

HOW ELSE MIGHT WE LEARN TO DO DESIGN? ALTERNATIVE VISIONS FOR FUTURE DEVELOPMENT OF SKILLS FOR THE PROFESSION

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ABSTRACT

In the UK some eighteen-year olds are avoiding the high costs of University and entering employment directly. Presumably some of these might be interested in developing skills as designers. How might Higher Education provide the development of professional skills for these people?

Disruptive innovation, coined by Christensen [1] forms a first influence. He asked why companies that concentrated on developing products that met their customers' needs were not successful. This was because their current customers were not the future customers. Christensen and others such as Utterback [2] investigated other industries before investigating education [3].

Threshold concepts and liminality of Ray Land [4, 5] form a second influence. In the process towards 'becoming', understanding moves to being. Epistemology becomes ontology.

A third influence is books such as *How to Design Cars like a Pro* [6]. Implicit in the title are the assumptions that the reader wishes to be a car designer and that they intend to imitate professionalism. Deschooling and silent design are other influential topics.

Several possibilities that might develop designers outside the mainstream of design education as practised in Higher Education are suggested.

Solutions are briefly posed. Part-time and virtual courses have the disadvantage of costing the same as conventional degrees. Separating the provision of qualifications from the process of developing skills is recommended. Solutions for developing design skills are divided into the pedagogical and andragogical, with the latter providing greater value for money.

Keywords: disruptive innovation, design education, professionalism, liminality

1 THE CURRENTLY ACCEPTED PROCESS OF BECOMING A DESIGNER

A three-year undergraduate degree, either a BA or a BSc is now perceived as the start of the normal approach to attaining competence as a designer. Following that, graduates are expected to practice as designers for a period of time before they are able to obtain full professional status, perhaps as MIED (Member of the Institution of Engineering Designers) or an equivalent level within whichever design organisation or society might be able to recognise such professionalism. By no means has this always been the way into the profession, and there are other possibilities that might be the way in.

Designers are always trying to invent and develop alternatives to the status quo, some of which might be deliberately boring, some of which very creative and some of which might even be deliberately provocative and challenging. It goes with the territory. Perhaps one of the most useful words in the designer's vocabulary is the short word 'else'. This paper starts to look at the 'else' in educational processes. What else might these other processes be? Educational processes and regulations have largely been developed from a combination of tradition and diktat, and there may be few reasons for the current arrangements. The attitude of the paper is investigatory and it is intended to pose more questions that determine answers, although some of these will be suggested.

2 THE BACKGROUND TO THE PAPER

There have been several spurs to the creation of this particular paper. The key question to ask is "Why should we bother trying to do anything different?" What reasons are there for even wanting to do it, apart from the designer 'else' simply because it's different? Some of these reasons relate specifically to design education and others relate to the more general topic of education as a whole.

2.1 Students moving away from university courses.

English University tuition fees have increased dramatically for the current academic year, 2012-13. Some 18 year olds feel that they have been priced out of the market. This has resulted in fewer university applications. The UK government sees this as the removal of higher education subsidies: that students are the main beneficiaries of education and they therefore need to be the main bearers of the costs, debt culture or not. The number of 18-year olds heading for university in October 2012 was down by 57,000. In 2012 the skills minister, Matthew Hancock, suggested that more young people should directly enter the professions through apprenticeship schemes [7].

Student drop-out rates from degrees are significant. In 2011, in answer to an innovation challenge, a group of design students investigated student drop-out, discovering that more than 100,000 drop out after the first year, that nearly one in four 18-24 year olds were writing off going to university because of fears of debt and that 22.4% fail to complete their courses. (The students failed to give their sources of information)

Several well-known figures such as Sir Richard Branson and "Dragon" Deborah Meaden never went to university. She says she thinks it is dangerous to counsel young people that university is the only way, and that learning on the job can be more useful, particularly if you are a practical person [8]. The rise in English University tuition fees provides an effective criterion for assessing the alternative ways of learning to do design: if they cost the student too much they need to be dismissed.

