

Beyond the technological blindfold: a fundamental design research approach to sustainability

Lisa Thomas, Lancaster University, Bailrigg, Lancaster, LA1 4YW, UK.

Stuart Walker, Lancaster University, Bailrigg, Lancaster, LA1 4YW, UK.

Lynne Blair, Lancaster University, Bailrigg, Lancaster, LA1 4YW, UK.

Suggested Citation:

Thomas, L., Walker, S., & Blair, L. (2016). Beyond the technological blindfold: a fundamental design research approach to sustainability, *Global Journal on Humanities & Social Sciences*. [Online]. 03, pp 532-539. Available from: <http://sproc.org/ojs/index.php/pntsbs>

Received January 10, 2015; revised March 03, 2015; accepted April 23, 2015.

Selection and peer review under responsibility of Prof. Dr. Milan Matijevic.

©2016 SciencePark Research, Organization & Counseling. All rights reserved.

Abstract

Design for sustainability is contextualised within the modern worldview, which undermines notions of human meaning that accord with sustainability. A fundamental design research approach is presented, which responds to calls for more radical approaches to sustainability that account for deeper notions of human meaning – notions that are lacking within dominant technological approaches. Two artefacts have been designed in response to philosophical perspectives that relate to the technological erosion of human meaning. It is argued that this form of fundamental design research could inform a higher education agenda that substantively contributes towards the development of more effective, rather than merely more efficient approaches to design for sustainability.

Keywords: Design, sustainability, technology, meaning

1. Introduction

The continued design of an unsustainable material culture is underpinned by a loss of meaning widely recognised to be associated with the rationalistic, instrumental outlook of the modern era. This outlook has fuelled the human propensity to think in technologically inclined ways, which has facilitated widespread industrial expansion, the emergence of mass production and the birth of consumerism - the latter being associated with materialism and loss of spiritual values (Brey, 2010). The modern worldview is characterised by scientific understandings, which have warped how human beings perceive themselves and their place within the world, leading to unprecedented environmental damage (Dryzek, 2005). Despite the sustained trajectory of this damage, we continue to produce and consume enormous quantities of goods and gadgets to the extent that we now struggle to explain what they are all for, or how they add value to our lives (Thakara, 2001). Technological change and the pursuit of novelty have become hallmarks of the late-modern society and are major drivers of design, which is undermining the potential of design to meaningfully rise to the challenge of sustainability (Davison, 2013).

The concept of sustainability within the late-modern period has been promoted as an economic opportunity that can be capitalised upon through rationalistic, productive means; the kind of which have dug the foundations of our unsustainable technological world (Davison, 2001). It follows that approaching the challenge of sustainability in the same way may prove counterproductive (Braungart & McDonough, 2002). This phenomenon has been described as “ecomodernism” because sustainability, including design for sustainability, seeks solutions within the current context: they are therefore largely technological, eco-efficient, and market-driven (Davison, 2001). Within this context, technology is perceived as a neutral tool (Davison, 2001, p. 95), rather than as a world-building process in which technical decisions become fixed over many generations and shape, amongst other things, how we work, communicate, travel, and consume (Winner, 1980). The powerful impact that this environment then has upon how we experience our lives in a meaningful sense cannot be accounted for within such instrumentalist approaches to technological development. The technological world is an ambivalent phenomenon that reveals only its objects (Davison, 2001), and the design of this world suppresses this ambivalence - hence it is Davison’s (2013) contention that we are “blindly building a deformed world”.

2. The co-evolutionary nature of design

Despite many of our current technologies being post-industrial, they are built upon a modernist foundation (Davison, 2001), which is antithetical to the side of human nature that flourishes, experiences subjective wellbeing, and seeks meaning. This modernist foundation strongly shapes our understanding and experience of the world and how we continue to build it. Technology is not solely a manifestation of human knowledge, it is also a precondition to it, because it co-evolves with us (Davison, 2001), i.e. the technological world itself strongly influences the future development of it. Within this co-evolutionary relationship, it is a vast range of design endeavor that transforms technologies into products and techno-systems that are accessible, intelligible, and meaningful to a person’s life: from the cars that we drive, to the smartphones that we seemingly cannot live without. Design co-shapes human relationships with each other and with the world (Badke & Walker, 2013) but it is powerfully influenced by the technological processes of world-building, which are implicated in both causing and amplifying the environmental crisis that we face.

