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# As if Democracy Mattered... Design, Technology and Citizenship or 'Living with the Temperamental Elephant'

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This presentation takes as its basis the proposals for 'civics and citizenship education' – exemplified from Australia 'Whereas the people: civics and citizenship education' (1994) and from England and Wales 'Education for citizenship and the teaching of democracy in schools' (1998).

Not only is the current orthodoxy impaired – that the content of these reports ought to be the remit of curriculum areas such as Studies of Society – but also the reports' attention to technology is impaired by limited understandings of information and communications technologies. It will be argued that Design and Technology has an obvious and significant role to play in citizenship education and education for democracy. Furthermore, the case is presented that Design and Technology can only claim its legitimate place in a democratic curriculum if it is constructed holistically rather than being limited to the instrumental, the gendered or the vocational.

In addressing the dysfunction between the rhetoric of the reports and the potential of Design and Technology Education to empower students as citizens, workers and individuals, the paper explores:

- the significance of design as a change agent and creator of the future;
- understandings of matters of our very being and existence, and relationships with gene technologies and 'machine consciousness';
- technologies and technological practices which inhibit democracy.

Keywords: education for citizenship, democracy, design and technology

# **1** Preface

From my personal perspective I'm sharing today some concerns and arguments on topics that I think matter. They matter to educators, they matter to the recipients of education and they matter to the quality of democratic life. This paper is a part of my own ongoing journey with Design and Technology Education, and its genesis came from four factors.

First, in this very room, a year ago to the date, if not the day, we were given food for thought by Sir William Stubbs. There was a suggestion that Design and Technology might contemplate less of a future in the crowded curriculum and there was concern that we ought to make way for other initiatives.

Second, in the context of his remarks and the (then) recently produced draft Crick report on Citizenship I found myself in conversation with some colleagues a day or two later discussing the relationship between such a report on citizenship and Design and Technology. Third, I was aware of discourse in Australia about Civics and Citizenship Education yet, there too, I knew of no explicit articulation of such concepts through Technology Education. I decided to look further.

Fourth, being an ardent supporter of Design and Technology Education for all students throughout the years of their general education, I take the position that if, in a society which calls itself democratic, Design and Technology Education should be compulsory then, reasonably, it should be constructed democratically. Clearly a small debate looms here, but insofar as my personal journey is concerned, having visited the ethical dimension of Technology Education (Keirl, 1998), something of the notion of 'technological literacy' (Keirl, 1999b), and explored the orthodoxies and potential of the Technology Education curriculum (Keirl, 1999a), it seemed appropriate to critique this curiously fashionable 'Civics and Citizenship'.

# 2 Introduction

In this paper my core concern is that, despite the staggering influences (overt and covert) of technologies in our lives, we offer a most inadequate education for our co-existence with them. I contend that we seem to miss the educational significance of design as an empowering concept for life in democratic society.

Although I'd been told about it, Richard Sclove's (1995) text <u>Democracy and Technology</u> was not in my hands when I drafted the title to the paper, I assure you! However, it was a blend of serendipity, satisfaction and mild embarrassment to find that he too embraces the phrase that prefaces the title I've given this presentation... 'as if democracy mattered'.

Sclove's text is, I believe, most valuable for our field. It does not deal with education <u>per</u> <u>se</u> but its analysis of design, technology and democracy is significant. He highlights the paradox of the utter pervasiveness of technologies in our lives alongside the utterly inadequate critiquing of those very technologies. I salute his work and have drawn the subtitle for this paper from the following extract. He argues that:

This complicity in technological decisions that haphazardly uproot established ways of life is as perplexing as discovering a family that shared its home with a temperamental elephant, and yet never discussed - somehow did not even notice - the beast's pervasive influence on every facet of their lives. It is even as though everyone in a nation were to gather together nightly in their dreams - assemble solemnly in a glistening moonlit glade - and there debate and ratify a new constitution. Awakening afterward with no memory of what had passed, they nonetheless mysteriously comply with the nocturnally revolutionized document in its every word and letter. Such a world, in which unconscious collective actions govern waking reality, is the world that now exists. It is the modern technological world that we have all helped create.

(Sclove 1995:5)

Of which, more anon.

I'd like to set out some background and commentary on civics and citizenship and offer some brief notes on democracy. I will then examine a range of ways our field can be viewed to illustrate both its complexity and its educational potential. I contend that so long as we ignore this complexity – or, as I prefer, its richness – then we fail to fulfil our potential. Essentially, narrow constructs serve narrow agendas. I believe that rich manifestations of a Design and Technology curriculum will better reflect and serve rich democratic practice. I draw the paper to a close with some discussion of curriculum issues and pathways we might explore.

