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Chinese UI Design Guidelines 2.0

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Abstract. This paper presents the preferences of selected UI components of Chinese users. The areas of study were chosen using from a semiotic perspective, which lead us to focus on the cultural context, as well as the linguistic structure of user interaction. This quantitative study based on 50 respondents was targeted at validating the data gathered in a qualitative pilot study. The results are presented as UI design guidelines to simplify their adoption by both HCI researchers, and UX practitioners.

Keywords: Cross-cultural research, Cultural markers, Methodology, Design, Guidelines, User-interface, HCI, Semiotics.

1 Introduction

When designing for global users, we are faced with a need to design UIs that are usable and well accepted in a targeted culture. In order to match the user's cultural expectations as closely as possible, designers need to combine usability knowledge with cultural insights. In the field of cross-cultural comparison, we can build upon a body of previous research [6, 7, 8]. For an initial analysis of the Chinese user experience we can refer to Marcus and Baradit [5]. In our view, however, only limited work has been done in creating usable guidelines for Chinese UI design.

We worked from a semiotic perspective, which lead us to focus on the cultural context, as well as the linguistic structure of user interaction. From our perspective, the UI is an example of complex language.

Semiotics works with a basic unit of analysis, which is a sign. The sign can be anything in the UI/UX that has a meaning for somebody. The meaning is supported by context and relationships between signs. Semiotic analysis can find implicit assumptions and hidden relations in culture, therefore is very suitable for cross-cultural analysis. The semiotic perspective in this study lead us to focus on specific areas, such as the meaning of composition (UI layout), of color, of icons, and the overall look and feel. The linguistic perspective focused in more detail on the composition (grammar) of icons, wording and structure of menu items (e.g., object+command).

Consequently, in our research we focused on different components of the UI language such as: discrete elements, interaction sentences, narration, rhetorical tropes, and patterns. [2] Discrete elements are the smallest elements to have a meaning. The interaction sentence is a meaningful unit describing a task in the user's interaction. The narrative in UI is made both by the designer's meta-communication and the temporal and/or sequential aspects of perceiving UI elements. Rhetorical tropes are devices of persuasion and emphasis, such as metaphors. Patterns are typical configurations of UI language components in different settings. Focusing on these UI language components allowed us to focus the scope of our research.

2 Research Methods

This paper revisits the results gathered during a pilot study in Mainland China in September 2011. The pilot study targeted the UI components' preferences of Chinese users. To continue on the previous study we defined research questions, updated and improved the questions to include more contexts for the given task. We also updated the hypotheses about the Chinese users forming the background of the questions. Then we built a questionnaire of ~40 questions for user interviews using an online reporting tool [9], and recruited participants according to a screener (using the snow-ball method: friends of friends). One session took about 15 min. After the interviews all the data was checked and translated, when appropriate.

In order to find the prevalent and preferred UI components or cultural markers [1], we focused our study on the five following areas: personal information (demographics, exposure to other cultures and technologies), layout (discrete elements, patterns, interaction sentences and narration), color (discrete elements, rhetorical tropes), symbol (rhetorical tropes) and look and feel (interaction sentences, narration, patterns, and rhetorical tropes).

The previous qualitative pilot study was based on one-to-one interviews supported by note taking and filling in questionnaires. The same method was adopted also for this quantitative study.

To limit the respondent's adaptation to a foreign culture, we worked with students who were enrolled at a local university (Dalian Maritime University in China) and were born and lived in the target cultures of our study. Also, the moderator of the interviews was a native speaker [8]. We worked with a sample consisting of 50 respondents, evenly split between females and males. The respondents had an average age of 22 years.

For evaluating the data we are using a margin of error [3] of 13,9% (7 respondents) for the whole group of 50 respondents, and 19,6% for in-group comparison (5 people in a sample of 25 respondents, e.g. male/female, urban/rural).