Like technology, design also operates within a co-evolutionary process. Despite this however, products are often designed as relatively independent entities, which is symptomatic of the one-way logic of the modern worldview, in which instrumentalist epistemology has led us to lose sight of ourselves as relational beings (Davison, 2001). This is evident within our design education curricula - particularly those of product design that tend towards incremental re-designing, rather than radical re-thinking (Marchand, 2009). Despite its co-evolutionary nature, design *can* contribute towards

ameliorating unsustainable patterns of behaviour but designers “must be willing and competent to think in new ways and be brave enough to break the proverbial mold” (Ehrenfeld, 2013). Re-thinking is particularly complex however because our ways of reasoning about the world are based upon unconsciously held assumptions that strongly condition how we perceive the world, before we begin to reason about it (Sengers, Boehner, David, & Kaye, 2005). The concrete artefacts of the designed world are not neutral entities because they have been largely informed by modernist assumptions and therefore serve to reify the unsustainable ideologies that underpin their design and development.

3. Design and the philosophy of technology

Given that design integrates different bodies of knowledge and renders them effective in practical life (Buchanan, 1998), the integration of philosophical perspectives of technology into our understandings of design for sustainability could enable designers to break the aforementioned proverbial mold. Such perspectives may have a significant role to play in bolstering and enriching our design approaches to sustainability through considering the relationship between technological development and sustainability. Design awareness of the world-building capabilities of technology, especially as they relate to deeper notions of human meaning, the human relationship with the world, and indeed, what it means to be human, could lead to radically different design approaches to sustainability that seek effectiveness, rather than merely efficiency.

Three major questions preoccupy the growing field of the philosophy of technology, which are: What is technology? How can the consequences of technology for society and the human condition be understood and evaluated? And, how should we act in relation to technology? (Brey, 2010). A variety of phenomenological, hermeneutic, existential, theological and critical theory approaches were adopted during the twentieth century that came to be characterised as the classical philosophy of technology (Brey, 2010), which located technology as being central to modern life and as concealing the essence of nature and our connection to it. Such concealments were thought to be detrimental to the human condition, particularly with respect to the side of our nature that flourishes, experiences subjective wellbeing, and seeks meaning. The classical tradition explored how humanity could develop a better relation to technology (Ibid) – a critically important aim in the context of the overwhelming evidence of unsustainability (Davison, 2013). The more recent society-oriented strand of the philosophy of technology holds particular potential to inform design for sustainability because it is less abstract than the classical tradition, seeking to evaluate the implications of technology for society and the human condition through studying concrete technologies contextually (Brey, 2010). Within this strand, elements from the classical approach are retained, in particular, the focus upon the technological erosion of human meaning and notions of meaningfulness that relate to sustainable ways of being. Such notions run counter to the modern way because they are associated with personal meaning and include values such as compassion, care, and benevolence, which are rarely discussed in design and design education (Walker, 2012).

4. Sustainability in design education

Lack of discussion about these important values in design education inevitably leads to a lack of discussion about them in the design industry. This is an unsurprising state of affairs given that the modern outlook led to the development of increasingly rationalistic methods for making design decisions, which has resulted in the almost unquestioned belief that research in design should be founded in scientific objectivity (Swann, 2002), despite design being an inherently creative, subjective practice. Having emerged from industrial roots before entering into a period of professional development, design is now experiencing a “third era” in which it has become a discipline in its own right, becoming recognised as a form of inquiry, capable of generating new knowledge (Buchanan, 1998). Design education has long subordinated itself to the design industry and whilst this third era is ushering in a more equal relationship between education and professional practice, it is borne out of

the late-modern, highly industrial period. This third era of design is likely therefore to fall short against the scale of change that sustainability requires, precisely because of the more equal relationship between design education and the design industry.

