

# 1) Miaoxia a socio-material approach towards rural sustainability

## 2) Abstract

The collaborative research project in rural Sichuan involved two disciplines; the Applied Social Sciences and Spatial Design; and their research methodologies; action research providing the 'software' as community engagement and social organisation and the development design 'hardware' outcomes through participatory design processes. This resulted in a community kitchen that enabled villagers to develop social enterprises and collective organisations. The outcomes produced greater cohesiveness, self-organisation, helping to rejuvenate a stagnant village. The repositioning of design within dynamic social processes; as a *socio-material assembly* or as *design together* with its social attributes; expands the idea that the participatory design can be a complex adaptive system of knowledge generation. This has broader implications in outlining how collaborative social design approaches positively impact sustainable rural development, generating an understanding of resources, capacities and capabilities as local knowledge ecologies; and tools of social innovation and change.

## 3) Introduction: Miaoxia Community Kitchen Context

Miaoxia village is situated in a rural valley near to Shangli historic town and to the prefecture level town of Ya'an, approximately three hours drive to the west of Chengdu in Sichuan Province. Geographically the river plains and surrounding wooded hills provide good quality subsistence farmland while forestry and related industries are found in the higher hills. The proximity to these natural resources has led to the predominance of wooden buildings in the region. An agriculture community with strong kinship, cultural, social and familial ties, the village and region has a strong Tibetan influence, due to the connecting valleys linking to the Tibetan Plateau in the nearby Garze Autonomous Region. In 2013 the Lushan earthquake affected the region and to some extent Miaoxia Village disrupting the provision of social services, economic wellbeing. As well the earthquake impacted and diverted some river courses, affecting the formerly irrigated farmlands which could no longer function in the same ways they had been used to, there was also some damage to physical structures.

In Miaoxia, as can be found in many thousands of other villages across China, almost all working age adults have left to seek employment in cities elsewhere. The remaining villagers include around 200 left-behind elderly and 75 left-behind children. This aging community and its physical environs accordingly have become dilapidated and rundown, with substandard living conditions. The village houses and facilities accordingly suffer numerous problems including very poor sanitation, poor hygienic conditions, dim lighting, lack of public space and very little social or economic provision. Through a process asset mapping involving the gathering of oral histories by embedded social workers, the history of Miaoxia it was determined that ancestors of Yang (one of the major families in Miaoxia) were originally high ranking military officers in Qing dynasty and their large houses with sophisticated woodcarvings revealed the social status and wealth of the village in the past. The predominance of wooden buildings - some over 150 years old - in the older villages in the region also bears witness to a (now declining) tradition of wood craftsmanship skills in the area. Through this process, it was discovered that many elderly building masters have knowledge of traditional construction processes, skills and local material resources that are presently disappearing. This signifies the continual erosion of the patrimony of the area. Significantly, the wood buildings in this earthquake prone region of

Sichuan are an ongoing testament to local knowledge and expertise in which the long-lasting durability and earthquake resilience of these structures is notable, whilst more recent concrete buildings are easily damaged as evidenced in recent earthquakes.

Rural community development is a critical issue in China's ongoing socio-spatial transformation. Many rural villages in recent years have been affected by a complex range of macro-issues, policy changes and transformations in the socio-cultural systems and by economic shifts. These have impacted a wide range of both tangible and intangible issues. Rural land and agrarian practices have evidenced an increasing patchwork suburbanization of the rural environment and loss of farmable lands (Guldin 1997); as well as the corporatisation of agriculture; the dilapidation and depopulation of traditional villages; and the loss of associated agricultural and cultural practices and skillsets. The depopulation for instance goes hand in hand with the corresponding increase in rural-urban migration and the related development of urban villages in cities elsewhere and is inextricably coupled with the increase in left behind children whose parents have sought employment in other provinces; (Friedman 2005, Lin, 2009, Xuefei 2013); there are thought to be over 60 million left behind children in China. The resultant hollowing out of rural communities and alteration of their socio-economic conditions is interconnected with the aging of the rural population and eventual decline or disappearance of villages. Broadly we can say that government policies concerning the 600 million rural population and agriculture together with the modernisation of China have strongly impacted local economic wellbeing, social and cultural development and long term sustainability in rural areas. The longer term environmental effects of this are clearly uncertain.

This was recognised under the policy of "Construction of New Socialist Countryside" arising from the 11th Five-Year Plan (2006-10). This policy addressed accrued imbalances that arose during the economic and urbanization development emphasis of previous Five-Year plans. This aimed at the promotion of harmonious rural-urban and socio-economic development for the estimated 600 million strong rural population, thereby representing a key transition point in China's modernization in recent decades. During this period, a quarter century of urbanisation have reduced the amount of available farmland significantly and the policy highlighted the many millions of former farmers who have migrated to cities. In particular the 11<sup>th</sup> Five Year Plan identified rising rural inequality, the need for a new economic framework, revised tax bases and agricultural subsidies, alleviation of the under-provision of community services and education and the need for sustainable development approaches amongst other aspects. "The only way to ensure sustainable development of the national economy and continuous expansion of domestic demand is to develop the rural economy and help farmers to become more affluent." (Communist Party of China (CPC) Central Committee and the State Council, 2006). The policy also more broadly reflects concerns about China's shrinking areas of cultivated land and the prognosis for the country's ability to feed itself in coming decades. <China Daily [http://www.chinadaily.com.cn/english/home/2006-03/08/content\\_528139.htm](http://www.chinadaily.com.cn/english/home/2006-03/08/content_528139.htm) >> In the time since this policy was effected, in villages such as Miaoxia there have been few tangible benefits other than improved roads, the ongoing suburbanisation of the former village farmlands continues unabated, the hollowing out and left behind children still continue, if at a slightly slower rate than previously.

For Miaoxia, the hypothesis of this research project is that a combined action research and participatory design approach can be relevant to sustainable development for small scale rural communities, aiding the understanding of resources, capacities and capabilities as a form of local

knowledge for new sustainable development approaches where an alignment of localised socio-material conditions with consideration of the habits, patterns and values of the inhabitants is necessary for an integrated approach to development. The research outlines some directions for an approach based on understanding generated in the completed research so far. This raises a number of questions across a range of different scales that point to the need for a better and more sustainable approach that can engage active participation in the dynamic and continual development of the village or area. In effect this aims to be able to rebalance the social, environmental and economic developments locally to increase Miaoxia's resilience and autonomy through the development of a new model for locally-derived sustainable development. For rural sustainability, an alignment of localised socio-material conditions and resources with consideration of the habits, patterns and values of the inhabitants may be necessary (McGetrick & Jun 2009). Further, it is clear that if this model can be tested and refined, the impacts and relevance for other similar villages can be widely applicable given that there are over 600, 000 villages in China.

