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### Education and climate change - some systemic connections

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## Education and climate change – some systemic connections

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Unlike most papers on education and ecology, this one is not concerned with the content of education but its organisation as a system and hence its *purpose* or *finality*. The central contention of the paper, which takes English education and training (or ‘learning’) as a case in point, is that in a new market-state formation the pursuit of short-term goals is tied to the global free-market economy over which any attempt at democratic control has been relinquished. At a time when humanity worldwide faces increasing change in the ecology that sustains it, this is considered to be ‘ecocidally insane’ and the opposite of any sort of learning from experience to alter behaviour in the future. The re-regulated new global market is seen in conclusion as a crisis response to the end of the previous Keynesian welfare nation-state formation. As such, it is argued to be unsustainable in any sense.

**Keywords:** climate change; education and training (learning); higher education; further education; systems analysis

### Education and climate change

Prosperity built on the destruction of the natural environment is no prosperity at all. It is only a reprieve from future disaster. (Nnanna 2006)

If you went a few million years into the future it’d be really interesting to see how mankind is preserved. Probably as a little black line of carbon. If that. We won’t leave much record in the rock sequence. (Paleoclimatologist Jane Francis, quoted in *The Guardian*, 31 December 2005, <http://www.guardian.co.uk/environment/2005/dec/31/climatechange.comment>)

I hope I make sense to  
you in the shimmer of  
our days while the world we  
cling to in common is  
burning. (Merwin 2007, 34)

### Introduction

Impending climate change obviously poses a severe threat for education, as for the societies of which it is a part. This is more than the physical challenge – how inadequate that word seems – of rising seas and storms, drought and pestilence. It is a challenge to the very purpose of education – the handing down to future generations of ‘the whole expanding corpus of human knowledge’ that, as Sir Geoffrey Vickers says in *The Art of Judgement* (1965, 108), ‘must be relearnt about three times in each century’. If there is no future, however, there is no point in this institutionalised learning. Such a possibility may seem apocalyptic and therefore demented – ‘the psychopathic

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Now in which man was imprisoned when the future became improbable' (Nuttall 1968, 106). And yet, as the government's own 2007 Stern Review (Stern 2007) shows, such predictions can no longer be regarded as delusional or the interpretations of religious fundamentalisms.

The full range of evidence on the impact of human activity on the planet's ecosystem cannot be gone into here. Suffice it to say, it is well established and, put simply:

The earth was very hot four billion years ago ... The atmosphere was unbreathable. Methane, carbon dioxide, hydrogen sulphide... Nature hadn't learnt to break down cellulose. When a tree fell, it lay on the ground and got buried by the next tree that fell. This was the Carboniferous. The earth was a lush riot. And in the course of millions and millions of years of trees falling on trees, almost all the carbon got taken from the air and buried underground. And there it stayed until yesterday, geologically speaking ... What happens to a log that falls today is that fungus and microbes digest it, and all the carbon goes back into the sky. There can never be another Carboniferous. Ever. Because you can't ask Nature to unlearn how to biodegrade cellulose ... Mammals came along when the world cooled off. Frost on the pumpkin. Furry things in dens. But now we have a very clever mammal that's taking all the carbon from underground and putting it back into the atmosphere ... Once we burn up all the coal and oil and gas ... we'll have an antique atmosphere. A hot nasty atmosphere that no one's seen for three hundred million years. Once we've let the carbon genie out of its lithic bottle. (Franzen 2002, 375–376)

As the acid seas rise, glaciers melt, rivers dry, corals crumble, deserts spread, forests burn, tundra buckles, storms surge, animals die and people starve, it may be that humanity has only two or three centuries of habitable environment before nature corrects the imbalances we have caused and the insects inherit the earth. The Intergovernmental Panel on Climate Change (2007) warned that greenhouse gas emissions must peak by 2015 to limit global temperature rise to the two-degree threshold for more extreme consequences of climate change. This recommendation was not endorsed by the latest meeting of the G8 as the US refusal to enter into a binding commitment without China in effect vetoed specific targets. Even if targets are belatedly agreed, this agreement has still to be achieved. This is unlikely since, due to heightened economic activity consequent upon globalisation, emissions are increasing at record rates – 'the suicide programme still uninterrupted and well under way' (Nuttall 1968, 56).

