

Design and the University: a Partnership for Sustainable Design

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ABSTRACT

In this paper we discuss the sustainable design opportunities that are arising from a shared agenda between design and the university. As international experience demonstrates, sustainable design remains largely theoretical, and has had great difficulty in achieving significant traction in education and practice (Findeli 2008). We are increasingly frustrated as sustainable design educators by the scarcity of examples of sustainable design practice—there are many examples of low impacting products, but few examples, especially in Australia, of commercially viable, real world sustainable design projects that achieve ‘systemic discontinuity’ in highly resource-consumptive lifestyles.

We shall discuss how we have applied Tony Fry’s concept of ‘redirective practice’ (2009) to re-think the role of design in our particular university context. For Fry, design re-made is a meta-discipline, drawing together disparate knowledge under the ethical directive of ‘the sustainment’. We see design for sustainability as located at the project level, as an initiator and facilitator of a change process which is necessarily collaborative. We have brought this conception of design to the university’s sustainability agenda as, similarly to design, it is being called upon to take a leadership role in sustainability as it educates the graduates who will be determining the sustainability or not of our human systems. As a project field for sustainable design exploration the university is rich in expertise and its community and campuses provide ‘a microcosm for society’ (Cortese 2003:19). Whilst it has the know-how within its disparate academic disciplines, higher education ‘is generally organized into highly specialized areas of knowledge’ wherein cross-disciplinarily collaboration is a significant challenge (Cortese 2003:16). What we have found and are exploring in a range of projects that will be elaborated on in this paper, is that design as a meta-discipline provides i) the means to bridge these disciplinary gaps and ii) the action strategies necessary to initiate projects of lasting impact with high learning potential.

INTRODUCTION

We are industrial design and visual communication educators at the University of Western Sydney (UWS), committed to sustainable design in its broadest and most

ambitious sense. What we are seeking as exemplars for learning and teaching through our research activities, are design-led means to enable a break in the unsustainable status quo, or what Ezio Manzini describes as ‘systemic discontinuity’ (2003:37). Rather than minimising the impact of individual design objects (as in ecodesign), we are seeking ways to apply design thinking more strategically and collaboratively to envision and implement different, more environmentally sustainable everyday practice. First, we’ll explain why we believe sustainable design is a viable mechanism for systemic change, theoretically, and with reference to promising international examples. Then we shall discuss the theory of redirective practice and how we have used this to generate an alternate picture of what the University could be. We then examine, with reference to our own projects, the mutual benefits of aligning design to the sustainability agenda of higher education.

Much is being done to mobilise design for systemic change which is significantly challenging notions of what design is. For example, Chris Ryan, director of The Victorian Eco-Innovation Lab (VEIL) sees a new role for design emerging ‘as a powerful tool for public visioning and for generating a dynamic for change’ (Ryan 2008:2). VEIL facilitates collaboration between design, business and government in creative workshops to generate future scenarios which are then back-cast to give direction and the first steps of implementation towards preferred, climate change adaptive and mitigating futures. The process agitates systemic change by providing alternative future visions, action strategies and eco-innovation projects that address Melbourne’s food, energy and water supply challenges.

Manzini understands design as a (not necessarily expert) forward-looking, adaptive capacity to change everyday practice (Manzini and Jégou 2003). The scale and pace of change required for sustainability requires taking short cuts, working at a local scale, and learning from creative communities who have already shown initiative to successfully shift to quite radical yet high quality and appealing sustainable everyday practices (EMUDE 2006). Design’s role here is to seek out these exemplars, learn from them and find ways to scale them up or to adapt them to other contexts. He’s aiming for local (but highly networked) systemic discontinuity.

Additionally, international examples of design remade for sustainability see design being deployed to i) support

sustainable behaviour change (Bhamra, Lilley and Tang 2008); ii) visually or interactively communicate the environmental impacts of local activities (Holmes 2007; Maze 2008) and iii) conceive sustainable solutions as an integration of product and service design to achieve eco-efficiency (Van Halen and Karsch 2007). The efforts are often characterised by the opening up of the design process which was identified early in sustainable design thinking as a necessity to achieving systemic change (Fletcher and Goggin 2001). The greater the scope and therefore impact of sustainable design, the broader and more diffuse is the design capacity required.

