

## **Designing Development in Disaster Affected Area in Ya'an, Sichuan of China: a trans-disciplinary action research project**

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### **Abstract:**

On April 2013, a 7.0-magnitude earthquake hit Lushan county of Ya'an city in Sichuan Province. Although the damage of Lushan earthquake cannot be compared with Wenchuan earthquake in 2008, there are still over 70,000 houses collapsed and almost 2 million people being affected across 19 prefectures and 115 counties of Sichuan province. We chose Miaoxia village in Shangli township as base of intervention after the earthquake. Miaoxia is an old village from where almost all young adults left for working in the city and there were groups of left-behind elderly and children lacked of family care after the earthquake. The old community became dilapidated and their traditional culture, in terms of architecture, custom, skill and wisdom, was dying. Social work working alone in the community could not fully tackle their multiple needs, especially in the dimension of environmental and physical space. Thus, this is a trans-disciplinary action research project in which social work worked hand-in-hand with design and architecture disciplines in exploring an alternative model in post-disaster community reconstruction for enhancing quality of life of the left-behind elderly in the disaster affected community in Ya'an of Sichuan. After one-year's initiative, being together with the villagers, the trans-disciplinary action research team built up a community kitchen. The resulting kitchen enables the villagers to develop new cooperative organizations and social enterprises, thereby extending the village capacity for income generation through festivals and community events that contribute to the villagers' capability for sustainable development. The paper presents the participatory action research process as well as our thinking of trans-disciplinary intervention in post-disaster community reconstruction.

**Keywords:**

Space injustice, post-disaster community reconstruction, participatory action research, participatory design, China

**Introduction**

A large number of countries in the world have been faced with devastating damage by natural disasters, such as the southeast Asian tsunami in 2004, the Mumbai flood in 2005, the Caribbean and the United States storms in 2010, and Japan earthquake and tsunami in 2011. China is also constantly plagued by natural disasters like earthquakes, typhoons, mudslides, flood, etc. The most recent major disaster in China is the “5.12 Earthquake,” which occurred on May 12<sup>th</sup>, 2008, in Sichuan province, with a death toll of at least 69,227. The injured and missing persons are estimated to be 374,643 and 17,923 respectively. Where physical infrastructures are concerned, 21 million buildings were damaged and 7,000 schools were destroyed (United States Geological Survey, 2008). Since 2008, successive huge catastrophe, such as Yushu earthquake in 2009, Zhouqu mudslides in 2010, Lushan earthquake 2013, and Ludian earthquake in 2014, pose a threat to China’s economic development and people’s sustainable livelihood.

Addressing these hazards by mitigating risk, developing adaptation strategies and resilient reconstruction action plans and engaging residents at community level in coproducing solutions to the problems they face are important tools that can be brought to bear on such situations. Meeting the objectives of reducing losses attributable to natural and human-made disasters is a matter that involves many stakeholders – government at all levels; physical scientists, social scientists, and other different professionals.

According to Dominelli (2015), developing responses that are locality specific and culturally relevant is a challenge to the entire disaster risk reduction (DRR) and disaster risk management (DRM) enterprise, and requires working in effective transdisciplinary teams. She argues that transdisciplinary teams are more than physical and social scientists from different disciplines working in one team to solve a common problem. She suggests that an effective transdisciplinary team is one that

involves scientific and ‘indigenous’ /local/community expertise in ‘doing science differently’ by coproducing a common analytical framework and culturally situated analysis to solve an agreed problem or issue (Dominelli, 2015).

In this article, we argue a trans-disciplinary teams is effective in coordinating activities between the different stakeholders, translating scientific knowledge to residents and ‘indigenous’/local/community knowledge to scientists, mobilizing communities to participate in coproduction activities, assisting in the implementation of agreed plans, and evaluating outcomes.

### **Spatial Injustice in Post-Disaster Reconstruction in China**

Spatial justice should link together social justice and space, most notably in the work of geographers David Harvey (1973) and Edward W. Soja (2010), but not social work. The organization of space is a crucial dimension of human societies and reflects social facts and influences social relations (Lefebvre, 1968, 1972). Consequently, both justice and injustice become visible in space. Thus the understanding of interactions between space and society is important to understand social injustices and to a reflection on planning policies that aims at tackling them.

Physical space embodied in housing is not only a place or building that serves pragmatic needs for shelter, but also a symbolic ‘repository of historical meanings that reproduce social relations’ and ‘mnemonic device for recovering memories’. (Low, 1993, p.75) Space affects how individuals and groups perceive their place in the order of things. Shared places help forge communities by enabling and/or constraining the way in which people come together (Kohn, 2003, p.3). The built environment shapes people’s actions, collective memory and identity, which tells who you are and where you come from as well as creates people’s sense of belonging. Maurice Halbwachs (1980) explained a way to recapture the past is by understanding how it is preserved in current physical surroundings. A particular place is a way to locate stories, memories, and dreams. It connects the past with the present and projects it into the future (Kohn, 2003).

Margaret Kohn (2003, p.5) further reminds us that space and place are political. Particular spaces aggregate or exclude people, and determine the form and scope of their interactions. These effects may be achieved through physical properties such as the accessibility of a courtyard, the arrangement of chairs, or the presence of a pulpit.

