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A Field Study in China**

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Publication date
2017

Document Version
Final published version

Published in
International Journal of Cultural and Creative Industries

Citation (APA)

Hao, C., van Boeijen, A., Sonneveld, M., & Stappers, P. J. (2017). Generative Research Techniques Crossing Cultures: A Field Study in China. *International Journal of Cultural and Creative Industries*, 4(3), 04-21. Article 1. <http://www.ijcci.net/index.php?option=module&lang=en&task=pageinfo&id=237&index=3>

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Generative Research Techniques Crossing Cultures: A Field Study in China

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ABSTRACT

The value of understanding user needs has been recognized by industry, and user research methods have become an accepted part of industrial design practice. These techniques were originally developed and tested for Western markets, with participants from Western cultures. More recently, companies developing goods and services for the Chinese market realize that these goods have to fit the needs of Chinese users. Like the products, the techniques for involving participants in research may also need to be adjusted. Many of the current techniques make use of social interaction forms that are more common in the West than in China. In this paper, we describe our experiences with applying contextmapping, a well-documented set of generative user research techniques, critically review the techniques using cultural theories, present modifications of the techniques, and evaluate these modified techniques in the field with a commercial design context. We discuss how cultural parameters are used to help understand local social interactions. The results show that the modified techniques fitting the local culture made generative user research successful in China.

Keywords: Contextmapping, Generative techniques, User study, Cultural differences, Co-design

1. INTRODUCTION

In China, the need for human centered design is growing rapidly. Chinese consumers are becoming more critical about products that were not designed with their needs in mind (Ann, 2005). At the same time, Chinese manufacturers are shifting from 'Made in China' to 'Designed in China'. In 2015, transforming Chinese manufacturing to innovation-driven and service-oriented production became a new national strategy (Chinese Government's State Council, 2015). Designers for the Chinese market recognize that successful products are built on insights from Chinese customers and their personal, situational, and cultural contexts. Design researchers, whose job it is to discover those insights, are searching for effective tools to perform user research activities, and are especially focusing on contextual user research in the early phases of design (Zhou, Shan, Qin, & Huang, 2008).

In contextual user research, researchers study the envisaged users' lives around the proposed product or service. Over the last decade, generative research techniques have proven useful for understanding user needs (Sanders & Stappers, 2012). Such techniques have been used to build direct links with users and to bring rich insights to designers in the early phase of product development. However, most of these studies have been performed in Western cultures, for Western

markets, and involving Western participants (Sleeswijk Visser, 2009). Design researchers who applied contextmapping to engage participants from non-Western cultures have noticed that it does not always work as expected. The activities in the contextmapping process, such as bringing consumers together in sessions and have them discuss their own and each other's experiences, sometimes come into conflict with cultural norms and practices. Lee (2012) suggests that these design research methods are 'culturally bounded' which requires attention to be adapted to local situations. Van Boeijen (2015) reports on a variety of intercultural barriers, and proposes guidelines for designers to deal with cultural barriers. In a creative workshop with students, she found students from East Asia were not at ease with expressing and discussing the opinions of themselves and others. Many participants from East Asia experienced difficulties when using generative techniques, such as word-and-image collages, for the first time (Hao, van Boeijen, & Stappers, 2017).

In this paper, we deepen our understanding of how generative techniques using Western styles of thought and social interaction can be tailored to Chinese situations. Based on these insights, our goal is to develop new extensions that work better in China. We conducted the study using the following process: (1) reviewing the existing techniques through the lens of cultural theories, to identify where these techniques rely heavily

on cultural specific models of thought and interactions; (2) based on these insights, developing extensions of the techniques that are more appropriate to a Chinese situation; (3) evaluating the extensions in a case study where user insights were gathered with participants (phase 1), and shared to a product development team (phase 2). This study focuses on observing and improving phase 1, collecting user insights. We will also add our observations for phase 2, but did not control/structure that in detail.

2. GENERATIVE TECHNIQUES AND THEIR CHALLENGES

Over the last couple of decades, industries have become more human centered. They want to understand user needs and put these central in their design development of products. Beginning with observational studies and user testing of existing products, newer methods have emerged that use designerly and participatory ways of gaining user insights (Sanders & Stappers, 2012). Generative techniques have emerged with a design-led perspective and equipped with a participatory mindset within the landscape of design research (Sanders & Stappers, 2008). Such techniques position users as the 'experts of their own experience' and motivate them to share their feelings, opinions, and anecdotes surrounding a product or service. These techniques are often used for contextual user research processes to help designers learn about the contexts of people and their everyday experiences. Moreover, they actively involve multidisciplinary stakeholders in the product development process to ensure the design fits the needs of

various participants (Sanders & Stappers, 2012). Contextmapping is one proposed way of conducting such a study. We use contextmapping as the basis of this study, because it follows a process that has been well documented in academic literature (Sleeswijk Visser, Stappers, van der Lugt, & Sanders, 2005), and is used in education and design practice (van Boeijen, Daalhuizen, Zijlstra, & van der Schoor, 2013).

