ON CULTURAL DIFFERENCES IN LOCAL WEB INTERFACES

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Abstract

In the light of the existing literature on the issue of cross-cultural interface design, we carried out a small-scale study in order to check whether we could find cultural differences in local web sites. First, the experiment was conducted for university web sites. Our hypotheses with regard to cross-cultural variation were based on the well-known theory of Hofstede [6]. Contrary to Hofstede's theory and findings, very little evidence of cultural differences in the interfaces of the web sites was reported. Subsequently, an online survey was conducted among webmasters of university web sites in an attempt to provide preliminary explanations for the findings. Because the results of the experiment were inconsistent with other previous research findings, we decided to repeat the experiment for a different type of web sites: newspaper web sites. This experiment confirmed the first results. Although the experiments done were on a small scale and had several limitations, the results already give an indication that Hofstede's theory may not be applicable as such for web sites. Furthermore, it seems that the Web has developed its own culture, a hybrid cosmopolitan culture overriding traditional cultural differences.

Key words: globalisation, localisation, web user interface design, cultural differences, cultural value orientations, Hofstede's cross-cultural theory, online culture.

1   Introduction

A considerable amount of literature on web site development stresses that, in order to attract and retain more customers, it is vital to localize a global web site, i.e. to adapt the web site to a local community. Localizing a web site includes translating (text) content and also adjusting content examples, graphical and visual elements, in order to make them culturally appropriate [5], [8].

All members of a certain culture do not only share a common language, but also common cultural conventions. Since measurement units, keyboard configurations, default paper sizes, character sets and notational standards for writing time, dates, addresses, numbers, currency, etc. differ from one culture to another, it is self-evident that local web sites should address these issues. Some jokes, symbols, icons, graphics or even colours may be completely acceptable in one country, but trigger off negative

reactions in another country. Sometimes the style or tone of the site's text might even be considered offensive by a particular cultural entity, as a result of which the content needs to be rewritten rather than merely translated.

In their book *International User Interfaces* [2], Nielsen and Del Galdo stress that localization should encompass more than a 'surface-level' adaptation, by acknowledging underlying cultural differences such as interface design preferences and the local culture's perception of usability. The role of culture in user interfaces has also been addressed by Evers and Day [4]. Barber and Badre [1] detected the existence of cultural markers, i.e. web design elements that are prevalent in web sites of a particular culture (e.g. color, icons, symbols). Sheppard and Scholtz [10] and Sun [11] conducted pilot studies to determine if the absence or presence of cultural markers affects the user's preference or performance.

Cultural differences have also been investigated from an anthropological perspective, looking at the intangible nuances of a culture's social hierarchy, individualism, gender roles, attitude towards uncertainty and time-orientation (Marcus and Gould [9]; Dormann and Chisalita [3]). This type of research is commonly approached through Hofstede's cross-cultural theory [6]. According to Hofstede, cultural differences are based in deeply rooted values that can be categorized along five fundamental dimensions*: power distance, collectivism-individualism, masculinity-femininity, uncertainty avoidance, and long and short-term orientation.* His research is based on a large-scale survey which was carried out between 1967 and 1973 and which covered 53 countries representing the major regions of the world. These were rated for each dimension, usually on a scale from 0 to 100. A lot of researches have based their work on his theory. Marcus and Gould [9] attempt to apply those dimensions to global web interface design, providing suggestions and guidelines to produce successfully localized web sites. Dormann and Chisalita [3] conducted an empirical study in order to determine the extent to which value orientations are expressed in sites from 'masculine' and 'feminine' countries and to examine value differences between participants of countries of both poles.

In search for methods and guidelines to design localized web sites, we wanted to investigate to which degree it would be necessary to take cultural differences into account. After all, the theory of Hofstede is 30 to 40 years old and cultural values and reference systems in different countries have changed over the years. Since the original study, circumstances have changed dramatically, at least in some regions and countries. In addition, the Web has introduced issues, which Hofstede could not even have considered in the late 1960s, worldwide accessability being the most important one for our subject. Therefore, we started with a small-scale action research inspired by the aforementioned studies. Following the aforementioned studies, we departed from the assumptions that since web sites are developed in many different cultures all over the world (of: worldwide), and that interface designs could be influenced by the culture in which they originated. To verify this, we used the value orientations in accordance with Hofstede's theory. First, as part of a localization course program, 16 students were asked to analyze homepages of university web sites in different countries in search of distinctive features which could illustrate cross-cultural variation. The students' reports contained little evidence of clear cross-cultural differences in design. Therefore, an online survey was conducted subsequently among webmasters of university web sites in an attempt to provide preliminary explanations for the findings. Since the results of the experiment were inconsistent with previous research findings and considering the possibility that the settings of the experiment could have influenced the results, we repeated the experiment with students from another culture and for a different domain, newspaper web sites. However, the results proved to be quite similar. These findings allow us to formulate some preliminary conclusions.

The article is structured as follows. Section 2 offers a description of the setup and outcome of the first experiment. A discussion of the findings of this pilot experiment is provided in section 3. Section 4 reports on the webmaster's survey done in the context of the pilot experiment. Section 5 describes the results of the second experiment and compares them with the results of the pilot experiment. Finally, section 6 presents conclusions.

