Designers' Articulation and Activation of Instrumental Design Judgments in Cross-Cultural User Research

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Abstract: Cross-cultural design practices have begun to rise in prominence, but these practices have infrequently intersected with common user-centered design practices that value the participation and lived experience of users. We identified the ways in which the design team referred to co-creation workshop participants during the design and debrief of the workshop, focusing on how these references invoked or implicated the design team's understanding of Chinese culture. We identified referents to the participants, using occurrence of third-person plural pronouns to locate projection of and reflection on participant interaction. In parallel, we performed a thematic analysis of design and debrief activities to document the team's articulation and activation of instrumental judgments relating to culture.

The team's instrumental judgments shifted substantially across the design and debrief session, moving from totalizing cultural references in the design phase to frequent translator-mediated interactions in the debrief phase. Translators "nuanced" the cultural meanings being explored by the design team, while team members attempted to engage with cultural concerns by "making familiar" these concerns within the context of their own culture. Implications for considering culture as a part of standard user research methods and paradigms are considered, along with practical considerations for foregrounding cultural assumptions in design activity.

Keywords: instrumental judgment, cross-cultural design, culture, co-creation

1. Introduction

Methods that engage potential users in the design process are numerous (e.g., Goodman, Kuniavsky, & Moed, 2012; Martin & Hanington, 2012; Olson & Kellogg, 2014), but it is rare for these methods to articulate the means by which a designer or design team might meaningfully engage with users who draw from different cultural backgrounds. Design processes are almost inherently power laden (Irani, Vertesi, Dourish, Philip, & Grinter, 2010; Nelson & Stolterman, 2012), driven primarily by the designer with the end goal of bringing about intentional change. Several dominant user-centered approaches, such as participatory design or co-design, are intended to equalize power and welcome users into the design process as co-designers. These approaches characterize a push towards egalitarianism on a philosophical level, even while pragmatic concerns about the translational and technical role of the designer—along with the

power that these roles assume—can be easily neglected or deemphasized (Carr-Chellman & Savoy, 2004; Hakken & Maté, 2014; Nielsen, Bødker, & Vatrapu, 2010).

As design for global use becomes increasingly common, there has been a concomitant rise in design principles and practices that are intended to highlight and manage cultural considerations across the project lifecycle (e.g., Barber & Badre, 1998; Bell, Blythe, & Sengers, 2005). Cross-cultural methods exist in parallel with other models of user-centered design (UCD), but rarely directly intersect. Many of the primary examples of poor cross-cultural design can also be seen as examples of failed user-centered design—where Western design imperatives or assumptions often trump cultural realities in a local, non-Western context.

In this analysis of the DTRS11 dataset (Christensen & Abildgaard, 2016), we document how judgments are invoked and supported in design activity, contextualizing these judgments within cultural assumptions of the design team as they planned a co-creation workshop with Chinese consumers. Cross-cultural design practices have begun to rise in prominence, but these practices infrequently intersect with common design methods that value user participation. While design judgments necessarily take on a cultural character from multiple stakeholder perspectives, designers' intentional interaction with design methods have not consistently addressed this complexity. While culturally-centric approaches to design activity do exist, these methods are often distanced from common UCD approaches that appear on the surface to equally value the user and her lived experience.

2. Theoretical Framework

2.1 Design Judgment

When practitioners engage in design activity, they continuously make design judgments about their understanding of the design situation and what steps they should take next (Nelson & Stolterman, 2012). These judgments are frequently invoked as tacit knowledge (i.e., Polanyi, 1966; Vickers, 1984), and as such are often inaccessible even to the designer herself, yet form the backbone of design expertise (Lawson & Dorst, 2009) and are a recognizable output of "practical knowledge" or *phronesis* (Dunne, 1997, 2005; Stolterman, 2008). We build upon on a theoretical typology of design judgments created by Nelson and Stolterman (2012), which has enriched our understanding of the tacit expertise that practitioners draw upon to direct their design activity. Our prior research using this typology (Gray et al., 2015; Korkmaz & Boling, 2014) has built on the scholarship of Vickers (1984) and Polanyi (1996) to understand the interplay between judgment and tacit knowledge in design cognition, relating professional expertise both to knowledge of theory and formalized methods as well as a rich repertoire of lived experience and precedents.

While design judgment has often been discussed in theoretical terms, the ways in which these judgments are responsible for directing design activity, is unclear and represents a substantial area for further scholarship. In this analysis of the DTRS11 dataset, we focus our attention on a specific type of judgment as proposed by Nelson and Stolterman (2012): *instrumental judgment*. Instrumental judgment refers to a designer's interaction with her tools: "a process of mediation that considers not only technique and which instruments to use, but proportion and gauge, as well" (Nelson & Stolterman, 2012, p. 152). We rely on previous definitions of tool use in design activity that are intentionally broad, which encompass design methods as one class of tools that a designer interacts with in order to facilitate their design process (Gray, 2016a; Stolterman, 2008).