Contextmapping consists of a series of activities, roughly divided over two phases: (1) collecting user insights and (2) communicating user insights. During the first phase, users participate in two activities: *sensitizing* and *user session* (Figure 1). The sensitizing materials help users reflect on their current experiences and recall past experiences and express them in a free manner. These materials, such as workbooks, are delivered to the users in order to immerse them in the topic explored, usually one week before the session. Then the users join a session facilitated by a researcher, in which they carry out two or three assignments. During the *user session*, users receive different forms of generative techniques and tools (e.g. collage, model making), which they can use to express their thoughts and wishes. Users are encouraged to make artifacts that express their personal memories and feelings and to dream about the future use of a product or service. They are asked to present their reasons for these artefacts this way, and to react on each other's stories. The second phase of contextmapping focuses on the activities *analysis* and *communication & design*. All sensitizing materials, artifacts, and the quotes from users are collected



Figure 1. Standard contextmapping process (adapted from Sleeswijk Visser et al., 2005)

as information to be analyzed and used to formulate insights. The analysis approach is largely in line with Grounded Theory (Corbin & Strauss, 1990) that discovers patterns of data from the ground up, through a process of comparisons, i.e. without predefined structures. After this, researchers bring the product development (PD) team together to share insights, often in the form of a workshop, in which insights are reviewed and product ideas are generated.

The activities in the first phase (e.g. *user session*) require that participants perform a creative assignment, express personal feelings and opinions, and discuss these in a group with others. Earlier researchers that applied such techniques in non-Western cultures report that often participants felt ill at ease (Hsu, 2007; Lee & Lee, 2009; van Boeijen & Stappers, 2011; van Rijn, Bahk, Stappers, & Lee, 2006, van Boeijen, 2015). Van Rijn (2006) and van Boeijen (2015) report that Asian participants find it difficult to handle the ambiguity of the generative tools used in contextmapping. Hsu (2007) and Lee (2009) found that member-to-member interactions in group sessions were difficult to facilitate in Taiwan and South Korea. There is good cause to expect that different norms for social interactions are at play here. For example, Kwang (2001) reports that East Asians are more reserved than Westerners when it comes to expressing their views. Nisbett (2003) found that, when confronted with different opinions in a group, they prefer to keep quiet or seek a 'middle way'. This lessens the results from the techniques, which depend on participants expressing independent opinions and personal experiences. If the techniques are not aligned with the values and practices that users feel comfortable with, it is likely to hamper them in bringing out their expertise. Some authors have reported successful adaptations of the techniques, in order to better accommodate such cultural factors. Van Rijn et al. (2006) designed extensions to generative techniques that fit the specific values of South Korean social interaction. Hsu (2007) explored similarly-developed exten-

sions to fit her design research project in Taiwan, and noted the importance of harmony and *mianzi* (explained in section 5.1) in Chinese culture. Van Boeijen (2015) analyzed several studies in which designers, often student teams, adapted tools to fit local situations, and pointed to the importance of taking cultural theories into account in localizing design (research) methods.

In the second phase, effective communication is crucial in ensuring that PD teams understand the users' needs and address these in the further development of their products. Again in these workshops, cultural factors played a role: for example, if there was a sensitivity to hierarchical relation between people in the workshop, some did not contribute as actively as would be effective (Sleeswijk Visser, 2009). One can expect that this challenge is especially great in cultures where people are more sensitive to hierarchy than in a 'flat' society. But unlike the first phase, situations in non-western cultures have not been reported in the literature.

Contextmapping, as discussed above, involves social interactions between people and within a group. It is intended to produce convincing insights about these people. If the participants stay silent due to feeling uncertain or ashamed, few insights will emerge. To obtain these insights, it is important to let these social interactions run effectively, which means to support the participants in expressing their expertise, needs, and values. There is large body of research about cultures and cultural differences to help achieve that understanding and prepare for Chinese situations. In the next section we apply the insights of cultural theories to the activities mentioned in this section.

3. CULTURAL THEORIES APPLIED TO TUNE CONTEXTMAPPING ACTIVITIES

There is extensive literature on cultural diversity, which has been specifically addressed in several studies. The ways in which East Asian

people think and express themselves sometimes differ from those used by Westerners (Nisbett, 2003), and also vary within East Asia (e.g. among Chinese, Korean and Japanese), just as there are differences within Western cultures, such as between Europeans and North Americans.

One cultural model that has gained popularity in applied contexts, such as design and international training, is Hofstede's set of cultural dimensions (Hofstede, Hofstede, & Minkov, 2010). Although it has been criticized from a number of perspectives (e.g. Jones, 2007; Ailon, 2008), it has been found useful by designers in organizing their own observations and in generating questions to fine-tune design methods (van Boeijen, 2015). Van Rijn et al. (2006) have used this model to understand, explain and design extensions of generative techniques for contextmapping user sessions in South Korean. In this study, we do not use it as predictive model with numerical precision, but rather as a set of suggestions to pay attention to certain aspects of behavior.

Table 1 lists Hofstede's dimensions, and for each gives a short explanation of the dimension, and a rough indication of the values for the Netherlands (NL), Korea (KR), and China (CN) on that dimension (we simplified the numeric scores by Hofstede, Hofstede, and Minkov, 2010). It shows that the East-Asian countries KR and CN are similar on four of the dimensions. Their dimensions Power Distance (PDI) and Individualism (IDV) differ

substantially from the Dutch. For Long-term Orientation (LTO) and Indulgence (IND), there is a smaller contrast to the Dutch. When techniques which worked well for Dutch participants (as in Sleeswijk Visser's studies) but are problematic in East Asia, looking at how the techniques connect to these dimensions may help explain why there are problems, and may suggest ways to improve the situation.