Miaoxia initially started as a post-disaster reconstruction project, conducted as an action research project called Hand-in-Hand Post-Disaster Reconstruction initiated Dr Ku Hok Bun from the department of Applied Social Sciences (APSS) in The Polytechnic University of Hong Kong. The project commenced in 2013 and involved the establishment of a social work station in the village where social work students from Sun Yat Sen University and Sichuan Agricultural University could conduct their placements in the village. As part of this work the action research project provided social and methodological foundations that enabled the identification of some existing tangible assets including the historic village context, skills and material resources as well as intangible assets including cultural and social structures, kinship, values and oral history. Subsequent work through oral history helped to identify the strengths and assets of the local community as well as their needs. After the initial mapping work, the social workers formed community groups aimed towards the long-term community development addressing the under-provision of basic social services. A range of other initiatives were implemented including the initiation of a small community school in an under-utilised room of an old house for the purpose of providing space for training, villagers gathering and children playing [see Figure 2]. Through direct engagement, the social workers conducted group meetings with elderly and women to discuss Miaoxia's future development. The research began by establishing trust, gaining understanding of people's living experiences after the earthquake and assessing their needs and local assets. This also 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. From these meetings, it was found that the women were more concerned about their livelihood and tended to want to learn practical skills, such as organic farming, producing hand-made soap, and the skill of educating children, whilst the men wished for more infrastructural upgrading of the village to improve the physical environment. The elderly tended to be more eager to revitalize their traditional culture (e.g. community banquet) and to have a public space for gathering and entertainment.

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 here, is based primarily on field notes and journals and ongoing documentation. Guided by the action research method, we used different skills at different stages to engage in our activities and record process and project evolution.

The initial research identified a need for an integrated approach towards a sustainable form of community development and initiated the process of combining the social sciences and design disciplines, the resulting collaboration being between APSS and the School of Design in The Polytechnic University of Hong Kong led by Peter Hasdell. The resulting multi-disciplinary research project team therefore combines social work, anthropology, environmental design, architecture, and product design. There has been extensive interest in relating the social sciences to the design professions since the 1970s (Gutman, 1972). At the present time there is much discussion on the focus on design for social change, and the potentials of design action to contribute to sustainable development. Design professionals – including urban planners, architects, and interior designers – seek 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). Design professionals now are setting higher standards of social responsibility for themselves, with the intention to design buildings that will better integrate into their social contexts for both stakeholders 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).

For Miaoxia the participatory design processes initiated aimed at developing the village capability to deal with aging and economic decline through the redesign of cooperative and public amenities in the village. The resulting design and implementation of a community kitchen and community centre through participatory design enabled the development of social enterprises and new collective organisations, extending the village capability for revenue generation, festivals and community events. Thus becoming an important marker for the village, fostering community identity, collective pride, and social cohesion through the process. The collaboration enabled new possibilities and measures that facilitate balances between social provision, development and enterprise. In the context of the above situation, the multiple objectives of building community kitchen in Miaoxia are: 1) identifying the local strengths; 2) revitalizing local culture and values, resulting in building up local capacity, confidence and cohesion; 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 habitable living space.

Comprehensive public consultation with the villagers was used to develop and actualize their social enterprises, while participatory design addressed identified design issues with stakeholders and was then used to develop culturally specific possible design options or solutions. An outline of the steps

taken includes: evaluations of potentials and brief development; social enterprise initiation; development of cooperative agreements; negotiations on shared responsibility and mutual benefit; site and leasehold negotiations; design intent and participatory process development; local skill engagement; development of appropriate technological solutions; management of different construction stages, volunteer participation and budget. In total over eight participatory design cycles were involved with typically 15-25 stakeholders engaged in each cycle. The wide range of stakeholders (more than 60) included elderly villagers of different capacities and authorities, non-resident relatives and kinfolk, local craftspeople and local experts as well as social workers and social work interns from three institutions, designers and design students from two different Hong Kong schools. The total process took ten months from initiation to completion. In what is a complex multi-staged process, clearly the social development and engagement are equally important as the actual 'design.'



Figure 2: Villager decorating old house as community school

#### **4) Background: Participatory Method and Approach**

As outlined above, the community wish for physical and design changes in Miaoxia necessitated collaboration with the School of Design through both the Spatial Design discipline (Environment and Interior Design) and the Product Design department at the Hong Kong Polytechnic University. In order to engage the local villagers and enable them to participate in design and building process of community kitchen urban planning, the project framework was conceived as the combination of action research (social sciences) and participatory design (spatial design). This process eventually necessitated six cycles or 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. Each step required detailed and intensive negotiation with the villagers and stakeholders. Although presented below as a synchronous outline of some of the important steps in the project, it is important to note that the interconnections and a-synchronous aspects are an essential aspect to the success of coherence of a project such as this, in much the same way that the tangible and the intangible cannot really be dissected in this type of project.

- ***Stage 1: brief and concept development***

With the assistance of social workers and villagers, site studies and surveys were conducted as well as a photo survey for overview of existing building systems and techniques. Initial project brief discussions also took place with some disagreement over what type of community facility should be built. Negotiations of potential sites and leasehold agreements also took place at this time and different options were presented for the villager's consideration [see Figure 4]. The initiation of

participatory design presentations and workshops allowed villagers to participate in discussion of these design plan options through models and simple drawings. Discussion ensuing of design potentials and opportunities, were used as feedback and clarification of overall project concept into revised designs and sites. As well followed up by a learning process from local building masters about traditional construction processes, details, skills and local material resources. Employing an anthropological method of ethnography, staying and living with villagers to understand their living habits.