Instrumental judgment is most accessible *in situ*, making this extensive dataset an ideal means of documenting the formation and realization of design judgments over time.

2.2 Design Methods and Cross-Cultural Design

Design methods are ways of thinking and acting, used by designers to work through a design process. Methods pertaining to user research and elicitation of needs are one subset of design methods, often existing within larger paradigms of methods (e.g., human-centered design; participatory design). Previous work has shown that practitioners view design methods as flexible "cores" (Gray, Stolterman, & Siegel, 2014) or "ingredients" (Woolrych, Hornbæk, Frøkjær, & Cockton, 2011) which are used to communicate the complexity of practice. However, even in their most prescriptive forms, design methods are generally underspecified (Gray, 2016b), with a wide range of interpretation assumed to be carried out by the designer. The judgments taken in relation to methods can be seen as largely *instrumental* in nature, with the designer asking and answering questions such as: "What method will give me the information I need next?"; "How will I know when the method has produced the right sort or amount of information to proceed?".

Krippendorf (2005) posits that designers contribute not only explicit and knowable design outputs (e.g., products), but also contribute to design *discourses*. These discourses include designers' tacit (often normative) understandings of the world, which can encompass assumptions of cultural appropriateness, value, or ethical behavior (e.g., Geertz, 1973; Hofstede, 2001). The term *cross-cultural design* foregrounds these aspects of design behavior—which are always present to some degree—but are heightened when cultural boundaries are traversed. Cross-cultural concerns can relate to product, designer, user along cultural dimensions such as geography, ethnicity, nationality, or socioeconomic status (Tai, 2008).

While mundane examples of cross-cultural design and use abound, particular instances that foreground the potential issues that arise when cultural issues are not considered may be especially illustrative of the challenges of designing within a discourse that is not one's own. Chavan, Gorney, Prabhu, and Arora (2009) share an example of the Whirlpool *World Washer*: a washing machine that was designed to serve multiple countries, including Mexico, China, India, and Brazil. In this process of cultural generalization, the impact of the washing mechanic was not considered for garments that were out of the Western mainstream, such as the Indian *sari*. Due to their length, saris were caught between the agitator and washing drum, resulting in shredded clothing and a lack of local trust in the Whirlpool brand.

Design methods are a primary access point into these cross-cultural issues, shaping interactions with users and allowing designers to define and frame appropriate design problems to solve. And indeed, scholars have previously identified ways of using user research methods and paradigms of user engagement such as participatory design to account for cultural concerns (e.g., Hakken & Maté, 2014; Nielsen, Bødker, & Vatrapu, 2010), along with broader interests in designing for interactions and products with culture in mind (e.g., Bell, Blythe, Gaver, Sengers, & Wright, 2003; Horn, 2013).

3. Research Focus

We have identified a set of research questions that address how instrumental design judgment is functioning in a design team focusing on the intersection between their use of a design research

method and the cultural dimension of their specific project which included a design team and participants from distinctly different cultures and design goals specifically engaging culture.

1. How does the design team reference the participants of the co-creation workshops during the planning of those workshops?
2. How does the design team reference the participants of the co-creation workshops during the debrief sessions following the workshops?
3. In what ways do instrumental judgments function regarding the workshop participants and the translators with respect to co-creation as a method and meaning making as an outcome of this method?

4. Method

To investigate these questions, we analyzed multiple planning and debrief sessions from the DTRS11 dataset (Christensen & Abildgaard, 2016), using discourse and thematic analysis to build an understanding of how design judgments are invoked, and the cultural implications of these judgments. Through our analysis, we identified key assumptions team members articulate about workshop participants. Building on these assumptions, we then identified how the design team's cultural understanding shaped their professional judgments, and how these judgments related to expected and actual workshop outcomes.

4.1 Data in Use

Based on our review of the dataset, we focused our attention on the main design team, using multiple data points across the design process (Table 1; e.g., design: v2-5; debrief: v7;v14; interviews: v1;v22) to document changing perceptions in cultural assumptions across time. We analyzed substantial portions from the transcripts in each stage, focusing our attention on the main design team, using multiple data points across the design process to document design judgments across time in relation to cultural assumptions, understandings, and co-creation methods. We centered our analysis on the design and debrief of the workshop, using background and final interviews with Ewan to ground our understanding of the design, execution, and outcomes of the workshops.

