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Intercultural aspects of Web Design: Approaches to Culture-Centred Design

Romina Rimondi*

Department of General Psychology
Università degli Studi di Padova
(Italy)

ABSTRACT

This paper addresses culturally rooted factors within web design and how their theoretical study must affect the design process.
We describe and relate theories that have developed over a period of 20 years, traceable in the published literature. We follow the links that connect them in the study of cultural and cognitive aspects in web design and how they finally converge in practical recommendations for designers, providing an original point of view combining academic research on categorization of culture elements and suggestions for designers stemming from user experience models applied to web sites.

Keywords: C*ross cultural design, interaction design, intercultural design, web design, culture-centered design, user centered design, user interface design, user experience design.*

1. Introduction

The study of Human-Computer Interaction poses challenges and needs knowledge and methodologies that require a multidisciplinary approach centred on the mechanisms that regulate the relationship between user and technology.

The approaches used since the birth of the discipline include basic concepts such as efficacy, usability and safety. However, these concepts are no longer sufficient. Whereas the catchment areas are becoming increasingly diverse due to greater accessibility of technological resources, and that in those areas, users are becoming more literate, experts and then demanding, even the interface design must take into

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*Corresponding Author:
Romina Rimondi
Università degli studi di Padova, via Venezia 8 – 35131 Padova (ITALY)
E-mail: romina.rimondi@gmail.com

account aspects such as involvement, emotions, satisfaction and pleasure of use as well as the mechanisms that influence mutually affective and cognitive factors.

In order to provide interface designers with all the tools for an enjoyable and profitable relationship between users and technology, the need for a user-centred perspective has been outlined long since, the user being an active subject and a valuable source of feedback on the process of design.

This perspective is enhanced by social and cultural characteristics when we consider that the concept of user includes not only the individual but also user groups:

'When we talk about human-computer interaction, we do not necessarily envisage a single user with a desktop computer. By user we may mean an individual user, a group of users working together, or a sequence of users in an organization, each dealing with some part of the task or process. The user is whoever is trying to get the job done using the technology' (Dix, Finlay, Abowd and Beale, 1993, p.4).

The user groups to which designers address may be made up by organizations and, in a broadest sense, by cultural groups. The aim of the studies in Human-Computer Interaction and good usability in accordance with ISO 9241 (quoted in Gamberini, Chittaro and Paternò, 2012), is also to take into account the contexts of use. The context can be represented by the social environment in which the user is to use the technology, and, in its broadest sense, by the cultures in which interactions take place.

Having defined the user not only as a single user but also as user groups, with more or less homogeneous languages and mental models, our aim is to present the evolution of the concept of User-Centred Design as regards web interface design. User-Centred Design is depicted considering cognitive and emotional aspects of user experience that goes beyond the mere concept of usability to enter the field of Interaction Design. Thanks to the notion of interface as interspace (Winograd, 1997) we come then to consider the need of translating and customise the interface to make the user feel at home.

For this purpose, we then explore the concept of Culture-Centred Web Design, first taking into account the attempts made by Hall (1976), Schwartz (1994) and Hofstede (1997) to categorize cultural differences and then examining how cultural differences can be retrieved and measured in web design, using for example the concept of cultural markers (Barber and Badre, 1998) and the guidelines by Marcus and Gould (2000) based on Hofstede's cultural dimensions.

We finally analyse some user experience models applied to web sites that take into consideration the user interface guidelines combining the study of cultural dimensions

(Hofstede, 1997), with other conceptual tools such as the TAM model or the cultural markers, with the purpose of reaching the ideal goal that stems from this studies: make designers perceptions and users perceptions match.

2. User Centered Web Design, Evolution of the Concept

The path that leads from User-Centred Design to Culture-Centred Web Design, does not want to act as a linear chronological journey but it is an ideal path illustrating a growing awareness that extends to the consideration of Culture-Centred Web Design as a branch of User-Centred Design.

Russo and Boor, since 1993, in one of the first articles on the importance of cultural aspects in the design of web interfaces, argued that cultural awareness is an aspect of user awareness.

Marcus and Gould (2000, p. 44), reiterated the importance of Culture-Centred Design on the web, stating that ‘as the Web continues to develop globally [...] exploring, then exploiting, these dimensions of culture, will become a necessity and not an option for successful theory and practice’.