These values would explain that participants in both China and Korea are reluctant to express their opinions or to tell personal stories to strangers (because of the high PDI), or react to the opinions of others (because of the low IDV). According to Hofstede et al.'s score on the dimension Uncertainty avoidance (UAI), Chinese participants might be much more tolerant to uncertain situations than Koreans (low UAI). The benefit of low UAI is that participants may be more able to accept new situations and able to take initiatives in adapting their approaches to generative assignments. Finally, on Masculinity (MAS), the Dutch and Korean scores are similar, but both very different from the Chinese. With regards to this dimension we could expect that Chinese participants value achievements, and also that women are less free in expressing opinions or taking credit than men. In both Chinese and South Korean cultures, participants may be more aware of contextual factors and personal relations than Dutch participants (because of high LTO), which would be helpful in finding context-based insights.

Table 1. The six cultural dimensions: Comparisons among the Netherlands (NL), Korea (KR), and China (CN)

Cultural Dimensions	Definitions	NL	KR	CN
Power Distance (PDI)	Describes the acceptance level of unequal power distribution by less powerful people in a country	-	+	+
Individualism (IDV)	Indicates the interdependence of people ("I" or "we")	+	--	--
Long-term orientation (LTO)	Shows how people maintain links with its own historic point of view or cope with the changes of the present and future	+	++	++
Indulgence (IND)	Explains the degree to which people try to control their desires and impulses	+	-	-
Masculinity (MAS)	Illustrates people's motivations in terms of achieving the best results (masculine) or enjoying what they do (feminine)	--	-	+
Uncertainty avoidance (UAI)	Expresses the extent to which people feel anxious with uncertainty	-	++	-

Note: The numeric scores by Hofstede, Hofstede and Minkov (2010) were simplified: - relatively low; -- very low; + relatively high; ++ very high

However, the model by Hofstede et al. (2010) does not step into a local culture specifically. To further deepen our understanding of the Chinese situation and local social interaction forms, the work of Fan (2000) appears to give more guidance on tuning the type of activities performed in contextmapping. Fan's classification of Chinese cultural values distinguishes a total of 71 values, grouped into eight categories based on an original survey conducted by the Chinese Culture Connection (1987). The 8 categories are *National Traits*, *Interpersonal Relations*, *Family Orientation*, *Work attitude*, *Business Philosophy*, *Personal Traits*, *Time Orientation*, and *Relationship with Nature*. In section 5, we apply the insights of this theory to the activities in contextmapping, to see what guidance these insights bring to adjusting tools and techniques better to the Chinese forms of social interaction.

4. METHOD

This study followed the three main steps: (1) identify the Chinese specific cultural parameters, (2) design the extended tools of contextmapping, and (3) evaluate the extended tools in the field. This corresponds to the following research questions.

- (1) What local cultural parameters apply to contextmapping in China?
- (2) How can we use the identified Chinese cultural parameters to design extensions for contextmapping?
- (3) a. What cultural specific behaviors and interactions with contextmapping extensions do participants exhibit (seen through the lens of the identified cultural parameters)?
b. What are the benefits, barriers, and opportunities of applying the extensions designed for contextmapping in China?

4.1 Identifying Chinese Cultural Parameters

Hofstede's theory was used as a lens to foresee and prepare for the challenges of applying contextmapping in a different cultural context. We further use Fan's theory and Nisbett's observation to deepen our understanding of the specific

Chinese situation. We identified Chinese cultural values based on the following concerns: (1) which value(s) explain a social occasion (e.g. user sessions), that is less formal yet organized? (2) which of the values can be associated with contextmapping situations? (3) the number of values selected should be manageable, so that they can effectively give guidance to design extensions.

4.2 Designing Extensions for Contextmapping

The identified cultural parameters served as guidance to design the extension tools for contextmapping. They were used to anticipate what interactions Chinese participants could appreciate and what aspects should be avoided. In designing these extended tools, we also incorporated local cultural elements, such as karaoke, local games, that are more familiar in Chinese contexts. The first author generated design ideas based on the identified cultural parameters. Together with the co-authors, promising ones were selected and further detailed. The evaluation of the design ideas was based on literature and our previous experience.

4.3 Evaluating Extensions in the Field

We applied the new extensions in a case study where contextmapping was used for a commercial client in China. In total, the field study spanned a period of 6 weeks in Guangzhou, China. In the case study, extensions were used for Chinese participants during *sensitizing* and *user session* (phase 1 in Figure 1). User insights were communicated to the product development (PD) team in a *co-creation workshop* (phase 2 in Figure 1), from which the extensions were excluded.

(1) Topic of the Case Study

The commercial goal was to help the manufacturer to identify opportunities for innovative cooking products for the Chinese post 1980s generation. Thus, the subject of the contextmapping studies was 'Chinese future cooking experience 2020', according to the commercial theme of the PD team.

(2) Participants

The design company recruited users who were participants for sensitizing and user sessions (in

phase 1). They were fourteen post 1980s and two post 1990s high-educated urban dwellers who originally came from different Chinese cities and currently work in Guangzhou. To ensure an equal communication during the session, the participants had similar financial situations.

In phase 2, a PD team participated in the co-creation workshop. The team included three designers from a local design company, and three clients from a mid-size local manufacturer of electric cooking appliances.

(3) Grouping participants

Three groups of participants took part in the *sensitizing* and *user sessions*: one group of 3 participants to pilot (group 1) and fine-tune the whole procedure (as is part of the whole methodology, Sleeswijk Visser, 2005); and two groups of 6-7 participants for the actual data sessions (group 2 and group 3). Participants in the pilot (group 1) knew each other. Those in the group 2 were less acquainted, i.e. two of the participants

did not know the other group members, and the last group members were strangers. In this way we could observe how the extensions worked differently between in-group and out-group members, in another word, how they supported creating sense of *trustworthiness* (elaborated in section 5.1).

