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Critiquing design: Perspectives and world views on Design, and Design and Technology Education, for the common good

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Abstract

This chapter critiques design and design practices from historic, social, cultural and sustainable perspectives as a basis for opening up a broader perspective on the ways design and designing are seen within mainstream Design and Technology education in schools. The chapter is divided into four broad sections. The first section explores the ways that design practitioners, theorists and historians critique past and present practices of design from within the profession. This is followed by an outlining of approaches that some designers have taken to using design itself as a way of critiquing society and culture. The focus then turns to Design and Technology education and highlights concerns that have been identified both at school and higher education level. Finally, consideration is given to examples that illustrate positive approaches to bringing broader and more critical approaches to Design and Technology in classrooms, including ways that are developed in detail in further chapters in this book.

Key words

Design practices; world views; critical design; design activism; utopian and dystopian design

Introduction

The aim of this chapter is to discuss, expand critique and disrupt some mainstream ideas about the nature and potential of design and then explore the relevance of this discussion in the context of school Design and Technology projects. This aim is premised on a concern that many learning experiences provided in Design and Technology education in schools are not consistently as challenging, engaging and meaningful as they could be and that it is often a limited understanding of design's importance and potential that underpins a restricted approach. With this in mind my intention is to illuminate a far broader canvas of what design practices can be and what they can achieve as a means to enrich, broaden and deepen critical and creative practices within mainstream schooling.

The chapter will take a critical look at design practices more generally and then focus on a critique of design practices within schools. The phrase 'design practices' is used explicitly in this chapter not as a way of creating a dichotomy between practical and theoretical approaches, but to indicate a more holistic perspective of *all* that *designing* constitutes, drawing on Lucy Kimbell's application of Reckwitz's theory of social practices (2002) in which she describes practices as "a nexus of minds, bodies, objects, discourses, knowledge, structures/processes and agency, that together constitute practices which are carried out by individuals" (Kimbell, 2009, p.4)

Critiquing past and present design practices:

How do designers define and critique themselves?

While its roots go deep into human activity, the idea of design as it is viewed today is relatively young. For many its birthplace is seen as the industrial revolution, meaning that, as a discipline and a profession, it has only been in existence for about 150 years. The practices of design have evolved partly in relation to meeting the needs of industrial societies and these practices have created many valuable innovations. However, in the fullness of time, some design innovations have come to be seen as of questionable value. Historically, design practices have had their critics, not least from within the field of design itself. The

first section of this chapter explores historical and current practices of design that arguably have created as many problems in the world as they have solved. The perspectives in this first section are largely those expressed by designers themselves, challenging and critiquing from within.

Design historians and those operating in the area of ‘design studies’ raise issues about design criticism itself. Is critique too embedded within normative views such that designing is critiqued against what might be seen as the design ‘cannon’? Should critique step outside of this in order to provide less insular perspectives? (Whitely, 1997). Huygen (1997) takes a historic view of design critique and identifies three forms of criticism: one that focuses on instruction on how to design, one that deals with norms and criteria such as functionality, utility, durability, universal aesthetic and so on, and one that he refers to as cultural criticism, critiquing “the context of design and its impact on society, and on the ideology and the way it functions.” (p.41)

It is this third form of critique that I see as the most productive to use to frame this chapter, drawing on examples where this is the stance that designers themselves have used to critique design practices from within.

Utopian and dystopian views of design

Design has been a major force in increasing standards of living and economic prosperity for large sections of the world’s population. But in parallel it has also been a major player in the development of a consumer culture that threatens to massively damage the futures of all living things. Margolin, writing in 1998, links the challenges that have been created in the name of design back to its modern starting point with the statement that "Since design's beginning, when it was conceived as an art of giving form to products for mass production, it has been firmly embedded in consumer culture" (Margolin, 1998, p.83). He sees this embeddedness as defining the mainstream development of design – citing examples of mass production in the UK, USA and Germany. Many designers see themselves as operating for the common good. But the values of different people, different cultures and different times affect the ways in which individuals and communities see the world, so that one person’s ‘common good’ may be another person’s nightmare. Within the post-industrialisation history of design there have been a series of movements, driven by the vision, ideals and values of groups of designers whose motives have been for progress in society – a utopian aspiration. Dorrestijn and Verbeek (2013) highlight key utopian movements in the modern age – the *Arts and Crafts* movement that sought a utopia that acted as a contrast and alternative to mass production, *Modernism* movements that saw industrialisation and technology as forces for social good and *Postmodernism* that has been promoted as a utopia of diversity and plurality. They identify these as utopian design movements “because in these movements designers seem to have been most explicitly concerned with improving peoples’ ways of living by means of design” (p.46). But they also comment that these movements are highly contested in terms of the extent to which their utopian ideals have been achieved.