Table 1. Dataset videos by focus area

Focus Area	Relevant Videos
Co-creation workshop **design**	v02 Designing co-creation workshops v03 Iterations on workshop design v04 Iterations on co-creation workshops v05 Designing co-creation workshop day 2
Co-creation workshop **debrief**	v07 Debrief co-creation workshop day 1 v14 Debrief co-creation workshop day 2
Initial and final **interviews**	v01 Background interview with Ewan v22 Final interview

4.2 Analysis

We addressed the selected data through three intertwined layers of analysis. First, we built a broad view of the corpus through lightweight discourse analysis, revealing the frequency of referents to workshop participants. Second, we thematically analyzed design and debrief sessions to reveal how the design team referenced and relied upon notions of culture when understanding the actions of the workshop participants. Finally, we synthesized the results of the discourse and thematic analyses to clarify the instrumental judgments of the design team over time.

Lightweight Discourse Analysis

In this phase of analysis, we located points in the discourse where workshop participants were referenced or otherwise discussed by the team. Because of the size of the corpus (in words: design n=45557; debrief n=19249; interview n=21464), we relied on word frequency to begin investigating themes across the three focus areas. We qualify this instantiation of discourse analysis as "lightweight" to acknowledge our more mechanical approach to understanding word usage across a relatively large corpus, rather than dwelling deeply on features of the discourse.

First, we identified the frequency of third-person plural pronouns (i.e., they, them, their). This allowed us to capture references to participants in the workshops, both projected (design) and retrospective (debrief). Pronouns with the same stem (e.g., "they're", "themselves") were also captured in this process. All occurrences of these pronouns were identified using a text-parsing PHP script. Many speech acts included multiple instances of one or more plural pronouns, and the referent of the pronoun sometimes shifted within the act.

Second, we identified the referent of each pronoun to determine how instrumental judgments were made, indicating what these discussions included. Because the referent of plural pronouns is indistinct without parsing the context, we coded each occurrence using a coding interface that allowed the researcher to focus on each occurrence of the target pronouns and code it discretely using an open coding approach. This resulted in 36 codes, which included referents ranging from objects to companies to design team members to co-design workshop participants. The codes were then compared and consolidated, using verification of coded excerpts to ensure a balance between referent precision and patterns of referent use across the dataset. This consolidated set of codes resulted in 21 distinct codes.

Thematic and Synthetic Analysis

We carefully read the transcripts of all selected videos multiple times, noting themes that related to the workshop participants, cultural assumptions and understandings, and the ways in which these features factored into instrumental judgments. Each researcher identified an initial set of themes based on their individual reading of the transcripts. These themes were then refined, consolidated, and illustrated using exemplars from the data. Reviewing the thematic and discourse analyses together, we established when and how these themes manifested across the design process, representing shifts in instrumental judgments over time.

5. Findings

Based on our analysis, we present three sequential layers of findings. First, we describe the frequency and referent of the third-person plural pronouns used by the design team across the corpus, focusing on workshop participants and translators. Second, we summarize the themes relating to cultural awareness and consideration of cultural issues in design and debrief phases.

Third, we synthesize the referents and themes to reveal how the design team shifted in their utilization of instrumental judgments in relation to the cultural content of these judgments.

5.1 Referents to Co-Design Participants

We analyzed the frequency of third-person plural pronouns in order to understand the ways in which the design team referenced workshop participants. Through this relatively blunt analysis, we captured all instances of pronouns that had the potential to reference participants (i.e., they, them, their) to understand more fully how the conversations about and regarding third parties changed across the design and debrief sessions.

Third-Personal Plural Pronoun Frequencies

All speech acts in the selected videos were analyzed to locate instances of plural pronouns. The results of this frequency analysis is presented in Table 2, organized by video and word. This revealed a substantial increase in use of third-person plural pronouns as the design phase ramped up, with the target words increasing from 1.79% of all words in v02 to 3.47% of all words in v05. In the debrief sessions, the results were mixed, with a jump from 0.98% of all words in v07 to 2.14% of all words in v14. This reveals a tendency to talk more about individual participants in v07, resulting in a higher incidence of first-person singular pronouns (i.e., "he", "she") with reference to the actions of specific individuals. This use of first-person referents continued to some degree in v14, but there was a substantial increase in less descriptive plural pronouns, similar to the late design videos.