2   The Pilot Experiment

The first experiment was conducted in December 2003. 16 students who had previously attended a class in which Hofstede's cultural model was outlined were requested to participate in our experiment to evaluate cultural aspects in universities' web sites. As already explained, our methodology was somewhat inspired by Dormann and Chisalita's [3] experiment. Our goal was to determine the extent to which the homepage design of local web sites reflected the Hofstede-score assigned to the corresponding country

Constraints and Limits of the Study

1. We decided to restrict our study to Hofstede's four initial dimensions, i.e. power distance, collectivism-individualism, masculinity-femininity and uncertainty avoidance. We omitted long and short-term orientation, as we felt that this fifth dimension, which is based on values derived from the Chinese philosopher Confucius, could prove intangible to the participants.

2. We concentrated on one domain, university web sites, in order to rule out any domain-specific differences.

3. Students were asked to evaluate only the homepage, focusing on the visual parameters (images, symbols, logos, etc.) and design elements (color, layout, etc.), since they would evaluate university homepages from countries of which they did not always master the language.

16 Belgian students participated in the university web sites experiment, 10 female and 6 male, aged between 19 and 24.

2.1 Method

We used the following method for our experiments:

- Each of the four dimensions was examined by 4 students. Within one dimension, each student examined 10 homepages. They were asked to make a random selection of 5 homepages from at least three of the seven highest ranked countries, and 5 homepages from at least three of the nine lowest ranked countries (using the university portal site at http://univ.cc). In total, 40 homepages were analyzed per dimension, 20 homepages representing either pole of the dimension. (The list of analyzed homepages is available from the authors).

- For each homepage, students were asked to fill out a questionnaire, which offered them a recapitulation of the dimension they had to analyze and presented them with a number of questions.

  1. First, students were asked to give their general impression of the homepage.

2. Secondly, students were given a concise list of various subjective adjectives, which could be reflective of cultural trends, and were asked to check the ones they felt to be relevant to the homepage. The list included the following options: *attractive, bright, cheerful, dull, formal, informal, artistic, personal, impersonal, distant, concise, clear, simple, modern, old fashioned, busy, complex, nice, innovative, showy and dark.*

3. Afterwards, the students were asked to rate from 1 to 5 the extent to which value orientations were expressed in the homepages by means of auxiliary criteria representing the cultural values extracted from Hofstede's theory (listed below for each dimension separately). The rating scale was as follows: 1 = not applicable, 2 = hardly applicable, 3 = applicable to some extent, 4 = clearly applicable and 5 = strongly applicable. For a score higher than three, participants had to clarify from which elements in the page they perceived the given value.

4. Finally, students had to rate from 1 to 5 the extent to which they had found that the homepage reflected the high or low score of its country of origin for the dimension analyzed. Here the rating scale was: 1 = not perceptible, 2 = hardly perceptible, 3 = perceptible to some extent, 4 = clearly perceptible and 5 = strongly perceptible. We shall call this the *general perceptibility rating*.

5. After the analysis of the 10 homepages, the students were asked to describe the main differences in design between the 5 high-score homepages and the 5 low-score homepages.

The questionnaires (given in appendix 1 to 4) were identical across the four dimensions, except for the auxiliary criteria representing the value orientations:

Power Distance

The power distance dimension bears on the extent to which unequal power distribution within a culture is expected and accepted. Based on Hofstede's writings, we used the following criteria:

High Power Distance:

–   *Focus on hierarchy*

–   *Focus on teaching/management staff*

–   *Healthy respect/obedience of inferiors towards superiors*

–   *Focus on tradition and/or religion*

Low Power Distance:

–   *Focus on equality between teacher and student*

–   *Focus on student*

–   *Mutual respect between inferiors and superiors*

–   *Focus on personal development*

Collectivism-Individualism

This dimension refers to the degree of integration of individuals within groups and the extent to which individual concerns give priority over the interests of the group, and vice versa. These are the criteria we retained for rating:

Individualism:

– *Individual interests prevail over collective interests*

– *Focus on personal development and self-realization*

– *Focus on freedom*

Collectivism:

– *Collective interests prevail over individual interests*

– *Focus on tradition and/or religion*

– *Focus on consensus*

Masculinity-Femininity

Masculinity and femininity refers to differences in the social roles of women versus men. Where in feminine countries gender roles overlap, in masculine countries gender roles are clearly distinct. Students were requested to rate the following criteria:

Masculinity:

– *Boys and girls are addressed separately*

– *Focus on ambition/competition and/or (material) success*

– *Women should be tender and modest and/or men should be hard, ambitious and assertive*

Femininity:

– *Boys and girls are addressed indiscriminately*

– *Focus on equality, solidarity and/or quality of life*

– *Men may be tender and modest and/or women may be hard, ambitious and assertive*

Uncertainty Avoidance

Cultures have a different attitude towards uncertain or unknown matters. The tolerance for ambiguity is expressed through the extent to which a culture resorts to written or unwritten rules to maintain predictability. The value orientations to be rated for this dimension included:

High uncertainty avoidance:

– *Rigid rules*

– *Focus on formality*

– *Great precision or punctuality*

– *Focus on tradition and/or religion*

Low uncertainty avoidance:

- *Flexible rules*
- *Tolerance for informality*
- *Tolerance for ambiguity or vagueness*
- *Tolerance for evolution/change*

2.2 Quantitative Results

Students' reports contained two sets of quantifiable data: (i) the number of times they had ticked given adjectives in the list, and (ii) the scores (from one to five) on the auxiliary criteria they had given to the homepages. To check whether students' perceptions of the homepages differed significantly from the host countries' positions on Hofstede's dimensions, we applied a chi square test to the former set of data and a Mann-Whitney U-test to the latter. In keeping with standard scientific practice we set significance levels at $p < .05$ (two-tailed). The results will be reported for each dimension separately.

Power Distance

- None of the adjectives in the list of descriptors was ticked significantly more often with regard to homepages from high power distance countries than with regard to homepages from low power distance countries.
- The scores on the auxiliary criteria didn't reveal any significant difference between homepages from high power distance countries and those from low power distance countries.
- The average score given for the general perceptibility rating (on a 1 to 5 scale) of the power distance dimension was 2.5 for homepages from high power distance countries and 3.4 for homepages from low power distance countries. It is conceivable, of course, that low power distance indicators may have been more perceptible to our students than high power distance indicators.

Collectivism-Individualism

- We found no difference in the incidence of the adjectives ticked for homepages taken from countries positioned at opposite ends of the collectivism-individualism dimension.
- However, the Mann-Whitney U-test showed that two auxiliary criteria were significantly more likely ($p < .05$) to be perceived in the homepages from individualistic countries than in the homepages from collectivist countries, namely 'individual interests prevail over collective interests' and 'focus on freedom'. In homepages from collectivist countries, the statement 'collective interests prevail over individual interests' was rated significantly ($p < .05$) higher than in individualistic homepages.
- Based on the scores of the general perceptibility rating both poles were perceived to some extent: 2.95 for individualistic and 3.05 for collectivist countries (on a scale from 1 to 5).

Masculinity-Femininity

- One adjective was ticked significantly more often in response to homepages from feminine countries, i.e. the adjective nice ($p < .01$).
- However, no significant differences were found between students' assessments of the homepages' masculine and feminine value orientations. Students did observe that feminine values were

slightly more strongly expressed in homepages from feminine countries, but web sites from masculine countries were also characterized as displaying some feminine values.

–   In fact, the homepages from masculine countries were hardly found to reflect masculinity at all, with an average general perceptibility rating of 1.45. In feminine countries, femininity was found to be expressed to some extent in the homepages, with an average rating of 3.25 (on a scale from 1 to 5).

Uncertainty Avoidance

–   The chosen adjectives did not reveal any significant variation in participants' descriptions of homepages from countries representing contrasting poles of the uncertainty avoidance dimension.

–   Participants did not observe any clear differences between the given auxiliary criteria either. In other words, the analyzed homepages displayed values applying to both poles.

–   The average score given for general perceptibility was 2.6 for homepages from high uncertainty avoidance countries and 3 for homepages from low uncertainty avoidance countries.

2.3   Qualitative Results

At the end of the questionnaire, students were asked to sum up how (if at all) they had perceived the expected cross-cultural differences between the samples of homepages. From their observations, we can distil the following general trends:

•   In most cases, participants based their evaluation on the homepage's pictures and graphical representations, and their size and position in the homepage (central, in a corner, etc.). To some extent, the page's colors and its cheerful or formal appearance were decisive.

•   With reference to all four dimensions, most students reported that sometimes, huge design differences existed among homepages from one single country. The university homepages for a given country could be extremely simple or complex, very dull or very interactive, innovative or very formal, etc.

•   For the power distance dimension, the visual representations appeared to have been the main criterion of evaluation. Did pictures represent buildings, professors, and religious symbols or did students hold a prominent place? Eight of the 20 university homepages from high power distance countries actually portrayed students, usually cheerful and smiling.

•   The most perceptible value orientation differences were found in the dimension collectivism-individualism. In 'collectivist' homepages, pictures of buildings or groups were found more prominently than in 'individualistic' homepages, which generally depicted smaller groups or individual students, often with smiling faces. Collectivism was strongly expressed in homepages from Latin American countries, and to a lesser extent in other collectivist countries.

•   According to the participants, masculine homepages proved to display some feminine values. Pictures of girls appeared on 10 of the 20 masculine homepages. In their comments, the majority of the participants found the feminine homepages more aesthetically appealing, which explains the significant incidence of the adjective nice. In feminine countries, representations of people are more numerous than in masculine countries. Students also reported that they had been struck by the prominence of pictures of women in Scandinavian homepages.

• The homepages in low uncertainty avoidance countries were not found to be more complex or innovative than in high uncertainty avoidance countries. One student remarked that innovation and complexity are not reliable criteria, as they depend on the extent to which a country has been exposed to the web, and not only on the country's uncertainty avoidance.

