1 Interior view of the Pinch library
Project Details

**Designer:** Olivier Ottevaere  
**Co-designer:** John Lin  
**Practice:** Department of Architecture, the University of Hong Kong  
**Title:** Pinch, Sweep, Warp, a series of three timber structures  
**Function:** Three community projects in post-earthquake reconstruction areas consisting of the Pinch, a library and community center; the Sweep, a viewing platform and play area, and the Warp, a rest area and roadside market  
**Location:** Shuanghe, Tuanjie, and Ludian villages, Yunnan Province, China  
**Client:** Local Chinese bodies  
**Practical Completion:** 2013-16  
**Funding body:** 2 Knowledge Exchange Impact Awards (HKU), 2 Gallant HO Experiential learning fund, HKU and matching funds from Local Chinese government
Budget: 130,000RMB, 90,000RMB, 180,000RMB
Area/Size: 80 sqm, 60sqm, 130sqm
Contractor: Kunming Dianmuju Shanmao Company

Site visit for the Pinch during post-earthquake village reconstruction
Summary of the Work and its Significance, Originality, and Rigor

The Pinch, Sweep and Warp are three earthquake reconstruction projects located in Yunnan Province, China. The series maximizes the social and programmatic impact of small-scale, i.e. area of around 100 sq. m. interventions. Each challenges how architecture is shaped by a specific material and construction process.

Both multifaceted and site specific, Pinch, Sweep, Warp is a multi-object design project that is a site specific architectural response, prototypical to the landscape’s seismic activity.
The three timber structures are experiments in ruled-based construction, which is typically defined as developable geometry. By contrast, these projects are concerned with the translation of doubly curved surfaces into linear geometry while also taking into account specific material constraints derived from timber construction.

Located in Yunnan’s remote mountainous landscape, each project aimed to respond to the active seismicity of the region by addressing structural logics between timber and foundation. Each was also designed to maximize the use and viewing experience of the landscape via structural wooden trusses and decked, ruled surfaces. The outcomes are three structures, each with
a diversity of social programs directing the design of the projects; a library, a play area and a roadside market.

The projects are the result of ongoing collaboration with a local timber workshop, and thus challenge standard architectural practices that separate design from building as two distinctive exercises. They represent experimental construction methods that adapt complex geometries to simple local techniques.

It has won 12 international awards, Most notably, Best Small Project of the Year 2014 by the World Architecture Festival (WAF), Best Experimental Project by the World Chinese Architecture (WAACA) and Best of Best Category (9
categories in total) by Perspective Global, Highly Commended by Architectural Review Library Awards 2018

The WAF jury commented:

“An elegant project that demonstrated research into a material, building system, making an urban place that has answered a vital need for enclosure, congregation and culture in a remote and earthquake-stricken zone”

It has been exhibited at a range of venues and locations, including The Museum of Modern Art in New York.

It is has been featured in edited books, such as the Phaidon World Atlas of Architecture.

It has been reviewed in 27 professional magazines, such as Lotus International, Detail, Architectural Record, Architectural Review, Architecture Interieure, Domus, Azure.
Above: ruled beams of the Warp roof under construction / Below: ceiling trusses of the Pinch
Above: ruled beams of the Warp roof under construction / Below: ceiling trusses of the Pinch
4  Construction of the Sweep timber structure with students as experiential learning
Originality

The project’s originality lies in how it reviews ruled-based construction by employing universally standardized timber sections to produce highly articulated spatial structures in a region with scarce building resources, limited craftsmanship skills, and rudimentary building technology.

These projects were designed to be temporary, small-scale, and inexpensive to build because this type of work offers greater potential for direct, on-site experimentation. Inventive construction procedures emerged through the difficulties encountered in translating a conceptual geometry into physical material.
Specifically, the projects evince a rationalization of a curvilinear geometry through distinctive sequences of individual trusses, each built from wooden planks. These elements were prefabricated near the site and assembled sequentially into position to support a ruled timber decking.

This assembly method offers greater stiffness from the layering of timber components, i.e. transversal trusses, longitudinal beams and decking, addressing specifically issues of structural resistance in response to the earthquake-prone nature of the area.

