Dr. Rohan Nicol, Niklavs Rubenis
Australian National University

Crafting Connected Knowledge: Collaborative and Problem-Based Pedagogy for the Studio Craft and Design School.

Keywords: Problem-Based Pedagogy, Complexity, Studio Craft & Design

Introduction

This paper examines the studio C&D disciplines at the ANU SoA, and focuses on the pedagogical challenges and opportunities we currently face and how we have responded through curriculum reform. We will firstly look at the contextual issues that motivate this work by reflecting on our recent experience in which the five C&D workshops of Ceramics, Glass, Gold and Silversmithing, Furniture and Textiles, have undertaken a project of review and commenced an innovative process of program renewal. Specifically our discussion will outline and critique a new undergraduate course titled 'Multiples and Production: The Unique Offering'. This will enable an evaluation of the rationale and impact of expanded approaches including problem-based pedagogy for studio craft and design education, and highlight the significance of these to refinement of our teaching and learning programs.

The work to be presented has been undertaken to reconcile media based C&D disciplines within a rapidly changing and evolving world and educational system. It is important to examine the project of studio craft and design and its pedagogical structures for their distinct capacities and limitations in contributing to this new and emerging reality, and to recognize the challenges arising in preparing C&D students for practice in a shifting and increasingly dematerialized world. Throughout this process we interrogate existing C&D practice, research, and pedagogies for their ability to engage with the various challenges, crisis and complex problems that face all of those currently operating under the broad umbrella of design.

In a time when collaborative and cross-disciplinary approaches are frequently presented as the only way forward, we present an argument for the value of deep media based disciplinary knowledge (craft disciplines) as a key element within an ecology of practice and research. This approach is framed and justified by the work of Cutler and also Throsby, enabling us to conceptualise C&D at the center of an innovation system together with art, where core original creative content emanates,

before it is coopted into wider circles of applied and/or commercialised forms of distribution. In this central position C&D is also an important contributor of scalable solutions for complex distributed global opportunities and problems.

Within this discussion it is vital to recognise the elephant in the room, which is the challenge of maintaining media based programs that require small classes, intensive one-on-one tutorials, extensive infrastructure and time, and specialist teaching and technical staff. This reality presents a cost disadvantage for media based training, relative to other creative disciplines, especially those that are digitally based. We offer solutions to this challenge and present an expanded approach incorporating blended modes of delivery to complement more 'traditional' studio based models, including the use of a flipped classroom, where students are exposed to learning material prior to class. This approach attempts to mitigate a number of the issues identified throughout this paper and provides important flexibility for opening out subject matter through a problem-based curriculum.

The issue of student load will remain, while funding metrics continue to provide insufficient recognition of the cost differentials in facilitating education and research across the tertiary sector. Yet the curriculum shifts outlined respond to this challenge and provide a way to tailor media based training with the metrics of our core business. Despite these challenges we will outline a case for the continuing value of the studio craft and design disciplines in authoring and understanding our artificial landscape. It is important work as this is the location where the majorities of our world's crisis emanate or resides, and as we are in the business of training practitioners and researchers who operate in this terrain, it is vital to foster alumni that understand design as a contradictory discipline as both part of the problem and part of the solution (Rubenis 2015).

Shifting From Bauhaus

The C&D workshops at the ANU SoA are media based disciplines that have roots in the traditional crafts and manual industries of the past. Significantly these are the last set of studio craft and design education programs in Australia that remain completely intact, enabling students to major within one of five workshops. The set of concerns and values around which they have established an international standing remain, and can be traced back to the emergence of the modern studio craft movement that surfaced internationally after the Second World War and later flourished throughout Australia in the 1970's. It is widely known that the ANU SoA was established on the

Bauhaus pedagogical model and still operates in that form today by continuing to include features such as the foundation year – the practice of art as the underlying matrix to all disciplines – and the authoritative role of a 'Head of Workshop' (Agostino 2009, p.27). Australia and the world is a very different place from the 1930's height of the German Bauhaus, and the 1970's that saw the flourishing of the Australian C&D movement. The 21st Century has witnessed the continuing transformation of our spatial and temporal existence through rapidly evolving digital technologies and environmental degradation, amongst other urgent concerns, as the world has increasingly become industrialized and globalized. In relation to previous design movements such as the Bauhaus, Stuart Walker puts forth, "The issues and agendas to which they were responding are not our issues and agendas" (2006, p.9). Craft-based educational models largely remain bound to past models, and fail to offer the promise of change and in the face of pressing challenges, beyond a fixation with rote formal and frequently material concerns, particular to a given discipline.

