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Participatory Design: Re-evaluation as a Socio-material Assembly

PETER HASDELL
School of Design, The Hong Kong Polytechnic University

This paper aims towards a critical re-evaluation of Participatory Design processes based on a completed collaborative research (2015) in rural China. The study involved two complementary disciplines; the Applied Social Sciences and Design and their corresponding research methodologies; Action Research and Participatory Design aligning the social and the physical. The resulting design and implementation of a community kitchen in rural China enabled villagers to develop social enterprises and new types of collective organizations. With Action Research providing the necessary 'software' for social organization and engagement, facilitating the development of 'hardware' or design outcomes through participatory processes. Beyond design and social outcomes, the study raised questions concerning the critical, conceptual and praxis underpinnings of Participatory Design that impact its effectiveness as a tool. Participatory Design, sometimes panacea for an objectified and corporate driven field, often remains focused on design as outcome rather than on process or the development of outcomes embedded in a social context or based on non-commercial values. Complex design processes involving multiple stakeholders in design development may also result in an over-simplified outcome or a lowest acceptable solution approach. Additionally Participatory Design understood as a purely consensual process often ignores the complex negotiations tensions and conflicts between different forms of knowledge; characterized as the 'nightmare' of Participatory Design processes (Miessen, 2010), whereas it may in fact be the tension in the process that leads to paradigm shifts and possible 'real' innovations. A viable starting point for re-evaluation of Participatory Design methodologies therefore repositions it within complex social and materialization processes; in which design outcomes become the formation of socio-material assemblies, constructed within processes that span both before and after the design stage. It is useful to contextualize this process in terms of emerging changes in social systems that are evolving the ways both the social and design processes are developing towards distributed forms of knowledge, collaborative processes and cross-disciplinary practices (Sanders and Stappers 2008). These changes are impacting the ways we understand tangible and intangible culture and the nature of artefact or object, inasmuch as design or artefact are increasingly reconfigured as a relational matrix intrinsically connected to social (and sometimes technical) contexts. In other words outcome should be considered as a design object together with its attributes and relations, or as a socio-material assembly (Latour, 1999). This highlights 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. The paper therefore explores how understanding the role of complex knowledge generation in the design process can lead to a critical repositioning of Participatory Design. Drawing on work by Bjögvinsson, Ehn and Hillgren (2102) who posit Participatory Design should move from a conventional understanding of designing "things" (objects) towards designing "Things" (socio-material assemblies). Their reconsideration of the etymological meaning of "Thing" as (public) assembly or as the gathering of properties or attributes is critical. In other words, "Thingness" is the socio-material assembly that Latour (1999) characterizes as "a collective of humans and non-humans," both relational and complex. The paper will also reference the 'design before design' and the 'design after design' issues highlighted by Bjögvinsson et.al., as an intrinsic part of this process.

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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.) If mapped onto Snowden's sense making model Cynefin (Snowden 2007, 2010), one can see possible ways that Participatory Design processes could be repositioned; not as a formulaic design process but as a part of complex adaptive processes that may contain conflicts, indeterminacies and uncertainties. The potential relevance is in seeking Participatory Design approaches aimed towards rural community development. A critical issue in China's ongoing socio-spatial transformation that sees increased rural-urban migration; patchwork suburbanization of the rural; loss of agrarian lands (Guldin 1997); development of urban villages in urban contexts; increase in left behind children; (Xuefei 2013); hollowing out of rural communities and alteration of socio-economic conditions; aging of rural populations; the rise of corporate farming, and; loss of rural sustainability (McGetrick & Jun 2009). It asks can the role of design as a social process - through a reconfigured Participatory Design - be an effective tool towards an increased sustainable development (Manzini 2011), generating an understanding of resources, capacities and capabilities as local knowledge ecologies for new sustainable development approaches; and further how might these be effective tools of social innovation?

PARTICIPATORY DESIGN AND SOCIAL DESIGN

Participatory Design focuses on design as 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 over-simplification of the social and materialization 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. This has been characterized as the 'nightmare' of Participatory Design processes, Miessen (2010) who argues that **c**omplex 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.

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 repeated to determine the participants' consensus through the design development stages. Participatory Design processes are 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, organizational 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.

