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Cultural-Based User Interface Design

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ABSTRACT: The culture-based user interface design is a new field in interface design, crucial for designers of all disciplines, in a world where interface design is both more in demand and less profitable than ever before. No business visual communication is complete without an interface, but companies are no longer satisfied with websites that merely look good. Now they must work hard as well-they must answer users' cultural needs, keep them using the computer product for the longest possible time, and clearly understand the content. Only with a good culture-based user interface design will the computer product achieve these goals.

KEYWORDS: Cultural, Interface, Design, Strategy

I. INTRODUCTION

The advent of digitization has enabled individuals, institutions, and communities to create and disseminate digital representations of their cultural heritage in culture-based user interface design. These developments raise new and challenging issues around the re-presentation of the vast collections of human cultural artifacts in digital forms. Important considerations include the definitions of the targeted end users, biases in content selection to represent a given culture, access versus ownership issues, and the implications for information institutions in managing and organizing content. This paper presents initial evidence in support of our argument that interfaces display characteristics relevant to culture-based interface design for all users. Section 2 briefly reviews the concept of culture and cultural meta models, while Section 3 focuses on culture in the context of culture-based interface design.

II. THE CULTURE AND DESIGN

To better understand the concept of culture, and how it is related to human-computer interaction, we review below the definitions, metamodels, and models that have been proposed in the literature.

2.1 What is Culture?

There are many definitions of culture in the literature, but there is no agreement on a specific definition of culture [1, 2]. Some examples of such definitions include:

- Culture is conceptualized as a 'system of meaning that underlies routine and behavior in everyday working life' [3].
- Culture 'includes race and ethnicity as well as other variables and is manifested in customary behaviors, assumptions, and values, patterns of thinking and communication style' [4].
- 'Culture is communication, and communication is culture'.

Most of the above definitions refer to culture as influencing how communication takes place. Using the computer to perform tasks requires communication between the user and the system, particularly when using an interactive system. Consequently, for this paper, we define culture as the patterns of thinking, feeling, and acting that influence how people communicate amongst themselves and with computers.

Our working definition for this article is: that culture is learned behavior consisting of thoughts, feelings, and actions. [6] The definition used here is simple and seems to agree with much research on culture.

2.2 Culture Metamodels

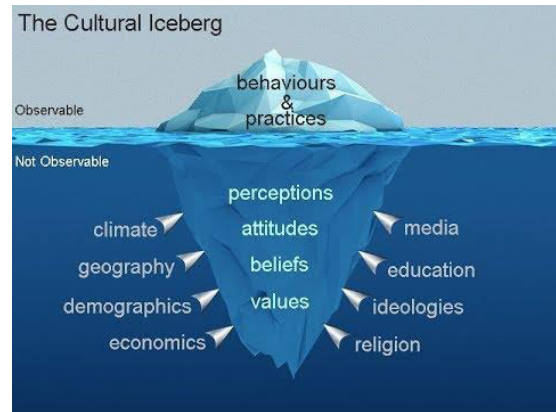
A culture model helps to identify levels of issues being involved in this complex problem by using international variables, or dimensions of culture. International variables are categories that organize cultural data.

The Iceberg Model

The Iceberg model is a popular metamodel that is often used in cross-cultural research. Below is the graph that shows the models. The analogy drawn in the Iceberg model is that just as 10 percent of an iceberg is visible above the surface of the water,

only 10 percent of the cultural characteristics of a target audience are easily visible to an observer (us).

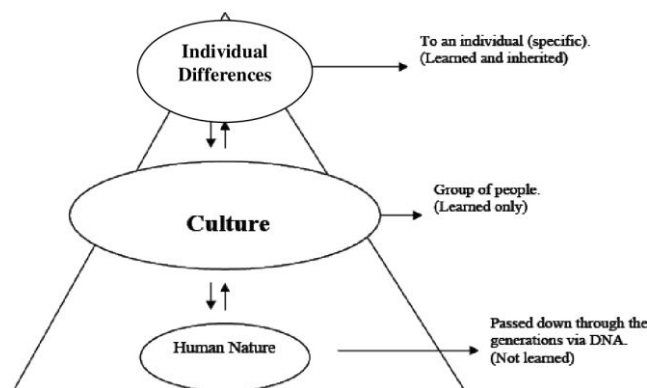
It follows that just as the remaining 90 percent of our cultural characteristics are hidden from view and are therefore easier to ignore and more difficult to identify and study.



