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Author:
Razzaghi, Mohammad; Ramirez, Mariano Jr

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Mohammad Razzaghi[1] & Mariano Ramirez Jr[2]
[1] University of Art, Tehran, Iran
[2]University of New South Wales, Sydney, Australia

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ABSTRACT

As initiators of product creation, industrial designers are expected to facilitate the communication of the products' physical and non-physical attributes to users in a self-explanatory way. In other words, the products that they create should "afford" conversation with their intended users using the visual semantics and symbolic language of the design. "Cultural affordance" refers to the perceived possibilities for interacting with a particular object or environment in the physical world, which could be directly or indirectly influenced by the cultures of both the users and the designers. The influential norms within one's social group and day-to-day lifestyle can be significant determinants of how an individual would comprehend and use a designed object. Our own mental models, formed through years of living within a society, also shape our expectations of how to engage with a product. Thus if we want products to afford usability and to facilitate a pleasurable involvement, then designers should design with an inclusive understanding of the user's culture, experiences and knowledge. This paper concludes with a proposal for a full-semester subject, suggested to inculcate among young industrial designers the sensitivity to the close links between design and culture.

INTRODUCTION

Gibson (1977) coined the word "affordance" to denote the many possible ways by which a particular object can interact in the physical world. Norman (1999) adapted the term into the fields of product design and ergonomics, when he wrote about "perceived affordance", which looks at those qualities of an object that suggests how it might be used or interacted with. Norman (1988) proposed that the perceived affordance of a product is determined by several factors, including: (1) the context, environment or process in which the object is displayed; (2) the culture or influential societal norms on the individual's understanding and use of an object; (3) instinct, which is an unconscious association often linked to physical characteristics, such as the size of an object in relation to the human form; and finally (4) the mental model or the user's understanding and expectations of interaction with the object. The concept of affordance and in particular, cultural affordance of products thus helps to establish how a user can interrelate with a product. As a result, if we want products to afford their usability and facilitate a pleasurable

communication, then designers should design products with an inclusive understanding of the users' culture, experiences, expertise and knowledge (Oshlyansky et al, 2004). Without this understanding, the designers impose on users the burden of re-learning or even un-learning about the product.

When products cross cultural borders, there is no guarantee that the meaning and functions invested in products by their designers will be recognized by their users from another culture (Howes & Classen, 1996). Corporations worldwide have started to realize that insight in embedding functional, cultural, mythical, symbolic, and ethical meaning into products are becoming increasingly important now (Gagliardi, 2001). A significant part of human understanding, feelings, and behaviors stem from cultural values. Accordingly, "culture" can be regarded as a foundation on which our understanding of objects is built up.

There are instances that highlight the importance of understanding users' culture. Examples of companies that do not take the time to literally understand cultural differences of their varied customers in target countries abound. Kaye (2009) gives Gerber as an example. The logo and packaging graphics of this US baby food company features the portrait of an infant. When Gerber launched its products in Africa, little did they know that most Africans perceive the image on the packaging as indicative of its contents!

Organizations acknowledging the differences in their customers' cultural preferences will not jeopardize their brand whilst making best use of their efforts put in developing products or services suitable to their customers. Gorman (2009) reports that observant Jews, Christians and Muslims are making use of the latest innovations in some GPS-enhanced cell phones, clocks, MP3 players, and kitchen appliances to strengthen their traditional religious practices. Therefore, religion as one aspect of cultural diversity can stimulate designers to embark on developing products suitable to a particular social group, a model which Gorman refers to as "faith-based design".

Even our simple daily routines may be culturally-bound. Huang and Deng (2008) instantiate tea drinking, as a traditional social activity in Taiwan, as being bound to abundant cultural features and user preferences that could provide many opportunities for designers to address.

It is argued that industrial design (ID) is a human-centered profession, and by extension, socially- and culturally-oriented. It would be ideal for practitioners to be trained with

a firm grasp of and respect for the social needs of users, which differ significantly across different cultures. Papanek (1985) reports that the direction of the design profession is changing from one that follows a market model to one that subscribes to a social model. Therefore design education should be concerned not only with training designers with enhancing the physical qualities of products and determining what would be profitable to sell, but also with producing solutions that are desirable or acceptable to a society and to its culture. While designers ought to be aware of the multifaceted social and cultural needs of users, they also need to be cognizant of the impact of their own cultural preferences, which inspire their creativity and innovation towards the generation of product concepts.