Table 2. Word frequency of plural pronouns and other common words

	Design				Debrief		Interview	
Word	v02	v03	v04	v05	v07	v14	v01	v22
they	45 (1.06%)	129 (1.35%)	206 (1.46%)	444 (2.52%)	27 (0.83%)	264 (1.65%)	27 (0.49%)	172 (1.08%)
them	26 (0.61%)	40 (0.42%)	107 (0.76%)	130 (0.74%)	5 (0.15%)	60 (0.38%)	10 (0.18%)	51 (0.32%)
their	5 (0.12%)	15 (0.16%)	10 (0.07%)	39 (0.22%)	0 (0%)	18 (0.11%)	4 (0.07%)	11 (0.07%)
they + them + their	76 (1.79%)	184 (1.92%)	323 (2.29%)	613 (3.47%)	32 (0.98%)	342 (2.14%)	41 (0.74%)	234 (1.47%)
Total Words	4235	9574	14099	17649	3271	15978	5505	15959

Referents of Pronouns

We coded 1844 target pronouns across the selected videos in two stages (Table 3). Our final coding scheme included 22 codes, with an average of 87.81 instances per code (SD=305.19). The highest frequency codes included: workshop participants (n=1445), company design team (n=155), company stakeholders (n=47), design concepts (n=28), and the product end user (n=28). Only the workshop participants code appeared in all videos. The majority of pronouns coded as "workshop participant" occurred in the design of the workshop (i.e., videos 2-5), totaling 1078 instances. This reveals a rapid increase across the four sessions, reflecting both an

increase in the design session length (v02=4235 words; v05=17649 words) and in the frequency of projected references to workshop participants (v02=67 [1.58% of all words]; v05=571 [3.24% of all words]).

Table 3. Referent of plural pronouns organized by code and frequency

	Total	Design				Debrief		Interview	
Word		v02	v03	v04	v05	v07	v14	v01	v22
animals	5				5				
assumptions	1			1					
Chinese	10		8		2				
company	8						8		
company stakeholder	47		1				3	25	18
concepts	28			1	25				2
design team	155		19	3				5	128
end user	28						16	3	9
materials	2							2	
other company	22						22		
other people	21						19		2
outcomes	1								1
process	1								1
product	12				2		4	1	5
project	2							2	
recruitment agency	6		6						
translator	17		17						
translator (previous)	6		6						
workshop logistics	10	2	1		2	1	1	1	2
workshop participant (previous)	18	7	4		7				
workshop participants	1445	67	122	318	571	31	268	2	66
Total	1844	76	184	323	614	32	341	41	234

The referent frequencies reveal the team's expectations about the workshop participants. There is clearly a high occurrence of workshop participant referents, and the specificity and frequency of these referents increased significantly across the four sessions. These referents take on the

character of *projection*, where the design team is either articulating the structure or logistics within which the participants will interact, or is anticipating a specific participant response. In the first set of examples, E and K are suggesting activities to engage the participants, invoking them in a relatively mechanical way (e.g., they will do X, and then Y will happen).

> v05,399
>
> E: Yeah 'cause then, that was the question. Should they tell the names while they're in their separate group, which is good because it's faster, we can do it parallel, but it's bad because it will (.) [the other group, the oth'- yeah yeah].

> v05,824
>
> K: Yeah, maybe they should just be allowed to have these six hearts or whatever and then put them on, and we: collect the things and then they see the result and they can discuss whether this eh order still makes sense for them. Then they will have a top three from the result, but they can discuss whether it makes sense.

In other examples of projection, the design team moves beyond logistical ordering of the workshop to anticipating the responses of participants. In these examples, E suggests that participants will want to see results from the competition (v05/589) and that one idea will probably win (v05/735).

> v05,589
>
> E: Yeah, but still, they wanna see the result, we're building up something and I think it's just- it's a little (.) unfair to- or, should I say it's a little unconclusive to not share that.

> v05,735
>
> E: One idea will win, probably, and then they will- we will say okay, the ideas that comes out here are out, but the three top one or two top one or three top one are still in the game.

Interestingly, no Chinese team members were involved in the design phase, which possibly explains the lack of deep cultural consideration when participant interactions were projected. With the exception of references to "all Chinese people" in v03, participant interactions projected in the design sessions were almost completely free of cultural content or explicitly articulated awareness of cultural appropriateness. In the rare instances where Chinese culture or ethnicity became the center of conversation, culture was instantiated through stereotypes, as in this example from K in v03:

> v03,284
>
> K: And especially Chinese people, […] I think actually they don't really need to speak Chinese when they go abroad, because they're- I know it's a little bit prejudice, but

[they- they are usually in groups, yeah yeah so they basically don't need- need any other language than Chinese].

5.2 Invocation of Culture

In this section, we document some ways in which the design team invoked culture in the design and debrief of the workshop. This description of themes is not meant to be exhaustive, but rather a broad overview of the ways in which culture is discussed, relied upon, or operationalized in design team discussions. A fuller account of how these cultural views are used to build consensus through instrumental judgment is provided in the next section.

Explicit and Implicit Efforts to Understand Elements of Culture

The team made both implicit and explicit efforts to understand the elements of culture confronting them within the statements and behaviors of the workshop participants. They were clearly seeking these elements as a core aspect of the design effort and the team leader mentioned more than once that it was his goal to get "something more than surface level stuff" [v22/104]—presumably the "stuff" that distinguished the Chinese participants as consumers.