Survival has thus become our new Utopia, superceding the rival Utopias of material abundance proffered as, on the one hand, the cornucopia still promised by free-market capitalism and, on the other, the freedom from necessity that was previously promoted by a perversion of Marxism into a relentless productivism – 'building steel-mills to build more steel mills', as Lipietz had it (1992, 52–56). Previously locked together in the Cold War of permanent arms economy, the victory of US imperialism leaves no alternative to its 'idea of a self-adjusting market ... a stark utopia' that, it is now becoming daily clearer, 'could not exist for any length of time without annihilating the human and natural substance of society; it would have physically destroyed man and transformed his surroundings into a wilderness' (Polanyi 1957, 3).

It is tragic that this triumphalist surrender of responsibility to the dynamic of the market – which knows only, as Marx said, 'the law of Moses and the prophets ... Accumulation for accumulation's sake, production for production's sake' (Marx 1971, 606) – has happened before humanity gained control over its own society. Indeed, to those who celebrate the monetarist nirvana, attempts at such control are misguided at best and totalitarian at worst. Much as its 'creative destruction' is celebrated by its acolytes, capitalist accumulation is an arithmetical function that has 'run away' from any cybernetic 'feedback' between the socio-economic system and the ecology that sustains it. A society that knowingly persists in destroying the conditions on which it depends for its future existence is ecocidal. As Elliot Morley, UK Minister of State for Climate Change and Environment, admitted: 'Climate change is the greatest environmental challenge the world will face this century' (letter to Mike Gapes MP, 22 February 2006). And yet global competition to extract and sell more and more of the earth's diminishing resources continues, driven by the so-called 'learning revolution'.

### Not learning but drowning

As far as we know, the human species is unique in having not only conscious awareness but also self-reflective consciousness of that consciousness. Because of this, humanity can learn not only from our own individual mistakes but from the record of collective errors chronicled in history. Our shifting perspectives on the past enable us to see that our present increasingly parlous situation is not without precedent. Indeed, as Bateson (1973, 470) wrote, 'It appears that the man-environment system has certainly been progressively unstable since the introduction of metals, the wheel and script. The deforestation of Europe and the man-made deserts of the Middle East and North Africa are evidence for this statement' in what can now be recognised as a new climatic era, the Anthropocene (Crutzen and Graedel 1986). We can also learn from millenarian enthusiasms of the past, such as those that seized upon some South Sea islands on first contact with Europeans, or that which Polanyi records gripped England in the early nineteenth century with the promise of 'free trade'. Part of contemporary free-market millenarianism is bolstered by the ubiquity of 'learning' and the promise of a 'learning revolution' supported by new information and communications technology such as the Internet.

However, disillusion with 'learning' is now widespread in England even amongst those with professional self-interest in providing 'learning services' at schools, colleges and universities where creeping credentialism has soured relations between teachers and taught. The old slogans have worn thin since the Confederation of British Industry declared 'a Training Revolution to turn Britain into a Learning Society' by 2000. Such naive views of 'learning' as self-evidently good ignored the obvious – that what is learnt can be irrelevant, false or morally wrong. Prisons – in the country with the highest proportionate prison population in Europe – are very good schools of crime, for instance. The learnings of lunatics, flat-earthers, creationists and other more harmful prejudices and delusions are also learnt, often laboriously, from the studious interpretation of teachings and texts. 'Masterminds' and the University Challenged recall unrelated bits of information under pressure. Examination techniques are honed to confuse knowledge with its presentation as information in acceptable literary form. Ever more selective higher education (HE) sifts the first-class from second-rate and third-rate minds and, as selection penetrates the entire school system, teachers differentiate their classes into 'the gifted and talented, the just plain average and the struggling', as the 2005 White Paper unsubtly distinguished them (DfES 2005, 20).

Psychometricians claim to calibrate these innate differences, and 'IQ' is back with a vengeance but with no more scientific justification than it ever had, although seeking one in the new heredity of genetics. New theories assign 'learning styles' and 'multiple intelligences' to the differentiated. Learning is then 'personalised' so that individuals negotiate their own learning plans through the seamless web of learning provision. Ancient prejudices live on in combination with the latest genetic predictions and other fish oil solutions. Even in everyday speech, the 'bright' child echoes Platonic gold over duller silver and bronze. The commonplace of 'mind' over body derives from mediaeval ideals of monastic contemplation. Victorian eclecticism reappears in the effortless achievement of the 'gifted and talented'. In all the talk about 'learning', what is being talked about is lost. Information is confused with knowledge, behavioural competence with holistic skill, and learning at all levels with its assessment.