2.2 Disruptive innovation

This term was coined in the 1980s by Clayton Christensen [1], when investigating the computer disc drive industry. Why were companies that were close to their customers not successful? The answer that he got was that the particular market the companies were successfully selling to was not the future market and there were other more significant markets they were disregarding. In the early 1980s computers were largely used by big industries for big analyses. Bigger and faster was the game. They became everyday machines later, via machines like the BBC Micro and the Amstrad word-processor. Although commercial packages such as NASTRAN (Finite Element analysis) and SPSS (statistics) had been available since 1968 (for both of these), early emphasis was on programming and packages for business and personal use waited for the word processor and the PC - a totally different market. Christensen has also written on disruptive innovation in education and higher education in particular [3]. He posits that the appropriate disruptive technology is internet and virtual learning, and doesn't develop other alternatives. He primarily uses two case studies from US Higher Education: Harvard and Brigham Young University.

2.3 Meyer and Land's work on threshold concepts and liminality [4, 9-11]

Meyer and Land have developed the idea of threshold concepts. These are not necessarily the core concepts of a discipline, but are those that are likely to be transformative, in that they fundamentally alter the way a discipline is viewed, are probably irreversible in that once one has understood them it becomes impossible to return to the previous view of the world, are integrative, in that they tend to lend comprehension to the whole of a discipline, may define disciplinary limits, and possibly troublesome, in that there is difficulty in understanding them [9]. By grasping threshold concepts individuals start to 'become'. Understanding moves to being. Epistemology - the knowledge structure of the subject - becomes ontology - part of the being of the person. Discover threshold concepts for a discipline, and they could be assessed to identify those who have 'become'. Would concentrating on achieving these threshold concepts in design become a short cut to becoming a designer?

2.4 De-schooling society

This throws out the notion of structured education without throwing out the concept of education itself. Ivan Illich wrote a book of this name in 1971. He posits that self-direction, rather than universal diktat or universally-acclaimed knowledge repositories should be the arbiter of educational standards. In the foreword to the book he wrote:

Universal education through schooling is not feasible. It would be no more feasible if it were attempted by means of alternative institutions built on the style of present schools. Neither new attitudes of teachers toward their pupils nor the proliferation of educational hardware or software (in classroom or bedroom), nor finally the attempt to expand the pedagogue's responsibility until it engulfs his pupils' lifetimes will deliver universal education. The current

search for new educational *funnels* must be reversed into the search for their institutional inverse: educational *webs* which heighten the opportunity for each one to transform each moment of his living into one of learning, sharing, and caring. We hope to contribute concepts needed by those who conduct such counterfoil research on education--and also to those who seek alternatives to other established service industries [12]

In a later book he applies this principle to designers and design education.

Designers have been traditionally known as aesthetic finishers of ideas... Rather than serving as the reproductive organ of a consumer society, the designer mindset needs to be cultivated to create new methods and tools which enable people to become empowered and willing to actively contribute to the design of their life and community [13]

He initially applied "the reproductive organ of a consumer society" to education, but here applies it to designers: this has been taken up in co-design themes and processes. Rather than bemoan the lack of direction in structured education, Illich proposed alternatives, termed *funnels* or decentralised webs. These may provide a direction for some of the alternative answers.

2.5 How to design cars like a pro [6].

This book title assumes a degree of subterfuge. The implicit assumption is that the reader is not a pro, but that they want to demonstrate that they are indistinguishable from one. How can they do it? The other implication is that a degree of hands-on is required. The 'How to' assumes that the outcome is that the intended reader performs the design task - *please can I design a car?* Part of the answer is that no-one is stopping them from doing it: they simply need confidence to get on and do it, incorporating tricks of the pros in their work to fool people that they have been trained. The book is an inspirational showcase to inspire the reader rather than a how-to manual. It has little in the way of instruction and does not teach how an appreciation of three-dimensional form and surfacing can be developed. These are both hands-on, practical skills and a method of developing sketching is through exercises similar to those in something like Dick Powell's Presentation Techniques, originally written in 1985 [14]. Combining self-help books like this with the achievement of threshold concepts through decentralised webs or funnels might start to develop a different concept of an educational process.

