JOSHUA BOLCHOVER

THE ANGDONG HOSPITAL
The elevation of the Angdong hospital showing the textures created by the recycled traditional brick.
Project Details

Designer
Joshua Bolchover

Co-designer
John Lin

Title
The Angdong Hospital

Output
Building

Function
Rural Hospital

Location
Angdong Village, Baojing County, Hunan Province, China

Client
Baojing Health Bureau and Harvest: Institute of Integrated Rural Development, (a HK based charity)

Practical Completion
2016
Aerial photo of the Angdong Hospital - providing public health services to a total population numbering at least 12,000.
Funding body
Baojing Health Bureau Harvest: Institute of Integrated Rural Development

Budget
Total Cost: 272,000 USD (1,697,250 RMB)
Unit Cost: 190 USD/sqm (1,170 RMB/sqm)

Area/Size
1,450 m²
Enhanced spatial effects of light and shadow casts on the corridor of the hospital on a sunny day.
Summary of the Work and its Significance, Originality, and Rigor

The project is a new model for rural healthcare that addresses the huge gap between rural and urban services in China. Commissioned by the Institute for Integrated Rural Development, a Hong Kong charity, and working closely with the local health bureau, the objective was to develop a building that is capable of supporting progressive reforms on rural hospital management and care-giving. The design serves as a demonstration for how this can be achieved through its programming, public accessibility and innovative use of materials.

The building provides the basic necessities absent in many current rural health establishments in China, such
as a surgical ward, labour ward, and physiotherapy treatment. It also offers both traditional Chinese and Western medicine. The Angdong hospital redefines the nature of healthcare design in China by offering a public facility in the heart of the village that includes outdoor waiting areas, community meeting spaces, and rooftop exercise areas – all connected via an accessible circulation ramp.

As part of the design process, we developed a flexible concrete-casting mold for building blocks that altered generic construction techniques on the site. In particular, our model varied the orientation and distance of an aperture’s extrusion or intrusion within each block, thereby creating variable lighting effects. These blocks were manufactured in the village, demonstrating how unique
materials can be developed in rural areas at a low cost but with enhanced spatial effects according to light penetration, shadow and texture.

The project has been widely acclaimed, winning the RIBA International Emerging Architect 2016 prize and receiving a Highly Commended award in the *Architectural Review* Healthcare Award 2016. It has been exhibited internationally including the China Pavilion at the Venice Biennale 2018 as part of *Building a Future Countryside* curated by Li Xiangning. It has been published in books including *Shaping Cities in an Urban Age* (edited by Ricky Burdett and Philipp Rode, 2018) and in multiple journals including *Lotus International* (September 2016) and *The Architectural Review* (November 2016).
Elevation of the Angdong hospital project showing its roofscape and different materials
Master plan of the hospital at final phase with neighbour buildings.
Study of variable lighting effects of blocks.
Angdong is a village of 1,300 people. It is one of 212 villages located in Baojing County that also comprises of 10 towns and 2 townships with a total population of 310,000. Typically, rural residents who have little knowledge of preventative care would have to travel to the city to receive healthcare. Childbirth in the countryside can be dangerous as surgeries are located in towns. Many of the village’s elderly are less mobile and suffer from physical ailments related to farming as well as mental degeneration, therefore preventing them from accessing the city, where health facilities are available.

The Angdong hospital provides much needed public health services, not only to the immediate residents of Angdong,
1 Section of the flexible concrete-casting mold that allows variation in the orientation and distance of an aperture’s extrusion or intrusion within each block.

2 Formwork of flexible concrete-casting mold for custom designed screen blocks.

3 1:1 mock up of the family of screen blocks resulting from the alteration of generic construction techniques on the site.
but to a network of villages with a total population numbering at least 12,000. In this regard, the design of the hospital is innovative in creating a new social centre of exchange capable of connecting a number of isolated rural populations together.

A second key objective was to test how we could alter the generic construction of a concrete block to create a family of types, for instance, creating variable lighting effects. These blocks were manufactured in the village, demonstrating how unique materials can be developed in rural areas at a low cost but with enhanced spatial effects according to light penetration, shadow and texture.
Research Questions

• Can we create a new typology of hospital building using a similar budget, structural system and material systems used in typical rural hospital construction in China?
• Can public spaces be integrated into the design of a hospital?
• Can we develop new material prototypes that can be made in rural villages at low cost yet offer enhanced spatial effects?

Combining Western and Chinese medicine, rehabilitation clinics, minor surgery, a labour ward and health education and training for medical practitioners, the centre is equipped to initiate the development of healthcare provision in the region.

1. The old hospital building had no lift. Patients had to be carried up the stairs on their relatives’ backs.

2. The new hospital was built around the old building. The old building continued to function during construction.

3. The old building was demolished and replaced by a public courtyard and ramp, allowing patients on wheelchairs to access the upper floors.
1 Design strategy to provide a continuous ramp access to all floors and minimise obstruction to the normal operation of the old hospital.

