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Culturability: The Merging of Culture and Usability

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Abstract

The electronic environment of the World Wide Web evolves daily, increasing the likelihood of international participants and transactions. With this in mind, the current focus of our research seeks to address three interrelated questions: 1.) Are there design elements which can be identified as culturally specific? 2.) Are there design elements which can be identified as genre specific? 3.) What, if any, relationship exists between culture and genre as reflected in WEB design? As a consequence of existing international WWW users and in anticipation of potential users, usability takes on an immediate and relevant cultural context. To identify localization elements and generalize them to "cultural markers" that are specific to a given culture, and/or, perhaps influenced by genre, we are performing a systematic usability inspection of several hundred Web sites originating in different countries and languages. Cultural markers are those elements that are most prevalent, and possibly preferred within a particular cultural group. Ultimately, we argue, cultural markers can directly impact user performance, hence the merging of culture and usability.

Introduction

The evolution of the World Wide Web as a medium for international communication, participation, and transaction serves as both reminder and stimulant when considering interface design for a multi-cultured environment. Although this relatively new medium is touted as "World Wide" and "Global," it remains localized due to design and cultural constraints, which can and will be overcome. Basic tenets of usability including learnability, efficiency, and satisfaction combined with a basic component of HCI, detailed audience analysis, take on a larger meaning when designing for an international market. What becomes clear is that one medium does not equate with one interface. Instead, the interface design, interactivity, and content reflect a cultural sensitivity and understanding of the targeted audience; indeed, the Global Interface is culturally dimensional and capable of rapid change. Although cultural biases and preferences are part of the users' characteristics, we believe that these take on a special importance as determining factors for usability design for international audiences; thus, we give cultural preferences and biases a special focus under the term "culturability." Part I of our research, discussed here, encompasses a large population of sites, categorized by country of origin, language, and genre and generates a list of cultural markers, which may prove to distinguish cultural/genre specific design elements. Creating or retrofitting software for other countries requires attention to technical detail that goes beyond mere translation. For example, how pictorial information is presented and organized for scanning on a display can be related to the script direction of the user's first language. The basic premise behind the research outlined here is simple: No longer can issues of culture and usability remain separate in design for the World Wide Web. Cultural preferences and biases (i.e., colors, text vs. graphics, spatial orientation, among many others) impact what is deemed "user friendly;" thus, usability issues must take on a cultural context. Indeed, the software industry is beginning to recognize the need to design for the international interface (Kano, N. 1995; Nielson, J. 1996). What is needed to implement a truly Global Interface are guidelines that are

capable of capturing the nuances of cultures around the world, rendering an interface that allows the targeted audience to "feel at home," without sacrificing the creative and artistic aspects of design that make the WWW an interesting place to explore; however, a Global Interface does not mean one interface. A clarification of terms contained in this paper and how we use them to discuss both our goals and our findings is listed below.

Culture: The term "culture" is a complex and problematic one defined differently by various disciplines. We use the word "culture" - somewhat loosely- as a means of distinguishing among the different countries and their respective web-sites. Our use of the term is not intended to be indicative of all the nuances and properties frequently implied by the term, but rather to permit discourse about the features that distinguish one country or region of the world from another in the electronic medium of the Web.

Cultural Marker: Cultural markers are interface design elements and features that are prevalent, and possibly preferred, within a particular cultural group. Such markers signify a cultural affiliation. A cultural marker, such as a national symbol, color, or spatial organization, for example, denotes a conventionalized use of the feature in the web-site, not an anomalous feature that occurs infrequently.

Genre/Knowledge Domain: A knowledge domain refers to the type of information being presented on the Web and describes large categories of sites. News and Media, for example, is a knowledge domain that presents similar types of information, but may vary stylistically, such as a magazine, newspaper, or broadcast. We use the term genre in the broadest sense to convey the sort or type of information presented in a web-site.

Culturally Deep vs. Shallow Sites: We define a culturally deep web-site as one that occurs in the native language of its country of origin and links to other native-language sites. A culturally shallow site is one that occurs in a secondary language and links to other secondary language sites.

