Citizenship education? Not without a quality technology education it isn’t

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Abstract
This paper will take as its context some of the relationships that exist amongst self, citizenship, society, democracy and technology. It will seek to demonstrate that these relationships are strong and cannot be considered in isolation of each other, nor that they are only tenuously linked. In particular, the relationship between technology and self and the consequent shaping of culture and society are discussed. This, in turn, is used to illuminate ways in which democracy may flourish or wither.

The paper will seek to show that current utilitarian and reductionist arguments are being equally applied to notions of both citizenship education and technology education. In such constructions, where citizenry and technological practice are conceived in functional ways, participatory democratic practice is stifled (be design?).

The paper examines ways in which a quality technology education, ethically grounded, can be designed to empower the individual as political player and conscious being not only in a democratic society but also as global citizen. The paper summarises the kinds of technology education which genuinely facilitate citizenship education.

Citizenship education? Not without a quality technology education it isn’t.

This paper was written and presented after September 11th 2001. W.H. Auden’s poem ‘September 1, 1939’ was written in New York when World War II was in the making. These are the last two (of nine) verses.

All I have is a voice
To undo the folded lie,
The romantic lie in the brain
Of the sensual man-in-the-street
And the lie of Authority
Whose buildings grope the sky;
There is no such thing as the State
And no one exists alone;
Hunger allows no choice
To the citizen or the police;
We must love each other or die.

Defenceless under the night
Our world in stupor lies;
Yet, dotted everywhere,
Ironic points of light
Flash out wherever the Just
Exchange their messages;
May I, composed like them
Of Eros and of dust,
Beleaguered by the same
Negation and despair,
Show an affirming flame.

(Auden, 1939)

Welcome to conference…
In a major city, one of the people in the street is here for a conference. This morning they have come from their home city in another state and have already checked in at their hotel. Casually dressed in jacket and jeans they walk to the conference carrying a bag which has amongst its contents their mobile phone and credit card. The street itself is a typical mix of people, businesses, traffic and advertising.

Keeping track
Their journey entailed first a call for a taxi to take them from home to the airport, then the flight and, after baggage collection, a train to the city and finally a short walk to the hotel. Having checked in they went to their room, unpacked, went out for a walk in the city park, returned, used a laptop computer to connect with the internet then left again for the conference. All of this, of course, has been efficiently documented. The phone calls are logged (hopefully not monitored) as is the internet use. Further logging occurred with the taxi company (by address if not name), with the airline and with the hotel. Hotel logging included times of entry and exit of the room using a swipecard. Camera observation occurred possibly in the taxi, certainly in all parts of the airports, in the stations, possibly in the train and the hotel’s public areas, and probably in the park and the main street.

Wearing jeans
One analysis of jeans (Sinclair, 2001) tells us that a typical pair of jeans might comprise: brass rivets from Namibian copper and Australian zinc; zip teeth from Japan; zip tape from France; thread for this made from petroleum in Japan and subsequently spun in Ireland; and, synthetic indigo dye which when discarded cuts out light in water and so kills fish and plants. The labour, if carried out in Tunisia, would pay about $A1.50 per hour. Wherever the cotton was grown (5% of the world’s cultivatable surface is given over to cotton) large amounts of water will have been used. Increasingly, cotton is generated from genetically modified seed – for a variety of reasons – to replace the use of pesticides, to ensure robust production and even to establish a particular colour at the growth stage. Cotton is the cash crop of choice in many Third World countries. Recycling denim is problematic because of the chemical treatments involved in its production.
Taking in the scenery
By the time our visitor strolls past a not untypical city-street display of advertising they have already been exposed to the attention-grabbing brand-establishing bids of advertisers on the train, in the airline and hotel house-journals, as well as on the internet. ‘No media without advertising’ is the tenet of the advertising industry argues Schiller (2001) citing Mattelart. No matter the medium, its colonisation is paramount, and the medium today can be the sport itself, the TV series itself or the society itself. No matter the desirability, ethically or otherwise, the product must be generated and sold. As Schiller documents, the cost and pervasiveness of production-push is huge. Kraft Food budgeted $800m in 1999-2001 for the marketing of 100 new products. Gillette’s new Venus razor ‘for women’ cost $300m in research, development and manufacturing and $150m for advertising in 29 countries. Coca-Cola’s global television (alone) advertising has run to at least 20,000 adverts over the last 50 years – as Schiller points out, an ad a day for the period.