# 3 The movement for Civics and Citizenship

In this country the Advisory Group on Citizenship (AGC) chaired by Professor Bernard Crick published its report 'Education for citizenship and the teaching of democracy in schools' in September last year (AGC, 1998). In Australia, the Civics Expert Groups (CEG) (MacIntyre, 1994) produced their report 'Whereas the people, civics and citizenship education' in 1994. I offer a rather selective summary of each.

Crick offers a three-pronged articulation of 'effective education for citizenship' (AGC, 1998:11):

- social and moral responsibility
- community involvement; and
- political literacy

and these are matched in the Australian approach. Both are proposed as mandatory curriculum components. The AGC argue for 5% of curriculum time and the CEG '... put the view that education for citizenship ranks with English and mathematics as a priority for school education and that it is an essential component of a liberal education.' (MacIntyre 1994:13)

Both reports argue for a thinking citizenry, knowledgeable of rights and responsibilities, able to play a full role in 'participatory democracy', committed to justice, rational behaviour and life in harmony with others. All of which sounds fine and, superficially, teachers and the public alike might find the intentions laudable. However, critiques of what is on offer are illuminating.

The fact that both countries identify alienation, apathy and cynicism as concerns for their participatory democracies leads them to devise strategies for more 'participation'. Thus we find emphasis on educating for duties and obligations in clear preference to the reciprocal of these, namely, rights. The subtly presented picture is very much of the individual and their responsibility to the community - a logical extension being, if you will, the individual's debt to the state. I am not convinced that this is the best way to approach apathy or alienation particularly in our young people!

Furthermore, from the student's perspective, there is little talk of empowerment to action within a democracy. The Australian curriculum materials are weighted by historical analyses while the recommendations for Key Stages 3 & 4 in England and Wales call for assessment based on political language and structures. Talk of basic skills tests in

citizenship and 'Certificates of Citizenship' as awards may well keep the portfolio full but must have limited efficacy in empowering students to engage with the social and global issues relentlessly portrayed for them through the media.

Let me draw briefly on a critique assembled by two of my colleagues in South Australia (Gill & Reid, 1999). They see things rather differently. In interrogating why civics and citizenship is being turned onto schools so trenchantly they argue that such moves must be understood in a framework of relations between state, capital and education. They identify a curriculum shift from the 'whole child' to one of 'narrow individualism' and the economy. According to Gill and Reid:

The citizen is now constructed in narrowly economic terms as a rational and selfinterested individual/consumer seeking to maximise her or his personal economic utility, and in so doing serve the needs of an internationally competitive economy... In this post-Keynesian settlement, even the public sector - including the education system - is seen to be producing commodities for discerning individual consumers, rather than working for a common public good.

(Gill & Reid, 1999:62)

These authors contend that governments are opting for a 'minimal', rather than a 'maximal' approach to citizenship education. They cite Evans:

'Minimal interpretations emphasise civil and legal status, rights and responsibilities, arising from membership of a community or society. The good citizen is law-abiding, public-spirited, exercises political involvement through voting for representatives. Citizenship is gained when civil and legal status is granted. Maximal interpretations, by contrast, entail consciousness of self as a member of a shared democratic culture, emphasise participatory approaches to political involvement and consider ways in which social disadvantage undermine citizenship by denying people full participation in society in any significant sense.' (Evans, quoted in Wyn, 1995, p49).

(Gill & Reid, 1999:63)

This leads me to a couple of points on the issue of political literacy. As I shall show in a moment, there are parallels with Design and Technology education. As with any literacy, there are contested understandings of exactly what is meant by the term. The crudest of constructions are instrumental or operational - for example, that competence in spelling and grammar are enough to constitute a literate student. Knowing language is not enough, it is through language that hermeneutic/interpretive/meaning-making constructions can occur. Further still, being able to reflect <u>on</u> language and make decisions about its very use - by self and others - (critiquing, debating, analysing, and so on) is what emancipates the individual to operate as an autonomous literate person.

So it must be with political literacy. Knowing the terms and the political structures is one thing. Using those basics to create new meanings and understandings and to, ideally, reach a level of critical autonomy as a member of society is quite something else.

Perhaps we should look to the person who holds the pen that creates the term 'political literacy' and ascertain their intentions!

Before moving on, a couple of contextual remarks and a critique of the reports from a Design and Technology point of view will be helpful. Regarding key terms - and I have not pursued an extensive analysis of the reports from either political or philosophical perspectives - I am aware that one social commentator is willing to offer five constructs of 'citizen' (Cox, 1999) and 'democracy', of course, has kept many a pub bore talking to themselves for decades.

