

The Brazilian HCI Community Perspectives in Cultural Aspects in HCI

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Abstract. We consider culture as a concept and a concern that permeates the 5 HCI Grand Challenges identified in 2012 by the Brazilian HCI community, and that should be understood and considered from a broad and systemic perspective. In this sense, we conducted a workshop about cultural issues to investigate and promote the topic in the HCI Brazilian community. In this paper, we present and discuss some results from the workshop, highlighting as primary empirical evidence the participants' survey responses. The results allow us to develop a panorama of how the Brazilian HCI community is interested in the subject of culture understands and makes sense of the subject in their practices.

Keywords: Culture · HCI Brazilian community · Workshop

1 Introduction

We live in a globalized and constantly changing world where technology, culture, society and nature are on a constant move. Thus, understanding the complex cultural context in which people live is becoming increasingly critical and necessary in order to clarify a problem and design a solution for it. However, one of the greatest challenges to Human-Computer Interaction (HCI) practitioners is to turn interfaces universally accessible and usable, on one hand, and to respect and promote culture-determined aspects of the user's experience, on the other hand. Big companies all over the world share this challenge and concern. Google, for instance, claims that “they are working toward a web that includes everyone”, but recognizes that “they are still not where they want to be when it comes to diversity” [12].

Over the years, cultural issues in technology design have been receiving attention from the HCI community [7, 10]. In Brazil, specifically, different research groups with different approaches have been working on artifacts, methods, tools, theoretical background and models to incorporate cultural issues in the interaction design process [11, 14–16, 20]. Salgado [17], for instance, has proposed a Semiotic Engineering conceptual tool, namely, Cultural Viewpoint Metaphors (CVM) for guiding the design

of cross-cultural interactive systems. Gasparini et al. [10] presented a survey of cultural-aware issues in HCI to establish background and some basic concepts for helping designers incorporating cultural issues in HCI. Pereira and Baranauskas [14], in turn, propose artifacts and methods for a value-oriented and culturally informed approach to design, recognizing the cultural nature of values and favoring the identification of relevant cultural aspects to the design context, process and stakeholders.

On the one hand, all the previously cited works have been focused on the importance of including and understanding cultural issues in HCI. On the other hand, each research group has adopted different theoretical foundations and different methodological frames to conduct its research. This is due to at least two reasons: (i) Brazil is a multicultural country with continental dimensions; (ii) the Brazilian HCI community has been founded in different approaches. In such a plural scenario, the key question is why just a few researchers, in Brazil, explicitly recognize the cross-cultural nature of their research.

In 2013, in a dataset composed by 236 full papers published in fifteen years of the Brazilian Symposium on Human Factors in Computer Science (namely “IHC”), Gasparini and co-authors [11] found only 6 papers focused on cultural issues. In the following year (2014), the same symposium (“IHC”) had just one full paper explicitly focused on this theme. The “IHC” is the major HCI conference in Brazil and it is supported by the HCI Special Interest Group of the Brazilian Computer Society. In the same year and conference, we organized the first Workshop on Cultural Aspects in HCI (WCIHC) aimed at: (i) identifying challenges and interests about this theme by the Brazilian community, (ii) sharing different concepts, theories, methodologies and knowledge, and (iii) raising the participants’ awareness to the importance and relevance of the topic. The workshop was attended by 23 participants from 20 different Brazilian organizations (18 universities and 2 Information Technology companies). From the participants, 8 are PhDs, 3 PhD candidates, 1 master, 7 graduates, and 3 undergraduate students. The research question that motivated the workshop was: What are the Brazilian community perspectives in Cultural aspects in HCI?

The workshop included different activities, such as paper presentation session; practical and participatory activity about design in a cultural critical context, focus groups, and a final discussion. In order to find out the researchers’ profile and background we invited all the registered attendees to answer a pre-workshop survey. It aimed at collecting evidence regarding: research activities, areas of concentration, research interests in Culture and HCI, what the participants understand by culture and cultural issues in HCI; previous experiences with cultural issues; and which cultural questions they believe to be relevant.

In this paper, we present and discuss some results from the workshop, highlighting as primary empirical evidence the survey responses. The results allow us to develop a panorama of how the Brazilian HCI community is interested in the subject of culture, understands and makes sense of the subject in their practices. Furthermore, we outline what the Brazilian HCI community thinks of when culture plays a leading role in interaction design.

This paper is organized as follows: Sect. 2 presents the foundation and concepts about culture and HCI. Section 3 details the workshop structure and dynamics.

