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TAKING ON AUSTRALIAN INDUSTRIAL DESIGN EDUCATION: CURRENT PRACTICE AND FUTURE DIRECTIONS

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ABSTRACT
There is much international discussion regarding the role of industrial design in a rapidly changing world. Immediate employment needs can lead to a focus on design skills and knowledge needed today. However, we also need to predict the needs of tomorrow, and recognize that industrial design exists in an increasingly complex environment, with increasing demands for cross-professional links and knowledge. Shifts in practice have required design education to restructure, often as add ons and patchwork solutions and more rarely as brand new programs where the old emphasis upon skills is only faintly seen. Different education institutions, programs and practitioners have responded differently to these challenges and diversity proliferates. University educators find themselves in a period of reflection and renewal with competing factors vying for dominance. While there is no single solution, the authors propose a conceptual model that helps explore the strands in the complexity and construct a way forward that privileges clarity and dialogue.

Keywords: Design future, design education, curriculum

1 INTRODUCTION

Luca left university in 2007. For some years before his graduation he had been a joint owner of a small studio doing contract design work in Melbourne. With his study completed he could now devote all this time to building his business. However soon after his graduation he landed a job to work in the design studios of a big automobile manufacturer in the city. He and his partner decided to close the studio and referred their clients to a competitor firm. He was just completing a year at the auto design company when the global financial crisis arrived in Australia and he found himself without a job. He was back on his feet soon enough and now works with an entertainment company as a marketing executive. He says he is learning heaps in his job and is enjoying his work. (Luca Abate, Graduate 2007, approved biography)

Luca's story is typical of a design graduate who enters the work place to find he has to be nimble and be prepared for the unexpected. Many design graduates have a similar story and what is significant is the realization this brings; one, that a design career can mean a quick succession of diverse work environments, two, that there is no one job for life and three, that there is no one fixed idea of the work place such as a studio or R&D of a big company that may have been taken as a given in the past. From within academia there are two ways to look at this phenomenon – as an aberration or as a regular occurrence. The former perspective privileges product design in education and the latter transforms the university program in design into a place for knowledge acquisition. In the latter we enter into rarefied territory of the very purpose of university. We, as university academics, will get on with the job and but we do realize that there is a chasm between the way a university program thinks and the way 'industry' thinks (industry here means the members of Design Institute of Australia [DIA] or the practicing product designers) about the design curriculum. So while this paper is an attempt to bridge the gap between university education and industry, it is also a window into a research project that looks at the future of Australian Industrial Design education. We do this in a particular way; first we set out what the industry situation and the university situation is, then we discuss some texts by 'industry' and finally we propose a triad as a research framework for constructing the negotiated meaning and purpose of design.

2 THE BACKDROP TO THE INDUSTRIAL DESIGN CURRICULUM

From being a significant producer of products in the 1950s for local consumption and export, Australia has seen a shift of its manufacturing facilities to China and other economies offering lower production costs and "*as local manufacturing has withered over the last 25 years the businesses that have flourished are those that are in niche design areas*"[1] . This shift has led to a situation today where the Australian brands survive but their products may largely be manufactured overseas.

The impact of the current Global Financial Crisis is another phenomenon reducing the local and international demand for products with the related impact of staff layoffs in product design and development workplaces [2]. The design professional is therefore often faced with the stark options of moving overseas to find work or to stay and seek alternative work. Those staying have seen a steady decrease in work opportunities in product design and have increased their employability beyond the narrow confines of design for manufacture by discovering new applications of their skill and knowledge.

While traditional skills like free-hand sketching and rendering still have a role, today's industrial designers are also expected to be competent in the use of new and emerging technologies. Computer aided design, the use of related computer software and the use of rapid prototyping technologies have all revolutionized the way industrial designers are trained and function. Industrial designers like most other technology orientated professions are being taught to work in a more fluid and complex environment where to stay relevant they have to constantly upgrade skills and change their ways of work. This coupled with a need to be able to work with other specialists and have an understanding of other knowledge areas makes it possible for the designer to contemplate changing jobs and carry over the skills and knowledge acquired for a career in design into related areas.