Figure 3: Interviewing local elderly about the local culture and traditional construction



Figure 4: Listening villagers' opinion on design

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

Design options, the initiation of a 'straw man concept,' were developed and presented using simple models and drawings 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. The villagers were divided and had different opinions that emerged through sometimes heated discussion. These were eventually resolved through mediation by the social workers and designers following discussions. Previously the social workers had showed video of post-disaster reconstruction in other places, one of these was a video on post-earthquake community development projects in Atayal tribe in Taichung of Taiwan which initiated the idea of the community kitchen as a way to provide the meals for the elderly in community, serving to revitalize the traditional culture of sharing meal. After several discussions, the villagers came to a consensus to build a community kitchen because the village also has tradition of sharing meal and an agreement was made to construct a community kitchen and a social enterprise in the form of a women's collective group to run this. The collective decision on the community kitchen option was based on issues of flexibility, adaptability to existing habits and patterns and enterprise potentials. Subsequently the local culinary culture, customs and habits were studied through interview and documentation of local villagers.

Further difficulties in choosing place for building community kitchen resulted in negotiations and finally a ramshackle run-down lean-to was chosen 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, design team needed to modify the design and confirm the project direction with villagers. Finally the broad focus and working brief of the project as a Multi-functions Community Kitchen was resolved with the following aims:

- 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, schematic design options for the community kitchen were developed and presented in simple 1:50 models and 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 the participatory design workshop, discussion followed of the different options and potentials with the villagers and evaluation of the potentials, viability and issues with each option. After the workshop, the feedback from villagers highlighted land ownership issues for some options.



Figure 5: Introduction of the three options to villagers

The second presentation 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. 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. Villagers also expressed desire for completion by Mid-



Autumn Festival. Preliminary discussion with master builders / carpenters to explore the feasibility of implementing the design plan.

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

Stage 4 finalized the design options to the detail design level. 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 in Hong Kong. The design detail also necessitated the costing to allow for preparation of materials. For the participatory design meeting the design incorporated earlier stages into the final design, as well ownership issues resulted in design modification and adjustment to final design. 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.

The decision to make roof curved structure evolving traditional timber structures into new forms, notably the villagers were initially sceptical about this new form. 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. This new design aimed at improving some shortcomings of traditional buildings, including dim lighting, poor air circulation, and lacking space on the second floor. However, a lot of discussion and critique followed, especially on the roof curved structure. Some villagers thought the design was not their tradition; some criticized the curved roof structure as not stable. Final confirmation was resolved under the guidance of the master carpenter who agreed the design and structure and technical resolution [see Figure 5]. Following this the design was revised and drawings and final measurements for construction and for the carpenters was produced on site. The revised version was presented to villagers and further discussion on layout and functional usage ensued.



Figure 5. Participatory design workshop

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

The construction stage commenced during the summer. It engaged the full participation of the local villagers and some volunteers participating in a workshop to assist the design and construction stage (Hong Kong design students). The first step involving the demolition of the existing building. Roofing tiles, floor stone pavers and some timbers were set aside to be recycled. Following this the site layout and foundation stones positioning were determined by the design team in collaboration with the



master builders. Re-used foundation stones from a variety of sources in the village were used. The positioning of foundation stones involved the assigning of the columns to specific positions and basic sizing and structuring according to the design.



Figure 7: Villager setting up the frame of building collectively

In doing so continual reference was made to the 1:20 model which had been made with many of the key joints and approximate sizings of the components. The master builders skill, experience and precision allowed them a relatively 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 un-milled timbers under the master carpenter's supervision. No nails assembly and fine tolerances for joints that were wedged. 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, this being the first new building in the village for over 50 years.

- **Stage 6: Design fit-out**

The design fit out stage consisted of walls, windows, partitions and interior, including kitchen layout, services and furniture stage. The 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, and further concerns on funding and costing. The villagers resolve to complete the community kitchen as soon as possible (before Mid-Autumn Festival) was under-estimated. In the design fit out presentation to the villagers specific options and solutions were strategized to reflect this, however discussion ensued requesting resolution of all parts and expedited completion with villager's consensus. Practicalities, costing, scheduling and ordering we also resolved at this stage.

- **Stage 7: Design fit-out prototyping**

Many of the façade, window and door options proposed were developed in collaboration and discussion. For some of the options, this involved Hong Kong students participating in a participatory design workshop looking at how to design and prototype for 10 days. The process of prototyping design and fabrication of prototype wall elements, windows, partitions and interior floor pattern allowed villagers to see and discuss the options in ways that drawings or models could not convey. As 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, this was an effective means to communicate. A variety of different options resulted. Discussion resulted in villagers rejecting bamboo solutions due to poor life cycle and high maintenance considerations. Additional discussion of project deadlines due to unseasoned wood meant that project completion was delayed.



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

- **Stage 8: Construction completion**

Involving the final stage of construction of wall elements, windows, partitions, ceiling, floor and interior. In this stage, designers and social workers were less participatory than previous stages due to the villagers wish to complete the building as fast as possible. In this 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, and engaged special kitchen stove craftsmen to do such tasks. They also constructed the bamboo vent above stove area, and water filtration tank, drain system and stair to upper level, timber ceiling, and upper decking

Though some design options were developed 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. By early December, effectively the building was completed, 8 months after the design process began and 5 months after construction began. Final interior furniture, decoration, finishes were done by villagers themselves incrementally. Various activities took place in the building before it was completed. Though the community kitchen was not completed, the space was used for community training. Social workers invited doctor from township hospital to give a health talk about diabetes and hypertension to elderly villagers. The community kitchen also began to receive the guests from outside at this time; two groups of visitors from other social work organization came to visit Miaoxia project and learned the experience of community development. Miaoxia community kitchen inauguration was held in January 2016 [see Figure 10], with around 200 villagers participating in a revived traditional ritual of the opening ceremony. The fireworks and 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. A community banquet was held to celebrate the opening. The elderly in the village showed pride and said “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. Subsequently the villagers have adapted to the changes and have initiated their social enterprise operational within the community kitchen.



Figure 10. The inauguration of Miaoxia Community kitchen

## 5) Conceptual and Methodological Framework *Constructing a Socio-material framework*

- **Conceptual context**

The Community Kitchen project in Miaoxia involved two distinct but complementary disciplines; the Applied Social Sciences and Spatial Design; together with their corresponding research methodologies; action research and participatory design. Beyond the design and social outcomes, the project highlighted how the two methodologies can be mutually beneficial: with action research providing the necessary ‘software’ as community engagement and social organisation facilitating the development of the ‘hardware’ or design conducted through participatory design processes. This aligned both social and physical manifestations. Specifically for the Community Kitchen, the action research facilitated

the negotiation and restructuring of dormant social engagements into social enterprises through shared and mutually beneficial outcomes, whilst working hand-in-hand with the participatory design which enabled stakeholder engagement with the design, construction and project realisation processes. As well the action research provides on-going evaluation after the participatory design processes are completed, guiding and facilitating the social enterprise development and wider community impacts of the project as a whole.

