Integrating Cultural Models into Human-Computer Interaction Design

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Abstract - This paper is part of a research-in-progress investigation into a Culture-Centred Design approach to human computer interaction (HCI). The main focus of this paper is on the development of a cultural model that is HCI oriented. To achieve this goal a generic cultural model was developed based on 28 cultural attributes (CA) identified from cultural models literature. These attributes relate to interface design issues and characterise significant differences between the cultures studied. Questionnaires were developed based on the model and data collected for four national cultures. Our study revealed that the four cultures shared some attributes but could also be differentiated from one another on the basis of certain attributes. We show how these similarities and differences can be mapped directly onto design elements to produce websites tailored to each nation.

Keywords: HCI, cultural model, culture-centred design cultural profile, cultural adaptation.

1 Background

The growth of Internet-based software and services and the continued globalisation of businesses presents a new challenge for user-centred design. The challenge is how to understand and analyse cultural diversity between user groups and how to design user interfaces that accommodate this diversity. In this paper we are concerned with one particular aspect of this problem, which is how to support the design and development of usable systems across national cultures. Currently, designers are not equipped with tools that support culture-sensitive design [7, 20]. There are no guidelines yet published that guarantee international usability [9]. The overall aim of this paper is to discuss the models of national cultures currently used by HCI researchers, and to describe how we have integrated them to make a more design-orientated and personalised version of these models [22].

2 Cross-cultural Studies: current practices

There are numerous approaches to the analysis of national cultural diversity from many disciplines, including psychology, sociology, anthropology and business studies [3]. There are also many approaches to the analysis of interface usability across cultures [5, 12].

These can be summarized as three strategic approaches. The first approach, which we refer to as the model-based approach, recruits cultural models developed by other disciplines to understand the value systems, attitudes, experiences and expectations of targeted national cultures. These models use survey and observation techniques to identify generic parameters, such as “communication context-dependency” [1], and determine where a particular national group is positioned in the space defined by this set of parameters. The parameters employed by these models (e.g., Hall [1]; Hofstede [4]; Victor [2]; and Trompenaars et al, [6]) are deliberately abstract in order to characterise very generic cultural dispositions or profiles. They do not relate directly to issues of human-computer interaction.

The second approach is targeted specifically at interface design and employs inspection techniques designed for analysing interfaces that are used by particular national cultures in order to infer which interface components are particularly sensitive to cultural effects [5, 19]. Interface attributes that are relatively strongly associated with interfaces used by a particular national culture are said to be cultural markers for that nationality. One of the problems with the cultural markers approach is that the technique provides no rationale or explanation as to why certain interface attributes are significant since it is not driven by any underlying model of culture. A second limitation is that such an inspection technique, while identifying the presence of cultural markers, does not provide any evidence that the presence of these markers has any impact on users. Finally, this approach in its current setting is artefact-dependent and cannot be used as a general model that can be applied in user interface (UI) cultural adaptation.

The third approach is also aimed at interface design and is based on user studies. For example the MIMA (Meaning In Mediated Action) method [13] adopts a think-aloud style of user evaluation similar to cooperative evaluation [23] in order to identify usability problems caused by cultural factors such as unfamiliarity with metaphors or particular culture-specific language or