

Merging experiences and perspectives in the complexity of cross-cultural design

H. Winschiers-Theophilus¹, N. Bidwell², E. Blake³, G. Kapuire⁴, M. Rehm⁵

^{1,4}Polytechnic of Namibia, ²James Cook University, Australia,

³University of Cape Town, South Africa, ⁵Aalborg University, Denmark

^{1,4}heikew/gkapuire@polytechnic.edu.na, ²nic@gmail.com,

³edwin@uct.ak.za, ⁵matthias@imi.aau.dk

Abstract

While our cross-cultural IT research continuously strives to contribute towards the development of HCI appropriate cross-cultural models and best practices, we are aware of the specificity of each development context and the influence of each participant. Uncovering the complexity within our current project as an international team with experiences from three different continents reveals a set of challenges and opportunities for growing global design communities.

1 Introduction

The last decade has seen a dramatic increase in recognising cultural issues in designing and evaluating Information and Communication Technologies (ICT). The academic and practice-oriented literature yields diverse perspectives on, and emphases in, an abundance of project experiences, models and frameworks and theoretical discourses. Fuelled by economic interests in emerging markets

a vibe of internationalization and localization grew. As far back as 1996, Del Galdo and Nielson recommended adapting usability methods to specific countries as well as designing user interfaces in accordance with cultural models of how local people work and communicate. However, under pressure to roll-out systems rapidly, often practitioners short-cut the processes for matching user interface design methods to localities and drew on highly generalized models. More recently this approach has received considerable criticism in the field of Human-Computer-Interaction (HCI) and the original euphoria of using cultural models (e.g Hofstede's, Hall's, Trompenaar's) has been replaced by, theoretical and practically-grounded (Winschiers & Fendler, 2007), scepticism. In parallel, interests in what user-centred design means in terms of socio-economic development and social justice has uncovered the incompatibility of methods and techniques in different cultural settings. The design community fills the resulting vacuum with a plethora of tools and experiences situated in particular examples from around the globe. However, while valuable, these instances tend to produce more questions when it comes to identifying suitable approaches and generating effective and efficient guidelines for cross-cultural design and evaluation.

2 The Models and the Real Life

The validity of high-level models for Software internationalization and localization, are now widely questioned due to their reliance on determinants that are locally irrelevant, data sets that are out-of-date and doubtful and generalizations within national boundaries. We argue that part of the problem is the inappropriate integration of cultural models in the entire design and evaluation process.

2.1 The modeled user and the real developer

Adopting a 'Rest-of-the-World' view to applying cultural models to user groups only omits even a notional recognition of the influence of developers. A range of studies illustrate the varying outcomes when evaluators and users of different cultural backgrounds are paired (e.g; Vatrapu & Perez-Quñones, 2008; Clemmensen & Plocher, 2007; Oyugi et al., 2008). Shi and Clemmensen (2008) remark that, "the appropriateness of a given cultural theory/knowledge depends on who the individual is together with. Sharing knowledge of usability problems and coordinating descriptions of usability problems depend on the mutual perception of group belongingness." The authors point out Eastern societies, for example, where the socio-emotional orientations of users are

acutely influenced by the presence of foreign evaluators. Clemmensen and Plocher's cultural usability model (2007) attempts to depict dynamics in the user-developer relationship by distinguishing the user's internal cultural model of technology use, external artifacts and institutions. However, this may omit some of those elements of the developers' cultural background that are unaware and which as Winschiers-Theophilus (2009b) suggests can have undesirable influence onto design and evaluation processes in determining outcome. Even when differences between users and developers are recognised we often tend to seed the design process from a particular perspective. For instance, Sherwani et al. (2009) propose a framework for designing for oral users by accounting for the psychodynamics of oral thought. While such users clearly differ from developers with written literacy the framework does not account for the dynamic between them. Finnegan (2007) argues that our own heritage, shaped by the written word, contributes to complex relationships that shape our beliefs about engagement, participation, dialogue and information transmission between people.