Craft, Design & Crisis

Despite the Australian (and worldwide) resurgence in anything and everything craft – especially beer – and the well-documented rise of numerous craft-based micro enterprises and cottage artisanal industries (Crafting Self n.d), it is clear that the separate project of studio craft and design education in Australia is in crisis and perhaps decline. In recent years C&D programs across Australia have been discontinued, amalgamated or rebadged as electives within larger homogenous programs. The challenges faced are many and some of these are flagged in the call for papers to this conference and include the impact of "… a globalized and hyper-networked 24/7 culture. Institutional and government policies … and calls for wider impact and productivity" (ACUADS 2015).

How we respond will be telling and it can be guaranteed that old models will not do the job. New and enterprising approaches will be at the center of this shift and academics must orchestrate fluid connections between the academy and the world to remain relevant and employed.

Conditions For Change

The ANU SoA C&D workshop facilities and infrastructure are excellent and enable learning, teaching and research that is world class. Most students have their own workspace, generous access outside class time, and benefit from a continuous stream of international visiting artists who are attracted through a range of initiatives

and onsite accommodation. Many of the workshops have exhibition spaces that compliment and extend both teaching and learning activities as well as outreach. Some workshops have also developed collections. These consist of work from students, visiting artists, alumni and staff, which are a valuable resource for learning, teaching and scholarship.

The independent workshop facilities enable manual modes of production and are complemented and extended by a comprehensive suite of digital tools enabling the development and production of content. Laser, computer numeric control (CNC) and digital printing are all available, as is the software for specifying work. This is fertile territory for problem-based education providing students an opportunity to roll up the sleeves and engage with materials and instigate modes of production that are rarely available in any other setting (Kolb 1984).

The degree to which digital tools have been integrated into the C&D learning and teaching has been sporadic. Early adopters included Gilbert Reidelbauch who led the procurement of a rapid prototyping facility in early the 2000's. While the technology was quickly outdated, it nevertheless provided a unique platform to foster inter-disciplinary exchanges including problem based learning outside usual disciplinary fixations of media based craft workshop, which until this development, had only occurred in rare instances. This ignited an institutional understanding of the value of constructivist style, collaborative and cooperative – problem based pedagogies that would build slowly toward recent changes.

Over a decade later the factor conditions have shifted considerably enabling new synergies to be forged across C&D. The schools culture of collaboration has evolved particularly since becoming a part of the ANU, producing increasing scholarly focus which flows trough to pressure for curriculum reform, accountability, engagement and opportunities for linkages across campus, enabling collaboration and eventually movement toward a greater need for and understanding of problem based pedagogies.

Multiples and Production: The Unique Offering

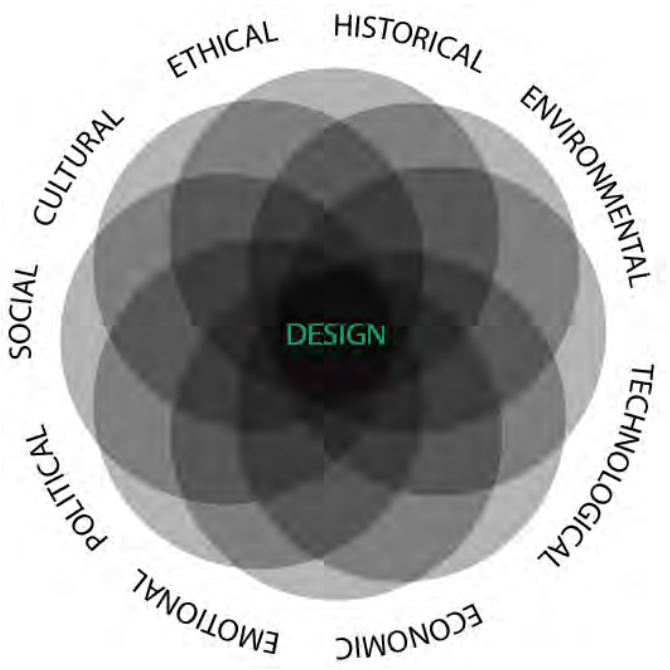

Figure 1: Design Complexity (Rubenis 2015)

