ALIGNING INDUSTRIAL DESIGN EDUCATION TO EMERGING TRENDS IN PROFESSIONAL PRACTICE AND INDUSTRY

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ABSTRACT
Processes of creating wealth through new product development have changed in recent years. This is having an effect on the business of industrial design. The paper identifies several drivers for change in the UK. These drivers include recent government and non-governmental initiatives such as the Cox Review and the Design Council skills audit. The potential impact of these changes on UK university-level product design education, and specifically the employability of product design graduates is discussed.
Activities by the authors, design educators in the Department of Design and Technology at Loughborough University, to address the educational impact of the changes are described. These cover curriculum and programme development, new module teaching and learning, and areas of academic research. It is proposed that university-level product design education should become more evidence-based, be more user-focused, and ultimately graduates will benefit from becoming accomplished problem-finders as well as problem-solvers. It is suggested that such activities and changes are imperative to prevent university-level product design education to go into significant, possibly terminal, decline.

Keywords: Industrial design, product design, university-level design education

1 DRIVERS FOR CHANGE

In 2004 the authors embarked on a strategy to re-think the direction of some of the teaching and learning in the Department of Design and Technology at Loughborough University, UK. The underlying aim of this re-thinking was to ensure that students with an industrial design 'bent' are given the chance to be nurtured to meet changing requirements of industrial wealth creation and redistribution, and so continue to add value to the UK economy, and be relevant to our society. There were four particular drivers to this re-thinking.

1.1 Driver 1: Change in the professional design industry since 2000

At the turn of the Millennium, the design industry received its wake up call. The US economy was slowing down, large product generators were in retrenchment mode and the effects were impacting across the world. The Dot-Com bubble burst, 9/11 made international terrorism a global issue and stock markets crashed. After ten years of continuous growth and investment into an unparalleled diversity of ventures, the money supply started to dry up. Design was hit hard across all categories of the Marketing Services sector [1]. As a result some designers started to re-invent themselves and this is

exemplified by the British Design Initiative, which in 2005 licensed its assets and brand to a newly formed company; British Design Innovation, a not-for-profit membership organisation with a range of services reflecting the increasing focus on collaborative innovation by designers and industry. It believes that it is more beneficial to promote 'design-thinking' (creative knowledge transfer) than it is to promote 'design'. Promoting design as a stand alone activity to be purchased at the point of visual translation is consigning it to a commodity, and a largely aesthetic process.

On a more general note, and within a UK context, leading international product designer Dick Powell reiterated this sentiment when he commented that, *"It's a myth peddled by the government that the creative and innovative skills will continue to prosper"* [2]. At a debate staged in March 2005 by the Design Council as part of its Skills Campaign, the evolving role of design within a changing economy was presented as a central issue. According to Matt Hunter, head of IDEO London, his company was forced to take the necessary step *"from being about the design of products to being about design thinking in business"* and stated that *"product design is dying"* [2].

During a forum, held in February 2007, to discuss the findings of the report "Making the Most of Design Excellence: Equipping UK Designers to Succeed in the Global Economy" [3] Dick Powell seemed to re-enforce his views on design skills when he was reported as saying the words "*Be afraid. Be very afraid*".

1.2 Driver 2: Experience of how businesses are developing new products

The slowdown in the market exposed a fundamental phenomenon in industry and a serious weakness in UK product/industrial design. This was the shift from predominantly engineering-led new product development (NPD) to one of marketing-led NPD.

In the 1960s and 1970s, apart from a few leading luminaries working for visionary clients, the majority of industrial designers had to learn the language of engineering to be credible. The Carter Report reflected this phenomenon [4]. The accent was on downstream price reduction and ease of manufacture. In the late 80s and early 90s a dramatic shift occurred as businesses learned the value of brand strength and forming emotional relationships with customers rather than selling goods at cheaper prices. Suddenly the engineer became less important and the human scientist more so, as more clients became marketing-led as opposed to engineering-led.

Additionally, one of the authors has been working with clients such as Procter & Gamble, Diageo and British Airports Authority and has witnessed the large amount of activity that precedes the traditional designer receiving a brief. Some of these activities are described in Cagan and Vogel's excellent book "Creating Breakthrough Products"[5]. They refer to these activities as the 'fuzzy front end' to highlight the point that, typically, designers are only, at best, vaguely aware of these activities. More precisely these activities include stakeholder vision, executive level business and brand strategy and the management, at operational level of technology-led and marketing-led drivers. It is in these 'fuzzy front end' activities where the real commercial innovation and creativity resides.