This contestation has resonance with Margolin’s (1998) writings about the negative contribution of design to societies, and the lack of critique that was visible during the 20th Century. In making his comments he points to the small number of visionaries who have taken a critical stance from within - identifying particularly Papanek (1971) as the harshest critic when he wrote

"Today, industrial design has put murder on a mass-production basis. By designing criminally unsafe automobiles that kill or maim nearly one million people around the world each year, by creating a whole new species of permanent garbage to clutter up the landscape, and by choosing materials and processes that pollute the air we breath, designers have become a dangerous breed" (Papanek, 1971, p.ix)

Looking back further in design’s history, Margolin cites Buckminster Fuller’s critique of an earlier era (1920s) that attacked traditional practices and limitations of industrial design, by focusing on the possibilities of advanced technologies that allowed for economic use of materials – a critique that was evidenced through Fuller’s unconventional design thinking as shown in his practice, for example from his early developments of the 4D ‘Dymaxion house in the 1920s to his geodesic dome of the 1950’s and 60’s. Margolin makes the point that, in referring to Papanek and Fuller, he is contrasting one designer who was

drawing on wisdom of indigenous peoples (Papanek) and one who was realising his ideas through the latest technological developments (Fuller). In doing so he highlights an enduring dimension of designing as part of human culture and its inextricable link with technology and technological development. He mentions more recent critics such as Gui Bonsiepe, Tomas Maldonado and John Chris Jones but comments that within the 20th Century, with a few exceptions, "designers have not been able to envision a professional practice outside of the consumer culture. ... most product designers have remained locked into the aims and arguments of their business clients, believing themselves unable to take any initiatives of their own." (Margolin, 1998, p.86)

In exploring perspectives on design for the common good, what quickly becomes apparent are conflicting views, approaches and attitudes, particularly when design is linked closely with technology.

Discussing the contestation of utopian design, Dorrestijn and Verbeek (2013) highlight a reaction against a perception of technology as the "highway to utopia" that has created a "dystopian countermovement" (p.52) pre-occupied with the dangers that technology poses. This swing between extremes illustrates the conflict between utopian beliefs and dystopian fears and, for Dorrestijn and Verbeek, an overarching challenge between freedom and constraint. For Walker (2010), writing in the context of sustainable design, the idea that technology will make people happier by providing solutions to social and ecological problems creates a "technocratic version of societal wellbeing ... where our environmental and social problems will be solved through the ingenious application of advanced, super-efficient, non-polluting technologies" that is "patently false and flies in the face of both logic and the teachings of all the major philosophical and wisdom traditions down the ages." (Walker, 2010, p.104). Feenberg (1999) identifies ideas of technology as the solution to societal problems as being driven by a deterministic concept of technology – one that sees technology as neutral and its increased use as a way of progressing 'civilisation'. In explaining the challenges to technological determinism, he outlines a 'substantive' theory of technology that denies the neutrality of technology. In his view technology "embodies specific values. Its spread is therefore not innocent. The tools we use shape our way of life in modern societies where technique has become all-pervasive. In this situation, means and ends cannot be separated." (Feenberg 1999, p.2). When viewed in this way, a utopian perspective of technological advancement is questionable, in particular when technology starts to impact on humanity and the environment in ways that hadn't been anticipated. In a similar vein to Dorrestijn and Verbeek, questions are raised about the locus of control, for Feenberg whether it is within the technology itself or within the human capacity that created it. This quickly turns the tables on technological utopia, creating images of dystopian proportions – made visible in our imaginations through fictions such as Mary Shelley's *Frankenstein*, Aldous Huxley's *Brave New World* and George Orwell's *1984*. And so the technological genie is out of the bottle and no attempts to push it back will be successful. Presenting a more optimistic perspective, Feenberg uses critical theory to explore a further view that

"recognises the catastrophic consequences of technological development but still sees a promise of greater freedom in a possible future. The problem is not with technology as such but with our failure so far to devise appropriate institutions for exercising human control over it. We could tame technology by submitting it to more a democratic process of design and development." (Feenberg, 2006, p.12)

Through this latter statement Feenberg makes the link not just to technology but also to the role of design. The two are undeniably and inextricably linked, for example as portrayed in Archer's straightforward definition of technology as "knowing how" and design as "envisaging what" (Archer, 1992, p. 8). In this linking it is important to recognise that design in one way or another is implicated in technological development, important in achieving effective developments but equally culpable when things go wrong.

'Going wrong' can be an unintended consequence of a poorly considered design, possibly a naïve belief that neutrality means that any new concept or product will be used for its original 'good' intent. But Mitcham and Holbrook (2006) point out that the 'going wrong' can also be driven by 'evil' intent, for example through acts of terrorism. They illustrate this by pointing to examples given by Kemper (2004) such as the use of fertilizers used in car bombs. But even more mundane products have their initial purposes displaced once in the hands of consumers. One only has to look at the number of people