Within this context, the dominant focus of design for sustainability in higher education is upon production (associated with the modern, techno-centric values of progress and growth), whilst the contextual aspects of a product are often not prioritised within the design decision-making process. This traditional, product-oriented approach still defines the design industry, which can lead to difficulties for design students to design products from contextual rather than product perspectives (Marchand, 2009). It is envisaged however that designers will increasingly be required to consider ecological issues from both production and consumption perspectives, and that design education will need to develop approaches that integrate both (Ibid). The challenge for design education therefore will be in developing deeper understandings of sustainability to counter the fact that industry has thus far responded poorly to the complexities of unsustainability, often misplacing faith in technological solutions (Fry, 2005).

There is an urgent need for design to become more critical (Dunne & Raby, 2001, p. 59), and to begin scrutinising the design of the modern world with a view to transforming it (Davison, 2013, p. 52) – in essence to disrupt the co-evolutionary flow. Such critical design approaches are unlikely to emerge however within the current market-driven system of the design industry. It therefore falls to our academies to begin the process of developing radically different approaches to sustainability that challenge industry conventions, and that contextualise material culture within a broader and deeper frame of consideration (Walker, 2012).

5. Towards meaningful design for sustainability: Fundamental design research

Design practice that aims to reconcile the outer, material world with inner aspects of our humanity that are conducive to sustainability could potentially contribute towards more effective approaches to design for sustainability. Two artefacts are presented below (figs. 1-2), which were developed in a research *through* design approach that attempts such reconciliation. The artefacts are components of a larger portfolio of work and are contextualised within the foregoing discussion. Each is accompanied by a description in order to articulate the ideas and issues that have informed their development, which responds to Gaver's (2012) call for annotated portfolios to be considered as serious theoretical contributions in themselves. The artefacts can be understood as *fundamental* design research because they aim to define, explore, and manifest issues and ideas, seeking to create alternative possibilities through their tangible visual formats (Marchand & Walker, 2009). They aim to contribute towards different ways of thinking about design, and to explore how we *ought* to be designing for sustainability. This approach does not seek to develop theory that makes incremental changes within existing systems, rather it can be understood as "theory as disciplined imagination" which seeks to contribute towards a fundamentally different path that is committed to, rather than merely being capable of developing sustainable lifestyles" (Doordan, 2013).

Using practice within research is subject to continued debate because it inevitably and necessarily draws upon intuition and subjective opinion that are at the core of creativity, which has contributed to the modern propensity to subordinate practice to theory, to the extent that practice is often defined through negative contrast with theory (Davison, 2001, pp. 160–161). The artefacts have been informed by contemporary philosophical perspectives that relate to the technological erosion of human meaning. They each attempt to draw attention to different aspects of this erosion in order to bring understandings to design practice that are not commonly associated with the design of an increasingly digital material culture, such as how it impacts upon sustainability. Within the context of academic research these artefacts belong within, and contribute to, a broader intellectual frame of understanding and are the result of a mutually informing relationship between theory and practice. The objects are entitled Lakeland Data Stone (figure 1), and Google Diary (figure 2).



