Human Factors

for Ergonomic ITs:

A Summary and some Guidelines
for Web Desing in China, Australia, Saudi
Arabia and Chile

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1. Summary

In the spirit of developing guidelines and increasing knowledge regarding culture-specific preferences in websites, this study takes on identifying some preference differences, specifically within the nationalities of Australia, China and Saudi Arabia, that have been identified as having particularly distinct traits. To asses such cultural differences, this research uses the two dimensions of Hall's, and Hofstede's initial four factors:

Cultural factors	Australia	China	Saudi Arabia
Power distance	Low	High	Very High
Individualism	Very high	Low	Low
Uncertainty avoidance	Medium	Low	High
Long-term orientation	Very low	High	Low
Context	Low	High	High
Time perception	Monochronic	Polychronic	Polychronic

Source: Hofstede, Hofstede, and Minkov (2010) and Hall and Hall (1990).

Table 1. Cultural distance. Extracted from Alexander, R., Thompson, N., & Murray, D. (2017). Towards cultural translation of websites: a large-scale study of Australian, Chinese, and Saudi Arabian design preferences. Behaviour & Information Technology, 36(4), 351-363. (p. 352).

Furthermore, to design web pages according to cultural preferences, layout, navigation, links, multimedia, text, visual representation and color were the design attributes modified to evaluate impact.

The study evaluates around five hundred web pages considering «government» and «news and media» sites prompting the different design components. Some of these were audited manually and the more time consuming, automatically. Later, a statistical analysis was carried on to arrive to results.

As for layout, more columns were identified on Australian web sites, but the content was denser in Chinese sites. Saudi Arabian sites generally did not use one color banners. Fat footers and quick link shortcuts were most used by Australian sites, and not common on Chinese sites.

Chinese sites more often opened in a new window some links and also, menus displaying all sub headers were common in Chinese sites followed by Saudi Arabian. In fact, two level of sub header depth was totally absent in Chinese sites. Australian sites generally used dynamic display of sub headers.

Regarding pop ups, animation and scrolling multimedia elements were common in Chinese sites but Australian sites recurred most to universal iconography. Australian sites also recurred more to buttons that allow users to control multimedia flow and buttons that allowed removing repetitive information more often.

Though Chinese prefer uncategorized content, and Chinese sites use more bolded inline portions of the texts, while Australian sites use more headings; their sites commonly used external links to signal bigger networks and social presence. Apparently, Chinese users don't need to feel in total control of navigation.

Saudi Arabian sites contained the greatest number of images of leaders, followed by Chinese pages. These two nationalities commonly showed collectivistic images. On the other hand, Australian sites display more individualistic images, images depicting nature and common people. Saudi Arabian sites also recur to the green color commonly. Australian sites used white more and Chinese pages, red and blue.

The study concludes that there are significant differences in the web sites. The size of the footer, for example, is related to the uncertainty avoidance in the culture, allowing fat footers to help users find their way in high uncertainty avoidance cultures.

High power distance cultures recur to images of leaders, large groups and institutions. Collectivistic cultures also consider images of groups of people.

High-context cultures tend to use more contrasting colors. Plus, polychronic, high context cultures tend to navigate in parallel, non-linear ways, using more images and cartoons to express content, making some sites appear distracting and overwhelming for low-context culture users. Australian content is based on text, on the center of the page, giving control to the user, of the flow of information.

2. Guidelines for Website Page Design in Australia, China and Saudi Arabia

We can identify two navigation styles by which the user likes to navigate. Websites analyzed vary from one pole to another: the controlling monochronic low context profile (associated to Australia) versus the scattered polychronic high context individual (associated to China). Saudi Arabian sites usually display middle-ground features excepting two prominent aspects: the use of the color green and the amount of images depicting leaders, exceptionally high.

2.a. Chinese Websites

Based on these two orientations, for China, we recommend creating a website that has dense content and recurs to inline images as a way of expressing and catching your attention. Chinese user dont feel the need to control navigation so you can avoid fat footers, hierarchically ordered headers or multimedia control for each of the inline elements.

In fact, when it comes to displaying information, Chinese prefer it to be presented in parallel: they even tend to open links in new windows, following non linear navigation patterns. Each portion of the text then must have a call for attention, images, bold texts, etcetera, so the user does not skip it when skimming the page.

I recommend a lot of external links in these sites, the use of blue and red colors in these pages, and collectivist images.