wearing highly technically designed running shoes who never run anywhere to see examples of this. Many of us will have opened a tin of paint with a screwdriver! Whether using examples of car bombs or running shoes, it is clear that to anticipate that an object designed for one purpose will not be appropriated (or misappropriated) for some other purpose – what Ihde (2006) calls the Designer Fallacy - is somewhat simplistic. To fail to recognise the many ways in which human beings choose to interact with and utilise the artefacts and systems of the made world, especially from the viewpoint of the professional designer, is a fundamental criticism that has been placed at their door. Tony Fry (2012) takes this debate one step further in exploring the reciprocal relationship between designed objects and humans – the ways in which humans design things that, in turn, affect the ways in which human behaviour is changed. For example, humans have designed mobile phones and mobile phones in return have ‘designed’ the ways in which we live our lives, from the ways and speed with which we communicate with each other to the ways in which we access information ‘on the go’. This reciprocal relationship he refers to as ontological designing, a facet of the ‘designer’ in all human beings. He points to the destructive side of this relationship that can be witnessed in the unsustainable aspects of ‘western’ civilisation – what he calls the nihilistic de-futuring activities of humans, but also to the potential, through human agency, to ‘self-recreate’ to a positive ‘futuring’ through ontological designing. Inherent in this idea is a need to recognise the ‘future’ that de-futuring presents and the need for some significant shifts in thinking including, in Fry’s proposition, a shift away from capitalist utopias of modernism. In considering the directions such a shift could take, it is hard to ignore those that prefigured early ideas of utopia as rejecting a life full of abundance and luxury that modernism promised, including the man conceiving the first ‘modern Utopia, Thomas More who, in his fictional work of the same name, written in 1516, promoted the idea of a better life that included an increase in leisure through living a modest lifestyle with a decrease in wants.

Views of utopia are starkly contrasting and, as those discussed above indicate, one person’s utopia is another person’s dystopia. But a bigger question, and one that raises issues for how designers can support the idea of ‘futuring’ is whether, while fictions can create utopias, in reality are they either achievable or desirable. De Vries (2012) makes the point that, from a Christian perspective, only God can create Utopia and that it is more appropriate and valuable for designers to accept that human beings are imperfect and live in an imperfect world and that responsible technological development should take place within this context. In identifying a negative legacy of utopian design, Dorrestijn and Verbeek (2013), in the context of user-influencing design, also challenge the idea of designing for utopia from an ethical standpoint. For them, the aim is to design in a way that finds a balance between coercion and freedom, exploring "nudge"(a libertarian paternalism approach) and "persuasive" technology as possible ways forward, recognising that, in the end, "any design will have unforeseen mediating effects"

Micro and Attainable utopias

The utopias critiqued above all fit in some way into what might be called a grand narrative of Utopia – utopia with a capital ‘U’. They are characterised by a specific vision, developed by the few in the interests (or not) of the many. In moving away from this, Dorrestijn and Verbeek propose as an alternative a more moderate “post-utopian social engagement” that would bring “a conscious and meaningful integration of technology into people’s ways of living” p.54. They link this proposal to Hannah Arendt’s idea (1958) that, in their words, “discussions of the good life were rooted in plurality. It was not the desire to develop overarching frameworks for one single answer ... but rather inter-action: acting with others”. (Dorrestijn and Verbeek, 2013, p.54).

This plurality indicates an increasing attention that designers are paying to more collective approaches – for some, new views of utopia that are driven by a belief in a collective, social interaction. This can be seen in the views expressed by Wood (2007) when he uses the terms ‘attainable utopias’ or ‘micro-utopias’ that capture “a more tentative, temporary, pluralized or truncated version than the ones we may find in the picture books”. (p. 3) He contrasts the idea of the conformity and possible fascism of a universal state of Utopia, with what he describes as “a more interdependent network of 'micro-utopias' (i.e. brief, or local utopias) [that] might be both helpful and feasible. ... different types of wisdom that are joined together.” (Wood, 2007, p. 12-13). Utopias are often characterised as unattainable, but for Wood it

is in the space between the thinkable and unthinkable that designing (and in particular collective designing) can operate. He proposes the following approach.

“It is wise to dream beyond what we currently believe to be attainable. Once we have done so, the next step is to co-imagine the dream in a more shareable form. This means exchanging dreams and seeing how they can be conjoined to enhance one another. The third step is to check that we really want what we have dreamed. The fourth step is to see how much of the dream is attainable. The fifth step is to share the task of producing and sharing the dream” (Wood, 2007, p. 13).

This small ‘u’ view of utopias is echoed by Gamez & Rogers (2008) who champion the concept’s intrinsic diversity and equity. The views of those speaking for the more micro views of utopia frequently link to democratic views of design that put the designer as part of a team of experts, rather than being what Baynes refers to as the ‘hero’ designer (2010). A number of newly defined fields of design have emerged from within the profession that recognise the value of collective approaches that bring together expertise from within and beyond the formal disciplines of design and that see the ‘user’ and other stakeholders as valid contributors. In their own ways, whether defining themselves or their methods as co-design, participatory design, socially responsive design or user-centred design they are collectively critiquing the idea of the hero designer and recognising the value of more distributed approaches to design, without denying the importance of professional expertise. Less the hero, more the team. Manzini (2015) sees these more distributed approaches as key to what he refers to as an ‘emerging civilisation’ in a world “when everybody designs” in which social innovation is created by collaboration between design ‘experts’ (or professionals) and ‘nonexperts’ – who he refers to as diffuse designers – those who engage with design through their innate human design capability.

