The Ideological Construction of a New Form of Digital Exclusion: Computer Science as Latin or Total Deus Ex Machina?

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Abstract

This paper offers a critical analysis of the UK coalition Government's educational computing policies. It argues that such policies must be viewed in relation to the broader ideological intent underpinning their development and the neo liberal orientation that seeks to further privatise and marketise education. In examining the related justificatory discourse, it is argued that the ideological origins of policy direction are masked through the use of selective and questionable 'evidence', which facilitates the further encroachment of vested industry interests. Furthermore, the symbolic re-presentation and repositioning of technology in schools through the disapplication of ICT Programmes of Study and a new emphasis on the teaching of computer science, not only diverts the purpose of education and educational technology further toward the needs of industry but may also lead to computer science being constructed as an elitist and selective subject. This is likely to have profound implications in terms of equality, with schools, individuals and groups who have less economic, social and cultural capitals being most at risk of a new form of digital exclusion. Similarly, in Higher Education, policy changes are in danger of excluding disadvantaged groups. Here too, technology is becoming an increasingly central tenet in the drive toward new forms of privatisation and marketisation. Educational technology therefore is an important site of struggle, where there is both the need and opportunities to challenge the increasingly prevalent profit and loss motives of business, and to also promote wider values associated with equality and social justice.

Key words: educational technology, inequality, equality, social justice, exclusion, neo liberal ideology, computer science

Background: The context of the coalition's educational computing policy direction

The educational computing landscape in the UK has undergone significant change since the election of the Conservative led coalition Government in May 2010. Elected against a backdrop of national and international economic crises, the coalition sought to reduce the national deficit by introducing sweeping and significant cuts to public sector budgets. The subsequent culling and reduction in size, funding and scope of various Government agencies, in what was previously named as *the bonfire of the quangos*[1] (quasi autonomous non-Governmental organisations), included the immediate abolition of the British Educational Communications Technology Agency (Becta), with the Government making a 'closure announcement' within days of election. As Becta had been New Labour's lead agency for promoting and implementing ICT in education, it became a political and symbolic target for the incoming administration (Selwyn 2011). As New Labour spent over £5 billion on educational infrastructure alone in its first decade in power (Selwyn 2008), with school ICT budgets (excluding curriculum software and digital content costs) rising to £577 million per year by 2009 (BESA 2010), austerity related arguments surrounding Becta's closure appeared feasible given the wider economic context.

However, whilst many argue that the dissolution of Becta may have been merited for various reasons[2], the financial argument appears less clear than initially stated. As with many other cuts to public sector organisations, questions regarding the cost of staff redundancies, related unemployment costs, the number of functions that were transferred to other departments, and the 'indecipherable' indirect cost of functions and activities that had to be carried out by local authorities, private providers, or schools themselves, were not fully accounted for (see for example: Trickett 2012; National Audit Office 2011 & 2012; Public Administrations Select Committee 2011). Moreover, little economic value was placed on the advice, guidance and materials Becta provided to support the educational community (see for example, Harrison & John 2010, Preston 2010), nor on the loss of various tax payer funded resources as a result of its closure[3], raising initial questions about the broader ideological intent.

Whilst the closure of Becta might be argued to have been a pragmatic response enforced by economic conditions, or perhaps a result of party political positioning, we also have to consider the wider context of recent reforms in education to better understand the wider influences and interests underpinning the coalition's educational technology policy direction and the implications this may have for digital exclusion and inequalities.

Austerity and the logical conclusion to the neo liberal project

Neo-liberalism has been the dominant force influencing education policy direction since the 1980s, resulting in significant changes to the structure and form of education. Market orientated principles of choice[4], diversity, competition and managerialism have become commonplace, with standardised 'performativity' measures being imposed through regulatory frameworks for monitoring and measuring institutional and practitioner efficacy (Ball 1998; 2000). Whilst neo liberal market ideology is associated with the 'new right', its underlying logic continued to pervade and shape education systems and practice despite changes in political administration. New Labour's tenure did little to detract from wider market principles, arguably replicating and exacerbating broader overarching regulatory frameworks and measures (Stevenson 2011), whilst extending the privatisation agenda (Benn 2011; Chitty 2011), and further encouraging the direct and indirect influence of 'edubusiness' (see for example: Ball 2011 & 2007; Hill & Kumar 2009). In perpetuating the neo liberal ideological legacy in education, New Labour also effectively left the door ajar for the next phase of the neo liberal project, which had remained incomplete (Stevenson *op. cit.*).