Keeping in touch
Kurzweil (1999:169) cites the Western Union executive who, in 1876, said, “The telephone has too many shortcomings to be seriously considered as a means of communication”. In a perverse way today, rather than marvelling at how bizarre the statement seems, we can say ‘how true’. The telephone is much more than a person-to-person conversation device. Today’s is the world of increasingly pervasive global communications surveillance with phone systems, including mobiles, now manufactured with circuitry-as-standard to facilitate monitoring purposes (Riviere, 1999).

Today, we can telephone someone in the full knowledge that our location, duration of use, and whom we contacted are readily logged. We can know that our call may be monitored, trawled or tapped. We can be instructed by our employer when and when not to have the (mobile) phone switched on. We can use answering machines and caller identification to vet callers including friends and relatives before we speak with them. We can make calls to call centres and use menus and join queues and listen to music. We can have researchers and businesses contact us without invitation. Alone, but particularly in conjunction with other technologies, our phones might indeed have too many shortcomings.

The citizen and technology
I have briefly described just four technologies (namely: movement recording; clothing; advertising; and, communications) as they relate to a few hours in the life of the conference visitor. I have not discussed, for example, the technologies of the car, plane, train, food, streets, city, navigation, furnishings, bags, park, hotel, airport or conference.

There are several points to establish about technologies:
• Technologies are so much a part of our lives and cultures that we cannot define our existence without reference to them. As a phenomenon, in work, leisure, home life, travel, whatever, technology is pervasive.
• All technologies have positive, negative and contested values. No technology is neutral or universally good.
• All technologies are created by a manufacturing or enabling process resulting from human intention or design.
• A technology cannot ‘be’ in any functional sense without a human interaction. A technology ‘is’ as a result of the intentions, designs or uses applied by humans (although many other species demonstrate technology use too). This will probably be less the case in the future.
• Technologies often undergo ‘function creep’ – uses other than those originally intended. The function of the telephone for surveillance is one example. The conversion of oil barrel into steel drum (the instrument) is another.
• The convergence of technologies facilitates greater technological power than that of the sum of the parts.
• We are beginning to enter the time of the post-human condition, where the balance between our human identity as we have known it and the engineered human is shifting. Some expansion on this issue is presented in a parallel paper (Keirl, 2002b Ref if accepted).
• The speed of emergence of technologies is almost always faster than associated ethical considerations and legal frameworks.
• Technology is commonly viewed as autonomous or inevitable – ‘that’s the way things are going’ or ‘you can’t stop progress’.
• As our personal and group identities are shaped by the technologies with which we interact, so are our cultures and societies. Thus, sex-, race-, and class-based discrimination is often underpinned by assumptions about technological ownership and use.
• As the raison d’etre of technology, power and empowerment are subject to attribution, distribution and ownership – in equitable or inequitable, and often contested ways.

Technology and the economic regime in this country are close partners, jointly enjoying competition and the market; designed over-production and obsolescence; enterprise and innovation; and, consumerism. Setting aside economic (substitute technological) advantage and disadvantage in this country, the gaps are immense when the global spectrum is considered. However, when matters of pervasive surveillance of the populus, the patenting of DNA, the homogenisation of culture, the suppression of free movement and speech occur – all in ‘creeping’ ways - there might be cause for concern. The rights issues, for example public versus private, involved with monitoring, collecting and analysing digital information – whether for commercial or political purposes (Nixon, 1996) - remain largely unexplored. Choice issues are also highly significant at a time when ‘choice’ is increasingly limited in democracies that would call themselves ‘participatory’. I would like to expand on the topics of privacy and choice.

