Developing a Cultural Model to Support Web Site Localization: A Case Study of Uzbek School Web Sites
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This paper presents the results of a research study in which we developed a cultural model and applied it to a content/feature analysis of Uzbek secondary school Web sites. Our assumption was that Web sites designed by local producers for local users would exhibit identifiable cultural dimensions. We found that the analyzed sites followed a general design template and exhibited many identifiable cultural markers: e.g., a focus on institutions, images of authority, a lot of blue coloring. This study can serve as a methodological guide for technical communicators interested in localizing Web sites or in developing appropriate cultural models in untested domains and countries. We identify some key challenges in using such methods in unfamiliar, cross-national, and cross-cultural settings.

This report presents a study in which we developed a cultural model and then used it in evaluating cultural preferences in Web site design, specifically Uzbek secondary school Web sites. This research was conducted as part of an ongoing study about the effects of the adoption of information technology on society conducted by the Central Asia+Information and Communication Technologies (CAICT) project at the University of Washington.

Our goals were to:
- Develop a culturally appropriate model for identifying Web content/features that reflect Uzbek cultural preferences.
- Analyze Uzbek school Web sites to test and refine this model.
- Discuss challenges in developing a cultural model in unfamiliar, cross-national and cross-cultural settings.
- Make recommendations for technical communicators who wish to employ cultural models to evaluate Web sites.

A significant body of research has examined the role national culture plays in how international users perceive and use Web sites. This research has led to the development of guidelines for localizing Web sites. Successful application of such guidelines hinges on choosing an appropriate cultural model for a given audience or, in many cases, a nation. Hofstede (1) suggests that a developer choose an available model and stick with it. Such an approach was impossible in our work because no model has been developed for or applied in Central Asia.

Thus, we had to develop our own cultural model and we used a hybrid approach: first developing a heuristic cultural model based on available values and demographic data, and then testing that model by performing a content/feature analysis of school Web sites. Our assumption was that Web sites designed by local producers for local users would embody and exhibit identifiable cultural markers. We also investigated whether language serves as a cultural marker in this context, i.e., whether site developers were using Uzbek more often than Russian or English.

LITERATURE REVIEW

There is extensive research on the design and use of Web sites in cross-cultural contexts that offers potential cultural models and dimensions to use in an analysis such as this one (e.g., 1, 2, 3). Most of these studies use cultural classification schemes developed by Hall (4, 5) and/or Hofstede (6, 7).

Hall (4, 5) describes culture as a communication system that relates to the amount of information that a message states versus what is left implied in the context surrounding a message. In low context cultures (e.g., United States), a message clearly states all relevant information; in high context cultures (e.g., Japan and Native American tribes), a message may leave much to be inferred from the context. Hall coined the terms monochronic and polychronic to describe contrasting views of time in different cultures. Monochronic time (characteristic of the United States) unfolds sequentially; it is simultaneous and linear. Monochronic cultures have a preference for schedules and promptness. Polychronic time (characteristic of Middle Eastern, Latin American, and traditional tribal cultures) consists of multiple events.
that occur simultaneously. Polychronic cultures tend to be more traditional and less oriented to notions of progress and the future.

With a similar goal as Hall, Hofstede (6, 7) developed a cultural model that includes ratings of numerous countries on five cultural dimensions: power distance, individualism/collectivism, masculine/feminine, uncertainty avoidance, and long-term orientation. For example, he defines power distance as “the degree of equality, or inequality, between people in the country’s society. A high power distance ranking indicates that inequalities of power and wealth have been allowed to grow within the society.”2 Latin American and Arab nations rank the highest in this category; Scandinavian and Germanic speaking countries the lowest.

Zahedi, Van Pelt, and Song (3) and others have taken these indices of cultural values and made predictions about their impact on the effectiveness of Web documents. They propose that Web documents for high power distance cultures will be most effective if they refer to authority, power, expertise, and wealth. In a similar vein, Marcus and Gould (2) recommend that Web sites for high context cultures contain multiple images, Flash features, and multiple links.