The fact that the series of projects is being used as case studies for building
technology and structure classes in universities abroad is a testimony to a productive transfer of knowledge.

This series of projects is also being used as case studies for building technology and structure classes in universities abroad, i.e. Cornell University, Milan Polytechnic, The University of Washington, Winterthur Zurich, is a testimony to a productive transfer of knowledge.
Construction and plans of trusses organizations transversally for the Pinch, radially for the Sweep and longitudinally for the Warp.
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Rigor

The rigor of the project lies in the geometrical material, and historical context of research, specifically in how intricate architectural forms were translated into a coherent building system, by means of specific geometry.

Complex doubly curved surfaces are made developable, geometrically describable by a moving straight line, and further rationalized into a series of rotating straight lines, each made of standard timber sections of 11cm by 3.3cm in section.

The three structures were organized in a sequence of changing trusses supporting a ruled deck:

They are articulated transversally for
the Pinch, radially and tangentially for the Sweep and longitudinally for the Warp. They were executed with the exact same material and with the same team of local carpenters, gradually learning and gaining expertise from the three iterations.

The research undergirding this design work has a historical context in Felix Candela’s ruled-based timber formwork for thin shell concrete casting, which also made use of hyperbolic-paraboloid geometry.

Candela’s projects were designed to be constructed by relatively unskilled workers in Mexico. His use of ruled-based geometry to produce simple formwork for complex concrete shells made it easier to build and compensated
for the limitations of human labor.

The Pinch, Sweep, and Warp projects engage Candela’s concrete roof structures at the structural/scalar/material level, pushing beyond them to ask how timber surfaces can also be implemented to function as new occupiable space on top of the surface while still sheltering community programs below.

Each project’s geometry adapts to specific programmatic demands based on each community needs and responds to the physical realities of their specific sites while maintaining a consistency of tectonic language between all three.
Building of trusses and assembly of the Pinch with local carpenters.
Axonometric view of building elements for Pinch, Sweep, Warp: concrete foundations, sequences of trusses and ruled decks.
Axonometric view of building elements for Pinch, Sweep, Warp: concrete foundations, sequences of trusses and ruled decks.
Significance

-Contextual:
  Taken collectively, these projects demonstrate how timber can be used as a relevant sustainable and resourceful material in these remote areas of rural China and change the perception of government officials of timber as unsafe material in China’s effort to revitalize the countryside.

-International:
  They have been recognized by the profession through international publications, such as the Phaidon World Atlas of Architecture, Lotus International, Detail, Architectural Record, Architectural Review, Architecture Interieure, Domus, Azure, among others.
They also have won numerous awards, among others winner of the ‘World Small Project of the Year 2014’, highly commended in the ‘Architectural Review Library Awards 2018’, best experimental project by ‘World Chinese Architecture Award 2014’.

-Educational:
The series has been used as case study for building technology and structure courses at Cornell University, Milan Polytechnic, The University of Washington, and Winterthur Zurich, among others, demonstrating their international impact on architectural education at other institutions for higher education around the world.

They have become a common reference for small scale experiments with wood.
Interior views and key cross-sections of the three projects showing the spatial characteristics of each structure.
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Dissemination and Evidence of Peer Review

Awards:

Description:
From 15 projects shortlisted for the AR Library awards. The shortlist was selected by our panel of judges, which includes Clare Wright, co-founder of Wright & Wright Architects, Giancarlo Mazzanti, the founder and principal of El Equipo de Mazzanti, and Demetri Porphyrios, the founder of Porphyrios Associates.


Description:
The Wood Design & Building Awards is the only North American program to recognize, award and publicize excellence in wood architecture. A hand-selected jury of prominent architects from Canada and the USA personally review each submission and chooses the award winners based on considerations such as creativity, distinctive and appropriate uses of wood materials, ability to satisfy clients’ building and site requirements, and overall aesthetic appeal for the use and application of wood.
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Jury:
Dean Maltz (Managing Partner, Shigeru Ban Architects), Stéphan
Langevin (Partner, STGM Architect), David Keltner, (Principal, Hacker)


Description:
“ARCHMARATHON is the first international architectural event that brings together 42 Architecture Design Studios from different countries of the world.

