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Eco-literacy in Transition: the role of design ecologies in developing our capacity for radical change.

Abstract

The transition design framework works within the limits of the ecological boundary of the natural world. This position resonates with a deeper and more radical response to unsustainability, particularly when compared to mainstream design activity, which mainly responds to the economic imperative. This paper explores ways to educate the eco-literate designer and addresses the potential for designed outcomes to grow levels of ecoliteracy through the way designs are interacted with, used and adapted in their lifetimes.

Introduction

This short paper explores the people-product relationships forged as part of everyday life. It addresses the role of design ecologies in fostering socio-ecological adaptability and resilience in the long-term. I reflect on the premises and principles of Transition Design and explore the different knowledge required for designing with the natural world in mind.

There is no need to repeat the well-trodden ground of the limits of 'modern' societies responses to the environmentally damaging behaviours endemic in the processes and outcomes of industrialisation. I will just quickly summarise these ideas though, through describing two different approaches to sustainability. Environmental educator, David Orr (1992) and industrial ecologist, John Ehrenfeld (2008) similarly distinguish between two very different perspectives on sustainability. The first approach *'reducing unsustainability' or 'technical sustainability'* stems from modern, deterministic and reductionist thought that perceives solutions to unsustainability will emerge through the integration of new science and technology, the application of new regulations and responses to market drivers; these together, it is proposed, will support current models of growth and development while simultaneously shifting towards sustainability by making what we currently do less environmentally damaging. In contrast the second approach they outline is *creating sustainability* or *ecological sustainability.* This encourages a reimagining of human requirements through creating new solutions to the provision of food, shelter, energy and materials alongside the management of the resources that derive from these processes (currently termed waste).

Sadly neither perspective is new news, but rather a simple reflection of an old dilemma that results in a plurality of views on ecological and social disruptions. The case for continuing 'as is' with a reliance on technological fix solutions continues to dominant thinking in strategic, political and cultural domains, almost universally. It is an uncomfortable truth that the crisis we have 'bought into' through the environmental consequences of global industrialisation and a growing global population remains distant from, and unresolved in, the main political decision-making arenas.

The transition movement however, embodies an alternative approach to sustainability: the approach and values of creating an ecological sustainability. Transition acknowledges head-on the human-ecology-resource crises (i.e. Peak Oil) and explores new solutions through alternative modes of living: of producing (distributed modes) and of consuming (local modes). Solutions are particularly rooted in context and specifically connected to place.

The Transition Design Framework likewise resonates with the more 'radical' scope and activities associated with an ecological paradigm. It proposes *theories of change* informed, for example, by social practice theory and multi-scale perspectives of technology, innovation and change. It presents *visions for transition* that reframe lifestyles and the expectations, resources, communities and systems that support them. It proposes the need for a focus on *posture and mind-set* in terms of alternative ways to think, to learn, and to do. It proposes that these new inputs (the framing of transition) will deliver new outputs in the form of *new ways to design* and that these approaches will co-evolve, adapt and develop in context-specific ways. These ingredients are a call to 'a change' in current practices; design is a way of thinking and doing that allows new practice to evolve. These ingredients of transition should be common to all design practice where the journey away from the industrial paradigm is a journey in effectively harnessing these new ways of thinking and doing. The danger of mapping 'transition design' apart from 'normal design' is that it proclaims 'difference' and potentially limits opportunities for achieving change at the scale required. For example, as we've witnessed over the last 30 years or so, 'eco' or 'sustainable' design has provided a frame for an environmental and social focus in design but, in-so-doing, has inadvertently permitted the rest of design activity to carry on as normal. This has resulted in frustratingly small steps forward during a period of time when the external signals for the need to adopt alternative strategies have been so obvious, but at the same time, so blatantly ignored. The label 'transition' may well be a useful device to articulate difference but we must be careful for it not to become another reason for such thinking and action to be marginalised and ignored. As a global society we are *in transition* and thus we need new approaches and tools to stimulate hope and inspire peoples' imaginations for an equitable, everyday life. That surely is one thing creative thinkers can influence in this very big picture of change.

This paper aims to explore some of these ingredients for transition design specifically relating to the ideas of ecological mind-set and the importance of creating sustainability (alongside reducing unsustainability) to embrace a deeper understanding of design ecologies and their landscapes of innovation.