The death of privacy
The telephone has been discussed for its role as one part of more complex systems and has been described from the user’s perspective. However, we can look further. One of the great assets of digital is that the more digital, the more readily data can be accessed, compared and aggregated. Thus, for purposes of tapping – the direct surveillance of whole conversations – voice recognition and analysis software can be applied. Similarly,
with trawling, the sifting of multiple transactions (text, graphics or speech) for key words or phrases is greatly enabled with the onset of digital communication. This is increasingly the case with all international communications including satellite traffic.

The technology of voice recognition falls into the ever more sophisticated field of biometrics which includes fingerprints, palm prints, voice templates, iris scanning, thermal imaging of the retina, facial recognition and DNA identification.

An explosion in personal data recording is occurring and not always with our consent: ATM and sales receipts; all banking transactions; transfer of salaries; recreational bookings; club memberships; credit card transactions; health and spending profiles; customs interactions; land titles; super funds; tax file numbers; electronic shopping activities; tollgate use; Australia Post records; genetic profiling; internet activity; and so on. Whatever can be recorded is ripe for use beyond the intentions under which it was first established. Matters of both use and abuse arise with the passing on or selling of such data, the sequestration of it, or the (ethical or unethical) hacking of it. Whatever the case, the amassing of it is occurring and citizens are not being informed about the full extent of the issues.

Cameras are pervasive, whether concealed in a restaurant or pub or built into the many satellites around the planet. In the case of the former they may monitor customer behaviour or buying habits. The latter, some now with a 12cm resolution, serve the purposes of defence, meteorology, surveying or surveillance (Riviere, 1999). By the month, systems are getting more sophisticated. In 1995 Robotham reported on a variety of mass-surveillance systems:

> In shopping malls in the UK, CCTV (*closed circuit television*) images undergo computer analysis for irregularities in colour, volume and pace of the crowd. If you are running, or are black in a white neighbourhood, or are shopping with 20 friends on a quiet day, it’s likely the computer will identify you as a potential problem.

(Robotham, 1995)

(Standing still for more than a fixed time – for example two minutes in a mall - is also a programmable variable for computers put to such use.)

A recent proposal for a ‘cyber-fairness symposium’ canvassed such topics as: privacy in performance monitoring; online snooping; cyber-slacking (opportunities to slack-off while working offsite or telecommuting); difficulties in maintaining interactional justice without in-person contact; digital divide (social injustices created by unequal access to IT); accuracy and correctability issues; does IT promote procedural justice?; intellectual property rights (whose information is it - employee or organization?); and, free speech, censorship online. Increasingly too, ‘management by software’ is a matter of concern.
When taken alone, each of the technologies and privacy arenas documented here may or may not be of concern to citizens in a ‘democracy’. Where the potency is greatest is when computers (and their minders) sift and aggregate the masses of data to profile the activities of individuals and groups. This becomes more insidious when considered in the international context – a less talked-of dimension of globalisation. Uaeuq (2001) cites the various activities of some countries in the face of what he describes as ‘cybercrime’. The United States’ ‘International Crime Threat Assessment’ of December 2000 lists, as ‘global threats to the security of the United States’: “…terrorism, trafficking in drugs, women and refugees, illegal transfers of technology, financial fraud – and counterfeit and piracy.” (Uaeuq, 2001).

Uaeuq documents the agreements under development to counter ‘cybercrime’. He points to the grey areas of who determines what is criminal and the holding of what data (by individuals not government agencies) is criminal. The roles of the World Intellectual Property Organisation (WIPO) and the World Trade Organisation (WTO) in ‘governing’ intellectual transactions and determining their ‘ownership’ as ‘property’ become clearer when what is sought is the transfer of such knowledge through approved and regulated servers. The democracy of the internet, which has been the bane of (collaborating) governments who would seek to control it, is under threat from such strategies. By combining the policing of intellectual property and international trade with the impending growth of licensed broadband servers, control will be possible. As Uaeuq comments, “The proposed Council of Europe convention has the…totalitarian logic: ‘You want access to the web? Then you’ll have to accept our philosophy of intellectual property.” (Uaeuq, 2001).