Internationally there are new design programs especially at the postgraduate level, offering specializations in for example; Interaction Design, Service Design and Sustainability have contributed to an ongoing debate defining the abilities and roles of the industrial designer. This international trend adds to this debate about the very need for a product design focus. As the decrease in manufacturing's contribution to National GDP along with a corresponding increase in the contribution of services [4] makes the case for an undergraduate curriculum that includes Interaction Design and Service Design. University programs in Australia, that have large numbers of students who would all need design jobs upon graduation, routinely question the ability of their curriculum to prepare students for a career in design. In such an environment, where the academic agenda accommodates the graduate designers' need to have skills they can carry as they shift from one work situation to another often entirely different one, the traditional product design curriculum becomes especially vulnerable to change and transformation.

While there has been substantial and continuous change in the work situation of designers the universities themselves, has changed too. From early beginnings as vocational institutions, which moved to a university status during the educational reforms of the late 1980's and early 1990's, Australian industrial design courses are now mainly offered in university contexts. There has since been 20 years of adjustment and refinement as vocationally orientated industrial design sought a place in a university environment. In this environment, the discourse is not just to provide industry ready workers, but to focus just as importantly upon knowledge education. Industrial design education is not isolated and is subject to the same changes that universities themselves negotiate. It therefore becomes important here for us to take a look at what is happening with universities and the related paradigm of practice that impacts upon industrial design programs.

3 THE UNIVERSITY INTRUDES

In the Australian system, a significant proportion of university funding is linked to student numbers where the number of university places is not determined by the size of the industry or available jobs but by university management's budget considerations. As a result there has often been a push to increase the intake of students in courses of design. A significant proportion of students, 26% of students enrolled, in the Australian higher education sector are from overseas with the majority being from Asia and a smaller number from Europe and the Americas [5] Increased numbers of international students in the classroom raises issues of communication (teaching students for whom English is not a first language) and culture (engaging with students who have different cultural aspirations and aesthetic sensibilities). Added to this is the Australian university's policy response to globalization with the insistence that all students are to be encouraged to go overseas on exchange, to travel and

acquire an international approach to knowledge, at least once during their university study. Students who travel and study in an overseas university for a semester or longer, bring back rich new perspectives, experiences and ways of working. All this makes the classroom or design project group very diverse and quite unlike homogeneous and small studio classes of the past. Projects that are set for such a group can range from the easy, where diversity is handled as the lowest common factor, to the challenging, which has the risk of alienating the less able or unengaged.

While these changes affect students in all disciplines, they have particular impacts in the design setting. The universally preferred face-to-face nature of the design classroom still exists but the one-on-one relationship with the student is no longer always possible. This has meant that traditional design education, which assumed trust and was based upon the apprentice-master model, has had to change and education has become more explicit and formal. There is tension now in the teacher-student relationship which impacts upon goals, so achievement targets can get set low to avoid future disagreements and complications. Added to this is the fact that it is not uncommon for Australian students to be engaged in twenty hours-plus paid work during their studies and this compromises their ability to completely engage with their projects. Even though most Australian students defer payment for university courses to future tax payment plans they often need to support themselves by earning some income during their studies. Though many find effective ways to complete the work and stay reasonably detached teachers have often responded by constructing projects to be more task-centric with a high focus upon analytical problem solving (which takes less time) where in the past it may have been innovation orientated (which is cyclical and relatively time consuming).

4 THE CURRICULUM FOR DESIGN EDUCATION

From the last section we see that the profession that product design now trains its graduate for has changed from being a fixed notion of a ‘studio’ to a more uncertain and negotiated work situation defined anew periodically by the graduate’s interests and abilities. Added to this is the fact that the teacher’s relationship with the student, both in the class-room and outside, requires a lot of care and attention. These two key factors provide particular challenges and opportunities in the negotiation of which the curriculum emerges – as a constantly changing and negotiated artefact.

Just like in the students life-situation the staff in universities also confront change. Their jobs are described differently and have now got to show ‘research’ in their ‘practice’. Staff are expected to engage in research and where required upgrade research qualifications through higher degrees and PhDs. It is natural therefore that the passions and explorations in their research leaks into the classroom and this happens in a few different ways: One, staff may become more theoretical and this changes industrial design courses, from being more practical to being more about reading and text submissions, term papers and essays are common these days, which consequently leaves less time for 'real' design projects. Two, as a result of their research preoccupations staff may withdraw from professional design communities and become more involved in university communities. Three, staff may become more concerned about what is going on internationally in design and end up focusing significantly upon long term issues and agendas such as sustainability. This may inhibit engagement in dialogue with the pragmatic issues and concerns of the professional design community.

