ARE ENTREPRENEURSHIP AND TRANSFORMATIVE INNOVATION APPROPRIATE AS PRIME FOCI FOR PRODUCT DESIGN CURRICULA?

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ABSTRACT
Should the teaching of business skills and knowledge within the context of Product Design BA and Masters-level curricula be focussed more towards entrepreneurship and transformative innovation than to professional practice and sustaining Innovation through enhancement? Are these pairings natural bedfellows or do the latter represent a partial 'dumbing down' of design education that would miss-serve an important minority?
Design education should prepare graduates for the realities of the workplace and therefore their major works shouldn't necessarily translate into market-ready products or entrepreneurial pathways. Graduates should be able to empathise, interpret and ideate through practical and intellectual skills which don't necessarily focus on paradigm reinvention. Are commercial acumen and market awareness worthy foils to entrepreneurship and transformative innovation given that the former are likely to ultimately offer a more relevant foundation for the majority of design graduates?
Whilst a broad understanding of the commercial realm, encompassing market awareness to disruptive innovation, can be taught together, should the fundamentals of commerce and the market be the mainstay of BA and BSc curriculums, with entrepreneurship and disruptive innovation being the crucible of Masters-level study? This paper will seek to establish appropriate strategies for design curricula via the analysis of a primary research study that canvasses opinion from educators, graduates, design employers and design managers

Keywords: Design curricula, entrepreneurship, commercialism, innovation

1   INTRODUCTION

How relevant is enterprise and entrepreneurship knowledge to graduating product designers, and in addition to the broad and detailed core design skills needed by these graduates, to what extent should an awareness of business and commercial practice be statute learning outcomes within university degrees? How should such teaching and its emphasis be balanced between entrepreneurship and a general awareness of business and commercial practice? Additionally, in parallel to such concerns over graduates' preparedness for the workplace, broader questions related to the nature of design teaching arise i.e. should design curricula be balanced more or less towards transformative innovation than to sustaining paradigms through enhancement? More broadly, given the changes in UK university fees and the possible creation of new institutions such as 'University Technical Colleges' for skills-based learning, should the 'transformative / sustaining' balance be related to different qualifications and timescales for learning?

2   ENTREPRENEURIAL SKILLS vs. BUSINESS PRACTICE

If the title 'Business Knowledge & Professional Practice' encompasses all of this important 'additional' knowledge, skills and experience needed by graduates (but still peripheral compared to their majority design skills), how much comparatively should be learnt through live projects, work placements and employment compared to that which is directly taught through lectures and seminars at university? Also; to what extent should such learning outcomes be balanced between employability, and an individual's interest in enterprise / entrepreneurship?
The usefulness of entrepreneurial knowledge could be more contextual than vocational for the majority of graduates. The popular perception of designers as entrepreneurs is not widespread but

through questioning (24 BA & BSc applicants questioned), it was found that applicants to undergraduate product design courses are aware, particularly through the popularity of the BBC's *Dragon's* Den series, of the connection between product design graduate expertise and entrepreneurial success stories such as Northumbria graduate Rob Law's *Trunki* children's suitcase. 37.5% stated that they understood that there was a link and that the opportunity would be there for them, but only 21% (of the total sample) stated a definite interest in pursuing such a career on graduation. Therefore, as a catalyst for students wanting to study product design and for motivating their subsequent studies, this aspect of Business Knowledge & Professional Practice is certainly more than just a sideshow, no matter what the student's interests or trajectory.

The emergence of individual undergraduate characteristics, which are inclined towards either the 'entrepreneurial' (in its broadest sense) or the judicious, leads academics to recommend, and students to envision, different professional roles within the design sphere. To adapt undergraduate teaching so that it parallels and presupposes students' results and perceived potential would of course become akin to streaming (thinly disguised as module choices). It would currently seem inappropriate to teach undergraduates design skills in this way, but if new institutions and qualifications became part of the UK's product design education landscape then a component of university's justification for coexistence could be such a separation of teaching foci and emphases.