ARCHMARATHON is an international conference where the invited studios are able to present the Project they were selected for, on the basis of which they compete for the prestigious Award bestowed by the Jury, composed by architecture critics, journalists and
Format:
4 pre-selected finalists presented competitively to a panel of jurors and to a wide professional audience.

Jury:
Luca Molinari (Chair Judge, Architect, critic and associate professor of Contemporary History and Theory of Architecture, Seconda Università degli Studi, Naples, and Cornell University College of Architecture, Art, and Planning in Rome), Lucy Bullivant (author/critic for Architectural Design, Architectural Record, Financial Times, Tate Magazine, Archis, Icon, Domus), Elie Haddad (Professor of Architecture, the Lebanese American University), among others.
Citation from Lucy Bullivant in the award proceedings:

"Architecture’s community focus is especially evident once again in this year’s ArchMarathon, epitomized by exceptional projects such as The Pinch Community Centre by Olivier Ottevaere and John Lin in a remote mountain valley of Yunnan province in China."


Description:

“ArchDaily’s readers select the buildings that - due to their beauty, intelligence, creativity, or service to the community - represent the best
architecture of the year 2015. The list from hundreds was narrowed down to 5 per category.”

The Warp was shortlisted among 4 other finalists in the Public Architecture category.


Festival, International, 2014

Description:
“WAF Awards are a critical celebration of the best work being carried out by practices large and small, known and unknown, from across the world. The live projects presentations and judging programme is always complemented by a thematic conference.”

10 shortlisted finalists presented competitively to a panel of jurors in front of an international audience, in the Small Project category.

Jury:
Paul Finch OBE (Programme Director, World Architecture Festival/Editorial Director, The Architectural Review), Colin Seah (Principal, Ministry of Design, Singapore), Simon Alford (Principal,
Festival, International, 2014

Description:
"WAF Awards are a critical celebration of the best work being carried out by practices large and small, known and unknown, from across the world. The live projects presentations and judging programme is always complemented by a thematic conference."

10 shortlisted finalists presented competitively to a panel of jurors in front of an international audience, in the Small Project category.

Jury:
Paul Finch OBE (Programme Director, World Architecture Festival/Editorial Director, The Architectural Review), Colin Seah (Principal, Ministry of Design, Singapore), Simon Alford (Principal, AHMM, UK), Vasu Virajslip (Principal, VaSlab, Vietnam), Rob Gregory (Associate Editor, The Architectural Review, UK), Nabil Gholam (Principal, NG Architects, Lebanon)

Comments by the Jury:
“An elegant project that demonstrated research into a material, building system, making an urban place that has answered a vital need for enclosure, congregation and culture in a remote and earthquake-stricken zone.”


Description:
One of the most important architecture awards for built work in China. Selected every two years by a panel of distinguished architects, theorists and critics, 3 winners and 5 honorable mentions are selected.

“The award aims to reward projects effectively carrying out experimental exploration at the level of ideas or practices.”

Criteria:
Design adventure in small buildings

Jury:
Zhang Jinqiu (President), Wang Lu, Liu Kecheng, Li Xinggang, Ole Bouman

Comments by the Jury:
“When the average quality of design is
already quite high, experiments become more difficult. It is not necessarily novel or surprising. In certain aspects, it may be, or is even better to be an innovation from within. The Pinch is such a project. The expressive structure brings the building a unique quality. At the same time, with a simple embedding function, it conceptualizes the life of community as art. In this sense it surpasses the meaning of the structure. What it creates are moments, not just a place.”


Description:
“Each year, the entries compete
against a bar of excellence to win a trophy (top award), Best of Category (9 in Architecture, 8 in Interior Design, 6 in Product Design). But only one winner is awarded the Best of the Best. The selection criteria is stringent: The Best of the Best winner must not only demonstrate the highest level of design achievement, but also have made a significant social contribution which advances not just the art of design, but also the lives of the people which the project directly affects.”

