

Designing for Experiential and 'Aspirational' Needs: Observations of Student Design Activity.

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The work reported in this paper investigates the application, within the industrial design education context, of methods of inquiry and design problem-framing derived from social research disciplines. The notion of developing more holistic approaches to human factors in design which incorporate affective and socio-cultural needs has gained some currency in recent years. Developments in this area have resulted in the proposal of a range of tools and methods such as Jordan's (2000) 'New Human Factors' and Watts-Perotti and Sanders' (2000) 'Generative User Needs Analysis'. The issues addressed by these tools and methods are clearly not new to design. To a designer, the ability to recognise or discover these types of needs might be described within the gamut of factors that constitute the expert designer's "designerly way of knowing" (Cross 1982) and designs created with such expertise would be expected to resonate with peoples' experience. The 'New Human Factors' tools and methods seek to support design activity by providing a more organised, systematic and (perhaps) objective way of capturing peoples' experiential 'aspirational' needs.

The investigation reported here follows an action-research model in which interventions were made to a sequence of senior-undergraduate, industrial design studio projects between 2000 and 2003 (Bernabei and Talbot 2002, Talbot and Pandolfo 2003). The scope of the projects and the nature of the design outcomes were deliberately left quite open. The interventions involved scheduling an extensive investigation phase during which the students were instructed by experts/practitioners from social science disciplines and the students also conducted investigation and idea-generation activities based on Sander's (2000) 'Generative Co-designing' methods. The structure of each of the projects was intended to support a 'breadth-first' approach within the project and allow the students to establish a framework for investigating and describing socio-cultural issues pertinent to their design work. The aims were: (a) to identify the extent to which students were able to articulate these 'deeper' socio-cultural needs in structuring their design problems; and (b) to identify the extent to which they established connections with these issues in their design decisions. This was done by ongoing monitoring of the outcomes through the various phases of the project.

The findings were that, on the whole, the interventions encouraged engagement with a broader range of issues and discouraged the framing of the design problems by the students in a narrow or superficial way. The extent to which the students' design responses dealt successfully with the socio-cultural issues imbedded in their problems was varied. But we did find that many students were able to pursue these issues through their design work and produce designs in which their engagement with these issues was evident. For a proportion of students, however, there was a gulf between the novel problem/idea framed early in the project and a designerly approach to finding a workable solution. Overall, the interventions served to extend the students, demanding a relatively advanced approach to understanding human needs and framing a design problem accordingly. The approaches used were very valuable in the educational context. This investigation does, however, raise questions about the difficulties that designers in professional practice may face in applying systematic tools and methods for identifying experiential and aspirational needs.

Designing for experiential and 'aspirational' needs: observations of student design activity

Introduction

The work reported in this paper investigates the application, within the industrial design education context, of methods of inquiry and design problem-framing derived from social research disciplines. The notion of developing more holistic approaches to human factors in design which incorporate affective and socio-cultural needs has gained some currency in recent years. Developments in this area have resulted in the proposal of a range of tools and methods such as Jordan's (2000) 'New Human Factors' and Sanders' (2000) 'Generative Co-Designing'. The main thrust of these approaches is to engage potential end-users in reflective and creative activities that will help to identify their needs and emotional responses and hopefully provide insight into their 'deeper' aspirations. The methods include interview and focus group inquiries and activities such as diary keeping and collage making.

The issues addressed by these tools and methods are clearly not new to design. To a designer, the ability to recognise or discover these types of needs might be described within the gamut of factors that constitute the expert designer's "designerly way of knowing" (Cross 1982). It is hoped that design activity informed by such insight may yield products that have an 'X-Factor' which resonates with peoples' experience and sets these products apart from more mundane alternatives. The 'New Human Factors' tools and methods seek to support design activity by providing a more organised, systematic and (perhaps) objective way of capturing peoples' 'experiential' and 'aspirational' needs. A growing number of cases of the use of these tools in design have been reported (Bruseberg and McDonagh-Philp 2001). Our interest in investigating this type of approach was to try to establish among design students a more effective response to the full extent of user needs than had been typical in our program. Changes to our design teaching were planned with the aims of (a) identifying the extent to which students were able to articulate these 'deeper' socio-cultural needs in structuring their design problems; and (b) identifying the extent to which they established connections with these issues in their design decisions.

Investigation of an alternative approach to design projects

The investigation reported here follows an action-research model involving a sequence of trial projects in senior-undergraduate, industrial design studio courses between 2000 and 2003 (Bernabei and Talbot 2002, Talbot and Pandolfo 2003). Staffing of these studio classes had been quite consistent over the previous two years (1998-99). In the design projects for these earlier, 'baseline' classes, first-hand inquiry through surveys and observations tended to focus on issues such as functional requirements and users' responses to existing products. Investigation of experiential and aspirational needs was typically based on the students' personal interpretation/exploration of contemporary issues related to the potential 'markets' (users) targeted for the design project. This was supported by reviews of relevant commentary by opinion leaders and presentations by studio teaching staff. The outcomes of these investigations were usually communicated through visual means such as 'style posters' (or 'mood boards'). These are collections of images of people, events, environments, products, product details and materials. In the 'baseline' projects they were generated by the designers to explore and convey ideas about attitudes, emotions and aesthetic preferences of target users. These investigations were helpful in stimulating students to consider the experiences and likely preferences of the people for whom they were designing. It was felt, however, that the results tended to be superficial in many cases and this was reflected in the design outcomes.