Course Overview

Multiples and Production (M&P) is a pilot elective for 2nd & 3rd year undergraduates that debuted in Semester 1, 2015. The underlying theme to M&P is to unpack and question the meaningful practice of craft in a world rapidly consuming itself. This pays particular focus to the many facets of design (Figure 1), and the central role this plays in how we negotiate and further shape our ever expanding built environment. Students were tasked with developing a design brief around one simple and complex question: *'Why make anything for a world already filled with stuff?'* This perhaps has a very obvious answer considering the current environmental and resource state of affairs, combined with the wash of already existing design objects. We recognize this subject as not a new line of enquiry within design or design research the world over, however it is fundamental to question and interrogate the very essence and purpose of craft and design practice in the context of the 21st Century. As stated by Bruce Mau, "Now that we can do anything, what will we do?" (2004, p.15)

Using the domestic table as a setting that contracts students to a specific site and associated traditions (Nicol & Bremner 2014) this project deliberately places students in a conflicted position, particularly through the engagement of dedicated industrial

production such as the use of CAD/CAM[1] technology. It is pertinent to the very act of understanding design, and the impact this makes on the world, that practitioners must engage with the process of design (Olsen & Heaton 2010, p. 81).

For C&D students the scale of one-off hand making often hides the issue of impact. The work produced serves as the way of distilling troublesome knowledge into critique-able objects that serve as reference points for discussion. This may present itself as simply a prototype, or a seemingly unresolved body of work. Yet considering the nature of the complex questions being asked and the reality of teaching timeframes, propositional objects that grapple with this knowledge via concrete outcomes that interrogate C&D as a mode of operation, can become the foundation or means to make holistic and integrated contributions to material culture.

This is an alternate mode of pedagogy from the usual disciplinary domains within the ANU SoA. It is a step away from one based exclusively on personal-interest, aesthetic or technique driven enquiry in the familiar form of craft as art. M&P proposes an extension to this usual mode of practice to one based on thematic problem-based learning, engaged with broad implications that link with contemporary issues and universal concerns. The task challenges students to orchestrate solutions to troublesome knowledge, and to look beyond the design-object itself (Morelli 2006).

Dealing With Teaching Constraints by Developing Opportunities

The course consists of four hours per week face-to-face contact over a 13-week period. This encompasses a range of students representing the C&D workshops (12 in 2015), collaboratively taught with two staff members from distinct disciplines supported by a CAD/CAM technical officer working on a cost recovery basis. Outside of class, students are required to commit a minimum of 6 hours of independent study, working from their respective workshops generally without direct access to their immediate teaching team. The size of the class, combined with the complex subject matter, calls for strict and pointed planning – and teaching plans – for intensive and productive classes. The use of online resources becomes vitally important in this instance and enabling flipped classroom techniques, providing flexibility for students and efficient delivery of content. In many ways this decreases time dedicated to in class lectures. However online resources cannot entirely replace

[1] Computer Aided Design/Computer Aided Manufacture. Students were introduced to digital software and machining such as CNC (computer numeric control) and laser cutting offered by the school's Digital Fabrication Lab.

traditional modes of face-to-face contact, particularly that of intensive craft and design based practice where tacit knowledge is acquired. To develop a balance between these modes of delivery, the following techniques were utilized:

- The use of detailed course outlines and assignment sheets, strict project milestones and delivery, and clear objectives and expectations;
- Engaging students and their specific discipline knowledge through critical 'at the bench' peer review and feedback. This also has the added benefit of developing tight networks between cohorts and exposure to workshops;
- Pointed design-based group activities with specific outcomes relating to themes outlined in Figure 1;
- Collaborative and split teaching team one-on-one student tutorials/consultation;
- Intensive tutorials with CAD/CAM technical officer to allow an opportunity to calibrate designs to fit within modes of production or to experiment within these limits (although production time was charged);
- Industry professional involvement for live pitching exercises, feedback and assessment tasks;
- Inclusion of student outcomes in design competitions and exhibition of final work in DESIGNCanberra.[2]

This has proven to be a successful model, as the course gained a rating of 5/5 in the ANU's *Student Experience of Learning and Teaching (SELT)* and the student results have clearly articulated their ability to distill theme-based teaching. Feedback highlights that students have reveled in the intensity of the course, the introduction of troublesome problems generally beyond the scope or workshop based discipline and the opportunity to pursue this through C&D practice. In this manner the course represents proof of concept, however a common thread within this review suggests:

- A year-long course that allows full refinement of an idea through a deeper engagement with the process of design;
- Additional time to experiment with ideas and to gain individual feedback;
- Further industry professional representation to help connect and introduce additional opportunity;
- Subsidy toward CAD/CAM outputs.

This has led us to a build on this program by looking at further opportunities for

[2] DESIGNCanberra is a weeklong festival hosted by Craft ACT: Craft & Design Centre that showcases international, national and local practitioners from all disciplines through exhibitions, lectures, panel discussions, cultural tours and pop-up stores. The outcomes from 'Multiples and Production: The Unique Offering' will be exhibited during November 2015.

program expansion such as through the extension to include post-graduate coursework, and to use this as a case study for developing cross-college and cross-institutional teaching. We have recently been awarded an ANU Vice-Chancellor's Teaching Enhancement Grant to facilitate further evaluation and implement revisions and refinements.

Case Studies: How Five Students Approached Troublesome Knowledge

The follow section provides an outline and image of works produced by several students engaged with the course. These are linked to the objectives outlined through this paper.