I. CULTURAL AFFORDANCE IN ID EDUCATION

The design literature shows that a variety of methods of enquiry are being utilized by professional designers so as to obtain an understanding about users and customers. Portigal (1997) believes that whilst many companies explore anthropological and cultural methodologies for the utilization of users' culture into the design of products, these methodologies suffer from a broad and vague generalization, as they are poorly understood, hard to evaluate and often hit-or-miss. Ward's (2005) findings, also is not very promising: he reports on research into methods used by nine Australian industrial design teams as to how they collect the required information on the intended user group. Despite the fact that large-scale companies do extensive research on how the user can be satisfied by the product, he concludes that designers prefer to act on their imagination, informed by experience, rather than rely on empirical data when forming an understanding of users in relation to a design project.

In another paper (Razzaghi & Ramirez, 2009), we presented the results of an online survey and catalog review from 75 universities worldwide, aimed at determining if the relationship between culture and design is convincingly addressed within the training of industrial designers. We argued that if the cultural affordance of products is deemed to be important for designers, then industrial design education must accordingly cover this topic in the tertiary curricula. Our study found that the majority of industrial design curricula suffer from a relative lack of subjects that explore the links between culture and design.

II. PROPOSED LEARNING PROGRAM

We propose to the community of industrial design educators a special full-semester module to be added to the curriculum of industrial design to enhance the designers' cultural awareness. We propose a theory-studio elective course titled "Culture and Design", to be offered in semester 6 of an 8-semester industrial design degree program. Within this course students will be introduced to the idea of cultural affordance in products with respect to the social aspects of design. This course will bridge the gap existing in Australian and Iranian industrial design curricula and virtually in all ID educational programs around the world. It ensures that ID students will not miss out on getting sensitized to design and

culture during their university studies. Throughout the course, they will develop an understanding of the varied cultural and social needs, and apply this learning to the design of culturally appropriate products. In the following sections, we introduce our course proposal.

A. Course title, description & objectives

The suggested title of the subject is "Culture & Design". It will run for a full semester: while a semester can range from anything in between 12 and 17 weeks in different universities around the world, for this paper, the typical 17-week semester in Iran was considered. It recognizes a responsibility amongst all ID students and practitioners to value the role and impact of culture on design and the cultural affordance of products. Classes would be comprised of lectures, tutorials, and seminars.

The course has two distinct teaching and learning components:

(1) Cultural Theory (40%). These include lectures and intensive discussions that would provide the necessary theoretical grounding to grasp the varied aspects of culture in design. This will run for the first 6 weeks only.

(2) Cultural Application (60%). These include problem-based learning activities in the studio, such as design problems which call for the creation of a product or service related to a set of specific cultural needs. This will run throughout the semester.

Students must reflect on their design process and the resultant solutions, assessing the extent to which the design solutions that they developed sufficiently address the cultural issues that have been identified or defined.

Upon completion of this course, the ID students should demonstrate the ability to:
1. Build upon knowledge from lectures and discussions so as to value the basic concepts of societies and cultures as well as their diverse manifestations;
2. Establish a system for interrogating the relationship between cultures and designs;
3. Understand cultural structures behind design problems;
4. Gain the ability to appropriately respond to the cultural matters through design; and
5. Differentiate between national and international cultures.

B. Teaching and learning strategies

As mentioned, the suggested course comprises coursework to be supported by such resources as lectures, library, and other relevant reference materials. Students must engage either in individual or team activities via dealing with a series of design situations. Tutors may be appointed from ID postgraduate students as a casual job to facilitate group discussions. Tutors will encourage discussion that elaborates on the lecture material and explain the assessment requirements. Each student will be allocated a tutorial group. It serves the purpose best if 4 to 6 students form a group. Students will receive regular individual and group feedback throughout the course, in the form of peer and tutor reviews.

Formal assessment will take place at specific stages throughout the course that recognizes contributions of both an individual and team nature.