As I move nearer to our core business as Design and Technology educators I share two plain objections to both of these Citizenship initiatives. I doubt if either will surprise you. First, neither Design and Technology, nor Technology, in its holistic sense, is mentioned. Information Technology is of course in there, as is mention of 'rapid technological change', sustainable development and future studies. This merely exemplifies the great Catch 22 of our field - until there are properly educated people, that is, with a good Design and Technology education, making informed curriculum decisions about our field, we will have to keep arguing and articulating our case most vigorously.

Second, it is proposed that Citizenship education is to be well and truly centred in the realms of Personal and Social Education or Social Studies. Other subjects are cited - English! Geography! History! In one report Maths and IT are seen with a role of statistical analysis. Design and Technology is (are) almost non-existent.

In the England and Wales document we get a bit of a mention that is possibly less helpful than no mention at all: 'Science and Technology [sic] subjects commonly raise ethical issues of social policy' (AGC, 1998:53). This is the partiality of thinking that we must continue to challenge and overcome for quite some time yet. The species is where it is through thought, language and technology, and it is these three which will articulate our future - whatever its quality - yet we still don't offer a solid education in at least two of them!

# 4 On Democracy

I turn now to 'democracy' and democracy for the purposes of this paper. I choose to start with Singer, a moral philosopher, whose text <u>How are we to live: Ethics in an age of self-interest?</u> (1993) provides an excellent discourse on the question he poses. His argument that 'ethics is practical or it is not really ethical' is indicative of an approach one might take towards democracy. It seems to me that 'democracy', 'ethics', 'education', 'curriculum', 'design' and 'technology' all have in common that they are contested, dynamic, culturally determined and above all should be practical. Of course, the very fact that they are contested doesn't necessarily help their practicality but it is when attempts to determine them by 'rules' or 'definitions' applied universally and inflexibly that tensions and frictions arise.

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Tolerance is a key for our societies today. We know we can co-exist with different value systems and moral frameworks. We seek to extend as much freedom as possible to others and we seek to be free to determine our own pathways and lives. We also value justice and a capacity to be rational to articulate our, and interrogate others', positions and points of view.

Now these dispositions don't just happen and education has a powerful part to play in their adoption by young people. Indeed as White argued so clearly some years ago:

There is at least one policy which must be in the public interest in a democracy. This is an appropriate education for a democracy.

(White 1973:237)

But what of alienation and cynicism? Is it not reasonable to portray democracy as now deflated, impotent, even fossilised? While it may seem idealistic to pursue 'democracy' as a living entity I am actually comfortable with such a position. If the ideal is, by definition, unobtainable then it must be an appropriate term for democracy as I construe it. With the complexity of its competing variables it must become passive and vulnerable if it loses its dynamism. Regardless of whether complacency or neglect cause stagnation, criticism and contestation must be constituents of democratic society. It is amusing to learn that the Australian citizenship curriculum kit is called 'Discovering Democracy'. It may just be that the view is that democracy is now a fossil awaiting discovery! To the cynic, to those invited to apathy, Singer offers a solution countering 'narrow self interest' and the pursuit of greater goals which can give meaning to our lives (Singer, 1997:30).

# 5 How might we look at Design, and at Technology, in the context of this discussion?

I'd like now to offer a series of sketches of our field – ways of appreciating its richness and, perhaps, its potential. It will be clear that these sketches are far from universally seen by those beyond Design and Technology Education.

# 5.1 Orthodoxies of Technology

I have alluded to the dynamic, shifting and contested nature of both 'Design' and 'Technology' and if we are serious about reconstructing the field as values-rich and with ethical purpose then I would argue that this should occur within a framework which views both as cultural practice. While exploring the field of Technology curriculum (Keirl, 1999a) I chose to identify seven 'orthodoxies' with which we must wrestle. I call them orthodoxies in their sense of being 'currently accepted opinions'. (I have been tempted to call them 'orthodoxies of ignorance' but perhaps this is premature or even unkind.) In seeking to strengthen and articulate our field I believe we must challenge these although, with one or two cases, I'm sure you'll want to disagree with me. These are the seven:

- The orthodoxy of technology as 'new'.
- The orthodoxy of technology as 'things'.

- The orthodoxy of technology as 'neutral'.
- The orthodoxy of technology as 'hi-tech/I-tech'.
- The orthodoxy of technology as 'applied science'.
- The orthodoxy of technology as 'inevitable'.
- The orthodoxy of technology as 'incomprehensible'.