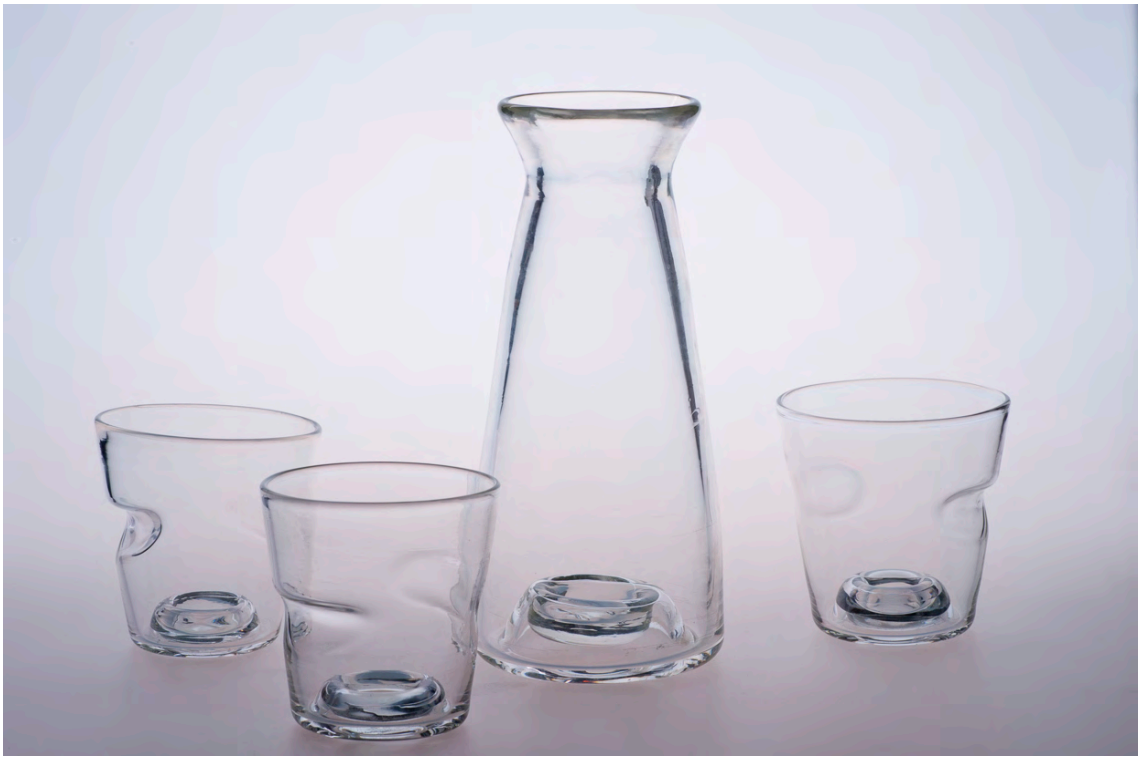

Figure 2: Kelda Morris 'Handful', blown glass, 2015

Kelda Morris (Glass Major, Figure 2) explores the liquid nature of glass by hand blowing a set of tumblers each slightly different from the next, although all produced using the same technique and mold. Morris has been inspired by the cradle-to-cradle movement (Braungart and McDonough 2009) and writes:

> Should a *Handful* tumbler become chipped, broken or no longer wanted, it may be returned to the maker, where it will be re-melted into the furnace, from which a new glass or set can be blown. This encourages a maintained

communication between the maker and user, creating open networks for people to connect through hand made objects on a 'glocal' or global-local scale.

Ross Peake (Furniture Major, Figure 3) pays respect to the Aboriginal Coolamon, by opening up the discussion around harvesting natural materials that have no ill effect on the environment. Ancient wisdom has much to offer the discourse surrounding sustainability (Tony Fry 2009, p.157-169), and Peake combines this philosophical standing with an opportunity to capitalise on increasing efficiency in production methods and to employ the reuse of existing materials (Moody and Nogrady 2010, p. 57-60).

