An Activity Approach to Cross-Cultural Design

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Abstract. The demanding challenges urge us to develop an effective way to address cultural issues in IT localization and design well-localized products to support complex activities in a concrete context. This article proposes an activity approach to cross-cultural design informed by key concepts and methods from activity theory, genre theory, and British cultural studies. The approach brings cross-cultural design focus from operational affordances to social affordances.

Keywords: Cross-cultural design, localization, activity, affordance.

1   The Dilemma of Culture in Cross-Cultural Design

The demanding challenges for localization urge us to develop an effective way to address cultural issues and design well-localized products to support complex activities in a concrete context. Nowadays a large amount of today's IT products are consumer-oriented information appliances which are expected to fit into the fabric of individual user's everyday life. While the local uses of IT enterprise products in organizational contexts might share similarities in work flows and organizational structures across cultures, the local uses of IT consumer products take on various cultural and social meanings in different cultural contexts.

However, accounting for culture in current localization practices presents a dilemma. On one hand, culture takes a central role in localization process, and the term of culture is a pervasive one which appears in localization literature very frequently: one could expect to encounter the word "culture" in almost every piece of localization literature, and usually more than once. Furthermore, the importance of culture has been claimed, proven, and validated in a lot of research literature and real-world cases of market failures where companies did not carefully consider local cultural issues.

On the other hand, culture has been one of the major problems constantly hurting localization practices, where the application of the culture work constantly remains with a narrow scope and on a surface level ([24]). Localization specialists focus most of their attention on delivery aspects, such as what colors will not work for an audience in a specific country and what page layout would be preferred by some ethnic cultures. Their enthusiasm for the forms of information products—the tip of the iceberg ([13])—usually results in their ignorance of the huge underwater iceberg—the broader cultural context where information products are situated, and where products are designed, produced, distributed, and consumed. This shortsightedness results in the lack of an overall vision of localization strategies in product design and a product-oriented

localization process separating product design from product use. Overall, these problems cause poor usability in actual use at the user's site, culturally.

It should be noted that the notion of culture in this article is primarily informed by research in anthropology and ethnomethodology, which regards *culture* as the meanings and behaviors that groups of people develop and share over time as well as the tangible manifestations of a way of life such as artifacts and values ([9]). Thus, the local culture of a technology use should be investigated in a context where the collective and the individual meet and where the implementation (instrumental aspect) and interpretation (social aspect) interact. To envision a local culture, one might want to think of walking into a friend's messy room: initially the messiness may strike you as strange, yet have traces of familiarity, and after a while you might be able to discern the structure behind the apparent messiness.

2   Common Views of Culture in Cross-Cultural Design

A review of literature in the field indicates the shortsightedness discussed in the section above is related to three incomplete views of culture that are commonly adopted to approach local cultural issues for cross-cultural information design. In these views, culture is either limitedly defined in its entity or narrowly operationalized into practices.

2.1   Empiricist View

An empiricist view tends to approach local cultures with their experiential knowledge. This view sees the messiness and tries to log, categorize, and organize the instances of the messiness into ad-hoc localization guides. Based on personal anecdotes and empirical studies of local cultural conventions, those guides usually include lengthy lists of do's and don'ts for different ethnic cultures, and elaborate on translation, coding conventions, interfaces, formats including layouts, fonts, and graphics, and other international variables ([5], [15]). However, this approach is built on an engineering approach favoring efficiency over context-sensitivity ([24]). The whole process of localization is simplified as part of the engineering cycle from the planning stage to the testing stage detached from its use context. In the pursuit of engineering and automating this process, localization professionals only need to attend to delivery and style such as translating the user interface and resizing a dialog box. The problem we see here is that localized products and services are usually not fit for use contexts. Professionals are only working on the forms of information products.

2.2   Positivist View

To address this problem, researchers suggest bringing cultural contexts into practices and research ([2], [6], [16]). They seek to understand the structure behind the messiness, and borrow popular cultural models from the fields of international communication and management such as Hofstede's for use in localization practices. Hofstede regards culture as "mental programming," and he develops a list of cultural dimensions

such as power-distance, collectivism vs. individualism, femininity vs. masculinity, and uncertainty avoidance to describe national cultures. Compared to ad-hoc localization guides, models of cultural dimensions are more structured and more research-based ([13]). They provide vocabularies and structured frameworks to compare cultural patterns across nation, which is helpful for localization design.