The coalition Government has since brought about significant structural and organisational changes to the education system, accompanied by a political discourse constructed around austerity. However, this masks the broader ideological neo liberal intent, which arguably seeks to remove remaining barriers to a fully functioning market 'logic' by severely reducing the role of the public sector and heightening private sector involvement and influence. For example, key 'flagship' policies, such as the Academies Act (DfE 2010), removes power from local authorities and gives power to the Secretary of State to issue academy orders and requires all new Academies to have a sponsor, thereby increasing private influence and involvement. Similarly, the 'free school' movement makes it possible for a range of organisations, including businesses, to set up their own, tax payer funded schools free from local authority control. The review of Higher Education (Browne 2010) has also led to the removal of the cap on tuition fees, thereby placing greater emphasis on students as 'consumers' or purchasers of 'services', and with Universities being placed more in a role of service provider with practices likely to be increasingly orientated toward creating more financially viable 'offers' based on 'market' demand. The Higher Education White Paper (Department for Business Industry and Skills 2011), also aims to make Universities more accountable, promoting further collaboration with business and employers, and enabling a wider range of providers to join the sector. As well as clearly embodying key market

principles, other commentators argue such policies are having a profound impact on the perceived purpose of education, with it becoming further subservient to the needs of vested private sector interests, and increasingly portrayed largely in relation to its vocational utility (Mccafferty 2010; Hall 2012; Worthington 2011).

It is perhaps unsurprising therefore, that emergent educational technology policies also reflect a broader ideological orientation, yet this has received insufficient critical scrutiny. This may be a result of the seemingly plausible evidence used in constructing justificatory discourse. However, on closer examination this not only overlooks a wealth of diverse and rigorous research in the field but draws selectively on contestable arguments that reflect vested private interests and avid proponents of neo liberalism.

The ideological construction of 'evidence'
The coalition's proclivity for selective use of evidence has been highlighted in other areas of education policy. Evidence drawn from the Swedish free school and American Charter School movements to support Academy and free school policies, has been seriously questioned (see for example, CREDO 2009; Lubienski & Weitzel (Eds.) 2010, Allen 2010, Lubienski et al. 2009, Lubienski 2009, Böhlmark, A and M Lindahl 2008 & 2007; Fisher 2012), and concerns have also been raised regarding the potential negative impacts and unequal outcomes arising from academisation and privatisation (Wrigley 2012; Ofsted 2011), and with regard to the true extent and purpose of commercial involvement and influence (Benn *op. cit.;* Ball 2011 *op. cit.*). Similarly, the ideological persuasion of information used as evidence in constructing a supporting case for new directions in educational computing is also visible on closer examination.

Some twenty months after the Becta's closure announcement, Education Minister, Michael Gove, outlined the first subsequent schools ICT policy in his speech at BETT[5] 2012 (Gove 2012). The key announcement was the intended disapplication of the existing National Curriculum Programme of Study for ICT[6], with greater emphasis being placed on Computer Science programmes and Universities, businesses and schools themselves being encouraged to create new courses, curricula, Computer Science GCSEs[7] and means of assessment.

The selective nature of evidence on which such a decision was based, was not only visible in the presentation at BETT but also in earlier speeches (see for example: Gove 2011a; Gove 2011b). Whilst a full analysis of the discourse is not possible here, such speeches are littered

with assumptions about the future, give primacy to a particular form of vocational and market utility, and overlook a broader body of work in the field, instead drawing on 'evidence' from vested interests in promoting a need for educational technology to reflect the projected needs of industry. For example, Gove (2011b) draws upon Moe & Chubb's (2009) book, *Liberating Learning*, which focuses on the potential of technological innovation in education. The authors are also renowned as anti-union, New Right theorists and authors of '*Politics, Markets and America's Schools*' (1990), and other similarly focussed publications (see for example, Chubb and Moe 1992) vehemently promoting the growth of markets in education. Such publications have been criticised for utilising spurious evidence and analysis to present 'a polemic wrapped in numbers', which provided the school choice movement the legitimation they had been searching for (Glass & Matthews 1990; Howell *et al*. 2006). It is perhaps unsurprising that *Liberating Learning* presents a similarly polemical (Mathis 2009) and overly determinist argument that assigns too much agency to technology, uncritically accepts technological development as a wholly positive and equalising force, and foregrounds the drive for systemic change for fear of being left behind in the global economy. The largely uncritical acceptance of the benefits of virtual (Charter) schools, electronic instruction and freely available content used by way of example, overlooks both wider contextual issues and numerous crucial issues relating to learning and teaching, and does not give adequate consideration to the role educators play in differentiating learning appropriately. Arguably, it utilises an unwarranted 'promise of technology' and a questionable vision of the future to deliver a broader ideological argument supporting privatisation and marketisation, thereby constructing a false juxtaposition between the innovative power of technology against those 'entrenched interests' perpetuating the status quo. Furthermore, little real consideration is given to how digital resources are accessed, used, mediated and applied unequally, especially in structured and unequal systems. Moreover, there appears to be the implication that emphasis will increasingly be on individuals to be able to equip themselves adequately and that they will have the appropriate critical and digital literacy skills to support their learning, something echoed in coalition rhetoric.