In each group, the introduction of the extensions and the method of facilitation were adjusted based on the reflection of the previous group. The set-up and extensions for each group are illustrated in Figure 2.

(4) General Procedure of the Case Study

In the *sensitizing* stage the sensitizing materials were delivered to most participants in person (3 by post because of the long distance). In addition, all participants received an introduction from the facilitator either face to face or by telephone. Before the sessions, the participants of group 2 and 3 had seven and group 1 had three days for sensitizing (see Figure 2).

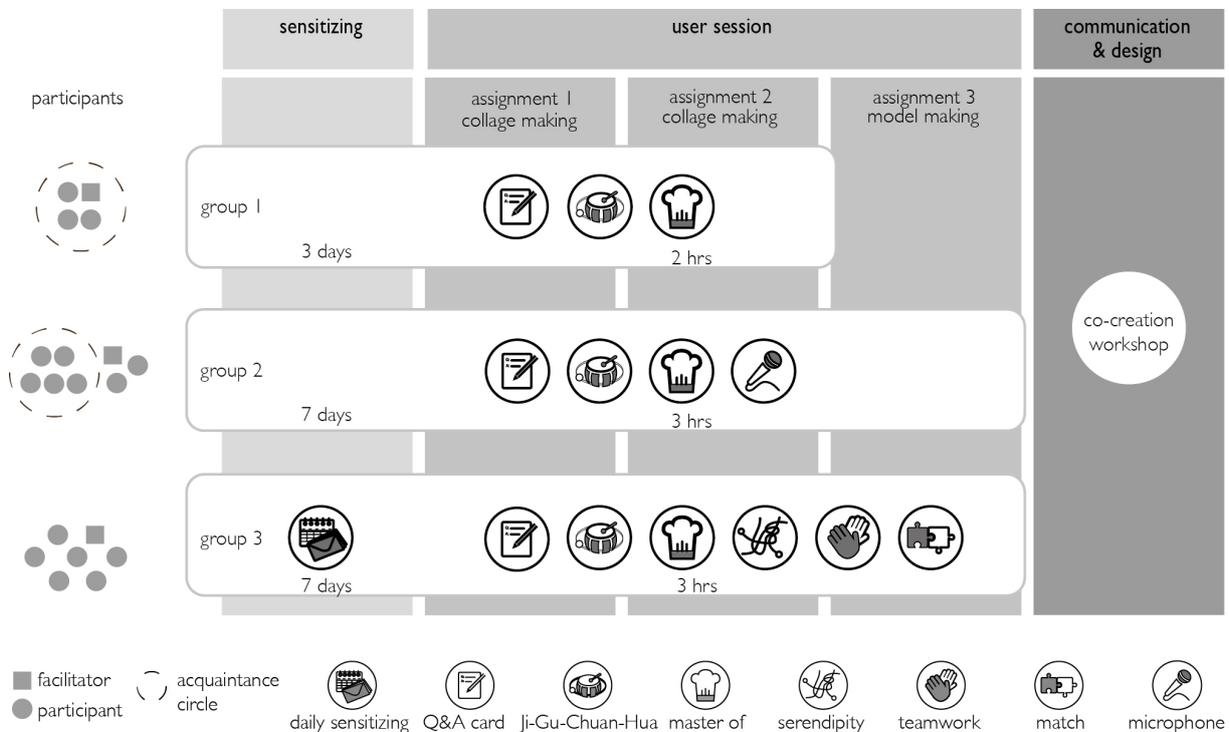


Figure 2. Overview of case study set up and the application of the extensions

In the *user session* stage, the sessions were facilitated in Mandarin, the common tongue in China. The generative tasks of each session consisted of the same contents of assignments including two collage exercises and a model making exercise. We localized contents of these tasks by using local images and words, whereas the formats and process of those were the same as introduced by Sleeswijk Visser et al. (2005). The sessions of group 2 and 3 lasted approximately 3 hours where involved three generative assignments including collage and model making. Three sessions were conducted in a design agency where we tried to make the room comfortable and creative to help the participants feel relaxed.

In the *communication & design* stage, the project ended with a co-creation workshop with the PD team. During the workshop user research findings, conveyed by a set of personas (see Pruitt and Adlin 2006), were communicated to the PD team. They were invited to generate design ideas together.

(5) Method of Analysis

All the sensitizing materials, artifacts, and assignment sheets made during the session were documented in digital format. The sessions were recorded with an audio recorder and a video camera. In this study, data analysis took place at two levels:

(1) within the contextmapping study to obtain user insights (questions of the commercial client), and (2) evaluating how the tools are used (the research questions listed at the start of section 4).

For both levels, all the qualitative data (e.g. quotes, actions, anecdotes, notes) were interpreted, categorized, and analyzed in an analysis-on-the-wall method (Sanders & Stappers, 2012). For the level (1), only sessions of group 2 and 3 were transcribed in Chinese. Selected key quotes were translated in English to involve a non-Mandarin speaking designer from the product design company. For the level (2), in addition to the recordings and transcriptions of the sessions, the first author took notes of what was observed and heard in the field, by keeping a research diary along the process. The data analysis was conducted by the first author of this paper, and reviewed by another Chinese designer. Figure 3 shows examples of the interpretations and how insights related to cultural parameters were formulated.

