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## Cross Cultural Web Design: An Experiences of Developing UK and Korean Cultural Markers

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**Abstract.** *International and multicultural nature of World Wide Web positions the issues of recognizing and observing cultural differences at the forefront of considerations in the design of web pages. This paper addresses some of these issues. Research has already identified some web page design elements that may be culturally or genre specific, that may also be generalised as 'cultural markers', and that consequently influence web page design and usability. These cultural markers represent a significant aspect of today's electronic environments in terms of influencing people's behaviour, changing their practices and attitudes, and affecting their learning and performance abilities. In this paper we identify general issues of cross-cultural web page design by defining a check-list of design elements relevant for developing a web-site and investigate culturally specific design elements, on examples of South Korean and UK web environments.*

**Keywords.** Web design; cultural differences; cultural markers, and web page usability

### 1 Introduction

The concept of "cultural markers" has been coined by W. Barber and A.N. Badre [1, 3] and refers to "interface design elements and features that are prevalent, and possibly preferred, within a particular cultural group". A specific cultural marker signifies a cultural association and denotes a conventionalised use of the feature in the website. Such cultural association can be

seen in the frequent use of cultural markers such as a national symbol, colour, or spatial organisation in web site design [1, 2, 3, 4, 14, 16]. This modus operandi of combining culture and usability in web design is defined as "culturability" and is considered as a new dimension in the Web usability matrix [3].

Communications within a particular culture denote "assigning meaning to messages based on peoples' prior beliefs, attitudes, and values" [3, 10]. Since people from different cultures often have different beliefs, attitudes, and values, normal human misunderstandings which occur in interactions between people of the same culture are magnified by the wider differences in intercultural interaction [9, 10]. The key to effective communication across different cultures is knowing what kind of information people from other cultures require and in what form [9]. Language, signs, currency and many other features make us aware of being in an unfamiliar place, which can be intriguing in certain ways and frustrating if we have to do complex tasks. With the tremendous growth of the Internet, and the World Wide Web sites being developed in many different cultures around the world, the interface design has to be influenced by the culture in which web sites originate. Del Galdo and Nielson [5] demonstrated that interface elements affected by culture are problematic because "they are representations, which can be understood differently by culturally diverse people". Design elements such as colours, icons, character sets, and symbols are important factors for understand the site by web users [17]. They

can also directly affect the way web users interact. Users from different cultures may understand the same websites differently; some metaphors, navigation or appearance might be misunderstood and might confuse or even offend different users.

In this paper we identify general issues of cross-cultural web design and define a checklist of relevant design elements. We also derive culturally specific design elements i.e. *cultural markers* for the South Korean and UK website environments. Section 2 gives our check-list of web page design elements relevant for developing a web site, section 3 applies the check list to a selection of web sites across the UK and South Korea in order to detect a specific cultural markers and section 4 comments on our research results and existence of cultural markers needed for a successful web design in both cultural environments.

The works of Barber and Badre [1, 3] and Sheppard and Sholtz [14] are the most similar to ours and the most frequently cited approach to exploring the effectiveness of cultural markers to web site usability. The work from [16] categorizes cultural markers in order to localise the trans-national corporate web sites that can be easily understood and accessed by international audiences. The work from [15] adds social and cultural contexts in order to extend the dominant and known cultural patterns towards sub-cultural groups or minorities. Other sources, such as [7, 18, 19], supply statistics and experiences of information visualisation and its impact on web design.

## 2. Check list of general attributes

We created a general checklist of *verbal*, *visual* and *audio-visual* attributes for web site design. Our selection and categorisation of attributes, which is partially based on related works [11,13,20] and partially on our previous unpublished research (available on request). The checklist of attributes, divided into three categories, is listed below.

### *Verbal attributes:*

- Language;
- Formats (time, date, telephone numbers, addresses, currency, printing format and size, units of measurements).

