Are we the tool?

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In sustainable design, the search for 'the right tool' is an obvious starting point, something to tell us – and those we serve – *how to do it.* Yet a tool, we have discovered, is what it is; useless without prior understanding of the system it is supposed to fix or the outcome it aims to achieve. An engagement with sustainability issues, debates and values are essential if tools are to be used and sustainable design to be attempted.

For the majority of designers the consideration of sustainability issues is the last thing on their minds. There are a number of probable contributing factors. Piliavin et al (1969) for example, proposed the theory of 'diffusion of responsibility' where an individual is less likely to act if there are others present who are able to act also, indicating that designers may perceive responsibility for sustainable activities as being shared by all present, and therefore see themselves as being less personally responsible. We could also turn to d'Anjou (2007) who calls on Sartre's existentialist philosophy to explain how a designer may stray from the consideration of sustainability early on in their career if it restricts their primary goal of designing. Perhaps most importantly, we can look to the nature of sustainable design guidance itself which can be hard to find, complex and often contradictory, difficult to dissect and understand, putting off even the most willing of designers.

For those tasked with fostering sustainable design practices in education and industry, the lack of general awareness of sustainability issues means that we exist for reference only, asked to give clear-cut answers to problems which are themselves 'wicked' (Margolin 1995). This paper offers an insight into the start of a shared journey between a doctoral researcher, a materials librarian and educationalist, and a practitioner. It began with a common interest in the interplay between materials, design and sustainability, in that most alluring of places, the materials library. As our meetings became more frequent and the discussion more enthused, a shared realisation developed, that each of us in our different situations had experienced the need to shift our approach from just thinking 'what tools can we use to support designers in making sustainable materials decisions?' to 'how can we engage designers in thinking about these principles for themselves'. The difference is important. The overarching themes from each of our experiences are drawn together in the closing remarks, as we consider how we might pursue our joint quest for a practicable solution.

Engaging product and industrial designers in the principles of the materials cycle, Rosie Hornbuckle

In the early phases of my doctoral research I explored the numerous difficulties with recovering secondary materials and utilising them in design practice. In this next phase I had been tasked with critically reviewing the tools and models available to support designers when considering the use of secondary materials, and my plan was to gather anything which could potentially offer guidance, information and support in this area. I ended up with around a hundred possibilities, and quickly realised that I needed some rule of thumb or reference model in order to understand their potential usefulness or success. Drawing a blank in the literature, I began by thinking about what my supervisor coined 'the toolness of tools'. I came up with a metaphor-based reference model I called *Designer as Workman* (inset), that I could quickly bring to mind when thinking about and 'critically reassessing' each of the items on my tools list, as well as my own attempts at improving on them. For its inspiration I must acknowledge Louridas' (1999) brilliant metaphor *'Design as bricolage'*.

The use of 'tools' in design practice appears a perfect fit, a designer seeks to find a solution to a problem and uses the tools at his disposal to help solve it. However, when I reviewed the relationship between the designer and his tools in reference to my model, one glaringly obvious problem stood out; in order to use a tool, a designer must be *in a position to use it*; many of the attributes I had decided were necessary in order for tools to work, simply don't apply to sustainable design in the majority of professional design practice today. This was my realisation: that adding to the plethora of 'how to do it' texts and guidelines might not be all that useful, at least not on its own.

Some tools have been developed to address this problem; for example Lofhouse reports that her fantastic resource *Information Inspiration* "appears to raise [designers] awareness: through an introduction to the basic principles of ecodesign; by introducing and encouraging them to think about ecodesign issues" (Lofthouse 2006:1394). But still, how is it that with so many tools, sustainable design is barely championed in design training let alone practiced in professional design? I'm not the first to make this observation as the collaborators on this paper bare testament. In addition Luttropp & Lagerstedt comment: "There is a lot of interest in Sustainable product development, and many tools and guidelines have been suggested. It is unclear if those tools are being used and if they have any real effect on product system developments." (Luttropp & Lagerstedt 2006:1396-7).

Designer as workman

A toolbox contains all manner of useful and versatile things. When he or she is confronted by the problem to be solved, a workman or woman reaches into the depths of the container with the confidence that something in there can be used to help fix it. Space in the box is limited: the tools that lie beneath the bolted lid have competed for their position; they are versatile and work well. The workman's knowledge of their mechanism allows them to be used on their own or in combination for a multitude of tasks. In the physical world even the box has its use; as a step to stand on, or to sit and eat sandwiches.