Buildings, architectural plans, sacred spaces, boundaries, and ruins can be read as texts that communicate important elements of culture and patterns of power relations. State powers have manipulated space for political purposes. For example, governments erect monuments and palaces to encourage emotional identification with the state. They also plan and restructure roads, neighbourhoods, and fortifications to manage and control potentially disruptive crowds or prevent their emergence. Influenced by Foucault (1980; 1988), we also treat space as vehicle of social inquiry and a bearer of symbolic value. Space is seen as governed by the political systems and constrained/shaped via the construction of knowledge and operation of discourse. The discourse of space is a way of producing regime of truth which legitimates the physical space construction and reconstruction made by the power.

Physical environment, including house, road and other infrastructure, is one of the most important part of post-disaster reconstruction. It is also the government's top priority of task in post-disaster rebuilding. No matter after Wenchuan or Lushan earthquake, the Chinese government created discourse that "the future will be better" and "issued an overarching post-earthquake reconstruction plan stating that the economic livelihood of the earthquake stricken communities should be restored to a level that would vastly exceed the pre-earthquake level" (Ting and Chen, 2012, 9).

However, to the local people the government's work was *bu kaopu* ("not reliable") because the reconstruction did not really meet their needs. In fact, the entire reconstruction work in China was dominated by the mainstream ideology of economic development with emphasis on 'speed', 'efficiency' and 'economic growth'. In Wenchuan earthquake, the Chinese government pushed to compress the original three-year reconstruction work plan into two years and integrate the reconstruction project into country's overall economic development goal. The post-earthquake reconstruction became an opportunity for the Chinese government to stimulate economic growth and achieve high GDP goal in tackling the decline of economy growth. It was also a chance for capital to make profit through post-disaster construction.

The mega reconstruction project during the post-earthquake period emphasized infrastructure. A school, a hospital, a government building, a water supply facility and a cultural center were made available in every earthquake-stricken rural township. New stylish housing estates were built for villagers to purchase and move into. However, as Ting and Chen (2012) have pointed out, the state-led growth-oriented model of reconstruction revealed its weakness in that the needs and concerns of local

people were not taken into consideration. Government progress reports highlighted only how many roads, highways, bridges, power stations, hospitals, schools and houses were built within such a short period of time. The reconstruction project became only a showcase to convince Chinese and the international audience how successful and efficient the government was. However, living within the community, we found villagers were unappreciative and even resistant to government intervention. This was because in the whole rebuilding process, the villagers' core concern – livelihood – had not been seriously considered and addressed. Most of the housing design were imitated the urban residential estate that rows of houses were close to each other and every house has three or two bedrooms on the upper floor, a sitting or a dining room and kitchen on the lower floors, and toilets on upper and lower floor. The villagers were crammed into houses with no space (e.g. backyard) to raise livestock, grow vegetable, and store farming tools. They even faced longer journey to their fields. For example, in Caopo Township of Wenchuan, the villagers complained that they needed to spend about 2 hours to walk from new house to farming land (Ku & Ma, 2015).

Post-earthquake reconstruction in Lushan actually repeated the similar model of Wenchuan. The government still emphasized on infrastructure rebuilding. Two years after the earthquake, the new housing estates were quickly built and ready for villagers to purchase with the subsidy from the government. In 2015, when we visited Miaoxia village, they found the modern housing design were all imitated the urban residential estate. The housing design in Miaoxia is quite similar to other place [see Figure 1]. The rows of houses were close to each other and every house has three or two bedrooms on the upper floor, a sitting or a dining room and kitchen on the lower floors, and toilets on upper and lower floor. The villagers were crowded into houses with no space (e.g. backyard) to raise livestock, grow vegetable, and store farming tools. A local cadre told them that “We plan to develop tourism. When the people move in these new pretty houses, we will organize them to develop guest house and receive guests from outside. Our Miaoxia is near to Shangli old town. When they come to visit Shangli old town, they can stay in Miaoxia and that will drive local economic development.” The local government officials told visitors about their plan of economic development through tourism. But Yingxiu's case has witnessed that it is unsuccessful and unsustainable.



Figure 1: Rebuilt housing estate in Shangli township, Ya'an

People may appreciate the Chinese government's efficiency in building houses for victim-survivors of natural calamity. However, the question remains – is the space habitable for the local people? Is the building process just? Does it involve local residents in its design and implementation? In our view, based on the value of spatial justice, the rebuilding process in Sichuan's earthquakes is undemocratic because those belonging to marginal groups (e.g. the elderly, children, and ethnic minorities) are excluded from the design process, and the core concern of the users (villagers–livelihood – had not been seriously considered and addressed.

Post-earthquake reconstruction involves processes of power domination and local resistance. In facing injustice arising through building processes, we ask, 'How should social work respond?' Lefebvre (1996, pp. 76) offers a possible answer. He advocates that urban theorists, architects, and planners, 'make the effort to reach out towards a new humanism, a new praxis, another man [sic], that of urban society'. He also demands specific rights for those who live in cities: rights to training and education, work, culture, rest/leisure, health, and housing (Lefebvre, 1996). Our emphasis on environmental justice and advocacy of post-disaster rebuilding that engages local residents in designing and developing accessible private and public spaces for local residents can expand Lefebvre's ideas. The first step in achieving this goal is to enable disadvantaged social groups to voice their views during the urban planning and renewal process. Thus, we used action research to highlight the needs of residents, empower marginal groups, and encourage community participation in design, planning and building processes.