Section 4 presents and discusses the initial results from the workshop. Section 5 presents our final remarks and directions for future research and activities.

2 Foundations and Concepts about Culture and HCI

Every technology triggers positive and/or negative impact on the environment in which it is inserted and on the people that are living in it – even in an indirectly way. Winograd [22] has stated that the task of designing interactive systems goes beyond building an interface to cover all the “interspace” in which people live.

In fact, HCI field needs to deal with universal issues and aspects that are also matter of other (computing or not) areas and, at the same time, consider specific aspects of the environment (e.g. cultural, social, economic, political, and geographic) in which the application occurs. Several authors as Bannon [1], Baranauskas [4], Bødker [5], Sellen and co-authors [19] claimed that the relationship between people with technology has changed intensely in last years. Currently, interactive systems can be anywhere and used anytime. These changes are profound enough to require a review of HCI field, its theories, methods and practices, and require consideration and explicit involvement of cultural issues related to context in which technology is designed, disseminated, evaluated and used.

Interactive systems need to support an increasing amount of materials and make them accessible to different populations Worldwide. A key challenge for the interaction designer is to design, build and evaluate systems that understand the cultural diversity of its stakeholders and answer a wide variety of needs and expectations.

Recently, the HCI Brazilian research community has developed an initiative to identify Grand Research Challenges for HCI in Brazil for the next decade [3]. Five Grand Challenges were presented: 1. The Future, Smart Cities and Sustainability; 2. Accessibility and Digital Inclusion; 3. Ubiquity, Multiple Devices and Tangibility; 4. Human Values and 5. HCI Education and the Market. This initiative shows the need to understand, consider and deal with cultural issues when doing scientific research in HCI. More than that, Salgado and colleagues affirm that culture topic is crosses the 5 suggested Great Challenges [18], requiring an understanding of Culture and an approach from a broad and systemic perspective.

Most research on culture and HCI performed in the last 15–20 years has investigated the impact of cultural differences on the users’ experience and aimed to define the cultural issues in the HCI design process (de Souza et al. [8]; del Gado [9]; Vatrapu & Suthers [21]). Other studies have proposed alternatives to the evaluation processes and design to accommodate cultural factors in the conceptualization and construction of multicultural systems interfaces (Barber & Badre [2]; Bourgues-Waldegg & Scrivener [6]; Gasparini et al. [10]; Pereira & Baranauskas [13]). In addition, new research showed interest in helping HCI professionals in developing multicultural systems that expose and communicate cultural diversity (Salgado and co-authors [17]).

However, while the importance of dealing with cultural issues is obvious and is often present in debates around the course of the HCI area, the treatments given to this issue have been so far mostly fragmentary, guided by practical and specific problems

(e.g., the need to develop Web applications for an international and culturally diverse audience). There is an urgent need to discuss and generate new knowledge that will help HCI professionals to find the necessary balance between cultural accessibility – allowing users from one culture to use software produced by other cultures, and preservation of cultural diversity – producing technology that respect, express and strengthen the identity and cultural values (Salgado et al. [17]). Indeed, there is still a lack of theoretically and methodologically informed work (artifacts, methods, tools, examples, experiments) to support the understanding of cultural issues and its explicit consideration in the technology design. The very notion of the meaning of culture, its role in the HCI, and the existing theories and methods used must be put into perspective, shared, reviewed and discussed.

Our initiative in this direction was to establish a place to discuss cultural issues in the practices and research with HCI Brazilian community. For that to happen, we proposed a workshop held jointly with the Brazilian Symposium on Human Factors in Computer Science (“IHC”).

3 WCIHC: The Workshop on Cultural Aspects in HCI

In recent years, unwanted impacts of computer systems on economic, ethical, political and social life have become more evident. Such kind of problems generally stem from a software development vision that does not privilege the social world in which solutions are used and people live, i.e., that ignore the complex cultural context of life. Therefore, we argue that research and developments in twenty-first century HCI must respond to the cultural challenges brought about by globalized societies. There is an urgent need to generate a body of knowledge that will help HCI designers to recognize the importance of cultural issues in the design and evaluation of interactive technologies, reaching a proper balance between cultural accessibility and the preservation of cultural diversity. Indeed, the very understanding of culture, its role in the design of technology, the existing theories and methods to deal with cultural issues are topics that need to be discussed, disseminated and revisited. Therefore, the first workshop WCIHC (acronyms of I Workshop on Cultural issues in Human Computer Interaction) aimed at sharing knowledge, experiences and practical results on the research undertaken by the HCI community on this issue and discussing the cultural dimensions in Human-Computer Interaction.