What is clear to the growing number of disillusioned is that in important respects society is not learning at all, but the opposite. It is not just that teaching to tests may not, after all, have improved literacy and numeracy when student standards of spelling and mathematics are visibly slipping (Shayer, Ginsburg and Coe 2007) but, more importantly, corporately controlled mass media daily plumb new depths of banality and sensation. 'Dumbing down' may be politically incorrect but it is not coincidental that the term appeared simultaneously with the extension of education to later and later years in what has been called *The Learning Unto Death* (Rikowski

1999). In this relentless world, not even the employed are secure but must train and retrain to keep up with the accelerating pace of new technology. The currently 1.67 million officially unemployed have been redefined out of existence. They are like actors 'resting', investing in their own human capital by tooling up their portfolio of personal skills to transfer to the next challenging opportunity. If they fail to make themselves 'employable' enough to be employed, they should try harder by taking out another loan for another training course! Learning is thus presented as a neutral and technical operation in which all learning is good as long as it is marketable. Colleges and university courses and departments close if they cannot find customers, as may many schools if unfettered competition results from the 2006 Education and Inspections Act. Meanwhile, everyone knows the biggest and most unmarketable questions are left unasked.

### Learning as adaptation

If 'Learning or conceptual change' is taken, as by Hutchins (1995, xvii), 'as a kind of adaptation in a larger dynamic system', then the logical question to ask is what is the larger dynamic system to which learning is adaptive? Following systems analysis, in particular Gregory Bateson's *Logical Categories of Learning and Communication* (Bateson 1973), the critical question is to define the boundaries of the system. Bateson, like Hutchins, takes as the unit of analysis for learning a system that is 'not bounded by the skin or skull' of individual learners, but rather one that includes their socio-material environment with boundaries to the system of their 'cognitive architecture' in 'Organizational Learning' that 'may shift during the course of activity' (Hutchins 1995, 292).

Bateson proposed a theory of learning for 'the unit of survival ... organism plus environment' (1973, 459). On this basis he recognised at least five levels of learning, the first of which was shared with other living organisms – such as even Franzen's 'fungus and microbes', which learnt or adapted to decompose cellulose, and the last that he thought probably had not occurred on this planet yet (1973, 264)! Confusion between messages at one level of learning with those at another, Bateson and later Laing elaborated into a theory of schizophrenia and jokes. In such situations the 'double bind' can only be overcome by additional information that can no longer be accommodated in the original context of learning and forces a change in that context. Thus Bateson distinguishes learning that changes the meta-context as a type of Damascene conversion in which the information that was acquired previously is recast in a new gestalt. Incidentally, 50 years ago at the Dialectics of Liberation Conference, Bateson defined wisdom as 'a sense or recognition of the fact of circuitry' (1973, 119) and saw the loss of such awareness as at *The Roots of Ecological Crisis* (464 *et seq*). Bateson ultimately reverted to three levels of learning, similar to those endorsed by the often quoted lines from Eliot's 1934 Choruses from *The Rock*:

'Where is the wisdom we have lost in knowledge?  
Where is the knowledge we have lost in information?' (Eliot 1963, 161)

Two levels are, however, more commonly distinguished in formal education by the common terms 'deep' and 'surface' learning (from Entwistle and Ramsden 1983; also Marton, Hounsell, and Entwistle 1984). Such a construction is also typically applied to discriminate between the two levels of 'higher' and 'further' and between education and training – the former, in systems terms, open to a higher level of determination than the latter.

### Higher-level learning

HE in England is habitually associated with the professions and management where its explicit knowledge – 'knowing what', as Ryle (1969) called it – is assumed to be generalisable to a wider range of functions than the tacit knowledge or skill ('knowing how') of further training limited to the crafts and trades. HE is thus 'open' beyond the 'closed' competence of further education (FE),

despite the fact that academic ‘training’ (as academics often refer to it) for the professions is also notoriously specialised – especially by traditional English empiricism. Unless a craft can professionalise itself to the level of an art or science, it remains linked with the inferior status and more applied/ less generalisable lower level learning of trade organised defensively through unions rather than self-regulated professional associations.