However, these cultural models promote a positivist view on culture which strips rich contextual data away during the formation of the formal structure. First, only the dominant cultural values in a national culture are represented in cultural models, other subcultural factors such as the individual user's gender, age, organizational affiliation, or ethnic group are ignored. As Myers and Tan ([17]) comment, these cultural dimensions based on the concept of a national culture are "overly simplistic" (p.24). In localization practices, we often see local cultures that are related to a subculture group (e.g., instant messaging is more popular in groups of teenagers than in other age groups) in a country, but these cultural models cannot help design and localization if they are obscured by a set of national culture dimensions. Second, these views of culture place concrete cultural realities into static dimensions ([17], [24]). Some researchers who employed cultural dimensions in research work noticed that those dimensions could not fully explain the complex phenomena found in the field as the messiness and complexities of the local contexts (e.g., immediate context) are often neglected while only general patterns originating from the broader social contexts are attended to ([11]).

In fact, missing the actual practice of social activities is a common problem in localization literature, as we can see from both the empiricist and positivist approach. As an example, Hoft's book *International Technical Communication* covers many aspects of internationalization and localization with "international variables," but none of them come from field studies of use activities in context. When they follow her suggestions of cultural editing (p.123), designers can only beautify buttons with local translations, though the real goal here is to support complex user activities in their local context.

2.3 Semi-contextualist View

To capture rich activities at local sites, this group ([26], [27]) approaches local cultures by contextualizing the messiness into local user activities and tying the messiness with design models from fieldwork methods such as contextual design ([3]).

However, this approach is still narrow in the scope as it only contextualizes half of the process. First, though it allows localization professionals to examine the immediate context, it fails to connect the immediate context with the broader socio-cultural context. Second, those work models were developed to examine work practices in the organizational context, but not for understanding social computing practices in the individual context like mobile phones and other information appliances. Third, some guidelines about cultural issues are limited and superficial. A common limitation for current fieldwork methods is that they just focus on the aspect of tool-mediated production of an IT artifact in context, but rarely explore its sign-mediated communication. Thus they are good for gathering design requirements for instrumental convenience, but weak for exploring design options for social affordances.

3   An Activity Approach to Cross-Cultural Design

To seek better solutions to cross-cultural design and improve localization perform-ance, I turn to activity theory, genre theory, and British cultural studies which study cultural and contextual factors from different angles forming a broader understanding of local cultural factors complementarily. Key concepts and methods from these theo-retical constructs are borrowed and integrated to develop an activity approach to cross-cultural design. This approach examines user activities in local contexts. It re-gards usability as a mediation process consisting of an instrumental aspect (mediation of practices) and a social aspect (mediation of meanings). This new methodology has a structured and flexible framework to investigate concrete uses via fieldwork with a robust structure to attend to cultural factors in both the broad socio-cultural context and in the immediate context.

3.1   Activity Theory: Examining Concrete Use Activities in Local Contexts

As a cultural-historical approach, activity theory claims that people's activities are an object-oriented and tool-mediated process in which actions are mediated through the use of artifacts (including tools and languages) to achieve a transformative objective. It is significant for the field of HCI to explore cultural and contextual issues by bring-ing the following valuable concepts and principles to practice and research. First, a focus on the tool (or artifact) on the basis of activities from activity theory helps us see how a technology is interpreted as an object used by people to perform activities in context. A tool becomes a tool only through use. Therefore, a tool needs to be stud-ied in its use setting; it is not meaningful to study a tool in isolation.

Second, all human activities involve the use of tools, and activities are mediated by tools. The concept of mediation is valuable here as it shows the ways that people use artifacts are socially, culturally, and historically determined. And the emphasis of activity theory on the mediation process, the transformational objective, and the activ-ity system suggests a process-oriented view of the design process rather than a prod-uct-oriented view.

Third, activity theory uses an activity as the unit of analysis to study human activ-ity and tool mediation, which brings the vision of contexts into the object of inquiry. The activity system includes "a minimal meaningful context" ([14]). In this "minimal meaningful context," history, development, meanings, community, rules, and even culture are articulated into a unified framework, which makes the context considera-tion an inherent feature of activity-theory-based HCI research.

Fourth, the three-level structure of activity makes it possible to distinguish and describe contextual factors as associated with the instrumental aspect or the social aspect of an activity. According to Leont'ev, the unit of activity is hierarchically structured on three functional levels: activity, action, and operation. A concrete activ-ity is always motivated by general objectives acknowledged and recognized in the local community and in the socio-cultural context. The concrete activity is realized by actions which are goal-directed in an immediate context (e.g., at the workplace or at home). Actions are usually conscious, and they are similar to the "tasks" we often talk about. An action is realized by conditions in a use situation (i.e., a material setting). Operations are usually non-conscious and automatically performed. For example, a

concrete *activity* involves a user who wants to maintain regular contact with an old college friend by sending messages of greetings occasionally. As she does not want to disturb her friend who might be busy at that moment, she chooses text messaging for communication. The act of sending a text message to the friend is *action* here. *Operation* refers to the mundane details when the user interacts with cell phone keypad and text messaging application. In all, the three-level structure is not static but fluid depending on the use situation.