## **Participatory Action Research as Methodology**

The method used in Miaoxia project was Participatory Action Research (PAR), which has been used by community workers to strengthen and support the capacity of communities to grow and change (McTaggart, 1996; Zuber-Skerritt, 1996).

The primary goal of PAR is to create a more just society through transformative social change (Park, 1993; Reason and Hilary, 2008; Small, 1995; Vickers, 2005). Research is no longer seen as solely a means of creating knowledge; it is also a process of education, a development of consciousness and a call to action (Park, 1993, 1999; Reason and Hilary, 2008; Small, 1995). The fundamental principles of PAR are that first, participants (often peasant/poor/marginal people) are regarded as ‘knowers’ and their knowledge and experiences are valorized. Second, researchers temper their own ‘expert’ status, and while not dismissing their own specialist skills, do not presume to have a superior perspective. Third, the agency of participants is recognized and encouraged (participants are encouraged to recognize their own agency) and researchers and participants enter into a reciprocal relationship in the research process (Kesby, 2000: 424). The central feature of PAR, then, is that it relies on the people themselves to engage in the research process to the greatest extent possible (Park, 1999: 143–44). Local people are full partners in the research process and are usually referred to as co-researchers (Gaventa, 1988; Park, 1999; Schruijer, 2006; Small, 1995; Streck, 2007).

The research team is multi-disciplinary, combining social work, anthropology, environmental design, architecture, and product design. The action research took place in stages. We began by establishing trust, gaining understanding of people’s living experiences after the earthquake and assessing their needs and local assets. Then they encouraged local people to form different groups (e.g. women group and public space management group) to take action to respond to their own concerns.

Guided by the action research method, we used different skills at different stages to engage in our activities and record our process. To learn about the needs and assets of the community, participant observation, in-depth interviews and asset-mapping methods were employed. Focus groups and workshop were used mainly to facilitate group discussions, explore ideas and find strategies for action. When implementing community activities, the participants’ observations and informal feedback were

recorded as field notes. Sometimes, public meetings were held to encourage participants to articulate and share their sentiments. In-depth interviews were also conducted with the local officials, community leaders and selected representatives of various age groups (children, young people, adults and senior citizens). All the members of the research team were required to keep notes and record their reflections in journals. Local people from the community were also recruited and trained to help with data collection. One of the characteristics of action research is that data collection and analysis cannot be separated. The data was analyzed on an ongoing basis and had discussions with different group at each stage to plan our actions. The data, presented in this paper, are based primarily on the field notes and journals. Our action research process will be presented in following stages.

### **Discovering Miaoxia**

On 20 April 2013, a 7.0-magnitude earthquake hit Lushan county of Ya'an city in Sichuan Province. Although the damage of Lushan earthquake cannot be compared with Wenchuan earthquake in 2008, there are still over 70,000 houses collapsed and almost 2 million people being affected across 19 prefectures and 115 counties of Sichuan province. In May, with the support of Civil Affair Bureau, social work educators and students from the Sichuan Agricultural University (SAU) first entered Lushan. Soon after, the Sun Yat-sen University and the Hong Kong Polytechnic University also came to explore what kind of support could provide for the local university and decided to support SAU as they had a strong commitment in post-disaster rebuilding work though they did not have much experience. Three parties agreed to form an action research team and participate in community reconstruction together. After half year's preparation and planning, we finally decided to set up our social work station in Shangli of Ya'an to support the long term community reconstruction.

We chose Shangli township as base of intervention as it was one of the most seriously affected area in Lushan earthquake. We came there to have site visit for many times. First time when they came to Shangli township and looked around in villages, they found many concrete houses, no matter new or old, were collapsed in earthquake. However, it was so amazed to discovered that there was a small village called Miaoxia wherein many old wooden houses stably stood still.



Miaoxia located in a rural valley near to Shangli historic town and the prefecture level town of Ya'an, two hours west of Chengdu in Sichuan Province. An agricultural valley area adjoining hilly and mountainous areas to the North of Chengdu, the river plains and low lying hills provide good quality subsistence farmland while forestry and related industries are found in the higher hills. This led to the predominance of wooden buildings. After researched local culture, customs, skills, and traditions to identify opportunities for engagement (actions), we found Miaoxia is also an agriculture community with strong kinship, cultural, social and familial ties. The region has a Tibetan influence, due to the connecting valleys linking to the Tibetan Plateau. The region was affected by the Lushan earthquake in 2013 that disrupted social, cultural, economic and physical structures. Additional factors affecting the village include: the impacts of recent changes to land ownership; the fragmenting of farmlands by suburbanization; the dilapidation and depopulation of traditional wooden villages; and the loss of former agricultural practices, cultural practices and skillsets. The change of the agricultural practices impacted local economic wellbeing as subsistence farming became marginalized. Same as other Chinese villages, in Miaoxia, almost all young adults left for working in the city and there were groups of 200 left-behind elderly and 150 left-behind children lacked of family care after the earthquake. The old community became dilapidated and rundown. The living condition in old community was undesirable. People face an array of stresses in the old house such as bad ventilation, poor hygienic conditions, dim lighting, and lack of public space.