Because the WCIHC happened jointly with the “IHC” event, it had the potential to promote a current discussion forum for the HCI community in Brazil, favoring not only research in the Great Challenges context, but contributing to the development of researches in line with the challenges of a society mediated by Information and Communication Technologies.

The objectives of the WCIHC workshop were twofold: (a) Promote discussions, share knowledge, experiences and concrete results of the research carried out on the cultural dimensions in Human-Computer Interaction; and (b) Disseminate existing research on the topic in the Brazilian community, stimulating the development of new initiatives.

People interested in participating with a paper submission were invited to submit a paper, justifying their interest in the topic and describing experiences related to cultural issues in HCI, including topics such as: Theories, methods, techniques for the design/evaluation of interactive systems; Design and/or evaluation of multicultural systems; Internationalization-Localization; Culture-Sensitive Design Process; Culture-sensitive Interaction; Cultural accessibility; Cultural awareness; Cultural Diversity and its effects on HCI research; Cultural Perspectives on HCI; Usability, HCI and Culture; Adapting the design and evaluation of interactive systems based on cultural issues; Cultural issues in HCI education; Multi and intercultural Collaboration; Intercultural encounters in HCI.

Each submission was evaluated by two reviewers, and the criteria for selection were: quality of data, arguments about the relevance of the topic, practical implication of the results for HCI, and potential for promoting constructive discussions during the workshop. Five papers were accepted for presentation and discussion at the Workshop, related to: (1) Survey of cultural aspects in HCI Research; (2) Culture in iDTV Projects; (3) Investigating the cultural aspects in the group formation of collaborative learning; (4) Digital Inclusion in a Kaingang Community; and (5) The investigation on elderly, games and motivation.

Among the five papers, the papers 1 and 2 provided general discussions on the subject, and the papers 3, 4 and 5 showed more specific discussions, addressing specific and local topics. The first work presented a comprehensive literature review and contributes to present an overview of some of the major works on the subject in the HCI. This was especially important to place the participants in relation to the existing work and to promote a common basis for discussion. The second work also presented a literature review and contributed to propose a set of questions to support the identification of requirements related to cultural issues involved in a practical context. These issues were important to promote critical thinking about cultural aspects and to show their direct relationship with design requirements. The third work showed the importance and relevance of considering cultural issues when forming groups to promote collaborative learning. This work contributed to relate culture with education, including questions about its practical applications, and suggested an agenda on the issue. The fourth work reported a direct experience of working with an indigenous tribe in southern Brazil, contributing to the workshop by showing a reality of great cultural difference and to the discussion of the methods and theories to be used to support the work in this kind of context. Finally, the fifth work highlighted the importance of understanding culture when designing solutions to specific groups, but not restricted to them, promoting discussions on the need to understand a specific user group, but located in a more complex and comprehensive context.

Besides the call for papers, we invited all the participants of our workshop (both presenters and the general audience) to answer a survey, before the workshop take place, to discover how culture is understood by Brazilian HCI practitioners. The workshop had 22 participants (researchers, masters and PhD students, industry professionals engaged in HCI and interested in cultural issues) and all of them answered the survey before the workshop.

The workshop was held on 27 October 2014, being organized as follows: Opening, with a brief summary of the objectives and the presentation of the agenda; Oral Presentations and discussions of selected papers; Panel with the organizers; Practical activity in groups; Discussion with the audience; and workshop closure. In the practical activity, the participants were exposed to a problem situation and were invited to reflect on the cultural issues involved in it. The activity intended to bring the discussions developed at the workshop into a practical context, promoting the critical reasoning and inviting the participants to think about real problems and the way they would deal with it.

The pre-WCIHC survey. The survey was available online for all the people who had subscribed to the WCIHC. Initially, the survey explained its goals, and presented an informed consent term. Only after this step people could answer the questions. The survey was composed by personal and demographic questions (e.g., background, field, institutions of work and jobs, professional activities, topics of interest, research interest), workshop expectations (e.g., what topics related to culture they would like to see in the WCIHC, their expectations about the workshop) and their previous knowledge about culture in HCI (e.g., information about their knowledge on the topic, what references and authors they knew, what culture means for them, which cultural aspects did they consider relevant in HCI study, as well as their previous experiences when dealing with cultural issues in HCI). In the next section we present and discuss some results from survey.