The three level of activity structure brings insights to the notion of affordance by placing it in context ([1]). Affordance describes the action possibilities posed by the artifact in use and associates the artifact with practices; however, this term is widely used in the HCI field but not clearly theorized yet ([8], [20], [21]). With an activity-based framework, Baerentsen and Trettvik assert that "[a]ffordances are not properties of objects in isolation, but of objects related to subjects in (possible) activities" (p.59). They propose that the concept of affordance should be treated as a generic concept which distinguishes affordance on the operational level with "operational affordance" (e.g., the touch and feel of a phone pad in the example above), "instrumental affordance" on the action level (e.g., communicating unobtrusively), and "need related affordance" on the activity level (e.g., staying in contact with college friends).

3.2 Genre Theory: Investigating Structuring Forces Behind Habituated Uses

Genre theory attends to textual and contextual regularities, repeated actions, and technological influences, both across texts and across practices by examining social exigencies of genres ([4]). A genre is "a collection of practices that finds its nexus in the recurrent, dynamic activities in which users engage" ([23]). Genre theory brings the following insights to the exploration of cultural and contextual factors during use.

First, the notion of genre can help us better understand the artifact in a social and historical context. In HCI research, genres don't have to be textual ones, and artifacts are broadly interpreted as genres to investigate how the connection of design and use is dynamically settled in different interface features by inquiring about rules and habits related to genres. For example, a structured layout on a German website and vibrant colors on a Brazilian website present different generic features informed by local reading habits and design preferences. By providing socially constructed interpretive conventions, genres are "affordances" here to help interpret the artifact's use in context.

Second, genre theory provides a foundation for interpreting actions from a social angle. According to Miller ([18]), genres are social actions in response to recurrent situations with social motives. Dias and his colleagues interpret a social motive as "a motive that is socially recognized and allowed for" and "that the culture acknowledges you may have and allows you to have" (p. 20). As "the culture's arrangements," genres are "means of legitimately acting on these motives." In a local setting, social motives take the form of "local purposes" (p.22). Linking genre theory to activity theory, they suggest that genres are "enactments of recognized social motives" and "activities in Letont'ev's sense" (p.25). In this sense, when we found mobile text messaging was used to conduct long conversations in one culture and to have small talk in another culture, we might want to design different interface features to support different user tasks.

Third, the rule-tool relationship embodied by genres is insightful to illustrate how uses of technologies are structured in social contexts and how cultural dimensions influence a particular IT design. Influenced by Gidden's structuration theory, Miller suggests genres are capable of reproducing social structures with their recurrent nature in situated communication ([19]). Regarding a technology as a genre can help us reveal the reciprocal relationship between a technology and the social context in which it is produced and used.

3.3   British Cultural Studies: Interpreting Local Use as Cultural Consumption

Culture is political for scholars of British cultural studies, which is "a way of living within an industrial society that encompasses all the meanings of that social experience" ([7]). They are concerned with the generation and circulation of meanings in technological societies at this postmodern stage. Its emphasis on popular culture and daily life practices helps us to understand technology use in everyday life and the influence of consumer culture on IT product design and use.

The articulation model ([22]) explores contextual factors from a discursive angle, highlighting the mediation of meanings on the social aspect of human action which activity theory does not. Here articulation as a methodology maps the context, but "not in the sense of situating a phenomenon *in a context*, but in mapping a context, mapping the very identity that brings the context into focus". Thus "identities, practices, effects generally *constitute* the very context within which they are practices, identities or effects." It is a process of creating connections between various contextual factors on the level of practices and the level of meanings. As an example of such mapping, the circuit of culture examines five key processes in a development cycle of an artifact: representation, identity, production, consumption, and regulation ([10]). In the real world, these five elements continually overlap and intertwine in complex and contingent ways.

Applying the circuit of culture to cross-cultural design can show how other elements (representation, identity, production, and regulation) interact with and contribute to the "consumption" element in the whole lifecycle. It suggests that the consumption process is not the only significant and stand-alone process we need to consider in design. The idea of cultural consumption as both a material and symbolic activity directs our attention to the signifying practices and "identity values" of daily technology use.

Based on the discussion above, I propose an activity approach to cross-cultural design. With a focus on the mediation of *meanings* and of *activities* in context, this approach regards usability as a diffusing feature across the activity system, incorporates cultural factors from both the *immediate context* and *socio-cultural context* into the object of inquiry, and situates culture in the dynamic interactions of the *instrumental* and *social* affordances of the technological artifact.