School teachers are a case in point. They achieved professional status when the teacher training (*sic*) colleges moved into the universities. Nowadays, however, the standards-based course that postgraduate trainees (*sic*) follow is dictated by what was until recently the justly named Teacher Training Agency (*sic*) (now Teacher Development Agency) of the state. Teaching is therefore an instance of professionalisation from FE to HE only to be re proletarianised as FE in HE, or ‘HE but not as we know it’. This process of reduction of large parts of HE to competence-based or otherwise less generalised FE in HE is also happening as a result of widening participation on a reduced unit of resource. It is having a knock-on effect in the rest of society, especially in schools that are directly affected though teacher training and where efforts to generalise knowledge have been largely subordinated to central state direction and monitoring pupils and teachers confined to competent delivery of testable tasks. (The citizenship initiative aimed at sustaining the national community of welfare democracy alongside consumer citizenship is an exception (Crick 1998) but has had a mixed reception (Ofsted 2006).) Partly as a result, less school pupils are adequately prepared for HE as more of them undertake it.

Despite the change of large parts of ‘HE’ into FE and its ongoing subordination to government agencies and private corporations, academics characteristically continue to elicit metaphors of an ideal HE providing independent communicational space in which generalised concepts can be rationally tested in argument and by experiment. Many courses and programmes of study in HE are based upon this implicit model expressed in humanistic terms as ‘learning for its own sake’. As generalised understanding, this knowledge is what Aristotle called ‘the knowledge necessary to rule’. It is not a *knowledge* of everything but – in Bateson’s (and Eliot’s) terms – of the rules by which the totality of *information* can be acquired and ordered. Instead of ‘key skills’, this ‘key knowledge’ is what Cardinal Newman called ‘knowledge of the relative disposition of things’, the lack of which, he wrote, ‘is the state of slaves and children’ and, he could have added, of most women and the working class of his day (Newman 1907, 113).

However, it is no longer possible for the Enlightenment University of Kantian reason, still living in Habermas’s (1989) *The Idea of the University* and recently reiterated by McLean (2006) as a privileged site of pure communication, to present itself as the education of a national professional elite. Nevertheless, mandarin selection for this character training in national leadership continues to characterise English education, such that – in one of Tim Brighouse’s *bon mots* – ‘No matter how far you go in the English education system, they’ll fail you in the end!’ (personal communication). Indeed, the selectivity of the system has been heightened with the extension of HE to later ages, with – as in the USA – ‘real HE’ (as opposed to ‘HE’ becomes FE) often not beginning until postgraduate school. Selectivity has also been deepened by the application of ‘key stage’ tests and ‘taskism’ (Grant 2005, 19) to compulsory schooling to earlier ages, even at the ‘Foundation’ level of nursery school. This ‘testing to destruction’ of the most examined generation ever, anywhere, also plays an increasing role in social control (Ainley 2003).

### **Social control by the new market-state**

Phil Mizen’s (2004) *The Changing State of Youth* highlights changes in the state as well as in public services and their new relations with the private sector. He argues that these have led to a crisis of legitimacy for the new market-state. One of its responses has been an extension of social control through education, its tests, examinations and certification. As a result there has been, ‘a

huge expansion in education's influence over the lives of the young' (Mizen 2004, 41). In a daily more divided society, official 'learning' substitutes for the guarantee of regular wages to integrate many employees into a changing economy while relegating whole groups of people to unemployment and many more to insecurity in employment. Dedicated obsessively to the vocational 'needs' of employers, education, whether in school, college or university, no longer aspires to emancipate the minds of future generations. Instead, it increasingly forecloses possibilities. In this sense, *Education Make You Fick, Innit?* (Ainley and Allen 2007).