2.2 ICT concepts and methods are from Mars, Users are from Venus

After studying cross-cultural evaluations on three continents, Oyugi et al. (2008) concluded that even an evaluator situated in the users' culture cannot compensate for methods that are inappropriate to the context. Indeed, the literature is awash with reports on the incompatibility of methods to different cultural settings. However few studies either inspect the underlying values and meaning of concepts inherent in usability evaluations that contribute to the inappropriateness of methods or attempt to re-define values and concepts for specific contexts. Winschiers and Fendler (2007) took a close look at values associated with the concept of "usability" and found that Namibian user groups did not prioritize effectiveness and user satisfaction in the way we typically evaluate designs. Evaluating usability according to assumed underlying values, only, leads to unusable results and products. For example, in rural Namibian settings task completion speed is an irrelevant criterion but measures of users' assessment of information integrity and the trust in knowledge sources is critical. Thus cultural adaptation must inform usability methods with values and concepts aligned to local cultural reference systems, rather than just compare errors in evaluating designs with different cultural groups.

2.3 The cultural flow

Young (2008) argues that "the current state of research representing culture in the design of ICTs serves a limited scope of what culture can be in the design process". Indeed, a situated approach to HCI design realizes that cultures are not monoliths with solid borders but rather a dynamic continuum of

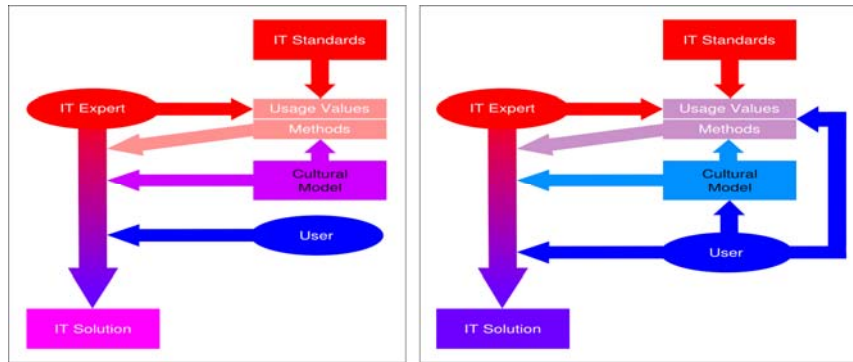


Illustration 1: Cultural flow in current and integrated process (Winschiers-Theophilus 2009a)

intersections and overlapping boundaries, inter-penetrating and variable scales. Winschiers-Theophilus (2009a) presents a cultural flow model explicating points of cultural influence within a development situation, as pictured in illustration 1 with the colors symbolising cultural flavors.

The integrated model shows the importance of user involvement in the definition of values and concepts, the choice of methods, the formation of the cultural model, as well as the development process itself. Picturing the cultural flow one can theorize about possible outcomes if the development would be user-driven, or the IT expert being more acculturated or replaced by an expert from another culture.

3 From Expert to Apprentice out there

To unpack the ways we can integrate cultural models in the entire design and evaluation process we reflect on situated complexities in our current research. We involve researchers from different backgrounds and continents and apply various approaches from different 'cultures' of design to a project that aims to develop an indigenous knowledge management system in rural Namibia, southwest Africa. We draw such diversity together in two ways. First, we take a dialogical approach to design which means our understandings of users and their activities, for the purpose of design, lives in sets of relationships between ourselves, others and the context. As designers we experience the interactions as we 'converse' with multiple perspectives and diverse aspects of settings. This sensitises us to our own relationships with those objects in our enquiry that arbitrate how we align understandings with our users. Second, we frame our design process following a critical action research approach (Blake, 2006),

to introduce technology and design concepts. Together these positions mean we undertake a process of reflecting on our current understanding of users and our relationship with them and then introduce appropriate tools for data gathering and interpretation and design conceptualization. We begin by outlining the research context and then present a series of challenges and reflections as we go through the process of cross-cultural meaning making.