5. RESULTS

In this section, we first describe the findings about identified cultural parameters based on literature. Next to that, the designed extensions for contextmapping will be introduced. Last, the

	What people say	What people do	Interpretation	Related parameter
Example 1	No quote	Participants often gave shy smiles after sharing their own opinions.	A habit to downplay one's thought in case other people would not agree with him/her	Humility
Example 2	<i>'I haven't cooked for a long time and I don't know much about cooking.'</i>	The participant shared many of experiences and stories of cooking during the session.	When participants felt uncertain about the situation, context, and/or other people, they tended to be modest in expressing their opinions	Humility
Example 3	No quote	The participants used sticker sheets to hide their assignment sheets.	They did not want to lose face in front of others by presenting something that was not 'right' or did not meet the group or the facilitator's expectation	Mianzi

Figure 3. Examples of cultural data analysis for the academic purpose

results of how they were evaluated in the field will be reported.

5.1 Four Identified Cultural Parameters

From Fan's classification, the category of *Interpersonal Relations* was most relevant with regards to contextmapping, because it links the best to the barriers, such as dealing with social interactions, reported in the earlier studies (see section 2). The other seven categories, for example, *National Traits* or *Business Philosophy* were not suitable to explain the less formal oc-

casions that contextmapping deals with. Similar to the identification of the values within the *Interpersonal Relations* (in total 13 Chinese values), a value such as *Tolerance of Others* could not be associated with contextmapping situations. As a result, four values *Harmony*, *Humility*, *Mianzi*, and *Trustworthiness*, were identified as relevant cultural parameters for contextmapping. In Table 2, we introduce them and discuss with the support of other cultural theories, e.g. Nisbett's (2003) how each value may influence the contextmapping activities.

Table 2. Four identified cultural parameters and possible relations to contextmapping activities

Cultural parameter	Description	Relation to contextmapping
Harmony	The importance of maintaining harmonious relationships dates back to ancient China, to the time of Confucius (5 th Century BC). One of his famous sayings was: 'In carrying our rites, it is harmony that is prized.' In a highly collectivist society like China, where people have intense and continuous social contact, the maintenance of harmony with one's social environment becomes a key virtue (Nisbett, 2003). Confrontations such as debates are therefore discouraged.	The contextmapping process encourages people to speak their minds in a free manner. Thus it is necessary to help Chinese participants feel at ease to express their personal opinions in a user session.
Humility	<i>Humility</i> as one of the roots of the Chinese culture is highly embodied in the Chinese way of expression (Gao, 1998). For instance, when a Chinese person receives a compliment, (s)he would automatically give a humble expression of denial in return: 'na li, na li' ² which means 'not really'. This also influences the way that Chinese people view the world, believing that one 'cannot understand the part without understanding the whole' (Nisbett, 2003, p.15).	Chinese participants may act in a modest and restrained fashion in contextmapping user session, especially when they do not have a holistic view in advance.
<i>Mianzi</i>	<i>Mianzi</i> (face) is a concept generated in the collectivist society (Ho, 1976; Hu, 1944). In Chinese culture it basically describes the proper relationship of a person's social environment (Hofstede, Hofstede, & Minkov, 2010). Lin Yutang (1935), one of the most influential Chinese authors describes <i>mianzi</i> as 'the most delicate standard by which Chinese social intercourse is regulated'. Preventing others from losing face and being aware of giving face to others are crucial in maintaining a good relationship in China. Chinese speak of 'giving face' in the sense of honor, which basically means to show respect to others, especially in public.	The participants may not like to share embarrassing experiences that would make them lose face. Furthermore, participants may pretend to agree with other people's opinions in order to help them to preserve face, or to 'give' face. Therefore, to avoid collecting insufficient information due to participant's face concerns, the facilitator is challenged to take care of participants' <i>mianzi</i> concerns in contextmapping sessions.
Trustworthiness	Chinese people value social relationships. Nisbett (2003) pointed out that East Asians tend to feel the members of their in-group are more approachable and reliable than those of the out-groups. They will need to ensure that they can trust the intentions of others. Building on a relationship of trust is expected to be important for facilitating social activities in China.	Chinese participants may feel confronted when attending a session with out-group members. Besides, the facilitator should act in a trustworthy way him/herself.

² 哪里, 哪里, with literal meaning of 'where, where', implies the meaning of 'it is nothing', an expression of politeness and humility in Chinese context for instances where one receives compliment from others

These parameters point out the reasons why Chinese participants may feel awkward when asked to 'brag' about their expertise, express opinions or discuss these with others, especially strangers. Based on the findings above, we set out new design to facilitate *harmony*, be sensitive to *humility*, protect people's *mianzi* and create a sense of *trustworthiness*.

5.2 The Results of Design: Eight Extensions to Contextmapping

Eight extensions were created in order to facilitate proper social interactions during contextmapping sessions in China. Table 3 presents each of these extensions and its related cultural parameter.