> And by definition, as we move to a world where we expect every child will have a tablet, the nature and range and type of content that can be delivered will be all the greater. (Gove 2011b).

The assumption above presents an unproblematised vision that brushes aside underlying issues of inequalities in ownership, access, functionality, understanding and ability to apply

and mobilise technology to good effect in different settings. No consideration is given to how issues of equality and choice can play out in extremely different ways in a highly differentiated and unequal schools marketplace, nor to whether private provision might be orientated toward more profitable and scalable areas rather than equally across all areas of learning needs. Ironically, given the demotion of digital literacy in coalition policies, it presents a vision of the future of education where such skills will become increasingly important.

Arguably, given the wealth of evidence overlooked, it is the ideological resonance of Moe and Chubb's (*op. cit.*) argument, rather than its robustness, which has informed policy perspectives. Interestingly, Chubb is also chief development officer and senior executive vice president of EdisonLearning. EdisonLearning Inc., is a leading 'for profit' international 'educational solutions' and services provider that championed the school voucher system and also the concept of Charter Schools in the United States[8]. EdisonLearning Limited also have a growing presence in the UK and hold management contracts with a number of schools, and were recently awarded a place on the Department for Education's (DfE) Academies and Free Schools Project Management and Educational Services Frameworks.

In justifying the new emphasis on Computer Science, Gove also praised and referenced Livingstone and Hope's (2011), *Next Gen.* review. The review was commissioned by the Government's Minister for Culture, Communication and Creative Industries, Ed Vaisey and conducted by Livingstone (Life President of Eidos[9]) and Hope (Managing Director and Co-founder of Double Negative Ltd[10] and Board Director of the UK Screen Association[11]) with the purpose of, as the sub-title suggests, '*transforming the UK into the world's leading talent hub for the video games and visual effects industries*'. In short, the report was commissioned and written to promote the growth of the games and visual effects industries by authors representing those industries, yet recommendations have been accepted uncritically to inform wider policy direction.

The report offers recommendations to address a *slump* in the UKs video games development and related sectors and address the lack of suitably qualified computer science graduates. However, other potential contributory factors are somewhat overlooked, such as the dominance of the games industry in other countries, the broader economic climate (see BBC 2012), the buying of independent developers by large, often multi-national organisations, and

outsourcing to countries where wages are lower. Others argue UK policies on tax relief in the sector are also a contributory factor, making the UK less appealing and contributing to a relative 'skills drain' to other countries and sectors (see for example, Rudden 2010; Gamepolitics 2010). Yet, the review is presented to demonstrate what these particular digital industries require from the education system, implying that blame for the current slump rests in the failure of the education system.

> We felt that the education system was not meeting the needs of our industries. (Livingstone & Hope 2011: Foreword).
>
> ... a failing of our education system – from schools to universities – it needs to be tackled urgently if we are to remain globally competitive... The industries suffer from an education system that doesn't understand their needs... there are severe misalignments between the education system and what the UK video games and visual effects industries need. (ibid. p.5).

Clearly, such perspectives reflect particular vested interests and convey much about the perceived purpose of education. Yet even leaving to one side wider debates about whether the role of education is to serve specific industry needs, the review is cited as 'evidence' to justify policy direction toward emphasising computer science and programming skills. Fuller consideration however, needs to be given to the realities behind the size of the sector(s), the overall type and changing nature of skills, and how these compare to the needs in various other employment sectors. According to Skillset (2011) for example, the computer games industry comprises of around 485 businesses, employing around 7000 people, with the most common occupations being art & design (24%) and business management (22%). Fewer actually work in production (19%) and technical development (13%, approximately 950 people). It also highlights that staff diversity is a significant issue, with the industry being dominated by young white males, with female representation as low as 6%, and Black and Minority Ethnic groups accounting for just 3% of the workforce. Such factors require careful consideration in terms of potential implications for the structuring of inequalities and perceptions of computer science in schools.

Of course, the economic competitiveness argument surrounding computer science and programming is extrapolated beyond the games and visual effects industries into other sectors and sub sectors. However, we should not blindly accept the taken for granted and unscrutinised accounts and implicit assumptions presented in official discourse. For example, a report by the Higher Education Statistics Agency (2010) found that 17% of computer

science students (including information technology and computer games design) could not find work in their field six months after graduation in 2009, the highest rate of university majors surveyed. The extent to which there will be employment opportunities for more computer scientists, therefore needs consideration, as perhaps vast increases in number may be just as likely lead to credential inflation (Collins 1979) with potential negative implications for remuneration and employment opportunities for many in an increasingly competitive sector. In an uncertain economic context, we should more carefully consider what percentage of the wider school age population will enter such industries and what roles they may undertake within them. Moreover, we cannot predict with great confidence what the future needs of employers will be, whether any such skills could, or indeed should, be addressed by education, nor what the nature of growth in different sectors may be in reality.