The goal of Culture-Centred Design is to assure that the user will not be offended or confused by the interface (Russo and Boor) addressing him not only in his own language but in the language of his culture, as far as pertains to information visualization and therefore using metaphors, mental models, navigation and interaction modalities adapted to the culture of the user. Sun, in 2001, stressed the importance of cultural awareness proposing to insert the "Cultural Sensitivity" next to effectiveness, satisfaction, efficiency of use as a metric of usability, considering culture as a semantic space in which action and meaning converge.

As demonstrated by Ito and Nakakoji (cited in Hillier, 2003), cultural factors are involved at every level of communication. It follows that designers will fit into their design numerous elements and norms pertaining to their culture, often in an unconscious way.

As pointed out by Choi, Lee, Kim (2006), according to the cultural iceberg model (Hoft, 1995), the visible characteristics of culture, such as language, represent only a small part (10%) of the cultural characteristics of a target audience. As applications and services are cultural amplifiers (Nakakoji 1996 cited in Choi, Lee, and Kim, 2006), a real localization must take into account 90% of the hidden cultural characteristics. It is

therefore essential to bring out the effects of cultural characteristics on User Experience.

Jesse James Garrett (2011) exceeds the concept of usability as pure performance by defining User-Centred Design as the practice of creating engaging, efficient user experiences. This definition contains two main aspects of User-Centred Design: efficiency, the result of a good usability, and the elements of attractiveness that result from a cognitive and positive emotional experience.

Donald Norman coined the term “User Experience” to find a concept that would combine all the aspects of the experience with interactive systems, including emotional ones, overcoming the traditional concept of usability.

Bonnardel, Piolat and Le Bigot (2011), affirmed the need to extend the research on emotional design to web sites development. For example, the results of this study demonstrate that emotions associated with the concept of "beauty" produce cognitive outcomes determining the length of the visit, the nature of the information consulted on the web site and the degree to which that information is remembered. The study shows that in fact, for example, the use of color has an impact on user experience not only during navigation but also afterwards (Bonnardel, Piolat and Le Bigot, 2011)

It is therefore necessary to properly balance usability and aesthetics in design of web sites.

With regard to the specific area of the web, in 2011, Garrett develops a model of the User Experience addressed in particular to web designers. The model illustrates how a web interface can be designed according to the User Experience. The model includes five levels that represent the stages of development, from the more abstract to the more concrete.

At the most abstract level we find the needs of the user, framed, as described by Garrett, also thanks to ethnographic and psychographic analysis, that also include cultural aspects. Culture is in fact a lens through which the user interprets the metaphors used in the design:

‘Even though the association between the feature and its metaphorical representation is clear to you, it's just one of any number of associations your users might apply – especially if those users come from a different cultural background’ (Garrett, 2011).

Dan Saffer (2007), to describe Interaction Design, uses concepts pertaining to User Experience depicting its basic elements with aspects such as movement, space, time, visual appearance, physical form, sound. In addition, to describe the characteristics of a good Interaction Design, he used adjectives such as playful and enjoyable. The

concept of pleasantness introduces elements which belong to the User Experience, involving emotions and aesthetic appeal, which affect the cognitive aspects of the experience of use, such as those related to performance and then to the pure concept of usability.

Interaction Design represents the turning point and the ideal bridge in considering the importance of the user's culture. If the concept of User Experience, with Donald Norman, had gone beyond the concept of usability, Interaction Design introduces a new spatial dimension.

The user interface becomes a place in which to live, a world in which trade and communication take place, not only between man and machine, but also among people within the mediated environment. Winograd (1997) states that ’the design role is the construction of the 'interspace' in which people live, rather than an 'interface' with Which they interact’ (par. 1.2).

While designing an interface we should therefore include not only technology skills, but also knowledge about individual psychology and social communication (Winograd, 1997). Winograd (1997) further states: ‘The traditional idea of “interface” implies that we are focusing on two entities, the person and the machine, and on the space that lies between them. But beyond the interface, we operate in an "interspace" that is inhabited by multiple people, workstations, servers, and other devices in a complex web of interactions. In designing new systems and applications, we are not simply providing better tools for working with objects in a previously existing world. We are creating new worlds’ (par. 1.2).