Table 3. Eight extensions and their relevance to the four cultural parameters

Cultural Parameter	Extension	Description
Harmony	<i>Ji-gu-chuan-hua</i> supporting the first presentation 	<i>Ji-gu-chuan-hua</i> ³ was made based on a popular Chinese game. It is comparable to the Western game <i>Pass the parcel</i> . The idea is to pass an artificial flower among a group of people until a drumbeat randomly ends. The one getting the flower is expected to do a required task. Chinese people may not used to initial utterances in a group conversation with strangers. Directly assigning a participant to be the first presenter can break the social harmony between participants or between participant and facilitator. This tool was expected to motivate the first presenter, yet not to break the harmonious vibe in the group.
Humility	<i>Serendipity</i> giving an excuse for assigning people to work in pairs 	<i>Serendipity</i> was used to separate the participants into sub-groups in a harmonious way. It consists of several pieces of intertwined strings. Each participant is asked to pick one end of a piece of string. Two participants who pick the same piece of string are formed into a group. Since Chinese people may tend to keep a distance with the out-group members (Nisbett, 2003). Pre-grouping by the facilitator might break the group harmony. <i>Serendipity</i> was expected to help to break the ice between participants but not break the harmony.
	<i>Master of</i> providing sense of authority 	<i>Master of</i> was made as a role-play tool to encourage the presenter act as a master of a specific experience. Since Chinese participants are likely to keep humble manners in conversations, supporting their utterance needs to facilitate their sense of authority. In this study, the target groups were 'cooking lovers', thus the <i>Master of</i> tool was a chef hat. The participant was given a chef hat when presenting and encouraged to act as if he/she was the master of cooking. It was expected not only to prevent the presenter from being too humble, but also to help other participants listen to his/her story.
	<i>Microphone</i> creating a professional context 	The <i>microphone</i> tool was developed to create a professional context, because a microphone is associated with paying attention to a specific person. For example, the extensive popularity of karaoke in China (X. Zhou, 2008) provides an occasion where a microphone can free one's voice and put one into the role of an expert. The tool is given to a participant in a humble gesture when he/she needs to present ideas. This interaction is considered as giving the participants a subtle message 'you are the expert of your experiences and now the stage is yours.'

³ 擊鼓傳花 which can be literally translated into 'drumming, passing flower'

Table 3. Eight extensions and their relevance to the four cultural parameters (*continued*)

Cultural Parameter	Extension	Description
	Teamwork ensuring a holistic view 	<i>Teamwork</i> was used for working as a team. It was expected to help the participants look at the task from a comprehensive perspective. Chinese people tend to view the world in a holistic way (Nisbett, 2003). The participants can be restricted to express thoughts when a holistic view cannot be ensured. They may keep a humble manner, even if they are knowledgeable. Moreover, China has a highly collectivist culture and therefore completing the assignment within a group was designed.
<i>Mianzi</i>	Q&A cards giving a way to ask questions 	<i>Q&A cards</i> were placed next to each participant's assignment sheet, in order to prevent him/her from losing face in front of others. The participants were informed that they should use the card to write down any questions they may feel embarrassed to ask publicly during the session.
	Match to trigger ideas 	<i>Match</i> was an activity in which the session assignments needed to be completed as a team. Each team was encouraged to share as many design ideas to be able to win a prize (the figure on the left shows the example of a prize for the winner of a <i>match</i>). Given the success and achievement driven culture in China, we expected Chinese participants to be more proactive when in a competitive mood. It was expected that the competitive situation would make the participants less worried about losing face when generating design ideas.
<i>Trustworthiness</i>	Daily Sensitizing to begin a good relationship 	<i>Daily Sensitizing</i> consisted of daily mobile messages and 5 envelopes filled with sensitizing assignments. The researcher maintained daily contact with each of the participants starting from the sensitizing period. A daily greeting was sent to each participant, reminding him or her to open an envelope. In return, the participants were expected to report back about their daily assignments by sending a photo every day. It was expected that the daily communication would help to enhance participants' sense of trustworthiness before the session day.

5.3 The Results of the Field Evaluation

In this sub-section, we first describe findings about interactions with and between the participants in the *sensitizing* and *user session* (phase 1), where four cultural parameters were used. Meanwhile, the observations of the extensions will be explained. Then the observations of the co-creation workshop with the PD team (phase 2) will be reported.

5.3.1 Interactions with and between participants

Findings with regard to the extensions and the four parameters and additional findings from observation are shared below.

(1) Extensions and interactions regarding *harmony*

During the sessions, the extensions *ji-gu-chuan-hua* and *serendipity* were used to find volunteers to speak about ideas and divide participants into

groups. None of the participants seemed to be offended or to react with a perfunctory answer. Instead, they seemed to be familiar with such forms of interaction and enjoyed playing with the extensions. In fact, these extensions even brought an entertainment vibe to the session. However, the majority of the participants agreed with others' opinions, or only shared their thoughts when similar ideas were mentioned in the group discussion. When asked for different opinions, they largely stayed quiet. In addition, one participant in the third session said she was afraid of not being able to give the 'correct' answers that the researcher might want.

(2) Extensions and interactions regarding *humility*

Two extensions, *master of* and *microphone*, performed well in valuing the participants and giving them confidence. When putting the chef's hat on the participant's head, the facilitator emphasized, 'Let's invite the Chef! Now please confidently tell us your stories.' All the participants seemed to be happy to put on the chef hat and shared their stories with few hesitations (Figure 4). Similar reactions were observed when using the *microphone*. In addition, when a participant used these extensions for presentation, most of the other participants paid attention to his/her stories.

The extension *teamwork* grouped two participants into one small team so that the two participants were given the opportunity to share their opinions before sharing them with the entire team. Compared with work as individuals, when the participants worked in teams, no questions or complaints about the assignment were mentioned to the facilitator. This made the process of group 3 smoother. The drawback was that fewer independent opinions were shared than in group 2. Moreover, less attention was paid to other teams once two participants were grouped as one.