Although such examples of sustainable design are promising and well formed—models and tools have been developed and trialled—viable (economically as well as culturally) sustainable design-initiated projects that have had lasting impact are scarce (Findeli 2008). Where these are sustained, design leadership as well as consideration of a range of regulatory, social, infrastructural and economic factors inform success. One oft cited example is the transformation of the Brazilian city of Curitiba into a model of sustainable design led by a former mayor and architect Jamie Lerner, who established a research institute to identify urban problems for designers to respond to (Margolin 2002).

Our ambition is to draw on and add to these models for sustainable design: to see how to make these models viable, especially in an Australian context.

DESIGN'S CHANGE AGENCY

A considerable body of work across the philosophy of technology, social and design theory supports our claim that design has the capacity to redirect human practices. Following on from phenomenological understandings of how objects or tools shape human practice, 'ontological design' explains how design becomes incorporated or naturalised in human practices in ways that transform the nature of being (Winograd & Flores 1990; Fry 1999 & 2009; and Willis 1999 & 2006). Linking this to sustainability, Fry (1999) argues that un-sustainability is 'structured in' to our lives and environments by design. We live unsustainably, not because we consciously decide to wastefully consume resources but because our minds, bodies, habits of thinking and acting have been shaped by the material conditions that support and sustain this consumption. By implicitly promoting particular ways of being, design goes on designing long after a project of design is complete and whether 'the perceiving subject' is aware of it or not (Fry 1994; Willis 1999; 2006). Fry says 'Design's agency does not usually come from it being mobilised with a clear vision of consequences, but rather from its power as an unrecognised structural inscription' (1999:4).

Perspectives from outside design theory also support the centrality of design to human practice and its capacity to direct human behaviour. For Actor Network theorist Latour (1992) agency is distributed between human and non-human actors and it is the hybrid entities thus formed that act in the world. The intentional delegation of responsibilities gives design an explicitly social role—design makes social relationships 'durable' (Shove et. al. 2007). For Akrich

(1998) designs 'script' human use—decisions about how products are to be used are actually hardwired into the interface of designs. Design's agency is wrapped up in co-dependent relationships between artefacts, human practices and social conventions, which co-evolve over time. And where designs become normative, they hold particular sway because they support conventions of practice.

REDIRECTIVE PRACTICE

Redirective practice is a new form of design leadership (Fry 2009: 57). It can be understood as ontological design linked to the need for 'systemic discontinuity' in particular situations. Design has change agency but this agency needs to be actively mobilised against the tide of existing human and institutional practices that sustain unsustainability. Ontological design is design practice that comprehends its change agency and is thus capable, with the appropriate tools, to redirect practice. Central to the idea of 'redirective practice' is the ability of design to 'redirectively prefigure what is coming to shape the future (recognising here that it is vital to transform/retrofit 'what is'—be it an industry, product, structure, environment, medium or process—as much, if not more so than, creating the 'sustainable new')' (Fry 2009). In addition, 'redirective practice aims to transform the practice the designer inhabits as much as the application of this practice' (Fry 2009). Redirective practice seeks to mobilise existing (creative, energetic) momentum in alternative directions. So rather than starting a 'more sustainable project' on a greenfield site, we need to reflectively interrogate what already exists—our physical, intellectual and emotional resources—to find spaces of opportunity to grow from what we already have, more sustainable directions.

After participating in a redirective practice workshop at Griffith University led by Tony Fry in 2008, we looked more strategically at how our own context, as design practitioners, educators and theorists in a Western Sydney University might become a platform for a community of redirective practitioners. In a subsequent 'Futures West' workshop and forum, we collaboratively developed a program for action for our research agenda that linked design and the university (Allen, Mellick Lopes & Andrews 2009). We posited the University as an Applied Research and Knowledge Hub (ARKH) which was the result of a strategic assessment of 'what exists' in our university context. 'What exists' for us is a university that models the geo-demo-graphics of our linear and sparsely populated city and its problems, but also offers particular opportunities for developing foresightful sustainability.

THE APPLIED RESEARCH AND KNOWLEDGE HUB (ARKH)

A. Snapshot of regional expertise and resources

In order to respond to the need to have a better and more accessible picture of the existing resources of the region, we thought the university could play an important role in creating coherent pictures of regional expertise. This was conceived as an auditing exercise, which could be performed as part of research training curricula.