Figure 1. Lakeland Data Stone

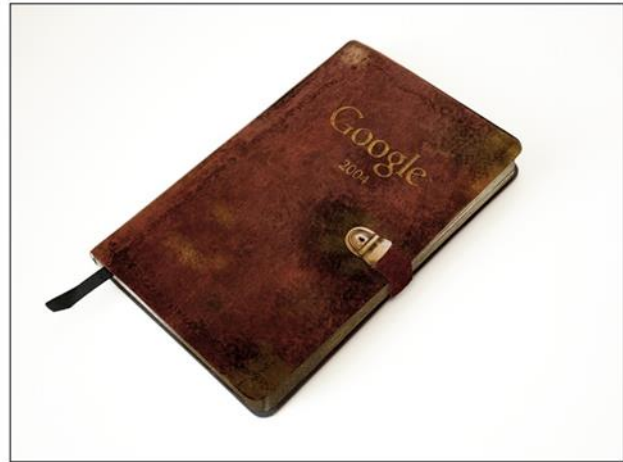


Figure 2. Google Diary

5.1. Lakeland Data Stone

The Lakeland Data Stone embodies critiques of technology that relate to disconnection from nature (Heidegger, 1971, p. 197), disburdenment (Borgmann, 1987, p. 42), fragmentation (Carr, 2011) and information overload (Postman, 2004). This artefact utilises a memory card from a camera that was used to photograph the English Lake District. The memory card (including its photographs) were destroyed in order to embed it within the stone, which is a distinctive, durable, and natural Lakeland material - the memory card therefore no longer has any obvious utility. Through this artefact however, utility can be understood differently. The photographs are accessible only through memory recall, which is facilitated in two ways: the artefact borrows from the familiar form of a memory card inserted into a camera, which is suggestive of photographs, and the distinctive nature of the stone evokes the location that they were taken in. The Lakeland Data Stone is a critique of digital photographic practices and their impact upon how we experience meaningful events, what we subsequently do with the photographs, and how we safeguard them for future engagement.

This artefact is the outcome of theoretically-informed design practice and aims to communicate a cautionary message about the nature of meaningful 'data'. In the digital era, the Lakeland Data Stone initiates recollection of a *whole* experience, rather than an often rapid digital rendition of a recorded experience. The artefact is therefore holistic in nature and requires focused, quiet attention for it to be meaningful, and, in turn, useful – in this sense, the Lakeland Data Stone particularly enables alternate understandings of utility that could transform how we design and develop digital material culture because conditions that are detrimental to sustainability, such as disconnection from nature, disburdenment, fragmentation, and information overload can be negated within design processes.

5.2. The Google Diary

The 'Google' Diary embodies critiques of internet culture that relate to distraction (Curtis, 2005), fragmentation (Carr, 2011), isolation (Turkle, 2012), and information overload (Postman, 2004). Through the symbolic form of a diary - an intensely private, deeply meaningful item that is often safeguarded over a lifetime – this artefact critiques the internet-connected life, specifically aiming to explore the increasingly personal relationship that exists between people and the internet. In forging a relationship between theory and design practice, the artefact, through the use of symbolism,

encourages reflection upon how much time we spend online, to what end, at the expense of what, and the extent to which it brings meaning to our lives. The 'content' of the diary comprises printouts from a search history, which powerfully communicates the trust we have in sharing personal information, including private, fleeting thoughts to search engines such as Google. In reading the Google Diary, a rich picture can be built about the life of the owner because the search history communicates what the person is interested in, the activities they are engaged in, and what they are thinking about. The Google Diary can inform design decision-making that relates to the purpose and design of the web, in addition to the proliferation of web-connected, everyday objects that the 'internet of things' is predicted to bring. It particularly encourages design approaches that develop the human relationship with the web in directions that seek to mitigate its negative influences upon sustainable ways of being, such as those of distraction, fragmentation, isolation and information overload.

6. Discussion

The two conceptual artefacts that have been presented form part of an annotated portfolio that explores the relationship between digital technology and sustainability. They are best construed as a flexible, radical *approach* to design for sustainability rather than a method per se. To suggest a method would be to suggest that a systematic procedure could be followed in order to achieve a specific aim. Designing such artefacts resists this kind of logical ordering, and therefore they resist the rationalistic, destructive patterns of the late-modern period. This approach is radical because it is not about producing a 'final' commercially viable design, but rather it seeks to "provoke, criticize, and experiment to reveal alternatives to the expected and traditional, to transcend accepted paradigms, to bring matters to a head" (Fallman, 2008). This approach suggests entirely new directions for design education. These directions are less product-focused in the traditional sense, and instead focus upon locating design for sustainability within a broader ecology of meaning. New narratives for design begin to emerge that explore and critique the relationship between our technological world and deeper notions of human meaning. These particular artefacts demonstrate that the objects of digital material culture are far from neutral - that in fact, such objects influence notions of human meaning that accord with sustainability through their associated practices.