Dimension	Tendency in web interface design	Tendency in web interface design
Collectivism and individualism	Collectivism • Pictures of groups • Pictures of experienced senior leaders • Emphasis on state of being • Pictures of success being displayed through the accomplishment of social−political agendas • More official slogans	Individualism • Pictures of individuals • Images of young individuals • Images of action • Emphasis on action • Pictures of success being displayed through materialism and consumerism • Argumentative speech • Presentation of personal achievement
Uncertainty avoidance	High uncertainty avoidance • Restricted choices • Limited amount of data • Restricted scrolling • Simplicity, with concise restricted amounts of information • Attempts to predict the results or implications of actions • Navigation structure intending to prevent users from getting lost • Mental models focusing on decreasing user errors • Using typography, colour, sound, etc. to decrease ambiguity	Low uncertainty avoidance • Many different choices • Long scrolling webpages • Acceptance of surfing and exploring, over-protection being • Courage for navigation • Mental models focusing on comprehension underlying concepts rather than narrow tasks
Long-term time and short-term time orientation	Long-term time orientation • Information concentrating on practice and practical value • Relationships as a reference of information and believability • Patience being required to attain Result and reach goals	Short-term time orientation • Information concentrating on the truth and certainty of notions • Regulations as a reference of information and credibility • Quickly getting results and reaching goals
Power distance	High power distance • Evenly distributed layout • Deep information hierarchies • Concentrating on official seal • Images of leaders • Architecture of monuments	Low power distance • Unevenly distributed layout • Shallow information hierarchies • Photographs of students rather than faculty • Pictures of both genders
Masculinity and feminity	Masculinity • Conventional gender role distinction • Restricted actions to get quick result of work tasks • Navigation oriented to discovering and control • Attention attracted by games and competition • Visual graphics, sound, and animation for useful purposes	Feminity • Ambiguous gender role distinction • Reciprocal group action, exchange, and support • Attention attracted by aesthetics, appealing to unifying values

Table 2. The web interface tendency on cultural dimension from Marcus and Gould. Extracted from Hsieh, H. (2015). Probing the effects of culture on the communication of websites design. Theoretical Issues in Ergonomics Science, 16(6), 606-630. (p. 611).

2.b. Australian Websites

The user in this case likes to control navigation, and proceed linearly. Content should be displayed with less density, giving priority to the center of the page. This tendencies allow a page to be sorted hierarchically, for example, recurring to menus that have sublevels, sitemaps, footers and other orienting shortcuts within the page: this users will be using mainly one tab so the flow must be under their control.

For Australian sites, content must be based on individualistic images, dynamic subsections on titles and subtitles, and multimedia in a way that the user may activate or deactivate. If too much content or multimedia is displayed and feels out of control, the user may not be comfortable.

I recommend to use the color white for backgrounds, transmitting a feel of tidiness.

2.c. Saudi Arabian Websites

Saudi Arabian websites should allow some degree of density in the layout, but not as Chinese sites. Quick links shouldn't be so common in Saudi Arabian sites, but still, the menus must not be ordered in a very hierarchical manner.

Saudi Arabian sites should haves quite an amount of external links and images that depict leaders recuring to the color green.

3. Suggestions for Chilean Website Design

Based on this work, we can extrapolate some characteristics we would desire Chilean websites to have. According to Hofstede (1992), Chile ranks mid-high on short-termed orientation, power distance, and collectivism but high on feminity and uncertainty avoidance. This charactersitcs can act as guidelines for website design.

Chileans have a polychronic work style and a high context communication style. Bold fonts and underlines may come in handy for Chilean websites. Users will prefer a lot of links, images and media complementing the information. We would expect users to open several tabs and can allow the site to redirect to other sites, or download content, for example, in a new tab or window. Traditional Chilean themes can be of value as this country is high context, or at least, depending on the content, the design must evoke it and support it.

For Chilean sites, I would recommend to pay attention to unifying aesthethics while designing, yet always allowing limited choices for the users. Moreover, menus, scrolling and deployables must be displayed in a way that the user can somehow predict the outcome of his interaction. Reference elements like footers, navigation maps and media control may be of great value for the user.

Chileans would prefer images of groups and social accomplishments, people sharing and interacting in a collectivistic manner plus references to leaders and institutions. Information can be hierarchically structured, not necessarily in a linear manner as hierarchies may overlap, but they must be displayed in a way in which the user quickly arrives to the desired data.

4. Bibliography

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