In practice, as evidenced by key moments in the participatory design for the Community Kitchen, processes are messy and complex and are never as clear as the conceptualised cyclical development model suggests. In fact the steps of design initiation and design development, the various participatory cycles, consensus on final design solutions, as well as design implementation provide a whole range of complex negotiations and social situations that change according to group dynamics, collective mood, misunderstandings, that may be affected if not derailed by who has the loudest voice, design anxieties, fear of new ideas and many other variables. Even the group members may change between cycles affecting the social dynamics. All of these occurred in the community kitchen project and required a series of linked and complicated negotiations in a constantly changing situation, necessitating the participants to be flexibility or adaptability through ad-hoc or on the spot solutions to concerns at times and at other times requiring the project leaders to refocus the project framework to enable participants' greater understanding of the issues. The dynamics only become more predictable in later stages of the design process.

Obviously external agents (social workers and designers) coming into a disaster affected context such as Miaoxia bringing new mechanisms of engagement, modes of mediation, and ideas may disturb the pre-existing patterns, clearly adds to the underlying complexity. Consensual participatory design and action research processes are not simple in such contexts, even in a small communities. The disparities of value sets and knowledge domains means all parties and stakeholders will have very different interpretations of community and self-interest at different moments in the process. In actualization the complexities of negotiation of land-use, sharing of collective responsibilities, identification of roles, formation of social enterprises or the development of common understandings (linguistic and in terms of design language) for shared visions and project briefs in effect activated and negotiated very different levels of complex knowledge translation, exchange (on multi-lateral levels between different knowledge domains). As a codex, it needs to be noted, that locally specific socio-cultural modes and practices are coupled with the complexities of social structures, kinships, hierarchies and values in both intangible and tangible forms. Specifically Miaoxia and other villagers have 70 years of experience negotiating the ever shifting centralized policies and their impacts determined by the Central Chinese Government and their local representatives during each 5 year plan. The various rural and urban policy shifts that have occurred and are still occurring keep the agrarian communities in a constant state of flux. Their resilience and adaptability should not be underestimated.

- ***Participatory design and community design application***

Participatory design, and the related fields of co-design and co-creation, employ methodologies that involve users and stakeholders within the design process. This typically involves aspects of: i) initial exploration and preliminary assessment of user needs; ii) discovery processes of user's values: developing collaboration and participation in decision-making; iii) prototyping: iterative process of design development; and iv) feedback and self-evaluation. As a self-reflective cycle (Kensing &

Blomberg 1998) this is iterated to determine the participants' consensus through the design development stages and design evolution. This has proved to be an effective methodology for specific design processes and over the past decades participatory design processes have been used in diverse ways in spatial and product design, whilst variations such as participatory planning (an older form of participatory design) are common in city planning where social or collective actions have a determining influence on public spaces and amenities. Often misconstrued as purely design approach, participatory design is in fact a "rigorous research methodology" (Spinuzzi 2005) involving a complex systems of knowledge generation and co-design processes where the interactions of people, practices, artifacts, interaction and knowledge, steers a course between participants' tacit knowledge and designers / researchers' abstract, analytical or technical knowledge.

The current tendency in participatory design shifts emphasis from the user as a 'carrier of needs and problems' to an active design member who is a 'non-design expert' with local knowledge, skills, organisational capabilities and entrepreneurship. The design researchers' roles adjust to become facilitators of specific design knowledge transfer processes. In this reformulation, design is understood as a contextual practice which engages creative communities working "in an economy of reciprocity" (Janzer & Weinstein 2014). Such participatory design projects can potentially generate design outcomes involving social innovation in which social enterprise and knowledge transfer can become the strategic directives and motivation to instigate and drive social change through design. Indicating a convergence of participatory design and social design and leading to possible extended definitions of participatory design as a "constellation of design initiatives aiming at the construction of socio-material assemblies where social innovation can take place" (Manzini & Rizzo 2011). Design in this context becomes a conceptual and practical tool that can be understood as a relational process connecting the social process and its associated body of knowledge; a type of design ecology (Tilder 2009) or a complex mesh of tangible and intangible factors, social forms and networks, information and interconnections of contexts and people. Clearly in Miaoxia the process of designing the Community Kitchen, cannot be disengaged from either the social enterprise that provides the software nor from intangible but significant factors such as the increased village cohesion that resulted from the project process. These factors point to the potentials of social innovation that begins to permit positive village transformation. Further the identification through villager consultation of the needs and problems facing the village, as well as the capacities, skills and resources available points towards the development of – albeit rudimentary – approach that re-connects the social, physical and economic in ways that begin to be self-determining and therefore leaning more towards sustainable development.

A further issue is that participatory design generally focuses more on design as consensual outcome rather than on the development of outcomes embedded in a social context; despite its usual development within social situations involving many stakeholders. The retrospective oversimplification of the social and materialisation interactions when viewed through the lens of the final outcome is common. Additionally it is clear for many researchers that participatory design understood as a purely consensual process may result in an ineffectual lowest acceptable outcome approach, a 'least offensive' outcome or one that leads only to incremental improvement rather than being transforming. This important distinction, between system improving (social learning / actualization) and system transforming (social mobilization) is often evident in participatory design approaches. The consensual process or path of least resistance in participatory design has been characterised as the

'nightmare' of participatory design processes, Miessen (2010) who argues that complex negotiations, conflicts and their subsequent resolution and tensions between different forms of knowledge may be the process that lead to paradigm shifts and possible innovations, or at least to system transforming design projects that are better positioned to contribute to social innovation and sustainable development. In Miaoxia the critical inflections during the process can be easily understood as crisis and conflict that radically shifted the project direction and development. It can be observed that these inflections were the testing of the processes of actualisation of change and transformation in the village and the real world dynamics and parameters –both tangible and intangible - that can so easily disrupt these.