It could be apposite to apply a similar type of curricula separation for the teaching of business knowledge and professional practice, i.e. a core module with 'satellite' options to cover such aspects of study as '*Entrepreneurship Skills*' or '*Manufacturing Management and Quality Control*'. These choices would be made by students (in Level 5) after receiving core Module guidance about selecting the most appropriate business knowledge and professional practice subjects for their career ambitions. Such expectations of future roles would not however be obstructively defining (as they would be, were they design project choices), but would simply be helpful in focussed applications, interviews and in employment.

In light of current Government policy and the activities of lobbying groups such as *The Association of Graduate Recruiters* (AGR), universities are now under more pressure than ever to *"...work more with employers to develop the curriculum in a way which embeds employability skills into every degree course."* [1] Therefore, engagement with industry and collaboration through the more focussed Knowledge Transfer Partnership scheme (KTP) may be the key to the survival for BA Product Design courses that don't have the STEM (Science, Technology, Engineering & Maths)-funded security of BSc and MSc study.

However, in order to fully connect with this process of industry engagement, the tension that has sometimes existed between academics and employers needs addressing i.e. the conflict between the less ruminant design skills needed by a sizeable portion of employers and the necessity for university curricula to educate students for the leading edge of the discipline.

3 RADICAL INNOVATION vs. IMPROVEMENT & ENHANCEMENT

Academic consensus seems to be that universities have a responsibility to educate their undergraduate and postgraduate students for the forefront of their chosen profession. However, the degree to which innovation and new product development is at the heart of design module projects is not always seen (in hindsight) as useful by some graduates (See Fig.2) who aren't at the leading edge of the profession, because the improvement and enhancement skills needed for most product development has to be learned empirically on the job.

This doesn't mean that curricula should be evenly balanced between the radical and the everyday, but the initial results of the DMU Research Study, outlined later in this paper, do suggest that some proportion of the time spent in specific design modules could be dedicated to more restricted example projects so that students experience paradigm reinvention briefs that for instance require redesigns for reasons of cost reduction, styling etc. Because such projects might not inspire undergraduates, 'improvement and enhancement' teaching could take the form of two or three-day design projects, or seminars with small group tasks.

In summation; given that designers graduate with different types of design abilities, interests and ambitions, to what degree should Product Design curricula be a balance between new product development and product development through enhancing existing product types?

Are the opportunities and roles for product design graduates changing and if so, how should design teaching at universities develop? As a result of the recent prominence given to 'Social Design',

'Design Thinking' and the concept of 'T-shaped designers' within business and mainstream media, the business world could be forgiven for thinking that the majority of product design activity and undergraduate ambition is focussed on multi-disciplinary and conceptually broad endeavours through the expansion of the product designer's realm into the likes of business strategies for customer care, or even into social policy for government. This expansion of the designer's professional domains is also, broadly speaking, a strategic response to a shrinking volume of 'traditional' product design work. Whether the success of Social Design is genuinely the result of 'insight superiority' or partly the success of the 'emperor's new clothes' is unclear, but undoubtedly, such activity is useful and thriving in certain sectors, as are more social / research-led, user-centred approaches to product design generally, particularly in education.

Such engaging additions to traditional core product design skills can certainly be appealing to students and staff alike, but perhaps for project-based teaching Social Design (as opposed to artefact / system design), Design Thinking is more the preserve of Masters-level rather than undergraduate-level design study. Product designers' strength should be in their deep expertise within the T-shape's vertical shaft and with an emphasis on business knowledge and professional practice forming a significant part of the T's horizontal rail. Whilst Social Design's focus on normative research could be said to broaden designers' skills and relevance across disciplines, too much undergraduate emphasis on such data gathering and analysis would result in too many 'insightful generalists' and not enough 'vertical' expertise if the importance of core technical and creative skills needed by designers do become eroded.

4   RESEARCH STUDY

The following data and analysis is part of an ongoing questionnaire and interview-based research study conducted by the author of this paper.

