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EDUCATING THE FUTURE: EMBEDDING FUTURES THINKING IN THE DESIGN CURRICULUM

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ABSTRACT
Design education needs to recognise the changing world it services. The way that we live our lives is very different to that of our parents. No doubt the way our children will live their lives will be very different to ours. We exist in an ever changing world. Design education must recognise this constant change and develop long term strategies that enable designers to not only be aware of, but play a major role in this change. Futures thinking – the systematic study of the future – provides design with a structured approach to consider potential futures.

Keywords: futures thinking, design futures, scenarios, forecasting, backcasting, trend forecasting, horizon scanning

1 INTRODUCTION

This paper (i) outlines the main approaches of futures thinking, (ii) discusses their relevance to product design education (and practice) and, (iii) presents examples of futures led design activities. The authors will conclude with observations of how futures thinking can be assistive to design activities, and relevant to (product) design education.
Designers look into the future and attempt to envisage products and services that are required, desired and suitable for the needs of the user and the environment they occupy. Thus, the seemingly relentless change in society, popular culture, technology, and consumer attitudes is of prime importance to design activity. Without an informed understanding of the drivers behind the changes in our everyday life, designers face an uphill struggle [1],[2],[3],[4],[5].
The field of future studies provides a framework of concepts and methodologies that allow a structured consideration of the future. As a new field of inquiry, it allows the opportunity for systematic study of the future [6]. Futures thinking is a powerful tool that has much to offer to design including: forecasting, backcasting, prediction, trends, scenario building, and blue sky thinking. Design education needs to imbed an awareness of these approaches within its curriculum if future aware designers are to be developed.
The ways in which designers may employ futures thinking, and how they may embody potential futures through their output is an important consideration to design education. The ability of designers to envision and propose possible social, cultural, technological and economic futures is crucial to the success of their design activities [7].

2 FUTURES THINKING: KEY CONCEPTS

The field of futures thinking provides a multitude of qualitative and quantitative approaches for consideration of the future. Designers utilises these to augment and

inform design activity. The following is a summary of key futures concepts pertinent to design activity [8],[9],[10],[11],[12],[13],[6]:

- **Horizon Scanning** - Includes techniques such as environmental scanning, monitoring, and tracking for identifying, emerging trends and events of importance to an organisation. They vary in purpose, focus and utilisation. Consideration needs to be given to 'external' information from the widest range of media combined with 'internal' industry specific information
- **Forecasting** - A forecast is a simple or complex look at the qualities and probabilities of a future event or trend. There is a differentiation between a *forecast*, which is generally not point-specific to time or place, and a *prediction*, a specific, usually quantitative statement about some future outcome. Forecasting seeks to anticipate the future on the basis of historical and current knowledge and trends
- **Backcasting** - Forecast an event that will occur in the future and then ask the question 'How did this event come to be…?' The task is then to develop a scenario (or series of events) to explain how the proposed future might actually come about. Backcasting offers a way to get a group to envision a desirable future and then determine what must happen in order for the goal to be reached
- **Trends** - A general direction in which something is developing or changing. A trend is something that represents a deeper change than a fad. By definition a trend has already begun – its existence implies that it already has an inclination. A trend is spotted rather than created
- **Scenarios** - A descriptive vision of the future communicated by a narrative; a description of a sequence of events that might possible occur in the future. This is an extremely useful approach for design activity as it allows a simple or complex consideration of the future. In brief, a scenario is normally developed by: (i) studying the facts of a situation, (ii) selecting something that might happen, and (iii) imagining the various ways for that development to occur and the sequence of events that it might follow. This process helps to communicate the essence of a design idea within its probable context of use

The above, by no means an exhaustive list, provides a broad overview of selected key concepts associated with futures thinking. The following provides a snapshot of key methods and techniques of particular relevance to design activity:

- **Trend Extrapolation** - Uses past data to define a pattern of change and extends that pattern to project future developments. Trends can be projected into the future often on the basis of the recent rate of change showing where a trend should be at some point in the future, assuming there is no shift in the rate of change
- **Analogy Analysis** - Uses one or more analogous situations to project future trends or events. This is particularly useful in new areas of endeavour where there is no established benchmark or clear reference point
- **Impact Analysis** - A technique for uncovering and analysing the non-obvious, often overlooked, impacts and implications of various trends, events or decisions. It involves the initial identification of immediate, direct impacts and implications, followed by identification of secondary, and tertiary impacts
- **Content Analysis** - Identifies emerging trends by collecting, correlating and analysing information contained in newspapers, magazines, trade journals, etc.