The last two are of particular interest to me today. The 'inevitable' facilitates modernist notions of 'progress' despite the fact that there are increasing calls to critique the very 'progress' which we seem to be making (at least in terms of quality of life). Linked with this are notions of 'keeping up' and 'not being left behind' - whether we are talking about a single student learning to use a computer or one national economy trying to stay ahead of others. Teachers and curriculum planners alike are also driven by this notion and try to design curricula to match perceived industrial and business developments and innovations. Given the current rate of technological change and the gap between industry-driven developments and curriculum innovation, I liken this to running after the plane as it heads off down the runway.

It is also here that 'technological determinism' and questions of free will arise. Questions of our capacity to choose and control (rather than be controlled by) the technologies we use, are key democratic questions yet the determinist position seeks to negate such choice.

It is partly the seeming impossibility of exercising our will (individual or collective) which contributes to the last orthodoxy - technology as 'incomprehensible'. We may wish, for the sake of expediency, or pragmatics, to confine ourselves to the creation of products and systems, to restrict our understandings and operations to the workshop, studio or notions of applied science. I consider this indefensible for a democratic curriculum. There are key issues here about the philosophy of our field. As you start to construct your personal 'it's all too hard' or 'that's not our brief' arguments in response, let's not mix the philosophical with the political, the educational with the resourcing. I contend that we must seek to articulate the significance of our field for education, for society and for global futures.

# 5.2 ... the Third Culture

We have known and valued for some time the conceptualisation of our field as a Third Culture (articulated by Archer, see Down 1985 and RCA 1979). This articulates what I believe to be a powerful educational case using an appropriate (Design and Technology) metaphor, of 'bridging' the 'gulf of initial incomprehension' perceived by Snow half a century ago (Snow, 1993:4). Berlin (1979:111) is less comfortable with the sense of 'cultures' but nevertheless identifies significant epistemological issues for Sciences and the Humanities. Contexts of knowledge, thought, creativity, society and culture are the very fields in which lie our debates today and it has been good to see the 'Invitation' in the Conference Handbook<sup>2</sup>. These debates must continue to be pursued with rigour and

<sup>&</sup>lt;sup>2</sup> The 'Invitation' paper from the *IDATER 99 Pre-Conference Handbook* (1999:22-26, Department of Design and Technology, Loughborough University) is reprinted earlier in this book.

the issues clarified if Design and Technology is to a confident and significant component of a democratic education.

We know, for example, that technology can no longer be constructed in the logicalpositivist paradigm of science. The values implicit at every stage of intention, manifestation and use of a designed technology are extensive and have consequences. Sclove points out, however, that '...critiques of instrumental rationality, (per se) have no obvious implications for technological design or practice' (Sclove, 1995:102). His position is not one of 'get technology out of politics' but rather 'get democracy into technology'. Thus, I return to the sense of technology as cultural practice.

# 5.3 ... seeing the Elephant

As with Singer, a core thesis of Sclove's is that we, first, consider the kind of society and quality of life we wish to have and, second, use those considerations to critique the technologies we choose to live with. He points out that we seem willing to accept, uncritically, life with the temperamental elephant. He illustrates his case by pointing to what he calls the 'polypotency' ('being potent in many ways' - rather than omnipotence, 'being potent in all ways') of technologies. Thus he talks of their '... superfluous efficacy ... in their functions, effects and meanings.' (Sclove 1995:20) Here, Sclove is suggesting that it is not just the explicit, immediate and functional potency of technologies with which we should be concerned but, further, with any technology's latent and pervasive potency that extends in multiple ways beyond the immediate and the tangible.

Sclove discusses people's tendency to be blind to the social origins of technology and to their social effects. He identifies the dual myths of technologies as 'autonomous self-contained phenomena' and of technologies as 'morally neutral'. He argues that:

These dual misperceptions concerning technologies actually enhance their relative structural significance, because they enable technologies to exert their influence with only limited social awareness of how, or even that, they are doing so. This helps explain why people are prone to resign themselves to social circumstances established through technological artifice and practices that they might well reject if the same results were proposed through a formal political process.

(Sclove 1995:24)

Sclove draws on the earlier work of Langdon Winner who has articulated what he calls 'Political Ergonomics' (Winner, 1995:146). Winner demonstrates the close relationship between political life and technological systems and patterns and he points out that:

At least as important now are the artificial patterns, including technology-centred patterns, that affect civic culture - the broad range of social relations, personal habits, popular beliefs, and styles of communication that give any political system its distinctive character. Of course, not all of what comprises civic culture is directly connected to the design and making of technological devices. There is more to it than that. But if the traditional concerns of 'politics as making' are to

respond to the challenge at hand, technological design must become a focus of political reflection. If Alexis de Tocqueville were visiting the United States in the late twentieth century, his book on its customs might well be entitled 'Technology in America'.