The importance of designers working with expertise beyond design also emerges from Fry’s critique of the insularity of seeing design as a “category, discourse, or professional instrumental practice” (2012, p. 91) He argues that to not bring design thinking to other thinking across the arts and sciences is to ignore the complexity of design and its fundamental contribution in human development. Threading through each of the cases for more distributed, collaborative approaches is a motivation for creating ‘better’ futures – less grand, more attainable.

As more and more designers are finding themselves working in interdisciplinary contexts there is emerging a concern that maintaining traditional design disciplines (such as graphic, product, fashion, industrial design) creates unnecessary boundaries and that moves towards interdisciplinary or transdisciplinary practices are more realistic and less restrictive. Some go further to talk of post-disciplinary design, drawing from post-disciplinary studies that

emerge when scholars forget about disciplines and whether ideas can be identified with any particular one; they identify with learning rather than with disciplines. They follow ideas and connections wherever they lead instead of following them only as far as the border of their discipline. It doesn't mean dilettantism or eclecticism, ending up doing a lot of things badly. It differs from those things precisely because it requires us to follow connections. One can still study a coherent group of phenomena, in fact since one is not dividing it up and selecting out elements appropriate to a particular discipline, it can be more coherent than disciplinary studies.” (Sayer, 2000, p.87)

What can be seen from all of the above approaches is the (sometimes implicit) critique of an omnipotent position of a professional designer, an understanding of the importance of collaboration and, within this, a recognition of the potential of the designer in all humans.

World views

While designers might work increasingly with broad groups of stakeholders, the vision they bring to a project is critical. Fundamental to ways in which design visions are made manifest is the world view of the designers themselves (and/or those commissioning their work) and there is an increasing divide between designers pushing a consumption model that is premised on a western view of affluence and those who have a commitment to a more inclusive worldview that takes account of the design challenges

within the context of the geographical east and south and of value positions within different faith and indigenous communities.

David Orr writes about the importance of an ecological worldview, which he contrasts with an industrial worldview. His critique of design is based on a consideration of these two worldviews in proposing ways in which design could make a greater contribution to sustainable futures. He is not talking here about a paternalistic view of 'western' designers, designing for communities and cultures that they have only a superficial understanding of, but recognising and learning from the design wisdom in other cultures. "The starting point for ecological design is not some mythical past, but the heritage of design intelligence evident in many places, times, and cultures prior to our own." (Orr, 2002 p.4) He illustrates this with examples drawn from different cultures such as Amish, Inuit, traditional Balinese agriculture - histories of nature and culture living in harmony. This perspective can also be seen in his definition of what he identifies as ecological design in which

"The goal is not total mastery but harmony that causes no ugliness, human or ecological, somewhere else or at some later time. And it is not just about making things, but rather remaking the human presence in the world in a way that honors life and protects human dignity. Ecological design is a large concept that joins science and the practical arts with ethics, politics, and economics." (Orr, 2002, p.4)

Orr is presenting an optimistic position. Coward and Fathers, in critiquing design in development contexts take a more pessimistic view that, despite the potential for otherwise,

"Western or Northern concepts of design have forsaken the discipline's capacity to contribute to the quality of life in favour of its role in adding value and increasing sales and profits. Design in the 'developed' world bears much of the responsibility for peddling visions of a lifestyle that, if not immediately unsustainable for the Western/Northern minority, is certainly unattainable for the majority of the population in the South, which for the most part lives in poverty." (Coward and Fathers, 2005, p.452)

While presenting some recent positive examples of alternative approaches to design methodologies in a range of development contexts, they also identify the negative impacts of imported western views of design.

Balaram (2011), an Indian design academic and industrial designer writing from the perspective of a colonized society, also critiques what he describes as imported design, especially when done in the name of collaboration.

"Apart from the disregard to the difference in culture, climate, social and economic contexts, such a trend eventually kills indigenous creativity and creates dependence. Any form of dependence leads to exploitation in many forms by the foreign country" p.97

He makes a strong plea for a revised view of what a designer should be, placing humanity at the core. He sees this as particularly important because of the growth of technology

"What is now required more and more is not a skilled designer (by skill I mean knowledge and aesthetic sense included) but a broad-based, socially well-integrated, humane designer with a broad global vision." P. 102

Balaram makes a case for a shift from 'object-centred designing' to 'process-centred designing' and in this, it is possible to see the derivation of his description of a designer. He suggests that process-centred designing puts the focus on "basic human needs rather than materialistic concerns ... The focus here is on people not as consumers but as sensitive human beings. The designer's workplace is not his studio but the site where people live. Much of the designing is not designing for the people but designing with the people." p.195

Fleming, in 'Design Education for a Sustainable Future' provides a powerful yet simple concept through his 'mantra' that "form follows world view". Through the book he returns consistently to the impact that world view has on the ways that any one of us approaches designing, particularly in the context of

sustainability, suggesting that the mantra “asks each of us to examine our intentions, personal values and behaviors”. (Fleming, 2013, Kindle loc. 1230). His critique is of superficial approaches to sustainable design, - ‘green design’ that he refers to as “less bad” and also his critique of the inclusion of sustainability in the Design curriculum – to which we will return in the third section of this chapter.