3   Discussion of the Pilot Experiment

The results of the study show that, except for the dimension collectivism-individualism, value orientations were not clearly ascertained by the students in the analyzed homepages. This is not consistent with the literature on cross-cultural issues in web site design (see above). Because of the surprising results, we first examined whether the way the experiment was conducted could have influenced the results.

It is hard to believe that the participant's background knowledge could have influenced the results. Moreover, given their knowledge of the homepages' countries of origin and those countries' scores on Hofstede's cultural dimensions, we may assume that our participants were actually biased towards 'finding' cross-cultural differences.

It needs to be acknowledged that, as a consequence of the participants' random selections, some homepages were just too plain to extract any information and thus got a very low rating. Nevertheless, none of the average general perceptibility ratings was ≥ 4 (i.e. clearly visible), which implies that no dimension was distinctly perceived. Moreover, responding to a 'random' sample of university and newspaper homepages may more closely resemble authentic web browsing than responding to a pre-selection of homepages chosen by a researcher with a view to demonstrating 'culture-typical' designs.

We also wondered whether our participants' findings could be ascribed to their own cultural background. Since they were all Belgians, perhaps they were more / less likely to perceive things which were affinitive to their culture? However, a comparison between Belgium's score for the four cultural dimensions and our students' reports shows that they had not observed their own cultural value orientations any better or worse.

It is also possible that the fact that the students only focused on the visual elements (since they did not always master the language) had an influence on the results. Maybe, if they had been able to read the content of the homepages, the results would have been different. However, the web is a very visual oriented medium and therefore, the contribution of visual aspects as a way to communicate should not be underestimated.

Moreover, it is also possible that the selected domain, university web sites, had an impact on the result. University web sites are mostly aimed at young people, which could also imply that these sites display less traditional features. Since some universities aim to display an international character, they might also deliberately veil certain cultural traits.

In order to estimate the degree of cultural identity of university web sites, we decided to query the webmasters of these sites about their methods when designing or redesigning the web site.

4   Webmaster Survey

At the end of December 2003, an email requesting to complete an online survey was sent to 223 webmasters of university web sites, among them the web sites analyzed by the students and some additional sites originating from countries with an extreme score for any of the four cultural dimensions. The survey's main goal aimed at finding out the extent to which webmasters or web

development teams draw inspiration from other existing web sites when (re)designing the university web site. In order to mask our primary objective, we addressed several issues through questions of various types: multiple choice, multiple answer and open-ended. We obtained 45 responses, which was more than we had hoped for. The questionnaire can be found in appendix 5.

To the question whether they happen to be inspired by the design or architecture of other existing web sites, 36% of the respondents answered that this was 'often' the case, 58% said 'occasionally' and only 6% answered 'never'. Of the 94% declaring that they were indeed receptive to external influences, a modest majority (54%) claimed that they looked at in-country web sites, while the others (46%) checked web sites of various origins. From the latter group's specifications, it appeared that most webmasters do not have a preference for specific countries, but they often also visit same language countries. According to both groups of respondents' open-ended answers, they mainly look at other university web sites.

5   The Second Experiment

Since our findings were inconsistent with previous research findings in literature and given the fact that we could not exclude the possibility that the selected domain, i.e. university web sites, might influence the results, we decided to repeat the experiment for another domain. For the second experiment, we used newspaper web sites. In contrast to university web sites that mainly target young people, newspaper web sites target nearly all ages. In addition, some universities may aim to display an international character (and therefore refrain from using culture specific issues), whereas the main target audience for newspaper web sites are local people (some of which may be abroad temporarily). At the same time, we availed ourselves of the opportunity to take participants from another culture. Instead of Belgian students, Palestinians students were asked to perform the web site review. We realized that by changing two parameters at the same time it would not be possible to detect which parameter influenced the outcome of the experiment in case this were different. However, at this stage, we are mainly interested in verifying if we can indeed detect cultural differences in local web sites. Furthermore, the method of the experiment was the same as that of the pilot experiment. Only small changes to the questionnaires were made to adjust them to the domain of newspapers.

This experiment was conducted in January 2005. 16 Palestinian students participated in the newspaper web sites experiment, 4 female and 12 male, aged between 19 and 24.

5.1 Quantitative Results

The quantitative results for this second experiment were not significantly different from the results of the first experiment. We discuss them here. Table 1 contains a summary of the quantitative results of both experiments.

Power Distance

–   No relevant adjectives from the list of descriptors were chosen, neither for homepages from high power distance countries nor for homepages from low power distance countries.

–   The average score (on a 1 to 5 scale) of the power distance dimension was 3.1 for homepages from high power distance countries and 3.9 for homepages from low power distance countries.

In the pilot experiment, low power distance indicators were perceived more often by the participants than high power distance indicators (2.5 for high power distance and 3.4 for low power distance).

Collectivism-Individualism

– There were noticeable differences between the two poles of homepages of the collectivism-individualism dimension. Two adjectives were ticked significantly more often in response to homepages from individualist countries, i.e. the adjectives personal and modern (p<.02).