Thanks to Winograd (1997) therefore a new dimension appears. The two-dimensional nature of the relationship between man and machine, who saw technology on the one hand and on the other the man who has to adapt to it, is enriched with a new dimension, that of '"gap" between man and machine in which several processes take place, both psychological and social.

In this respect, Barber and Badre (1998), talking about cultural adaptation of Web sites, affirm the need to make users “feel at home": ‘What is needed to implement a truly Global Interface are guidelines that are capable of capturing the nuances of cultures around the world, rendering an interface that allows the targeted audience to "feel at home"’.

Barber and Badre, reinforcing the idea of the interface as “home” and territory in which we live, also propose the analogy with the traveler, underlining the similarities between the experience of the user who surfs a web site and the experience of a

traveler exploring a foreign city. As it is not enough to have a vocabulary to interpret all the stimuli that come from a new town, so the only translation of the language in a web site is not enough to make the user feel at home:

'Just as physical cities and countries differ and reflect their inhabitants, so do Web sites. Colors, spatial organization, fonts, shapes, icons and metaphors, geography, language, flags, sounds, and motion contribute to the design and content of a Web page, which directly effects the way that a user interacts with the site' (Barber and Badre, 1998).

Precisely because of the increasing importance of the user interface as a place where we spend most of our existence, there is a growing need to turn it into a pleasant short stay, or passing through, the territories where we play our social lives and work, taking into account a broader concept of customization that include cultural factors.

If user interfaces are not only tools that people use but worlds and spaces within which people live, it becomes necessary to investigate the dimensions of User Experience linked to cultural aspects.

3. Culture-Centred Web Design

Culture has been defined in many ways. Kroeber and Parsons (cited in Choi, Lee, Kim, 2006) define it as 'transmitted and created content and patterns of values, ideas, and other symbolic -meaningful systems as factors in the shaping of human behavior and the artifacts produced through behavior' (p.173). Hofstede (1997) defines it as 'the collective programming of the mind which distinguishes the members of one group or category of people from others' (p. 6), made up by patterns of thoughts, feelings, actions learned in the social context and expressed through values, rituals and symbols.

Today, cultures can be understood as subgroups belonging to the same nation, or scattered in several nations and connected through internet communication, going beyond the traditional definitions of culture that ascribe the differences to historical events that have accumulated over the centuries:

'Small scales communities with preferred jargon, signs, and rituals can constitute a "cultural group" [...] The modern cultural group may be considered more a social group or "lifestyle group", including affinity groups, social groups, and geographically dispersed groups communicating through the Internet. Today, "digital natives" vs

“digital immigrants” may constitute significant differences in “culture”’ (Hartson and Pyla, 2012, p. 105).

Early in the history of usability, cultural aspects of web design were not considered in depth. Nielsen, in 1990, provided the earliest contributions on the topic of Human Computer Interaction Design for international users. However, his work focused mainly on testing for usability and on problems related to text translation. But it is not sufficient to translate texts to adapt a web site to an intercultural audience. In fact, as stated by Hillier (2003), ‘when we produce a web site in a given language, we should also ensure that the website conforms to the norms of the culture in which that language is based’ (p.11).

With the growth of the importance of graphical interfaces, researchers started to consider the cultural markers, beyond the translation of language, evaluating the cross-cultural translation of graphical elements such as icons, colors and symbols.

In 1993, Russo and Boor, proposed a cross-cultural checklist for the cultural adaptation of Web sites. It envisages the "translation" of text, numbers, date and time formats, images, symbols, colors, flow of information (arrangement of text and graphical components on the screen), functionality.

For example, as regards icons, some problems may occur: the recognition of the image, the association of the image to the intended concept, and the image acceptability. For example, particular attention should be paid to religious symbols, to the human body, and to the representation of women and hand gestures (Russo and Boor, 1993, p. 344).

Designer should also pay attention to symbols, in fact, in some cultures, the cross is not meant as a sign of prohibition; moreover, the symbology related to numbers can differ from culture to culture (the so-called "unlucky numbers").

Russo and Boor propose also the use of a color-culture chart (Table 1), later used by Barber and Badre (1998) to define the colors as elements that contribute to determine the type of information visualization specific to each culture.