Design Activism

The increasing priority that designers place on their broader contribution to culture and society has seen the emergence of design activism that acts as a form of critique, both of the practices of designers and of the contexts in which design is operating. Historically, a significant focus for activism has been located in the territory of anti-consumerism – as can be seen through the actions of Graphic Designers in the 1960s that created the ‘First things first’ manifesto, critiquing and taking a stand against graphic design being used as a tool to feed the growth of consumption through advertising. Activism through manifestos can be seen as statements of principle that designers make as a way of going public with intentions that then need to be delivered through their related actions as designers. They can also be statements of practice – as can be seen in Bruce Mau’s 1998 ‘An incomplete manifesto for growth’ that actively challenges and disrupts conventional approaches to designing through statements such as

“Capture accidents. The wrong answer is the right answer in search of a different question. Collect wrong answers as part of the process. Ask different questions.”

“Ask stupid questions. Growth is fuelled by desire and innocence. Assess the answer, not the question. Imagine learning throughout your life at the rate of an infant.”

And, linking back to ideas of post-disciplinarily

“Avoid fields. Jump fences. Disciplinary boundaries and regulatory regimes are attempts to control the wilding of creative life. They are often understandable efforts to order what are manifold, complex, evolutionary processes. Our job is to jump the fences and cross the fields”

Julier (2013) distinguishes between design activism that is aimed solely at changing attitudes (for example through posters or manifestos) and that which “functions in both a utilitarian and politicizing sense ... include[ing] the development of new processes and artifacts, where their starting points are overtly social, environmental, and/or political issues, but where they also intervene functionally in these” (p. 219). Critical in this idea is the importance of agency – the designer taking action in response to their own values and beliefs not the designer as a cog in a wheel doing a job defined and specified by someone else. These views have resonance with those of Fuad-Luke who speaks of design practice that creates “a counter-narrative aimed at generating and balancing positive social, institutional, environmental and or economic change” (2009, p.27)

Design as Critique

Through the first section of this chapter a story is told of the shifting thinking and understanding of design and a designer’s role that has significantly changed the territory and scope of design, particularly within the last fifty years. Changes have come about partly because of broader changes in the world and in societies. But important changes have also emerged through designers questioning and challenging to shift discourses by positioning design not so much as a thing to be critiqued, but as a tool for critique in its own right. The second section of the chapter will turn to explore design practices where the designer sees critique as a major driver of their work. This will start with unpacking the relatively recent concept of critical and speculative design.

There is a mainstream expectation that designed objects will have been created with a particular purpose in mind – meeting a need, maybe solving a problem and, most likely, ending up as a consumer item to be purchased. The standard assumption around what we mean by purpose is a normative one – to meet individual or societies needs for, say, warmth, protection, transportation, communication. There is a general concern that the designed ‘thing’ will meet some criteria in terms of technical function, user needs and aesthetic impact. But we have seen from the earlier discussion on design activism that

sometimes the need can be to protest, to shift behaviour. It is also clear that one person's purpose or need may be completely at odds with that of another person. Stuart Walker (2006) separates out these two approaches by pointing out that

“Functional objects do not always have to be all that functional. They do not have to be efficient, effective, economic or even acceptable. Mass-produced products have to be all these things because there is so much capital invested in their production; they have to be profitable. Therefore, the tendency is to play safe and to stay with the tried and true. Understandably, change tends to be incremental and cautious. There are, however, other ways of considering the creation of functional objects, and one of these that is especially useful is ‘design as critique’. Design itself can be used as the vehicle of critique and as a means of communication for drawing attention to the inadequacies of current assumptions.” Walker (p.127)

Critical practices - Critical design, Speculative design

Dunne and Raby are generally acknowledged as the initiators and key proponents of critical design. Showing some resonance with Walker, they give the following rationale for a shift in the use of design

“The design profession needs to mature and find ways of operating outside the tight constraints of servicing industry. At its worst product design simply reinforces global capitalist values. Design needs to see this for what it is, just one possibility, and to develop alternative roles for itself. It needs to establish an intellectual stance of its own, or the design profession is destined to lose all intellectual credibility and viewed simply as an agent of capitalism.” (Dunne and Raby 2001, p.59)

This alternative and possibly more conceptual approach is one that they have explored extensively. They highlight the value and potential of provocation through speculation, to an extent in the same way that science fiction does. But for them the medium is design practice, not creative writing. In ‘Speculative everything’ (2013) they distinguish approaches to design practices, in a similar way to Walker, between “industrial production and the marketplace” and a “parallel channel” of conceptual design that includes “speculative design, critical design, design fiction, design futures, antidesign, radical design, interrogative design, design for debate, adversarial design, discursive design, futurescaping, and some design art.” (Dunne and Raby, 2013, p. 11) They see this parallel channel as offering a wide range of opportunities for “design to pose questions, provoke, and inspire” (ibid) and, most importantly, to critique. They see designers as inherently optimistic and provide a useful and invigorating stance on critique as “not necessarily negative; it can be a gentle refusal, a turning away from what exists, a longing, wishful thinking, a desire, and even a dream. Critical designs are testimonials to what could be, but at the same time, they offer alternatives that highlight weaknesses within existing normality.” (p. 34-35). They see critical design as an activity, not a label and suggest that “all good design is critical critical thought translated into materiality”.