B. University as Knowledge Hub

The interdisciplinary expertise of the university could be mobilised in direct response to problems that are being experienced by people in a scattered and fragmentary way. In this sense, it can act as a place of the reception of problems that can be developed into briefs and actioned in curricula, in on-site demonstration and research projects or regional research partnerships. In applying ourselves to real community problems, we learn how to deal with them and as a region take leadership in adapting to changes. This idea has been explored by Penin and Vezzoli (2004) in a European context, in which the ‘peculiar community’ of the campus functions as preparatory ground for the dissemination of change strategies. Our proposal views the university as more of a conduit for community relationships, as a hub and repository of shared knowledge.

University as Risk Absorber

There could be change initiatives that members of the regional community would like to explore, but they may be perceived as too risky or time intensive. The university could be the ideal place to do this exploration, to roll out community pilot projects and trial those ideas as part of our core business of knowledge generation. In this capacity the hypothetical status of the university is more properly embraced.

Information Visualiser

Finally, the university could have a role in creating regional snapshots of how we are travelling as a community. These could be in the form of visual attractors, such as the Finnish ‘Green Cloud’ project which projected the energy consumption of an entire town on the smoke stack of the town’s power station, and changed over time according to this quantified consumption¹.

This agenda for the university was arrived at through the collaboration between a diverse range of workshop participants, representing business, community, local government, design and science. Why it is promising is that it includes ‘start now’ action strategies which are a core element to redirective practice: those who come up with the ideas need to be able to implement them. The feasibility of the ARKH concept was confirmed also when compared with the sustainability agenda for UWS and higher education more broadly.

THE SUSTAINABILITY AGENDA FOR HIGHER EDUCATION

The potential of this alternate conception of a university² has prompted us to look at the ways in which higher education is being charged to address sustainability and climate change issues. In 1990, the Association of University Leaders for a Sustainable Future (USLF) identified a shortfall in sustainability literacy and laid out a ten-point action plan for incorporating sustainability and environmental literacy in higher education with the following rationale: ‘Universities educate most of the people who develop and manage society’s institutions. For this reason, universities bear profound responsibilities to increase the awareness, knowledge, technologies, and tools to create an environmentally sustainable future’ (USLF 1990).

Practical imperatives have been highlighted in Australia in a study by the Dusseldorp Skills Forum and CSIRO Sustainable Ecosystems (Hatfield-Dodds et. al. 2008). Findings show a looming green skills shortfall, particularly in technology and innovation domains in which future designers will have significant influence (8). They recommend the fostering of an innovation culture for sustainability within universities (as hubs for experimentation and research) (9).

Very little is actually known about what a climate changed future holds and what a transition to sustainable modes of being will involve (Fry, 2009: 5). The community, including industry, will be looking to university graduates for direction and know-how. The most significant challenge to higher education is that this knowledge is not out there—it has to be developed from within the university itself, but with close community and industry engagement (Fullan and Scott 2009: 50). This is a pathfinding challenge for universities as much as it is for its graduates: ‘For the graduate (becoming a redirective practitioner) means making a career path rather than following one that is already available to pursue’ (Fry 2009: 175).

There are significant barriers faced by universities, however, to pursue this new agenda: Scott and Fullan suggest that universities are ‘change averse’ because of their tendency to be ‘hyperrational, prone to talk, dominated by research and individualistic...’(25). The cross-disciplinarity required to engage with the complexity of climate change is not easily achieved within universities structured (and funded) according to individual disciplines (Cortese 2003:16).

To develop the University’s sustainability capacity, to bridge the gap between disciplines and to foster sustainability literacy in graduates, Scott and Fullan propose the application and development of applied and engaged *practical reasoning* in educational programs. This is a means to shift from the analytical to the practical and to learn by doing through reflection-in-action that has significant potential for the University itself as a learning community, for its students as responsible professionals and for ensuring the relevance of the University to its community partners. They define practical reasoning as ‘a more integrated conception of the role of knowledge that combines collaborative engagement with real-world issues, analysis and application’ (2009: 43). Here as in Fry (2009) and Phillips cited in Stibbe (2009: 210) there is an emphasis on collaborative *action*.

