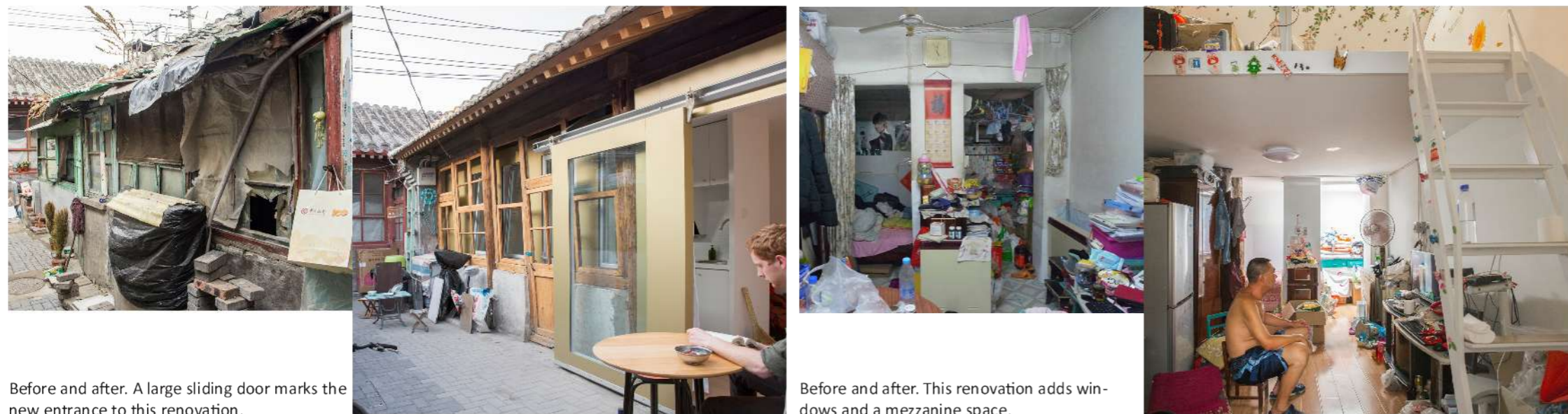


Diagrams showing the physical evolution of courtyard houses in Beijing.



## THE PLUGIN HOUSES

**Location:** Beijing, China  
**Date:** 2013-ongoing  
**Project Leads:** He Zhe, James Shen, Zang Feng  
**Clients:** Dashilar District Urban Regeneration Pilot and various private clients  
**Costs:** 1500 RMB/sq m  
**Area:** 15 sq m – 40 sq m

A prefabricated modular system for urban regeneration and preservation, the Plugin Houses are an inexpensive alternative to tearing down homes in Beijing's historic neighborhoods. These areas are characterized by narrow alleys, poorly insulated courtyard houses, lack of sewage system, and dependence on public toilet facilities. A main feature of the government-supported 'Dashilar District Urban Regeneration Pilot,' the Courtyard House Plugins counter the blanket demolition of old urban areas in China. Following a nodal manner of development, Plugins slow down the process of gentrification that plague areas marked for regeneration. The Plugins provide infrastructural needs as they include off-grid composting toilets and integrated insulation. They maintain cultural heritage by preserving historic structures and by allowing residents to remain after upgrades are completed.

Plugins serve derelict properties that have been vacant for years as well as the run-down homes of residents who desire higher living standards without having to relocate. Structures vary in size and amenities, and can include mezzanines, expandable rooms, sliding or tilting walls, kitchens, and bathrooms. Early courtyard versions follow a "house-within-a house" approach, meaning exterior structures of houses are left intact during renovation while interiors are upgraded to modern living conditions. More recent Plugins are waterproof, allowing upgrades to be exposed to the elements.

\*Plugin Houses featured on this page are part of the Dashilar Pilot and were completely funded by the local government.

# THE PLUGIN HOUSES PEOPLE'S ARCHITECTURE OFFICE



Above: Plugin Panels are attached with just an Allen Key.

Right: Several untrained people constructing a Courtyard House Plugin in just a day.

**THE HASSELT CHARTER POINT #5**

*Facilitate the use of appropriate technologies, materials and labour adequate to local values, to the cultural specificity and responsive to the natural environment.*

The Plugin Houses were developed in response to local needs and values found in Beijing's historic and derelict neighborhoods. Because residents of such areas often share courtyards with multiple families or have properties that abut neighboring ones, Plugin Houses are assembled on site in a way that preserves architectural structures - and concomitantly, existing social and cultural ties. The Courtyard House Plugin version, for example, is designed specifically for multi-family courtyard houses that are subdivided and owned by different people. This is a common situation of courtyard living that makes typical renovations impossible due to disturbances. The project preserves the historic traces embedded in the buildings being upgraded. Plugins afford locals the opportunity to stay in their beloved neighborhoods, ensuring the DNA of these tight knit communities remain to influence future cultural development.