Russo and Boor (1993) discusses the following examples of the use of color with consequences on the correct understanding of the meanings conveyed by a web site:

‘Garland found that using a red “X” as a prohibitive symbol in Egyptian pictures was not effective because the color red is not associated with forbiddance, and the “X” is not understood as prohibitive. Similarly, Courtney found that while Americans have “virtually perfect association” for red as stop and green as go, Chinese do not. If we chose to use colors to convey information to users (e.g., red error messages or yellow

warning messages) we have to allow for the appropriate translation of the colors during the internationalization process' (Russo and Boor, 1993, p. 345).

	China	**Japan**	**Egypt**	**France**	**United States**
Red	Happiness	Anger Danger	Death	Aristocracy	Danger Stop
Blue	Heavens Clouds	Villainy	Virtue Faith Truth	Freedom Peace	Masculine
Green	Ming Dynasty Heavens	Future Youth Energy	Fertility Strength	Criminality	Safety Go
Yellow	Birth Wealth Power	Grace Nobility	Happiness Prosperity	Temporary	Cowardice Temporary
White	Death Purity	Death	Joy	Neutrality	Purity

Table 1. The Color-Culture Chart (Russo & Boor, 1993).

Hartson and Pyla (2012), in a similar way, support the need for caution in attributing meaning to colors, with the example of the color red:

'Color conventions [...] are complicated and differ with international cultural conventions. One clear-cut convention in our Western culture is about the use of red. Beyond very limited use for emergency or urgent situations, red, especially blinking red, is alarming as well as irritating and distracting' (p.797).

Barber and Badre, in 1998, are among the first to speak about cultural markers and to highlight the close link between usability and cultural factors in web design, coining a new term, "Culturability":

'The basic premise behind the research outlined here is simple: no longer can issues of culture and usability remain separate in design for the World Wide Web. Cultural preferences and biases (i.e., colors, text vs. graphics, spatial orientation, among many others) impact what is deemed "user friendly;" thus, usability issues must take on a cultural context' (Barber e Badre, 1998).

Culturability, in this view, represents the set of cultural preferences and judgments that result in each specific "cultural markers".

In 1999, Sheppard and Scholtz (quoted in the Sun, 2001), as regards cultural markers, conducted an experiment on specifically designed web sites, one for North

America and one for Middle East, both recreated from an existing web site, to determine the extent to which the presence or absence of cultural markers influenced users' preferences and performance. The experiment showed that there were no significant differences in the users' preferences with regard to localized web sites but the subjects of the respective cultures presented better performance on the localized site.

The study by Sun (2001), unlike the work by Sheppard and Scholtz (1999), shows a relationship between the preference for certain cultural markers and users' cultural background. In this study, researchers compared Adobe and Lotus web sites as regards language, graphics, layout and colors for users of Asia, Europe and South America. Sun (2001) postulated a superficial level and a cultural level in the display of information, and the pilot study demonstrates that cultural markers are recognizable and are preferred by users. In addition, cultural markers revealed to have a positive impact on user performance, increasing customer satisfaction thereby improving the usability and user experience regarding web sites.

Faced with the difficulty of drawing up definitions designed to study the effects of culture for particular purposes, such as the approach to technology and localization of web sites, many researchers have devised conceptualizations suitable to be translated into quantitative patterns in order to translate cultural elements in discrete, quantifiable, measurable and therefore comparable categorizations.

Two major approaches are based on cultural markers and cultural dimensions.

Cultural markers, in the definition by Barber and Badre (1998), are interface design elements and features that are prevalent, and possibly preferred, within a particular cultural group; for example a national symbol, the symbolic meaning of colors, or spatial organization.

Cultural markers can be considered as useful cognitive tools in the service of a better understanding of the content at the level of information visualization:

‘Information visualization [...] uses computer-supported interactive visual representations of abstract data to amplify cognition. It is a form of external cognition, using resources in the world outside the mind to amplify what the mind can do. Cultural markers can be regarded as one of the techniques for information visualization on the multilingual websites’ (Sun, 2001, p. 99).

Barber and Badre (1998) are among the first to propose the use of cultural markers, that is interface elements specific to each cultural group and responsible for the judgments of usability.

Their study examined some hundreds of web sites categorized on the basis of the nation, of the subject and the language.

The aim of the research was therefore to identify cultural markers, after recognizing their connection with specific cultures and with reference to the subject matter of the web site: ‘Cultural markers are those elements that are most prevalent, and possibly preferred within a particular cultural group’ (Barber e Badre, 1998).