Assuming cultural equivalents

A number of statements signal that the speaker is tacitly assuming equivalence between what the workshop participants have said and some elements of the speaker's own cultural background. The first example here is straightforward, whereas in the second the speaker *may* be applying an understanding garnered from Phase I but equally may be assuming that a Western trope—the celebrity as a communicator of positive values—will be applicable in this context.

v14,117

E. … so many things of what they say is like, wow, we- we have that in our company. We just need to tell that story. We need to make sure the product or the service we have eh: the pipelines for telling a story like that.

v14,156-160

E: … so you have- maybe a foreign brand has some values, but maybe its difficult to understand that value, because they're foreign values. But how can we find the: local counterpart of those values … so let's say that THE COMPANY has a value that is (...) safety, but let's say it was difficult for Chinese people to understand what that safety was, but there was a person, a famous person, or an artist or whatever (.) in China, who shares some of that same values (INAUDIBLE), then for them to understand it, we can use that person or that brand or whatever, as this channel … [160] as a value communicator

Relating observations to familiar contexts

Attempts to reach cultural understanding are made via two types of relation to contexts familiar to the team members; the first is to contrast what has been expressed with the team member's own experience. Designers highlight the new concept by considering how it differs from the

familiar one. In this example, this attempt may be effective in describing the conceptual differences between two views of medicine. It does, however, miss the stated implication of the translator's explanation which is that this is a traditional view of medicine which is nevertheless still a large part of the lives of the young, upwardly mobile and presumably modern, workshop participants.

> v08,038-039
>
> W: "Ah: traditional Chinese medicine is quite big eh:" says it is about "maintenance" instead of going to the doctor after a problem occurs
>
> E: "That's actually a very smart way of looking at it. Western medicine is after: you get sick, you get fixed up, here it's like 'drink this tea;, do this thing and you won't: get sick.'"

Asking and explaining from translators

Looking to the translators for answers to specific questions is an appeal directly to the Chinese context for understanding. These appeals are generally for the purpose of clarification: Is this an actual saying?; Are these people "typical" for this city?; What does this expression mean? Arguably, this appeal to the translators is made when there is a clear need for clarification and no ready assumption or analog is available to address a specific situation.

> v09,253-264
>
> R: He talked about a table of old friends that was like-
>
> …
>
> E: Yeah, yeah, table- is it an expression? [in Chinese]
>
> R: No, but ok I guess the four [characters] is put together quite nicely. (Speaks Chinese) that's exactly what he wrote.
>
> W: (Repeats in Chinese), yeah.
>
> R: But thats exactly what he wrote, it's not an expression, but it literally translates [into old-] table of old friends.

> v14,239
>
> *After discussing the personality traits of participants*
>
> E: 'cause I was like, is- is she like a typical CHINESE CITY woman, and she was like, oh yeah. And the guy Brian,, he was like the typical CHINESE CITY man, like, husband.

Trying out understandings

A common effort at cultural understanding blended with the general design discourse and took the form of paraphrasing, as in the first example, or of a trial statement as in the second (which was followed by further refinement on the part of a translator). While not signposted as efforts to

understand culture, as when explanations were requested directly from the translators, these try outs were clearly the primary explicit form of attempts to understand Chinese culture in this design team context.

> v22,114
>
> E: "One of themes … when we do research in China is kind of the, the whole collectiveness versus - versus individual: and versus the (Guan Shi?) kind of network … they are individualistic and they are all about money in many ways, but then again they're so traditional and so about the, the society …"

Explicit and Implicit Limits on Cultural Perspectives

During the planning meetings, it was patently clear that the team recognized language as potential barrier to meeting the goals of the workshops and much effort was expended to provide for sufficient, effective translation of what would transpire during the workshops. Beyond the literal translation of what was said by the participants, however, a number of limitations arose regarding the cultural perspectives that the team was able to incorporate into their designing.

Ahistorical discourse positions

While it is not credible to assume that team members are wholly unaware of China's recent history, the Cultural Revolution, significant urban migrations, and even the genesis of Taiwan's claim to status as an independent state—all creating profound disruptions in social order and therefore expectations regarding work—statements like these suggest that what awareness the team members undoubtedly did have was not being applied to the current endeavor.

