A Vocabulary to Access Users' Cultural Perspectives in Human-Computer Interaction

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Abstract. This paper presents research carried out to explore the implications of giving users a specific vocabulary to express their perceptions and opinions about opportunities to make contact with cultural diversity in human-computer interaction. This two-step study is part of a broader research project that aims at investigating users' perceptions and reactions when interacting with cross-cultural systems. Our current findings point at the expressive power of the proposed vocabulary and the promising outcomes of using it in the interaction design cycle of cross-cultural systems.

Keywords: Cross-cultural evaluation, Culture, Cultural Viewpoint Metaphors.

1   Introduction

Today users can navigate almost anywhere in the Web (without national and cultural borders), making intentional or unintentional contact with foreign culture content. Thus the web has become a medium for intercultural encounters, a place where users have the opportunity to experience cultural diversity directly (when interacting with other users over social networks, for example) or indirectly (when interacting with web applications that carry cultural marks from a foreign origin).

Over nearly two decades of research with applications aiming to attend to the needs and expectations of people with different cultural and social backgrounds, we have worked to understand the impacts of culture on the users' experience and on user interface design. Studies have investigated, for instance, the adequacy of technologies [3], methodologies [4,8], theories and practices [3,5,6], as well as quality measures [10] created (and in some cases already validated) by and to a specific cultural group. There have also been new approaches to cultural sensitive interaction [7] and new theories of cultural influences in socio-technical systems [9].

Our research lies in exploring how cross-cultural systems, intentionally or not, express and promote *indirect* intercultural contact with signs and traces of foreign values, practices, heritage, and so on. The study presented here is part of a broader research about users' perceptions and reactions in such *indirect* intercultural encounters.

At this stage, we concentrate on how users signify and talk about their experience using a well-defined set of conceptual metaphors [7] as part of their vocabulary.

Cultural Viewpoint Metaphors (CVM) are a semiotic engineering [2] tool to support reasoning and decision-making about intercultural experience dimensions in HCI design. The general orientation we adopt is to view human-computer interaction as a special case of computer-mediated human communication where designers are telling the users, through systems interfaces, how, why, where, when and what for the system they have produced can be used. The users' interpretation and exploitation of the designers' *message* will define the kind of HCI experience that the system enables and ultimately whether the technology is successful or not.

In this paper we explore specific aspects of intercultural HCI experience, looking at the implications of introducing CVM in the users' vocabulary with which they can verbally express their perceptions and opinions when they faced opportunities for indirect intercultural contact. In the next section we describe our research. Then we discuss our current conclusions and present the main items in our future research agenda.

2   Research aims and method

We ran an empirical study with *Englishtown[1]* (ET), an online English school. This is an intercultural web application *par excellence* for all those who engage in learning English as a foreign language. We wanted to see: (i) if and how participants used CVM when verbalizing their intercultural experience with the website; and (ii) what they said they experienced. According to Salgado [7], the five conceptual metaphors lead us to think of interaction with cross-cultural systems as a journey, users being the travelers. There are five metaphors representing a *continuum* of cultural approximation which spans from the users' culture to a foreign culture (see Fig. 1).

Fig. 1. Progressive cultural viewpoint metaphors [7]

At one end, the *domestic traveler metaphor* keeps users in cultural isolation, since they aren't exposed to material explicitly referenced to a foreign culture, and cultural mediation is therefore absent. With the *observer at a distance metaphor*, cultural markers from another culture are communicated as "bits of information". There are hints about the foreign culture for users that are interested in learning more about it. The *guided tour visitor metaphor* presents cultural markers from another culture as "illustration". Thus, aspects of foreign cultural features are exemplified and explained in the user's language, underlining contrasts between two cultures (the user's and the

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[1]   From now on we will refer to it as simply "the ET website" (http://www.englishtown.com).

foreign one). The *foreigner with translator metaphor* allows users to experience the cultural practices from a foreign culture directly, with no other mediation than linguistic translation of verbal content. Finally, the *foreigner without translator metaphor* treats the users as natives of the foreign culture, with no mediation whatsoever. We can thus see that cultural mediation is absent at the beginning and at the end of the *continuum* and that nature and degree of mediation varies in intermediate stages.
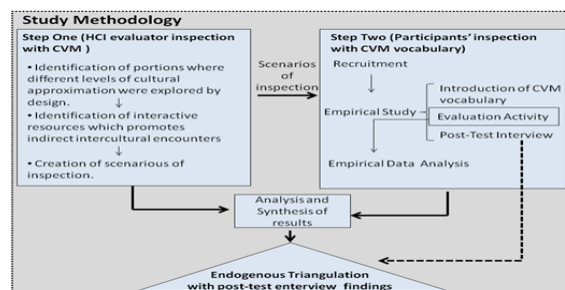
Fig. 2. ET website.