The alternative 'Affective Human Factors' tools being described by authors such as Jordan (ibid) and Sanders (ibid) potentially offered a rich framework for gaining a deeper understanding of experiential and aspirational needs. Having reflected on the 'pre-2000 baseline' standards, a sequence of design projects was then conducted with the aim of promoting a more structured engagement between the design students and the affective needs and responses of the people they are designing for.

The revised projects were of similar duration to the equivalent projects in previous years. The changes introduced in the trial projects involved scheduling a more extensive investigation phase during which the students were instructed by experts/practitioners from social science disciplines. The students received instruction and gained experience in investigation and idea-generation activities based on Sander's (2000) 'Generative Co-designing' approach. This required a different way of interacting with potential users of the product being designed. These people were invited by the designers to

participate in reflective and creative activities related to the project. The activities included keeping diaries, collecting images and participating in focus-group discussions. The intention was that engaging people in these activities would help the designers gain a better insight into the range of needs, attitudes and, hopefully, aspirations of the people they were designing for. The projects emphasised a 'breadth-first' approach within the project. This was to allow the students a wide scope for investigating and describing socio-cultural and personal/emotional issues pertinent to peoples' likely interaction with their designs. The trial projects were conducted in a senior industrial design course as part of ongoing course development over a three year period (2000 –02) giving three cycles of development and review. Other developments in subsequent course offerings (2003-04) have continued.

Outcomes of the baseline and trial projects

The results of the trial projects are best introduced using examples from two of the projects. The 'baseline' example described here is from 1999. The project, titled '**Are you connected?**', explored the increased use of limited-range cordless telephony across a variety of contexts. The students were asked to select and investigate a context for the use of a cordless communications. Methods used for assessing the needs of users, included interviews, construction of user profiles and observations of activities using existing products in the expected context of use. The practice of using early sketches and models to gain feedback about design concepts from potential users was also used. These would be regarded as conventional methods for this level of student project. The students were challenged through staff presentations, to investigate trends in attitudes and behaviours related to use of communication products. Judgements about users' desired experience, emotional response and aspirations were explored by the design students using 'style posters' as described earlier. Some design outcomes are pictured below. Figures 1 and 2 show the design for a wearable phone for use by department store sales staff.

Figures 1 & 2: Cordless phone for retail sector staff – Sophie Ellis



Figures 3 and 4 show a phone for domestic use which seeks to offer a playful departure from the norm by exploring relationship of the phone and the hand.

Figures 3 & 4: Domestic Cordless phone – Bazil Tung



Both these designs reflected a carefully considered response to the respective users' needs and contexts of use. The design decisions relating to affective issues were certainly not arbitrary, but were based on a rather cursory interpretation by the designers of users' affective needs. The ideas underlying 'stylistic' decisions were not very clearly articulated by the students early in the project apart from 'style poster' visuals. These ideas tended to be seen as implicit in the expression/visualisation of design alternatives.

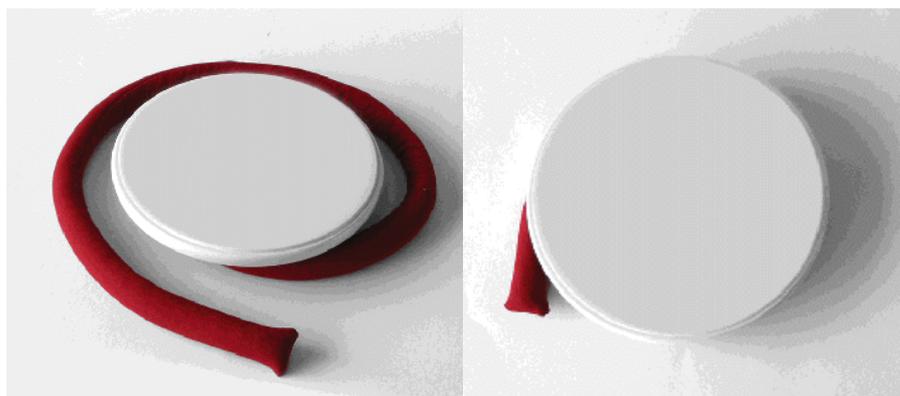
The Great Divide project (Talbot and Pandolfo 2003) is an example of one of the trial projects. The brief for this project was structured so that, rather than being required to focus on products per se, the students began by investigating a particular family relationship. Examples were; grandparents and their grandchildren, children and their (separated) parents or siblings. We believed that investigating these relationships would lead the design students to consider the impact of major social changes on certain groups within society. By gaining an awareness of the factors that influence these relationships, the students would be able to identify opportunities for design outcomes which fit the social context and support the experiences and aspirations of the people they were designing for. The project focus on relationships was deliberately chosen to ensure an 'emotionally rich' context for designing which would allow the design students to challenge stereotypical notions of lifestyles/living conditions and to capture insights into 'deeper' user needs. Sander's (2000) 'Generative Co-Designing' tools and methods (as