- ***Action research and social formation in Miaoxia***

Comparatively, action research actively engages participatory processes (Lewin 1946, 1958) to generate positive social change. Typically involving cyclical processes requiring iteration and feedback, this usually occurs in four or five step cycles, for example: plan, act, observe, reflect; and plan for subsequent cycles (Kemmis & McTaggart 1988, Susman 1983). Action research's methodological basis originally draws from the fields of Psychology and Sociology, referencing earlier empirical theories and is supplemented by practical application of these theories and methods in active engagement with its research subjects (Winter 1996, O'Brien 1998). Although well established and tested in social science research contexts, recent developments in action research put greater emphasis on social enterprise, development of new social forms and organisations and on social innovation, concordant with wider society changes. These help move the conceptual focus from a reflective practice towards a projective one, but one which is embedded in a social context. 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 participatory action research 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 participatory action research 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 participatory action research, 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). Within Miaoxia this was effected by having embedded social workers in the village who live, work and research, but as well initiate, facilitate and become very active members of the community, helping to guide the re-structuring of broken or dormant community potentials, and, in the context of the post-earthquake reconstruction facilitate the re-building and management of - for example - the disruption of services. Their role in the intangible aspects of community rebuilding such as culture and familial ties, civic pride and day to day engagement continues to be profound.



It can be said that in overall terms, action research is compatible with participatory design, however clear differences exist: Firstly, action research as a reflective approach has a stronger base in the social sciences whilst participatory design tends to be a projective practice (future oriented) whose methodologies are more design process focused, although this is not exclusively the case as in the participatory action research approach. Secondly action research is naturally and methodologically more adept at social organisation and network building embedded in social contexts; in contrast, most participatory design approaches do not have a sophisticated understanding of social organisation, social change and social formation, nor does participatory design have the methodological tools to adequately deal with social enterprise formation or social innovation. Action research is therefore better equipped with processes and approaches to facilitate social enterprise, network, support and provision of community services. Thirdly whilst action research emphasizes activist participation as “communities of inquiry and action,” that evolve as the community of co-researchers grows or changes (Reason and Bradbury, 2008), the capacity to evolve is generally absent from participatory design approaches that are not well equipped to evaluate impacts and social change after the ‘design process’ is concluded. Within a design context, the reflective practices developed within action research often engage the projective practices of participatory design as an “oscillation” between “knowledge generation and critical informed reflection” (Froth & Axup 2006, Schon 1983, O’Brien 1998). As a pair they are mutually beneficial. In actual collaborative project situations, such as in Miaoxia, developing shared objectives, commonalities in communication and knowledge transfer may facilitate better integration and help define new knowledge domains, whilst pushing participatory design out of the ‘problem-solution’ paradigm. In effect the participatory action research approach in the village with the embedded social workers before, during and after the participatory design processes were concluded was essential to all aspects of the successful integration and acceptance of the project into the village.

- ***Socio-spatial change and knowledge transfer***

In a broader context, changes in social systems are evolving the ways design develops towards forms of distributed knowledge, collaborative processes and cross-disciplinary practices (Sanders & Stappers 2008). Traditional design approaches are brought into question as new methodologies are developed, tested and refined that can deal with emerging relationships and the growing fields of social design. Such changes are impacting the ways we understand tangible and intangible culture and the artifact, design or object. Furthermore, the knowledge generation resulting from these processes can be an outcome that indicates not merely data or metrics but new pathways, connections, processes and social constructions; potentially opening up new hybrid fields of knowledge. Many researchers posit that linking social design to social enterprise ticks all the boxes for sustainable development and social innovation (Meroni 2009, Manzini & Rizzo 2011) whereby innovation can draw from the hybrid knowledge domains. Further, as design disciplines (and design schools) seek ways to respond to broader social changes, there is a need for new tools, methodologies and collaborative frameworks to engage and embed design processes in social contexts and in new modes of practice. The emerging social context of design therefore impacts the professional and academic boundaries of design disciplines.

A viable starting point for re-evaluation of participatory design conceptual frameworks and methodologies therefore repositions it within complex social processes; in which design outcomes

become the formation of *socio-material assemblies*, constructed within processes that span both before as ‘design before design’ and after as ‘design after design.’ The claim here is that participatory design needs to be understood as a ‘relational’ design process (Ehn 2008), connecting social context, socio-material implications and their associated bodies of knowledge in the design process. As such the definition of both the design process methodologies and design outcomes require reconsideration, as well as the roles of users, participants, and designers in the process. To illustrate this, Bjögvinsson, Ehn and Hillgren (2102) write that participatory design should move from a conventional understanding of designing *things* (objects) towards designing *Things* (*socio-material assemblies*). Drawing from Heidegger’s (1967) seminal reflection on ‘thingness,’ they reconsider the etymological meaning of *Thing* as (public) assembly or public space taking place at a certain time and place. They posit the need to understand ancient society’s participation in these gathering places and their purpose as common places where disputes were resolved or where negotiations and even conflicts took place between the social (belief) and the material worlds. A *Thing* therefore can be understood as the gathering of social and material properties and attributes and is critical to this re-evaluation as Participatory design is also a gathering of people and artifact design in a common framework. In other words, “*Thingness*” is very closely allied to the concept posited by Latour (1999) of *Socio-Material Assembly*. This Latour characterizes as “a collective of humans and non-humans;” whereby the collective gathers social and material (artifact) relations within an assembly that is closer perhaps to a contemporary form of ethnography. As part of this collective our participation, gathering and engagement in the material world forms a series of complex and dynamic interactions.

In participatory design terms, the design of socio-material *Things* shifts emphasis from the conventional understanding of design as a process towards the non-hierarchical performative or relational as mechanisms to resolve conflicts or negotiate between diverse groups of participants. Distinct from more conventional approaches this has the capacity to build in uncertainty and unexpected outcome that could lead to system transformation or social mobilization / innovation. This process necessarily needs to consider before and after the normative design cycle, the design before design and the design after design (Bjögvinsson et.al. 2102), not as a process of ‘projecting’ but as a process of *infrastructuring* allowing for continuation of the *socio-material assembly* before and beyond the design cycle itself. This is increasingly the case for specific types of artifacts such as mobile devices and social media in today’s context that are defining new forms of socio-design ecosystems and new practices.