In reviewing approaches to critical practice, Malpass (2013) suggests that a common link between them is satire, rationality and narrative but he sees different stances or purposes for approaches. He distinguishes critical design as critiquing the present.

"critical design focuses on present social, cultural, and ethical implications of design objects and practice. It is grounded in critical social theory. ... Through mechanisms of defamiliarization and estrangement, designers such as Dunne and Raby extend the critical distance between the object and the user; in so doing, they make striking comment on current sociotechnical, economic, political, cultural, and psychological concerns." p.341

As an example Malpass points to Dunne and Raby's 2004 project “Is the future yours?” in which they “present a collection of hypothetical products to explore the ethical, cultural and social impact of different energy futures. ... The scenarios included biofuel created from human waste. ... the implication that human beings can or might be transformed from fuel consumers to energy providers” (Malpass, 2013, p. 341)

He explains that critical design typically uses fictive scenarios that raise issues through making the person engaging with the designed objects uncomfortable with the concepts presented - in Malpass's word to "experience a dilemma" – in the example given using child labour to produce energy. Malpass characterises all forms of critical design as involving satire. This example has resonance with satirists from bygone ages – such as Jonathan Swift's "Modest Proposal", in which, writing in 1729, he proposed a solution to the Irish “problem” as breeding children to be cooked like suckling pigs.

Unlike Dunne and Raby, he separates out speculative design as being

“Situated between emerging scientific discourse and material culture, ... it typically focuses on the domestication of up-and-coming ideas in the sciences and applied technology. It is concerned with the projection of sociotechnical trends, developing scenarios of product roles in new use contexts. It is linked to futures, scenario building and technoscientific research. It is characterized by its inquiry into advancing science and technology. It aims to broaden the contexts and applications of work carried out in laboratories and show them in everyday contexts.” (Malpass, 2013, p.338)

Malpass suggests that speculative design operates within Feenberg’s (1999) description of a substantive view of technology. His examples include Kerridge’s project on bio jewellery (Thompson et. al., 2006) in which jewellery such as wedding rings were created from the growth of bone cells from each partner, grown to intertwine into the rings. He points to the way that speculative designers 'fast forward' future scenarios built on current science and technological developments that allow us to see how future use of science and technology might develop, including using future, and often dystopian, fictional contexts.

Critiquing critical design

While critical design is critiquing design, there are others who are critiquing critical design. For some there is concern that these practices come from a stance of privilege, ignoring issues of injustice that makes these approaches “of little value or interest to the majority population of the world who are already living the various negative consequences of past speculations” (Kiem, 2014). These views have been countered by Dunne and Raby themselves (2013) and also by others providing examples that exemplify a broader perspective, such as that given by Vu (2011) of design company Droog’s project making chairs from the second hand clothes of homeless people.

More in-depth critique comes from Bardzell and Bardzell (2013) who refer to different lenses to view our increasingly technological world such as science technology studies (STS), philosophy of technology and also what they call “the emerging area of research through design or constructive design” (Bardzell and Bardzell, 2013, p.1), in which they include critical design. Reviewing the value of critical design in the context of Human Computer Interaction research they suggest that critical design literature it is too underdeveloped to provide practical support and unpack critical design through an analysis using critical theory and metacriticism. Through this they come to the conclusion that ‘critical design’ as what they see as the narrow definition of Dunne and Raby is one way of looking at it, but that critical design in a more open sense – design that critiques – has much to offer. They exemplify this through Gaver et al.’s ‘Prayer Companion’ – a design that emerged from research into the potential of new technologies to enhance the lives of the elderly, within which they explored the lives of a cloistered order of predominantly elderly nuns. The Prayer Companion provided this through

“a resource for the spiritual activity [that] displays a stream of information sourced from RSS news feeds and social networking sites to suggest possible topics for prayers. The nuns have engaged with the device enthusiastically over the first ten months of an ongoing deployment, and ... report that it plays a significant and continuing role in their prayer life.” (Gaver et al, 2010, p. 1)

Critiquing the normative paradigms of design and designing within mainstream Design and Technology Education

The purpose behind the first two sections of this chapter was to open up new possibilities for thinking about what *design* could be in the context of Design and Technology Education in mainstream schooling. The ways in which design currently exists within this area of schooling varies from country to country and in many ways is driven by the history and culture of design, technology and education within local and national settings. The extent to which Design and Technology Education can be critiqued in a general way across these settings is debatable, but some common threads and themes exist and provide some backcloth against which to begin to explore the potential impact the critique of and by design, as discussed here, could have on future contexts in compulsory schooling.