3.1 Project outline

Increased rural-to-urban-migration in Southern Africa has disturbed the chain and processes of transferring rural knowledge and placed traditional wisdom at genuine risk. As is common throughout Africa, urban migrants return home to their villages however, without opportunities to receive knowledge from Elder community members, they encounter difficulties in performing rural activities essential for their survival and the sustainability of their land. Technology may provide a way to address this problem; thus, since 2008 we have worked with two communities in Eastern Namibia to develop an indigenous knowledge management system that can collect, organise and retrieve knowledge to enable communities to preserve their own wisdom, thought patterns and communication protocols. We intend that the final product, as well as successful methods, will act as proof of concept that can be deployed to other similar community development projects.

Our development team consists of community members of Herero ethnicity, local researchers, students and associated external researchers. In both communities one Elder is our main point of contact and is informed of or involved in all project activities. At the same time, our research team consists of a member of the Herero community whose familiarity with language and customs enables him to facilitate most community-researcher interactions. A second locally-based European researcher residing in Namibia for 16 years has focused her cross-cultural research on appropriation of Software Engineering methods and concepts. The three external researchers who joined the project include: a South African Professor grounded in critical action research with over a decade of ICT projects with African indigenous communities; an Australian interaction design researcher specializing in rurally-situated ICT and experienced with Indigenous Australian and African communities; and, a European Professor with skills in encultured conversational agent technology and recent project experiences in Japan. A number of students are directly and indirectly involved in specific project parts, and one external partner in Germany supervises groups of students who implement prototypes in accordance with specifications generated in Namibia. At this stage, all team members have influenced the design process in one way or the other.

3.2 Overcoming technological and conceptual challenges

Our project presents a significant new design challenge since African oral and performed knowledge inherently differs from those knowledge forms that ICT currently explicates and codifies. Digital knowledge representation and retrieval mechanisms (e.g. hierarchical structures, text-based search or technical ontologies) do not map well onto oral and performed knowledge that people routinely share, informally, face-to-face.

African rural knowledge is not recorded, by writing or electronically but shared in face-to-face participation within rural communities by talking, telling stories or collaborating on tasks. Close collaboration means that community members have an implicit understanding of their roles and expected skills and knowledge. For instance, we observe the exact timing and coordination by Herero community members in group or paired activities such as slaughtering, cooking, cattle branding and milking without prior discussion. After a group-activity, members sit together to eat and laugh about the events. Such an attitude demonstrates the mutual support of the villagers in any activity in the village. This social network with particularly values shape the identity of individuals within the community (Bidwell, 2010). Herero rural communities are no exception in Africa, where the way of life is deeply rooted in a philosophy of “connectedness of all” as expressed by the grand old man of African Theology, John Mbiti (1990): *“I am, because we are; and since we are, therefore I am”*.

An appreciation of local practices and worldviews is fundamental in conceptualising new and appropriate paradigms in ICT. Many authors such as Oyugi et al. (2008) acknowledge that, “local people have their own concepts of knowledge and their own forms of information communication so that it is essential that they should be able to shape their use of ICT without the risk of losing their culture and identity“. However, there is currently no suitable ICT platform accessible for Herero community members to shape in ways matched to their group performance of activities. Rather, ICTs have emerged in societies that prioritize written and picto-graphic information transfer to satisfy the needs of individuals or businesses (Taylor & Cheverst, 2008). Therefore to preserve culture and identity we need to develop processes to shape the underlying design and development concepts and paradigms.

Creating new concepts and paradigms on which to found representation and retrieval systems requires identifying anchors in the AIKS around which we can communicate about design and development. However, on the one hand it is difficult for community members to recognize ways that familiar activities could be different and supported by technology, while on the other hand it is difficult for an external researcher to judge which part of an activity must be

preserved and which one can be modified in the community context. Uncovering the incompatibility of current technological solutions with the representation of AIKS reveals our own conceptual limitations in finding new answers without falling back on familiar ICT patterns. In an attempt to query our own interpretations and suspend our design ideas we strive for community driven development, which entails its own challenges.

