the summer.

The green roof is used as an additional recreational and storage area. With options to be used for drying crops, socialising and planting.
The research, design and process of rebuilding this village went beyond reconstruction of generic village houses to address the rural to urban transformation of housing in China by combining rural elements (e.g., a rooftop farm), and sustainability features in a dense layout reminiscent of urban environments. Having won many architectural awards and been widely visited, published and discussed by the general public in China and the world, the project has had wide impact beyond the issue of earthquake reconstruction. It has influenced government planning and policy at the provincial and county levels, changed the overall public’s perception of rural housing and improved the living standards of the village inhabitants. The design has become a prime example of
efficient, sustainable and economical housing suitable for rural areas throughout China.

A total of twenty-two houses were rebuilt including a community center. The design strategy provides four different types of houses, differing in their roof sections. These demonstrate new use of local materials, a green stepped-roof, biogas technologies, and accommodation for pigs and chickens. A vertical courtyard increases light and ventilation and channels rainwater for collection. The design also invests in reed bed waste-water treatment and collective animal rearing. By relating various programs of the village to an ecological cycle, environment responsiveness is heightened, transforming the village into a model for nearby areas.
As design-related research involving a consultative process with multiple feedback loops, it is also changing design approaches in China. The use of various scale models enable active participation in the design process including creating a platform for exchange and negotiation between government and villagers - unlike the usual top-down and government led processes.
Participation in the design process:
Diagram of actors involved on different levels and project stages
Originality

This design-research addressed the following questions: how can we design a dense and modern village settlement in a precarious earthquake/landslide disaster location in a way that (a) re-establishes and enhances the community functions of village space; (b) adds food production space to the village to increase income-earning potential and subsistence agriculture potential; (c) conserves energy and water through sustainable water treatment; (d) maximizes natural light and air in a dense layout; (e) provides a model for rural settlement sustainable reconstruction and village rationalisation that will influence local, regional and national decision-makers. This problem involved researching
Site model

Model showing the structure of three different house types
i) appropriate and local materials; ii) environmentally friendly water systems; iii) architectural structure and layouts to create roof-top agricultural production and production spaces, iv) planning of community spaces based upon current and future needs, v) a collaboration process to integrate community opinions with government interests throughout the design process, vi) a post occupancy evaluation in order to inform future village designs.

The originality of the design derives from the integration of a rooftop household farm, grey water recycling and natural wetland cleansing systems with improved light and airflow in a compact plan where houses are only 3 meters apart.
Study model to test the different brick infills into the concrete frame structure
RAINWATER COLLECTION SYSTEM collects rainwater from the roof for use in dry seasons.

PERMEABLE PAVING SYSTEM creates a permeable ground for stormwater runoff to infiltrate into the soil below.

GRAYWATER RECYCLING SYSTEM collects and reuses rainwater and domestic graywater for planting, daily washing and toilet-flushing.

COLLECTIVE SEPTIC TANK collects domestic blackwater for primary sewage treatment.
CONSTRUCTED WETLAND
filtrates and purifies sewage using local water plants before discharging the effluent to the river nearby.

UNDERGROUND BIOGAS SYSTEM
provides renewable energy for the community.

ANIMAL-KEEPING FACILITY
produces biogas.

Ecodiagram: A model for sustainable reconstruction
Rigor

The underpinning research includes 4 different phases of design-research – each conducted through a specific methodology. The first phase includes documentation of existing village houses and living conditions in order to derive a modern rural house program. The methodology employed axonometric projection drawing vis-à-vis the approach of Made in Tokyo, the landmark ethnographic research done by Atelier Bow-Wow. The second phase includes methodologies for stakeholder participation and design engagement. The methodology utilized large scale and editable models as the basis of design adjustment. Parallel sessions provided input from government and villagers alike. This process eventually established
1 Villagers on their rooftop farms during construction
2 Portrait of a family in front of their new house
4 basic prototypes which addressed the different spatial and economic requirements of villagers. The third phase included assessment of appropriate sustainability features and materials. In-house greywater recycling systems and a large reed bed cleansing system were custom designed for this village. This phase of landscape design also involved a process of house location and planning that was derived though physical models and on-site consultations. The final phase is a post-occupancy survey. This documentation has two major components: first, conducted through interviews with villagers and second, as a visual and architectural survey. The visual documentation of the house records ongoing transformations to the original house typologies which have been implemented by the villagers themselves.
This will help inform future development and design-research of rural house prototypes in China.