The goal of the study was also to determine the guidelines for usability in web design at a cross cultural level, to reach the standards of a Global Interface Design that takes into account every nuance of cultural users of a web site.

The cultural markers identified by Barber and Badre (1998) are elements such as HTML tags, icons / metaphors, specific colors, grouping, flags, language, orientation, sound, fonts, links, shapes. With regard to the concept of "Orientation" Russo and Boor, in 1993, already put forward the problem of talking about "flow of information", which follows the habits of writing and reading of different cultural groups:

‘For instance, in America a series of icons or windows will be arranged from left to right and top to bottom. Such an arrangement would be counter-intuitive to an Arabic user who reads from right to left. This would be even more confusing to a Chinese user who reads top to bottom and right to left’ (Russo e Boor, 1993, p. 345).

In the years 1978-83, Hofstede, cultural anthropologist and researcher in the field of cultural organizations, conducted detailed interviews with hundreds of IBM employees in 53 countries. Through statistical analysis of large data sets, he was able to determine the patterns of similarities and differences between the replies. From this analysis, he formulated the theory according to which cultures vary along consistent dimensions. (Marcus and Gould, 2000).

Hofstede identified five dimensions to assess cultural differences: power-distance, collectivism vs individualism, femininity vs masculinity, uncertainty avoidance, long vs. short-term orientation.

According to Hofstede (1997), these cultural differences manifest themselves in the values, rituals, symbols, and heroes / heroines of a culture. Hofstede's theory is limited in some respects: for example, it presupposes the existence of a single culture for each country and is likely to create stereotypes (Hartson and Pyla, 2012). However, his research produced results that can be normalized to values (usually) of 0 to 100, turning out to be ideal for studying measurable quantities applied to web design (Marcus and Gould, 2000).

Marcus and Gould, in 2000, applies some of Hofstede's cultural dimensions to Web user interfaces. They theorize that cultural elements are embedded in user interfaces as a set of social and contextual cues that enable effective use. They also theorized that cultural dimensions are mapped to the design of user-interface components as metaphors, mental models, navigation, interaction, appearance, and propose user-interface design guidelines for global web sites (Choi, Lee, Kim 2006).

For example, the dimension of "Power distance", according to the authors, can be translated into the user-interface of a web site with the frequency / infrequency or strength / weakness of the following characteristics:

‘Access to information; hierarchies in mental models; emphasis on the social and moral order; focus on competence, authority, expertise, certifications, official stamps, or logos; prominence given to leaders vs citizens, customers, or employees; importance of security and restrictions; social roles used to organize information (e.g., a managers' section obvious to all but sealed off from non-managers)’ (Marcus and Gould, 2000).

Another study exploring the dimensions of Hofstede applied to web sites dates back to 2006 (Choi, Lee, Kim). The study proposes a set of critical design attributes for mobile data services taking intercultural differences into account. To determine these attributes, in-depth interviews in Korea, Japan and Finland were conducted, exploiting a qualitative method.

In 2006, Choi et al. identified twenty-one User Experience attributes grouped into three overarching categories: graphical user interface (GUI), information architecture, and content. These three categories showed a correlation with three cultural dimensions: contextuality, individualism / collectivism, uncertainty avoidance. In particular, the dimensions of individualism / collectivism and uncertainty avoidance seem to affect users' preferences regarding the architecture of information. For example, individualistic users may prefer personalized menus and search facilities that help them find what they want more quickly and efficiently (Choi et al., 2006). They may feel that contents ordered by popularity interfere with their search for material that meets their desires and expresses their personalities. In contrast, collectivist users may find content lists ordered by popularity useful because for them knowing which content is popular is meaningful (Choi et al, 2006).

The study by Choi, Lee, Kim (2006) also examines the cultural dimensions postulated by Hall (1976, cited in Sun, 2001). Hall distinguishes two types of cultures according to the level of linguistic communication: "High-Context" and "Low-Context".

Hall's concept of “context” involves the information underlying a communicative event. High-Context cultures prefer implicit messages, communications tend to be indirect, subtle, complex, elusive, situational, the meaning of the message is mainly in the context. In Low-Context cultures, messages are explicit and the communication is direct. It implies some consequences as regards preferences for certain cultural markers.