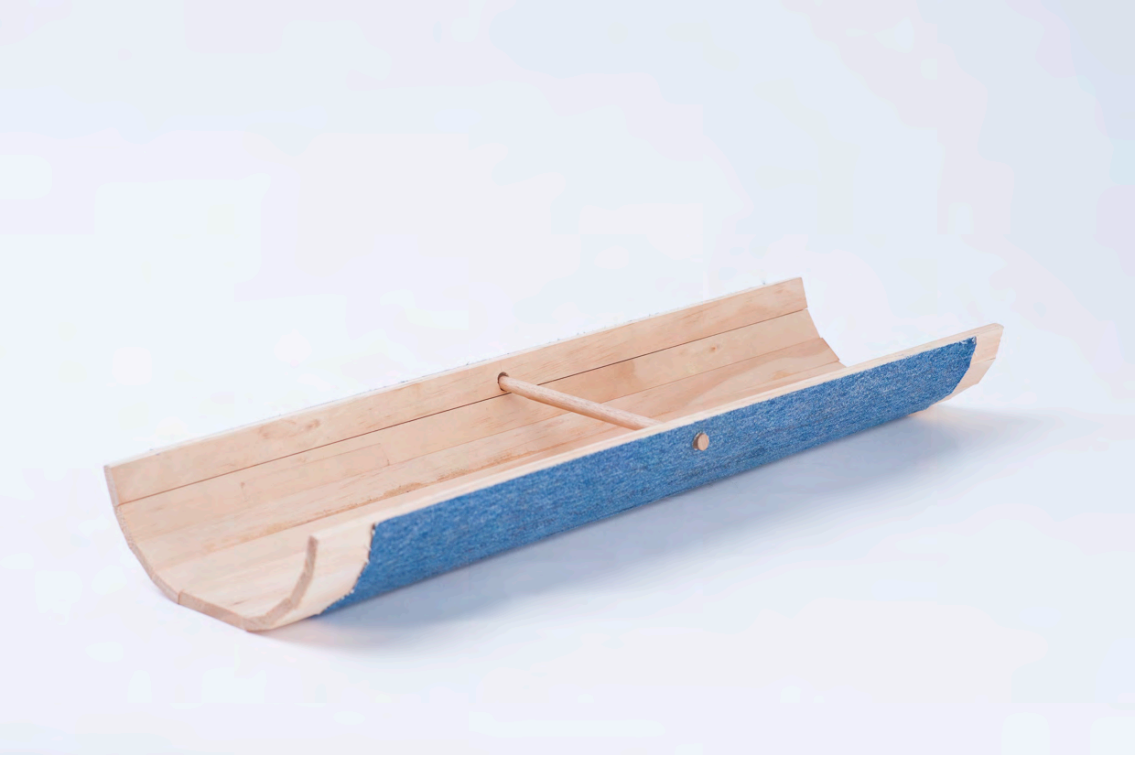

Figure 3: Ross Peake ‘Tambour Coolamon’, reused timber and fabric, 2015

Simon Azzopardi (Gold and Silversmithing Major, Figure 4) employs an economical use of material by cutting blanks from flat sheet metal, then pressing and folding into three-dimensional forms using low-tech methods. Azzopardi has created a knife to accompany a fork and spoon – both from random sets – which he has used and carried throughout living in Australia and the world. He uses story telling and narrative as effective communicators of design – emotion (Norman 2004) – and

questions the value we place on objects and their ability for sentimental attachment and life-long relationships.

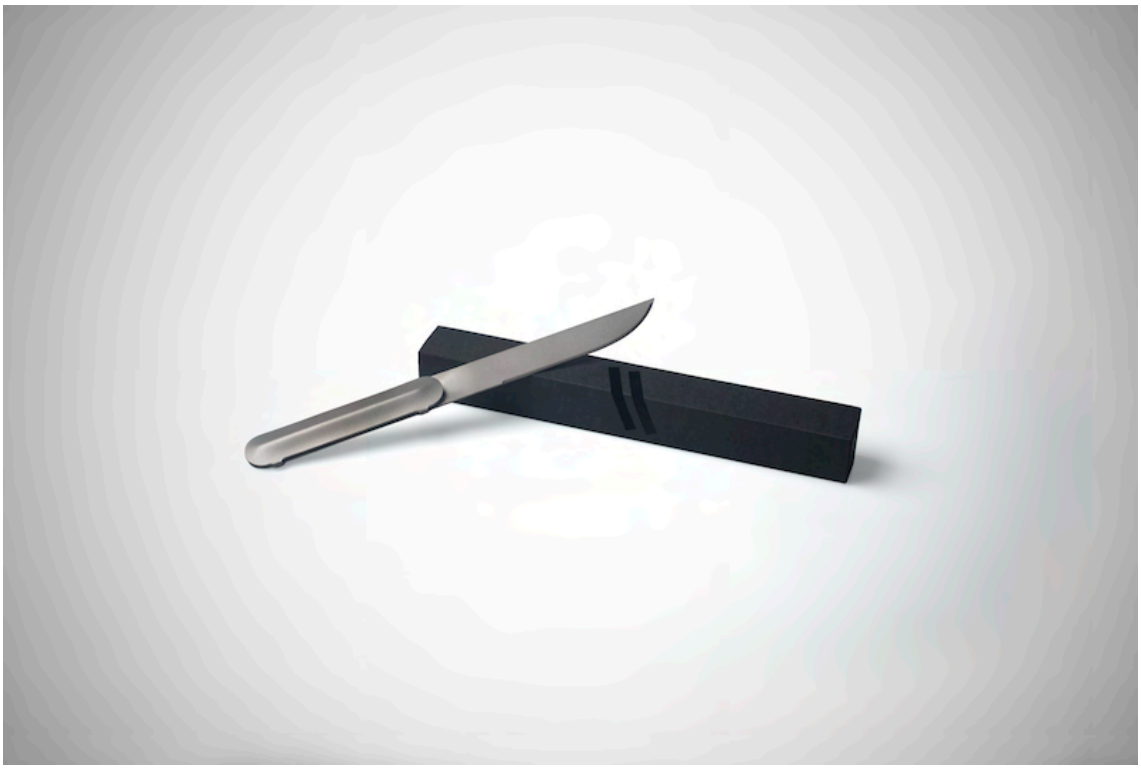

Figure 4: Simon Azzopardi ‘Katto Knife’, steel, 2015

Figure 5: Morven Downie ‘Medi Orb’, aluminium and 3D printed inserts, 2015

Morven Downie (Gold and Silversmithing Major, Figure 5) developed an aluminium orb, designed to remove the stigma from taking medication in public as a response to the role design plays in addressing societal concerns and how design can be used as the mechanism to create new culture (Hyde 2012, p.127). Recognizing the embodied energy within aluminium as a material, Downie has attempted to create a desirable and long-lasting object, and further offers a maker-object-user connection through customizable 3D printed coloured inserts.