4   The Case of Mobile Text Messaging

The following case is drawn from a recent cross-cultural study of mobile text messaging use in American and Chinese contexts ([25]) to illustrate the activity approach. Forty-one frequent users ranging from 18 to 30 from two sites participated in that

study. Data were collected via methods of questionnaire survey, diary study, qualitative interview, and observation. During data analysis, message diaries were studied to explore concrete use activities at the intersection of the immediate context and the sociocultural context; collected text messages were coded to examine habituated uses and search for structuring forces of this technology in a sociocultural context; and interview transcripts and observational notes were investigated to interpret the mediation of meanings and social motives in everyday life practices.

"Lily" is a 26-year-old college teacher from China. Texting is "an indispensable means of communication" in her life, and she thinks that most of her friendships and cousinship are maintained and enhanced by text messaging. Lily moved to her current city after graduation. As a stranger in the new place, she uses text messaging to stay in contact with childhood friends, college friends, colleagues, and relatives. The diary study indicates almost half of her messages were sent to exchange recent life situations with friends. She and her friend usually engaged in a conversation consisting of several message exchanges.

When I interviewed Lily, she was busy preparing for her upcoming wedding ceremony, and she had just sent out the first round of invitations for their wedding banquet to her friends via text messaging. She appreciated the affordance of getting quick feedback from text messaging. Friends typically texted her with congratulations, told her whether they would be able to come, and how many of them would make it. Especially for friends at a distance, it was more convenient to send text messages than to mail invitation cards. Lily also prepared a few paper-based invitations. These were primarily reserved out of respect for her older work colleagues with whom she had a good, yet more distant relationship.

Lily finds text messaging agrees with her personality compared to other technologies. For example, she does not like to make phone calls with friends all the time as it is abrupt to call people and ask about their recent situations after years without contact, nor does she like to go online to chat via instant messaging, as she does not feel it genuine to chat with different friends at the same time. She values simple friendships and one-to-one communication that text messaging affords. By using text messaging for maintaining and enhancing her social network, Lily actually identifies herself strongly with the socio-cultural norms surrounding her. In a collectivist culture, relationships are relatively long lasting, and individuals feel a deep personal involvement with each other. This long-term relationship orientation is mediated nicely with mobile messaging that allows people to stay in touch in an unobtrusive way. She confessed in the interview: "Sending text messages helps me understand [the saying] 'the friendship between gentlemen appears indifferent but is pure like water (Jun zi zhi jiao dan ru shui)' in a deeper way. It makes me feel good by texting and greeting friends occasionally." The phrase "the friendship between gentlemen appears indifferent but is pure like water" is a Confucian motto about how to socialize with friends. It has been told for thousands of years in China and is deeply rooted in Chinese people's daily social practices. People are taught that they should treat their friends genuinely with reserved warmth and reasonable distance. The best friendship is like pure water, maybe mild, but enduring without being tainted with personal interests or excessive contact.

While Lily enjoys the social affordance of this text messaging technology, she is also bothered by its instrumental limitations as she finds her care and consideration is

confined to the size limit of a text message. She likes to compose long and complex messages to describe life scenarios; however, "about 70% of the time" (her estimate) when composing text messages, she receives a prompt telling her that she has reached the size limit. Then, she has to go back and delete some words without ruining the clarity of her messages. It is annoying to go through this process daily, but she has no other way.

Lily's use of messaging technology indicates that her local uses were influenced by dimensional cultural factors such as high-context communication style and collectivist culture, but these dimensions are not abstract and isolated ones. They are also shaped by the local conditions in the immediate context and by Lily's own personality. In addition, gender factor and generation factor come into play. As a young female user, Lily embraces the messaging technology willingly than her older generations and tends to compose lengthy messages than male users.

With the lens of the activity approach, we can see a specific local use is developed in a concrete activity situated at the intersection of the immediate and social contexts, and this local use echoes with both the user's subjectivity and the surrounding culture's ethos. Thus, simply applying cultural conventions to cross-cultural design is ineffective; we need to develop rich understandings of use activities in context to designing local technology. Moreover, it is insufficient to tie cultural issues only to national cultural dimensions as gender/generation issues clearly affect local uses of text messaging in this case.

The activity approach brings design attention to social affordances. For example, Lily hoped that she would not have to delete words to fit in the message size limit most of the time when she texted to her old friends. On the surface level, it seems that this use problem can be easily fixed by increasing the message size limit; however, the real issue here is how to better support for longer conversations and lengthy chats and how to help maintain social network in a collectivist culture via text messaging.

It is clear that the focus of cross-cultural design needs to move from localizing for operational affordances to localizing for social affordances. Users value social affordance during their use. The translation of menus is an affordance on the operation level, but what users really want and value is an affordance on the activity level. It is shocking to see that the localization work for the mobile text messaging application on most phone models only involves the translation work of the interface for operational affordances, the interface and the functions of the technology have remained the same except for the improved inputting methods after all these years, even though mobile messaging technology is used for different purposes (e.g., small talk vs. long conversation) in different cultures. The localization work informed by the activity approach would address this need and better support local uses.

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