These artefacts are both theoretically-informed and subsequently inform theoretical development, which occurs through both the process of making itself, and through reflecting upon the ideas and issues that they manifest (Marchand & Walker, 2009). In this sense, the artefacts are fundamental to theoretical development and do not become abstracted – they are the "definite facts of research through design" (Gaver 2012, p.945). The Lakeland Data Stone and the Google Diary demonstrate that transmuting insights from philosophical perspectives of technology into concrete form loosens the technological blindfold of sustainability through revealing that technology impacts upon sustainable ways of being. Designing in response to this could represent a seismic shift in how we approach design because the technological erosion of human meaning that is implicated in contributing so significantly to unsustainability would become a key consideration within design processes.

The artefacts hold the potential to generate discussion and thinking around the issues that they embody, and their implications for design. To this end, they could serve as a fruitful design *tool* for both design educators and design students because they appeal to right-brain cognition, which is based upon the sense of vision (Sheedy, 2011). As a design *approach*, facilitating student engagement with this form of fundamental design research could substantively contribute towards radically different conceptions of design for sustainability, which address notions of personal meaning that accord with sustainability. Curriculum development in this direction will however be complex due to the aforementioned tensions associated with it being a radical approach rather than a method,

student expectations of what product design is, and introducing theoretical perspectives so that they are perceived by students as being relevant to practice.

7. Conclusion

This paper has argued for integrating fundamental design research approaches into design education that are construed here as being radical because they critique the current system and seek alternatives to it. The approach presented has sought to design artefacts that develop insights into how we *ought* to be designing in the context of sustainability. It has been demonstrated that the embodiment of abstract theoretical perspectives can forge a relationship between theory and practice that leads to new understandings of design for sustainability in which technological optimism and prioritisation are tempered. The artefacts presented subordinate the dominant focus upon the product within the design process, to a focus upon the designed relationship between technology and notions of human meaning that accord with sustainability, which then becomes the driver of design for sustainability.

Following Buchanan's (1998) aforementioned identification of three eras of design, a fourth era in which design practice neither follows behind, nor is in an equal relationship with the design industry may become a necessity in terms of designing for sustainability. The design educator is capable of anticipating entirely new conditions of practice (Ibid), and can therefore respond to Chapman's (2005) view that "In reality, the sustainability debate has only just begun, and this is exactly why new and provocative genres of sustainable design must constantly be explored, so that this ongoing debate about how best to live in greater harmony with the world may continue to grow in its philosophical diversity and long term efficacy". The scale of change required for sustainability is both sweeping and systemic (Cooper, 2013), and design can only ever be *part* of the solution. Developing radical approaches to design for sustainability within our design education curricula, such as the approach presented in this paper is one such way in which design might begin to substantively address the challenge of sustainability that we all face.

Acknowledgements

This work was carried out as part of the Highwire Centre for Doctoral Training, funded under the RCUK Digital Economy programme (Grant Reference EP/G037582/1).