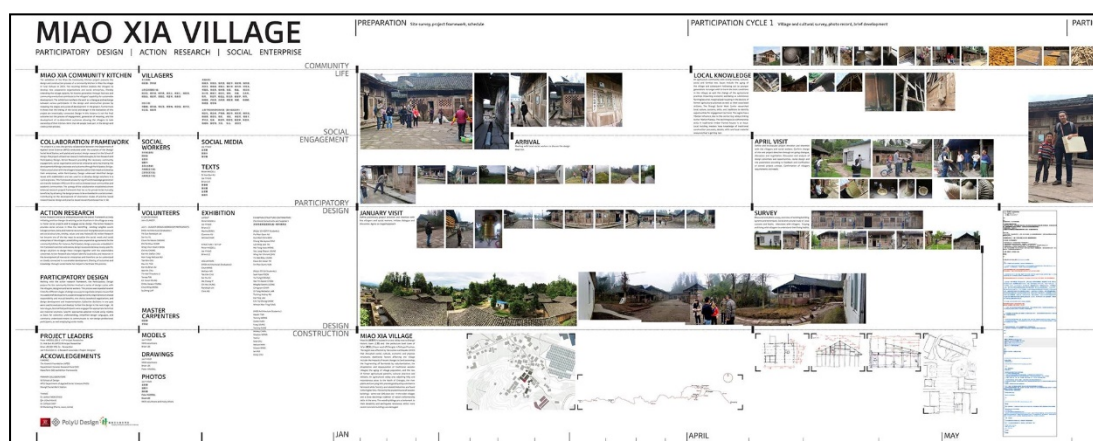


Fig. 11: Participation process documentation (source: author)

The temptation to see the processes in Miaoxia as simple because it is in a small rural context, miss out on the underlying complexities in processes, between disciplines, cultures, socio-economic classes, technology, process and praxis and all the associated knowledge transfers that were necessary on many different levels, from the tacit to the conceptual, between domains and languages as well. Drawing from Miaoxia we can see the complex engagement and intertwining of the social and the physical within some of these complex registers: Firstly the development of the initial project focus went through over five distinct variations and three different sites before negotiating the agreed direction and brief, and the social enterprise and cooperative framework through multi-level engagement of both social workers and designers. This negotiation aligned the social stakeholders together with the desires for specific income generating spaces and facilities. As a second illustration, a discussion later in the project on whether the main space should be divided between the kitchen and the dining area (a cultural issue because most rural buildings are functionally separated into discrete rooms) or kept open to provide a social space with a fireplace for the winter was debated at length and was approached with a mix of discussion and design strategy: the final outcome being to postpone this decision for 6 months so the villagers would use the space during the winter and see the benefits to keeping the space open themselves; a process that took two separate meetings to determine as it went counter to commonly understood social and cultural norms in the village. Both social sciences and design disciplines were critical to these processes and iterative cycles.

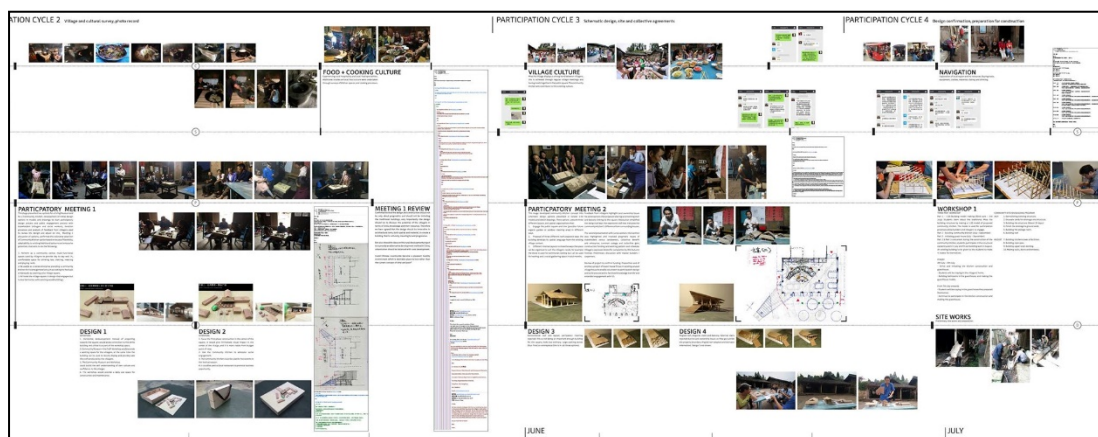


Fig. 12: Participation process documentation (source: author)

- ***Socio-spatial change and knowledge transfer***

The importance of knowledge (generation and transfer) as parts of the interconnection of the social and the design process on the one hand, and between the different heterogeneous fields of knowledge and the negotiations these entail cannot be understated in a project such as Miaoxia. The formerly discrete fields of knowledge require often complex processes of translation and negotiation for instance between the tacit knowledge of a craftsman and the conceptual knowledge of a scholar. Further, within the methodologies employed, the potentials for knowledge transfer between action research and participatory design approach are high. The primary research methodologies and approaches employed generate considerable knowledge: for example the 'asset mapping' of action research as well as the participatory design processes contain a high level of methodological and discipline specific knowledge. Additionally their application in-situ provide case study specific knowledge that has context value and can indicate specific nuances of the social and cultural context,

its skills and its capabilities. The processes therefore foster multiple-directional knowledge transfer between different stakeholders, participants and researchers on many different registers.

Of note the integration of this knowledge, when applied to design led social enterprise has value as identifiers of resources for locally based sustainable development and social innovation approaches. Further, if the recombination of different knowledge fields generates new forms of knowledge that can (but do not always) contribute to an ecology of knowledge, participatory design can help structure and materialize this as outcome and process. Design in this case may be a useful tool to model or negotiate complexity as a *Thing*, functioning as a mediator between different domains of knowledge (for instance design, social sciences, tacit, local and external knowledge.)