The work by Sun (2001) demonstrates this relationship between the preference for certain cultural markers and users cultural background. Therefore, German users, belonging to a Low-Context culture, prefer logical and structured layout, for example, a navigation bar with links in alphabetical order, while High-Context culture users, such as Chinese and Brazilians, prefer visual elements such as bright colors, numerous images or visual items related to their culture (Sun 2001).

A study by Baack and Singh (2007) consider, in addition to Hofstede's dimensions, cultural values identified by Schwartz (1994, cited in Baack, Singh, 2007): Conservatism, Intellectual Autonomy, Affective Autonomy, Egalitarian commitment, Harmony, Mastery, Hierarchy:

‘The research consisted in testing the relationship between cultural adaptation and web site effectiveness using a culturally adapted web site. The results support the conclusion that cultural dimensions by Hofstede and Schwartz alone do not perfectly explain culture's influence on web communication. Instead, an amalgamation of the two frameworks is a better explanation’ (Baack and Singh, 2007, p.187).

Results of this analysis have important implications for researchers as they show that academic research can guide the design of web sites and the localization thus obtained leads to a better web communication effectiveness.

3. Examples of User-Experience Models Applied to Web Sites in an Intercultural Perspective

In the following years, taking a cue from these early studies, some studies are carried out that relate to aspects of the User Experience as regards web sites adapted to the culture of the user, using the categories suggested by cultural markers and cultural dimensions.

3.1 The Adaptation of the TAM Model

With regard to the aspect of User Experience that refers to expectations of use, the anticipation phase of use of technology systems has been sketched by the model TAM (Technology Acceptance Model) of Davis (1989), which discusses the factors that contribute to the general level of acceptance of a technology by the user: the user-friendliness of a product or service ("perceived ease-of-use") affects perceived usefulness ("perceived usefulness"). Both of these factors influence the intention to adopt, that predicts the actual use of the system.

TAM model has been the subject of subsequent revisions, some of which correlate the influence of cultural factors on the acceptance of technology as regards web sites.

For example, in 2009, Li, Hess, McNab, Yu investigated the influence of national cultural values on acceptance of a personal web portal for users in China and in the United States. Users evaluated localized versions of MyYahoo, a personal portal aggregator of news and blogs. The five cultural dimensions of Hofstede (see par. 3) were investigated at the individual level to permit an assessment of the influence of each dimension on the beliefs and intentions of adoption of the technology in question. Compared to the proposed model the results do not confirm the moderating effects of the dimension of uncertainty avoidance, power distance and masculinity / femininity on the relationship between normative beliefs and intention to adopt, while the study confirms the hypothesis that dimensions of individualism / collectivism and time orientation directly affect perceived ease-of-use and perceived usefulness.

It is therefore important to consider the cultural values of time orientation and individualism / collectivism in the study of the acceptance of technology relating to web sites.

In 2006, Singh, Fassott, Chao and Hoffmann, applied the TAM model to the study of User Acceptance of international e-commerce web sites. The study shows that the localization of international web sites influences the attitudes and buying intentions of consumers. They investigated the perceptions of online experiences of users in Brazil, Germany and Taiwan about web sites of American and Japanese multinational companies, developed specifically for the different cultural affiliations of the users. Compared to the hypothesized model, the empirical results (Singh et al., 2006) confirm the causal relationships between the constructs of the model (TAM perceived ease-of-use, perceived usefulness, localization, and attitudes towards web site) and users' intentions to buy online.

In addition, consistently with previous research (Davis, 1989), the total effect of perceived usefulness is greater than perceived ease-of-use on intentions to buy. Finally, it has been shown that web site localization is a key variable for predicting the use of international web sites with regard to users in Brazil, Germany and Taiwan with confirmation of the validity of the TAM model for users of these nations.

3.2 “Cultural Fingerprints”

The model of Smith, Dunckley, French, Minocha, and Chang (2004) introduces "cultural fingerprints" (Figure 1) as a tool to analyze the correspondence between the dimensions of Hofstede identified with respect to a given culture (Country / Cultural fingerprint) and the same dimensions measured in a web site (Site fingerprint), using the guidelines of Marcus and Gould (2000). The Figure below shows the "Cultural fingerprints" which refer respectively to two web sites and nations to which their seem to better adapt culturally.