Attributes necessary for tool use:

Delivery
The tool must come into his possession (He knows that it exists)

Credible
The workman likes tools from sources that he can trust

Functional
The tool must work well to earn a place in the toolbox

Accessible
Once the tool is in the toolbox it must be easily found and reached, and not too costly or difficult to maintain

Intuitive
The tool must be intuitive so that using it comes easily to the workman

Relevant
He needs to be able to see the problem that the tool is intended for and see the point of fixing it (there's no point in giving a Thatcher a slate-cutting tool if he is quite determined to stick to reeds as his roofing material)

Transparent
It helps if the workman understands how the tool works so that when he encounters a problem he knows that the tool will be able to help fix it, and he believes in the results

Adaptable
If the tool's mechanism is simple and adaptable the workman can adapt its use to his own methods

A survey of product and industrial designers also undertaken as part of my doctoral research, further supports the idea that designers are not in a position to use the tools available to assist sustainable design. The findings suggest that designers have rarely received training on the sustainable use of materials, and importantly consider social and environmental impact, and sustainable development to be the least important factors to consider when designing. The survey also suggested that designers are more likely to seek information through dialogue with a colleague, with a supplier and particularly with their own experience[1], than from a static source.

So, if designers are not in a position to use sustainable design tools, what is our next move? Perhaps what is needed is a *pre-tool*, something (or more probably, someone) to encourage designers to think about the broader debates and principles of sustainable design. By using this understanding and our respective positions we have the opportunity to build awareness in the designers around us; using methods better suited to them.

Attempting to facilitate the development of a personal ethical stance with design students in higher education, Clare Qualmann

Papanek writing in 1970, imagined a world in which design graduates with personal convictions would take their ideals into the work place and gradually, year by year, saturate the design establishment from within with ethical workers. This of course can never happen without graduates with personal convictions.

Ten years ago I wrote an undergraduate dissertation about green design and higher education. Re-reading it today I'm surprised how little has changed and how closely it relates to my current experience in teaching a module entitled 'Responsible Design', a second year inter disciplinary (but Interior Design dominated) class at London Metropolitan University.

My assumption in 1998 was that by now everyone would care, or would at least have been forced into awareness and action by legislation. I guess to some extent that's true – consumer awareness is probably higher than it was, legislation that didn't exist then impacts now, but it seems that design students are apathetic as ever.

Over a seven-year period working as a University Materials Librarian (2001-2008) I noticed an increase in students asking for help in sourcing 'green', 'sustainable' and 'recycled/recyclable' materials. My response to their enquiries did not often seem to be what they wanted – I could help them to locate companies whose products purported to be green, or who claimed sustainable practices, but my emphasis was always (disappointingly to them) on the need for them to make their own assessment and evaluation of the materials' credentials and impact.

This led me to start to look for tools to assist in this kind of evaluation – eco-labels, independent certifications, simple life cycle analysis models – checks and measures that I could suggest for students to use in their research process. I soon found that this too was not what they were looking for – what they really wanted was for someone to say 'this material is ok – if you use it your product will be green', a straightforward answer to a very complicated question.

The opportunity to be involved in the planning and delivery of a semester long class made it possible to address these issues in greater depth. My approach to the curriculum drew strongly on Biggs' proposals for constructive alignment – which assert that students must construct their own learning (their own knowledge) through activities designed to elicit intended learning outcomes (Biggs, 1996). The outcomes in this instance could be summarised as:

Establishing the responsibility of the designer – mapping impact.
Recognising the complexity of environmental issues in relation to design
Establishing a personal ethic.
Developing critical thinking and evaluation skills.

The challenges that the delivery of the course presented related closely to the learning approaches of the students involved. Very few of the 50 or so students taking the class had any prior engagement or personal commitment to ideals of sustainability or environmental awareness. As I had encountered within the library context students with a classic strategic approach (Bloxham and Boyd, 2007) were focused on discovering the 'right' answers, as were those with a surface approach, and the extrinsically motivated (Marton and Saljo, cited by Fry et al. 2003).

The structure of the class from the outset was student research led, with increasingly complex tasks supplemented with lecture and seminar sessions introducing key concepts and approaches. As the semester progressed I became increasingly certain of the impossibility of 'teaching' students to care about sustainability. The ineffectiveness of preaching, shock tactics and overt evangelism was illustrated by student response to some of the stronger content (a guest lecturer with a 'the end of the world is nigh – and designers are responsible' approach). This is where my 'problem' converges with the concerns of Tracy and Rosie; how do we meaningfully engage the designer/design student with issues of sustainability?