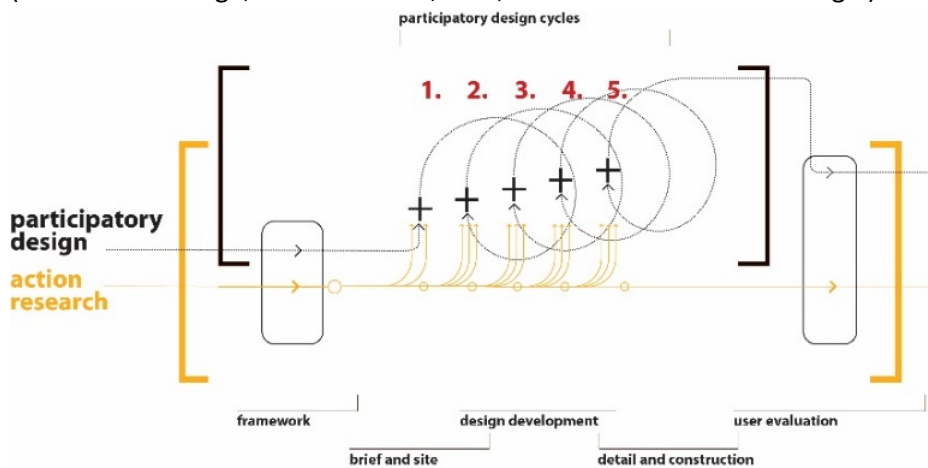


Fig. 13: Action research and participatory design integration and socio-material assembly (source: author)

For instance many participatory design projects undergo stages of indeterminacy and uncertainty. This can be in the definition of outcome or within the complex processes engaged to different degrees in the different stages of design, due to the complex nature of participation and divergent stakeholder views. These generate a web of different situations, negotiations, intersecting or contradictory knowledge fields. In a normal participatory design project the processes (Fig.1) engaged may be further broken down into a series of overlapping stages of: i) initiation (agreement to do a project); ii) ideation (initial design project conceptualization); iii) design development (participatory iteration); iv) design resolution and implementation. As Sanders and Stappers (2008) note, the ‘fuzzy front end’ of design processes that seek to structure the consequent design have been increasingly recognized as ambiguous and chaotic in nature. Extending this I posit that each participation cycle has the potential for an uncertainty of outcome that only becomes clear through negotiation processes. The repositioning of participatory design within a complex knowledge field thus allows for better understanding, analysis and management of this dynamic. This directs us to retrospectively consider the possible role of knowledge frameworks in projects such as Miaoxia that may help us to evaluate and map out the possible development of the approaches used in the project for future reference.

The *Cynefin* Framework developed by David Snowden (2010), is a sense-making and analytic framework used primarily for knowledge management purposes in complex social situations, the name deriving from the Welsh word for habitat as the place of multiple belongings. The five part framework, derived from complex adaptive systems theory, is structured around basic systems of order and boundaries between them. It is considered as a dynamic process in which the interrelations between the five parts are fluid, differing from categorical frameworks which tend to be static. The

five parts: *Disorder*, *Simple* (cause and effect), *Complicated* (knowable with expert knowledge), *Complex* (emergent ordering systems) and *Chaotic* (incoherent), allow situations and conditions to be mapped, analysed and appropriate responses formed according to the type of complexity the situation has.

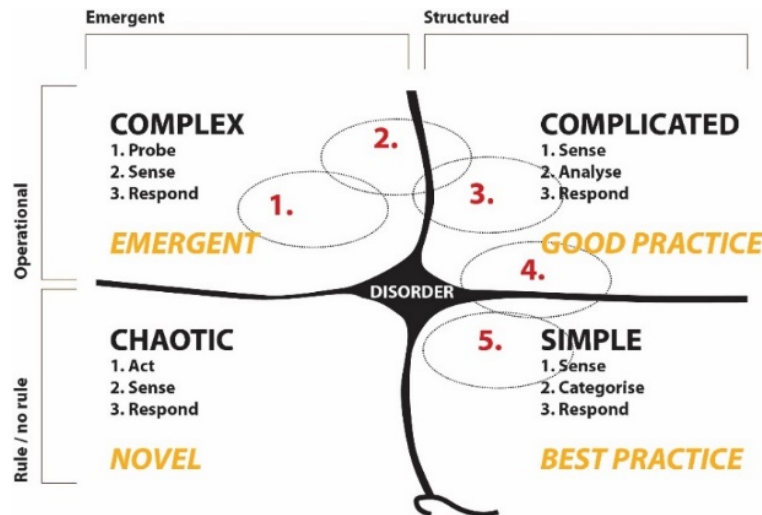


Fig. 14: Cynefin framework with mapping of participatory design cycles (source: author, after Snowden)

If mapped onto *Cynefin* framework (Fig.2), participatory design processes can be repositioned within appropriate categories allowing for a more finely nuanced understanding of the complex dynamics of participatory processes. For instance; design initiation and ideation would fit within the *Complex* category whilst design development and design resolution would better be positioned in the *Complicated* or *Simple* categories. This would better allow these design stages to be understood as parts of complex adaptive processes that may contain conflicts, indeterminacies and uncertainties, and which require the identification of suitable approaches as suggested by the framework.

From a conceptual understanding the key conceptual and methodological aspects outlined here tend to look at integrative processes rather than specific outcome. This is the case whether this is action research, participatory design, or knowledge transfer and adaptation processes. The wider rubric of the social-material framework suggested here as a mechanism to be better able to link the social and the material (read environmental) is similarly aligned. This integrative approach in one better suited towards consideration of sustainable thinking, be it social, environmental or economic sustainability, as the consideration of inputs, and outputs, stakeholders, regulatory or feedback systems involving generated knowledge and transfer of this, continual process and outcomes become integral to the specific project development.

Thereby in operational or as a situated practice, it is already closer to some of the conditions that sustainable development approaches require. Further we can see that this approach is not exclusive to top-down approaches but is equally applicable to bottom-up approaches as found in Miaoxia that seek to more closely align the social with the environmental in contextually appropriate ways that better align with sustainable development where knowledge transfer approaches and management frameworks can help increase understanding and feedback. Secondly this may permit the linking of top-down policies such as the "Construction of New Socialist Countryside" and the locally specific adaptations towards sustainability in Miaoxia. Although this is inconclusive in relationship to the one-



off nature of the Community Kitchen at present, a second stage of community development is presently under way in the village and a third stage which will try to test a sustainable model is in planning at present.

## **6) Conclusion: Towards a sustainable development approach**

Previously in rural contexts, action research and participatory design approaches tended to be either socio-anthropologically based, or answering specific design needs such as disaster relief provision. While scholars have proposed social design frameworks in more developed contexts, in developing locations these are generally focused on empirical or analytical studies, leaving significant gaps with the development and hypothesis testing of applied research in situ. The impacts of a better resolved framework can therefore be relevant across similar conditions in China and can eventually lead to the development models with wider applicability in other contexts. Participatory design can facilitate higher levels of sustainability in rural environments (Chambers 1994, Darabi, 2010), as it identifies and links local resources, economies, skills and practices with specific needs, forming a holistic approach.

The transdisciplinary participatory design and 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. The community kitchen, as social space, also reconnects the villagers to their tradition, land and memory. This transdisciplinary approach 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.