Social control has been extended, especially through expanded FE and HE and training (with recent proposals to raise the school leaving age to 18 in 2015), to legitimate a new capitalist state formation introduced under Thatcher's premiership. Sustained and developed more successfully by New Labour Government than by Mrs Thatcher's chosen successor, John Major, the new state has been recognised from various perspectives by a range of names, but is best described in US political scientist Phillip Bobbitt's terms as a move from a nation to a new market-state (Bobbitt 2002). 'The market-state', as Bobbitt describes it:

depends on the international capital markets and, to a lesser degree, on the modern multinational business network to create stability in the world economy, in preference to management by national or transnational political bodies. Its political institutions are [therefore] less representative ... (2002, 228)

Polytechnics and FE colleges, for example – and soon perhaps all state schools – have been removed from democratic control by local authorities to function independently in an education and training market, while universities also compete for students and have shifted, as Harvey said as long ago as 1986, from being 'guardians of national knowledge to ancillaries in the production of knowledge for global corporations' (Harvey 1986, 160). Control by the national polity is lost and suborned to international capital markets less amendable to any democratic or ecological constraints.

Meanwhile, awareness of these developments has been reduced in an on-going process of class reformation in which schooling (as noted above) has played a large part. Post-school, popular cultural apprenticeships associated with the oppositional labourism of the industrial past have been vitiated, along with their craft forms regulated by trades unions. Instead, one-half of 18–30 year olds are now supposed to attain some sort of nominally HE. This has been presented as a professionalisation of the proletariat. In reality, in place of the former 'upper', 'middle' and 'working' classes, there is a much more fluid situation in which a new respectable 'middle-working class', no longer divided between mental and manual labour, finds itself insecurely placed between an at least partly internationalised ruling class (Roberts 2001, 169 *et seq*) above and a 'socially excluded', so-called 'underclass', beneath (Roberts 2001, 110–17). In a polarising society, this latter section of the traditional working class is increasingly 'socially excluded' not only by its growing relative poverty with resulting criminalisation, poor housing, regional isolation and racial stereotyping, but by the lack of any worthwhile qualifications. Accident or failure – including educational failure – can too easily relegate individual members of the new middle-working class or their children to this 'underclass' status (see examples in Reay, David, and Ball 2005 and Brown, Hesketh, and Williams 2004), sustaining competition for schooling and fuelling privatisation.

With variable fees for HE the cultural capital enabling 'effortless achievement' by those from privileged backgrounds is transparently linked to the real money capital of those who will soon be the only ones able to afford acquiring it in the private and 'better'/semi-privatised and most selective state schools. As fees rise this link will not be disguised by the access regulator, nor by the encouragement of US-style bursaries that no English universities and colleges can afford. Indeed, with 'a myriad of tax reliefs, allowances, subsidies, vouchers and grants', access to HE will provide a precursor to the vivid picture that Dexter Whitfield (2001, 211) gives of 'The nation

state in 2020', in which transnational corporations provide 'cradle to grave' health, education, social care and local environmental services. By then, if current trends persist, 'Two-tier provision is common for all basic services' so that 'Choice is determined by ability to pay'. Like the USA, only an Ivy League of the top colleges – or of their postgraduate schools – will be regarded as 'real education', although what they teach may often be increasingly academic and remote from reality in semi-privatised institutions more directly subordinated to international capital. Mass universities for the many will thus be combined with elite universities for the few. The former wider purposes of education at all levels are being erased in this competition for places in which even the successful few who avoid relegation until the latest stages are even less open than the previous national managerial and professional elite to generalised knowledge beyond their subject specialisations.

Even – or especially – in the elite universities, empirical subject specialisation focuses student attention on narrow academic study related to certification for employment often via postgraduate schooling. As a result, the only form of generalised knowledge recognised in today's dominant culture of learning is academic generalised knowledge. This 'Official Knowledge' (Apple 1995) is deliberately obscured not only by its obtuse language of expression but by arbitrary divisions between academic disciplines. Where these break down, the postmodern orthodoxy in the humanities and social sciences has allowed a retreat into a 'discourse' of fragmented incomprehensibility. Such academic generalised knowledge is incapable of questioning the purposes to which it is put or the society that uses it because, as Robertson explained (1994, 332), students 'can never be aware of the global totality of things'. 'Totality', along with 'essentialism' and 'binarism', is of course a *tapu* term of the new academic orthodoxy. Thus 'higher' education abrogates any aspiration to any generalisable overview and reconciles itself to its reduction to a more limited training in competence, on the one hand, and the collection of disconnected information for regurgitation in acceptable academic forms, on the other.