In addition, a number of humble expressions were spotted during the studies. For instance, cooking frequently at home was a key criterion for recruitment. But when receiving the sensitizing package some of the participants tried to explain that they did not often cook, yet during the session they readily talked about their cooking experiences. After the session, we were informed that this was because the participants were not aware of the cooking skill of others (missing a holistic view). Thus they were far too modest before the session. Moreover, participants were often observed giving a shy smile after sharing their own opinions. This was recognized as a mannerism intended to downplay one's contribution.



Figure 4. A participant wears *master of* when presenting his experience

(3) Extensions and interactions regarding *mianzi*
Match extension was applied in group 3. It was announced that the team which came up with the most product ideas would get a prize. They became competitive. While one team was presenting, other teams kept working on their own assignment. Most of the participants came up with more ideas than group 2, but they also talked less about their experience. The participants in the two sessions did not use the *Q&A cards*.

Most of the participants hesitated to show their own workbooks or even just to bring it to the stage. Moreover, some participants in the first exercises used blank paper to hide their assignment sheets, indicating they did not want to present something that was not 'right' or did not meet the group's or the facilitator's expectations. Such *mianzi* related behaviors were not as commonly noticed as the ones related to the other cultural parameters.

(4) Extensions and interactions regarding *trustworthiness*

The extension *daily sensitizing* was only applied in group 3. All the participants let us know their progress daily and two participants asked us questions when a task was not clear enough. Moreover, two days before the session, we built a group chat for the participants and researcher via local social media for getting to know each other. During the session, they got at least the first in-group feeling, because the participants had seen and even talked to the researcher before via mobile phone. Thus, group 3 had a smoother start than groups 1 and 2.

Before the session started, all the participants were quiet. After the introduction and first assignment were done, the participants started talking to each other spontaneously. The participants' social status had shifted gradually from out-group to in-group. This was primarily seen among the participants who did not know each other. One case from another perspective explained how the in-group and out-group situations existed in the session. One participant,

who knew the other four participants, was late for almost one hour on the session day in group 2. When she arrived, the session had started and the trust had been built in the group of the other six participants. It became hard for her to be involved with the group even though she knew some of the participants in advance. Consequently, losing the trust of other group members negatively influenced her performance. She dropped out in the last assignment.

(5) Other observations

Next to the observations discussed previously, a few other situations were observed in the studies. Firstly, we noticed different sensitizing workbook results between male and female participants. Most female participants (10 out of 12) carefully completed their workbooks by filing in all the tasks. In contrast, all the male participants (4 out of 4) got through the sensitizing carelessly by handing in half-empty workbooks. Moreover, details in the behavior of male participants sometimes were different from female. For example during the session all the male participants tended to walk to the 'stage' when presenting their work.

Moreover, all of the participants said that they preferred a digital format such as a mobile app to a paper-based workbook. In this way they can easily complete tasks wherever they are (e.g. in public transport). This is consistent with the prevalent use of smartphones in China reported by BBC NEWS (2015).

Last, instead of using the visual elements provided for expression, more than half of the participants started the collage assignment in an 'exam style' by filling in answers. They immediately started writing when receiving the assignment sheets (Figure 5 left). Similarly, 14 out of 16 participants wrote only text in their workbooks. This also occurred in the brainstorm sessions with the PD team (Figure 5, right side).



Figure 5. Session assignment sheets (left), brainstorming sheets from the workshop (right)

5.3.2 Interaction with and between product development team

The first author shared user insights (from phase 1) with the PD team (three designers and three clients) in a co-creation workshop (phase 2), where a brainstorming session was facilitated to generate new product/service ideas.

Considerable power distance was observed in the co-design workshop. The manager, who has the highest position in the client team, tended to dominate the discussion and turned the workshop into a Q&A session instead of a co-creation process. It happened naturally because the rest of the attendants from the client team were expecting their manager to give his opinion first instead of expressing aloud their own thoughts. Therefore, they either took notes or agreed and went along with everything that had been discussed. Meanwhile, the designers from the local design company often catered to what the client leader saying. Consequently, all PD members in the session played their own roles in the different hierarchical levels, meaning that discussion points could not be directly shared and argued. The communication in the co-creation process became less effective.

During the workshop the members of the PD team tended to skip analyzing and questioning

the deeper insights behind findings, but went directly to solutions. For instance, compared to quotes and images, the designers found the most useful contents of the persona were the ‘pain points’ and ‘ideal features’, which could directly lead to design solutions. These results-oriented behaviors are in line with Hofstede et al.’s (2010) suggestion of a masculine culture in China.

Apart from that, the clients considered a persona as a single person and kept projecting stereotypical opinions on each persona. For example, a persona represented a post 1980s Chinese men who dreamed of being able to cook outdoors. Two post 60’s clients pointed to it and said ‘this guy will never go outdoors once he gets a child, just like us’. In another case, one designer kept ridiculing the product ideas generated by the participants. According to him, the participants’ ideas were superficial and would make little contribution to the product development.

6. DISCUSSION

A primary consideration in contextmapping *user session* is empowering equal expressions among participants, which depends on building-up and maintaining good relations. In general, the new extensions worked well to support that. The four cultural parameters related to interpersonal rela-

tions were considered influential on this process, and could be identified in the case study.