3 Results

Our findings show there is a strong influence of globalization on the cultural markers, mainly through the use of common software platforms. In spite of that, we found still many important culture-specific differences in both groups which are related to: spatial organization of information [4], shapes, direction of reading, motion, color, color combinations, semantic organization of content, use of icons and metaphors, user's preferences for different types of media, preference for culture-specific content and for cartoon imagery, trustworthiness of the content, navigation tools, visible and interaction grammar of menus and commands. In the following sub-sections, we provide a summary of the hypotheses that were supported by the data, those that were not, as well as other interesting insights and comments. The summary is divided by the main themes of our research:

3.1 Layout

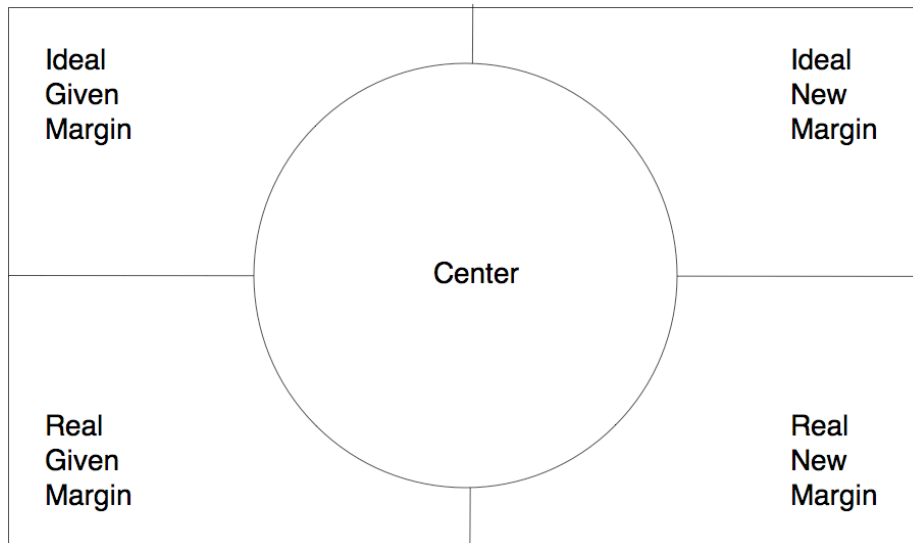


Fig. 1. Semiotics of space used to elicit hypotheses, and to evaluate study results (according to Kress and van Leeuwen).

For testing the UI composition we used a matrix with 3 rows and 3 columns. The hypotheses that were supported in relation to the spatial organization of the UI, shapes, direction of reading and motion are:

- The center would hold important information, the margin the least important information.
- The given information would be on the left of the screen, the new on the right.
- The ideal information would be on the upper part of the screen, the real in the bottom.
- The sequence of comic panels follows the reading direction of text.

3.2 Color



Fig. 2. Color palette used in the study.

For testing colors we used a 5-color palette. The supported hypotheses regarding colors and color combinations were:

- Users would prefer lighter shades, combination of pastel colors.

3.3 Symbol



Fig. 3. Variants of icon sets used in the study. Book icon author: Paomedia, License: Creative Commons (Attribution 3.0 Unported); Shopping cart icon author: www.inmotionhosting.com, License: Creative Commons Attribution 3.0 Unported (CC BY 3.0).

For testing symbols we used various examples of existing computer icons, or we created the examples by ourselves. The supported hypotheses regarding user's preferences for the UI grammar were:

- During Chinese language acquisition in children, verbs are learned first, followed by nouns later.
- Icons with situations would be preferred, because they present a wider context, and focus on actions (verbs).

- There is a close similarity between sequential information structure in language and in visual composition. **Verb (downloading) and adverb (speed of download) would mimic their position in sentence.** The file is in this case the noun.
- There is a close similarity between sequential information structure in language and in visual composition. **Noun (folder) and adjective (star attribute) would mimic their position in sentence** (adjective+noun).
- The sequence of input in **faceted search** would follow the sequence of natural language.

3.4 Look & Feel

University	I want to...	Lecturers	Parents	Alumni	
	Enroll				
University	Students	Lecturers	Parents	Alumni	
University	I am...	News	Profile	Sitemap	Search
	Student Lecturer Parent Alumni				

Fig. 4. Three different compositions of menus used in the study. On top a verb-driven menu, in the middle a noun-only menu, on the bottom a role-driven (narrative) menu.

For testing the look and feel we used various examples found in different applications, or we created the examples by ourselves. The supported hypotheses in this section regarding user's preference for cartoon imagery, navigation tools, visible and interaction grammar of menus and commands were:

- Menus starting with a verb are considered more natural than those starting with nouns.
- Menus progressively disclosing a narrative are considered more natural.
- Cartoon imagery (little animals) plays an important role in communication.