(Winner 1995:156)

# 5.4 ... framing Design

Of course, I'm sure that our collective political consciousness is being enhanced. For example, we are aware that environmental issues must be addressed and, so far as the world of design is concerned, we have authors' frameworks of principles not only to apply but also to compare and contrast. From two decades apart I would offer as examples for critique Mayall's (1979) Ten Principles of Design and McDonough's (in Ellyard, 1999:111) nine 'Hannover Principles' for sustainable design - so called for their articulation with the Hannover 2000 expo 'Humanity, Nature and Technology'. (appended)

# 5.5 Engaging technologies... We with them? Them with us?

# 5.5.1 Participation

At the level of participation, within our schools, in the professions or in societal decisionmaking concerning technology, serious issues remain for one (though by no means the only) group. As far as the educational and democratic arguments go, Grant put the case clearly:

The absence of girls from technological-type courses may well have profound social and political consequences for a society that is highly dependent on technology. Individuals lacking the necessary skills and knowledge to understand and cope with the technology that impinges on every aspect of their daily lives will increasingly have to rely on technical experts - be it for simple technical repairs or for more important decisions regarding the very nature of our society. At present most women have little influence on technological decision-making at any level. This nonparticipation of half the nation's population in directing technological change must surely strike at the very foundations of democracy. To disenfranchise women from the politics of technology by denying them an adequate technological education is to deny them a most basic freedom and can only lead to alienation from and ignorance, or worse still, fear, of technology.

(Grant, 1983, p. 217)

5.5.2 Technology and work - then and now...

There isn't only the sense of being positioned by the technologies we buy, use or live with. There is also considerable discourse on our relationship with the technologies with which we work. A hundred years ago, Morris articulated concerns about the depersonalising nature of machine-based production and the disengagement of the worker from the product (Morton, 1979). Current commentators note the agendas that control our potential to function in employment. For example, Luke (1992), in his elaboration of 'cultural' and 'functional' literacy, identifies the former for an elite and the latter for the masses.

Whereas the 'traditional' in the form of a 'craft' is seen as technology passé, computers are very much technology de rigueur. The critiques of Fry (1992) and Apple (1992) illustrate, ironically, the emancipatory role of the traditional and the technical role of the modern respectively. It is possible to share the concerns of Fry when he suggests that it is our very separation from technology, at least in its craft sense, which contributes to a dehumanisation.

Besides whatever particular craft practices deliver, craft centres on the act of human making which is increasingly important to retain in the face of technologies that dedemocratise the power to shape the world through one's labour. In such a context, craft inverts the historical trajectory of technology to shift the directive power of the making of forms away from the hand and machine-skilled labour into management maintained systems. In other words, it re-centres the human maker that advanced technology de-centres and displaces.

(Fry, 1992:263)

# 5.5.3 Being us...

So entwined are we with our technologies that we seem not to see their effects. Yet we seem willingly affected, if not also effected, by them. Earlier this year I framed an informal workshop for my local branch of the World Education Fellowship around the title 'Who were we? Who are we? Who will we be?' The questions offered a vehicle to talk about our very existence and development as a species. Our capacity to design and make sets us apart from other species although our capacity to head into the future uncritically may, in another sense, not set us so far apart at all! Several authors illustrate well the very essence of our 'being with' technology and the construct of technology as cultural practice (see eg Whiteley, 1993; Pursell, 1994; Buchanan & Margolin, 1995).

# 5.6 The existential...

The kinds of scenarios I have discussed - of relationships, societal organisation, culture and work - all bring one to ask 'Can we be who we are without Technology?' (As I have suggested, I view thought and language similarly. It seems to me that these three are of our essence). There are enough technologies in the first five minutes of anyone's day to construct a semester's study of species and technology. Short of a complete return to our natural state - whatever that might be, and I doubt if our minds would allow it - it may well be that we really are who we are because of the technologies we inhabit or because

of the technologies that position us in our world. Thus we come to the existential philosophy of our business.

Some colleagues will be aware of Florman's (1994) text <u>The Existential Pleasures of</u> <u>Engineering</u> where he writes:

Yet, what if existential searching were to reveal at the core of the human spirit a love for engineering? Or what if engineers, seeking the basis of the satisfactions they derive from their work, were to come upon the very soul-satisfying elixir that existentialists prize?