2 Roof-scape of the newly built hospital and surrounding houses.

3 Old hospital building and the site preparation work undergoing for the construction of the new hospital.
Rigor

The project was an opportunity to investigate the integration of public spaces into rural hospital design and test how we can intervene in the manufacture of low cost construction materials in the village.

Key design methods included:
• Conduct research into generic building techniques and available materials through discussions with local design institute and visits to construction markets.
• Create multiple physical models exploring the relationship between the health care program, public spaces and the circulation ramp.
• Create physical molds and 1:1 mock-ups of material samples.
• Conduct monthly meetings with the local design institute, the education bureau and construction workers to discuss implementation
• Create drawings and models to convey how project can be built with limited resources.

1 Entry lobby of the new Angdong hospital.
Significance

Unlike other health institutions in China, the hospital is porous and completely open to the public. The use of the ramp as a public space demonstrates how the hospital can combine health and social functions. The ramp is an active space for interaction between local villagers and people who have come from other, remote villages. As commented: “This new building type extends the notion of care beyond basic treatment to embrace a wider social programme...” (Jack Young, AR, Nov 2016). The design of custom molds demonstrates how unique materials can be manufactured in a rural village context to improve the spatial experience according to light and shadow. Collectively, these two strategies show how local governments in rural
areas in China and other developing regions in other parts of the world can conceive of rural health institutions.

1 Spatial relationship between the health care program, public spaces and the circulation ramp create new model for rural healthcare in China.
Dissemination and Evidence of Peer Review

Prizes and awards:
• The RIBA International Emerging Architect Award 2016 and 2016 Award for International Excellence, The Angdong Hospital, Rural Urban Framework

Description: “Awarded to the most transformative building which demonstrates visionary, innovative thinking, excellence of execution, and makes a distinct contribution to its users and physical context.”

Jury: Richard Rogers, Rogers Stirk Harbour + Partners, Billie Tsien, Tod Williams Billie Tsien Architects | Partners, Kunlé Adeyemi, NLÉ,
Marilyn Jordan Taylor, Former Dean & Paley Professor, UPENN, Philip Gumuchdjian, Gumuchdjian Architects

Process: “Open to all architects from around the world. The jury selected 30 schemes from around the world to be visited by an Awards Group member and an architect from the region local to the building”

Comments: “The RIBA have also recognised the achievement of Rural Urban Framework, HKUrban Lab, The University of Hong Kong for their ambitious plan for Angdong Hospital in Baojing County, China with the RIBA International Emerging Architect prize.”
• The AR Healthcare Award 2016, Architectural Review, Highly Commended (3rd Place), Angdong Hospital

Comments: “RUF’s low-budget building in rural China is a device for healing”

“Rural Urban Framework’s hospital has kindled a new purpose for Angdong”
New hospital introduces ramp connecting all floors of the hospital for the less mobile patients. Roof space also transform into a exercise area desirable to residents in the neighbourhood.
Dissemination and Evidence of Peer Review

Related publications by the designer:


Book chapters by others:


Citations in professional journals:


“Shelter: Rural Urban Framework,” Lotus International 160 (September 2016), 100-103

”Hospital Angdong,” PLOT 32 (September 2016), 12-17.


Exhibitions:

“Anticipating the Urban” video exhibited in Building the Future Countryside, curated by Li Xiangning as part of the 2018 China Pavilion in 16th International Architecture Exhibition: Freespace, curated by Yvonne Farrell and Shelley McNamara, La Biennale di Venezia, May 26th-November 25th 2018


“Rural Urban Framework” in the exhibition Constellations, Arc en Rêve, Centre d’architecture, Bordeaux, June 2 – October 2 2016

Dissemination and Evidence of Peer Review

Lectures:

“Rural Urban Framework: Designing in Sites of Contradiction”, The School of the Art Institute of Chicago (SCAI), 19 October 2017


Joshua Bolchover and John Lin/Debora Mesa and Antón García-Abril, Pratt Institute, New York, “New Contexts”, 16 October 2017


“Rural Urban Framework: Transforming the Chinese Countryside” The University of Miami, Jan 2016


Joshua Bolchover, “Rural Urban

“The Horizontal Metropolis” keynote speaker and workshop leader, EPFL, Switzerland (Ecole Polytechnique Federale de Lausanne), December 12-17th 2014.

1 Permeable facade of the hospital created by the orientation of the brick arrangement.
New Angdong hospital standing in the rural Angdong Village of Hunan Province in China, re-introducing the hospital as a multi-purpose architecture model that serves a network of rural villages.
1 Panoramic photo of the courtyard in the centre of the hospital that turns into a public space for the neighbourhood.

2 Opposite view of the courtyard - provides additional steps for seating and serves as an outdoor waiting area.

3 Recycled traditional brick on the exterior facade of the hospital.

4 Different textural relationship of custom designed screen block and recycled traditional brick.
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.