It’s your choice…

As a species, our capacity as decision-makers is highly developed. Our capacity to weigh up multiple considerations and choose is a distinctive quality. A key aspect that we can consider in the life of citizens in a democracy is surely that of choice. But, do we have any real choice about the technologies that pervade our lives and shape our existence? Do we have real choice when we buy or use products? Do we have a choice in matters of technological ethics or in matters of legislation and technology?

Undoubtedly, many products reach the market place not because there has been a huge public demand for them. Rather, the demand has been created. When the question is put ‘Could you live without such and such?’ the reply is invariably ‘No’. The species managed rather well without remote controls, compact discs, mobile phones, computers or plastic carry bags yet none of these products came into our lives as a result of our declared choice to have them. Conversely, to now choose to live without them is no easy choice. To put matters into their proper economic and global context we also remember that for the majority of the world’s citizens such choices are not even an option.

Within our and similar societies we experience ever-greater homogenisation of our cultures, and technologies play a significant role in this phenomenon. The globalised marketing of ‘brand’ and, increasingly, ‘a lifestyle’ (ABC, 2001) depend on the (technology as) product itself being designed and manufactured wherever the economics...
suit (viz. the jeans cited above). The dominance of market is vital and (technology as)
media and communications play their key role. While one computer company would
dominate the market with both the machine and a plethora of licensed software the aim is
not only the immediate product sales but also the designed dependence because of lack of
alternatives, because of the machine’s displacement of prior human expertise, and
because of designed obsolescence.

Whilst media discourse analysis would expose the power and pervasiveness of the
message this is simply not enough. Advertising and marketing would not exist if not for
the products themselves. Whether it is the shoe, the jeans, the computer, the phone, the
coffee, the airline, the tobacco, the soft drink or the seed, the deconstruction of the
technology exposes the designed, that is, the choice-making that went into not only the
product but also the systems of which it is a constituent part.

Another sense in which we are deprived of choice or are presented with pseudo-choice
comes with the business of intellectual property and patenting. Berlan and Lewontin
(1999) articulate the case of Monsanto and their market-driven aims in the arena of the
genetically modified organism (GMO). With a Microsoft-style of licensing and global
domination the company developed GM wheat that had been subjected to the Terminator
patent (applied for in 87 countries). Not only would this seed not reproduce after its
harvest but was tolerant of particular herbicides – another Monsanto-licensed product
which the farmer is obliged to use. These authors refer to Monsanto’s ‘ally-competitors’
that oxymoronic sense of sharing technological purposes and techniques whilst
‘competing’ in the market. The market is of course global and key outcomes are the end
of diversification in farming practices, the control of farmers by licences, ‘special
arrangements’ with governments and, as-yet-unseen environmental outcomes.

Palast (1999) describes the suppression and control of (technological) knowledge by
transnational corporations such as Monsanto and suggests that ‘Editors who defy
government censorship fall flat on their backs when faced with powerful commercial
interests.’ (Palast, 1999:62). He concludes:

In much of the world this valuable tool, censorship, remains a government
monopoly. To protect their interests from dissent, some governments reserve to
themselves ownership of ideas; they are the landlords of discourse. Happily,
there are editors who would choose jail rather than change a word of print if the
demand comes from a government censor. Yet these same editors will slash
news reports, spike television productions or pulp entire journals based on a
single note from Monsanto – or merely the fear of one.

(Palast, 1999:66)

Another company, Syngenta, is marketing ‘golden rice’ – a Swiss “invention” – and
calling it a ‘pharma-food’ as it is enriched with Vitamin A. Greenpeace has pointed out
that a child would have to eat 3.7 kilos of this rice to get a daily dose of Vitamin A. The
‘inventor’ has described Greenpeace as “guilty of crimes against humanity” (Sinai,
Following a bomb threat in France, Monsanto are now adopting top security measures, including barring staff connecting their computers through modems to the outside world. They continue to consider offering ‘free or minimal fee’, to South Africa, “…technologies adapted to local crops, such as sweet potato or cassava” (Sinai, 2001:9). As Sinai points out, such a strategy gets a foothold in the market and could facilitate dependence. She cites other examples of such practices as well as Monsanto taking a Canadian farmer to court for ‘pirating transgenic rape’ and of contamination/pollution issues. In France a crop of winter rape was contaminated with GM seed while no GM rape has been licensed for growth or consumption in that country.