To be sure, the ET website has not been designed with CVM, however, because it is clearly a cross-cultural application that exposes and exploits opportunities to communicate cultural diversity in the linguistic domain, we can use CVM to *talk about it*, as users or as HCI evaluators and designers. The ET mission, as clearly stated in the website "is to use technology to create a fundamentally better way of learning English. (…)As part of its endeavor to break down borders and remove barriers in language and culture, ET gives students more than just the ability to communicate in a new language" (see Fig. 2).

As shown in Fig. 3, our study was divided in two steps. In Step One, a Brazilian HCI evaluator (who knows CVM well) inspected the ET website using CVM to identify portions where different levels of cultural approximation were explored and interactive resources used to promote indirect intercultural encounters. Seven scenarios of inspection were then created for user sessions in the next step of the study.

In Step Two, five potential users were recruited to evaluate the selected portions of the ET website. None of them was an Englishtown student. Participants were further invited for a post-test interview. All of them were Brazilian, with college or university diplomas. They all had at least a basic knowledge of English and are interested in learning more about this language.
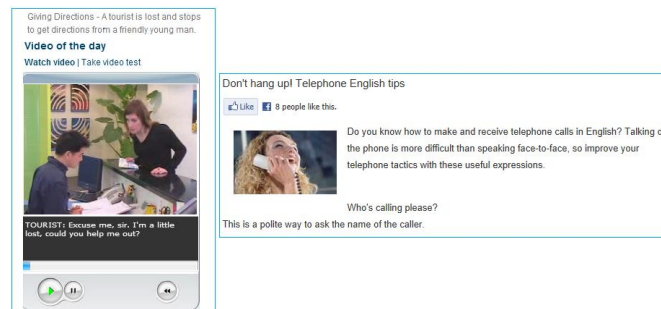
Fig. 3. Methodology

Empirical data collected in Step Two was influenced by the introduction of CVM vocabulary in the participants' expressive resources. Data analysis was carried out in three stages using discourse analysis techniques, a systematic exploration aiming to find out major meaning categories in discourse with intra-participant and inter-participant analysis. Firstly, we looked for evidence of each participant's usage and signification of CVM vocabulary during the evaluation activity, only. Secondly, results from the first phase were analyzed, contrasted and integrated with the findings from the inspection conducted in Step One. Finally, participants' interviews were analyzed separately, working as an internal triangulation required for validating our qualitative analysis. In this interview, we investigated how participants classified intercultural encounters according to the CVM framework and what perceptions they expressed with regard to such encounters.

The focus of inspection at Step One was on how ET explores English language teaching in different contexts: Business English; Social Protocol; Directions in English; and, Learning about the English language Places. The evaluator inspected each one guided by CVM, looking for interesting evidence of different degrees of cultural approximation. Selected portions were organized in accordance with the website's own categorization of interactive resources (articles, lessons, quizzes, videos) and their corresponding context. Figs. 4a and 4b show examples of selected material.

Fig. 4. (a) *Video* to learn **Directions in English** and (b) *Article* to learn **Social Protocols**.

Next, the researcher analyzed the degree of cultural approximation promoted by selected interactive resources. We saw that the articles were being used to contrast two cultures with examples and explanations (guided tour visitor metaphor); videos typically sought to immerse students in the foreign culture (foreigner without translator metaphor); and quizzes and lessons led students directly into the foreign culture's context, providing them with linguistic support (foreigner with translator metaphor).

In Step Two, the five participants (P1, P2, P3, P4 and P5) were briefly introduced to the ET website and to the basic CVM concepts (with examples and illustrations). Then they were offered supportive material (for look up, during the activity) with a summary of the CVM vocabulary and the concepts associated with it. Next they listened to an explanation of the evaluation activity they should perform. There were seven scenarios for inspection, each involving one or more tasks. At the end, participants should describe and classify detected intercultural encounters enabled by ET, using CVM vocabulary they had just learned.