The underlying concept is that the amount of information about a trend included in the selected publications reflects the probability and importance of that trend

- **Morphological Analysis** - Allows envisioning of new products and services by first defining the essential functions involved in current products and services and then postulating alternate ways for accomplishing each of these functions and new ways of combining them
- **Predict Next Years Headlines** - Project a company into the future, identifying how they want to develop and sustain customer relationships. Based upon customer-focussed research, these predictions can help clients to define which issues to pursue in product development
- **Nominal Group Analysis** - A group expert opinion technique that causes participants to use their skills in originating new ideas, evaluating the ideas of others, intelligently addressing differences in opinion, and rating a series of ideas according to agreed-upon criteria

An important focus of futures thinking in design activity is the need to uncover opportunities by exploring people's unmet and unarticulated needs and utilise this insight in design generation. The designer's capacity to envision and interpret social, cultural, technological, and economic futures is central to the success of a design led futures approach. Their task is to invent, discover and communicate ways to advance the collective sense making of the about what to do next [14].

3 THE RELEVANCE OF FUTURES THINKING TO DESIGN: EDUCATION AND PRACTICE

Design education requires students to be forward looking, however, the expectation is usually, though tacitly inferred, that the outcome will represent the 'next' iteration of the selected product area or user group. The 'design process' places emphasis on knowledge acquisition regarding the 'current' environment. Rarely is there a requirement to consider the historical development of the current situation to understand developmental patterns regarding a more significant extrapolation of a possible product. The activity and associated methodologies of a 'futures' focussed process requires a far broader view of the environment and a clearer understanding of 'where things have come from'. Additionally, the relationship of a product as an object that exists as a consequence of a wider more complex system, is far more clearly demonstrated, than within the more traditional 'product centred' approach to design synthesis [15],[16].

4 DESIGN LED FUTURES: CASE STUDIES FROM DESIGN EDUCATION

As a development of the traditional 'design process', futures based design activities can be placed within the curriculum relatively easily, but should be seen as a distinctly specialist activity, relative to a standard product development process. The following case studies describe two different activities. Whilst duration, level and outcomes are different, both activities utilised recognised methodologies and structures to develop the students understanding of the concept development activity within a speculative structure.

4.1 University of Central Lancashire, UK: Speculative Design Futures

The Speculative Design Futures module was originally conceived in 1998, as a device to force separation between the two courses of BSc (Hons) Product and BA (Hons) Industrial Design in the Department of Engineering and Product Design. It became clear

that there existed opportunity to also use it as a vehicle to explore and develop an alternative strategy to the traditional ‘design process’ led activity, regarding both methodology and output. Whilst the focus of the module is future forecasting and ‘referenceless’ design, a highly desirable consequence is the demonstration of a concept heavy design activity, evidence of which, by feedback from graduates, has been a significant addition to their portfolio when interviewed.

Speculative Design Futures is a double module, which runs year long (representing one third of final year credits). Semester 1 is used to introduce the concepts and principles of area definition, investigation, historical development, trend identification and forecasting, to arrive at a final ‘future’ scenario. Semester 1 activities are presented in the form of a ‘Template Manual’ a media rich document that defines the individual’s forecasted scenario and accompanying justification. As well as providing the assessor with a clear and structured review of the proposed future scenario, it provides the student with a self-contained reference manual for Semester 2 activities. This manual is submitted at the end of a formal viva based on activities to date at the end of the autumn term.