My proposition is that the nature of engineering has been misconceived. Analysis, rationality, materialism, and practical creativity do not preclude emotional fulfilment; they are pathways to such fulfilment. They do not 'reduce' experience, as is so often claimed; they expand it. Engineering is superficial only to those who view it superficially. At the heart of engineering lies existential joy. (Florman 1994:101)

Compare and contrast this with Hacker's (1990) analysis of 'The Erotic in Technology'. She, too, looks at engineering and, later, deconstructs Florman's work. She says;

Let us consider the field of engineering, foregrounding the passionate context of this occupation. This field, the apparent epitome of cool rationality, is shot through with desire and excitement. Much of this excitement stirs the mind. It is as though an intricately shaped erotic expression finds its most creative outlet today in the design of technology. The contemporary images of eroticism and of machines and systems reflect the imagination of the designer. How could it be otherwise if any human venture?

As with any human and social activity, some care a lot and some don't give a damn. Technical skills and activities and erotic skills and activities leave some cold, but fire the imagination of many. The latter, rightly or wrongly, view the disinterested as alienated, pathological, or deficient in some way. The disinterested may view the aficionado as obsessed, either with sexuality or with technology.

(Hacker 1990:206)

# 5.7 ... and the phenomenological

I conclude this section with a visit to the work of Don Ihde and his argument that technologies '... must be understood phenomenologically', not as objects but in terms of our experiences, indeed, as a 'human-technology relation'. I can express his third (of three) theses on 'Technology as Cultural Instrument' no better than he:

Thesis Three. The dimensions of technology transfers are never simply economic or productive, but multidimensioned and involve basic cultural and existential interchange. This is therefore a rejection of any foundationalist or reductionist explanation and an opting for a more multidimensional and phenomenological

model of understanding. It will involve utilization of a variation theory such as originated with Husserl, but now adumbrated into the historical-cultural domain both through interdisciplinary use of historical and anthropological insights and of imaginative variants upon these.

(Ihde, 1993:34)

Existentialism and phenomenology have much to offer us in our understandings of the relationship between ourselves and our technologies. Today we can converse, rather than just speculate, about robots and about - at least at a restricted level - artificial intelligence. At the beginning of this decade Kurzweil (1990) titled his text 'The Age of Intelligent Machines'. Two years later Caudill (1992) sub-titled her text 'Building an Artificial Person' (note 'person') and used the title 'In our own image'. This year, Kurzweil's (1999) text is subtitled 'When computers exceed human intelligence' and the title? 'The Age of Spiritual Machines'. In the same timeframe there has been growth in the field of nanotechnologies – machines built on atomic scales and, it is proposed, capable of travelling through the bloodstream. The landmark author, Drexler (1996) titled his text 'Engines of Creation'.

None of these authors is of the science-fiction genre; indeed, their works are highly appropriate as studies of Design, and of Technology. They offer excellent material for exploring what I see as a key concern for education as well as for professional Design and Technology practice, namely, intention. Are we willing and able to encourage critique at the very time of intention? What are the intentions of those who would design – let alone manufacture – new or 'improved' products, systems or technologies? In the desire to humanise technologies, we may be failing to explore the dehumanising (or the continued technologisation) of our 'selves'.

# 5.8 A summary of our look at Design and at Technology

What, then, is to be said about the scenarios I have just presented? I pose three questions:

- Where are we, as conscious beings, in relation to the technologies we design and use?
- Are we conscious of the extent of our depersonalisation or dehumanisation by technologies in our lives, relationships or work?
- What are our intentions in designing technologies and systems that we claim to be thinking, conscious or even human?

To know who we are, in our essence and through our consciousness, is to really know our technologies. To know both will allow us to create ethical and democratic futures. As Buchanan says in his chapter 'Rhetoric, Humanism and Design':

In our contemporary world, design is the domain of vividly competing ideas about what it means to be human. However, the exploration of design does not break our connection with the past. The central themes and commonplaces of design – power and control, materialism and pleasure, spirituality, and character – reveal deep continuities with ancient philosophic tradition. Indeed, the pluralism of

design in the twentieth century is intelligible because it rests on a pluralism of philosophic assumptions which are familiar. The exploration of design is, therefore, a contribution to the philosophy of culture in our time.

(Buchanan 1995:55-6)

# 6 Design and Technology and Citizenship Curriculum Issues

I will now try to bring together what I've said so far in ways which might inform curriculum design but which certainly demonstrate Design and Technology's role in Citizenship Education.

I see democracy as an ethically focussed ideal - to be striven for, worked for - not something which one learns from the book or simply discovers. So I suggest that, by definition, if it were ever achieved then it would cease to be an ideal. It is a form of social and political organisation which is dynamic and can constantly re-create itself.

There seems to be a case that the current state of affairs for democracy is poor, that some democracies are fossilising, ceasing to be vibrant. In climates where critique and criticism are unwelcome then they atrophy, and cynicism - an insidious reciprocal of idealism - sets in.