2.6 Silent design

Peter Gorb and Angela Dumas [15] used this to signify design that is carried out, but not by design departments, trained design staff or external design consultants. It is design that 'just happens' but is nevertheless carried out by someone, unsung, who does the design: and who therefore becomes, by definition, a designer. Utterback et al state that only 19% of British Millennium Products were designed by an in-house designer, design team or an external design group. The other 81% were designed - but by *silent* designers. "It does not require industrial design training to do industrial design - and hence we have 'silent design' in which marketing, production and other staff contribute to design decisions, or are involved in the design and development work, even though they are not officially designated as 'designers'" [16]. Many people are in that position. Presumably those in this position no longer need to learn how to do design: they are already doing it. All they need is for their professional skills to be recognised.

3 POSSIBLE ANSWERS

3.1 Easy answers

Several people answer the question with something like, "It's obvious. What you need to do is to run *xyz*". The real answers might include *xyz*, but as *xyz* is relatively inconsistent, it would be worth stating some of the obvious answers before delving into what sometimes feels like the struggle to obtain a number of other possible solutions and directions for further thought.

The first *xyz* that is suggested is that of the part-time degree course. The results of this are effectively the same as those obtained from a full-time degree course, except, crucially, that the person taking the course is expected to be in gainful employment within a suitable capacity during the period of their degree course. Projects and exercises that are carried out on the course are usually assumed to be related to the work-based environment if there is an option for that to take place. It is accepted that this solution requires a considerable investment by the individuals concerned in terms of time, and the financial aspects of the process on the part of both the student's resources and the educational

institution are essentially similar to those required for the full-time degree. With a part-time degree it is anticipated that there will be some interaction between the students and their peers on the course, and this can rub off effectively on the other students.

The second *xyz* is the Christensen error [3] of assuming that remote, virtual study, is the answer.

Student interaction and resources for practical skill-based learning cause difficulties here, as does the need to provide effective distance tutoring. Alternatively, combine virtual and part-time learning.

The end result for all these solutions is that the person achieves a conventional degree, albeit without the three-year full-time constraint. There is no possibility to allow for any initial competencies and there is still the requirement to provide an educational institution with a large amount of money. So whilst they are answers, they do not meet the required first criterion.

3.2 Alternative pointers

Investigating alternative schemes led to an investigation of the Japanese mastery processes. John Singleton [17] describes what he calls situational learning, describing it as *Learning in Likely Places*. The book's collaborating authors deliberately avoided investigating educational establishments in the search for the 'how to' develop learning. Instead, they concentrated on three particular areas.

The first group of these is learning in the traditional Japanese arts – actors, artists, calligraphers. These use formal, structured apprenticeship processes, still take a long time and cost a significant amount.

The second group looks at less formal artisanal apprenticeships – potters, weavers, mechanics, doctors and violinists. These show more variation in method than the first, and there may be employment arrangements that make them more affordable. There are combinations of head-learning and more craft-like learning by example.

The third section looks at some diverse learning places: shellfish diving, a self-taught economist and bureaucrat, at the social learning that takes place at a public bath house, and developing self and community identities in participating in a festival.

These start to provide clues for how the learning processes might take place, concentrating on the learning process rather than the provision of evidence that learning has taken place.

4 THE REDEFINITION OF THE BRIEF

One becomes a designer by designing: one becomes an engineer by doing engineering. They are not simply knowledge-driven but occupational. Their communities of practice are not academia or research but are industrial.

There are two distinct components to developing an individual as part of a community of practice: firstly, how designers become formally recognised and secondly, how might designers be developed - with the assumption that as the end product they will be able to be formally recognised.

The key here is separating the certification from the education.

This principle could be applied to 18-25 year olds who have avoided university, people in design employment with no HE qualifications, those silent designers who are doing design without being acknowledged as designers, and graduates of other disciplines who wish to have their design abilities formally acknowledged. Kaufman, for instance, also recommends that education and what he calls credentialing should be separated [18]. But he is in the business of providing assistance to those who do not wish to either pay for degree courses or to spend excessive time taking them.