### *Visual attributes:*

- Image (photographic, symbolic, iconic, indexical, others);

- Colour (background, text: title/body; link: unvisited/visited; graphics, others);
- Text (typeface, size, others);
- Layout (menu, tables, and placement of menus, logos, graphics/images, and others).

### *Audiovisual attributes:*

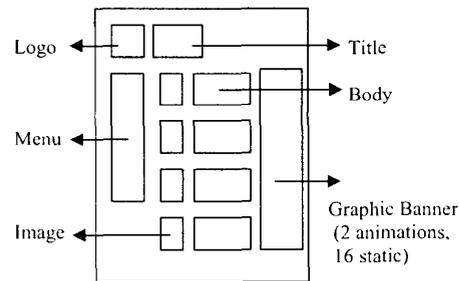
- Sound (music/voice/others)
- Animation
- 3D

## 3. Applying the checklist to a selection of UK and Korean web sites

We applied our check list on a selection of 40 web pages, half from the UK and half from South Korean environments. Web pages are chosen from the following 5 genres (5 web pages per genre):

- government
- news & media
- business and
- education.

The application of the attributes from our checklist on is illustrated on an example of a UK Government web page <http://www.number-10.gov.uk/default.asp?PageId=1> visited on 5 Apr 2002. The overall layout of that site is given in Figure 1.



**Figure 1. The layout of the UK government website**

Table 1 shows the outcome of the application of the attributes from our checklist on the UK government web page. All general attributes, listed in the checklist in section 2, have been identified within the page with the exception of language. Language attribute could be essential when there is a need to translate a text from one language to another, which is not the case in our chosen web-site. This attribute may therefore play an important role in cross-cultural web design.

**Table 1. The checklist applied to the UK Government website.**

Attribute		Content		
Image	Photo-graphic	Number 10 policeman (up right), parliament, people		
	Symbolic	Royal symbol and union jack		
	Iconic	Menu: eyes, face, keyboard, hand in square shape		
	Indexical	Horizontal bar		
	Others	27, 'More' text for more information/ hyperlink with icon		
Colour	Back ground	Dark yellow (only)		
	Text	Title	Size 10, Arial, Black, bold	
		Body	Size 10, Arial, Black,	
	Link	Unvisited	N	
		Visited	N	
		Overall	Menu-colour appear (more dark yellow)	
	Graphics			
Others				
Text	Typeface	Up menu in Times New Roman Down menu- in Gill Sans MIT, 8		
	Others			
Lay Out	Menu	Vertical (after click –down menu appear)		
	Tables			
	Menu placement	Left		
	Logo placement	Left top		
	Title placement	Top middle left		
	Search engine	N		
	Graphic /image	Middle left		
	Others	Horizontal (using right Scroll bar)		
Sound	Yes	Music		
		Voice		
		Others		
No	0			
Animation	Text animation (bottom to top: news)			
3D	N			
Format	Time	N		
	Date	N		
	Menu order	Non alphabetic		

Table 2 shows the summary of applying our checklist attributes to all 40 pages. Attributes from the first columns of Table 1 and Table 2 do not map precisely. In Table 2 we list only attributes which appear to have significantly different values in both cultures. Consequently, the checklist attributes from Table 1 are transmitted into Table 2 only if they can play a role of 'cultural markers'. The following checklist attributes: format, 3D, sound, search engine, logo placement, title placement, typeface of text and search engine, appear not to be significantly different across UK and Korean web sites. Consequently, they are not candidates for cultural markers.