Towards an ecological mind-set

Illich (1971:1) prophetically comments in his book *Deschooling Society* "that the institutionalization of values leads inevitably to physical pollution, social polarisation and psychological impotence: three dimensions in a process of global degradation and modernised misery." I am both struck and saddened by the relevance of this comment 45 years on. Illich's important yet contentious reflections at that time, questioned the trends for, and trajectory of, the institutionalization in society and the inevitable impediment to new education processes to foster an independence of thought and develop the emergence of non-technocratic values. Illich's once radical critic of industrialised and institutionalized society now resonates with the deeply embedded education crisis of our own era. Continuously creating processes of education to serve the demands of industrialization is a reality we have come to know; it is also a reality that diminishes opportunities to convey other types of knowledge connecting people to place. Responses to unsustainable trajectories today reflect institutionalized and risk adverse approaches to change that promote dislocated thinking between citizens and the consequences of their collective actions. Societies develop 'norms' of understanding and behaviour through what they see and what they do. An example of this is industrialised societies' mind-set on 'waste': discarded materials and products are seen as 'waste, rubbish, garbage' - a collective language that continues to support the 'normality' of linear resource flow. This is in contrast to an ecological mind-set that views *all* resources as *useable* resources to be effectively re-crafted for other uses.

Ecoliteracy, I believe, is about establishing new norms of thinking and doing. Changing mind-sets is a challenge when formal-based knowledge institutions respond to governance that is centralised, generic and non-specific. In the main formal learning today delivers the opposite of the knowledge and skills required to foster more ecologically aware mind-sets and thus the capacity for effective transition. It is also difficult to propose change (in established modes of learning) if the scope of understanding for that change originates from the very problems that propagate the need for change in the first place. Economist, John Maynard Keynes (1935) made the comment *"The difficulty lies, not in the new ideas, but in escaping from the old ones ...".* In other words how can we develop interventions that promote new ways of understanding our world and our place in it - where the questions of relationship between personal endeavour, societal need and ecological boundaries can be better articulated and valued, in more diverse ways than simply as the human potential to 'feed the machine'. This requires both a

spirit of exploration and conditions conducive to adventure and risk-taking ... neither of which are much in evidence in most systems of education today. Leadership and management thinker, Danah Zohar writes "*there is the brain's spirit - imaginative, intuitive, insightful, creative, unwilling to accept old paradigms as given, inventing new categories of thought, being holistic, finding new ways of making one and one add up to three, and finding a new path when our rule-bound and habit-bound thinking can cope*." (1997:38). Approaches to both formal and informal ecological learning need to tap into this spirit of creative thinking to reanimate responses to unsustainability through new types of ecologically framed literacy.

Ecoliteracy represents a shift in (the industrialized) mind-set that asks people to understand the fundamental role of natural systems and the relationship between their own well-being and the health of those natural systems. It is not only the theoretical underpinning of the interconnectedness of systems that is important but also the value of action-oriented ecoliteracy. David Orr emphasises this point, "*The study of environmental problems is an exercise in despair unless it is regarded as only a preface to the study, design and implementation of solutions. The concept of sustainability implies a radical change in institutions and patterns that we have come to accept as normal. It begins with ecology as the basis for the redesign of technology, cities, farms and education institutions, and a change in metaphors from mechanical to organic, industrial to biological."* (1992:94). Eco-pragmatism as an approach to learning nicely aligns with design-based education. The teaching of design thinking, process and practice offers up useful spaces to explore the relationship between ecological theory and practice to foster *new ways of designing*.

The transition design framework provides a structure to deliver formal, theory and practice-led ecoliteracy (reflecting its meta-frame of the Natural World): and here we are talking about the education of expert designers as described by Manzini (2015). The outcomes of teaching an ecoliterate curricula to expert designers is that this knowledge has the potential to permeate other types of designing through different approaches to design (co-creation, activism, hacktivism, repair and maintenance) and different outcomes of design (product, services and systems), as more 'expert' designers engage with a wider landscape of design, of which non-expert designers (citizens) are a part.

The last section of this paper explores an integrated, ecological view of design. It also explores the role of design outcomes (in this case a product) to convey the ecological-social-technical story of the product as part of the journey of consumption, use, reuse and the redistribution of resources at the end-of-life.

Innovation landscapes and design ecologies: finding ways to tell new stories

Design thinker, John Thackara (2005) describes a contemporary dislocation in thinking. He says we've grown this common consciousness of the idea that the world is 'out of control' - that all is too complex for us to delve into, to interrupt and understand. But he says we have culture, a language and the ability to understand abstract phenomena; to share knowledge and ideas and to shape solutions through design. So basically there is stuff that seems big and distant from us and there is stuff all around us, accessible and at the right scale - and here we have the opportunities and scope to act differently. "*The dance of the big and small entails a new kind of design. It involves a new relationship between subject and object and a commitment to think about the consequences of design actions before we take them, in a state of mind - design mindfulness - that values place, time, and cultural difference*." (2005: 226).