5 DEVELOPMENT OF DESIGNER ASSESSMENT SCHEMES

5.1 Assessment of what?

Coventry Centre for Excellence in Teaching and Learning (CETL) investigated the automotive design course at Coventry University to determine threshold concepts [19]. This did not pick up core concepts of the visual design discipline of automotive design such as three-dimensional spatial awareness and the confidence to challenge, but the toleration of design uncertainty. Osmond argues that without this concept students tend to remain in the state of known as liminality -

an in-between state of uncertainty and insecurity in which they do not enjoy full community membership status and struggle both to make sense of the underlying episteme and also to find their own creative identities as design practitioners [19]

Osmond does not answer how to demonstrate toleration of design uncertainty but suggests some students might have obtained it before starting their courses: design education confirms them as designers rather than teaches the process of becoming.

This threshold concept may be demonstrated by silent designers. Much design knowledge, including threshold concepts, becomes part of the designer's subconscious vocabulary and part of that 'designerly' thinking that they develop [20]. The subtitle of the book is the design process demystified, and though it deals largely with solution-led design there still seems to be a certain mystique involved that remains opaque to non-designers. Susan McLaren includes a list of bullet points to identify such thinking [21]. This reflects a mindset rather than a testable set of abilities.

Kaufman [22] might provide clues as to the *what* of assessment, in that he suggests it is relatively simple to obtain subject head knowledge by locating and analysing the significant literature of the subject. Doing this for business, he suggests, identifies its five key principles. He would probably identify a similar approach for design. He also adds the need for skills practice and demonstration.

5.2 How to assess?

As designers are creative individuals the formal examination or report has little appeal and in any case design skills are not examination techniques or verbal skills. Extreme suggestions here rang from developing a stage sets, six impossible things and trial by customers. The least painful and most helpful might include self-assessment regimes, structured tutorial interviews and portfolio clinics. Flexibility is deemed to be an important criterion.

5.3 The position of professional institutions

The Professional Engineering institutions, under the UK Engineering Council, have granted post-nominals to individuals with appropriate engineering qualifications and experience. Chief among these are those for Chartered and Incorporated Engineer (CEng and IEng). They used to provide examinations as an alternative to conventional degree qualifications. Those who do not have accredited qualifications are now able to provide evidence of their technical standard through the technical report route. This indicates willingness on the part of professions to separate certification from education. It is recommended that a similar route be set up for those wishing to join the design profession. For these routes a candidate has to carry out a gap analysis between published standards, either in the UK Standard for Professional Engineering Competence (UKSPEC) [23] or a similar document determining technical design competence, perhaps using a technical design portfolio. This would allow silent designers to gain validation and obtain recognised professional qualifications. It would effectively separate education from certification.

6 DEVELOPMENT OF A DESIGNER DEVELOPMENT SCHEMES

There is also the need to consider ways to provide the education aspect for designers in a more cost-effective manner. These divide into two significant areas.

6.1 Pedagogical processes

These rely on the teaching process. They tend to rely on existing educational institutions, professional tutors and class-based or virtual methods. They tend to require the significant fees that educational institutions decide are the appropriate entry to all the professions and as such they have essentially been discounted from being effective solutions to the problem as posed, although there may be shorter, cheaper versions to develop key skills that can form part of the process.

6.2 Andragogical processes

The term andragogy might be unfamiliar. They focus on needing to know, problem-centred, non-didactic and self-managed learning. Andragogical learning may include on-the-job processes, learning contracts, use of mentoring, the development of an interested, dispersed community, support networks that may be informal or formal, tacit understandings, the development of skills, learning as fun or a hobby, subconscious learning and learning accidentally. In terms of design, this will include learning by doing design, being inspired by example and copying excellence.

These processes seem to result in the most useful development of alternative methods to develop design skills. Kaufman [18] reckoned that his self-taught MBA equivalent cost him \$1.50 as opposed

to \$15,000 for a traditional MBA course. He is, of course, exaggerating, but even so the value for money of the do-it-yourself option is significantly better and is much less risk than the full-cost option.

7 CONCLUSIONS

The best answers to the posed question seem to lie in the uncoupling of designer validation from education, together with the development of andragogical learning processes. Processes such as Technical Portfolios, reports and interviews result in personal accreditation.

Informal and self-assessment need to take place augmented by tutoring and mentoring at early stages so that programmes can be tailored to individual requirements. Stages in professional development could be determined by competencies and learning contract-type or work plan arrangements to develop movement from one level of competence to another.

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