In face of the above situation, multiple objectives of building community kitchen in Miaoxia are as: 1) identifying the local strength; 2) revitalizing local culture and value, resulting in building up local capacity and confidence; 3) promote collectivism via developing cooperative organizations and social enterprises, thereby extending the village capacity for income generation through community events; 4) reclaiming villagers' right of having habitable living space.

### **Oral Testimony and Discovering Local Strength**

The strength perspective and assets building framework help us to see that the local communities contain a wide range of assets and strengths, rather than focusing on their deficiencies, problems, or disabilities. The practice models that keep research team focused on the strengths, assets, and capacities of people are critical for social

work practice in rural communities (Ginsberg, 2005; Lohmann & Lohmann, 2005; Collier, 2006). As Scales and Streeter state, the role of rural social worker is to “seek to uncover and reaffirm people’s abilities, talents, survival strategies, and aspiration, and community’s assets and resources.” (Scales & Streeter, 2003, p.2) We has commitment to empower rural communities to use their resources in innovative ways to create new assets as well as to help them determine their own direction, set their own priorities, and leverage both internal and external resources.

It is important to listen to local people’s voices and to help them become ‘subjects’ in the community rebuilding process, the first act should be to collect oral testimonies from elderly to understand the local history and culture and to discover their strength. The oral testimony was adopted because it is a method of participatory rural appraisal (PRA), which is an effective means of mobilizing community participation and discovering community needs (Ku & Luk, 2002; Slim & Thompson, 1995). Oral testimony gives us access to voices outside the mainstream discourse, and reveals personal experiences and aspects of life that are buried or hidden in the public realm. It offers marginalized groups an opportunity to speak for themselves, tell their own stories, recall their life experiences, and express their own views regarding their circumstances. For members of the local community, oral testimony is a means of empowerment. For social workers, oral testimony is an opportunity to discover the common experiences of the community members, and to gain a deeper insight into the community’s relation to its past and its cultural heritage.

In August of 2014, after decided to choose Miaoxia as our post-disaster reconstruction project site and signed up formal agreement with local government for obtaining legitimacy, we quickly came to collect oral history of Miaoxia village. August was a good time to get involved social work students from Sun Yat-sen University and Sichuan Agricultural University as they came to conduct their placement in Miaoxia. In oral history, we know Miaoxia village has its glittering and glorious history. The ancestors of Yang (major surname in Miaoxia) were high ranking military officers in Qing dynasty. Their big houses with luxury woodcarving still shows us their social status and wealth in the past. The predominance of wooden buildings - some over 100 years old - in the older villages also witness a (now declining) tradition of wood craftsmanship skills in the area. In collecting the oral history, we also discovered that many elderly and local building masters have

knowledge of traditional construction processes, details, skills and local material resources that is getting lost. Very important, the wood buildings are a testament to their durability and earthquake resilience, whilst more recent concrete buildings are damaged.

Apart from allowing us to listen to the voice of the local masses and get closer to their needs, the use of oral testimony is also an experience of empowerment. The elderly is often regarded as useless and awaiting death after their retirement. In their interaction with the society, the elderly also feels themselves to be useless, lonely and in ill health, while their families have left them alone. Through oral testimony, the elderly was given the opportunity to tell their own stories. In recalling their memories, they were also regaining self-confidence. Looking back on their past, they were able to rediscover the glories of their youth, such as their participation in the War, the dedication to the country, as well as the many great and significant things that they have done. Therefore, in telling their stories, their faces were radiant with joy, as they once again found themselves to be a useful person. In interviewing process, social worker and students could sense the elderly's pride and strong identity with their history and culture. When they knew social work came to Miaoxia for community rebuilding, they strongly requested us to help for revitalizing their community life and traditional culture (e.g. community banquet called nine bowls *jiudawan*)

In collecting the oral testimony, the school kids were also got involved in summer, letting them to help our interview. In this sense, oral history can also help establish communal relationship between the local masses, and strengthen the social cohesion among them. Social workers arranged young people to visit the elderly people in the community as part of oral testimony collection. In talking to them, the young people realised that, for all their current ageing looks, the elderly people were in fact once young as they are, leading a colourful life and rich in experience. They therefore began to respect the elderly. In the process of conducting oral history, the young and the old were able to find common topics and narrow the generation gap between them. Moreover, the elderly people rediscovered their faith in life through oral testimony, and become part of the community once again. They became active in community public affair.

### **Participatory Design and Capacity Building**

Oral testimony helped us identify the strength and assets of the local community as well as their needs. After identifying existing tangible assets (village context, skills and material resources) and intangible assets (cultural and social structures, kinship, values and history), social workers formed elderly and women group for the long term community development. Community school was also set up by using a room of old house for the purpose of providing space for training, villagers gathering and children playing [see Figure 2].