My 'successes' resulted from facilitation of student research, discussion and being a sounding board in the development of ideas. Although students did use tools such as simple product lifecycle evaluation, the key 'tool' was me. By acting as a reference point, a questioner of assumptions, a facilitator of discussion and debate and a pointer to information resources I hope that, irrespective of their ability to pass the course, at least some of the students have achieved the most difficult of the learning outcomes to measure – establishing a personal ethic and an approach to design that considers its impact.

Implementing sustainable design in a typically unsustainable industry, Tracy Sutton

Media focus on the packaging industry is intense, often distorted and, arguably, does not paint an accurate picture of the real facts. A good example of this is a recent focus on supermarkets wrapping cucumbers in plastic. A cucumber loses moisture very quickly and is unsaleable within 3 days of being picked so a tiny 1.5 gram piece of plastic wrap keeps it fresh for up to 14 days, (Incpen, 2007). Preserving the cucumber means it's more likely to be eaten and will therefore reduce the amount of food that is thrown away every year in the UK which currently stands at a third of what we buy (Wrap, 2008). When consumers are given the whole picture they are able to make an educated decision. Inaccurate, negative topline press coverage of such issues repels the pubic further.

I am a technical specialist who designers come to when they need inspiration, advice or a solution and I inspire them with materials and decoration methods that are appropriate to each project. Designers want quick and simple answers to enable them to make the right decisions. I can give 'yes' or 'no' answers when it comes to materials and decoration but when I provide environmental guidance for materials and solutions the answers are often more complicated, which I have found to put off designers.

I provide examples of innovative material use and structure design but have found that while the designers find these examples inspiring, they are not able to interpret *how and why* the examples are environmentally sound. The unique nature of the projects that we work on makes it very hard for designers to apply the snippets of knowledge that I share with them, because they are not able to put them into practice more than once; every project is different as a specialist rather than the individuals taking responsibility of sustainability themselves.

I recently held a workshop with the designers in Pearlfisher that turned out to be a very beneficial exercise. It began with an introduction to environmental issues affecting packaging lifecycles, then incorporated an important 'Pack Critique' where the designers applied basic Life Cycle Analysis to packs that had previously been designed. I ran through a series of Eco-design pointers created for the designers to use after the workshop in an everyday environment. In the final part of the workshop the packs were redesigned to be much more environmentally considerate. The team responded very positively and were able to select materials, design the structure and choose relevant finishes in a more sustainably educated manner.

An important part of the workshop was the Pack Critique that enabled the designers to relate to existing projects and gain insight to how they are actually manufactured. The designers were able to understand the basics of packaging life cycles and review their individual designs environmental impact by asking questions such as *'Where does that material come from?', 'How easy it it to disassemble this pack after it is used?'* and *'Can I recycle this pack?'*. The workshop was a success in educating the designers the principles of Eco-design and basic LCA, however I can never expect the designers to have the technical, material and environmental expertise I posess. Therefore I believe that sustainable expertise, practical tools and a knowledgable implementor are the three key requirements needed to successfully implement sustainable design.

Closing Remarks

This paper draws on collective experiences from over 20 years of work and study, including educating and inspiring students, designers, manufacturers and brand owners, and shows how we are beginning to put our shared realisations into practice. It also highlights our common desire to inspire a personal ethic towards sustainability in the designers around us, through dialogue and debate and to raise awareness of the issues facing design, through education. Alastair Fuad Luke's succinct quote is rather appropriate "We should stop dictating sustainability" (Fuad-Luke, A. 2005), he hints at the need to *stop talking* about sustainability and *start implementing*, whilst also highlighting the importance of not talking down to, or overwhelming people with sustainability doctrine. Instead, we want to highlight the energy, new opportunities and innovation that sustainable design can create. We know that we can capitalise on our unique strengths and experiences to

create *something*. We want this *something* to be useful to, and accessed by, designers across a variety of industries, empowering them to think and design more sustainably. The next step is to investigate what this *something* is and to give it a try.

We began by asking *'Are we the tool?*' This title was not meant to be facetious, we intended to suggest that while we currently find ourselves reference 'tools' for those who seek answers to sustainable design and material selection questions, the real breakthrough or indeed the 'right tool' resides within designers themselves. Designers must engage with the issues and make value judgments themselves if sustainable design practice is to stand a chance in the mainstream. Dialogue and debate to encourage awareness of the broader principles of sustainable design currently appears the best method for fostering independent thinking and problem-solving in designers… our story is less about engaging design artifacts than engaging *the designers* of those artifacts in the challenging issues that lie ahead.

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