We can connect to this 'bigness' through design thinking and practice where the designed outcomes provide a useful response at a meaningful scale.
If design in transition represents a shift in values from reductionist to holistic, how can these best be represented in the outcomes of a newly framed design process? And how can these outcomes not only help to grow expert designers but also to engage citizens more actively (than passively) in new types of relationship with the resources they consume? Seeing the value of creating different types of 'made' future in a context of ecological parameters is, I believe, a primary role of design education. These values are also embodied through the designs created for, and in, society.

In my twenty years or so of exploring design for sustainability, I don't believe the relationship between bigness and smallness has been properly addressed. The 'beyond ecodesign' approach to reconceiving human-material relationships is difficult to implement because 'beyond ecodesign' shifts thinking and by association, action, beyond an efficiency imperative. This deeply challenges the core premise of the industrial model: that is, more stuff, to more people, at a faster rate. For example, we may make products more efficient but if we consume so many more of them than before, overall gains in efficiency are lost. Efficiency often only tweaks at the edges of the change needed and may not address the inter-relational issues (bigness) of our ecologies. The introduction of concepts such as sufficiency presents a challenge to an economic model that favourably measures high quantities of resource consumed. Issues such as resource scarcity, flows and sinks, the scale of consumption, manufacturing futures, and economic models are highlighted through explorations of sufficiency. Exposure to such debates are vital for developing ecoliterate designers who can comprehend the rationale of 'beyond single-issue' foci such as recycling, disassembly and energy efficiency. It is not that these foci are irrelevant, but rather that they need to be understood in an interrelated way.

The Open University teaches design modules to over 1000 students a year. Last year we launched a new third level program exploring sustainable design and innovation. As part of this module I created a framework to help students consider the interrelated landscape of a design. The innovation landscape (Figure 1) is a matrix that links multiple scales of design to the material, people and context of the design ecology.

