

## Is the Brazilian HCI community researching cultural issues? An analysis of 15 years of the Brazilian HCI conference

Isabela Gasparini <sup>1,2</sup>, Marcos H. Kimura <sup>1</sup>, Sergio L. de Moraes Junior <sup>1</sup>,  
Marcelo S. Pimenta <sup>2</sup>, José Palazzo M. de Oliveira <sup>2</sup>

<sup>1</sup>Department of Computer Science,  
Universidade do Estado de Santa Catarina (UDESC), Brazil  
isabela.gasparini@udesc.br

<sup>2</sup>Institute of Informatics,  
Universidade Federal do Rio Grande do Sul (UFRGS), Brazil  
{mpimenta, palazzo}@inf.ufrgs.br

**Abstract.** This paper presents the results of a in-depth study to investigate if Brazilian HCI (Human Computer Interaction) community is addressing cultural issues. In this paper, the results emerge from a study of fifteen years paper production in Brazilian HCI conference. After this first analysis, this work explored each Brazilian' researcher curriculum from the previous result, aiming to understand how research field is evolving.

**Keywords:** HCI community, Brazilian conference, cultural issues.

### 1 Introduction

Brazil is a country with 8,514,876 km<sup>2</sup>, it is the largest country in both South America and the Latin America region and the world's fifth largest country, both by geographical area and by population, with over 193 million people. Brazil is 58th in the economic competitiveness ranking published by the World Economic Forum in September of 2010, which analyzed 139 countries [1]. Brazilian culture is a very extensive subject, including stories, legends, dances, superstitions and religious rituals, either brought to the land by the Europeans, Africans and Asians or already present in its native cultures. All of these manifestations are quite peculiar to each culture and distinct in each region of Brazil. Brazil is a multicultural and multiethnic society. Because of the Portuguese colonization, Portuguese is the official language and is spoken in the whole country; however, Brazilian culture has been influenced by many cultures, due to immigration throughout our history [2].

Human-computer interaction (HCI) is an area of research and practice that emerged in the early 1980s, as a specialty area in computer science embracing cognitive science and human factors engineering [3]. The initial research in the HCI field was motivated by the increase of personal computing that became manifest at an op-

portune time – personal computers were being used by end users who were not experts in computer science or engineering. As HCI developed, it moved beyond the desktop perspective. First, because of the growing influence of the Internet on computing and on society, and secondly, because HCI moved beyond the desktop through the continual, and occasionally explosive diversification in the ecology of computing devices. Nowadays, interactive systems can be anywhere and anytime. Therefore, today it is important to know how to deal with cultural issues, especially when developing or evaluating wide-access applications and interactive systems. Interactive systems for the Web need to provide support for an ever increasing amount of material and make it available for local-language populations across the world. One of the main challenges for designers is to build/evaluate system that aim explicitly at acknowledging the diversity of their users' cultural background and attending to a wider variety of needs and expectations [4]. Consequently, the introduction of the culture concept in interactive systems and interaction design is becoming a necessity, a challenge, and a timely and relevant issue [5]. Indeed, in attempting to disentangle this diversity, culture has received increasing attention in International Human Computer Interaction (HCI) community, *e.g.* in learning contexts [6] and [7]; in internationalization/globalization aspects [8], [9], [10] and [11]; in an adaptive user perspective [12]; in an usability evaluation [13]; in a Web Science Perspective [14]; in the software engineering [18]; and in HCI design [25]. For the last years, the research and literature accounting for cultural contexts in human-computer interaction design has quickly grown [25].

Nevertheless, until today, there is no analysis of how cultural issues have been addressed in Brazilian HCI community, neither how HCI community in Brazil has been working towards consolidating its cultural aspects in interactive systems. This paper presents an analysis of fifteen years of Brazilian Symposium on Human Factors in Computer Systems (IHC), to identify researchers who treat cultural issues as a core activity in their research. To do this, the conference between the years 1998 to 2012 was analyzed. After these results, we perform a qualitative analysis on each researcher who deals with cultural aspects to verify ongoing topic in Brazil.

This paper is structured as follows. Section 2 shows the related work. Section 3 describes our methodology of this work and Section 4 presents the results of cultural issues in Brazilian researches. Finally, section 5 presents the considerations of this analysis.