> v09,006
>
> AM says, "In Chinese, the family name comes first … before your own: So I think that carries a lot of weight, right? Like, I am a reflection on my family because it is so intertwined. […]
>
> E: "And of course this goes back to-this is ultra-European, 'cause Europe had tons of revolutions … to remove themselves from this [the assumption that you would do what your parents do] …"

Expressing the hope that the sentiment expressed in one participant group is actually a trend among their target group in general likewise reveals a position within the team's discourse that takes the immediate situation at face value without connecting it to larger trends. In this instance, signaling social status through patterns of consumption (Martineau, 1958) has long been observed, as has the interaction of brand consumption with such signaling, particularly in developing countries (Batra et al., 2000). The notion that upwardly mobile workshop participants might both be growing out of a knee-jerk fascination with foreign brands and stating that people "despise" those in their society who have not progressed past consumer behavior that signals "developing country" status can probably be assumed to be pervasive.

v08,222-230

Discussion of respondents shifting from caring about brands ("vulgar;" "people kind of despise these people now") to experiences … E says "I hope that is a trend: that it is bigger than - that it wasn't just planted in our little group."

Awareness of cultural limits on understanding

Alongside the apparently unconscious disregard for historical context in some of the statements made by the team, some of Ewan's explicit statements make it clear that there is a fully conscious awareness that the understandings achieved via these workshops (and presumably the Phase I ethnographic study) are limited.

v22,114

E: "I'm never gonna crack that code … it is really difficult for me as a white man to grasp that, and I think, or a white woman … a person that is not Chinese or Asian …"

Explicit generalizations

Despite a good deal of the discussion that treated workshop participants as individuals during the debrief sessions (in contrast to the planning sessions where the discourse analysis showed referents to the participants in the aggregate as "them" and "they") cultural generalizations persisted into the debriefings.

v14,036

E: … they are (...) much more individualistic than like, I don't know; maybe "our" view of who the Chinese person are. At least they have a voice, they wanna say something. And I think that's great.

v14,318-320

E: The whole kind of balance metaphor is so powerful and so:-

(they all speak at once)

E: So Asian!

5.3 Shifts in Instrumental Judgment Over Time

One of the shifts that we observed is likely both natural and subliminal on the part of the design team—from using "they" and "them" to refer to the workshop participants, to using either their names or referents coined by team members to identify individual participants. While this form of instrumental judgment, impacting what is being foregrounded in terms of methods, does not appear to be an explicit decision on the part of the design team, it is, nevertheless, influential in the design process. What was anticipated to be raw material offered by the participants from

which to fashion ideas required by THE COMPANY, turns out to be, after this shift, more piecemeal than expected.

Another shift in instrumental judgment, this one also unreflective on the part of the team, is the role of the translators. The team plans for this role as a somewhat unwonted, or awkward, necessity. Translators are assumed to allow designers to extract the material they need from the workshops even though the designers do not speak Chinese and the participants do not frequently speak English. As the workshops unfold, and as they are being reviewed, the collective instrumental judgment of the team shifts to positioning the translators as cultural translators, rather than simply English-to-Chinese translators.

In this shift from language translator to cultural translator, we noted a shift in instrumental judgment taking place, moving from a mechanical view of translation as part of the co-creation process to translation as "nuancing" or facilitating the "making familiar" of the workshop participants. Each of these instrumental judgments made by the design team are discussed in more detail in the next two sections.

Nuancing

During the debrief, sharing insights and clustering insights sessions, the translators offered explanations and observations as part of the team discussion. We identified a specific form of explanation we are calling "nuancing." In the instances where this takes place, one of the non-Chinese team members will state an understanding of a cultural point and one of the translators will follow up with one or more statements that do not contradict the understanding directly but appear either to be adding layers or gradation, or repositioning the understanding.

> v14,143-146
>
> R: But- but there's also a lot more trust for the foreign brand, because when the:- I mean for us they were talking about, they were afraid about data, about their privacy being divulged, and then so they want- or some people say that is you have the server in Europe then that's because (INAUDIBLE) they believe that somewhere foreign as we trust versus (INAUDIBLE).
>
> E: Even- yeah and of course, sure, we should focus on that right now, but how many years until that will change. 2 years, 5 years, 10 years, never? Will it change? If feel that we're on the steps of having- I use Chinese, you know:, cloud-services, I buy, like
>
> R: No, but- but- but I don't think they actually think about the actual data on the server itself, but I think they are thinking of that if you have some- if they- they believe in the foreign brand, right?
>
> E: Yeah, the foreign brand, rather than domestic

R shifts E from the notion of not trusting Chinese cloud services (which E trusts and uses), to the idea that there is more trust in foreign brands than Chinese brands. Additional information from R's lived experience using Chinese cloud services is used to build on E's understanding of these services, adding the complexity not only of the server location (i.e., foreign v. local) but also the security of the data and the "foreign-ness" of the service brand.

These instances of nuancing are sometimes taken up by the team, as illustrated in the previous example, and sometimes not. In the next example, the symbolism of the sun rising and the location that is implied (i.e., city v. ocean or sea) is explored by W, but not taken up for further conversation by E.