Comparatively, Action Research actively engages participatory processes (Lewin 1946, 1958) to generate positive social change. Typically involving cyclical processes requiring iteration and feedback. Usually 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 draws from psychology and sociology, referencing Dewey and 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). Recent developments in Action Research put greater emphasis on social enterprise, development of new social forms and organizations and on social innovation, concordant with wider society changes. These move the conceptual focus from a reflective practice towards a projective one, but embedded in a social context.

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 whose methodologies are more design process focused (although not exclusively). Secondly Action Research is naturally more adept at social organization and network building embedded in social contexts; in contrast, most Participatory Design approaches do not have a sophisticated understanding of social organization. Action Research therefore has developed processes to facilitate social enterprise, network, support and service. 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, 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 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.

PARTICIPATORY DESIGN RECONCEPTUALIZED AS SOCIO-MATERIAL ASSEMBLIES?

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.

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 societies 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 todays context that are defining new forms of socio-design ecosystems and new practices.

FROM KNOWLEDGE TRANSFER TO COMPLEX ADAPTATION

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. The formerly discrete fields of knowledge require often complex processes of translation and negotiation for instance between the tacit knowledge of a craftsperson and the conceptual knowledge of a scholar.

Further, 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 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.)

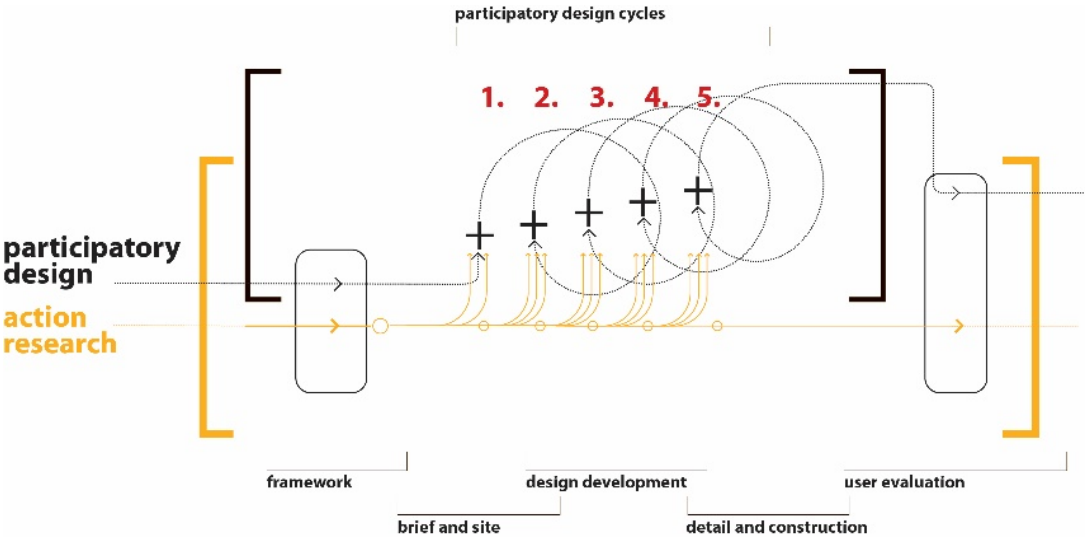

Figure 1. Action research and participatory design integration and socio-material assembly. Source: author.

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.

The Cynefin Framework developed by David Snowdon (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, analyzed and appropriate responses formed according to the type of complexity the situation has.