**Table 2. The summary of applying the checklist to 40 websites in South Korea and the UK**

		South Korea	UK
Popup windows		5	0
Icon		11	5
Menu Placement	Horizontal	9	4
	Vertical	1	6
	Combination	9	7
Image placement	Top:9	Top:9	Top:0
	Left:3	Left:3	Left:5
	Right:5	Right:5	Right:5
	Middle:2	Middle:2	Middle:2
Bottom:4		Bottom:4	Bottom:0
Use of Animation		16	8
Text movement	Text movement	From bottom to top:15	From bottom to top:6
	Text movement	From right to left:1	From right to left:1
Menu	Pop-down	14	1
	Fixed	6	19
Layout (scrollbar)	Horizontal	0	0
	Vertical	15	12
	Both	1	0
No using		2	5
Colour	Background	White:19 Grey:1	White:10 Blue: 3 Red: 2 Green:2 Dark-yellow:1 Orange:1 Black:1
		Blue: 5 Black: 10 Grey: 2 Green: 1 Red: 1	Black:8 Blue:6 White:3 Yellow:1
	Body text	Black:5 Dark grey: 1 Grey:2 Green:1 Orange:1	Black:10 White:3 Blue:1

The strongest candidates for cultural markers are colour, menu placement, menu layout, and text animation/movement. There are also interesting findings on images within Table 3 presenting the summary of images present within all websites according to their genre.

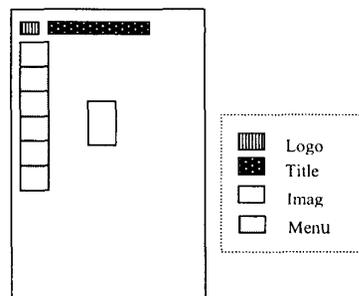
Consequently figures 2a and 2b give a layout of a 'typical' Korean and UK website. Korean web sites have a richer source of icons/images used within their sites than their equivalents in the UK. Figures 2 and 3 also show that the predominant layout of a typical Korean web site is 'horizontally placed' (i.e. the bottom scroll bar is used), as opposed to a typical UK web site which is more 'vertically oriented' (i.e. side scroll bar is used).

**Table 3. Summary of images within all 40 websites according to their genre**

	Korea	UK
Government	Cheonwadae, president, flag, rice green background, mascot of ministry, Korea traditional colour and figure (red, blue, yellow), A family (dad, mom, daughter, son)	Royal symbol, Union jack, number 10, policeman, parliament, people, fireman, operation, doctor, lion, horse, countryside photo
Education	School Building, students, cook, computer, school flower, lion (school animal)	School crest, school building, students
News & media	Weather, date, day	World map
Business	People, money (won) Address, phone number, cart World cup trophy	Money (pound) UK map, parliament

#### 4. Comments and Conclusions

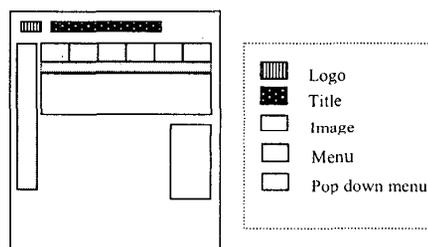
Our work shows that cultural dimensions are important factors, which must be considered when designing web sites that span across different cultural environments. Values and appearances of the 'cultural markers'; i.e. attributes needed when designing a web site, differ significantly across different cultures. Our case study of Korean and UK environments may generate cross-cultural design guidelines, which can help web designers to identify and understand cultural specific requirements.



**Figure 2. The layout of a typical South Korean websites**

Our results may also have bearings on issues related to web usability. As the usability may be affected by cultural markers the cultural markers must be considered in conjunction with other usability issues within a particular cultural context. Hence, in cross cultural web design, we should adopt the following process:

- (i) analyse cultural sensitivities and identify cultural markers
- (ii) analyse how cultural markers affect web usability and
- (iii) derive a checklist of design elements, i.e. cultural markers that can guide such design.



**Figure 3. The layout of a typical UK website**

Our paper presents only one slice of our exploratory study of creating web design guidelines across UK and Korean cultural environments. Space restrictions do not allow us to show a complete method and models, which deal with the cultural sensitivities in the web design. We have identified strong cultural markers for UK and Korean environments, which can serve as a basis for further exploration of their implementations, i.e. their usage in cross-cultural design.

Our ongoing research includes a large-scale evaluation of cultural marker's impact on web page usability, after a preliminary study showed that web users are aware of 'culturability' [3] in web-designs.

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