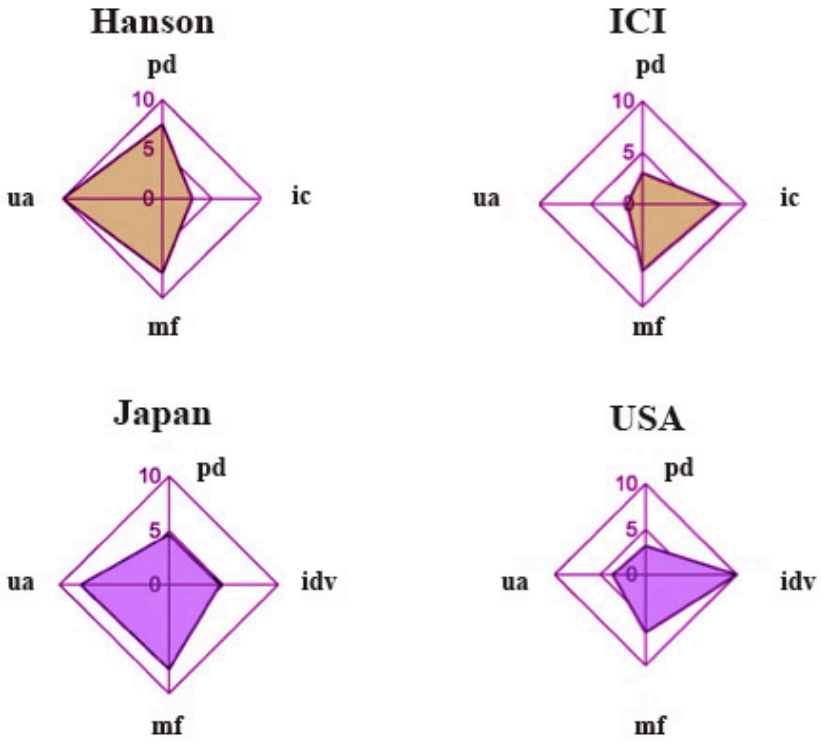

Figure 1. Corporate investor websites fingerprints (Smith et al., 2004).

This model, like the others mentioned, without claiming to define tools and guidance directives, offers interesting insights for future developments with regard to the mode of collection of cultural information and the design and testing of web sites in an

intercultural perspective, in order to achieve a Culture-Centred approach based on the knowledge of the user's culture.

3.3 The “Cultural Filter”

In relation to web sites design process, Shen, Woolley and Prior (2006) suggest starting with a search on the target group about cognition and usability, blending elements such as cultural identity, language and visual communication.

The recommended procedure is derived from the concept of "cultural filter", an idea that authors borrow from the book "Psychoanalysis and Zen Buddhism" by Erich Fromm (Shen et al., 2006). In this context, the Culture-Centred Design consists of two parallel planes that are projected in an interface (Figure 2).