Project Description

Culturability is a term we use to emphasize the importance of the relationship between culture and usability in WWW design, but it can be expanded to apply to any software designed for international use. When one visits a foreign country, it is rarely enough to have a pocket translation dictionary and the proper currency. Although the dictionary and currency may help in performing simple tasks, purchasing a cheeseburger for example, one is still inundated with cues that mark her location as distinctly different from her native home, and may interfere with performing more complex tasks, asking a police officer for directions to the nearest hospital, for example. Sounds, smells, architecture, geography, flags, mode of dress, signs, customs, language, currency, and many other features contribute to the traveler's awareness of being in an unfamiliar place, which can be exciting when one wants to explore, and frustrating when one needs to accomplish a complex task easily and efficiently. Apply the traveler's analogy to the WWW, and the similarities are striking. Just as physical cities and countries differ and reflect their inhabitants, so do Web sites. Colors, spatial organization, fonts, shapes, icons and metaphors, geography, language, flags, sounds, and motion contribute to the design and content of a Web page, which directly effects the way that a user interacts with the site. Can she find the information she seeks? Can she submit a form or make a request? Does she find the site easy to use? Aesthetically pleasing? Consider the various meanings associated with color by different cultures. The Color-Culture Chart below illustrates some of the different meanings (Boor & Russo, 1993). When applied to Web design, color may impact the user's expectations about navigation, links, and content, for example, as well as overall satisfaction. For example, an American bank using a web site to promote services for French investors may want to avoid the use of the color green, which some French may associate with criminality. On the other hand, the American bank may want to use green to attract Egyptian and Middle Eastern investors, as green has a positive connotation for them.

Color-Culture Chart

Color	China	Japan	Egypt	France	United States
Red	Happiness	Anger Danger	Death	Aristocracy	Danger Stop
Blue	Heavens Clouds	Villainy	Virtue Faith Truth	Freedom Peace	Masculine
Green	Ming Dynasty Heavens	Future Youth Energy	Fertility Strength	Criminality	Safety Go
Yellow	Birth Wealth Power	Grace Nobility	Happiness Prosperity	Temporary	Cowardice Temporary
White	Death Purity	Death	Joy	Neutrality	Purity

The long term objective of our current research is twofold: First, the study aims to identify and study design standards and conventions that distinguish cultures as manifested in existing Web pages; and second, to understand how cultural influences lead to variations in peoples' behaviors and practices. Once this is understood, the development of what we term "culturability" guidelines may be implemented when considering design for the Web. Specifically, we focused on identifying cultural design cultural markers present in Web sites that have different languages, originate in different countries, and represent different genres. The intent is to explore three main questions: 1.) Are there design elements which are culturally unique and specific? 2.) Are there design elements which are genre specific? 3.) Are there design dominance relationships between culture and genre?

There are two primary motivating forces behind this work, which include studies of situated learning and data from a Cultural Issues Questionnaire designed by the GVU at Georgia Tech. Briefly, we relate psychological studies of situated learning to our work in that environmental and contextual cues effect learning and memory performance in recall and recognition tests (Reisberg, 1997). Cultural markers are a significant part of our environment and we expect our work to demonstrate that the presence and/or absence of cultural markers in international Web sites can effect learning and performance in an electronic environment, as well.

The other motivating force is based on the information provided by international respondents to a Cultural Issues Questionnaire. An analysis of data collected through the 8th GVU (Graphics, Visualization, and Usability Center) WWW User Survey (Cultural Issues Questionnaire) demonstrates that there are indeed cultural preferences and biases which effect user satisfaction and performance. Simply put, people perceive cultural differences as important. Some Middle Eastern and European respondents to the GVU

survey indicate that they believe American images make computers harder to learn, while Asian and American respondents believe American images have no effect on learning. What is more, according to the survey, Asian and Middle Eastern respondents were most likely to know someone who could not use the Internet due to language barriers, and Asian respondents suggest that if the web sites are designed for their language and

culture, more people would be willing to use the web. What becomes clear is that a Global Interface Design relies upon culturability, as it is capable of capturing the cultural nuances of a targeted audience to enhance usability; thus, the Global Interface may really mean an American Interface, a French Interface, an Israeli Interface, a Chinese Interface. To illustrate and explore the point more fully, Part I of this research identifies cultural markers that differ across cultures and genres. In an effort to go beyond the GVU survey, our research method includes a systematic usability, or culturability, inspection of several hundred web sites to identify culture and genre design elements. What follows is a detailed description of our method.

Methodology

The Culturability Inspection Method grew from discussions about usability and how such a concept might change given different cultural backgrounds and international users. We have identified numerous cultural markers that are reflected in Web sites around the world with some being far more prevalent in one country or region than in others. Cultural markers, or indications of belief systems, institutions, religion, customs, habits, preferences, biases and the like, are embedded in international WWW sites, both deliberately and subconsciously (i.e., the creator of the site is not necessarily cognizant of his/her own cultural phenomenon playing a role in how s/he designs the site). Similarly, specific genres, such as *Government* (including official government home pages, military, & political web sites) *Travel*, and *News* (in a few instances, the American CNN site for example), exploit cultural icons and cues. One relationship to be examined in more detail concerns the thematic use of flags and the symbols and colors found on a national flag, which are frequently found in WWW sites.