– The Mann-Whitney U-test showed that three auxiliary criteria were significantly more likely (p<.05) to be perceived in the homepages from individualistic countries than in the homepages from collectivist countries, namely 'individual interests prevail over collective interests' , 'focus on personal development' and 'focus on freedom'. On the other hand, in homepages from collectivist countries two auxiliary criteria, 'collective interests prevail over individual interests' and 'focus on tradition' were rated significantly (p<.05) higher than in individualistic homepages.

– The average score given for the general perceptibility rating (on a 1 to 5 scale) of the collectivism-individualism dimension was 3.5 for homepages from individualistic countries and 3.8 for homepages from collectivist countries.

In the pilot experiment, the collectivism-individualism dimension was rather well perceived by the participants. The criteria 'individual interests prevail over collective interests', 'focus on freedom', and 'collective interests prevail over individual interests' were also rated significantly higher in the first experiment.

Masculinity-Femininity

– Two adjectives were ticked significantly more in response to homepages from both feminine and masculine countries, i.e. the adjective nice and attractive (p<.02). Also one adjective was ticked significantly more often for homepages from feminine countries, i.e. the adjective modern (p<.01).

– Participants did not observe a significant difference between masculine and feminine web sites. It was also found that web sites from masculine countries were displaying some feminine values.

– The average score given for the general perceptibility rating (on a 1 to 5 scale) of the masculinity was 1.9 and 3.0 for homepages from feminine countries. Actually the homepages from masculine countries were hardly found to reflect masculinity at all, while femininity was found to some extent in homepages from feminine countries.

Also here, the results are similar to the results of the pilot experiment: masculinity was hardly detected (1.45), while femininity to detected to some extent (3.25).

Uncertainty Avoidance

– One adjective was ticked significantly more often in response to homepages from high uncertainty avoidance countries, i.e. the adjective flexible (p<.01).

– Participants did not observe any actual differences for the auxiliary criteria of both types of homepages in this dimension.

– The average score given for general perceptibility rating (on a 1 to 5 scale) was 3.1 for homepages from high uncertainty avoidance countries and 3.4 for homepages from low uncertainty avoidance countries.

Again, the results mirror the results of the pilot experiment, except for the fact that the adjective flexible was ticked more often for newspaper homepages from high uncertainty avoidance countries.

5.2 Qualitative Results

The following general trends were discernible from the replies to the newspaper questionnaire:

- In low power distance countries the homepages were usually more personal oriented and allowed for interaction between the visitor and the web site.

- The main difference in the power distance dimension was in the visual representations and in certain parts of the text that could be understood. We found that 15 of the 20 newspaper homepages from low power distance countries actually contained pictures related to the content, while only 6 of the 20 newspaper homepages from high power distance countries contained such pictures.

- In 'collectivist' homepages, pictures of buildings, logos and pictures representing tradition, and groups of animated pictures were found more prominently than in 'individualistic' homepages, which, in general had small smoothly integrated pictures and fashionable fonts. In individualistic country homepages, the first page also contained many news titles that could be used to navigate to the different news items.

- The dimension Masculinity-Femininity shows another type of analysis; most of the masculine homepages contain feminine values. In 12 of the 20 masculine homepages, feminine values appear. In feminine countries, female-oriented pictures were more numerous than in masculine countries.

- In the dimension Uncertainty Avoidance, three students remarked that for the same country, there were big differences in complexity. In addition, another student noticed that there was a big difference between the complexities of the web sites of two closely ranked countries (e.g. Portugal and Guatemala Newspapers web sites).

	University sites	Newspaper sites
Power Distance (PD)		
adjectives		
for high PD for low PD	no difference	no difference
auxiliary criteria		
for high PD for low PD	no difference	no difference
average perceptibility		
for high PD	2.50	3.10
for low PD	3.40	3.90
Collectivism-Individualism		
adjectives		
for individualism for collectivism	no difference	personal, modern
auxiliary criteria		
for individualism	ind. interest prevails, focus of freedom	ind. interest prevails, focus of freedom, focus on pers. developm.
for collectivism	coll. interest prevails	coll. interest prevails, focus on tradition
average perceptibility		
for individualism	2.95	3.50
for collectivism	3.05	3.80
Masculinity-Femininity		
adjectives		
for masculinity		nice, attractive
for femininity	nice	nice, attractive, modern
auxiliary criteria		
for masculinity for femininity	no difference	no difference
average perceptibility		
for masculinity	1.45	1.90
for femininity	3.25	3.00
Uncertainty Avoidance (UA)		
adjectives		
for high UA for low UA	no difference	flexible
auxiliary criteria		
for high UA for low UA	no difference	no difference
average perceptibility		
for high UA	2.60	3.10
for low UA	3.00	3.40

Table 1: Results of the experiments

5.3 Newspaper Webmaster Survey

Similar to the university web sites, we also did an online survey for the newspaper web sites. At the end of January 2005, we invited 256 webmasters of newspaper web sites to join our experimental study. We got 52 responses to our e-mail request.

To the question whether they got their inspiration from the design or architecture of other existing web sites, 47% of the respondents answered that this was 'often' the case, 49% said 'occasionally' and only 4% answered 'never'. Of the 96% declaring that they were indeed receptive to external influences, a modest majority (61%) claimed that they looked at in-country web sites, while the others (39%) checked web sites of various origins. Most of webmasters declare that, they did not have a preference for specific countries, but they often visit the similar language countries.