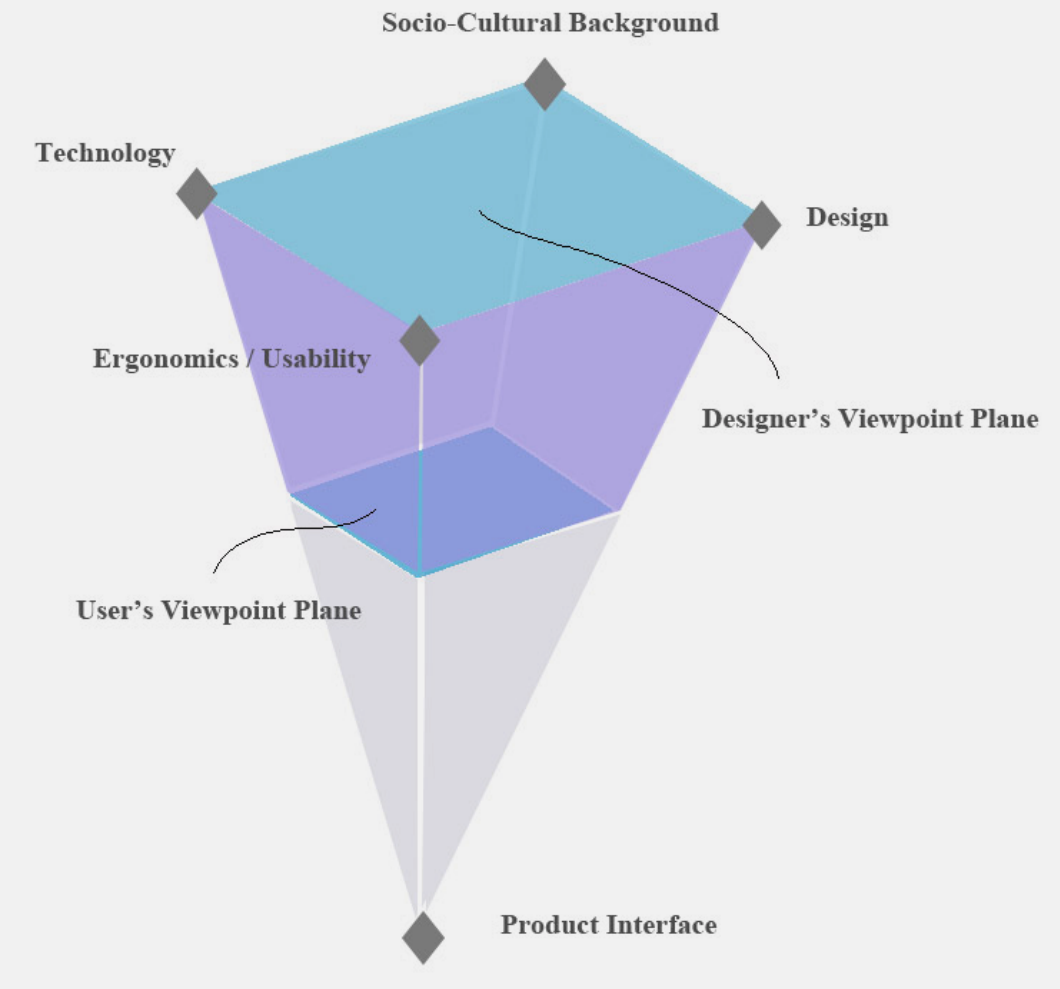

Figure 2. Graphical representation of the Cultural Filter (Shen et al., 2006).

This concept goes beyond the idea of User-Centred Design, conceived as a design "for all", based on an average user, which allows the standardization and generalization of usability but on the other side is likely to have a homogenizing effect

on multi-cultural communities, ignoring the different cultural expressions (Shen et al., 2006,). In this perspective, Culture-Centred Design as conceived by Shen et al. (2006), proposes instead a design divided into the following phases:

- Filter designer: the designer has its own cultural background but he must be able to see the user culture through the cultural filter. At this level, the designer must select the target group, collect relevant cultural data and verify technical requirements, usability and evaluation tools. At the second level, the designer should create a "visual collage" of different images of the target culture, including language, logical patterns of thought and social taboos, in order to build an appropriate interface.
- Similarly, the lower level is represented by users that look at the interface through their cultural filter and offer their feedback.

Through a design that progresses by iterative analysis, designers will create a final product more usable for the target culture.

The research does not claim to produce a strict design tool but it provides a useful mental map to guide the relationship between the perceptions of designer and user perceptions (Shen et al., 2006). Working with the process mentioned, this study demonstrated the success of the garden metaphor developed and applied as an alternative to the current global “office” or “desktop” metaphor. The original interface has demonstrated effectiveness in terms of interactivity, usability and cultural significance in a group of Chinese users.

4. Conclusions

The path traced leads to reason about the need for a multidisciplinary approach in web design, whose ideal qualities should allow researchers to outline the characteristics of a design process that does not cause users to feel discomfort or difficulty while trying to understand web contents. In addition, the design process should not be limited by the meanings conveyed by metaphors and symbols that belong only to certain cultures. It's therefore necessary to achieve a set of tools and knowledge that include anthropological, cultural, and social perspectives, broad in scope, that can provide web interface designers useful guiding principles and methodological tools, frameworks and interpretative grids that facilitate the design and a fluid achievement of the objectives. At the same time, web design should meet the expectations in terms of user experience and optimal reception of information on the

user side, in order to meet the needs of involvement, pleasantness, simplicity and fluidity in picking the right content inserted in the right graphics and aesthetics, as well as in the right metaphorical and symbolic frame.

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