Jury:
Perspective’s editorial director (Suzanne Miao) and the editorial team

-Winner, “The Pinch: Community Center and Library”, Best Institutional/
Public Space, Architecture and Design (A&D) Trophy Awards, Perspective Global, Hong Kong, 2014, International Description:

“The A&D Trophy Awards were created in 2004 to celebrate excellence in architecture, interior design and product design across Asia-Pacific and beyond, with a panel of expert local and international judges ensuring that only genuinely exceptional work is rewarded. Each Year, the entries compete against a bar of excellence to win a trophy (top award), Best of Category (9 in Architecture, 8 in Interior Design, 6 in Product Design).”

Jury:
Dominic Bettison (Director Wilkinson Eyre Architects, London),
Hugh Broughton (Hugh Broughton Architects, London), MA Yansong (MAD Architects, Beijing), Lukasz Kos (Four O Nine, Shanghai), Neville Mars (MARS Architects, Shanghai)

-Silver Award, “The Pinch, Community Center and Library”, Design for Asia, Hong Kong Design Center (HKDC), International, 2014
Description:
“The DFA Design for Asia Awards is the flagship programme of the HKDC, celebrating design excellence and acknowledging outstanding designs with Asian perspectives. Since its launch in 2003, the DFA Design for Asia Awards has been a stage upon which design talents can showcase their design projects internationally.
Submissions are judged on four criteria – overall excellence, use of technology, impact in Asia as well as commercial and societal success. The judges are design professionals and experts attuned to design developments in Asia and experienced in serving as judges for Hong Kong and international design awards.”

Jury:
Li Xiadu (Director of Urbanus) and others


Description:
“Wood, as a renewable resource
material, is indispensable in architecture and design. Our daily challenge is to achieve projects and products that are sustainable, of timeless beauty, pure and simple, but at the same time technically and environmentally innovative. The new Wood Excellence Prize will reinforce this intention.”

The award is sponsored by the American Hardwood Export Council (AHEC).

10 shortlisted finalists presented competitively to a panel of jurors in front of international audience, in the Wood Excellence category

Jury:
Matteo Thun (Architect), David Venables (European Director of the American Hardwood Export Council)
Exhibitions:
- “Fragilitas; Design out of the comfort zone”, Reciprocity Design (exhibition name), Province de Liege, Belgium, 2018.


Publications:

- Ottevaere O. “Ruled Based Constructions or the Materialization of a line in Motion”, in Design Strategies: Situated Creative Machines: Material Practices, CROSS-AMERICAS: PROBING DISGLOBAL NETWORKS, Association of Collegiate Schools of Architecture (ACSA) Annual Meeting Santiago, Chile,
- Ottevaere O. “Liquid States and Concrete Uncertainties”, in Risk Panel, International Research Based Education 2016, University College London (UCL) and in collaboration with the Association of Architectural Educators (AAE) and the Architectural Review (AR), London, England, The Bartlett School of Architecture (publisher), UCL, 2016

**Reviews (Selected):**

**Citations (Selected):**
- “Open Book: The Pinch”, Architectural Record, USA, March 2015, pp. 60-63

- “Auffallend bescheiden (Strikingly Modest)”, in Konzept, DETAIL, Germany, Serie 2014. 9, p. 860


2016

Lectures (Selected):

- “The Pinch, Community Center and Library”, Keynote Lecture as award recipient at Tsinghua University, School of Architecture, Beijing, China, September, 2015.

THE OPEN BOOK

Community needs, the role of the public domain and disaster relief all coalesce in The Pinch, an imaginative timber structure by Olivier Ottevaere and John Lin of the University of Hong Kong, writes Matthew Priestman.
Write-up of the Pinch project in Architectural Review no. 1457, featured as part of the AR library awards 2018
Bibliography

Felix Candela’s use of ruled based timber formwork for thin concrete shells
11 1:1 scale reconstruction of the Pinch inside a museum space as part of the ‘Fragilitas: Design out of the Comfort Zone’ exhibition, Liege, Belgium, 2018
The Pinch building technology study at Winterthur University in Zurich (above) and at the University of Washington in Seattle (below).
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.