With this background in place, we now turn our attention to the commentators who write about the design scene in Australia. One writer in particular[6] has highlighted in his writings a key issue from the perspective of the ‘industry’, which is their dis-satisfaction with the skill levels and quality of designers graduating from Australian universities. On the other side in the international context Australian graduates have been compared favourably with their US-counterparts, particularly in regard to skills for manufacturing. In a recent interview Rob Curedale, an Australia trained and now US based Industrial Designer, mentions that employers in the US see the Australian trained designer as one who comes with a robust practical approach that is engineering-like in its ability to think, design and almost simultaneously incorporate manufacturing considerations. "*Australian and UK Industrial Designers tend to have a better knowledge of manufacturing, engineering and global design trends than many US Industrial Designers. Overall Australian design schools are seen traditionally to have a greater emphasis on model making, developing CAD projects as rigorously detailed exercises and in quizzing students about their projects for their working out of the process of manufacture”*[7].

Robertson sees tertiary design education standards in Australia as deteriorating and listed commercial relevance, production skills, work experience, business training, quality, computer skills, teaching

staff and competence, as the top ten issues of concern [8]. He suggests a systemic overhaul is required to remedy deficiencies in the level of manufacturing thinking and CAD skills. At the time of writing we are awaiting the release of a review of design education in Australia by the DIA. In essence a focus upon manufacturing in Australian Design education is a significant strength and there exists a fear/ apprehension of the erosion of the fundamental character of Australian industrial design talent. It is this perspective that lays a criticism at the Australian university system where he states "*Beware of funding initiatives that continue to drive an overheated educational sector without addressing the employing industries*." [9]. However, too traditional and narrow an understanding of the potential employment applications of an industrial design qualification can lead to an overly pessimistic forecast of employment prospects. There is an acknowledgement of the benefits of increased graduating numbers of industrial designers from the same commentator where he states that a *"flood of graduates was far from a threat to design but was an opportunity for the future"* [10].

A more objective measure of success for tertiary education is the extent to which graduates secure employment in the field in which they are qualified. Individual design schools vary in the extent to which on-going networks with graduates are maintained, and most rely on anecdotal understandings of successful employment. However both discussions with alumni and a reading of the text of interviews in the design press indicates that the diversity of design job descriptions is very large and growing. Overall it appears that employment prospects are good, but the range of employment types is very broad and growth of career opportunities is in emerging, rather than traditional areas. In fact product design and design for manufacture jobs are hard to come by and the fact that design schools give students many alternative pathways of careers is useful. Some of these jobs are difficult to recognize as industrial design roles, with little or no emphasis on design for manufacture, and requirements for different skills and abilities in the graduate.

Which brings us to the basic question about the curriculum? Ultimately universities face a fundamental question of what capabilities to train and educate for. Should they have a curriculum largely dictated by professional representative bodies or current employers? Or should they instead, have a visionary curriculum that responds to emerging needs and seeks to meet societies' needs in the future? In industrial design, this question is particularly complex as the role of the industrial designer is in flux. Design education is influenced by global changes which are mirrored in employer expectations of the graduate 'product'. The changing environment means industrial design is in the midst of "*a major paradigm shift that has resulted from expanding its influence to new subject matter and exploring new ways to think about the modern life*." [11](REF - Kwon (2007) Within this context, design practitioners, design theorists and educators are engaged in an international discourse about the role of design education. *Curve* [12] had an issue with a design education focus. And authors such Buchanan 2001[13] Friedman 2000 [14], Yess, Michlewski et al 2007 [15], Zec 2007 [16], Yang, M.-Y., M. You, et al. (2005) [17]. While responses differ, there is an acknowledgement that design education requires restructuring to accommodate and reflect these changes. And therefore we have a need for an inclusive model to facilitate a collective understanding (dialogue) where traditional product design and new dimensions including frequent job changes are accommodated.

5 NEGOTIATING DIVERSITY

The challenges impacting on the industrial design profession, and the consequent demands on industrial design education, are complex, mutable and inter-dependent. The range of stakeholders involved is likewise diverse – including government funders, existing and potential employers, students, teachers, academics, design professionals and members of the public. While there are no simple solutions to the question of what the role of an industrial designer should be, and as a consequence, how universities should best educate industrial design students. It is possible to begin the task of writing the narrative of what design trained graduates can do. Therefore a shared understanding and ongoing dialogue is crucial to the continued development and relevance of industrial design practice, and that this will continue to evolve through engagement with the curriculum of design education by teaching staff in universities.