It has long been common practice for companies to ‘buy out’ their competitors or, more specifically, those who develop technologies that would threaten a company’s own product. In the case of Monsanto, buying the company that developed the Terminator gene meant a cost of $1.8billion and a gain of the patent. The revolutionary design of the Dyson vacuum cleaner saw Hoover seek to bypass the patent to develop a copy (Dyson, 2001). Eisen (1999) seeks to outline extensive suppression of inventions and discoveries. Sclove (1995) describes how the established oil-based car industry for a long time sought to suppress any development of electric alternatives. “This practice might aptly be labelled ‘elite Luddism’” (Sclove, 1995:116). Riviere (2001) discusses the medical apartheid in relation to drugs for AIDS victims in South Africa and describes the about-turn of 39 pharmaceutical companies that were suing the South African government when they “…evaluated the damage to their image caused by their defiant defence of their patents and suddenly dropped proceedings.” (Riviere, 2001:11).

Riviere closes his piece citing Jonas Salk, creator of the first polio vaccine, who when asked in 1955 who the patent belonged to, said, “The people. There is no patent. Can you patent the sun?” (Riviere, 2001:11). (Well, today the colonisation of Mars nears.) This concern for the patenting of technologies for purposes of control and profit highlights the intimate relationship between technological practice, economy and culture. While we may talk of cultural imperialism eroding familial, tribal and social structures it is technological imperialism that must be critiqued too. Not just technologies per se but technological practices and technological production are all instrumental in shaping and denying choice – whether the choice be political, economic, social or work-related. Underpinning this instrumentalism are the decision-makers whose own choices are rarely open to scrutiny or exposed to public opinion, informed or otherwise.

Finally, one might consider what choices the individual or the society has made to arrive at the perceptible psychological conditions that result from ‘pressure to buy’ or ‘pressure to use’.

Van (1998) alludes to the social pressure that comes with the term ‘literate’ and how people would rather claim to be ‘computer literate’ – a term Van reports one Institute Director as calling ‘a fraud’ – rather than admit the opposite. He suggests that those ‘in the know’ about computers – designers and users alike – can often delight in their knowledge while needless anxiety is generated “…among ordinary, intelligent people
who may be surprised to learn that scholars adept at using computers say the technology is often poorly designed.” (Van, 1998:14).

Over four decades ago Packard wrote:

> Another problem is that the environment for a satisfying style of life is being undermined by all the emphasis on ever-greater productivity and consumption. As a result, the nation faces the hazard of developing a healthy economy within the confines of a psychologically sick and psychologically impoverished society. (Packard, 1960:293)

Recently, Schumaker (2001), a clinical psychologist, talks of:

> …capitalism’s psychological dead end where life masquerades as a kaleidoscope of consumer choices. …(and of) the collective voice of mindless consumerism as it has been perfected and amplified in America.

(Schumaker, 2001:34)

He argues that:

> …high degrees of materialism have a toxic effect on psychological and social wellbeing. A strong materialist orientation has been associated with diminished life satisfaction, impaired self-esteem, dissatisfaction with friendships and leisure activities, and a pre-disposition to depression.

Escalating materialism may be the single largest contributor to Western society’s tenfold increase in major depression over the past half-century. It certainly features in the worrying rash of ‘consumption disorders’ such as compulsive shopping, consumer vertigo and kleptomania.