A modular and flexible system, Plugin panels are mass-produced and designed specifically for each site of renovation. They are dimensioned to be easily carried through narrow alleys and doorways, allowing a new house to be constructed from the inside. Panels are technologically advanced, incorporating structure, insulation, wiring, plumbing, windows, doors, interior and exterior finishes into one molded part. Light and designed for easy and quick assemblage, a Plugin can be constructed by a few untrained people in one day using just an Allen wrench, significantly reducing labor costs. Well-sealed and insulated, a Plugin House is 10 times more efficient than typical courtyard houses.



Left: Plugin Panels stacked in a courtyard before installation.

Above: Sectional diagram showing Plugins inserted into historic courtyards.

**THE PLUGIN HOUSES  
PEOPLE'S ARCHITECTURE OFFICE**



Mrs. Dong's Plugin House extends her livable area and includes a retractable shower area. Left: Before and after of the exterior. Right: Before and after of the interior.



Mr. Zhao's Plugin House includes a terrace as a private space of reflection and respite.



Mrs. Fan's Plugin House: the exterior form is determined by neighbors' requirements for sunlight and ventilation while the interior is light-filled and airy.

### THE HASSELT CHARTER POINT #1

*Cooperate for fair and sustainable development initiatives in active collaboration with disadvantaged people or communities. This process shall follow principles of human solidarity, non-discrimination and will be aimed at promoting their self-sufficiency.*

Close collaboration with residents is integral to the process of building Plugin Houses. We assist residents to unpack complex relationships between neighbors, and to contextualize their needs within a very complicated physical and politicized environment. Plugins allow for self-sufficiency: locals of limited means can finance their own renovations, upgrades provide previously unavailable privacy, and Plugins can be adjusted to specific needs.

With the Plugin system, unique solutions to architectural requirements, however, are not one-offs, but are part of a flexible system to be replicated, a marker of sustainable design. Mrs. Dong, who shares 15 square meters with her adult son, would shower outdoors in the common courtyard by making a private enclosure with two wooden doors. Her Courtyard House Plugin includes a retractable accordion space that replaces her improvised shower area. Another client, Mr. Zhao suffers from depression and desired physical reprieve from both his adult daughter who shares his tiny home and from the cramped conditions of the neighborhood. His Plugin House includes a sanctuary for private thoughts: a terrace with views of the neighborhood he grew up in. Furthermore, the unusual form of Mrs. Fan's Plugin House is an outcome of consultation with the client and neighbors. While Mrs. Fan requested a spacious and light-filled interior to replace her dilapidated childhood home, neighbors required unobstructed views and access to sunlight and air circulation.

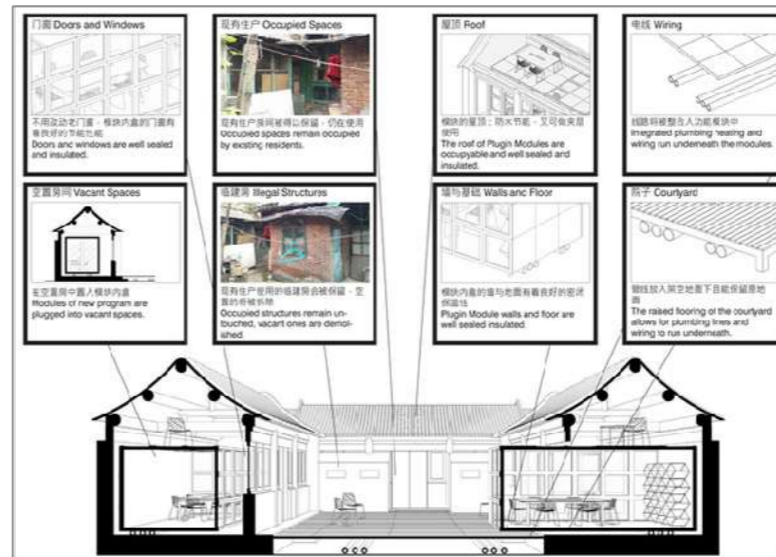
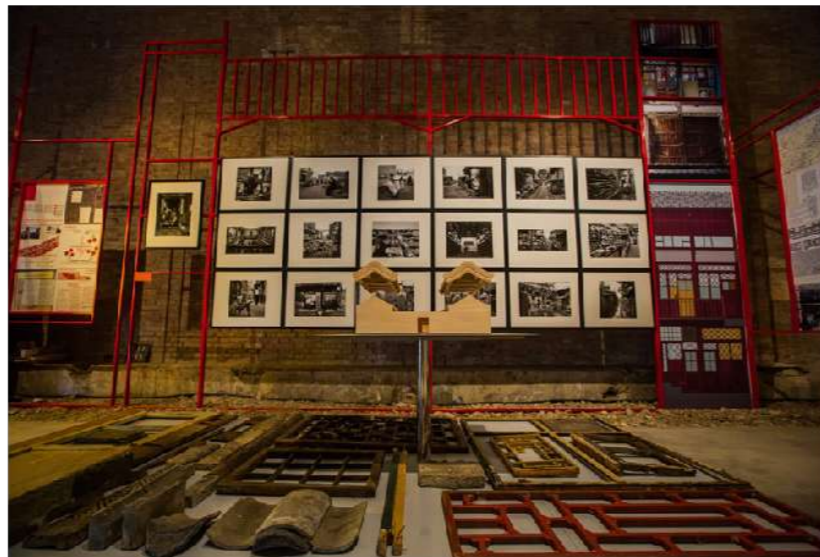
\*Mrs. Dong's renovation was partially funded by the Dashilar government as part of a pilot project. She covered just under 50% of the costs. Both Mr. Zhao and Mrs. Fan funded their own renovations.