After completing the evaluation activity, during the post-test interview, participants reported verbally on what they had just done and experienced. This stage aimed at collecting evidence from the participants' discourse about the evaluation process with CVM vocabulary (*i.e.* how the proposed metaphors helped them, if at all, in talking about their perceptions and reactions; what they found easy or difficult to do; and what they learned with the activity).

3 Synthesis of Results and Triangulation

Results from the evaluation activity, in Step Two, pointed at two categories of meanings. In the first one, "Analysis of learning situations by using the CVM vocabulary", participants' discourse suggests different levels of usage and signification of the CVM vocabulary. We reached this conclusion based on two subcategories of meanings: (i) use of the basic CVM vocabulary to express perceived level of cultural approximation, without expanding or adapting it; (ii) free use of the CVM vocabulary to explain observed phenomenon spontaneously. For lack of space, we selected only some pieces of evidence to illustrate the kind of qualitative data we used.

In the first subcategory (i) P1, for instance, identified an intercultural contact as prescribed by the observer at a distance metaphor. P2, in turn, indicated another one as prescribed by the guided tour visitor metaphor:

P1: "[They are] *hints about the other culture* [communicated] *as information*".

P2: "*He* [the designer] *is contrasting cultures by means of examples*".

In the second sub-category (ii), we found evidence of participants' usage and signification of CVM vocabulary while explaining their own needs as users. See below that P5 also identified a case associated with the observer at a distance metaphor, but he expressed his perception in a more elaborate way:

P5:"[...] *he* [the designer] *is giving tips about what´s missing, simply saying what is right or wrong and pointing at the right answer. There isn´t an explanation, actually. I really expected some note. Why is it wrong? One does not understand why (...)*".

Evidence from P4 gives to us another great example of productive usage and signification, when he expresses how a learning situation with the English language places corresponds to the foreigner without translator metaphor.

P4: "*Not only because I do not have the translation or further linguistic support, but we are totally immersed through images, several attractive things, various sights being shown [...].I found it interesting because the narrator has an accent from* [the place]. *Then, everything they could do to show what it is like, how studying there should be like, parts of Sydney ... they really immersed us there*".

The second category "Analysis of intercultural contact through language", presents some discourse excerpts with evidence that participants analyzed language as an important cultural component in the linguistic domain. The following subcategories of meanings show what they found: (i) politeness in language; (ii) translation used as linguistic support; (iii) language as a vehicle to expose foreign expressions; (iv) the close relationship between language and culture.

P4, for instance, in a context of Social Protocol learning situation, expressed his perception about subcategory (i).

P4: " [...] *the site explains that this is a very polite way* [to say something]. *If I just used* [the sentence] *the translator, I would not realize that this is a polite answer*".

The vocabulary of foreigner without translator metaphor (subcategory (ii)) was also used by P5 when faced with an opportunity to be completly immersed in another culture.

P5: "*[...] You are clearly inside their culture [...] They went heavy, just* [using] *slang*".

P3 pointed out that language may be used as a scaffold to give access to foreign material, as the foreigner with translator metaphor does (subcategory (iii)). P1, in turn, saw the challenges brought about by the close relationship between language and culture (subcategory (iv)).

P3: "*You are in another* [foreign] *culture, but you have a translation support*".

P1: "*It is a direct practicing of the foreign culture, without any linguistic support*". [It's an] *immersion in culture to request information. [...] I feel confused by the culture and language difference. The difficulty is because culture is related to language*".

In conclusion, from the subcategories of analysis presented above, we drew evidence that the methodology proposed here to access users' cultural perspectives worked. Participants were not limited to using, rigidly, the concepts of CVM. They literally "traveled" in metaphors' domain and went beyond the mere *tagging* of CVM's fixed expressions. They expanded, applied, adapted the concepts and expressed themselves freely with them. We thus conclude that the CVM vocabulary was visibly *incorporated* in participants' idioms.