Hyper-materialism also features predominantly in the emerging plague of ‘existential disorders’ such as chronic boredom, ennui, jadedness, purposelessness, meaninglessness and alienation …

(Schumaker, 2001:35)

Van, Packard and Schumaker all link our personal and social psychological wellbeing to the material world of production and what we are lead to believe are choices. With any technology there are foreseen and unforeseen consequences and the amount of knowledge and understanding we hold will directly influence the quality of our decision-making. Invariably the situation will be imperfect and we can only do our best. However, when obsolescence, over-production, low quality, high energy use, non-recyclability, and harm to the wellbeing of people are known and understood there seems to be no rational explanation for our ‘choice’ in continuing to design, manufacture, use and discard a mass of technologies. This is not a democratic practice.
Whilst knowledge is a part of the matter, perhaps the greatest choice issue concerns the very act of choosing which is essentially a matter if will. Will – as design or intention – is part of the act of conception of a technology. Yet when it comes to our take-up of technologies we seem unable to apply a will guided by any particular principles. It would seem to be the case of either ‘that’s the way things are going’ (a fatalist approach) or ‘design for profit - create wants rather than cater for needs’ (the capitalist imperative). These are not polarities. Often, one is used as a justification for the other – ‘you can’t stop progress’.

In summary, there are two aspects of choice to consider here. First, being equipped with a critical and emancipatory technological knowledge on which to base a choice. Second, having the personal and collective political will to make the choice.

Awakening a will
Sclove’s (1995) analysis of our relationship with technologies is rich and illuminating. He highlights the paradox of the pervasiveness of technologies in our lives alongside the utterly inadequate critiquing of those very technologies. He suggests 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)

Sclove’s work is grounded in values questions and he articulates the past, and knowledge of technological consequences that we might be wiser heeding, with a strong futures perspective. (As Singer (1993) puts it: “How are we to live?”) Sclove begins by describing the relationships between communities and the technologies they accept – or adopt. He describes Amish religion and culture and allays the myth that such groups shun all technological innovation. He explains:

To a casual observer, the resulting pattern of exclusions and adoptions seems capricious. However, the pattern is the result of a remarkably sophisticated style of technological politics. The exact decision-making process varies somewhat from one Amish community to the next and from one decision to the next. In essence, each local Amish community – acting collectively rather than as a set of discrete individuals – asks itself how the adoption of a technology would affect the community as a whole. Innovations that would tend, on balance, to preserve
the community, its religion, and its harmonious relation with nature are permitted; those that appear to threaten the community and its values are rejected. In either case, the decision is reached through a process of public discussion and democratic ratification.

(Sclove 1995:6)

Sclove points out that laws and political and economic institutions are ‘contingent social products’ which, should we not like or agree with them, we can bring about change. However, this is far less the case with technologies:

So long as their social origin, effects, and dynamics remain so badly misperceived, technologies will not suffer the same liability as would, say, functionally comparable laws or economic institutions, of being challenged on the grounds that they are politically or culturally acceptable. Furthermore, societies will fail to develop the capacity to seek other technologies more consonant…with their members’ ideals and aspirations.

(Sclove 1995:24)

Whither democracy?
This paper cannot open up any expansive discourse on democracy but there are clearly many democratic issues to be unpacked with regard to our technologies. Given that not only are our daily lives intimately intertwined with technologies but also that we cannot define our existence without them, it is inevitable that our means of social, economic and political organization shape, and are shaped by, technologies too.

The mass of technologies are not consciously sought by the mass of people. They arrive as a result of a created need – in fact, a want – to generate a market and to generate profit. Consultation and consent are not a part of the process of the introduction of technologies. Nor are opportunities to inhibit function creep. The ubiquitous ‘expert’ or committee is believed and entrusted to represent the individual’s and the community’s interests. Rights issues arise with any privacy or surveillance practices yet much of our lives are already subject to these practices without an option on our part. Inequity exists between haves and have-nots whether in schools, communities or across cultures and across nations. Cultural and technological imperialism show no respect for democratic rights yet when a colonised culture reacts it is charged with being ‘uncivilised’, ‘backward’ or ‘ungrateful’.