The model identifies three metaphorical layers of culture:

- Surface: visible, obvious rules such as number, currency, time, and date formats.
- Unspoken rules: obscured, need a context of the situation to understand the rules.
- Unconscious rules: rules out of conscious awareness and difficult to study.

The Pyramid Model



Geert Hofstede introduces three layers of culture in the Pyramid model.

- Personality: specific to a person and is learned and inherited
- Culture: specific to a group or category of people. It is learned not inherited.
- Human Nature: common to all human beings. It is universal and is inherited, not learned.

These meta-models provide us with a sense of which layer of culture we would like to look at to test international computer products.

III. STRATEGY OF RESEARCH CULTURE-BASED INTERFACE DESIGN

As culture influences how people interact in general, culture will also influence how people will interact with computers. The culture-based Interface design issue is part of computer product design and thus to do things right, a proper method needs to be proposed to incorporate internalization elements into the processes of the software development cycle. Using interactive systems to perform tasks requires communication between the system and the user. People learn patterns of thinking, acting, and communicating from living in a specific social environment, normally typified by national culture. As such, culture partially predetermines a person's communication preferences and behaviors. Communication style, which reflects how a person sends and interprets messages, represents the overall patterns and values of a culture. As the user interface is how the user and the computer interact, it stands to reason that the interface should facilitate users to use their communication styles. Consequently, user reactions become more predictable and understandable when the user's cultural perspective is considered. Websites need to display 'culturability', that is, designing the interface to accommodate the cultural preferences and biases to increase the culture-based interface and the product.

Approaching The Subjective Culture into the Interface Design

Many analysts in organizational communication have studied cultures thoroughly and published classic theories; other authors have applied these theories to analyze the impact of culture on cultural relations. Few of these works are well known to the user-interface design community. We want to introduce the well-respected work of one theorist, Geert Hofstede, and apply some of his cultural models to user interfaces. These are described below.

Power distance: Power distance (PD) refers to the extent to which less powerful members expect and accept unequal power distribution within a culture. Based on this definition, we believe power distance may influence the following aspects of user interface and Web design:

- Access to information: highly (high PD) vs. Less-highly (low PD) structured.
- Hierarchies in mental models: tall vs. Shallow.
- Emphasis on the social and moral order (e.g., nationalism or religion) and its symbols: significant/frequent vs. minor/infrequent use.
- Focus on expertise, authority, experts, certifications, official stamps, or logos: strong vs. Weak.
- The prominence is given to leaders vs. citizens, customers, or employees.
- Importance of security and restrictions or barriers to access: explicit, enforced, frequent restrictions on users vs. transparent, integrated, implicit freedom to roam.
- Social roles used to organize information (e.g., a managers' section obvious to all but sealed off from non-managers): frequent vs. Infrequent

Uncertainty avoidance: People vary in the extent that they feel anxiety about uncertain or unknown matters, as opposed to the more universal feeling of fear caused by known or understood threats. Cultures vary in their avoidance of uncertainty, creating different rituals and having different values regarding formality, punctuality, legal-religious-social requirements, and tolerance for ambiguity. Based on this definition, we believe uncertainty avoidance may influence contrary aspects of user interface and Web design. High-UA cultures would emphasize the following:

- Simplicity, with clear metaphors, limited choices, and restricted amounts of data
- Attempts to reveal or forecast the results or implications of actions before the user act
- Navigation schemes intended to prevent users from becoming lost
- Mental models and help systems that focus on reducing "user errors"
- Redundant cues (color, typography, sound, etc.) to reduce ambiguity.

Low UA cultures would emphasize the reverse:

- Complexity with maximal content and choices
- Acceptance (even encouragement) of wandering and risk, with a stigma on "over-protection"
- Less control of navigation; for example, links might open new windows leading away from the original location

- Mental models and help systems might focus on understanding underlying concepts rather than narrow tasks
- Coding of color, typography, and sound to maximize information (multiple links without redundant cueing)

Masculinity vs. femininity: Masculinity and femininity refer to gender roles, not physical characteristics. Hofstede focuses on the traditional assignment to masculine roles of assertiveness, competition, and toughness, and to feminine roles of orientation to home and children, people, and tenderness. He acknowledges that in different cultures different professions are dominated by different genders. (For example, women dominate the medical profession in the Soviet Union, while men dominate in the USA.) But in masculine cultures, the traditional distinctions are strongly maintained, while feminine cultures tend to collapse the distinctions and overlap gender roles (both men and women can exhibit modesty, tenderness, and a concern for both quality of life and material success.) Traditional masculine work goals include earnings, recognition, advancement, and challenge. Traditional feminine work goals include good relations with supervisors, peers, and subordinates; good living and working conditions; and employment security.