> v14,348-349
>
> E: And this one, which was pretty cool, was like, eh: the sun rises, which of course like is very Chinese or Asian …
>
> W: It must be over - it must be rising from ocean or sea, and not over city, 'cause the city is like- you see a cityscape and you all busy, chaotic and you feel stressed … The sun rising from ocean is like liberation, freedom, enjoyment, yeah yeah

Making Familiar

Non-Chinese members of the team, while attempting to understand the perspectives of the workshop participants, often sought to find an equivalence or analog to those perspectives in their own experiences or understanding of the world.

In the two examples that follow, the design team proposes a cultural analog to enrich the conversation. In the first example, E compares W's translation of a Chinese expression to a similar Scandinavian cultural expression. This "making familiar" appears to suggest consensus building on the part of the Scandinavian design team, ensuring that the correct meaning is being made from the interaction with the translator, while also explicitly bridging colloquialisms (and the deep cultural meaning that is implied) across two cultures.

> v14,278-285
>
> W: So I guess the whole thing about 先苦后甜 which is the traditional way of saying … First bitter, and then (...) later sweet
>
> E: Yeah, it's kind of scar- or how do you say in [a Scandinavian language …] okay I eat this really boring porridge right now, and now I get full, and then I have a little bit of cake afterwards. First you do the crappy part …

In the second example, T suggested interactions of Chinese customers with the factory in Scandinavia. She used a Scandinavian cultural reference regarding a "train that goes inside the factory," which is then taken up by W and AM for discussion in a Chinese context after T explicitly asks "would the Chinese people like that?". In this case, the translators are asked to "make familiar" a Scandinavian cultural scenario and assess its appropriateness for a Chinese audience.

> v14,848-857
>
> T: But the Chinese people would then- like, in SCANDINAVIA you can take this train that goes inside the factory.
>
> E: Mhm?

T: Eh: would the Chinese people like that?

W: Yeah, I agree-

…

AM: Especially for people like Brian 2, who love this kind of story.

…

AM: So for him, having the access to be there (.) is the source of credibility.

6. Discussion

Instrumental judgments made by the design team can be traced across the design process, leveraging the articulation of the designers that is occurring in relation to culture and the deeper meaning-making afforded through our analysis. In particular, we wish to call attention to several key moments in the design and debrief process where the articulation of *instrumental judgment* foregrounds moments where the design team tacitly or explicitly guided their use of design methods to increase their understanding of the targeted Chinese consumers.

First, the shift in the defined and implied role of the translators in the workshops can be seen as a manipulation of translator-as-instrument in the data collection process, moving from a utilitarian to a nuancing role across the design and debrief sessions. In the design of the workshop, the team treated the selection and coverage of translators as a logistical hurdle to overcome, rather than as a means of entering and understanding a different culture. The translators emerged only in a mediating role during the debrief sessions, insufficiently leveraged in exposing the cultural depth of the workshop participants, but still deepening the design team's understanding of the target user population.

Second, the organization of activities relied heavily on previous workshopping experiences, potentially reducing the conversation about cultural limitations of these activities for the present user context. The instrumental judgments related to the activity selection brought assumptions about the potential user interactions that would be involved, and because of the previous success of some methods, any potential that the cultural fabric of the Chinese participants would be incompatible was largely left unexplored. This set of instrumental judgments in relation to activity selection was due to the initial absence of a cultural sounding board, even though it appears that such resources may have been available from the Phase I ethnographic study.

Finally, the use of "co-creation" as a paradigm for user engagement took on the quality of an "observed generative activity," implicating a set of instrumental judgments about the depth of engagement that was appropriate or desirable given the cross-cultural context and language barrier. While the design team acknowledged in the design of the workshop that it could barely be considered "co-creation," the team appeared to desire more engagement from the output in the debrief session than was allowed given the highly structured activities that were planned. This set of instrumental judgments prioritized a set of known generative insights over activities that may have been more "messy," yet would have engaged participants more directly.

6.1 Foregrounding the Cultural Assumptions of Instrumental Design Judgments

Instrumental judgement, as it was tacitly performed through the routines of "nuancing" and "making familiar," points to an implicit view of culture which Geertz (1973) identifies, specifically that "men are men under whatever guise and against whatever backdrop" (p. 34). In this view, behaviors or beliefs observed across cultures are understood to be expressions of essentially identical human characteristics that have manifested themselves differently owing to time, place and circumstances. This holds the promise that such an understanding may be possible, and possible in one's own terms—that is, that the *other* may eventually be rendered almost as fully knowable as one's self. Such an implicit view of culture may be termed a "core judgment" (Nelson & Stolterman, 2012), which, although it has general application in a designer's life outside the processes of designing, is particularly relevant to the design method being used in this project and the instrumental judgments being observed.