### The persistence of two levels of learning

Yet, despite the erosion of the manual–mental divide that marked the Tayloristic separation of managers from those they managed under the former heavy industrial 'Fordist' model of work organisation, the division of knowledge and labour between managers and managed and of 'the office' from 'the plant' or 'brain' from 'brawn' is reconstituted in the free-market economy of the new market-state. Despite devolved responsibility if not power to supposedly autonomous agents, there are still only two levels of learning between core managers and those they manage. Only the former are ('higher') educated to *knowledge* and control of whole processes if not their purposes, while the latter are restricted in FE and training/ lifelong learning (or 'HE' become FE) to the lower level of vocational *information* and competence necessary to carry out their assigned tasks. Thus, two levels of learning correspond to two persisting levels of knowledge and labour in the employment hierarchy of managers over managed. This is – to return to Hutchins, as well as to Bateson and the conventional HE and FE and training distinctions – 'the larger dynamic system' to which official, institutionalised learning is adaptive. Its persistence has only been obscured by the growth of HE.

Ostensibly, HE follows a different and vertical logic of progression from one level to the other, rather than the horizontal level of accretion of equivalent competences through further vocational training. But just because degrees have become necessary for entry to a range of occupations that have closed themselves off from non-graduate applicants, this does not mean that the actual information and competence required for these occupations have been raised to a higher level of knowledge and skill. As work reorganisation and the latest applications of information and communications technology reach up the employment hierarchy to 'delayer' middle

management and deskill former craft workers in the new middle-working class, holistic knowledge and equivalent tacit skills are reduced to the levels of limited information necessary for the performance of routine competences (Cooley 1987). 'Performance management' by output-related objectives for performance-related pay is characteristic of the growing sections of the workforce for whom Felstead, Gallie, and Green reported a 'marked decline in task discretion' (2002, 62). Teachers, doctors and other professional public servants, for example, are held accountable through more explicit contracts with the consumers of their previously self-regulated services. While this may redress the balance of knowledge and power between professionals and their clients, it is a proletarianisation of the professions that runs concurrent with the devaluation through expansion of the major part of a more differentiated HE system.

'The result,' as Naidoo (2003, 256) suggests:

may be a higher education system that produces what Castells (2001) has termed a small elite of 'self-programmeable' workers who have learnt how to learn and are occupationally mobile, together with a large mass of 'generic workers' who are exchangeable and disposable and unable to adapt to a changing and volatile labour market.

Again, this subordinates larger numbers of employees – graduates or not – to unmediated direction by international capital. It also reinstates the binary divide as large parts of HE turn into FE through delivering two-year Foundation 'degrees' and other qualifications whose competences are dictated by the employer-dominated Sector Skills Councils and administered by local or regional Learning and Skills Councils/ Regional Development Agencies. This is the characteristic form of administration by agencies through contracts to meet the targets of the new market-state (Whitfield 2006).

### Learning in a right state

The new market-state marks the dominance of private over state monopoly capital following a process of state-subsidised privatisation. What Monbiot (2000) calls this *Corporate Takeover of Britain* has resulted in a *Captive State* (Monbiot 2000) run by and for big business. Yet, as a *Financial Times* editorial admitted, 'Successful businessmen are not educators. Businessmen are necessarily driven by short-termism' (5 December 1990). More recently (4 June 2007), the same newspaper confirmed 'climate change is bottom of the priority list for Britain's largest companies', referring to a survey by YouGov for KPMG of business leaders and their biggest shareholders showing them 'not much more exercised by the issue'. While in the same issue a report from Headland, a communications consultancy, stated 'fund managers do not pay much attention to climate change issues when taking investment decisions ... Instead they regard climate change effects as slow and cumulative and the issue as outside the remit of typical fund managers who "are not looking at 2012, let alone 2050." Long term for the investment community was about three years, they said.' Even if they occasionally offer self-regulation or call for externally imposed restraint in recognition of the damage that their unregulated activities inflict upon 'the human and natural substance of society', the new market-state is by its nature incapable of regulating the private sector – in education as elsewhere – in the way that the former welfare national states at least attempted to do through Keynesian demand management and democratic accountability for the state sector.