Fig. 16: Completed Community Kitchen (source: author)



Broadly stated, the development of an action research and participatory design framework as a social design methodology approach applicable for rural contexts can positively impact or contribute to collaborative cross-disciplinary research, design research methodology development and research testing in applications in real situations. Specifically the repositioning of participatory design as the design of socio-material assemblies that are considered within complex adaptive system frameworks has several implications. It decreases the tendency for participatory design to be understood as either design outcome generating or procedural problem solving, instead valuing the knowledge and social structures on an equal plane as the design outcomes. It more clearly opens the possibilities for collaborative frameworks in which different local and external knowledge fields can engage in complex parts of a participatory design project. It contributes better to nonlinear causalities and processes, implying that participatory design could better contribute to sustainable development and resilience models. Through the nuanced integration of the different knowledge domains and socio-material assemblages, the situating of resultant processes and contributing outcomes constitute a form of an ecology of practice, able to be reflexive, discursive and innovative across very different knowledge domains.

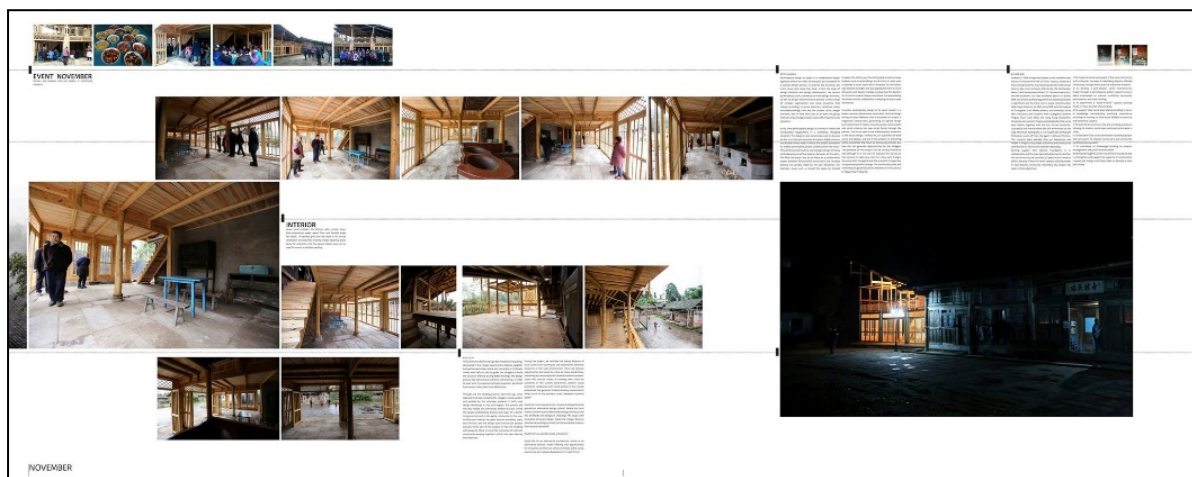


Fig. 15: Completed participatory design (source: author)

In passing we note that emerging tendencies of design to become *networked* as a mix of *material and immaterial systems* (Manzini 2011) *connected to places and people*, suggests that design schools can become socially innovative as cultural agencies developing ‘open design programs,’ ‘distributed design agencies,’ or ‘design lab networks.’ The potential of design schools exists to be a collaborative ‘social resource’ that can become an active ‘critical and creative actor’ in sustainable development (Leadbeater 2008). Utilising its networks, competence, initiating and constructing interactions with wider communities as outreach, research and social design using participatory design processes. The Community Kitchen collaboration helped to foster positive change in the village, whilst activating existing skills, self-organising initiatives and capacities in the village. Enabling 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 in active 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). Therefore for the Miaoxia Community Kitchen we can point to three main conclusions:

- ***Tangible outcomes, social enterprise and resilience***

The research benefited key stakeholders in Miaoxia village by increasing their engagement in the project from 8 persons prior to the project to over 60, increasing village cohesiveness. It also brought external interest into the village through regional and supra regional workshops including three from different HK design schools. Social enterprise initiatives also increased and diversified (self-initiated) as a result of the project and this provides better financial sustainability. Environmental (village environs) also improved under the villagers own initiatives with the construction of community gardens and other facilities. These benefits continue to be monitored / evaluated by the project. Further stages are elaborating on provision and support of social enterprises and constructions to reinforce the positive benefits as steps towards sustainable rural development.

- ***Rural sustainable development and the necessity of new models***

The context of issues of rural development in China encompass a complex set of issues as shown by the "Construction of New Socialist Countryside": aging, left behind children, resource misuse and neglect, tangible and intangible cultural loss and more. The Miaoxia research positions a possible development model directed towards sustainability (social / economic / financial). If a key hypothesis here is that this approach can facilitate positive approaches towards sustainable rural development, the future stages of this work will test the validity of this in social, environmental and economic domains as a model condition that may have validity in similar contexts.

- ***Social Design collaborative methodologies***

Collaborative practice and co-design / participatory design expertise is essential for Design Social processes. The design and implementation of designed or constructed projects as a social project requires a range of diverse stakeholders and participants, bringing different knowledge domains and value sets to each project. Local institutions, stakeholders, experts and voluntary participation are essential to this process. This work moves towards a 'communities of practice' mode engaging 'situated learning' that can involve research, teaching and service learning. The Miaoxia research work outline these modes of engagement and strengthens the potentials for knowledge transfer, such that if the recombination of different knowledge fields generates new forms of knowledge that can contribute to an ecology of knowledge, then participatory design can help structure and materialize this as outcome and process. Design in this case can be a useful tool to model or negotiate complexity, functioning as a mediator between different domains of knowledge, for instance design, social sciences, tacit, local and external knowledge.

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## **8) Key terms**

Participatory Design: is a design methodology aimed at engaging users and stakeholders in a cyclical design process

Action Research: is a methodology used by the social sciences to engage communities in direct and active research.

Sustainable Rural Development: is an approach aimed at sustainable development for rural environments.

Social Design: is a new field of design based on the integration and cross fertilisation of the design fields and the social sciences

Social Enterprise: a form of cooperative and mutually beneficial or profit sharing economic enterprise share by stakeholders

Social Innovation: the transformation of social systems and groups into new constellations relevant for today's society

Socio-material assembly: the interlinking of tangible and intangible aspects that describe complex social interactions and material cultures