Unfortunately, none of the research cited here has examined cultural dimensions in Central Asia. Furthermore, the predictions and recommendations offered by the existing models can seem contradictory. Researchers such as Zahir, Dobing, and Hunter (8) cite a trend towards convergence with Western design and content models on the part of non-Western site producers (e.g., Yahoo is cited as a standard for national portal sites). Johnston and Johal (9) claim the Web is a virtual country with its own culture. However, the empirical research to back up these predictions and recommendations is limited. St. Amant (10) cites two approaches to analyzing Web sites that are developed by members of a specific culture for members of their culture: observing people (or interviewing them) or analyzing Web sites. Relying on prototype theory, which assumes that visual features on the site will exhibit cultural tendencies, he recommends the latter approach. He starts with one site and then examines others to test and refine the prototype in order to produce a checklist for Web designers for that culture.

Another approach to developing a cultural model is to use national language as a cultural marker. Although this approach can be problematic, especially in a multilingual society, it still can be a useful “first cut” category for operationalizing culture when studying Web sites. CAICT researchers have investigated the relationship between language and Internet use and found that most Uzbeks use Russian on the Web (11) but that English language use is a robust predictor of Internet use (12). Although Uzbek is the official language of the country, Russian remains the language of choice for the intelligentsia and other elites.

Language choice poses an interesting problem for cultural models applied to the Internet since English is the predominant language and most content is associated with US Web sites, as demonstrated by Halavais (13). Furthermore, Evans et al. (14) have shown that even English tone is becoming the norm.

METHODOLOGY

Model Development

The first step in this study was to create an Uzbek cultural model, using Hall and Hofstede’s (4, 5, 6, 7) dimensions, that fits what we have learned about Uzbek culture. Researchers and practitioners interested in developing culture/country specific models need to locate recent and comprehensive sources for demographic data and information on cultural values and attitudes. For example, the Michigan World Values Survey has extensive data on many countries but not Uzbekistan.3 Fortunately, we found a recent countrywide survey by Dadabaev (15) during our literature review.

Uzbekistan is a multicultural and multilingual country. Based on his recent survey of 800 people in seven regions in Uzbekistan, Dadabaev (15) concludes that ethnicity, regionalism, and localism are the main forms of societal self-identification. He found that traditional institutions such as the mahalla (local neighborhood community) and family and ethnic traditions are very strong even though modern values are taking hold in the cities. Dadabaev points out that these traditions survived extreme authoritarian Soviet rule with an Uzbek set of morals and education existing in parallel. Since these same traditions and institutions have survived centuries of occupation and colonization, it is reasonable to conclude that Uzbek culture is high context and polychronic in Hall’s terms.

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3 See World Values Surveys at http://www.worldvaluessurvey.org/
Using Hofstede’s dimensions, Uzbekistan could be characterized as:
- High on the power distance scale.
- Medium to high on the masculine scale.
- High on the collectivism scale.
- Medium to high on the uncertainty avoidance scale.
- High on the long-term orientation scale.

The studies reviewed here would predict that Web sites in our sample would contain the following characteristics.
- Multiple languages, particularly Uzbek and Russian, with some English pages.
- Multiple images featuring institutions, officials, teachers, logos, flags, and national icons.
- Content, pictures and image colors referring to Uzbek traditions or culture.
- Multiple links.

We must point out that the existing literature that led to these predictions creates some contradictions. Research such as that conducted by Zahir, Dobring, and Hunter (8) suggests that analysis of the school Web sites would show sites conforming to Western (i.e., United States) design and content standards. Hence, the current study is by necessity an exploratory study.

**Content/Feature Analysis**

One of the authors archived 60 Uzbek school Web sites covering five geographical regions in April 2005 and February 2006. These sites, including the seven school sites used for detailed analysis in the current study, were located through links from the educational portal site associated with the Global Connections and Exchange-Uzbekistan (GC&E) project (www.connect.uz, see Figure 1). GC&E schools were often the only locations in many communities that had Internet access (17).

In the current study, we analyzed sites produced by Uzbeks in Uzbekistan for seven schools in two regions of the country (for language choice, we analyzed all 60 sites). The Web sites are in three different languages and reflect the different types of schools and professional cultures at those schools (e.g., Lycee, boarding, or Russian school).