Pia Nemec (Furniture Major, Figure 6) created a series of bees wax candles that argued for sustainable consumption (Jackson 2006), and connected with design ephemerality theories from Victor Papanek (1995) and Stuart Walker (2006). Further layering this project, Nemec incorporated the use of local resources such as wax from regional honey producers. Aside from the material and potential economic benefits from cross collaborating with craft and design practitioners positioned in the center, localism offers a connection back to community (Norberg-Hodge et al. 2011).

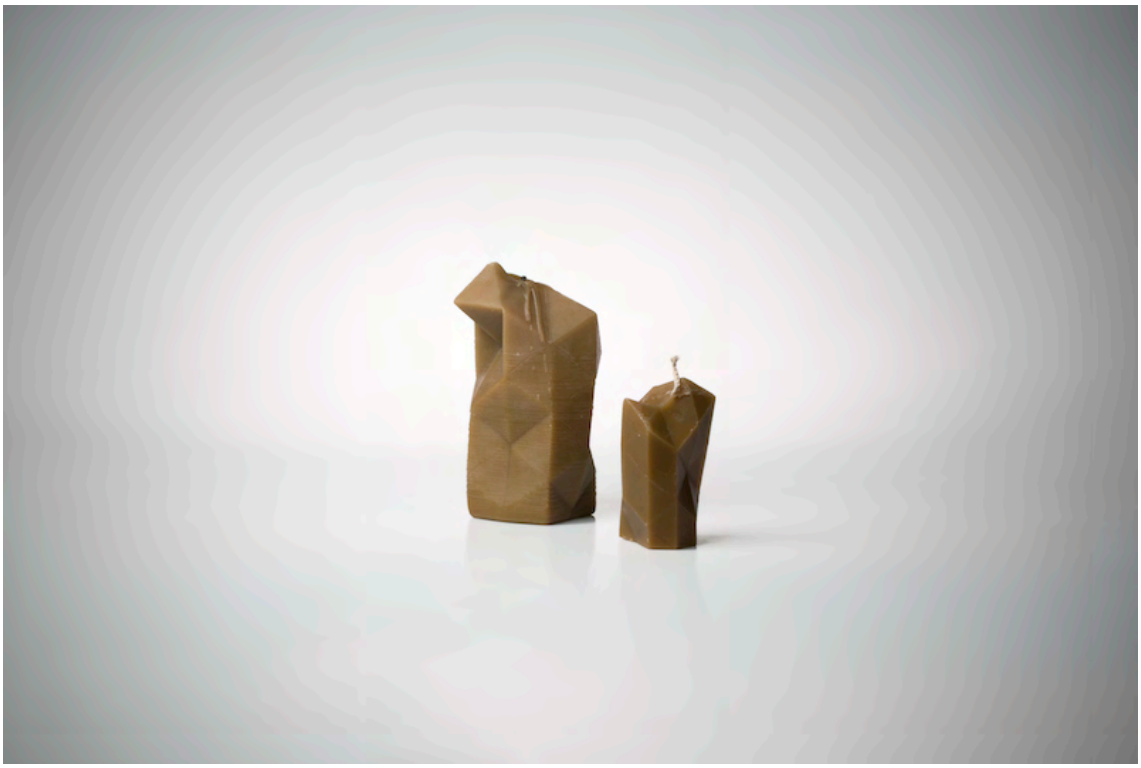

Figure 6: Pia Nemec ‘Facet Candles’, beeswax, 2015

Conclusion

In this paper we argue for an expansion of C&PBL within the C&D programs of the ANU, SoA and similar institutions. We have identified several issues that motivate