Figure 2: Villager decorating old house as community school

Social worker had many group meetings with elderly and women to discuss Miaoxia's future development. Women seemed to be more concerned about their livelihood and tended to learn something practical, like learning organic farming, producing hand-made soap, and skill of educating children. The elderly tended to be more eager to revitalize their traditional culture (e.g. community banquet) and to have public space for gathering and entertainment. Sometimes social worker also showed video of post-disaster reconstruction in other place and countries to them. One vide is about post-earthquake community development projects in Atayal tribe in Taichung of Taiwan inspired them to build their community kitchen. The community kitchen in Atayal tribe was built after 9.21 earthquake by a group of returning Atayal young people for providing meal for the elderly in community and revitalize their traditional culture of sharing meal. In Miaoxia after several discussions, the social workers and the villagers came to a consensus to build a community kitchen because Miaoxia also has tradition of sharing meal and has need of elderly and children care. Thus multiple

objectives of building community kitchen in Miaoxia are as: revitalizing local culture and value, resulting in building up local capacity and confidence; enabling villagers to develop new cooperative organizations and social enterprises, thereby extending the village capacity for income generation through community events.

Social workers do not know how to build the house and tackle the problem of environmental and physical space, but we are good at building up social relation and connecting outside resources. There has been enormous interest in relating the social sciences to the design professions since the 1970s (Gutman, 1972). Nowadays we hear a lot about design for social change, and the potentials of design action to contribute to sustainable development. Design professionals – including urban planners, architects, and interior designers – demand collaboration because they realize ‘that the intellectual traditions of architecture and planning are simply not adequate for grasping the complexity of the building needs of urbanized and industrialized societies’ (Gutman, 1972, p. xi). Thus, they turn to the social sciences in hope that such research can develop practical knowledge for urban planning. The design professionals now are setting higher standards of social responsibility for themselves. They intend to design buildings that will satisfy both their clients and the eventual users. Likewise, social scientists have developed a new concern for the practical applications of their research. They realize the relevance of physical environment to human behaviour. Thus, they work together with design professionals to understand the lifestyle of the poor, the housing needs of different racial groups, etc., to guide practical and useful urban planning (Zeisel, 2006).

Ku invited Hasdell, Kuo and Lee from the school of design at the Hong Kong Polytechnic University to join our project. In order to empower the local villagers and enable them to participate in design and building process of community kitchen urban planning, they decided to use the approach of participatory design which include six stages: *brief and concept Development, design prototyping and revision 1:100, design confirmation and Revision 1:50, design finalisation and detailing 1:20, design realisation and construction 1:1, design fit-out*. In January 2015, the colleagues from design school came to visit Miaoxia and made initial evaluation. Because we shared the similar idea of participatory community development, we quickly formulated concrete plan for the community design after returned to Hong Kong. Kuo went to the

project site again and collected important information for community design in the next step.

### *Cycle 1: brief and concept development*

With the assistance of social workers and villagers, Kuo, as Hong Kong architect, came to site study and conducted a simple photo survey for overview of existing building systems and techniques. He also humbly studied the local culture, customs and habits through interview with local villagers. To architect and social workers, it was a learning process in which they also learned from local building masters about traditional construction processes, details, skills and local material resources. Both architect and social workers employed anthropological method of ethnography, staying and living with villagers to understand their living habits. Following the principle of sustainable design, we also did the community measurement and investigated those local second hand materials (e.g. wood and tile) which could be recycled for the community rebuilding.



Figure 3: Kuo interviewing local elderly about the local culture and traditional construction



Figure 4: Listening villagers' opinion on design

We carefully listened to the opinion from the local villagers and humbly exchanged idea with the villagers about how to redesign the space [see Figure 4]. Social workers assisted to organize several participatory design workshops and invited villagers to participate in discussing the design plan. Of design potentials and opportunities, architect revised design and site parameters according to feedback and clarification of overall project concept. Participatory design emphasized on user-center and we needed to obtained confirmation of villager's requirements and needs. After defined and re-evaluated project direction and intention with the villagers, we came to an agreement that community museum and community kitchen should be the priority to construct through on going dialogue, discussion and negotiation.

### *Stage 2: design prototyping and revision*

By the end of May 2015, Hong Kong architect brought a newly developed design options to village and presented in simple models and drawings (initiating 'straw man concept') of two concepts: **living museum** - craft and skill focused on highlighting villager's expertise; **community kitchen** - multifunctional space with community kitchen as cultural and social enterprise. Social workers helped organize participatory design workshop and designer presented 1:100 models to villagers and social workers, hoping to initiate public engagement. We encouraged villagers freely expressed their opinion on the the design options. They had different opinion in

discussion and sometimes even came to quarrel. Social worker was important to observe group dynamic and made the meeting smoothly. They let the villagers to make collective selection of community kitchen options based on issues of flexibility, adaptability to existing habits and patterns and enterprise potentials.

Then we analyzed feedback from villagers and reviewed design and adjusted on site, discussing further to incorporate villagers' ideas as part of the design process cycle. However, we encountered difficulty in choosing place for building community kitchen. The social workers kept going to discuss with villagers and finally they chose a declined and broken house as the place of community kitchen for two important reasons: it was easy to start the project as nobody occupied the house; the owner was willing to let social workers to renovate his house for public utility. After one month's negotiation with the owner, the social work station, public space management group and the house owner finally signed a 20 years' agreement that the house can be used 10 years for free.