Compared to results of university web sites, the number of web masters that declared to be inspired rather often by other web sites was somewhat higher than for the university web sites (9% higher), but the total number of people receptive to external influence was more or less the same (2% difference). A similar difference exists for the percentage of webmasters looking at in-country web sites (61% for newspaper web sites and 54% for university web sites).

An overview of the Webmaster's surveys is given in table 2.

	Inspired				
	often (%)	occasionally (%)	never (%)	by in-county (%)	by various (%)
university sites	36	58	6	54	46
newspaper sites	47	49	4	61	39

Table 2: Webmaster's survey

6   Conclusions & Discussion

The results of the second experiment confirm the results of the first experiment. Except for the dimension collectivism-individualism, the value orientations of Hofstede were not clearly ascertained in the homepages analyzed.

We realize that our study has a limited scope, as we only concentrated on visual parameters in a confined number of homepages. Our approach involved a comparison of two opposite poles of countries, but not of countries individually. We also restricted our study to four of the five dimensions of Hofstede. Moreover, an in-depth investigation of the web sites' content and navigation systems might have disclosed preferences associated with prevailing cultural value orientations. In addition, the world has changed a lot since Hofstede conducted his surveys and formulated his theory. Both the differences between countries and the criteria used to describe them may have changed. Therefore, interface designs can still be influenced by the culture in which they originate, even if they do not reflect value orientations in accordance with Hofstede's theory. However, despite the limitations, the results obtained through our small-scale studies and webmaster surveys led us to formulate a number of explanatory hypotheses and preliminary conclusions.

The webmaster surveys revealed that, when developing a site, almost all of the respondents (94% of the university webmasters and 96% of the newspaper webmasters) happen to be inspired by other web sites. More of half of them (54% of university webmasters, and 61% of newspaper webmasters)

look at in-country web sites, while the others declare to prospect web sites of various origins. However, the in-country web sites could in turn have been designed on the basis of foreign web sites. As one webmaster put it, the web is 'an international medium and inspiration comes from all over'. Moreover it appears that, within the same domain, web developers tend to mutually keep an eye on each other. This could explain why we had difficulties detecting the expected value orientations in the homepages. It would imply a certain homogenization of cyberspace.

Our findings might be inconsistent with previous research findings in literature, but the Web is highly dynamic, ever changing and quickly evolving. It seems that, rather than being a forum for different existing cultures, the Web is developing its own online culture, a hybrid culture that does not have the same characteristics as traditional cultures, as it is the outcome of the communication and interaction between people with different cultural backgrounds.

If we posit that the online culture is an intermediate culture in which traditional cultural differences are fuzzy, perhaps then the value of cross-cultural theories for the localization of web systems is overrated? Would web sites really better fit users' preferences and expectations if web developers took these cultural dimensions into account? The observations made by our experiments at least call for more research before using the traditional work on cultural differences indiscriminately in methods and guidelines for web site localization. Similarly, as it is not possible to apply software engineering methodologies directly for web system engineering, it is probably not a good idea to do this for localization. Although it may not harm to apply the cross-cultural theories to web localization, it may be a waste of time and may not result in the expected usability increase. Web users are typically young[a] and innovative; they are a less traditional or conservative audience. It is also plausible to assume that, even if people were to have clear cultural preferences, they would become more flexible and 'acclimatize' to the online culture as they continue to surf the Web's cultural melting pot. However, some domains may be more sensitive to cultural difference than others. University web sites are mostly aimed at a young and sometimes international audience. We see from the results of the second experiment that cultural value orientations are somewhat more perceived for the newspapers web sites than for the university web sites. We expect that also commercial web sites and governmental web sites could gain in a similar way by addressing cultural issues.

Acknowledgements

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[a] Although the group of online seniors is growing every year with about 10%, most of them are highly educated men who had a responsible job in the past (De Standard Online, sdg 22/02/2005 - http://www.standard.be - accessed date: June 2005)

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Appendix 1: Power Distance Survey Questions

Q0a: Name:
Q0b: Age:
Q0c: Nationality:

Q0d: Organization name:
Q0e: URL:
Q0f: Country:
Q0g: Hofstede-score on this dimension:

The homepage is the most important page of a web site. Base your evaluation especially on the homepage of the web site (you can also navigate through the site, perhaps this may provide some useful information). Look especially to the images, graphics (symbols, logo's …), colors and layout. Be objective!

****

Q1a: What is your general impression about the homepage (minimum 3 sentences)?

Q1b: Select the adjectives, which are applicable to the homepage of the site
     attractive, bright, cheerful, dull, formal, informal, artistic, personal, impersonal, distant, concise, clear, simple, modern, old fashioned, busy, complex, nice, innovative, showy and dark

     Others:

****

Rate from 1 to 5 the extent to which the following statements are applicable for the homepage.

1 = not applicable, 2 = hardly applicable, 3 = applicable to some extent, 4 = clearly applicable, 5 = strongly applicable.

Please, choose between the possibilities. If your choice is score 3 or above, please indicate which elements on the page (e.g. the content of the images, layout, color) have given rise to the statement.