The course can be structured as a 3 UoC (unit of credit) elective subject that requires 2 hours face-to-face teaching for most weeks. During the first eight weeks (Weeks 1 to 6), one-hour lectures must be held, followed by one hour tutorials. For the following six weeks (Weeks 9 to 15) each tutorial group will meet for a two hour class focusing on design problem defined within each group differently. Design assignments are planned to encourage students through all theoretical, research in-the-field processes, as well as creative phases in which design solutions will be generated. The basic design exercise involves developing concepts for a particular cultural group. For instance, students may be encouraged to identify a design problem within a sub-culture of the inner city and respond to the problem through integrating their knowledge and appreciation of the problem into a design of a product.

An alternative design exercise in the studio might be to develop concepts for culturally-divergent user groups, in order to stimulate students' creative sensitivities towards satisfying varied user needs across cultures. In this exercise, students are given a design brief to develop a product for potential users whose culture is the same as the designer's. Students will be required to identify the cultural issues associated with the intended user group ("identification"). Then, they may proceed to the next phase where they modify the design solution to fit the expectations of new users whose culture is different with that of the originally intended users of the design solution ("modification"). It is expected that through group or class discussions and comparisons, students can gain an insight as to how a product can be differentiated, by integrating and respecting different users' cultural wants and expectations. Figure 1 depicts the alternative exercise structure.
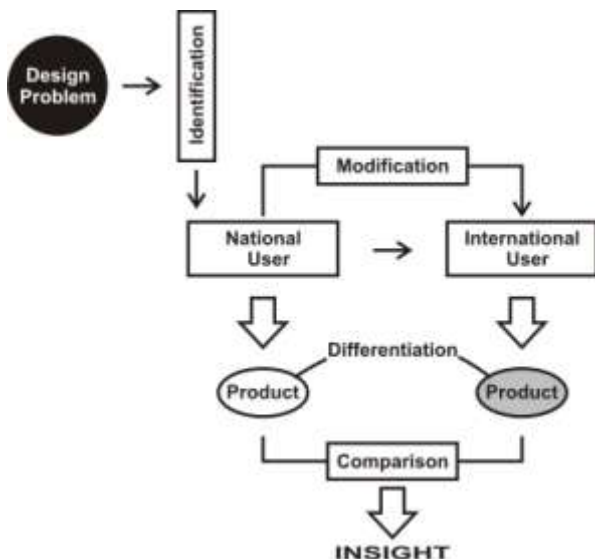

Fig. 1. The alternative exercise structure

The course coordinator will randomly supervise group discussions and involvement. Each group must be provided with a different design problem associated with a different cultural matter. Therefore, at the end of the semester when students present the result of their researches and design processes to the class, they can benefit from the multiple design situations and sets of viable answers to the inquiry. Tutors must help students defining their project within which a design ideation, concept screening and development phases are outlined.

Varied aspects of culture and society in relation to the idea of design will be discussed in the Cultural Theory part of the course. The list below suggests some possible concepts for teaching aspects of cultures and societies to students for each week:

1. Overview of the relationship between culture & design;
2. Globalization, global transformation, national vs international design; consumerism, universal design & cultural affordance of products;
3. Culture, cultural values & its varied manifestations (Heroes, rituals, traditions);
4. Identity, language & religion;
5. Social psychology, organizational culture;
6. Research methods in social science.

It is expected that students enhance their understanding of the idea of culture through extensive readings to be suggested by the lecturers.

C. Assessment

Students will be required to present the result of their team-based works and research findings in seminars during the final weeks of the course. The two 2-hour seminars (Weeks 16 & 17) should provide the time required for students to present their research findings to the class, so that all may benefit from the new insights gained. The presentation will form 70% of the group final mark. For the remaining 30%, students may have a choice of either writing a well-researched essay or a paper of conference quality.

III. CONCLUSIONS

This investigation discovered a relative insufficiency in the consideration of cultural affordances within industrial design curricula and practice. A learning program is introduced and suggested to overpass this gap.

Through integrating this course into ID curricula, it is expected that after graduation, ID students will be able to employ their developed initiatives, research and design skills across the curriculum to understand the general spectrum of cultural matters and address varied cultural needs within particular design project.

The module can be enhanced by student exchange programs and international online collaborative design studios, so that participating students will be able to experience and understand the cultures of students from other countries whom they are interacting with. One example of such a cross-cultural collaborative is the Omnium virtual design studio [VDS], which brought together interdisciplinary design students from 11 countries, engaging in verbal and visual dialogue, using the internet as their only communication medium (COFA, 1999).

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