In order to validate the qualitative research results presented above, we triangulated findings from the evaluation activity with results emerging from the post-test interview. After comparing and contrasting both results, we found consistent evidence that, just like in the evaluation study, participants again used and signified CVM vocabulary freely in their discourse. They also acknowledged the importance of taking cultural components into consideration when dealing with linguistic domains (as is the case with ET).

As evidence of the consistency among the results, we see in the following discourse excerpt that P2 clearly incorporated CVM terms into his own vocabulary, while talking about a learning situation:

P2: "*What caught my attention was the use of the Observer at a Distance as a honeypot: 'Look, here you will have something that will interest you. Do you know how to do this in another culture?' *".

Furthermore, as was the case in the evaluation activity, during the post-test interview participants analyzed the challenges of using language as support. P4, for instance, explained that during translation many aspects of language are lost:

P4:"*If I do not have knowledge of the English language, I'll have access to this cultural information via translation and through somebody else's point of view. Thus, I'll lose a lot of the English culture, i.e., much of the language is lost during translation*".

Besides consistency reached in triangulation process, we also reached additional perspectives to our own research. Evidence suggests that participants found further

opportunities to: (i) inspect a students' learning level using CVM's levels of cultural approximation; (ii) invite students to learn more about other culture; and, (iii) redesign the website. Regarding (i), the following excerpts talk about opportunities to monitor students' learning evolution:

P5: *"The beginner guy, he needs more information, he is open to receiving that* [new] *information. A person who is at a more advanced level, actually he requires less information and he also does not want to waste time with those observations* [he already knows it]*"*.

P3: *"You have a high degree of support while in your own culture and you go gradually removing it so that the person can get used to or interact more with another culture. The person is gradually supported with the transition, in order to be more immersed, moving across these areas* [the continuum with the five metaphors]*"*.

P2's excerpt, in turn, is about the power of the Observer at a Distance metaphor for inviting users to discover cultural diversity.

P2: *[…] "Do you know how to do this in another culture?"*

Finally, some participants saw opportunities to redesign the website.

P5: *"The quizzes could be focused on the "Guided Tour Visitor" metaphor because it does not matter just to know whether one is right or wrong, I am interested in knowing why this is an opportunity, they* [designers] *could improve the quizzes […]"*.

In conclusion, the triangulation showed the intensive use and signification of CVM vocabulary in the linguistic domain where the ET website is positioned. Participants produced very insightful reviews about their experience. Furthermore, participants helped the evaluator in seeing new elements in the HCI evaluation process, things that the evaluator herself had not found during the inspection.

4   Conclusion

This paper presented a qualitative empirical study where participants were invited to use the CVM vocabulary to express their perceptions regarding opportunities of intercultural encounters in a foreign language learning website. We wanted to see: if and how they used CVM when verbalizing their intercultural experience with the website; and what they said they experienced. The strategy of providing intentional vocabulary to be used in HCI evaluation is not new. The Cognitive Dimensions of Notations (CDN) framework, for example, has been proposed as "a **vocabulary** for design discussion" [1] and has been in use by a broad community of researchers. We were inspired by this approach that, according to the proponents, is meant to provide discussion tools "to help people who are not HCI experts in making quick but useful evaluations" [1]. The CVM vocabulary is comparable to the CDN one, as an HCI design and evaluation tool, except the Green and Blackwell take a cognitive orientation, whereas we take a semiotic one (brought about by the foundations of the CVM vocabulary[7]).

At this stage of our research, we have reached two main results. First, the CVM vocabulary was easily internalized and used by study participants. Second, participants produced very insightful evaluations of their experience with the website, including criticisms and suggestions. Together, these two findings mean that the CVM

vocabulary generated empirical demonstration of its potential in the interaction design cycle of cross-cultural systems. CVM is a medium of expression and communication for users to qualify real or potential interaction experiences. CVM are, therefore, a promising support tool for participatory design practices.

All of our findings emerged from interaction with an application pertaining to the linguistic domain. Language, as we know, is a prime medium for cultural investigation, which means that the success of the reported research may be boosted by the specific domain where we worked. Thus, we now want to carry out a similar study in a non-linguistic domain. Likewise, and for sake of powerful comparison, we want to carry a similar study without offering CVM vocabulary for participants, in both linguistic and non-linguistic domains. This, we believe, will give us a very clear picture of the true power of CVM as a conceptual tool for intercultural HCI design and evaluation.

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