## 2 Related Work

One of the most accepted definition of culture is “the collective programming of the mind that distinguishes the members of one group or category of people from others” [26] and is usually defined in Human Computer Interaction as the common values, attitudes and behavioral patterns shared by a group of people [27]. Cultural awareness involves becoming aware of cultural values, beliefs and perceptions. It's become central when we have to interact with people from other cultures. Blanchard et al [28] refer culturally-aware system to ‘any system where culture-related information has

had some impact on its design, runtime or internal processes, structures, and/or objectives'. The quality of user experience is intricately related to the users' cultural characteristics [15]. Cultural characteristics have been found to be an important issue because a user's cultural profile shapes his/her perception of a system features, e.g., a given culture profile will cause a user to focus on a set of information and ignore others, thus, system features appropriated for one culture may not be suitable for others; and system design needs to be adapted for different culture as well [15].

Considering culture in HCI interaction is becoming a necessity, a challenge, and a timely and relevant issue, as we can see the inclusion of this topic in different HCI conferences (e.g. the 14th International Conference on Human-Computer Interaction, that in 2011 had a tutorial about Cross-Cultural HCI [16], the 20<sup>th</sup> conference on User Modeling, Adaptation, and Personalization – UMAP that in 2009 selects as a best paper award a paper about adapting interfaces to Cultural Preferences [17], or the 14th IFIP TC13 Conference on Human-Computer Interaction - Interact 2013, that has the theme of the conference, "Designing for Diversity", which recognizes the interdisciplinary, multidisciplinary and intercultural spirit of human-computer interaction research). Cultural diversity is a hot topic to HCI today and many works have applied cultural dimension to interaction design, variations of dialog and presentation design, evaluation of user behavior, etc. [19], [20], [21], [22].

Regarding related works which aims to analyze data from conference papers, a paper stands out. Henry et al. [23] brings a general analysis of HCI conferences all over the world where he shows several graphic data, making possible a wide vision about how authors have behaved during years of work in that field of knowledge of computer science. Henry et al. [23] opens many possibilities of analysis which can show important information about how have being directed the researches all over the globe. They showed a visual exploration of the field of HCI through the author and article metadata of four of its major conferences: the ACM conferences on Computer-Human Interaction (CHI), User Interface Software and Technology, and Advanced Visual Interfaces and the IEEE Symposium on Information Visualization, and then they described many global and local patterns they had discovered in this data set, together with the exploration process that produced them.

Blanchard [6] analyzes potential cultural biases in paper production in Intelligent Tutoring Systems (ITS) and Artificial Intelligence in Education (AIED) conferences. The paper attempts to make the community aware of an identified and quantified WEIRD (*Western, Educated, Industrialized, Rich, and Democratic societies*) bias in psychology research that is likely to have an indirect impact on the AIED research field. A ten year analysis of full conference papers production reveals similar WEIRD imbalances in the AIED research field, which suggests that it may be producing WEIRD-flavored research as well [6].

Following the authors idea, this paper presents an in-depth study to investigate if Brazilian HCI community is addressing cultural issues in their researches. In this paper, the results emerge from *Brazilian Symposium on Human Factors in Computing Systems (IHC)* and the exploration of each Brazilian' researcher curriculum from the previous result, aiming to understand how research field is evolving. The next section will present the methodology of the analysis.

### 3 Methodology

This work focuses in the analysis of fifteen years of Brazilian Symposium on Human Factors in Computing Systems (IHC). To begin the review, all the data was reunited from all conferences editions and started a filtering of information. First decision was to investigate only full papers. Some editions (206-2012) were available in ACM Digital Library, but we also had access to the Proceedings of all conference editions, getting access to all papers. Then, we open each full paper, and put its information in a dataset (i.e., year, title, language, authors, institution, country, keywords, abstract, ACM keywords, ACM category, general terms, and references).

Also in parallel we inspected all 236 full papers, observing for each paper: the title, abstract, keywords and introduction, aiming identify the main subject of the work and if it treated cultural issues. Each paper identified as focusing with cultural issues, a fully reading was applied. Table 1 presents the number of papers investigated from each year. It is important to explain that the period from 2002 to 2010 the conference was biannual. In 2010 the community voted to return the annual conference. This year the Brazilian Symposium on Human Factors in Computing System will be placed at Manaus- the capital state of Amazonas – in the North of Brazil, because the community agrees that Brazil have diverse cultural components, and each region has its peculiarities, so the conference must be placed each year in a different region of Brazil. Since the others regions have already supported the conference (i.e. Northeast, Central-West, Southeast and South), the only region not yet covered was the North region.