A healthy democracy needs a literate citizenry (Freire, 1972) – indeed a critically literate, not just a functionally literate citizenry. There is a proliferation of theorising to suggest that there is no such thing as a single, universal literacy. The debates and issues from the field of technological literacy are informative. We can construct technological literacy on the most basic of instrumental or operational lines - perhaps of skills and techniques. Thus we 'teach the technology' and students learn it – it is essentially technical. We can also look to 'learning through' technology. Here, in the hermeneutic-interpretive sense students can make meanings and understandings of their world – perhaps through designing products of their own. It is essentially practical. However, at an emancipatory level, students reflect on, critique, deconstruct and evaluate technologies in their fullest formulations. This is critical technological literacy. All of these senses of technological literacy are important and I would argue that a truly technologically literate person is empowered through all three senses to participate in and shape democratic life.

In an education for participatory democracy, and in preparing students for citizenship in our technologically-practised culture, it is simply not enough to constrain their learning to competence or basic applications. The issues that our societies create for themselves are of a political-technological blend and this has been the case for millennia. Hacker concludes her piece by envisioning that:

...the organization of material and energy to accomplish work, embedded in relationships of democratic technics, might once again unite technology and eroticism, freed of the authoritarian dimension that has distorted both since military institutions emerged some 5,000 years ago.

(Hacker, 1990:222-3)

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Sophisticated applications of both political and technological literacies are called for and these can only be articulated in climates of reasoned criticism - whether in the classroom, in forums such as this, or in a society wishing to be truly democratic. If our students are to be ethical citizens then we will need ethical educators delivering an ethical curriculum for an ethical society. 'Right practice' in Design and Technology is 'right practice' for a democratic society. As Gill & Reid (1999) argue, democracy should be both the purpose of schooling and the model on which its curriculum is structured.

As we think of our students and their citizenship I suggest that we have plenty to offer through Design and Technology curriculum. Today's is the world of the blundering oxymoron – 'military intelligence', 'economic rationalism', and the 'discriminating consumer'. Today's is the world where the term 'Luddite' is used offensively towards anyone who dares to speak out against a particular technology. Today's is the world of instrumental and reductionist reasoning. Today's is the world of valuing material capital and viewing the individual as commodity. Today's is the world of government- and multinational-controlled suppression of knowledge and criticism (Tudge, 1999:46). Today's is the world of the telephone as a tool of mutual surveillance. Today's is the world of near total global communications surveillance (all phones systems including mobiles must now embody circuitry for monitoring purposes - Riviere, 1999). Today's is the world of plant and human gene patenting (Berlan & Lewontin, 1999).

This is the world that the Citizenship Education writers would have students learn 'social and moral responsibility', 'community involvement' and, I suspect, a very narrow 'political literacy'. This is also the world in which students are to 'discover democracy'.

In a phrase in the vernacular, we might construe a good quality Design and Technology education as 'bullshit spotting'. I might put it more eloquently and assure those Citizenship, and other, curriculum designers that good quality Design and Technology Education recognises: the polypotency of technologies; is concerned with dynamism and change; is constantly weighing-up competing variables; articulates ethics, values and the aesthetic; and, is futures-focussed.

I put it to Design and Technology educators that instrumental reasoning, instrumental technology, instrumental assessment systems (see Kimbell, 1997) all lead to instrumental democracy. It is more important than ever to keep alive the lights of holism, criticism and contestation as the democratic indicators of our field - one which must be comfortable with the continuous journey, never the destination.

# 7 Conclusion...or re-creation...?

I offer two snapshots of challenging paths we might explore. The first is from the broad discussion of the design-technology-politics relationship.

Under present conditions it seems unlikely that a humane, democratically motivated, broadly effective political ergonomics will emerge. But it is also true

that in modern society one of the most grievous manifestations of society's rudderless condition is a widespread atrophy in the ability to imagine what an alternative society and its technologies would look like. Even those eager reformers and revolutionaries who have succeeded in achieving real power in the twentieth century have shown a woeful ability to apply the powers of human creativity in shaping a more positive connection between human purposes and the structure of technical means. To realise a better connection between politics and the design of things is the challenge that awaits us.

(Winner, 1995:168-9)

The second extract, already five years old, speculates on curriculum redirection.

Rather than necessarily associating technology studies more or less exclusively with workplace reform and the economy, perhaps as much emphasis needs to be given to the critical reimagining of a 'post-industrial', postmodern culture and the effects of new technologies and media culture on the emergent generations, as the citizenry of the future. Hence cultural and identity dynamics and new forms of lifestyle within an increasingly digitalised ecology might well become more overt curriculum concerns, supplementing current emphases on 'knowledge' and 'expertise': a new 'life-skills' curriculum, in short, bringing together 'really useful knowledge', 'technological literacy', 'practical learning', and 'civic courage'. This remains a matter for further enquiry and investigation.