Based on the real situation, research team needed to modify design plan and confirmed the project direction with villagers further. Finally we confirmed the broad focus and working brief of the project as a Multi-functions Community Kitchen that aims to do the following:

- Provide multi-functional spaces adaptable and flexible for the villagers.
- Provide a community kitchen allowing for social enterprise and income generation such as cooking for festivals or banquets by opening onto village square.
- This space can also be used by villagers to provide day to day well lit, comfortable space for drinking tea, chatting, meeting and playing cards (and can be heated in the winter).
- Upper floor space provides a small meeting room or public balcony.
- Design that engages but is also harmonious with existing wood buildings and context.

### ***Stage 3: design confirmation and revision***

Based on the information collected from second stage, the architect developed the model of community kitchen from stage 2 into schematic design options presented



in simple 1:50 models and sketch drawings. The options present three different layouts and spatial organizations that: Engage the public square and tree (possible future organic garden or outdoor meeting area) in different ways; proposal of three different roofs explored ways the building develops its spatial language from the existing village context; different internal layouts to show the ways the space can be organized to suit the villagers needs, for example the stove is used for communal cooking but can be used for heating and a social gathering space in cold months; these options allow villagers to see the different ways the options integrate into the existing context and into the village square as well as into their daily habits and patterns. In June, we came to Miaoxia again and use developed design ideas to present options to villagers. In the participatory design workshop, we had comprehensive discussion of the different options and potentials with the villagers and evaluation of the potentials, viability and issues with each option.

After the workshop, the architect analyzed the feedback from villagers that they highlighted land ownership issues for some options that proposed placing a connecting stair and balcony linking to the square. The eventual resolution simplified the design and allowed for common consensus but kept the expressive roof that indicates the community kitchen's importance and difference from the surrounding houses.



Figure 5: Kuo introduced three options to villagers

We organized second presentation in participatory design workshop. The second presentation with social worker's intervention also highlighted and resolved pragmatic issues of stakeholders versus landowners, collective benefit and enterprise, common usage and collective gain, construction funding and working pattern and

schedule. Villagers expressed desire for completion by Mid-Autumn Festival. The architect also had a preliminary discussion with master builders / carpenters to explore the feasibility of implementing the design plan. Time was so tight if we wanted to complete the building by mid-Autumn Festival. We decided invited student from Hong Kong Design Institute to become volunteers to participate in design and building process. It was a good chance to facilitate knowledge transfer and extended engagement with design profession.

#### ***Stage 4: Design Finalization and Detailing 1:20***

It was a critical stage as it is needed to finalize the design option. In July, research team came to Miaoxia again with six architecture students from Hong Kong. We incorporated earlier stages design process into final design and had a decision to make roof curved structure evolving traditional timber structures into new forms. But we were worried about whether the villagers could accept the new design.

We tried to develop design into detail and costing of this to allow for preparation of materials. Appropriate communication methods were developed to allow for a variety of communications with different stakeholders, in this case a detailed 1:20 scale wood joints model for dictating detail issues and guiding construction, was made by students.

The social workers informed villagers to come to final design workshop. In this time, more people came to join. At the night, the room was fully occupied and crowded with people, especially the elderly. Designer gave a final design presentation to villagers and highlighted some ownership issues resulting in design modification and adjustment to final design. The proposal was that the roof system is structure is rotated about 30 degrees from the column grid and roof beams positioned at different heights to give shape to the curved roof (knowledge transfer). This new design aimed at improving the shortage of traditional building, like dim lighting, poor air circulation, and lacking space on the second floor. However, the designer encountered a lot of critiques on the final design, especially the roof curved structure, from the old villagers and carpenter. Some villagers thought the design was not their tradition; some criticized the curved roof structure not stable; and some just felt resisted. Final confirmation design to villagers. Presentation to carpenter team initially caused consternation but was resolved under the guidance of the master carpenter who agreed our design and structure and technical resolution [see Figure 5].



Figure 5. Participatory design workshop

On the second day, based on the comments from master carpenter and villagers, the designer and students quickly conducted on site production of revised drawings and final measurements for construction and for the carpenters. We presented the revised version to villagers and further discussion on layout and functional usage. Participatory processes of presentation, review and sketch presentation coupled with sequence of increasing scale models was effective and vital in confirming and getting the engagement and support of the villagers. Villagers participation, input and the moderation of the social workers were both essential for the rapid development of the project to date. The project finally started in a very unclear state and in a much less ambitious vision compared to that one in two months earlier. This is the first new building in the village for perhaps 50 years. The social and physical construct in this case are intrinsically linked in their development. The next phase of construction will make clear if the collective ownership of the design transfers to the collective ownership of the building, as well as civic pride, user satisfaction and social enterprise success.

#### **Stage 5: *Design realization and construction 1:1***

We came to the construction stage in the beginning of July and it ended in August. It really needed the fully participation of the local villagers and our volunteers (design students). The first step was demolition. Villager and volunteer participation involved in demolishing the existing building. Roofing tiles, floor stone pavers and some

timbers would be recycled. Then the designer needed to fix the site layout and foundation stones. The site layout and positioning of foundation stones involved the assigning of the columns to specific positions and basic sizing and shaping. In building process, social worker and designer could only rely on the master carpenter and villagers although they were a bit worried about the progress because they only employed very basic tools in construction.