In England we have a formalised critique, in the form of evaluation through a national inspection service and in recent years have also found the school subject of Design and Technology under the spotlight from a range of other stakeholders. Elsewhere (Stables, 2012), I have drawn on these recent critiques, identifying a number of concerns including learners being set too many tasks that are formulaic, too narrowly focused, that lack challenge. There is too little focus on interdisciplinarity, societal challenges, and links with the world beyond schools, resulting in too little emphasis on projects that have genuine social and cultural relevance to young learners. There is also a clear message that more attention needs to be placed on design and for stronger links both with STEM subjects but also with art. More positive critique suggests a consensus that when Design and Technology is working well in schools it is taught and learned in ways that are enlightening, inspiring, challenging and that spark enthusiasm and innovation and invoke confidence and pride in learners.

Critiques from elsewhere that have resonance with issues identified earlier in this chapter include concerns for a lack of focus on sustainability issues. Elshof (2006, 2009) highlights a need to move away from a ‘product paradigm’ that supports a consumerist view of the world. For him, this consumerist view has been the dominant paradigm in Design and Technology Education in which “productivism as an encompassing belief system offers an uncritical valorization of industry, economic growth, and the consumption of technological products” (Elshof, 2006, p. 23)

In a similar vein, Flowers (1998) critiques Technology Education from an explicitly eco-centric stance, identifying the extent to which an anthropocentric world view dominates design and problem solving activities, focusing on “‘control’ over the ‘human-made and natural environment’ to better meet ‘human needs and wants’” (p.20).

In a separate article Flowers (2010) also draws attention to a “dogmatism ... prevalent in the curriculum, literature, and research in Technology Education” made evident by “dogmatic uses of a single English word - “the” - to falsely imply uniqueness.” (p.10). He illustrates his point by referring to his self awareness of his own practice -

“I found myself teaching students about “*the* five families of materials,” “*the* six types of material processing,” “*the* definition of technology,” “*the* rules for brainstorming,” “*the* environmental impacts of our obsession with lawns,” ... But are there exactly five families of materials, and are these five the five? In each of these instances, I seemed to be attempting to convey to students that one particular model, list, or procedure was the only (or the only important) model, list, or procedure, and they had better learn it” (Flowers, 2010, p. 14; my italics)

Of particular importance for the focus of this chapter, he draws attention to the impact that this has had in relation to the unhelpful way in which designing is represented normatively within Design and Technology Education as *the* design process, as if there was just one. This position has been critiqued by others (e.g. Petrina 2000; Lewis, 2005) and has dogged both pedagogy and assessment for at least half a century. The tenacity of this representation of designing as a universal method is great – as we are currently witnessing with revisions to the English D&T curriculum where our latest attempt at shifting the dogmatism of the design process has been to refer to ‘iterative processes of designing’ – only to find that people are now talking about *the* iterative process of design.

Useful critique is also evident in the context of design education in higher education. Margolin (1998) comments on the negative impact on Design Education of the narrow, consumerist view of design

professions and the narrow model of design practice that the students are exposed to. Clune (2008) extends this by highlighting models of Design Education that, by the way design is defined, support students in designing for unsustainability, giving examples of where a problem is identified through a particular type of product, such as cars, which then focuses the student's mind on re-designing cars, rather than stepping back to look at the broader socio-cultural context in which they exist.

As mentioned previously, Fleming (2013), critiques Design Education that engage students in superficial, "less bad" approaches to sustainable design. He also comments on the problems created for students by a lack of opportunities for collaborative working by maintaining "academically reinforced disciplinary silos" (p. 6) and the need for design educators to challenge this position. Questioning a westernized view of design, he states that

"if form follows world view, and if integration is the new consciousness, then how will that impact design education? The process begins with understanding some core values – inclusion and cooperation – and by pursuing a set of integral core behaviors: beginning with inclusion, the question of "who designs" has new meaning in the age of collaboration, cooperation and integration." (Fleming, 2013, p. 4)

Achieving a broader canvas: attainable utopias, sustainable futures, critique and speculation, activism and agency ... insights from current practice

While I have painted a gloomy picture of a reality that is present in in current Design and Technology Education, many of the ideas and understandings from design have already infiltrated the minds and practices of groups of Design and Technology educators, examples of which are highlighted through chapters that follow in this book. In this final section I draw from these examples in order to illustrate positive ways towards enriching Design and Technology learning and teaching through a broader and deeper understanding of future-facing critical and creative design practices.