An understanding of how the sites evolved is informative. GC&E hired site monitors at each school and trained them in basic Web design. These advisors helped form and advise Web clubs at the schools. At some schools, advisors could not invest this level of effort and sites stagnated.5

Most Web sites in Uzbekistan are not highly developed and are often not updated. Part of the impetus for studying Uzbek school Web sites is that these sites form an identifiable, diverse, and comprehensive sample frame. The fact that they are all secondary schools allows us to control for confounding effects of genre.

Our analysis follows a qualitative, interpretive approach to content/feature analysis as described by Jankowski and Van Selm (18) and Jackson (19). Once data were captured, a preliminary coding framework was developed based on research about cultural analysis of Web sites. Two CAICT research assistants coded the seven school Web sites using this framework’s broad categories of language, versions, text, images, and colors.6 The coders were worked with the archived (2/27/06) home pages.

Part of the purpose of this study was to identify appropriate categories and techniques for coding this particular data set and similar Web archives given the biases inherent in cross-cultural research, as outlined by MacDonald (20). One coder is an Uzbek whose first language is Russian, followed by English, although she speaks and reads Uzbek as well. The other coder is an American whose first language is English but who is strong in Russian. The coders coded half the sites separately, and then compared and combined their coding for half the sites as a check. They agreed a

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4 In 2001 there were 9,802 secondary schools (grade 1-11) in Uzbekistan with 436,300 students (16).

5 Email message from Ari Katz, former GC&E project manager, to Kathleen Gygi, 3/14/07.

6 Special thanks to research assistants Soshana Billik and Odina Salihbaeva for translating many Web pages from Uzbek and Russian into English and enthusiastically coding Web pages for this paper.
majority of the time. During the preliminary analysis they focused on collecting descriptive information and standardizing the terms they used in describing features, as well as on reconciling questions about translations.

RESULTS

Although the sites vary in terms of sophistication of design and Web technologies employed, we did identify the following general patterns:
- Sites seem to follow a general design template.
- Half of the sites are in Uzbek, half in Russian, but there is significant regional variation in language choice.
- Sites focus on institutions (versus people or individuals): logos and images feature authority figures.
- The color blue predominates, which might reflect its national and historical significance.
- Some regions have extensive interlinking between school sites.
- The portal site complies with Marcus and Gould’s guidelines for high context cultures.

Design Template. The sites seem to follow a general design template with a picture/collage banner across the top of the page and a common set of links in the left hand navigation bar (see Figure 2). This is to be expected given that the site producers were trained by US project staff. The portal site, created by Westerners, does not follow the standard Yahoo model (as would be predicted by Zahir, Dobring and Hunter) (8). Rather it seems to follow the guidelines outlined by Marcus and Gould (2) for high context cultures: multiple images, Flash features, and multiple links, except for the high degree of axial symmetry, which is indicative of high power distance rather than high context.

Language Choice and Versions. Of the 60 sites examined, exactly half are in Uzbek and half are in Russia, yet there is significant regional variation in choice of language. In our subsample, two sites are in Uzbek and five are in Russian, results that differ from the aggregate preference for Uzbek over Russian in these two regions. Two have English versions or subsections on their sites. There are often differences in the primary language version (Russian or Uzbek) and English versions, including different content and images (see Figures 3 and 4).
Generally the English versions (see Figure 3) are limited to a page or two rather than replicating the entire site. The Russian/Uzbek pages (see Figure 4) often have more internal links such as “Write to Us”; the English version might have more recent news items as well as additional external links, for example, to the national school Internet festival or to an online forum. Differences in content and features in these versions raise issues regarding audience.

Interestingly, the site statistics report indicates the majority of visitors to the portal site are from the United States, followed by the European Union.7 The most often visited pages are forums, which are conducted in multiple languages. Most teachers and students from Western countries would not be able to read the school Web sites from their partner schools. However, the project pages generated by these partnerships are often in English, or in Russian (in the case of partner schools in Russia), and can be hard to find (see Figure 5).

**Institutional Focus.** The school Web sites’ focus on institutions is not surprising given the genre. The type of images varied, with photographs, cartoon images, and logos featured in many sites. However, as our model predicts, even if people are present in photos on the site, they are depicted as members of the collective rather than as individuals. Authority figures such as teachers and administrators (see Figure 6) appear more frequently than students (except when students appear in groups).