Figure 7: Villager setting up the frame of building collectively

However, in the process, the research team highly admired the skill and team spirit of master carpenters and villagers. Their skill, experience and precision allowed them a high level of craftsmanship with surprisingly high level of speed. Mechanical tools limited to portable bench saw, grinder and electric drills. The frame parts were shaped and formed in the existing temporary building from unmilled timbers under the master carpenter's supervision. No nails assembly and fine tolerances for joints that were wedged. Our model used for reference to builders. The frames were made to be assembled flat on the ground pulled vertical (like barn construction) so precision of the parts is crucial. Villager and volunteer participation together with carpenter team, erected the assembled frames on site [see Figure 7]. It was evident that the collective action and participation was essential for this process and also aided collective ownership of the building.



Figure 8: Social workers and villagers doing tiling

After the frame completion, the carpenter and villagers connected and wedged the erected frame. As it is a no nails construction, they needed to tighten up the frame when the wood dried and the details finished. Roof frame and tiling was also completed as a collective action, with important topping out and finishing ceremonies including the burning of incense. The tiling was completed in one morning with over 20 participants [see Figure 8]. The construction process was effective in mobilizing community support and participation (especially the elderly) and across boundaries (Hong Kong student volunteers with locals). This also generates sense of collective ownership and community pride as well as allowing knowledge transfer in many ways to occur. An ancillary benefit is this project contributes to the continuation of a craftsman tradition of carpentry that is presently declining in the area due to the proliferation of concrete buildings.

### ***Cycle 6: Design fit-out***

We came to the part of design of walls, windows, partitions and interior tout including kitchen and services and furniture stage. But in the third week of July, the designer already had initial schematic design and strategy focused on minimal intervention, due to concerns that the villagers may not have the will to push the project at this stage. We under-estimated their desire to complete the community kitchen as soon as possible (before Mid Autumn Festival: mid September). So social workers presented the initial schematic design to villagers and had discussion to

ensued requesting resolution of all parts and expedited completion with villager's consensus. We also worked out practicalities, costing, scheduling and ordering.

The community kitchen building process is ongoing. Expected completion date mid September. Ongoing user evaluation were carried out and documented by the social workers and they helped to evaluate the villager's responses after construction is complete.

### ***Cycle 7: Design fit-out prototyping***

No matter the style of cooking bench, stove, window, or door were not designed by the designers alone, but by the collective discussion. The process of prototyping design and fabrication of wall elements, windows, partitions and interior floor pattern involved twelve Hong Kong design students in a participatory design workshop over 10 days in August. As volunteers, they came to learn and assist the construction. They assisted builders in construction of kitchen floor and masonry walls. They also learned and assisted in wood cutting, shaping and framing of door and screen frames.



Figure 9. Hong Kong students helping design of stair and wall

Kuo assigned students to help the sketch and scale design of stair and wall elements for prototyping [see Figure 10]. They also needed to develop model and full size mock-ups of wall element prototypes with timber and bamboo for testing on the

building frame and for presenting to villagers. A variety of different options was the outcome in the end. They presented the prototypes to villagers for their feedback, participation and comments. Discussion resulted in villagers rejecting bamboo solutions due to poor life cycle and high maintenance considerations. Further development is required. Additional discussion of project deadlines due to unseasoned wood means project completion will be delayed.

### ***Cycle 8: Design Fit-out Construction***

We came to final stage of construction of wall elements, windows, partitions, ceiling and interior floor in September. In this stage, designers and social workers were less participatory than previous stages due to the fact that the villagers wished to complete the building as fast as possible. In the process, we still needed to negotiate with villagers about the decisions on keeping upper level open as deck area.

The villagers were responsible for all the construction of floor and kitchen walls. It was not an easy work as they needed to do positioning and placement, choice of stone pavers to provide continuity to square, finishes for kitchen area, selection. Constructing kitchen stove and amenities is a skill work. The old villagers were very skillful in positioning and construction and finishes to stove. They also constructed the bamboo vent above stove area, and water filtration tank, drain system. They also collectively construct the stair to upper level, timber ceiling, and upper decking.

Though design students developed some design options for wall, door assemblies and screen details for door, there was some key negotiated decisions focused on maintaining as much light and flexible operation for community uses. Finally, the villagers decided to use the material of transparent plastic plate as it is cheaper and easy to replace. Some other site works and landscaping including rainwater gutters, drains, paving, and finishes, completed by by week three in November, with the exception of glazing to windows and some minor adjustments. In December, interior furniture, decoration, finishes were done by villagers themselves little by little.

Various activities had been taking place in the building (or structure before it was completed) since August. Though the community kitchen did not finish, the space had been used for community training. Social workers invited doctor from township hospital to give a health talk about diabetes and hypertension to elderly

villagers. The doctor provided free body check to the elderly. The elderly came to understand how the disease related to their dietary structure and the ways of disease prevention. The community kitchen also began to receive the guests from outside. In November, two groups of visitors from other social work organization came to visit Miaoxia project and learned the experience of community development. The villagers had good exchange with outsiders. They felt proud of Miaoxia development and had confidence to build their home village in future.