First, the participants' intention to maintain harmonious relationships came to our notice. For instance, a participant received applause after his presentation at the beginning of the session and this applause ritual lasted through the whole session. This observation showed that the participants tended to keep harmonious relationships by treating everyone else the same. The extensions *ji-gu-chuan-hua* and *serendipity* helped avoid breaking harmonious relationships among the participants, as well as with the facilitator.

Next to that, *humility*, often embedded in humble behaviors, was found from all the participants by nature, and during the sensitizing period to the sessions. When the Chinese participants felt uncertain about the situation, context and/or other people, they were observed as being careful in expressing their opinions. In addition, a participant missing a holistic view was found to be influential in humble expression. We noticed that the extensions *microphone* and *teamwork* worked well. Since hearing others' thoughts provided the participants with a better holistic view of the situation, they were able to feel at ease when reacting to it.

However, both maintaining harmony and being humble also generated several side effects that could not be avoided by the extensions. For instance, participants agreed to each other's options, in order not to break the harmonious atmosphere of the talk. Working in a group hindered giving individual opinions.

Furthermore, we noticed that *mianzi* related observations were not as notable as the observations related to the other three parameters. This could be that the analogous social backgrounds between the participants and with the facilitator helped to minimize concerns about 'face', and that the extension *teamwork* that we designed

supported participants to react freely. In a competitive situation, the participants seemed to care less about sharing some 'dull' ideas. In other words, they were less concerned about losing face in front of others. The *Q&A cards* were not used by the participants. Thus, the effect of this extension could not be observed.

Similar to maintaining a harmonious relationship, building up trust was not only an issue among participants, but also between the participants and researchers. In fact, the trust building started from the delivery of sensitizing materials: both the extension *daily sensitizing* and delivering sensitizing materials in person contributed to this. Generally speaking, the atmosphere of group 2 was better than that of group 3, perhaps because most of the participants in group 2 were acquainted with each other. We also noticed that the outcomes of group 2 were richer than those of group 3. The *trustworthiness* among in-group members helped them to feel more at ease when expressing themselves.

The other observations described above, (e.g. the different preferences between female and male participants regarding to the sensitizing workbook, etc.), could not be related to the four cultural parameters. An example was that the participants seemed to be more at ease with writing instead of drawing or using visual elements for the generative assignments. This observation could not be linked to the parameters, but might have to do with the nature of Chinese language, which is contextual and also an art form (Lindqvist & Tate, 2008). Chinese participants may be able to better express themselves explicitly by writing. Another reason could be that a blank collage sheet with linear questions was reminiscent of a typical Chinese exam paper at school. Such observation is not related to the local cultural values, but suggests other aspects (e.g. creative expression) to be considered for the developments of new extensions.

During the co-creation workshop (*communication & design* in phase 2), the relationships between the PD members were formal, as usual in a working situation. Thus, there were fewer opportunities to observe interactions related to the four cultural parameters. The PD team mentioned that the user insights were impressive and inspiring. Yet many of them found it unfamiliar and needed more support in understanding and using the personas and other generative materials. The local PD team has preferred ways of working and communicating, and were not yet be used to this form of communication. Their earlier experience with user research was mainly about assessment of products, because participation and co-creation were new. Similarly in the West, most companies started using contextmapping primarily for user testing, and not for generative purposes. We therefore suggest future studies and developments of extensions focus on the effectiveness of contextmapping in this stage of the process (*communicating user insights* in phase 2, Figure 1).

To contribute to the previous endeavors of applying generative techniques in Asia (Hsu, 2007; Lee & Lee, 2009; van Rijn et al., 2006), this study has advanced the state of art by applying Fan's theory for tuning contextmapping. Based on Fan, four cultural parameters were identified specifically for Chinese situations. Another added value was that this study included firsthand experience of involving a local PD team in contextmapping (phase 2). This was not reported in previous studies. We hope that the results of the study offer insights for design researchers who would like to conduct contextmapping study in China.

7. CONCLUSION

This study reports on the application of generative techniques crossing cultures by theoretical reviews and an empirical field study in China. Contextmapping as one such technique was tuned to fit Chinese contexts. Our findings from this

study suggest that to conduct generative user research in Chinese contexts require the ability to deal with local social interactions by (1) facilitating *harmony*; (2) sensitivity to *humility* to achieve greater understanding; (3) taking *mianzi* into consideration so that participants feel empowered; and (4) developing a sense of *trustworthiness* between the participants and with the facilitator.

With the extensions of generative techniques, gathering user insights in China was successful in terms of engaging with the local culture. However, the barrier between sharing individual opinions and maintaining harmonious relationships still must be overcome. For example, the participants preferred to write out rather than to draw their ideas, which revealed room for improving the form of the extensions. The presented extensions in this study are examples of how contextmapping can be tailored to a Chinese situation. Development of these techniques is ongoing, and we recommend that researchers create new extensions to expand the repertoire.

Local product development teams have shown interest in using generative techniques in their work, but were found to be unfamiliar with the use of formats for communicating user insights. From this study, we found opportunities to develop extensions to facilitate *communication & design*. In future studies we will focus explicitly on this part of the process.

Our findings shine a light on cultural awareness during the contextmapping process. We believe the experiences harvested from this study provide a basis for further research on this topic, and offer considerable input to develop generative research techniques on the whole.

ACKNOWLEDGMENT

We would like to thank all the participants who took part in this research and Jiayi Zhao who

contributed to the data analysis. Further, we give our special thanks to China Scholarship Council grand number 201407720019 and Orange Creatives who made this research possible.

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