THE UNIVERSITY: A PLATFORM FOR DESIGN

This we argue is where design can contribute most significantly to the University, as: the ‘hunter-gatherer’ of expertise (Thackara 2008: vii); the facilitator of knowledge exchange (Fry 2009: 55); and the initiator of action at the level of the project (Findeli 2008: 310). In our collaborations, what we are experiencing is the uniqueness of design’s way of thinking: the frustration, for instance of analysis or description and our need to convert research findings into design ‘briefs’ (design as a mechanism for individual creativity, to turn *facts* into *values* through *action* (Findeli, 2008: 311). Given the disparate (and in our case geographically dispersed) nature of a university’s structure, it

is clear that processes for collaboration and cross-disciplinary engagement also need to be designed.

We are beginning to see how this can happen as our collaborations develop. Lopes is involved in an innovative 'campus as lab' pilot project at the University of Technology, Sydney where an alternative system of sanitation to capture, treat and reuse urine (as an alternative to phosphorus) in agricultural trials at UWS will take place over the next two years. One of its aims is to look very closely at the plethora of issues that are preventing closed-loop recovery systems from achieving the 'systemic discontinuity' of polluting and wasteful water-based sanitation. This transdisciplinary project situates design as a core component in enabling the transition to a new system of sanitation, which as yet is unfamiliar in terms of technology, infrastructural support, institutional arrangements and social habits of practice.

Allen has helped secure funding for a UWS research collaboration between industrial design, sustainable agriculture, and solar technology to design and develop smart greenhouses (energy and water efficient greenhouses that significantly increase food yield from limited space). The project will bring international experts in green house technology from Wageningen University in The Netherlands to UWS in order to share their knowledge and expertise and to collaboratively develop further research. This project follows through on a sustainable urban agriculture scenario generated in the Futures West workshop, addressing issues affecting the Greater Western Sydney region, namely food security, water scarcity and high energy costs associated with agriculture.

Andrews has commenced a doctorate project which is investigating what is needed to implement viable, desirable and continuing design projects that deliver significant environmentally and socially sustainable behaviour change in the context of Western Sydney. The project seeks out design briefs from within UWS to apply the most promising of sustainable design models, theories and tools to, primarily using redirective practice methodology. The thesis will tell the story of how these projects are initiated and managed, to help define what a 'sustainable designer' needs to be.

We have also joined a team of academics representing business, land use, education, environmental law and medicine to seek funding for the development of an engaged, cross-disciplinary program of study designed to develop our own and students' climate change leadership capacity.

Our pursuit of a redirective practice agenda within our university highlights the opportunities afforded within academia for the *co-production* of research priorities (Shove 2003). Shove demonstrates that academic research contexts don't tend to follow principal-agent theories and that research programmes can function as virtual social institutions. This relatively fluid context enables the kind of cross-disciplinary engagement with design that we are enacting in these projects. We are leveraging the research programmes accessible to us as platforms for growing the broad design capacity that sustainability demands. In the process of seeking research funding, we are developing valuable cross-disciplinary relationships within and beyond our university

that are helping to clarify our agenda, gather existing expertise and momentum, and form a learning community.

CONCLUSION

What we have set out to show in this paper is that there is enormous learning potential with the alignment of agendas of the University and sustainable design. It provides a means to move from a disciplinary based approach to sustainability wherein discrete disciplines consider how to make their areas of practice *less environmentally impacting*, to a more ambitious transdisciplinary approach that can creatively consider more systemic change. It also provides a platform for the development of climate change leadership: in the University, within its region as relevant, engaged and forward-looking; and more especially in our graduates, to whom society will turn for ideas and action strategies for climate change adaptation and mitigation.

What we are finding also is that the University provides a means for us to pursue the kind of design we believe necessary for sustainable futures, and is a means to generate concrete examples of this sort of practice. Because we can contribute to the co-production of research agendas and because the University's own agenda is increasingly moving towards sustainability, there hasn't been a need to seek permission or to agitate politically for the importance of design. We are thus increasingly excited and affirmed as a small and motivated group to take these projects further.

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¹ See: <<http://www.pixelache.ac/nuage-blog/>> [Accessed 18 May 2009].

² Fullan and Scott (2009) have outlined a similar conception of the University as a 'living laboratory' and as a place to study and learn from the issues of climate change (49).