References

- Badke, C. & Walker, S. (2013). Design sleepwalking: Critical inquiry in design. In Walker S. & Giard J. (Eds.), *The handbook of design for sustainability* (pp. 389-407). A&C Black.
- Borgmann, A. (1987). *Technology and the character of contemporary life: A philosophical inquiry*. University of Chicago Press.
- Braungart, M., & McDonough, W. (2002). *Cradle to cradle: Remaking the way we make things* (1st ed.). North Point Press NYC.
- Brey, P. (2010). Philosophy of technology after the empirical turn. *Techné*, 14(1), 36–48.
- Buchanan, R. (1998). Education and professional practice in design. *Design Issues*, 14(2), 63–66.
- Carr, N. (2011). *The shallows: What the internet is doing to our brains*. W. W. Norton.
- Chapman, J. (2005). *Emotionally durable design: Objects, experiences and empathy*. Earthscan LLC.
- Cooper, T. (2013). Sustainability, consumption and the throwaway culture. In Walker S. & Giard J. (Eds.), *The handbook of design for sustainability* (pp. 137-155). A&C Black.
- Curtis, M. (2005). *Distraction: Being human in the digital age*. Futuretext Limited.
- Davison, A. (2001). *Technology and the contested meanings of sustainability*. State University of New York Press.

Thomas, L., Walker, S., & Blair, L. (2016). Beyond the technological blindfold: a fundamental design research approach to sustainability, *Global Journal on Humanites & Social Sciences*. [Online]. 03, pp 532-539. Available from: <http://sproc.org/ojs/index.php/pntsbs>

- Davison, A. (2013). Making sustainability up: Design beyond possibility. In Walker S. & Giard J. (Eds.), *The handbook of design for sustainability* (pp. 43-56). A&C Black.
- Doordan, D.P. (2013). Developing theories for sustainable design. In Walker S. & Giard J. (Eds.), *The handbook of design for sustainability* (pp. 43-56). A&C Black.
- Dryzek, J. S. (2005). *The politics of the earth: Environmental discourses*. OUP Oxford.
- Dunne, A., & Raby, F. (2001). *Design noir: The secret life of electronic objects*. Springer Science & Business Media.
- Ehrenfeld, J.R. (2013). The roots of unsustainability. In Walker S. & Giard J. (Eds.), *The handbook of design for sustainability* (pp. 43-56). A&C Black.
- Fallman, D. (2008). The interaction design research triangle of design practice, design studies, and design exploration. *Design Issues*, 24(3), 4–18.
- Fry, T. (2005). The scenario of design. *Design Philosophy Papers*, (1).
- Gaver, W. (2012). What should we expect from research through design ? In *CHI* (pp. 937–946). ACM.
- Heidegger, M. (1971). *Poetry, language, thought*. Harper Colophon Books, New York.
- Marchand, A. (2009). Sustainability and design education: From products to practices. *Engineering and Product Design Education*, (September), 436–440.
- Marchand, A., & Walker, S. (2009). Designing in design research : From solving problems to exploring issues. In *8th European Academy Of Design Conference* (pp. 300–303).
- Postman, N. (2004). The information age: A blessing or a curse? *The Harvard International Journal of Press/Politics*, 9(2), 3–10.
- Sengers, P., Boehner, K., David, S., & Kaye, J. J. (2005). Reflective design. In *4th decennial conference on Critical computing: between sense and sensibility* (pp. 49–58). ACM.
- Sheedy, J. (2011). *Pondering life: The human brain - Right and left*. Retrieved April 14, 2015, from <http://www.drsheedy.com/our-2-minds/the-human-brain-right-and-left.php>
- Swann, C. (2002). Action research and the practice of design. *Design Issues*, 18(1), 49–61.
- Thakara, J. (2001). Design Challenge. *Interactions*, 46–52. Retrieved from <http://www.cs.cmu.edu/~jasonh/courses/ubicomp-sp2007/papers/08-thackara-design-challenge-pervasive.pdf>
- Turkle, S. (2012). *Alone together: Why we expect more from technology and less from each other*. Basic Books.
- Walker, S. (2012). The narrow door to sustainability – From practically useful to spiritually useful artefacts. *The International Journal of Sustainable Design*, 2(1), 83–103.
- Walker, S. (2014). *Designing Sustainability: Making radical changes in a material world*. Routledge.
- Walker S. & Giard J. (2013). *The handbook of design for sustainability*. A&C Black.
- Winner, L. (1980). Do artifacts have Politics? *Daedalus*, 109(1), 121–136.