State-subsidised privatisation or marketisation was the perverse form of modernisation (Rustin 1998) adopted in response to the crisis of Keynesian capitalism. 'State induced enterprise', as Wallace and Chandler (1989, 5) called it, came to 'permeate the franchise sections of the welfare state'. It mirrored the model of 'the state as a holding-company which sub-contracts parts of itself at different levels' (Wallace and Chandler 1989, 20). In this new mixed economy, private-monopoly capital dominates semi-privatised state capital as former services provided by

the local or national state are taken over and sold off to private companies while other public services are retained by the state as semi-independent agencies to be run at a profit. Citizens are then redefined as consumers. However, the new consumer citizens do not participate collectively as informed individuals in democratic decisions about which goods and services should be provided by society at what cost to its members. They merely choose individually between the different commodities that the market offers them. In the market the only common value of commodities is their relative price. Public issues of health, education and welfare, including most importantly that of collective human survival through amelioration of climate change, which should be the subject of informed debate and democratic decision, are disguised by the mechanical routines of cost accounting, reducing them to simple certainties that can easily be measured. Once established, monetary measures form a closed, apparently concrete and completely self-sufficient system of reference exclusive of all external considerations. Such a closed system precludes further learning. As Bateson indicates, it is pathologically fixated on its own finality.

Unlike the post-war welfare state settlement, the new market-state 'settlement' was not the result of consensus and compromise. Nor is it open to possible progressive development through extension of democratic control with education in generalised knowledge, as was the welfare state. The new market-state was imposed by Mrs Thatcher's Governments and needs to be continually reimposed by her successors in order to maintain itself. The appearance of openness and adaptability is given only by the 'permanent revolution' that perpetually reorders the institutional deckchairs. Such constant reorganisation is presented as dynamic and responsive to consumer demand and employer need. It also 'disorganises dissent', as Ainley and Vickerstaff (1993) noted. Yet what it really reveals is the crisis-ridden nature of the response to the end of the post-war economic boom that globalisation represents (Freeman and Kagarlitsky 2004). Globalisation breaks down barriers between states and borders between countries in the interests of 'free trade' but at the same time creates 'internal borders' between different groups of consumers within them. This has contributed to the on-going processes of class recomposition outlined above. This increasingly 'Americanised' society is growing, particularly in England.

The USA controls the successor organisations to the World Bank, like the World Trade Organisation. Even though the World Trade Organisation's enthusiasm for 'free trade' (like Mrs Thatcher's) harks back to Adam Smith, the pre-existence of vast private monopolies means that free trade cannot take place on equal terms. Trans-national corporations, especially the most powerful ones based in the USA, monopolise the economies of poorer countries. This system of economic domination is being extended through the General Agreement on Trade in Services. If the General Agreement on Trade in Services is implemented it will have huge consequences for education as for other public services, surrendering remaining national regulation to the global market.

This surrender of democratic control to the global market has to be reversed. Education can no longer be subordinated to selection for the employment hierarchy. The 'demands' of industry have to be set in a wider framework of human cultural and environmental need. If education at every level is to build the skills and knowledge base of society to take fullest advantage of the latest developments in technology, it must regain its uniquely human purpose of critically examining 'the whole expanding corpus of human knowledge' that it hands down to future generations. It can begin by recognising how new technology has been applied during economic restructuring by the new market-state to deskill so many of the tasks involved in production, distribution and services and the closure and control inflicted upon the minds of its pupils and students. Investigation, experiment and debate by as many people as possible is vital to preserving and extending the surviving 'critical space' within education by integrating scientific research, scholarship and artistic creation at all levels of learning. This is not to deny the need for specialist research institutes dedicated to contributing solutions to the ecological crisis and not prostituted to more immediate commercial concerns.

To prevent the social isolation of an ‘underclass’ in an increasingly self-destructive society, to preserve critical space at all levels of learning and counter ‘dumbing down’, to reverse privatisation of public service education and maintain free provision, so as to remain true to the Enlightenment ideal of understanding in order to control society and adapt it to its natural environment, requires a new direction at all levels of learning. Such a new direction can contribute to creating what Bateson (1973, 471) called ‘A High Civilisation’ (not what some sociologists call ‘high modernity’, whatever that is – ‘late’ perhaps!): a society ‘limited in its transactions with the environment’ so as to ‘consume unreplacable natural resources *only* as a means to facilitate necessary change (as a chrysalis in metamorphosis must live on its fat)’.

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