**Colors.** Blue seems to be a dominant color in this subsample, used in five of seven sites (see Figures 1-3 and 5). Some sites are very blue. Traditional colors used in national designs are blue and white. Since these colors are also mourning colors, gold or silver are added to make the color schemes shiny.8 At least one site, which was very green and yellow (see Figure 6), reflected its school colors, which were discussed under the “Information About the School” link.

**Links.** A quick review of the sites for the entire 60 schools showed that in some regions all the schools link to each other. This practice is suggestive given that a study of activity on the portal site shows that these schools are working together on GC&E projects such as curriculum development. External links on the school sites are limited primarily to the portal and sponsor sites. One school was exceptional in the number of external links to regional schools and American partners, a pattern that confirms the high context/collectivist dimensions of this study’s model (see Figure 5). In fact, this site had few images or text, consisting mostly of links.

Figure 5. Partner page in English, accessed through www.karshi34.connect.uz, archived 2/27/06.

Figure 6. School Site in Russian, www.yakkabog1.connect.uz, archived 2/27/06.

**DISCUSSION**

The presence of features such as images and links follows the predictions of the proposed cultural model in some cases. In other cases the results are contradictory, as we expected. Analysis of additional Web sites would allow us to further test and refine our model. However, given the multiple cultures that might be at play here—ethnic, regional/local, post-Soviet, institutional—the model is by necessity very general. Nevertheless, the categories do give analysts a common vocabulary to describe the findings. Given the results discussed here, we are now able to make preliminary recommendations about designing appropriate Web sites for Uzbek audiences and for other audiences that might fit the

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8 Email message from Odina Salihbaeva to Kathleen Gygi, 3/13/06.
cultural model we developed. In that these recommendations are beyond the scope of this paper, they are not discussed here.

At this point we cannot answer the question about convergence with Western models. The sites follow a general design template and focus on institutions. These characteristics could be due to the common training of the producers (by Westerners) as well as the site’s genre. However, this apparent standardization could also be a sign of convergence. For example, the frequent use of the color blue could reflect expression of national or ethnic identity given its historical significance as a traditional color and its presence in the national flag.

Differences in the Russian and English versions of the sites raise issues about audience that bear further investigation through content and discourse analysis. Another fruitful avenue of inquiry would focus on the external linking practices of the schools and how they relate to intended audience. Interviews with site producers would help illuminate some of these issues.

**APPLICATIONS FOR TC PROFESSIONALS**

When designing a Web site for international or cross-cultural audiences, technical communicators need to be cognizant of the fact that differences in culture may impact the way the site is perceived and used by specific audiences. Cultural differences can be subtle but still have major impacts. Employing an appropriate cultural model can be extremely useful if one is available. If not, the designer or other localization professional may have to develop a model.

To identify an appropriate model, technical communicators should familiarize themselves with foundational works on culture such as Hall (4, 5) and Hofstede (6, 7). Technical communicators should also review research relating to guidelines and design principles for culture-appropriate Web design (e.g., 1, 2, 3, 8, 14). If they cannot find a readily applicable model, they must then develop their own.

Based on our pilot study, we recommend taking the following steps:

1. Locate recent local demographic and social values data.
2. Identify key cultural dimensions and rate them per Hall and Hofstede.
3. Consult with experts on the culture of interest as well as local informants.
4. Confirm or refine your draft model.
5. Test your model using actual Web sites created by local producers.
   a. Select a well-defined sample of sites that controls for genre.
   b. Perform a content/feature analysis using an established methodology.
   c. Interview site producers if possible.
   d. Interpret your results.
6. Refine your model based on your analysis.
7. Generate design recommendations using recognized guidelines such as those offered by Gould and Marcus (2).

Some key challenges to keep in mind include the following points:

1. Local data may not be available at a fine enough grain (e.g., data may concern all of Central Asia instead of only Uzbek speaking regions).
2. Operationalizing national culture can be problematic, but language can be a useful proxy.
3. Translation of sites is a huge effort, requiring considerable human and time resources, as is the content/feature analysis.
4. Archiving sites is well worth the effort; it allows working with sites offline without worrying about having elements change.
5. Coders must be trained properly to ensure intercoder reliability.

We believe that technical communicators are well positioned to analyze the influence of culture on Web design and in turn generate design guidelines that can best suit users in a specific culture.

**REFERENCES**


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