described earlier) were used. A range of activities were conducted by the students with their target groups. For example grandparents and their grandchildren participated in drawing and collage making activities expressing ideas/feelings about particular events such as “spending time with Grandma and Grandpa after school”. Diary-keeping activities and focus-group discussions were also carried out. The students were also encouraged to keep diaries and used activities such as role-playing to explore the experiences related to their target group. The students’ investigations were supported by input from visiting experts from the fields of psychology, sociology, industrial design and new-media design.

Visual materials drawn from this investigation were, on the surface, similar to the types of posters and sample boards produced in the baseline project. However there was greater user involvement in the creation of this material. User profiles and scenarios-of-use were used to capture a range of user-related issues including affective aspects. Some students also used videotaping of role-plays to dramatise the central ideas they were dealing with.

Following Sanders’ (2000) approach, the students attempted to articulate *tacit* needs related to people’s knowledge and feelings. They were also challenged to explore ideas which might expose *latent* needs related to the aspirations and dreams of their target group. The resulting design proposals ranged from communication products to furniture and environments. Three examples selected from this project are shown here. The *Table* by Kenneth Lam in Figures 3 and 4 connects with the ideas surrounding the shared activities at the communal table in a family household which expands and contracts as daily circumstances change.

Fig.3 &4: Table- Kenneth Lam



The *Uan Rug* (Figure 5) by Helen Chen is made from a slow memory ‘technogel’. The rug ‘remembers’ who has been in the room by keeping their imprints for a while. It serves to connect people who share a space but often don’t have the chance to share time together.

Fig.5: Uan rug- Helen Chen



Fig.6: Twin Locator- Michael Kwan



The *Twin Locator* (Figure 6) by Michael Kwan is intended for use by twin brothers. The devices communicate with each other and provide subtle clues to the wearer about the location of the other twin. The design explores the idea that a twin's social interactions and emotional state are often affected by the presence or absence of the other twin.

The Great Divide project, had a noticeably different character to the 'baseline' projects. The nature and scope of the briefings were clearly different and the revised project was characterised by a more focussed concern for user experiences. The project structure encouraged engagement with a broader range of issues and discouraged the framing of the design problems by the students in a narrow or superficial way. The ideas underlying the affective aspects of interaction with the designs were more clearly articulated through user profiles and scenarios-of-use which expressed emotional and cultural concerns. These were supported with diary notes, user-generated visuals and recorded anecdotes. The extent to which the students' design responses dealt successfully with the socio-cultural issues imbedded in their problems was varied. But we did find that many students were able to pursue these issues through their design work and produce designs in which their engagement with these issues was evident. In the examples shown here, the students expressed an over-arching purpose or philosophy which was a point of reference for design decisions. For a proportion of students, however, there was a gulf between the novel problem/idea framed early in the project and a designerly approach to finding a workable solution. Overall, the trial projects have served to extend the students, demanding a relatively advanced approach to understanding human needs and framing a design problem accordingly.

Discussion

The approach used in the trial projects was very valuable in the educational context. It challenged the students to engage in a deeper understanding of peoples' experiences with products. This approach also provided them with tools to explore and express these understandings, arguably giving them a better framework for linking ideas about peoples' experiences and aspirational needs to design decisions.

The breadth of initial scope in the trial projects and the emphasis on user's experience tended to instil in the students a priority of concern for their central conceptual design ideas. In some cases the technological issues were not addressed to the same extent as in the baseline projects, although both the baseline and trial projects were aiming at a similar level of technical resolution. Questions remain about the relationship between this educational experience and professional design activity. One of the aims of the design studio, as a learning setting, is to build experiences likely to connect with and support future work experiences in design practice. In comparing the former style of studio project with the newer type discussed in this paper, it might appear that the former style presents a design task in a way that more closely resembles a typical brief in commercial design practice. That is, a brief often originates with an organisation already committed to a particular type of product and market position. One might therefore question whether a project that seeks to identify an emotional need as a starting point for a design, without constraint as to the type of product, offers the most appropriate learning experience for a student. We would argue that the educational setting should be used to stretch the students' experience beyond the present norms of commercial practice. This approach positions the students so that they can be more flexible in their thinking and see beyond the constraints easily accepted as the "real world" condition. We are also anticipating future forms of design practice where the ability to respond to a wide range of human and social need is a core expectation of an industrial designer.

The level of involvement with users and user-generated ideas to explore affective issues in the trial projects is also not typical of professional practice. Subtle understandings of these issues tend to be seen as implicit in the expert designers' role of linking designs to people. The approach used in the trial projects may serve to give students a 'leg-up' in dealing with these kinds of internalised understandings in their design work. Another view is that students who can master these 'co-designing' tools may bring additional capabilities to their future professional work.

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