Q2a: Emphasis on hierarchy: 1, 2, 3, 4, 5
Which elements?
Q2b: Professors/executive/writers have a central place: 1, 2, 3, 4, 5
Which elements?
Q2c: Healthy respect/obedience of inferiors towards superiors: 1, 2, 3, 4, 5
Which elements?
Q2d: Emphasis on established values (e.g. tradition, religion, nationalism): 1, 2, 3, 4, 5
Which elements?
Q2e: Hierarchy is not perceptible: 1, 2, 3, 4, 5
Which elements?
Q2f: The student/visitor has a central place: 1, 2, 3, 4, 5
Which elements?
Q2g: Mutual respect between inferior and superior: 1, 2, 3, 4, 5
Which elements?
Q2h: Emphasis on personal development: 1, 2, 3, 4, 5
Which elements?
Q2i: Other observations?

****

Q3: In your opinion, the high/low score on power distance is on this site (underline your choice!):
       1 = not perceptible
       2 = hardly perceptible
       3 = perceptible to some extent
       4 = clearly perceptible
       5 = Strongly perceptible

****

Q4: After the analysis of the 10 homepages please answer the next question (give minimum 4 sentences): What do you think are the most important differences in the design between the 5 homepages (sites) from countries with a high score and those from countries with a low score (the content of images, graphics, colors, layout, etc.)?

Appendix 2: Individualism – Collectivism Survey Questions

Q0a: Name:
Q0b: Age:
Q0c: Nationality:

Q0d: Organization name:
Q0e: URL:
Q0f: Country:
Q0g: Hofstede-score on this dimension:

The homepage is the most important page of a web site. Base your evaluation especially on the homepage of the web site (you can also navigate through the site, perhaps this may provide some useful information). Look especially to the images, graphics (symbols, logo's, etc.), colors and layout. Be objective!
****

Q1a: What is your general impression about the homepage (minimum 3 sentence)?

Q1b: Select the adjectives, which are related to the homepage (site)

attractive, bright, cheerful, dull, formal, informal, artistic, personal, impersonal, distant, concise, clear, simple, modern, old fashioned, busy, complex, nice, innovative, showy and dark

Other:

****

Rate from 1 to 5 the extent to which the following statements are applicable for the homepage.

1 = not applicable, 2 = hardly applicable, 3 = applicable to some extent, 4 = clearly applicable, 5 = strongly applicable.

Please, choose between the possibilities. If your choice is score 3 or above, please indicate which elements on the page (e.g. the content of the images, layout, color) have given raise to the statement.

Q2a: Collective interests precede individual interests: 1, 2, 3, 4, 5
Which elements?
Q2b: Emphasis on established values (e.g. religion, tradition, nationalism): 1, 2, 3, 4, 5
Which elements?
Q2c: Emphasis on consensus and/or official slogans: 1, 2, 3, 4, 5
Which elements?
Q2d: Individual interests precede collective interests: 1, 2, 3, 4, 5
Which elements?
Q2e: Emphasis on personal development and self-realization: 1, 2, 3, 4, 5
Which elements?
Q2f: Emphasis on own opinion: 1, 2, 3, 4, 5
Which elements?
Q2i: Other observations?

****

Q3: In your opinion, the high/low score on individualism/collectivism is on this site (underline your choice!):

1 = not perceptible
2 = hardly perceptible
3 = perceptible to some extent
4 = clearly perceptible
5 = Strongly perceptible

****

Q4: After the analysis of the 10 homepages please answer the next question (give minimum 4 sentences): What do you think are the most important differences in the design between the 5 homepages (sites) from countries with a high score and those from countries with a low score? (the content of images, graphics, colors, layout, etc.).

Appendix 3: Masculinity – Femininity Survey Questions

Q0a: Name:
Q0b: Age:
Q0c: Nationality:

Q0d: Organization name:
Q0e: URL:
Q0f: Country:
Q0g: Hofstede-score on this dimension:

The homepage is the most important page of a web site. Base your evaluation especially on the homepage of the web site (you can also navigate through the site, perhaps this may provide some useful information). Look especially to the images, graphics (symbols, logo's, etc.), colors and layout. Be objective!

****
Q1a: What is your general impression about the homepage (minimum 3 sentences)?

Q1b: Select the adjectives, which are related to the homepage (site)
    attractive, bright, cheerful, dull, formal, informal, artistic, personal, impersonal, distant, concise, clear, simple, modern, old fashioned, busy, complex, nice, innovative, showy and dark

    Other:

****
Rate from 1 to 5 the extent to which the following statements are applicable for the homepage.

1 = not applicable, 2 = hardly applicable, 3 = applicable to some extent, 4 = clearly applicable, 5 = strongly applicable.

Please, choose between the possibilities. If your choice is score 3 or above, please indicate which elements on the page (e.g. the content of the images, layout, color) have given raise to the statement.