Claims of bio-technologies’ benefits always hide the profit-generating dimension. Whether plant engineering, animal growth for human parts (Somerville, 2000), cloning or designer babies, profit and rich-world are the focus. Solutions to global health, hunger and planetary degradation do not figure in the picture. Exploitation remains so long as we want our jeans, genes, cars, phones and computers at the lowest possible (financial) cost without regard to humanity. Empowerment comes with technological control whether through the licensing of seeds and software or the surveillance of people.
To protest a technology today is to invite a charge of Luddism or, worse, be vilified for daring to challenge ‘authority’. As Hobsbawm (1998) and Dickson (1974) point out the equating of ‘Luddite’ with ‘machine breaker’ is erroneous. ‘Machines threatened, not only employment, but a whole way of life that embraced the freedom, dignity and sense of kinship of the craft-worker’ (Dickson, 1974:77). Further, Hobsbawm (1998:17) points to “…the latent passive Luddism of the employers themselves…” referring to their acquiescence towards, if not promotion of, the breaking of rivals’ machines to inhibit competitive edge. As the computer pervades our lives today, it does so largely unchallenged, carried forward on the surface perceptions of its benefits yet powerful in assuring unemployment, the monitoring and manipulation of personal data, the monitoring of our personal and work lives, and the facilitation of the aggregation of technologies that with ever increasing speed bring about the post-human condition.

The core issue remains that we do not participate in any decision making about these technologies while they continue to shape our futures in increasingly restrictive or behaviour-forming ways. We do not participate in decision-making for two reasons. First, we are not encouraged (allowed?) to. Second, even if the first were the case, we are not equipped to. How can a democratic citizenry function in such a way?

**Civics and citizenship education (CCE)**

In 1998 in the UK, the Advisory Group on Citizenship (AGC) chaired by Crick published its report ‘Education for citizenship and the teaching of democracy in schools’ (AGC, 1998). Four years earlier, in Australia, the Civics Expert Group (CEG) produced their report ‘Whereas the people…’ (CEG, 1994). 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. Teachers and the public alike would find these intentions laudable. However, both ‘citizenship’ (e.g. Cox, 1999) and ‘democracy’ are contestable terms. As with ‘technology’ they need to be seen as dynamic and unstable to remain robust. A critique of what is on offer is necessary.

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.’ (CEG, 1994:13).

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 the individual's debt to the state. This does not seem a convincing 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 fill portfolio but must have limited efficacy in empowering students to engage with the social and global issues relentlessly portrayed for them through the media.

Gill & Reid, (1999) 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.

The citizen is now constructed in narrowly economic terms as a rational and self-interested 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)

They 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)

When the reports are examined for their analysis of the people in relationship with technology the outcome is unsurprising. None is to be found. 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 but no explanation of the authors’ understandings of these
last three is provided. 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. In the England and Wales document one of the orthodoxies of technology education – that the field has some kind of special relationship with science education - is reinforced in a passing reference. 'Science and Technology (sic – linked, and in that order) subjects commonly raise ethical issues of social policy’ (AGC, 1998:53).

In Australia, the locating of CCE in particular subjects or a single Learning Area is confirmed, almost ratified, by Print et al. (2001). This may suit traditional curriculum organisational structures but for a concept of such ‘whole person’ importance, surely a ‘whole school’ approach is desirable. Just as literacy is the concern of every teacher so must be the case for political literacy. The principles of democratic practice are desirable principles for the content and the pedagogy of all schooling. A prerequisite for democracy is an education in democracy (White, 1973) and what better way than to practise this across the curriculum – a curriculum that not only outlines principles but practises and tests democracy in its day-to-day being.

There is no case for the marginalisation of Technology Education from the delivery of CCE. Indeed it is contended that the opposite is desirable. However, there is Technology Education and there is Technology Education.

A quality (Design and) Technology Education for citizenship in participatory democracy.

Just as there are instrumental, state-serving agendas running for CCE so is the case for education generally and Technology Education in particular.

Technology, like citizenship, is not value-neutral (Kennedy, 1995; Sclove, 1995). Rather, it is values rich – never without a downside, never universally good. So long as it is instrumental in content and pedagogy (viz. vocational education and training) it will stay geared to skilling and the jobs market. This is no less the case for ‘new’ technologies (by which people often just mean ‘the computer’ and then only part of its capacity) than it is for traditional ones based in non-classroom environments. Such Technology Education ensures transmissive pedagogy with quantitative assessment strategies that reinforce product and technique as the only measurables.