(Bigum and Green, 1994:121)

Perhaps we, the profession, lack the critical confidence and/or the theoretical base to articulate the profound significance of Design and Technology to the general education of all students. To this end I welcome and accept the 'Invitation' presented to us by the conference organisers and I encourage you all to enter, critically of course, into this 'running conversation'.

We all have a fundamental role to play in citizenship education for vital and contested democracy. This is not something to be either marginalised by us or compartmentalised by instrumentally rational curriculum planners. Of course we could creep around, like Basil Fawlty, whispering "Don't mention the temperamental elephant" in case we awaken the critical, engage the ethical or even create a truly technologically literate society. As if democracy mattered...

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#### Appendix A MAYALL'S 'TEN PRINCIPLES'

#### THE PRINCIPLE OF ITERATION

Design requires processes of evaluation that begin with the first intentions to explore the need for a product or system. These processes continue throughout all subsequent design and development stages to the user himself, whose reactions will often cause the iterative process to continue with a new product or system.

#### THE PRINCIPLE OF CHANGE

Design is a process of change, an activity undertaken not only to meet changing circumstances, but also to bring about changes to these circumstances by the nature of the products it creates.

#### THE PRINCIPLE OF RELATIONSHIPS

Design work cannot be undertaken effectively without establishing working relationships with all those activities concerned with the conception, manufacture and marketing of products and, importantly, with the prospective user, together with all the services he may call upon to assist his judgement and protect his interests.

#### THE PRINCIPLE OF COMPETENCE

Design competence is the ability to create a synthesis of features that achieves all desired characteristics in terms of their required life and relative value, using available or specified materials, tools and skills, and to transmit effective information about this synthesis to those who will turn it into products or systems.

#### THE PRINCIPLE OF SERVICE

Design must satisfy everybody, and not just those for whom its products are directly intended.

#### THE PRINCIPLE OF TOTALITY

All design requirements are always interrelated and must always be treated as such throughout a design task.

#### THE PRINCIPLE OF TIME

The features and characteristics of all products change as time passes.

#### THE PRINCIPLE OF VALUE

The characteristics of all products have different relative values depending upon the different circumstances and times in which they may be used.

#### THE PRINCIPLE OF RESOURCES

The design, manufacture and life of all products and systems depend upon the materials, tools and skills upon which we can call.

#### THE PRINCIPLE OF SYNTHESIS

All features of a product must combine to satisfy all the characteristics we expect it to possess with an acceptable relative importance for as long as we wish, bearing in mind the resources available to make and use it.

Mayall, W.H. (1979), Principles in Design, Design Council, London

# Appendix B McDonough's 'HANNOVER PRINCIPLES'

- 1. Insist on the rights of humanity and nature to coexist in a healthy, supportive, diverse and sustainable condition.
- 2. Recognise interdependence. The elements of human design interact with and depend upon the natural world, with broad and diverse implications at every scale. Expand design considerations to recognise even distant effects.
- 3. Respect relationships between spirit and matter. Consider all aspects of human settlement, including community, dwelling, industry and trade in terms of existing and evolving connections between spiritual and material consciousness.
- 4. Accept responsibility for the consequences of design decisions upon human wellbeing, the viability of natural systems, and their right to coexist.
- 5. Create safe objects of long-term value. Do not burden future generations with requirements for maintenance or vigilant administration of potential danger due to the careless creation of products, processes or standards.
- 6. Eliminate the concept of waste. Evaluate and optimise the full life-cycle of products and processes to approach natural systems, in which there is no waste.
- 7. Rely on natural energy flows. Human designs should, like the living world, derive their creative forces from perpetual solar income. Incorporate this energy efficiently and safely for responsible use.
- 8. Understand the limitations of design. No human creation lasts forever, and design does not solve all problems. Those who create and plan should practise humility in the fact of nature. Treat nature as a model and mentor, not an inconvenience to be evaded and controlled.
- 9. Seek constant improvement by the sharing of knowledge. Encourage direct and open communication between colleagues, patrons, manufacturers and users to link long-term sustainable considerations with ethical responsibility and re-establish the integral relationship between natural processes and human activity.

McDonough added the following explanation to the document.

The Hannover Principles should be seen as a living document committed to the transformation and growth in the understanding of our interdependence with nature, so that they may adapt as our knowledge of the world evolves. These principles have been adopted officially by the City of Hannover and are being used by design-based professionals, particularly in North America, Europe and Australasia. (Personal communication with author).

Ellyard, P. (1998:111-2), Ideas for the New Millenium, Melbourne University Press, Melbourne

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