1.3 Driver 3: Economic wealth is not only created by artefacts but also by systems and services

The economic slowdown also highlighted the fact that the West, and the UK in particular, had moved away from the design and manufacture of artefacts. The UK now 'does' computer games, the National Health Service, aircraft wings, tanks, music, aero

engines, food, education, financial services and text messaging [6]. Since the 1960s, industry has moved from factory-based manufacture to consumer-based thinking. In response to the diminishing contribution of the manufacture of artefacts, the British government now wants to instill a broad-base enterprise culture, using examples of excellence that include Richard Branson (Virgin Group) and Simon Woodroffe (Yo Sushi Japanese restaurants) as representative of innovative service providers. The rise of the entrepreneur as celebrity, through TV programmes like BBC's Dragons' Den, is another example of the new entrepreneurial culture in the UK. The Cox Review [7] highlighted the potential benefit to the UK economy from fostering this change.

This point is nicely made by that ubiquitous artefact, the iPod. This has been fantastically successful for Apple. But the real success is Apple's increasing dominance in sales of an entirely different product - music, in the form of digital information. This has been created by vision, strategy and a very high level of technology and management. Although important in the styling of the iPod, the (industrial) designer's role has been on the periphery of this significant development. The question can be: how many educators have asked students to design a rock band rather than an MP3 player?

Evidence and opinion suggests that the industrial designer's mind-set and skill-set are lagging behind and becoming less matched to the UK's increasingly developing knowledge-based economy. Industrial design students are still taught, by and large, to design engineering-led artefacts. This despairing and probably unfair (on the students) comment on the 2005 New Designers exhibition in London highlights the situation: *"...you can have gorged yourself on show after show of bent plywood furniture, over-engineered extreme sports equipment and domestic light fittings made of reclaimed milk bottles"* [8].

The conclusion is that there is a mis-match between higher education's product design curriculum and the skills and knowledge needed by an ever developing and increasingly sophisticated Western economy.

1.4 Driver 4: UK initiatives to promote science, innovation and creativity

HM Treasury has made very clear its desire to increase productivity within the context of the global marketplace and specifically, to compete with the rapidly rising economic giants, China and India [9]. The 2006 Budget cited as one of the five key drivers of productivity: *supporting science and innovation, given that increasing rewards to innovation mean that the UK's economic success will depend on its ability to create new knowledge and translate it into innovative goods and services.*

There has been much debate on the issue of skills in design and the role and responsibility of educators to 'supply' the design industry with an appropriate graduate skillset. The Cox Review [7] was one of the reports to initiate discussion and debate. This review was commissioned by HM Treasury. More recently the Design Council, along with the Design Industry Skills Advisory Panel, have continued the debate with its campaign "Keep British Design Alive" [10]. This campaign has looked closely at how UK design education, including university-level courses, needs to be re-shaped to take account of some of the changes inherent in the UK, and world, design industries. It is due to make recommendations to government in May 2007, in a Design Skills Plan.

The February 2007 Tanaka Business School report [3] also reflected on the state of UK design education and its relationship with design companies, making reference to design skills and the need to keep them up-to-date with global commercial activities and innovative practices. A response to the report was a criticism of the emphasis on

vocational skills. In a letter to Design Week [11], Baldwin argued that degree-level design education should be valued and supported as an intellectual activity, not just something which supplies a product to the design industry.

2 INITIATIVES AT LOUGHBOROUGH UNIVERSITY

The above drivers for change have led the authors to review the teaching and learning in their Department at Loughborough University. The authors' action research methods, through their work on new modules, modifications to existing teaching, and ongoing consideration of curriculum and programme changes have been part of their approaches to address the above issues.

It has been realised that one of the broad goals of the Department should be to help those people with an industrial design 'bent' to move up the value chain in line with the rest of UK wealth creation (obviously within the area of product design and innovation). It is believed that this is, crucially, about changing mindsets of designers from the now hackneyed 'solutions providers' to one of 'user led innovation'.