3.3 Exploring contextually adequate methods

We aim to enable both researchers and community members to engage in reflective discussions leading to a deeper common understanding of an appropriate design. We follow local communication protocols as advised by the community member in our research team. Thus, we use small or large group discussions in the design and evaluation process, and many discussions were facilitated by him. This has proven most effective in a male-only and mixed community groups and with elder women, and yielded considerable insights into members' lives, usage of ICT, internal and external communication flow and clarified differing assumptions. For instance, our experience with Australian Indigenous communities led to the concerns that indigenous knowledge should be guarded by specific members of a community, while experience in Africa led to concerns that broadcasting local knowledge might lead to external agencies descending on and exploiting the sites. However, in contrast, the communities showed considerable eagerness to share information about community life and knowledge with the rest of the world, both to attract financial and technical support and to proudly display and propagate their own culture. While none of the community members perceived any knowledge exploitation threat, expectations in immediate financial benefits of participating in the project were soon expressed.

Vivid debates among the researchers on the appropriateness of specific techniques and technology ensued as soon as we commenced reflecting on activities. For instance, in considering different media for the community to express ideas we were concerned about their lack of familiarity with paper or modeling with clay or plastic toys. We were also concerned about how our own early prototypes or design ideas might influence the community, and inherently impose "our" cultural heuristics of structuring information. To provide a medium around which we could communicate, and provide the community with sufficient a glimpse into our thinking patterns to triggers their own design ideas for preserving cultural identity we introduced a technology probe, in the form of video recording devices. These externalised tacit practices and stimulated community debate including meta-level discussions on indigenous knowledge which significantly enriched our conceptualization. At an early stage we introduced 'Flip' cameras and high-end cell-phones for participants to

record. We were motivated to genuinely empower participants and reduce our intrusion. However, our observations of participants' use of the tool revealed new dimensions of design challenges, such as visualizing indigenous knowledge in relation to the narrator of the knowledge and the audience, and provoked different design ideas which we have partially discussed with the community but not yet further developed.

This leads to a further challenge for implementing design processes which relates to the sequencing of different design explorations with the same community and their effect upon each other. For instance, to identify knowledge organisation patterns we planned a video-thumbnail sorting exercise without any prescriptions but we also sought to investigate the usefulness of a three-dimensional model of the village for location tagging of videos. In the field the community intern researcher opted for the thumbnail evaluation as he felt it was looser. Drawing upon experiences from one site sometimes helped our process at the other research site. For example, we observed that using a laptop based thumbnail organization at the one community site carried a high overhead in terms of participants focusing on interacting with a technology prototype rather than on core aspects of the organisation. Thus, we used paper-prototyping at the other site, which revealed interactions between participants and their conceptualisations that would have been otherwise obscured. However, we also uncovered major discrepancies between the two community sites barely 100 km apart; for instance although at both sites the community members were equally semi-literate and computer illiterate, the conceptualization of a computer application and its evaluation differed substantially.

As a research team with vastly varying backgrounds, skills and immersion in the research context we produced different meanings, abstractions and design ideas in our respective engagements with the data and the community. This increased the complexity of the already 'exotic' context and the overhead of ensuring different positions are managed and incorporated appropriately. However, the exchange of multiple-perspectives sometimes challenging each other's assumptions, sometimes adding observations has been immense valuable to the project. Which leads us to the next challenge, namely the position and perspective of the individuals within the development context, based on their background. In this case we have the local community and the semi-external researcher team, as one of the researchers also belongs to the local community. Taylor and Cheverest (2008) point out that one of the practical problems in designing with communities is the perception of their ideas and of the researchers. Sherwani et. al. (2009) assumes that the experimenter always has a higher socio-economic status leading participants to feel intimidated. However, we experience that the communities being in their

familiar surrounding and outnumbering the researchers overcame their initial shyness rapidly and are now confident and the once to determine the paste while leaving researchers being anxious. Research activities running over a longer time period have to be subsumed in the daily activities of the rural community. While this feels natural to the one from the community, the rhythm is -mostly- consciously adopted by the external researchers, requiring a high learning curve. Related to exploring useful design and evaluation methods while attempting to design a real system is at the cost of the patience of the community as part of the process. After a number of field trips, the community was wondering when the system would be ready for use.