**Table 1.** Number of full paper for each year of HCI conference

| <i>Conference year</i> | <i>Place of the Conference (city and state in Brazil)</i> | <i>Number of full paper</i> |
|------------------------|---|-----------------------------|
| 1998                   | Maringá – Paraná  | 15                          |
| 1999                   | Campinas – São Paulo                                      | 13                          |
| 2000                   | Gramado – Rio Grande do Sul                               | 16                          |
| 2001                   | Florianópolis – Santa Catarina                            | 22                          |
| 2002                   | Fortaleza – Ceará   | 29                          |
| 2004                   | Curitiba – Paraná   | 15                          |
| 2006                   | Natal – Rio Grande do Norte                               | 20                          |
| 2008                   | Porto Alegre – Rio Grande do Sul                          | 25                          |
| 2010                   | Belo Horizonte – Minas Gerais                             | 19                          |
| 2011                   | Porto de Galinhas – Pernambuco                            | 32                          |
| 2012                   | Cuiabá – Mato Grosso                                      | 30                          |
| Total                  |   | 236                         |

The articles were read individually, aiming searching for terms and themes that fits the specifications, *i.e.*, culturally related aspects. After that, we also did diverse queries in the dataset, aiming to confirm previous results with human inspection.

After this data stratification, we identified only six papers (related to sixteen researchers) of the conference treat directly cultural issues in their research. Therefore, we did an explorative search for the research of each researcher who published one of these papers. All these sixteen researchers who published cultural aspects in the conference work at Brazilian's institutes, so, as all of them must have an update curriculum vitae in the Lattes Platform provided by the National Council for Scientific and Technological Development (CNPq<sup>1</sup>) [24], the analysis of each curriculum was facilitated.

The understanding and analysis of this amount of data is not the core business, and this paper just initiates what seems to be an important issue of analysis at HCI field studies. Section 4 presents the results found.

## 4 Results

We analyzed 236 full papers of all Brazilian Symposium on Human Factors in Computing System editions. From this dataset, we had found a list of only six full papers that had focused on cultural related aspects as the core business of the paper. There were found other papers which have some relation to cultural aspects (e.g. accessibility, design for different types of users, etc.), but the cultural aspects were not treat or even cited in them. Table 2 presents the result of this analysis.

**Table 2.** Results of cultural aspects from the Brazilian Symposium on Human Factors in Computing System

| <i>Year of the conference</i> | <i>Number of author</i> | <i>Cultural subject of the paper</i>   |
|-------------------------------|-------------------------|--|
| 2000                          | 3                       | Cultural and Psychological effects of Colors   |
| 2001                          | 2                       | Methods for the study of signs perception for subjects in different cultural environment |
| 2008                          | 4                       | Cultural sensitive web-based learning material   |
| 2011                          | 1                       | Cultural aspects to dealing with death issues and afterlife digital legacy               |
| 2011                          | 3                       | Cultural-aware issues in HCI   |
| 2011                          | 3                       | Cross-cultural systems and cultural Metaphors  |

From this small list of papers, we found sixteen researchers that deals with culture as a topic of research and investigation. After that we analyzed all Lattes curriculum vitae, in order to find out whenever these authors have also been publishing the cultural subject in other conferences or journals. The result of the triangulation analysis is shown in Figure 1.

<sup>1</sup> CNPq is an agency under the Ministry of Science and Technology (MST) which aims to promote scientific and technological research and also train and qualify researchers in the country and abroad

**Fig. 1.** Cloud tag of related conference where Brazilian researchers have been publishing the cultural subject.



Table 3 presents the list of conferences where the researchers published papers with cultural related issues.

**Table 3.** Main conferences where Brazilian researchers published papers related to cultural issues

| <i>Acronym</i>    | <i>Name of the Conference</i>   |
|-------------------|---|
| ACM-SIGDOC        | ACM International Conference on Design of Communication                               |
| Applied-Computing | IADIS International Conference Applied Computing                                      |
| CATS              | International Workshop on Culturally-Aware Tutoring Systems                           |
| CLIHC             | Latin American Human- Computer Interaction  |
| CSEDU             | International Conference on Computer Supported Education                              |
| e-Society         | IADIS International Conference e-Society  |
| ED-MEDIA          | World Conference on Educational Multimedia, Hypermedia and Telecommunications         |
| Hcii              | International Conference on Human-Computing Interaction                               |
| IBERAMIA          | Ibero-American Artificial Intelligence Conference                                     |
| ICEC              | International Conference on Entertainment Computing                                   |
| ICEIS             | International Conference on Enterprise Information Systems                            |
| IDGD              | International conference on Internationalization, design and global development       |
| IEEE-SMC          | IEEE International Conference on Systems, Man, and Cybernetics                        |
| IFIP-HCIS         | IFIP Human-Computer Interaction Symposium   |
| IFIP-WCCE         | IFIP World Conference on Computers in Education                                       |
| INTERACT          | IFIP TC13 Conference on Human-Computer Interaction                                    |
| LA-WEB            | Latin American Web Congress   |
| NAACL-HLT         | Young Investigators Workshop on Computational Approaches to Languages of the Americas |
| SBIE              | Simpósio Brasileiro de Informática na Educação  |
| SCCC              | International Conference of the Chilean Computer Science Society                      |
| WAIHCWS           | Workshop sobre Aspectos da Interação Humano-Computador na Web Social                  |
| WWW/Internet      | IADIS International Conference WWW/Internet   |