The data accrued from this study seeks to discover the consequence and inform the ideal weighting / balance of teaching business and commercial practice and entrepreneurship within undergraduate Product Design curricula. The study also seeks to assess the consequence of current and previous product design teaching (core design skills) and asks questions about product design graduates' transition between university and the workplace. Although relatively small (73 BA & BSc Graduates from six UK universities and 23 Design Employers & Managers [DEMs] at the time of this paper's submission), the sample size of the study's data continues to grow and will be summatively analysed in autumn 2011.

4.1 Business Teaching: Entrepreneurship vs. a General Awareness of Business

Graduates were surveyed from five UK universities and were questioned about their business knowledge and teaching, they were also asked to reflect on their preparedness for the design workplace on graduation. 73% of these undergraduates agreed that 'awareness of business and commercial practice should be an important part of product design education'. A further 27% thought that the subject was moderately important. None thought that it was unimportant.

Obviously, the skills needed for a graduate's first year in employment will differ from those needed two or three years later but the Design Employers & Managers (DEMs) believed that knowledge of (1) Design Project Management in the Workplace and (2) Business Practice were graduate designers' most important skills in addition to their design expertise.

The same respondents noted that (1) Design Project Management in the Workplace (2) Product Marketing and were the strongest skills shown by interns and new graduates.

DEMs were also invited to suggest (additional to the answer options) skills needed by graduates; the most common of these responses was 'teamwork' and 'client awareness' (the latter is an aggregation of "understanding clients" and "client awareness").
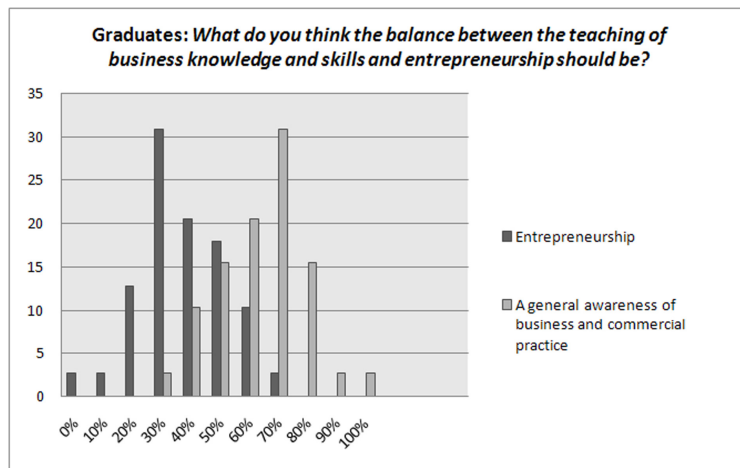
Figure 1. Business Practice vs. Entrepreneurship

In terms of the ideal curriculum balance between entrepreneurship and a general awareness of business, the most common graduate response for BA and BSc was 30% for *Entrepreneurship* and 70% for a *General Awareness of Business and Commercial* Practice (with 40% / 60% being the next most common).

50% of DEMs considered *Entrepreneurship* to be a subject worth teaching at all to undergraduate students and despite agreeing that all of the other subjects* were important, only 22% of In-House-based designers confirmed *Entrepreneurship* as being important. The reason for this correlation between consultancy-based graduate requirements and the importance entrepreneurship in the curriculum is as yet unconfirmed, but anecdotally the connection is most likely due to the following influences:

(1) The entrepreneurial nature of consultancies themselves (and the high value placed on entrepreneurship by their Owners' / Directors')

(2) The relative prevalence of entrepreneurs in each consultancy's portfolio / client lists, and the necessity therefore for the consultancy's designers to 'understand' their clients' mindsets

*(*Business practice, The design workplace, Design project management in the workplace, Manufacturing management/supply, Global, national & regional trade/markets, Product marketing*).