Reunion of villagers under the communal roof
The roofscape blending with the landscape beyond
The ground level of the village remains open and shared
Dissemination and Evidence of Peer Review

Related publications by the designer:


Books, journals, and references to the project written by others:


Exhibitions:


2016  “Rural Urban Framework” in Constellation.s, Arc en Rêve, Centre d’architecture, Bordeaux, June 2 – October 2, 2016

Awards:

2018  DESIGNS OF THE YEAR_The DESIGN MUSEUM

2016  Winner, RIBA International Emerging Architect Award, RIBA (Royal Institute of British Architects), International

2015  Winner, Curry Stone Design Prize, Curry Stone Foundation, International

2014  Winner, Ralph Erskine 100 Years Anniversary Award, Swedish Association of Architects, International
Lectures:

2016  “Rural Urban Framework: Transforming the Chinese Countryside”, Public Lecture, Royal Danish Academy of Fine Arts, School of Architecture, Copenhagen, June 22, 2016


2016  “Rural Urban Framework: Transforming the Chinese Countryside” University of Miami, Miami, January 22, 2016

2016  “Rural Urban Framework: Transforming the Chinese countryside” Public Lecture at Shenzhen University, August 15, 2016


2015  “Rural Urban Framework: Transforming the Chinese countryside” Public Lecture at The Graduate Institute of Building and Planning, National Taiwan University, December 21, 2015

2014  “Rural Urban Framework: Transforming the Chinese countryside” Public Lecture at The School of Design, Shih Chien University, December 12, 2014

2014  “Rural Urban Framework” Public Lecture and workshop leader, EPFL, Switzerland (Ecole Polytechnique Federale de Lausanne), December 12-17, 2014

2014  “Experiential Learning in Architecture”, Keynote Speaker at Experiential Learning Symposium, The University of Hong Kong, Hong Kong, March 25, 2014


2013 “Rural Urban Framework”, Invited Speaker at Asia Pacific Housing Forum, Manila, October 2, 2013


2013 “Making Architecture in a Place Without Architecture”, Invited Public Lecture at The Chinese University of Hong Kong, Hong Kong, March 4, 2013
Publications in mainstream media:

Since 2017, the coverage of the Jintai Village Reconstruction Project in the mainstream media has been extensive, including newspaper, TV and online publication. The total number of viewers in online publication (within the top twenty sources) is more than 1,250,000.

1. The Bund 原创
2018年4月23日
https://mp.weixin.qq.com/s/4HJ6_pTqqngKYb5jPrOQ8A (Viewers: 33,710)

2. Chengdu Economic Daily 成都商报: 原创: 成都商报 2018年4月12日
https://mp.weixin.qq.com/s/z42KEXi_KemUhTkbcmiRxA (Viewers: 53,197)

3. Min Su Ke民宿客
https://mp.weixin.qq.com/s/pQOohDiIMBzXqY92HVfqag. (Viewers: 100,000+)

4. Xinhua 新华社
2018年5月7日

5. National Business Daily 每日财经新闻
2018年5月4日
http://epaper.mrjjxw.com/shtml/mrjjxw/20180514/145038.shtml?from=timeline&isappinstalled=0

6. 环球观筑
2018年4月10日
https://mp.weixin.qq.com/s/
 VGbu4KDczyR_omG0Jc8mWg (Viewers: 100 000+)
7. 艺非凡 2018年5月5日
https://mp.weixin.qq.com/s/a_kvYJgzpvTb-aMWjHUOWg (Viewers: 95,389)
8. 一席 2018年5月12日
https://mp.weixin.qq.com/s/yyc-mVmVtHBRai5YMOJkeFuKA (Viewers: 65,142)
9. Chinanews
12nd May, 2018
10. Sichuan News, Sichuan TV, 13th April, 2018
https://www.iqiyi.com/v_19rrc5wfpg.html
share/3477067?channel=weixin (Viewers: 516 108 (12/11/2018))
5. National Business Daily 每日财经新闻 2018年5月4日
Bibliography

The large public square is lively during all weather conditions.
Plants starting to grow on the rooftop farms
The Department of Architecture educates students in an active culture of service, scholarship and invention. Uniquely situated at the crossroads of China and global influence, the Department takes the approach that design is best explored from a sophisticated understanding of both. With a multidisciplinary curriculum emphasizing technology, history and culture, students gain broad knowledge and skills in the management of the environmental, social, and aesthetic challenges of contemporary architectural practice. With opportunities for design workshops, international exchanges, and study travel, graduates of the Department of Architecture are well prepared for contribution to both international and local communities of architects and designers.