Q2a: Boys/man and girls/woman are addressed separately: 1, 2, 3, 4, 5
Which elements?
Q2b: Emphasis on ambition, competition, performance and/or material success: 1, 2, 3, 4, 5
Which elements?
Q2c: Women must tender and modest and/or men must hard, ambitious and assertive: 1, 2, 3, 4, 5
Which elements?
Q2d: Boys/men and girls/women are addressed indiscriminately: 1, 2, 3, 4, 5
Which elements?
Q2e: Emphasis on equality, solidarity and/or the quality of life: 1, 2, 3, 4, 5
Which elements?
Q2f: Men may tender and modest and/or women may be ambitious and assertive: 1, 2, 3, 4, 5
Which elements?
Q2g: Other observations?

****
Q3: In your opinion, the high/low score on Masculinity - Femininity is on this site (underline your choice!):
        1 = not perceptible
        2 = hardly perceptible
        3 = perceptible to some extent
        4 = clearly perceptible
        5 = Strongly perceptible

****

Q4: After the analysis of the 10 homepages please answer the next question (give minimum 4 sentences): What do you think are the most important differences in the design between the 5 homepages (sites) from countries with a high score and those from countries with a low score? (the content of images, graphics, colors, layout, etc.).

Appendix 4: Uncertainty Avoidance Survey Questions

Q0a: Name:
Q0b: Age:
Q0c: Nationality:

Q0d: Organization name:
Q0e: URL:
Q0f: Country:
Q0g: Hofstede-score on this dimension:

The homepage is the most important page of a web site. Base your evaluation especially on the homepage of the web site (you can also navigate through the site, perhaps this may provide some useful information). Look especially to the images, graphics (symbols, logo's, etc.), colors and layout. Be objective!

****

Q1a: What is your general impression about the homepage (minimum 3 sentences)?

Q1b: Select the adjectives, which are related to the homepage (site)
    attractive, bright, cheerful, dull, formal, informal, artistic, personal, impersonal, distant, concise, clear, simple, modern, old fashioned, busy, complex, nice, innovative, showy and dark

    Other:

****

Rate from 1 to 5 the extent to which the following statements are applicable for the homepage.

1 = not applicable, 2 = hardly applicable, 3 = applicable to some extent, 4 = clearly applicable, 5 = strongly applicable.

Please, choose between the possibilities. If your choice is score 3 or above, please indicate which elements on the page (e.g. the content of the images, layout, color) have given raise to the statement.

Q2a: Flexible rules: 1, 2, 3, 4, 5
Which elements?
Q2b: Informality is tolerated: 1, 2, 3, 4, 5
Which elements?
Q2c: Tolerance for ambiguity or vagueness: 1, 2, 3, 4, 5
Which elements?
Q2d: Tight rules: 1, 2, 3, 4, 5
Which elements?
Q2e: Emphasis on formality: 1, 2, 3, 4, 5
Which elements?
Q2f: Large precision and punctuality: 1, 2, 3, 4, 5

Which elements?
Q2g: Other observations?

****

Q3: In your opinion, the high/low score on uncertainties avoidance is on this site (underline your choice!):

     1 = not perceptible
     2 = hardly perceptible
     3 = perceptible to some extent
     4 = clearly perceptible
     5 = strongly perceptible

****

Q4: After the analysis of the 10 homepages please answer the next question (give minimum 4 sentences): What do you think are the most important differences in the design between the 5 homepages (sites) from countries with a high score and those from countries with a low score? (the content of images, graphics, colors, layout, etc.).

Appendix 5: Webmaster Survey Questions

Thank you for completing this questionnaire.

Feel free to add any comments.

Q0a: What is your nationality?
Q0b: Web site URL:

Q1a: Who designed the web site? (Company, Person …)
Q1b: How many persons were involved in the design of the web site?

Q2: How frequently did the design/architecture of the web site change?
- Between once a year and once in two years
- Between once in three and once in five years
- Less than every five years
- Other:

Q3: What is usually the reason for changing / redesigning the web site?
- Change of organization policy
- New webmaster
- To remove the shortcomings of the previous web site
- Other:

Q4: The redesigned web site is usually:
- More attractive than the previous one
- More extensive than the previous one (more content)
- Easier to navigate than the previous one
- Technologically more sophisticated than the previous one
- Other:

Q5: Who determines the content of the web site?
- Organization board
- The webmaster
- Other:

Q6a: Do you personally decide on how the design/architecture is made/changed (structure, pictures, graphics and colors used, layout, etc.)?
- Yes, completely
- To some extent, I get some directives
- No, I get many directives

Q6b: From whom do you get directives?

Q6c: To what do these directives relate?
- Visual representations (images, symbols, logo)
- Colors
- Structure
- Other:

Q7a: Do you happen to be influenced by design/architecture features from other existing web sites?
- Often
- Occasionally
- Never
- Other:

Q7aa: Could you give an example?

Q7b: You are generally inspired by:
- American web sites
- Asian web sites
- African web sites
- European web sites
- Web sites from different countries
- Local web sites
- Other:

Q8: Do you use any methodology for designing the web site?
- Yes
- No

If you used a methodology, what's the name of that methodology; or can you explain the methodology?

Q9: Do you consider the needs of target audience explicitly during the design process?

Q10: Do you study the culture of the target audience of the web site to adapt the web site to this culture?