Pragmatically, "making familiar" can help designers reach an insight which, while not fully accurate, may satisfy the need to move forward in designing when the time and resources to reach a more nuanced understanding are not available or perceived to be necessary. However, if a parallel is fallaciously drawn between an unfamiliar cultural concept and one's own experience, or if the nuancing activated by a culturally-knowledgeable collaborator is misunderstood, the insights thus yielded could miss the mark. Some instances of nuancing on the part of the translators seemed to take place in response to such shortcut understandings when the design team moved too quickly to draw parallels that were flawed or otherwise inappropriate.

The team might also be seen to be using the co-creation method from a cultural studies position in line with the focus of du Gay, et al. (2013) who address the study of artifacts and texts from multiple perspectives (i.e., representation, identity, production, consumption and regulation) in order to come to cultural understandings of the meanings ascribed to them, and the relationships that people have with them. However, observing the team engage in meaning making by "making familiar" suggests that cultural relativism as it manifests in relationships between people and artifacts, or concepts, exists in an unexamined muddle together with a core judgment which regards all people as sharing fundamental needs and desires onto which the layers of culture are overlaid and may be plucked off to reveal an individual much like one's self.

These understandings of the team's culturally-situated behaviors lead us to consider the perhaps unexplored complexity of engaging users in participatory or co-design traditions in cross-cultural contexts, and the ways in which cultural assumptions bound up in instrumental judgments may be more fully articulated.

6.2 User Research Methods "Considered Harmful"

Commonly accepted methods for conducting user research have alternately been created by practitioners and adapted from scholarship (Gray, Stolterman, & Siegel, 2014; Stolterman, 2008). Such methods may be at risk of losing potential value because of a strong instrumental focus which keeps engagement along cultural dimensions comparatively shallow. Attending only to commonly accepted user research collection and analysis practices may leave important subjective dimensions, such as culture, inaccessible to the designer. In addition, the adaptation of methods—when carried out without departure from a purely instrumentalist view—may discourage attention to complicating constructs such as culture, thus neglecting assumptions key to the use of user research methods that may in fact yield the most useful and generative insights.

It is possible that user research methods could be "considered harmful"[1] in some sense, in that these methods encourage attendance to the lived experience of users within the paradigm of user-centered design, even while the methods themselves can be too blunt to distinguish areas where intersubjectivity among the designer and users is very difficult or impossible. If key cultural considerations as one source of complexity in design practice are systematically or occasionally neglected, even in a design paradigm where the user is intentionally made more central (i.e., co-creation), perhaps this points to a larger issue of instrumental judgment that so often skirts the ways in which meaning is made and articulated into the design process. Perhaps, echoing Buchanan's (2015) concern regarding the diluting of judgment and complexity in relation to the design thinking movement, current user-centered practices encourage "quick wins" that yield rapid design insights rather than deeper study and analysis that leads to a fuller sense of the complexity of the design space. Thus, an instrumentalist view that does not adequately attend to holistic and societal concerns may weaken design processes in ways that are counter to the grounding principles of user-centered design. The intersubjective dimension of user-centered research methods that allows access to such complexity has been particularly understudied, and the nature of meaning-making among designer and users would be an ideal area for further study.

The ethic of user-centered design is focused on understanding users and engaging them directly in the design process. However, in this series of design and debrief sessions, the conversations regarding participants often relied on unvalidated assumptions about culture, occasionally engaging in cultural stereotypes in more explicit ways. While the setting for foregrounding cultural meaning-making was present, the awareness of the importance of such cultural sensitivity did not appear to be a recognized priority. In the early design sessions, the team engaged in detailed discussions that projected participant interactions and possible behaviors, but tropes of culture had largely disappeared by this point in the conversation, and the team did not question these expected, culturally-grounded responses.

7. Conclusion

In this analysis, we traced the cultural dimensions of instrumental judgment across a set of co-creation workshop design and debrief activities, bringing attention to the ways in which the design team activated cultural judgments that shaped their understanding of the participants and target user population. The design team engaged in brief exchanges that were culturally situated, but the invocation of culture was often bracketed within a co-creation approach that did not leave room for deep cultural engagement.

Designers simultaneously work *within* and *shape* discourses, which include a cultural and social dimension (Krippendorf, 2005). However, in order to understand and potentially alter discourses—which is required if greater cultural awareness is to be present within design activity—the discourse must "[remain] *rearticulable*, [so] that its users can understand, practice, and speak about these changes" (Krippendorf, 2005, p. 12, emphasis in original). This analysis provides a first step towards understanding the ways in which culture may be invoked in design activity, bringing greater awareness of the cultural dimensions that designers must engage *with* and *through* when conducting user research and co-creation projects.

[1] This term references a critique of programming practices by Dijkstra in 1968. "Considered harmful" now references a critical reading of existing practices in computing, made popular in the HCI literature by Greenberg and Buxton (2008).

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