In addition to the conference papers, some researchers have been publishing cultural aspects in different journals and books chapters. The most relevant are: International Reports on Socio-Informatics, Advances in Human-Computer Interaction and Human-Computer Interaction Series (Springer).

## 5 Conclusion

The Brazilian HCI community is very well consolidated in Brazil and is acknowledged both nationally and internationally. Members of the community feel that the people working in the field and their production have increased in the last few years [2]. This paper focused on carry out an exploratory search in the Brazilian Symposium on Human Factors in Computing System. From the two hundred thirty-six full papers study, only six were directly related to the cultural issues. After, we have summarized these findings and executed a new search toward to discover if the authors of these papers actually have been publishing about this subject in other conferences and journals. The result was positive, since the majority of them still working in the cultural aspects.

Our objective was not point out who in Brazil is researching about cultural issues and HCI, nor even show how much Brazilian HCI community is addressing cultural aspects (if this answer is possible or desirable) but to discuss how cultural issues can be addressed in HCI field. Indeed, the success of the growth of cultural issues in HCI research is exactly take advantage of workshops and conferences where the theme can be discussed.

HCI (as a community and as a research area) need more investigation towards this agreement. Many open issues emerge when we discuss culture in interaction design, and HCI, including:

- What exactly is culture? How we can represent it and use it appropriately in the interaction design?
- How do you obtain relevant cultural information about a specific community (country or region or even a corporation) and how do you determine each is relevant?
- How do you generate design ideas from this cultural information?
- How important is culture among all other aspects being considered in an interaction design?
- How Brazilian HCI community can address cultural issues in its research?

This paper obviously has not an answer to these questions, it just tries to provide some directions of how culture aspects still an open issue. Therefore, it is yet a limited excursion into a territory which includes many other possible perspectives and paths to explore.

## 6 References

1. Official Brazil Governmental website. Brazil in numbers. Available online at <http://www.brasil.gov.br/sobre/brazil/brazil-in-numbers>