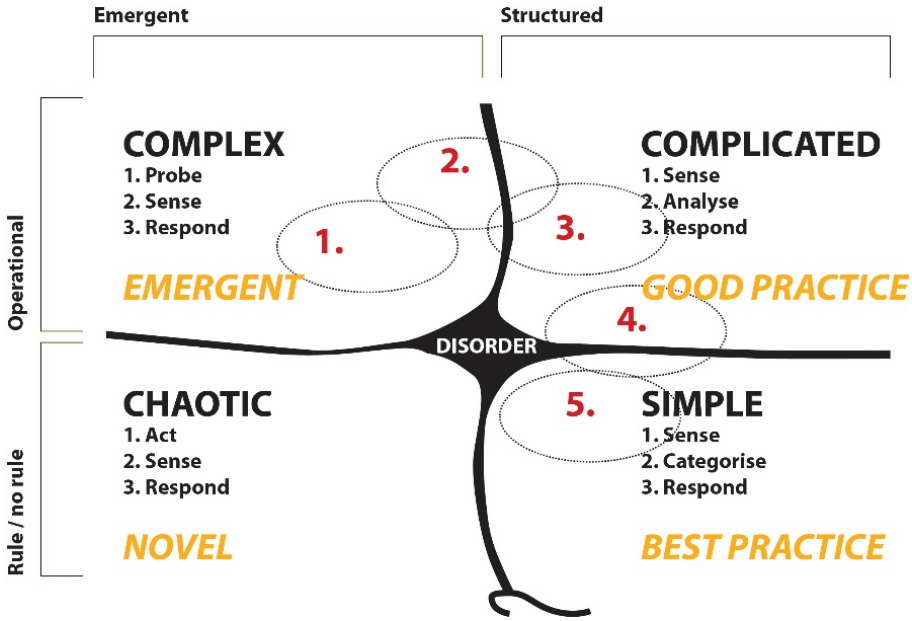

Figure 2. Cynefin framework with mapping of participatory design cycles. Source: author, after Snowden.

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.

COMMUNITY KITCHEN: MULTIVALENT COOKING

Rural community development is a critical issue in China's ongoing socio-spatial transformation. Factors affecting this include: increased rural-urban migration; patchwork suburbanization of the rural environment; loss of agrarian lands (Guldin 1997); increase of internal migration and related development of urban villages coupled with an increase in left behind children; (Friedman 2005, Lin, 2009, Xuefei 2013); hollowing out of the rural communities and alteration of their socio-economic conditions; aging of the rural population; and the rise of corporate farming. For rural sustainability, an alignment of localized socio-material conditions and resources with consideration of the habits, patterns and values of the inhabitants is necessary (Guldin 1997, McGetrick & Jun 2009). The combined Action Research and Participatory Design approaches can therefore 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. The impacts can be applicable widely.

In this context the case study research was located in Miao Xia, a rural village in Sichuan. A region affected by the Lushan earthquake in 2013 that significantly disrupted existing social, cultural, economic and physical structures. Additional factors affecting the village include: the impacts of recent changes to land ownership in rural communities; the fragmenting of farmlands by suburbanization; increase of agricultural corporations; the dilapidation and depopulation of traditional wooden villages; the aging of village population; increasing subsistence farming marginalization; and; the loss of former agricultural patterns, cultural practices and skillsets.

Figure 3. Participation process documentation. Source: author.

An existing action research project (2013-) provided social foundations and identified existing tangible assets (historic village, skills and material resources) as well as intangible assets (cultural and social structures, kinship, values and oral history). The Participatory Design processes co-initiated by the author (with Dr Ku Hok Bun) 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 center through Participatory Design enabled the development of social enterprises and new collective organizations, 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.

The completed research (2015) involved two distinct but complementary disciplines; the Applied Social Sciences and Design; and their corresponding research methodologies; Action Research and Participatory Design. Beyond the design and social outcomes, the study highlighted how the two methodologies are mutually beneficial: with Action Research providing the necessary 'software' as community engagement and social organization facilitating the development of 'hardware' or design outcomes through Participatory Design processes, aligning both social and physical manifestations.

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 design 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) is included primarily 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 HK 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.'