# THE PLUGIN HOUSES

## PEOPLE'S ARCHITECTURE OFFICE



People's Architecture Office presented site relics and a scale model of the Courtyard House Plugin at the 2014 Venice Biennale. Images courtesy of Beijing Design Week.



A page from our Courtyard House Plugin manual.

### THE HASSELT CHARTER POINT #4

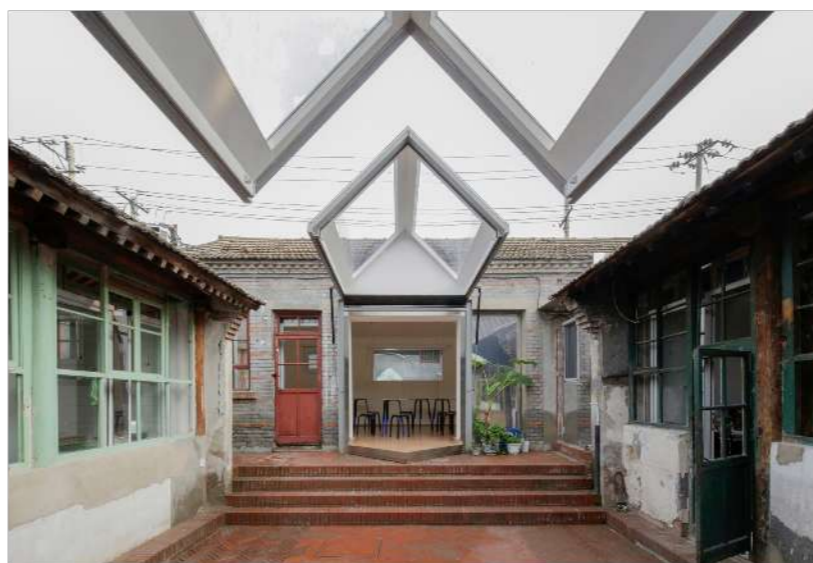
*Identify, disseminate and work alongside public institutions, multilateral organizations and private sector's policies, programmes and sustainable socio-economic systems fostering social equity and urban inclusion within the built environment.*



Plugin Houses presented at the 2016 Venice Biennale.



A solarium door of a Plugin in Beijing is replicated for the 2016 Venice Biennale.



In search of a viable urban renovation solution, Dashilar authorities have funded nearly two dozen Plugins while People's Architecture Office continues to design and participate in the construction of the structures. We interview residents about the site of their homes, their relationship to neighbors, the history of their families, and of course their spatial needs. Our research and site preparation has yielded powerful personal stories and archaeological finds that were presented during the 2014 Beijing Design Week and in *Across Chinese Cities* at the 2014 Venice Architecture Biennale. As the project developed and expanded, we were featured again at the 2016 Venice Biennale and other public arts institutions. We continue to speak at different venues about how the Plugins can stem gentrification, prevent unwanted relocation, and foster pride in one's home and surroundings.



A page from the online platform that allows residents to design their own Plugin renovations.



Mrs. Fan discusses her childhood home and her new Plugin House.

In order to increase access to the Plugins, PAO collaborated with local authorities to devise an online platform that allows residents to design their own Plugins and to estimate costs. Low-income locals have successfully financed their own Plugins. Citing the Plugins, the local government is currently exploring revising their policy towards urban regeneration. Additionally, PAO has secured funding and support from the non-profit Leping Social Entrepreneur Foundation. Together we are working towards developing the Plugin system in a manner that creates equitable housing for a mass population of limited means.

# THE PLUGIN HOUSES PEOPLE'S ARCHITECTURE OFFICE