Many of the ideas expressed within this chapter about utopian and dystopian views of design when related to new technologies have resonance with David Barlex's chapter (11) on Disruptive technologies. David provides insights into ways to enable learners to critique disruptive technologies – approaches that allow them to question the validity and impact of the technologies through exploring both constraints and affordances. He suggests a number of approaches, such as drawing on Macnaghten, Davies and Kearnes 'narratives' (2010) to critique, (narratives of desire, alienation, the sacred, evil and hope and exploitation) or alternatively through the lenses of 'People' Market' and 'Society'. He also suggests more speculative approaches, such as building future scenarios that in turn can be used for learners to create fictional vignettes that allow learners to explore how technologies might impact on people lives. The value of speculation is further explored in Niall Seery's chapter (13) on Modelling as a form of critique. In this chapter Niall presents ways of understanding how speculative modelling can be used as a form of critique that "explores the world *as it could be* not *as it is*. Future facing speculative scenario building, used to create contexts for design and technology projects also supports the creation of meaningful design briefs which, Fleming reminds us, provide "the consciousness of the project, develops the necessary diverse stakeholders, determines the rules for the co-creative design process, sets the schedule of interactions and clearly illuminates the integrative goals of the project". (2013, p.6). In my own research, responding to the concerns expressed earlier around formulaic, narrow and unchallenging design projects, learners working in groups who shared an interest in particular societal issues who created their own scenarios and briefs showed maturity, creativity and commitment in their speculations and prototypes for which they felt pride and a sense of achievement (Stables, 2013) In a similar vein, Bill Nicholl's chapter (8) 'Empathy as an aspect of critical thought and action in Design and Technology' illustrates how young people can engage in user centred design methods to develop understanding in a context and build empathy for the users they are designing for. Providing a further example of using scenarios, he shows how imagining you are someone 'suffering capability loss' performing an everyday task can build empathy for the user. He illustrates this further by showing how using user-centred simulation tools such as gloves that simulate arthritis by restricting finger movement or glasses that simulate failing eyesight

through blurring lenses allowed young learners to more fully engage with those they were designing for, increasing relevance and resonating with Balaram's (2011) plea for a shift from 'object-centred designing to process-centred designing that focuses on "basic human needs rather than materialistic concerns.

Mishack Gumbo opens up further insight into the importance of keeping Design and Technology Education firmly grounded in societal and cultural contexts. In his chapter (5) on 'Alternative Knowledge Systems' he illustrates how an alternative to a traditional western worldview shows inclusivity and respect for alternative wisdom and understanding and provides a fresh perspective to enrich approaches to design and technology, both in terms of knowledge and of practices. His chapter echoes those of Orr and Coward and Fathers in questioning the appropriateness of the dominance of a western worldview whilst also showing how much design, technology and education have to learn from indigenous knowledge systems. He illustrates this with examples of indigenous design and technological practices and presents cultural concepts of community and collaborative approaches that resonate with Walker, Fry and Wood and that provide potential for pedagogic approaches, for example for holism, co-creation and collectiveness and for dealing with values and complexity.

Cecilia Axell, in her chapter (12) on 'Children's literature as a learning tool for critical awareness' shows how stories can be used to open up different worldviews in relation to Design and Technology, for example through her account of Ghanaian author Meshack Asare's 'The Canoe Story' that highlights ecological issues and Roald Dahl's 'Charlie and the Chocolate Factory' that illustrates technology's role in colonization. She also introduces pedagogic approaches to bringing criticality and speculation, for example by presenting children with an incomplete story where they can bring their own creative and speculative design and technological ideas to life through the way they complete the story.

Echoing the concerns of designers (Papanek, Walker, Fry, Margolin, Orr) and design educators (Elshof, Fleming and Flowers) Terry Wilkinson's chapter (14) 'Politicizing the discourse of consumerism' provides evidence of how both agency and activism can be kindled in young learners whose eyes are opened to the realities of production and consumption of objects in their everyday lives. Using Annie Leonard's 'Story of Stuff' as both a model of critique and the context for a project with 12 year old learners, she illustrates their reactions to gaining insight into realities of globalisation and the critical stance they took as a result. More details of the case study presented from the project can be found elsewhere (Wilkinson and Bencze, 2015) but what she makes clear in this book's chapter is the empowerment potential of the use of the resource as a way of enabling "concrete utopian thinking" that is "wilful" not "wishful", "infused with hope and anticipation" – an idea that shares much with Wood's concept of attainable utopias.

Conclusion

Each section in this chapter spotlights areas of interest and concern that are now engaging collections of designers in creating new practices of design and new roles for designers. Many of these practices and roles are currently remote or entirely hidden from experiences of designing that are provided for young people in mainstream schooling. There could be a considerable number of arguments for maintaining this position, but I am not aware that these are currently being made, because such practices are also remote, unseen or outside of the experiences of teachers. Does this mean that a broader, more socially and culturally contextualised experience of designing is not desirable, or seen as attainable? If it is the latter, then following some guidance from John Wood (2007) would not be a bad start in exploring ways of opening up possibilities, first by dreaming beyond what we might currently see as attainable, sharing and exchanging dreams and checking whether they are what we really believe to be desirable, how they can become attainable and how to share the task of realising them, however 'micro' they may initially be.

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