Stage 1 Foraging: The foraging stage involves categorizing hundreds of Web sites by country, genre, and language to create a large base of Web sites to be further examined. During the initial foraging stage, sites representing many countries were collected regardless of language, for example Chinese sites in English were included in the data. In order to narrow the scope of our research, we are currently examining sites that are created in their country's native language, although the site may offer other language options. In a future iteration of the project, all sites will be examined so that comparisons can be made between native and non-native language sites. Table I below shows the countries, genres, and languages examined thus far, and to be included here, each site must be in its country's native language. We hypothesize that sites in the country of origin's native language will depict cultural markers more specific to that particular culture, whereas a site in a non-native language will be more influenced by outside cultural markers.

Table I represents 168 native-language sites, reiterating the diversity of cultures to be found on the WWW. Although more usability and web design guidelines are being established in the relevant literature, such guidelines still remain separate from issues of cultural context. In other words, design elements that are appropriate for one culture may not be appropriate for another.

Table I - Foraging Results

Countries	Languages	Genres
Australia	English	Government
Andorra	Catalan	News & Media
Austria	German	Business

Italy	Italian	Education
France	French	Travel
China	Chinese	Society & Culture
Japan	Japanese	Health
Iran	Afrikaans	Science
Israel	Persian	Art & Humanities
Lebanon	Arabic	
Saudi Arabia	Hebrew	
South Africa	Spanish	
Canada	Portuguese	
United States		
Mexico		
Brazil		
Colombia		
Venezuela		
Total: 18	Total: 13	Total: 9

Stage 2 Cultural marker Identification: During cultural marker identification, a detailed inspection of each site occurs and cultural markers are cross listed by country and genre. Cultural markers are design elements found in web pages, and such elements become cultural markers when they prove to be highly prevalent within a particular cultural group and less prevalent or absent in other groups. Table II shows a list of cultural markers identified for this project.

Table II - Cultural markers

HTML Specific	Icons/Metaphors	Colors	Specific Colors	Grouping
# of lines	international	red	flag	symmetrical
# of centers	local	blue	graphics	asymmetrical
# of images	clocks	green	pictures	proximity
# of links	newspapers	purple	borders	alignment
# of internal links	books	pink	background	boundary
# of external	pages	black		enclosure

links	homes	yellow		connection
link color	stamps	gold		
visited link color	envelopes	teal		
horizontal bars	musical notes	white		
tables	paperclips	multiple		
bold	thumbtacks			
italics	other			
underlines				
frames				
audio				
video				
background image				
background color				
text color				
Flag	Language	Geography	Orientation	Sound
native	native	maps	centered	music
foreign	foreign	outline	left-right	voice
multiple	multiple	globe	right-left	
Font	Links	Regional	Shapes	Architecture
cursive	color	foliage	squares	state building
italics	embedded	animals	circles	house
bold	stand alone	landscape	triangles	church
size	internal external	water	rectangles	office
shading		desert	lines	cityscape
			arrows	

The lists of cultural markers in Table II are not intended to be exhaustive lists. The list must be somewhat flexible to account for changes in web sites and technology.

Stage 3 Pattern Identification: Cultural markers are checked for emergent patterns within countries and genres and across regions, which can then be analyzed for depth and WWW design implications. A "culturally deep" site is one that is in the native language and links to other native language sites. A "culturally shallow" site is one that is in a non-native language and/or primarily links to other non-native language sites. To aid in the identification of patterns and cultural marker aggregate analysis an engine has been implemented, which checks for cultural markers that can be specified in HTML files; all sites, however, are also inspected by hand. Patterns are emerging which suggest that there are definitely design cultural markers which are culturally determined and genre specific. Tables III - V illustrate samples of high frequency occurrences of cultural markers organized by genre and country. Each table represents only a sample of specific data collected during the foraging and cultural marker identification stages. Tables VI - VII show how this data can be taken and generalized into cultural markers that have a high frequency rating for a given culture and/or genre.