2. Prates, R. O., Filgueiras, L. V. L. Usability in Brazil. I. Douglas and Z. Liu (Eds.) *Global Usability*. Human-Computer Interaction Series, Springer London, 2011. 91-109.
3. Carroll, John M. Human Computer Interaction - brief intro. In: Soegaard, Mads and Dam, Rikke Friis (Eds.). *The Encyclopedia of Human-Computer Interaction*, 2nd Ed. Aarhus, Denmark: The Interaction Design Foundation. 2013. Available online at [http://www.interaction-design.org/encyclopedia/human\\_computer\\_interaction\\_hci.html](http://www.interaction-design.org/encyclopedia/human_computer_interaction_hci.html)
4. Salgado, L. C. de C., Sieckenius, C. de S., Leitão, C. F. On the epistemic nature of cultural viewpoint metaphors. In *Proceedings of the 10th Brazilian Symposium on Human Factors in Computing Systems and the 5th Latin American Conference on Human-Computer Interaction (IHC+CLIHC '11)*. Brazilian Computer Society, Porto Alegre, Brazil, 2011, 23-32.
5. Gasparini, I., Pimenta, M.S., Palazzo, M., de Oliveira, J. Vive la différence!: a survey of culturally-aware issues in HCI. *Proceedings of the 10th Brazilian Symposium on Human Factors in Computing Systems and the 5th Latin American Conference on Human-Computer Interaction (IHC+CLIHC '11)*. Brazilian Computer Society, Porto Alegre, Brazil, 2011, 13-22.
6. Blanchard, E.G. On the WEIRD nature of ITS/AIED conferences: A 10 year longitudinal study analyzing potential cultural biases. *Proceedings of the 11th International Conference on Intelligent Tutoring Systems (ITS2012)*, Springer LNCS 7315, Chania, Greece, 2012, 280-285.
7. Limongelli, C., Sciarrone, F., Temperini, M., & Vaste, G. Virtual Cultural Tour Personalization by Means of an Adaptive E-Learning System: A Case Study. M.D. Lytras et al. (Eds.): *WSKS2009*, LNAI 5736, 2009, pp. 40–49, Springer-Verlag.
8. del Galdo, E., Nielsen, J. (Eds.). *International User Interfaces*. Wiley, New York, 1996.
9. Smith, A., Yetim, F. (Eds.). *Global Human-Computer Systems: Cultural Determinants of Usability*. *Interacting with Computers* 16 (1) (special issue), 2004.
10. Amant, Kirk St. *Linguistic and Cultural Online Communication Issues in the Global Age*. IGI Global, 2007.
11. Moran, R. T., Harris, P. R., & Moran, S. *Managing cultural differences - Global Leadership Strategies for the 21st Century*. 7th ed., Elsevier, 2007.
12. Recabarren, M.; Nussbaum, M. Exploring the feasibility of web form adaptation to users' cultural dimension scores. *User Model User-Adap Inter*, 2010, 20, pp. 87-108.
13. Clemmensen, T., Hertzum, M., Hornbæk, K., Shi, Q., & Yammiyavar, P. Cultural Cognition in Usability Evaluation. *Interacting with Computers*, 2009, 21(3), pp. 212-220.
14. Lytras, M. D., Damiani, E., Carroll, J. M., Tennyson, R. D., Avison, D., Naeve, A., ... & Vossen, G. (Eds.) *Visioning and Engineering the Knowledge Society - A Web Science Perspective*. *Proceedings of Second World Summit on the Knowledge Society, WSKS 2009*, LNCS 5736, Springer, 2009.
15. Lee, I., Choi, G. W., Kim, J., Kim, S., Lee, K., Kim, D., ... & An, Y. Cultural Dimensions for User Experience: Cross-Country and Cross-Product Analysis of Users' Cultural Characteristics. *Proceeding of the 22nd British HCI Group Annual Conference on People and Computers: Culture, Creativity, Interaction, BCS-HCI '08*, v. 1, 2008, pp. 3 -12
16. HCI2011 - 14th International Conference on Human-Computer Interaction, Tutorial Program - T08: Cross-Cultural HCI /User-Experience Development. <http://www.hcii2011.org/index.php?module=webpage&id=47>
17. Reinecke, K., Bernstein, A. Tell Me Where You've Lived, and I'll Tell You What You Like: Adapting Interfaces to Cultural Preferences. *Proceeding of User Modeling, Adaptation, and Personalization (UMAP)*, 2009.



18. Shah, H., Nersessian, N. J., Harrold, M. J., Newstetter, W. Studying the influence of culture in global software engineering: thinking in terms of cultural models. 4th international conference on Intercultural Collaboration, ACM, 2012, pp. 77-86.
19. Reinecke, K., Schenkel, S., & Bernstein, A. Modeling a User's Culture. *The Handbook of Research in Culturally-Aware Information Technology: Perspectives and Models*, IGI Global, 2010.
20. Callahan, E. Cultural similarities and differences in the design of university websites. *Journal of Computer-Mediated Communication*, 2005, 11(1), 12.
21. Marcus, A., Gould, E. W. Crosscurrents: Cultural Dimensions and Global Web User-Interface Design. *ACM Interactions*, 2000, 7(4), pp. 32-46.
22. Marcus, A.; Gould, E. W. Cultural Dimensions and Global Web User-Interface Design: What? So What? Now What? *Proceedings of Sixth Conference on Human Factors and the Web*, Austin, Texas, 2000.
23. Henry, N., Goodell, H., Elmqvist, N., & Fekete, J. D. 20 years of four HCI conferences: A visual exploration. *International Journal of Human-Computer Interaction*, 2007, 23(3), 239-285.
24. National Council for Scientific and Technological Development (CNPq). Official website. <http://www.cnpq.br/>
25. Heimgärtner, R. Reflections on a Model of Culturally Influenced Human-Computer Interaction to Cover Cultural Contexts in HCI Design. *International Journal of Human-Computer Interaction*, 2013, 29(4), 205-219.
26. Hofstede, G. *Cultures and organizations: software of the mind*. 2nd ed. New York: McGraw-Hill, 2005.
27. Vatrapu, R; Pérez-Quiñones, M. A. Culture and Usability Evaluation: The Effects of Culture in Structure Interviews. *Journal of Usability Studies*, 2006, v 1, 4, pp. 156-170.
28. Blanchard, E., Mizoguchi, R., Lajoie, S. P. Structuring the Cultural Domain with an Upper Ontology of Culture. In E. G. Blanchard and D. Allard (Eds.),