In an emancipatory approach one would see design and critique as active and valued constituents of (Design and) Technology Education. Hogan et al. (1995) begin to unearth some key roles for design thinking in their analysis of students’ bids for a Studies of Society and its Environment curriculum. The authors report the students’ focus on individual identity and interests whilst demonstrating that ‘…there is little…that suggests that they think of themselves as active constructors of their projects and lives.’ (Hogan et al., 1995:41). When identity is determined by the material, and cultural difference is viewed in material terms, it is the politics of the product that warrants exploration. When groups seek and establish identity through the material then there are grounds for
understanding the worth attributed to the material. Clothing, transport, architecture, space organization, accessories, food and so on are all technologies and are all utilised in identity formation and in establishing diversity and difference. To critique these technologies is to begin to understand them and the values that accompany them.

Brennan (1995) articulates the ‘doing’ and experiential aspects of education and these are also traits of good Design and Technology education. She recognises copyright and patent issues, colonialism, equity issues regarding technology access, ‘a living ethics’, the centrality of people (rather than management) in the institution, health, housing, and recreation – all nominated for their part in citizenship education. Technology education, too, can play its role in engaging with such issues. As Brennan argues:

These areas go beyond any one key learning area. They suggest that schools can contribute as places other than as gatekeepers of qualifications. They can also be central to the invention of new forms of knowledge, and of new ways of relating around knowledge and action in community.

(Brennan, 1995:30-31)

A quality Design and Technology Education is not about just skills at the kitchen worktop, computer keyboard or workshop bench. Skills education is a part of any quality education. Uncritical skill reproduction is not. Skilling taught as empowerment, as part of personal potential or cultural heritage, skilling explored as a part of one’s being, skilling as exploration of mind-body and self-environment relations, skilling as community asset – these are some understandings of skill as education. Skilling ‘to get a job’ is simply inadequate.

The ‘can-do’ efficacy that a quality Design and Technology Education can bring about is couched in the lives and problems of students, their families and their communities. The ownership and meaningfulness of sole and shared projects which engage with problems or briefs for which there are never right answers, only contestable and defensible ones, begin to serve learners with mental tools of creation and critique. Through design experience students can engage with choice as well as learn how change is enacted. Beginnings can happen with regard to will and action. Values issues become paramount as contestation is articulated and ethics is unearthed as a viable and practical field of enquiry for living.

Through critique as a Design and Technology experience, students learn to question the values behind technologies and designs. They interrogate the four phases of a technology’s lifespan – the earliest intentions, the design, the creation, and the use. Students develop self-critique and skills of deconstruction which can be applied to the technologies that make up their world. They learn that a technology is nothing without its users and that there are consequences as a result of technological design and use.

A quality Design and Technology Education must be grounded by five major considerations. First, it must be understood as a prime device for students’ personal knowledge creation. How knowledge is constructed is a matter for the student as much
as anyone else. Design is a key to this. Second, values and ethics must emerge. Third, the personal and species’ relationships with technologies must emerge – the existential warrants introduction. Fourth, the choice issues – both the instrumental capacity to choose as well as the will to act – should emerge. Finally, the pedagogical and curriculum implications for these four must be understood and articulated.

So far as CCE is concerned, D&T has special role. Talk of a thinking citizenry, rights issues, control of knowledge, ability to participate in democracy, empowerment to shape preferred futures, commitment to justice and equity – in all, ethical action – must come from a curriculum of empowerment not one of servility. Preparing the individual as servant of the state or tool of the economy is not what an education for democracy is about. This is instrumentalism that can be delivered through a particular kind of Civics and Citizenship education and a particular kind of Design and Technology education.

There is no shortage of argument to show that politically and educationally we have been blind to the need to critique technology in depth and with urgency (e.g. Sklair, 1977; Schumacher, 1986; Sclove, 1995; Singer, 1995; Kurzweil, 1999; Joy, 2000; Postman, 2000; Somerville, 2000; Guillebaud, 2001; Schumaker, 2001). If we value participatory democracy, and humanity as we know it, then a positive, optimistic and holistic Design and Technology can offer an affirming flame - without alarming the elephant.
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