A simpler aim, within design education, is to improve those processes that are about identifying needs, within the NPD process. The belief is that if student product designers can be encouraged to search for new knowledge, become evidence-based and less vocational, to become more scientific in their approach, this will equip them better to move up the value chain of product design. In a sense, just as designers in the 70s had to learn engineering 'language' to enhance their input, influenced by the Carter Report [4], the authors believe that there should be a shift to such topics as psychology, marketing and even business strategy in order to leverage more effectively the designer's 'DNA' to create value.

2.1 Developments in teaching and learning at Loughborough University

A recent addition to the undergraduate programmes of the Department has been an elective module called User Led Innovation (ULI), chosen by second year students. It is within this module that the authors are introducing student designers to the new 'upstream' processes of commercial new product development. Brand research is an early component of the module. More specifically, this part is about introducing the concept of a brand-customer relationship, and how an organisation's 'products' can influence the nature of that relationship. Students undertake a brand investigation, to uncover and communicate the essential elements of the relationship. In a recent instance of this exercise the authors chose to have students investigate two UK financial organisations - banks. This was a deliberate choice of companies as their 'products' are obviously not traditional physical artefacts. In another exercise the brands under investigation were the big UK supermarkets.

The most significant area of teaching and learning in the ULI module is user research. Students develop knowledge and abilities in this, and learn how to link it to innovative, strategic thinking for 'downstream' designing. It has been realised that user research is essential for effective 'problem-finding'. Our students are taught to use some basic user research tools, mainly ethnographic observation and chatting/interviewing of people. Personal journals are used to record the material gathered and students work in small teams. The use of 'personas' is a recent addition to the module's teaching and learning. A critical stage in the process is the utilisation of the gathered research information to something that could lead to an innovative product. Techniques are taught to process the research data to generate insights into users' behaviour (within a given context), and subsequently to formulate a proposition statement.

During the second half of the academic year the brand and user research activities in the ULI module are practised in a live, company-led project. The authors consider that working with appropriate industry and commercial collaborators is essential for high quality student learning, and for the development of the module itself. We want to our students to benefit from the external, motivating input of external organisations, but we also want to learn about the companies' own NPD processes. In recent years the authors have collaborated on projects with Diageo (global drinks company), Amcor (global packaging company) and McCain (global food company). These companies are appropriate to the ULI module in that they manage, or work with, significant product brands and are known for their strategic innovation in product development. During a NPD project with Diageo a company brand manager viewed some of the students' user research material and made the following comments:
"The process of generating insight-propositions is exactly the sort of process we go through and want to see. ... We would pay agencies a lot of money for the work you have been doing and they would struggle to get into the depth that you have."
It has been recognised by the authors that some of the novel teaching and learning developed for the ULI module should be carried over to other parts of the design programmes at Loughborough. One of the design projects final year students undertake is the design challenge presented by the Royal Society of Arts (RSA) student design competition "Design Directions". The RSA briefs tend to be non-traditional, demanding some 'deep', strategic thinking and investigation prior to any design realisation. Within the teaching and learning that is built around the RSA project in the Department of Design and Technology students are expected to spend significant time investigating relevant issues, conducting user research, uncovering and communicating user needs, and presenting insights and propositions prior to design realisation. All Loughborough RSA design work must be accompanied by evidence; gathered, processed and communicated by the student. Loughborough students have enjoyed considerable success in the last three RSA competitions. Twenty-two students were shortlisted and five awards have been won, with several more students being commended on their work.

3 CONCLUSIONS

The authors perceive a need to investigate and instigate changes in UK university-level product design education, because of some of the changes which are surrounding commercial NPD activities. There is a need to change so that future product design graduates will have knowledge, skills and values which are more relevant to some of the ways in which commerce and industry are developing and generating wealth.
The authors' activities at Loughborough University include:

- Curriculum development to ensure that all student work completed on our BA Industrial Design and Technology programme is, as far as possible, fully evidence-based.
- Continuing development of individual modules which focus on the 'fuzzy front end' processes of commercial new product development.
- Researching processes of new product development by relevant wealth creators, and fostering partnerships between academia, practice and industry.

The authors strongly believe that these initiatives are vital to continue the valuable input of those people with an industrial design 'bent'. They advocate that if we do not move

quickly, our young people will become 'designersaurs', and that university industrial design departments will become equally extinct.

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