4 Preliminary Results

All the 22 participants answered the survey before attending to the workshop. The first set of questions was about the participant's profile. Most of them have some background in computer science/informatics field (academic education, e.g. undergrad or Master/PhD; or teaches/researches in the field), and one participant has academic education and works in Arts. When asked about their institution (in the past 3 years), as all participants are located in Brazil, only Brazilian' institution (universities and research centers) were described. The participants work in different regions of the country (at least 1 participant from each one of the 5 regions in Brazil). This is quite an interesting aspect, because Brazil has continental proportions, each region has different traditions and costumes, and these cultural differences could be investigated and applied in HCI field.

In relation to their research topics of interest, although all the participants research in HCI in some extend, different topics emerged. The main topics are presented in Fig. 1, which highlights "Accessibility", "Computers and Education", and "Semiotic Engineering".

About the reasons that led them to enroll in the workshop, most of them (21) stated that they have interest in Culture and HCI, and one participant want to know the topic. Eight participants already research in the topic and six participants claimed they still do not research on the topic but they want to start.

When asked which themes related to culture and HCI they would like to see addressed in the WCIHC, there were different suggestions: Ongoing research on the subject in Brazil; systems evaluation focusing on culture; perception of cultural

are frequently referenced in the literature related to cultural and HCI issues, we presented a list of well-known authors in the field and asked the participants to check the ones they already knew. Figure 2 presents the cited authors.

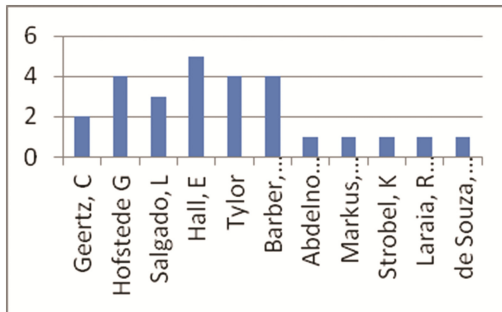


Fig. 2. Cited authors

When we asked participants what is culture to them, the answers were diverse, but all related to each other. Here we show 3 participant’s responses (translated by the authors), with distinct ways of writing, probably related to their knowledge of the topic:

Participant 1: *“Aspects of a society.”*; Participant 2: *“It is a set of conventions established over time in a community, influenced by factors such as tradition, laws, territories, values etc.”*; Participant 3: *“A higher order signification system which determines how the expression and content from multiple lower order signification systems used by one or more social groups are associated with each other. It is my interpretation of the term signifying order’ proposed by Danesi and Perron in the book that deals with culture in a semiotic perspective.”*

Finally, about the question “What cultural issues do you consider relevant for HCI studies?”, the answers were varied: Cultural plurality questions; Microcultures; organizational culture; Language and behavioral differences; How countries deal with the lack or excess of privacy; All the issues related to beliefs, values and customs of a group or society, at the technical, formal and informal levels; All issues related to culture and its implications in the interaction of people with the new technologies; Beliefs, habits, values, customs; Accessible interfaces to language groups; Localization of interfaces; diversity of aesthetic and logical paradigms; The formation of culture, cultural diversity and how different values can impact HCI; Styles of thought and communication, etc. These answers indicate that Cultural issues are still a new topic to discuss in the Brazilian community, which has different interested, purposes and ways of understanding the role of culture in HCI.

5 Final Remarks and Directions for Future Research

Nowadays we need to discuss the course of HCI area and to rethink the theories, methods and practices adopted to support the design of computing solutions in a culturally informed manner. It is a two-way road, once revisiting theories, practices and methods

to become “culturally aware” will be useful, and even possible, only if the HCI community changes its mindset, i.e., its culture of research and practice.

In fact, we need to understand and recognize that cultural aspects directly influence how an interactive system is created, perceived, understood and used. The lack of understanding and knowledge about the need for considering cultural differences in HCI has led to the design of products that do not meet the demands of their users, do not make sense, and that often cause unwanted impacts on the environment in which they are available and on the diverse stakeholders.

The WCIHC was an initiative to promoting such discussion in the HCI Brazilian community, highlight the importance of cultural issues in HCI research, and promoting the exchange of experiences and practices between the participants. The initial results from this workshop suggested that our community is diverse, and that although many participants do not consider (or do it at a minimum level) cultural issues in HCI research and practices, they are aware of their importance, and prone to advance in this direction. For that, background material, examples of practices and further discussions to understand concepts, share experiences, practices, challenges, and practical problems are welcome and necessary. We hope this is initiative to be the first step to more people to get involved on the topic.