Miaoxia community kitchen inauguration was held in January 2016 [see Figure 10]. There were around 200 villagers participated. They decorated the community kitchen with red lantern and streamers. They revived traditional ritual of opening ceremony. They had lion dancing and setting off firecrackers. Finally, two yellow dancing lions climbed up to the second floor of community kitchen to unveil the plaque which named as “Chongshan Lou” (Building for Good) by the villagers. They had community banquet together for whole day to celebrate the opening. Song and laughter filled with the whole community. The old people felt very joyful and one of them told our social workers, “our village hasn’t been so festive for a long time!” These functions were largely community oriented at present, but did not engage yet the social enterprise income generation potentials of the community kitchen. We anticipate that villagers will take some time to adapt and adjust and to get their social enterprise operational within the community kitchen.



Figure 10. The inauguration of Miaoxia Community kitchen



## **Reflecting in Action**

Critical reflection is an important part of action research. When we want to assess the results of a participatory research project, there are several important questions we need to ask: did the villagers fully participate in the whole process of the research? Did the project enhance the awareness and capabilities of the participants? Will the project empower the participants in the research process, and if so, in what way? Did the project enhance the citizens' competency in community development? Will the project bring transformation and social change to the community? Whose aims are served: the academics or the participants? Does the project create the unequal power relationship?

In the research process, we devoted a few workshops to sharing our reflections with social workers. We realized that we had encountered some constraints and difficulties. First, although participatory approach was advocated as the means to promote the community participation, most participations was initiated by social workers and us.

Second, it was not easy to establish an equal and cooperative relationship with the local villagers. Because we did not speak local dialect, we were confined to working with educated villagers who had graduated from those educated and were able to understand the standard Putonghua. We worked closely with master carpenter and those male old people with knowledge of construction. Villagers who had little knowledge in architecture and did not speak the Putonghua language, often old female villagers, were excluded.

Third, as people from Hong Kong, and as teachers and sponsors of the program, we could not completely shake off the authority and status of our position. With their Chinese background, the villagers continued to perceive us as their teachers and sometimes were not comfortable challenging our opinions, even when they did not agree with us. The duality of expert/novice and educated/uneducated could not be completely eradicated. Villagers persisted in calling us "lao-shi," which means teacher, has been used in rural China since feudal times to express respect. Such a title conveys power and authority. Although we were eager to admit our inadequacies and ignorance with regard to the village life and traditional construction, the villagers still

felt at a disadvantage. Consequently, the villagers were often reluctant to express their views, preferring to defer to the vague and unsure ideas of the outsiders.

Forth, In the research process, the villagers involved in the project sometimes were still passive in participating in research design, choosing methods of data collection, or analyzing and disseminating the results of the research. They were invited by the researchers and social workers to be involved in the project to answer predefined questions and participate in pre-designed activities by using a pre-designed model. Though we tried to use methods for investigation that involved local people as researchers, we found that they did not really work independently and often needed assistance from the social workers and researchers.

Though we see weakness in this action process, our experience will still contribute to the field of social work of disaster management and community development, sustainable and participatory design.

## **Conclusion**

The project exemplifies green social work practice in an earthquake affected area in China. The recent transdisciplinary participatory action research collaboration among villagers, social scientists and environmental designers resulted in a new model of development that was to respond to the spatial injustice in the post-disaster rebuilding initiatives of the Chinese government. We let the hidden voices uncovered, isolated elderly included, passive recipient become active, and marginalized community revitalized. The community kitchen, as social space, also reconnects the villagers to their tradition, land and memory.

This transdisciplinary action research is more than design profession and social scientists working in one team to solve a common problem. The process involves academic and local expertise in doing reconstruction by coproducing a common analytical framework and culturally situated analysis to solve an agreed problem together. The Community Kitchen collaboration helped to foster positive change in the village, whilst activating existing skills, self-organising initiatives and capacities in the village.

The Community Kitchen has enabled villagers to develop new cooperative organizations and social enterprises, thereby extending the village's capacity for income generation through community events. These factors contribute to the self-sufficiency, village recovery and development. Specific outcomes and benefits generated in the Community Kitchen project include: 1) initiation of a multi-discipline collaborative research framework (action research/participatory design) and knowledge sharing/transfer platform; 2) implementation project engaging over 60 villagers' skills, labour and capacities inactive involvement in the implementation of the project; 3) development of collectively run social enterprises to reconstruct socio-economic systems and develop new income generation (capacity building); 4) development of a new multi-functional all-weather facility in the village allowing for social, cultural and community activities; 5) re-establishment and activation of locally-based skills and craft traditions (wood building construction that are partly proven to be earthquake resilient); 6) enhancing place-making and fostering community pride (capacity) manifest in the construction; 7) alignment of sustainable development with social development to contribute greater resilience to disaster preparedness; 8) engagement of knowledge, management and education, actively involving different knowledge domains (social sciences, design, local knowledge and skills), service learning initiatives from three different disciplines (student and researcher engagement) and knowledge transfer (building bi-directional bridges between local based action research and remote institutions).

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