this call for change. Some of those are internal pressures such as funding metrics and structural issues that are an artifact of a former era that has passed, and to which the academy is, to some extent, oblivious or slow to respond. Others are pull factors that reach into the institution from the rapidly changing outside world. These include the impact of globalization and the rise of digital technologies, which provide the overarching context to all practices. In this article, we have demonstrated that strategies including collaborative and problem base pedagogies in C&D courses and programs better prepare students for this setting. We have highlighted the enabling capacity of material based and applied learning and teaching methods that facilitate experiential learning. We have argued that, in combination, these are the only approaches that will prepare students with the skills required to conduct meaningful practices in the contemporary world.

References

ACUADS 2015, *ACUADS Conference 2015: Art and Design Education in the Global 24/7.* Available from: http://acuads.com.au/conference/2015-conference/. [25 July 2015].

AGOSTINO, M 2009, *The Australian National University School of Art: A History of the First 65 Years*, Australian National University School of Art, Canberra.

BRAUNGART, M, McDonough, W 2009, *Cradle to Cradle: Re-Making the Way We Make Things*, Vintage Books, London.

CRAFTING SELF n.d, *Promoting the Making Self in the Creative Micro-Economy.* Available from: http://craftingself.net/about-the-project/. [29 May 2015].

FRY, T 2009, *Design Futuring: Sustainability, Ethics and New Practice,* UNSW Press, Sydney.

HYDE, R 2013, *Future Practice: Conversations From the Edge of Architecture*, Routledge, New York.

JACKSON, T (ed.) 2006, *Sustainable Consumption,* Earthscan, London.

KOLB, D.A. 1984, *Experiential Learning: Experience as the Source of Learning and Development*, Prentice-Hall, New Jersey

MAU, B 2004, "Now that we can do anything, what will we do?" in *Massive Change*, eds B Mau, J Leonard and The Institute Without Boundaries, Phaidon Press Inc, New York, p.15-19.

MOODY, JB, Nogrady, B 2010, *The Sixth Wave: How to Succeed in a Resource-Limited World,* Vintage Books, Sydney.

MORELLI, N 2006, 'Globalised Markets and Localised Needs. Relocating design Competence in a New Industrial Context', In Rothbucher, B.; Kolar, M.; Ion, W.; Clarke, A, *Proceedings of the 8th International Conference on Engineering and Product Design Education,* Salzburg, Austria, https://www.designsociety.org/publication/28209/globalised_markets_and_localised_needs_relocating_design_competence_in_a_new_industrial_context

NICOL, N, Bremner, C 2014, 'Domestic Renewal: resetting the table and repairing the domestic', *Interiors: Design Architecture Culture*, vol. 5, pp. 55-70.

NORMAN, DA 2004, *Emotional Design: Why We Love (or Hate) Everyday Things,* Basic Books, New York.

OLSEN, PB, Heaton, L 2010, "Knowing through design" in *Design Research: Synergies from interdisciplinary perspectives,* eds J Simonsen, JO Naerenholdt, M Buscher, JD Scheuer, Routledge, Oxon, p.79-94.

PAPANEK, V 1995, *The Green Imperative: Ecology and Ethics in Design and Architecture,* Thames and Hudson, London.

RUBENIS, N 2015, 'Crafting Waste: A Re-evaluation of a Furniture Practice', Proceedings of the *Unmaking Waste Conference*, Zero Waste SA Research Centre for Sustainable Design and Behaviour, School of Art, Architecture and Design, University of South Australia, Adelaide, September 2015. http://unmakingwaste2015.org/

The Economics of Happiness 2011, *(*DVD), directed by Norberg-Hodge, H, Gorelick, S, Page J, ISEC Production.

WALKER, S 2003, 'Light Touch: The Design of Ephemeral Objects for Sustainability', *The Journal of Sustainable Product Design* 3, pp.187–198. Available from: http://stuartwalker.org.uk/articles/9-light-touch-the-design-of-ephemeral-objects-for-sustainability/file. [19 March 2015].

WALKER, S 2006, *Sustainable by Design: Explorations in Theory and Practice,* Earthscan, Oxon.