4 Premises

We recognize that designing Usable Information Technology across Cultures is an Art, highly creative and sensitive, situational unique, and contextually self-defined (Winschiers-Theophilus, 2009a). In an attempt to suspend judgments and design decisions as long as possible, we find ourselves trapped in our own thinking patterns of knowledge organization, technological solutions and familiar methods. While there is a place and time for every participant to shape the outcome there is a number of challenges to overcome if designing with local communities rather than for communities. We believe that with a dialogic approach and Action Research, as a paradigm rather than a prescriptive method, we create a development context in which the community and the researchers with their own legitimate interests and areas of expertise, yet both clueless in regard to a good outcome, can explore appropriate methods and technological solutions. Models and experiences become absorbed into the dialogic. First, we use them to organize multiple strands of information when we initiate encounters with a setting. Next, we use them to create plans for interventions and actions against which we monitor and reflect upon the unfolding situations. All along the way they are a dialectic trigger, to focus and diffract the meanings we elicit from circumstances.

References

- Bidwell, NJ. (2010). Ubuntu in the Network: Humanness in Social Capital in Rural South Africa. *Interactions*, Mar- Apr.
- Blake, E. (2006). How to Provide Useful ICT When Called Upon. *Interactions*. September/October. P.20-21

- Clemmensen, T., Plocher, T. (2007). The Cultural Usability (CULTUSAB) Project: Studies of Cultural Models in psychological Usability Evaluation Methods (UEMs). In Proceedings of the HCI International, Beijing, China, Springer Notes
- Del Galdo, E., Nielsen, J. (1996). International User Interfaces. John Wiley & Sons, New York
- Finnegan, R. (2007). The oral and beyond: doing things with words in Africa. Oxf./Chicago: James Currey/ UCP
- Mbiti, J. (1990). African Religions and Philosophy, Heinemann; 2nd edition
- Oyugi, C, Dunckley, L., Smith, A. (2008) Evaluation Methods and Cultural Differences: Studies Across Three Continents. In Proceedings of NordiCHI 2008: Using Bridges, Sweden
- Sherwani, J., Ali, N., Penstein Rose, C., Rosenfeld, R. (2009) Orality-Grounded HCID: Understanding the Oral User. Information Technologies and Development, Vol. 5, Num. 4
- Shi, T., Clemmensen, T. (2008) Communication Patterns and Usability Problem Finding in Cross-Cultural Thinking Aloud Usability Testing. In Proceedings of CHI, Florence, Italy
- Taylor, N., Cheverst, K. (2008) "This Might Be Stupid, But...": Participatory Design with Community Displays and Postcards, OZCHI 2008, Australia
- Vatrapu, R., Perez-Quiñones, M.A.(2008) Culture and Usability Evaluation. The Effects of Culture in Structured Interviews. In Journal of Usability Studies 1, pp.156–170
- Winschiers, H & Fendler, J (2007). Assumptions Considered Harmful -The Need to Redefine Usability-. In: Usability and Internationalization, Part I, HCII 2007. Ed N. Aykin. LNCS Springer-Verlag Berlin Heidelberg
- Winschiers-Theophilus, H. (2009a) The Art of Cross-Cultural Design for Usability. In Proceedings of the HCII 2009, San Diego, USA
- Winschiers-Theophilus, H. (2009b). Cultural Appropriation of Software Design and Evaluation. In Handbook of Research on Socio-Technical Design and Social Networking Systems. Whitworth, B. (Ed.). IGI Global.
- Young, P. (2008). Integrating Culture in the Design of ICTs. British Journal of Educational Technology, Vol. 39, No.1