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References

1. Bannon, L.: Reimagining HCI: toward a more human-centered perspective. *Interactions* **18**(4), 50–57 (2011)
2. Barber, W., Badre, A.: Culturability: the merging of culture and usability. In: Proceedings of the 4th Conference on Human Factors & the Web, Basking Ridge, NJ, 5 June 1998
3. Baranauskas, M.C.C., de Souza, C.S., Pereira, R.I.: GrandIHC-BR – Grand Research Challenges for Human-Computer Interaction in Brazil. Human-Computer Interaction Special Committee (CEIHC) of the Brazilian Computer Society (SBC) (2015). ISBN: 9788576692966
4. Baranauskas, M.C.C.: Social awareness in HCI. *Interactions* **21**(4), 66–69 (2014)
5. Bødker, S.: When second wave HCI meets third wave challenges. In: 4th Nordic Conference on Human-Computer Interaction: Changing Roles, Norway, pp. 1–8 (2006)
6. Bourgues-Waldegg, P., Scrivener, S.A.R.: Meaning, the central issue in cross-cultural HCI design. *Interact. Comput.* **9**(3), 287–309 (1998)
7. Clemmensen, T., Roese, K.: An overview of a decade of journal publications about Culture and Human - Computer Interaction (HCI) - Department of Informatics Howitzvej DK. Working Paper nr. 03-2009 (2009). http://openarchive.cbs.dk/bitstream/handle/10398/7948/WP_2009_003.pdf
8. de Souza, C.S., Laffon, R., Leitão, C.F.: Communicability in multicultural contexts: a study with the international children’s digital library. In: Forbrig, P., Paternò, F., Pejtersen, A.M. (eds.) HCIS 2008. IFIP, vol. 272, pp. 129–142. Springer, Boston (2008)
9. Del Gado, E., Nielsen, J.: *International User Interfaces*. John Wiley and Sons, New York (1996)

10. Gasparini, I., Pimenta, M.S., de Oliveira, J.P.M.: Vive la différence!: a survey of cultural-aware issues in HCI. In: X Brazilian Symposium on Human Factors in Computer Systems (IHC 2011), pp. 13–22 (2011)
11. Gasparini, I., Kimura, M.H., Moraes Jr., S.L., Pimenta, M.S., de Oliveira, J.P.M.: Is the Brazilian HCI community researching cultural issues? An analysis of 15 years of the Brazilian HCI conference. In: The Fourth International Workshop on Culturally-Aware Tutoring Systems (CATS 2013). Proceedings of the Workshops at the 16th International Conference on Artificial Intelligence in Education AIED 2013, Memphis, pp. 11–19 (2013)
12. <https://www.google.com/diversity/>. Accessed in October 2015
13. Pereira, R., Baranauskas, M.C.C.: Value pie: a culturally informed conceptual scheme for understanding values in design. In: Human-Computer Interaction. Theories, Methods, and Tools, pp. 122–133 (2014)
14. Pereira, R., Baranauskas, M.C.C.: A value-oriented and culturally informed approach to the design of interactive systems. *Int. J. Hum Comput Stud.* **80**, 66–82 (2015)
15. Salgado, L.C.C., et al.: Conceptual metaphors for designing multi-cultural applications. In: LA-WEB 2009 - Latin American Web Congress, pp. 105–111 (2009)
16. Salgado, L.C.C., Souza, C.S., Leitão, C.F.: On the epistemic nature of cultural viewpoint metaphors. In: X Brazilian Symposium on Human Factors in Computer Systems (IHC 2011), pp. 23–32 (2011)
17. Salgado, L.C.C., de Souza, C.S., Leitão, C.F.: *A Journey through Cultures: Metaphors for Guiding the Design of Cross-Cultural Interactive Systems*. Springer, London (2012)
18. Salgado, L., Pereira, R., Gasparini, I.: Cultural issues in HCI: challenges and opportunities. In: Kurosu, M. (ed.) *Human-Computer Interaction, HCII 2015, Part I*. LNCS, vol. 9169, pp. 60–70. Springer, Heidelberg (2015)
19. Sellen, A., Rogers, Y., Harper, R., Rodden, T.: Reflecting human values in the digital age. *Commun. ACM* **52**, 58–66 (2009)
20. Silva, M.A.R., Anacleto, J.C.: An end user development environment for culturally contextualized storytelling. *Int. Rep. Socio-Inform. (IRSI)* **6**, 4–8 (2009)
21. Vatrapu, R., Suthers, D.: Intra- and Inter-cultural usability in computer supported collaboration. *J. Usability Stud.* **5**(4), 172–197 (2010)
22. Winograd, T.: The design of interaction. In: *Beyond Calculation: The Next Fifty Years of Computing*, pp. 149–161. Springer, New York (1997)