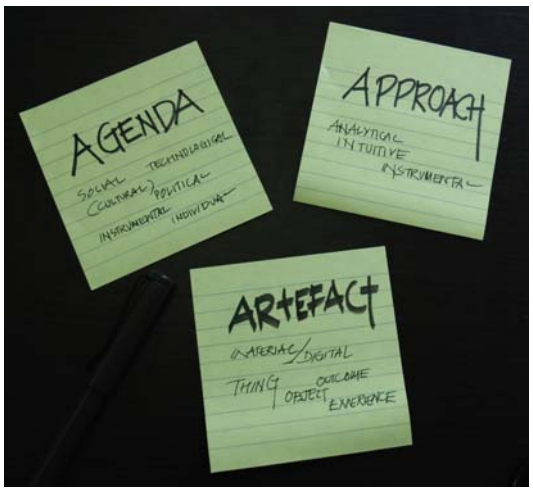

Figure 1. Agenda, Approach and Artefact model.

With this goal in mind, we proposed a conceptual model that could be used in working our way through change, both current and future. The authors see this model as potentially useful in helping to clarify the issues and enabling shared understandings and as a means of developing a way forward with various stakeholders. In multifaceted complex problems groups can be bogged down by issues of meaning and or agreement on what the issues actually are. Therefore , if we can get stakeholders to agree on aspects of these three components we can then develop a dialogue and agreed understanding to use in the process of designing a future together.

The model (Figure 1) is a triad made up on the 'agenda', the 'approach' and the 'artefact'. One, the Agenda – (Why design) refers to the purpose. In the case of the curriculum this becomes a way to think about and share a goal for education. In contemporary design education we are witnessing the strong emergence of a social agenda (sustainability, poverty and service design) even as the technological grows stronger (with off shoots such as interaction design). This needs to be reconciled with the traditional design for manufacture agenda espoused by many in the industry. Two, the Approach – (how to design) refers to the way design is to be done. For a long time design has been content with tacit knowledge of the approach used in design - and referred to it as the design process. Contemporary writings in method have put more explicit tasks and analytical thought processes into the idea of the design method or process. The way to develop a product still continues even as other practices emerge for the design of digital tools and services. The engagement with the approach will ensure openness about method and the inclusivity to emerging ways of thinking, visualizing and working. Three, the Artefact – (what to design) refers to both the material object or non-material outcome, that is to result from the design project, and the knowledge domain that constitutes a professional specialization. It is here that we begin to see areas such as product design and furniture design being joined by interaction design and service design. It is possible that the way into the future is an eventual decoupling of the artefact from the approach so that we appreciate that the same artefact can be arrived at through different approaches. It is imagined that in time this triad as a research tool, in the PhD of one of the authors, will build a body of knowledge and diversity.

6 CONCLUSION

There is no doubt that we are in a new era of change and uncertainty and this impacts upon the future of industrial design. There is also no single definition of industrial design or shared understanding of the capabilities of industrial designers. This has been reflected in both the evidence within the literature and our own experience and reflections through our immersion in design education and close relationship with industry. This allows us to be exposed to and made aware of, the changes taking place locally and internationally. There will always be a need for the mass manufacture of products/objects and people to design them, but there is also a growing need and future prospects for other specializations influenced by industrial design. Australia has a role to play in the education of industrial designers for both domestic students wanting to be able work locally or overseas, and to educate international students to contribute to their national manufacturing economies.

In this paper we have discussed a simple model which moves away from an 'us and them' dichotomy and facilitates collaboration and communication across various stakeholders. The model is proposed as an instrument in a research project to facilitate discussions that reconcile the perspectives of traditional industry employers, peak representative bodies, the graduate designers and also those of new and emerging employers. Further tailored research is required to both refine and apply such a model to this problem as part of the continuing overall research question; what of the future of Australian Industrial Design education. In the end Industrial Design education is not just about how to service the current needs of the manufacturing sector but to educate for an understanding, an ever changing context of knowledge and skills, and through this to educate and prepare graduates for a changing world environment.

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