4.2 Design Teaching: Radical Innovation vs. Improvement & Enhancement

Obviously the differences between BA and BSc curriculums can be marked, but what was consistent in the feedback from DEMs was that broadly, graduate employees / interns from a cross-section of all universities and degree types, performed and under-performed in the same skills areas (with the exception of 'Sketching' of which BA were typically of a higher standard). This data was compared to graduates' own sense of confidence ('Confident,' Moderately Confident' or 'Unconfident') related to their skills and knowledge (See Fig.4). 34% of responses were 'Confident', 43% were 'Moderately Confident' and 23% were 'Not Confident'. 55% of DEM respondents confirmed that graduates were 'Under-skilled' at technical drawing and 'Appropriately Skilled' at sketching. 91% thought that 3D CAD modelling skills were of an appropriate level.
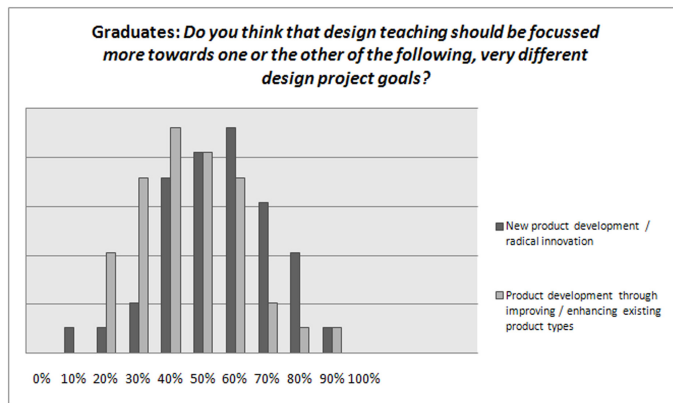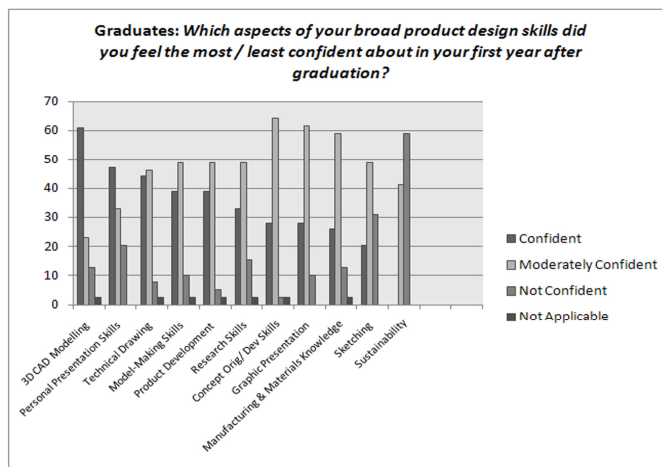
Figure 2. Radical Innovation vs. Improvement
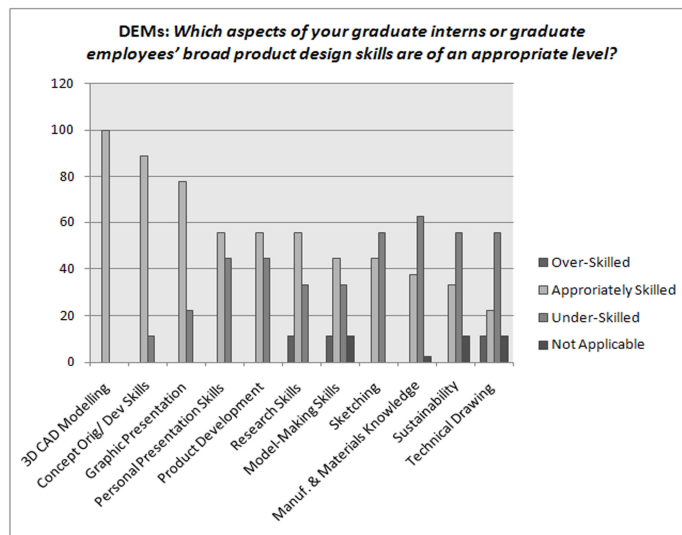

Figure 3. Graduate Confidence

Figure 4. Graduate Skills

REFERENCES
[1] The Association of Graduate Recruiters. *AGR Manifesto*, 2010.