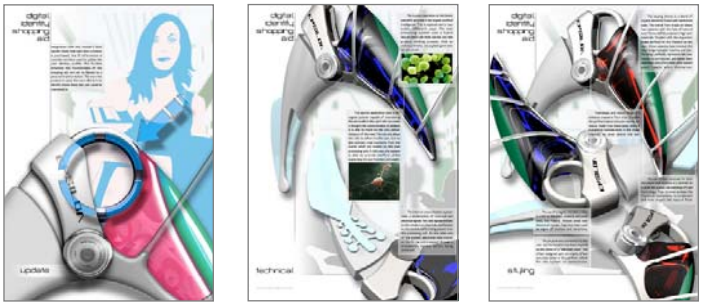

Fig. 1 Speculative Design Futures concept presentations

Semester 2 requires the student to creatively react to their defined forecast. Whilst the terms activities reflect the more traditional stages of concept generation and refinement, emphasis is based on group review and discussion and high volume concept generation.

The final proposal is presented, using presentation boards, a model of the concept and the Template Manual from the previous term. Additionally, the presentation also includes a ‘scenario’ board that sets the scene in terms of the overall future predictions and a justification for the resulting concept proposal.

Speculative Design Futures proves to be a challenging, yet worthwhile addition to the design curriculum at the University of Central Lancashire. Its success and relevance to both design education and practice had led to the adoption of future forecasting in the final year studies of all courses in the Department of Design (commencing in the academic year 2006/ 2007).

4.2 University of Salford, UK: Future Thinking - Envision the Future

In 2004/2005 2nd year BA (Hons) Product Design students in the School of Art & Design, undertook an eight week design led futures activity for their Design in Context module (representing one sixth of year credits). They were presented with a future framework and directed to respond in the form of a scenario – a written narrative that described the context of their proposed activities. This scenario would then be utilised as the vehicle for further design work. An extract from the briefing material follows:

You are required to provide insights to how we will live in the future, in the following three timescales: 2 years, 5 years, and 20 years. You will have to predict events and trends that you feel will occur. These predictions must be based on research that informs these 'visions'. What will life be like? How will we live our everyday lives? What will be important to us? Ask yourself questions like: What will we wear? What will we eat? What will we do in our spare time? Who will run the country? Who will be number one? What will be on TV? Will there be TV?

Participants were able to identify a self directed project theme and were required to address this theme during the identified timeframes. Key concepts including scenarios, forecasting, backcasting and trend forecasting were introduced and explored. The project output was in the form of (i) Short Scenarios and (ii) Image Landscapes, providing a visual insight of the future, for the designated three timeframes. Parts (i) and (ii) were utilised as the basis for (iii) Concept Insights - outline concepts for one of the timeframes. This was not a full design undertaking but a broad concept that would be appropriate to the future vision. Research was required to support all activities. Students presented written information in conjunction with visual imagery to convey a coherent 'story'.

Fig. 2 Future Thinking - Envision the Future concept presentations

Students performed a future orientated design activity within a scenario based framework. It acted as a trigger within the design process. As the project developed, the students output became more visual, but was still driven by the narrative scenario. Participants commented that the integration of written and visual information was useful to the development of the project. Whilst the use of scenarios was a new experience, students became comfortable using this to augment familiar design techniques.

5 CONCLUDING REMARKS

Traditional design activity relies heavily on an experiential reaction to a given problem or situation. A greater body of 'prior experience' provides the designer with a catalogue of response, whether that be mechanical solution or formatic reference. Within the context of student design, an instant dichotomy exists – a need to demonstrate creativity originality, limited by a relatively shallow experiential pool, based almost entirely on their reactions to the work of others. The 'futures' activity forces the student to approach the activity with a truly ' blank' sheet of paper. Individuals are required to confront the fact that they are unable to bring preconceived ideas or prior reference to the creative process.

Futures thinking utilises both qualitative and quantitative methods. Qualitative approaches can give us the *why* and *how*; whilst quantitative approaches gives us the *who, where* and *what*. Effective design led future activities need to utilise these research methods as an integral element of the design process. Establishing this approach in the

design curriculum is important as it provides design students, who will become design practitioners, with an effective tool kit to design the future.

The case studies outlined above were undertaken independently by the authors. They were not aware of each others activities but compellingly have developed equivalent approaches to introducing design students to the consideration of the future. The authors now form an integral part of a developing international network of design academics that are all undertaking related activities in universities in the UK, Australasia and the Americas.

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