4 Revisited Guidelines for Chinese UI Design

To help cross-cultural UI designers utilize our findings, we present our results in the form of guidelines that could also be used to enhance the user's acceptance of the UI in the Chinese culture. Some of the findings support universal usability tenets, while others are culture-specific:

Layout: Center vs. margin. The most important message to the user should be in the upper-left and middle part of the screen. The least important should be placed in the bottom-right corner. These results confirm the outcome from the pilot study.

Layout: Given vs. new information. Given information should be placed in the upper-left and left part of the screen, the new information to the right or below from it.

Layout: Ideal vs. real information. The ideal information should be placed in the upper part of the screen, the real information in the center of the screen. These results also support the pilot study outcome.

Layout: Focus of attention. Carefully choose the images: they start the visual narration on the screen, followed by titles.

Layout: Expected sequence direction. In a progressively disclosing UI, follow the prevalent reading direction. Expand the options to the right or underneath.

Layout: Originality. For a personal website use a somewhat novel style of design, for a commercial website use rather a somewhat well known style.

Color: Emotions and preference. Adjust the UI color scheme not only for the target culture, but also to the target group of users. The results underlined the importance of the red color in Chinese culture no matter what segmentation we used.

Color: Combinations preference. Background/content (white/blue or black), color pairs for a personal website (blue and yellow), color pairs for a commercial website (black and white, black and blue, blue and white).

Color: Image brightness preference. Use well-adjusted, or somewhat lighter images in the UI. This is one of the questions we presented using a different methodology. In contrast with the previous study we let the respondents choose from visible options.

Symbol: Implicit interaction. Build UIs on implicit relationships between commands and objects. In the Chinese context users tend to group items according to relations (verbs), rather than categories (nouns).

Symbol: Icon style preference. The icons should be as clear as possible, and when representing an action (command), they should present also **the object of the action**. The situations depicted in the icons favored mostly female respondents, while males preferred only a textual description of the action.

Symbol: Verbs and adverbs. The icons presenting the current system status should be below or on the right of the object, as these placements are most natural for the users.

Symbol: Nouns and adjectives. The icons presenting object attributes should be on the left of the object; as such a placement seems most natural for the users.

Symbol: Length of web pages. When appropriate, use shorter, rather than longer pages on screen. While bandwidth limitations favored longer pages (because of a lower number of requests to a server) during our pilot study in 2011, the quickly improving infrastructure allows the designers to focus more on users' requirements.

Symbol: Trust. Design for the **senses** when building trust. The UX design should account for the preferences of the target group of users, in order **to build trust, and to persuade**. Although the senses might have a different importance in terms of trustworthiness in different environment, the leading is sight, followed by touch, and taste. In the media, **television still plays a major role** in trust. We see trust as a first step towards persuasion.

Symbol: Learning online. When designing an online course, **focus on video-recorded lectures**, but add also a choice to **download the slides**, and a possibility to directly **engage with the lecturer** through videoconference. Differences were found between the sexes; we can assume, that females prefer more direct social interaction (video conference), while males prefer quickly skim and scan the texts.

Symbol: Word order in faceted search. The sequence of input in a faceted search follows the sequence of natural language. The Subject comes first (relating to the user's gender, or size), followed by an implied Verb and adverb (purpose), and finally the Object (price, color, rating etc.). The results were the same in the pilot study for the first 3 items.

Look and feel: Unfolding a narrative. Construct menus with noun only, as these are clear to the users, and allow for a verb (command) submenu.

Look and feel: User roles. Construct menus that are based on the roles of users. In the case of a university website the students find it much more natural to find the information for them, and to **start their interaction** with the site from there.

Look and feel: Cartoons in the UI. Present cartoons in the UI while waiting for system processes to finish, which might take some time.

5 Discussion

The current study validated some of the results from the pilot. However, some of the hypotheses were not fully supported because of a different approach adopted. This was most evident, where the questions were asked differently or in a different sequence in relation to the pilot study. Another reason might be the choice of example images. Although we strived to gather a comparable population as in the previous

study, there was a generation change: We worked with students having a different life experience, who were exposed to different social and technological conditions.

As a result, we obtained some new results (also because we introduced exploratory questions), and some trends that we would like to investigate further in a future study. As was the case with the pilot study, we plan to run a comparison study with a Western (Czech) population.

We hope our results and proposed design guidelines will help the international HCI design community and they will contribute to a discussion on how to improve cross-cultural research.

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