Since Hofstede focuses on the balance between roles and relationships, we believe masculinity and femininity may be expressed on the Web through different emphases. High-masculinity cultures would focus on the following user interface and design elements:

- Traditional gender/family/age distinctions
- Work tasks, roles, and mastery, with quick results for limited tasks
- Navigation oriented to exploration and control
- The attention gained through games and competitions
- Graphics, sound, and animation used for utilitarian purposes
- Feminine cultures would emphasize the following user-interface elements:
 - The blurring of gender roles
 - Cooperation, exchange, and support, (rather than mastery and winning)
 - The attention gained through poetry, visual aesthetics, and appeals to unifying values

Individualism vs. collectivism: Individualism in cultures implies loose ties; everyone is expected to look after oneself or immediate family but no one else. Collectivism implies that people are integrated from birth into strong, cohesive groups that protect them in exchange for unquestioning loyalty. Based on this definition, we believe individualism and collectivism may influence the following aspects of user interface and Web design:

- Motivation based on personal achievement: maximized (expect the extraordinary) for individualist cultures vs. underplayed (in favor of group achievement) for collectivist cultures.
- Images of success: demonstrated through materialism and consumerism vs. achievement of social-political agendas.
- Rhetorical style: controversial/argumentative speech and tolerance or encouragement of extreme claims vs. official slogans and subdued hyperbole and controversy.
- Prominence given youth and action vs. aged, experienced, wise leaders and states of being
- Importance given individuals vs. products shown by themselves or with groups.
- An underlying sense of social morality: emphasis on truth vs. Relationships.
- Emphasis on change: what is new and unique vs. tradition and history.
- Willingness to provide personal information vs. protection of personal data differentiates the individual from the group.

Time orientation: In the early 1980s, shortly after Hofstede first formulated his cultural dimensions, work by Michael Bond convinced him that a fifth dimension needed to be defined. Long-Term Orientation seemed to play an important role in Asian countries that had been influenced by Confucian philosophy over many thousands of years. Hofstede and Bond found such countries shared these beliefs:

- A stable society requires unequal relations.
- The family is the prototype of all social organizations; consequently, older people (parents) have more authority than younger people (and men more than women)
- Virtuous behavior to others means not treating them as one would not like to be treated

- Virtuous behavior in work means trying to acquire skills and education, working hard, and being frugal, patient, and persevering

Based on this definition, high LT countries would emphasize the following aspects of user-interface design:

- Content focused on practice and practical value
- Relationships as a source of information and credibility
- Patience in achieving results and goals
- Low LT countries would emphasize the contrary
- Content focused on truth and certainty of beliefs
- Rules as a source of information and credibility
- Desire for immediate results and achievement of goals

However, the use of Hofstede's cultural model of managing the subjective aspects of cross-cultural interface design has been severely criticized as being too stereotypical [16] or rigid [12]. In addition, previous attempts to apply Hofstede's model to usability have resulted in conflicting and therefore inconclusive findings. For example, Gould et al. [17] found that Malaysian websites contain links on the home page to website administration, which correlates well with the high-power distance reported for Malaysia. However, this does not explain why low power distance countries such as the US also contain such links on their websites. In contrast, Forer and Ford [18] reported that accommodating for the user's cultural profile enhanced performance. Consequently, until better proof of their relevance to website design is provided, Fitzgerald suggests that cultural models should be used with care.

IV. CONCLUSION

Some of the arguments in the literature propose that objective, rather than subjective culture, should be accommodated into the design of user interfaces. Others argue that subjective culture is just as important as objective culture, and that the subjective cultural profile of the interface should match the subjective cultural profile of the intended users. In addition, the use of cultural models as a way of managing the subjective aspects of user interface design, has been severely criticized as being stereotypical and rigid. Although study, we proposed that the interface design characteristics required to design interfaces that accommodate high power distance, high uncertainty avoidance, masculinity and short-term orientation would provide a more culture-based interface to all users than one that is designed to accommodate the opposing sides of these dimensions. The assumed increase in general usability was translated into the hypotheses on which this research was based.

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