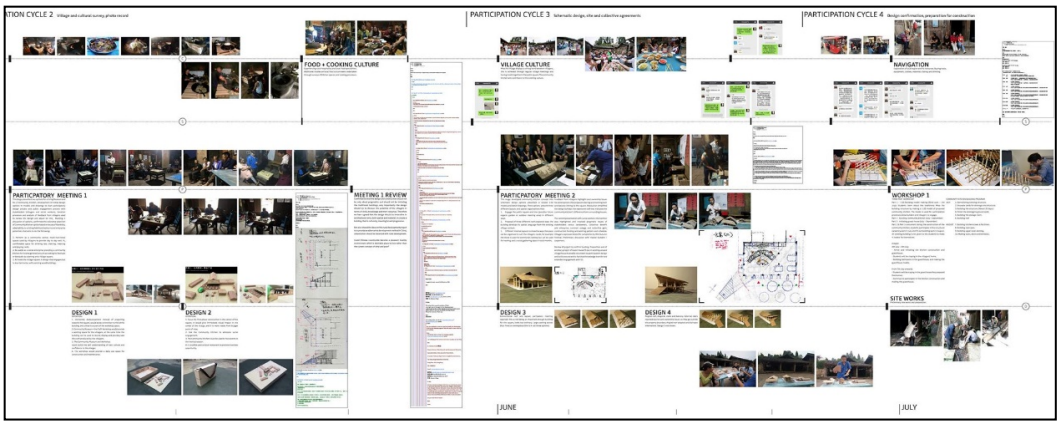

Figure 4. Participation process documentation. Source: author.

Whilst the intent is not to outline a procedural explanation of the research, its complex processes can be illustrated with reference to specific instances. An example to illustrate the complex engagement and intertwining of the social and the physical: 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.

ENGAGING IN-SITU COMPLEXITY

In practice Participatory Design processes are messy and complex and are never as clear as the conceptualized cyclical development models outline. 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, 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. As a series of linked and complicated negotiations in a constantly changing situation, it requires the participants to be flexibility or adaptability through ad-hoc or on the spot solutions to concerns and at other times the need 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 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 villagers have 70 years of experience negotiating the ever shifting centralized policies and their impacts determined by the Peoples Republic of China 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.

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.

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.

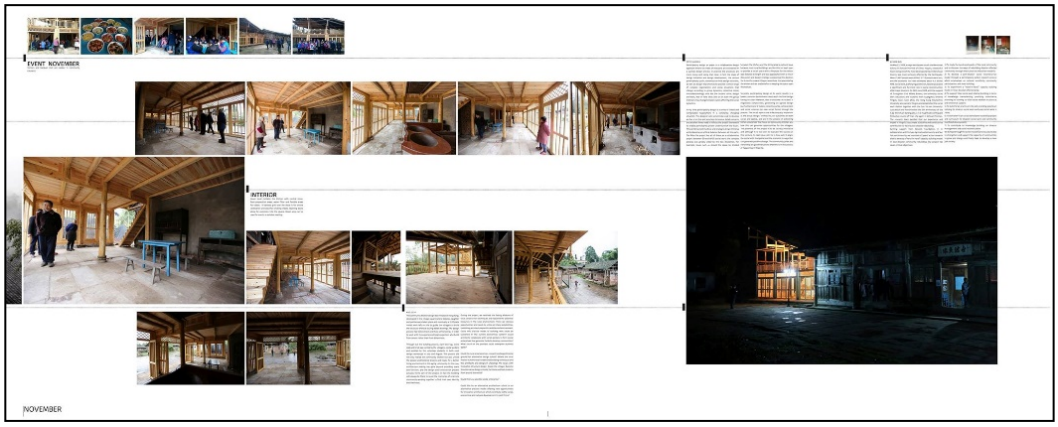

Figure 5. Completed participatory design. Source: author.

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). Utilizing its networks, competence, initiating and constructing interactions with wider communities as outreach, research and social design using participatory design processes.

Peter Hasdell Architect and urbanist, graduated from the University of Sydney and the Architectural Association, London. Previously taught at the Bartlett School UCL London, KTH Stockholm, and University of Manitoba. Core member of research institutes Chora Institute of Architecture and Urbanism and the Centre for Architecture Structures and Technology (C.A.S.T.), his research focuses on social design, liminal urbanism and interactive and responsive architectures. *peter@hasdell.com.*

NOTES

The research study Miaoxia Community Kitchen was developed as a primary collaboration with School of Design, and the Department of Applied Social Sciences, in The Hong Kong Polytechnic University. The author was the principle investigator with co-investigators Dr Ku Hok Bun (APSS) and Brian Lee (SD), and primary researcher Kuo Jze Yi. Secondary supporting collaborations with the Sichuan Agricultural University, Sun Yat Sen University and the Shangli Social Work Station during 2015 were essential. The project was funded by the Keswick Foundation (HK) and the School of Design through department research funding.

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