Table III - Specified Sample of High Frequency of Flag Cultural Marker by Genre

Country	Flags	Genre	URL
Andorra	Andorra, Spain, France, Germany, United Kingdom	Government	http://www.andorra.ad/consell/index.html
Lebanon	Lebanon	Government	http://www.lp.gov.lb/index.html
Brazil	Brazil	Government	http://www.mare.gov.br
Mexico	Mexico, Trinidad, Canada Nicaragua,	Government	http://www.presidencia.gob.mx

Table IV - Specified Sample of High Frequency of Right -to - Left Orientation by Cultural Marker

Country	Cultural Marker	Genre	URL
Egypt	Right-Left	News & Media	http://www.elshaab.com
Israel	Right-Left	Government	http://192.115.74.50/shilton/heb/open.htm

Israel	Right-Left	News & Media	http://www6.snunit.k12.il/news
Lebanon	Right-Left	News & Media	http://www.arabia.com/Addustour

Table V - Specified Sample of High Frequency of Prominent Multiple Colors Organized by Country

Country	Cultural Marker	Genre	URL
Brazil	Multiple Colors	News & Media	http://www.dgabc.com.br
Brazil	Multiple Colors	Travel	http://www.nautaplace.com.br
Brazil	Multiple Colors	Travel	http://www.embratur.gov.br
Brazil	Multiple Colors	Government	http://www.senado.gov.br

Table VI - Generalized Sample of High Frequency Cultural Markers by Country

Israel	Lebanon	Japan	Brazil	France
grouping - alignment	national flag	architecture: cityscapes	national flag	orientation: centered
orientation: right-to-left	icon: cedar tree; found in flag	grouping: enclosure	geographical references	colors: red, blue, white
borders	light graphics; more text	frames	heavy graphics	motion
color: green	color: green			

Table VII - Generalized Sample of High Frequency Cultural Markers by Genre

Government	News & Media	Business	Travel
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national flag	Bold font for headlines	orientation: center	heavy graphics
colors of national flag	English words: news,	bullet points	geography: maps, out-
throughout site	email, web, info		line of region
human picture; head of state	icons: sun/clouds for weather	logos	icons: skis; mountains; hiking gear; water

Results and Discussion

Overall, Tables III-V demonstrate that from the foraging and cultural marker identification stages of this work, patterns are emerging that reflect cultural practices and preferences in Web sites, influenced both by country of origin and genre. Table III shows that a commonly used cultural icon, the flag, is exploited in government sites. The flag serves as a symbol of immediate national, even global, recognition, helping the user to quickly identify the locale and origin of the site, which is particularly helpful when the site is in a language foreign to the user. The flag is also used to denote alternative language choices, which impacts usability in that the user may identify and choose an alternate language much more quickly and efficiently, as opposed to when the choices are textual.

Table IV suggests that some cultural markers may be particular to a given region, especially when the region shares similarities in language. Middle Eastern sites in Arabic and Hebrew have a high frequency of orienting text, links, and graphics from right-to-left, as opposed to centering or left-to-right. The spatial orientation of presented information has immediate implications for usability. While the left side of a web site might be the first focus of attention for an American, the right side would be the initial focus for a Middle Easterner; thus, important information should be displayed accordingly. Manipulate the orientation of the display and the user's comfort zone, the way she is accustomed to viewing information, is also changed.

Table V shows that some cultural markers may be particular to a given country and employed across genres. Brazil's multi-colored government sites differ from the majority of government sites in this study, which usually employ national colors throughout the site. Brazil has many sites that are particularly colorful with no one color being overly dominant. This is indicative of a cultural preference for many colors.

Tables VI and VII demonstrate that cultural markers can be cultural and/or genre specific and can then be used to implement culturability guidelines. It is also important to note the interplay between culture and genre. Lebanon, for example, has the cultural markers light graphics and more text based. The travel genre has a high frequency of heavy graphics, but a travel site in Lebanon is dominated by the cultural marker; thus Lebanese travel sites are still more text oriented rather than graphically oriented.

The Future

Culturability, the merging of culture and usability, has implications for Web and software design. Usability must be re-defined in terms of a cultural context, as what is "user friendly" for one culture can be vastly different for another culture. The intent is not to develop a generic Global Interface to be accepted by all cultures participating in this medium, but to suggest that cultural markers can be manipulated to facilitate international interactions.

In the final stages of pattern identification in which all cultural markers are weighed by region, country,

genre, and language a set of guidelines can be established. Such guidelines will offer web and software designers specific information about the region and country for which they are developing an interface.

Currently in development are search engines designated to parse HTML files to identify and aggregate cultural markers in HTML, which can then be assigned a percentage number of frequencies, according to country of origin, language, and genre. The next step is development of a tool that can help automate design processes, when the site is intended for a particular international audience.

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