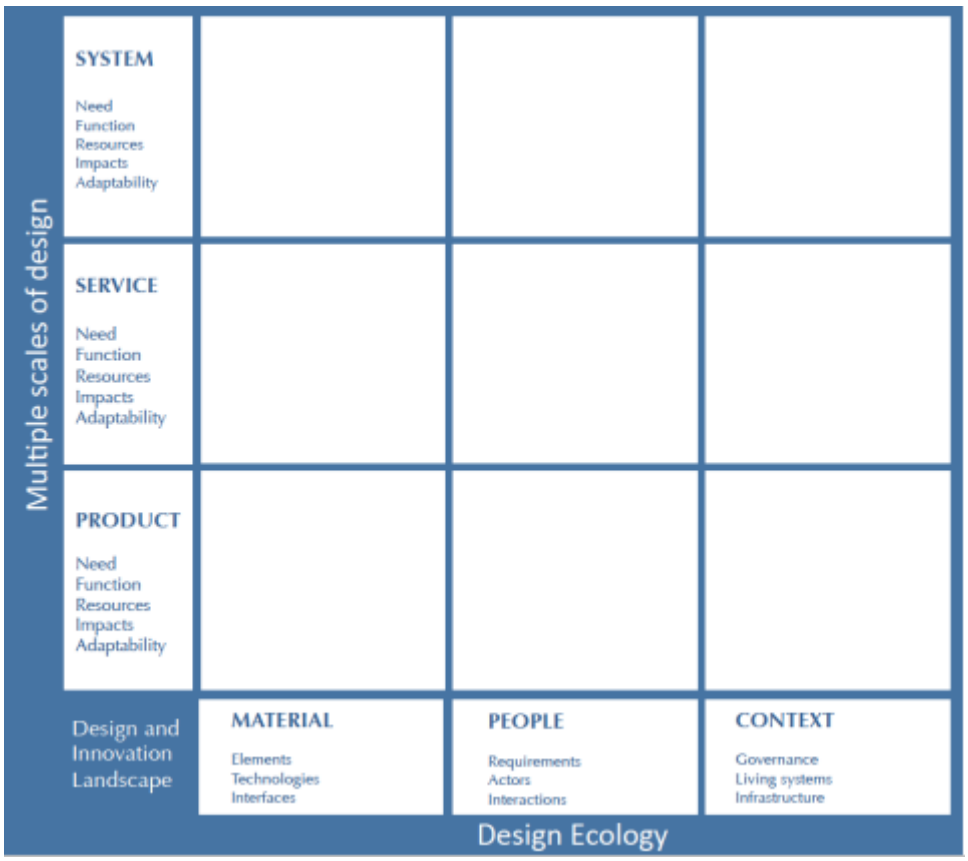

Figure 1 Innovation landscape

Each square of the matrix has a number of questions associated with it to prompt the designer to consider a range of issues. For example the product-material square scopes out issues of resource use across lifespan, the nature and ecosystem impacts of resources (renewable, toxic, scarce), the nature of, and reliance on, technology (fast/slow, durable, adaptable), product infrastructure (robust, flexible, adaptable, vulnerable to change), types of interfaces (versatile, accessible, maintainable), the needs the product meets and its core functionality and resilience. It is a useful exercise for looking at an everyday product in 'its landscape' of innovation opportunity. It is often easier to complete the product level than it is to consider responses at the service and system levels. As we move to the upper right hand side of the matrix the issues are further removed from the

ones usually associated with product design decision-making and linked to broader concerns such as geographical locations of ecological impacts, ethics of resource use, systems of regulation, cultural norms and sensitivities or technological trends. Take the washing machine as an example. In the bottom left corner we are concerned with issues of resource use across lifespan - using less metal, light-weighting, maintenance, using less energy, reducing detergent use, reducing water, cold water washes only etc. At the system level we focus for example on the need for clean clothes, cultural expectations of clean, access to hygiene, domestic grey water use, the infrastructure of redistributed manufacturing, the cyclical flow of resources and the diversity of regulation. These jumping off points for innovation are not the usual requirements for redesigning the washing machine. They instead open up the debate concerning the role of clean clothes in society and how this need can best be met.

Everyday design has the opportunity to (quietly) educate us. Products that result from large-scale and global production processes have common lessons to convey. These embody a speed of consumption, passive use, linear flows of resources, technology lock-in, technology redundancy and wastefulness. Designs that help to create sustainability will tell different types of story: mindful of resource origins, impacts and use; regenerative; celebrate locality and cultural difference; promote active people-product interactions across lifespan (e.g. repair, adaptation); and foster new knowledge and skills. The Fairphone (Figure 2) is an example of a different story in a complex, globalised and fast-tech market. As a relative newcomer to the smart-phone market, Fairphone pitches in with a different set of values and characteristics to its competitors. The phone communicates the usual technical specifications but also opens itself up (both metaphorically and physically) to reveal its ethical make-up - which, among other things, responds to concerns regarding mineral mining in conflict areas - alongside its physical ability to be taken apart, hacked, repaired, upgraded and restored. The company encourages its Fairphone owners to engage with the product, to look inside it, to understand the components and their functionality and to develop their confidence to repair and adapt the product as time and technology progresses; this develops a community of Fairphone owners who can actively engage with others who have other examples of hacking, adapting and use. While the concept is not rocket science it is a universe away from the trajectory of the smart-tech market, characterised by its built-in technological obsolescence, its product-service provider relationships and its use of depleting mineral stocks such as lithium, indium and tantalum. In comparison Fairphone represents a new story - an innovation with ecological and social credentials that have influenced its design and its mode of business.

Figure 2 Fairphone 2: black matte case and modular design (Fairphone, 2015)

Conclusion

Recognising fundamental ecological and social problems and developing new ways to respond to them is a substantial part of creating sustainability. This paper proposes that part of this journey is determined by the ability of designers, through designing the world around us, to make the ecological context more meaningful to people through designed objects. This provides an opportunity to

deliver new patterns of production and consumption that reframe the socio-ecological context and redefine the potential of human activity to positively contribute to sustainable change. Products (and other design outcomes) have a role in this transition. They can tell different stories of resource origin, use and reuse; of technology, resilience and economies of wellbeing. These are not just part of the traditional 'sales communication' to influence initial purchasing decisions. Instead these ecoliteracy inspired stories are intrinsic to the designed outcome and can communicate and guide users through lifespan decisions - from processes of co-creation to activities associated with maintenance, modularity, repair and up-cycling. It is through these ecologies of design that we can create future resilience and hope.

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Images

Figure 1 Innovation landscape, Author's own

Figure 2 Fairphone 2: black matte case and modular design, Accessed from Flickr Album *Fairphone 2, 2015*, on 03/05/16 at: https://www.flickr.com/photos/fairphone/23624799326/in/album-72157654222299268/