It has long been recognised (see Martin 1981) that a significant proportion of people working in computer related industries do not utilise computer programming skills on a daily basis. It is also likely that the wider population will remain users, 'consumers' or manipulators of new technologies rather than computer scientists, and there are also the effects of the changing nature and re-presentation of 'languages', processes, or trends toward 'routinisation' within such industries that need further consideration (Martin *op. cit*, Glass 2005). History tells us technological developments and their applications are notoriously difficult to predict (Gerrold 2010), are confounded further by interaction with multiple variables, and that such predictions often occur as a function of the past (Taleb 2007). Moreover, there are many myths that surround the perceived relationships between the economy and education. Such relationships are far from clear or simple with reality often starkly contrasting with policy makers' rhetoric (Lauder *et al*. 2011).

A broader argument also put forward, is that the underlying logic, skills and rigour associated with computer science and programming will be transferable to different learning areas and processes. This transferability argument is presented somewhat uncritically and there are many other well documented critical technology and modern learning skills and literacies that may require as much, if not greater attention. Some commentators suggest greater emphasis should be placed on higher order learning and critical thinking skills, digital and information literacies and other transferable skills, believed to be valuable to all learners, and which might have been significantly enhanced through a reworking of existing frameworks. However, there are concerns that the shift in policy emphasis toward computer science as a discrete, and

potentially selective subject, may decrease opportunities to model and develop such skills (NAACE 2012), and this may have disproportional effects on the educational experience of disadvantaged groups.

The coalition's educational computing policy: Ideology, symbolic violence and digital exclusion

In selectively attending to evidence fitting a broader ideological agenda and overlooking a much larger body of research and theory in related fields, a process of narrative levitation has been performed, which is in danger of propagating a form of cultural amnesia whereby the structuring effects of processes and selection in a competitive, unequal and differentiated marketplace are overlooked. The emphasis on computer science has been justified in relation to its perceived vocational utility, and surrounded by market discourse espousing greater 'freedom of choice', diversity and competition of related public and private provision. However, the realities of such 'choice' must be examined in terms of potential implications for exclusion and the structuring of inequalities.

The existence and mobilisation of economic, cultural and social capitals (Bourdieu and Passeron 1977; Bourdieu 1977a; 1986 a & b), as well as the representational symbolic capital, may provide effective conceptual bases for empirical exploration. Economic capital, for example, may mediate access, ownership, related resources, external services, extpertise, professional development opportunities and involvement in programmes, projects and activities for individuals and schools. The research literature is littered with often overlooked examples of various 'digital divides' that highlight how ownership, access, application and use of technologies are patterned in relation to existing and broader economic inequities (See for example, Sutton 1991; Selwyn and Facer 2007; Tonder *et al*. 2011) at individual and institutional levels. In formalising computer science as a distinct, and selective subject area, and with supporting discourse highlighting that those wishing to enter related professions will need to possess at least an undergraduate degree, with fees alone up to £9000 per year, this will no doubt have an impact on both the objective probabilities and subjective expectations of many students. This is most likely to have disproportionally negative consequences for those already in less advantageous positions.

As overall school technology budgets are unlikely to increase, we have to question whether the introduction of computer science and associated resources will detract from other aspects

of ICT in schools, and whether a range of other areas of technology supported learning might receive less funding and emphasis. This relates not only to hardware, software, licences and content but also in relation to staff resource and what wider courses or activities might suffer as result. Whilst many schools have ICT experts, few will be immediately capable of teaching computer science, meaning they will have to hire new or train existing staff, potentially redirecting budgets from elsewhere. Individual schools' financial positions therefore, may also mediate whether, and to what extent, computer science is offered.

Furthermore, in the process of selection, structuring and formalisation, computer science may well be viewed differently depending on resonance, not only with economic circumstances, but also in relation to wider social capitals, situations, trajectories and related processes of selection, exclusion and self exclusion. Social capitals, or existing sets of lasting social relations, networks and contacts (Bourdieu 1986b) that institutions and individuals can effectively mobilise within the field, will also be of significant importance. Social capital can act as a 'muliplier' enhancing the capital possesed in its own right, and exists in relationships of mutual reciprocity, which consciously or subconsciously, are developed as a mechanism for exchange of other capitals. The ownership and ability to mobilise such capital therefore may be related to institutional status, league and attainment table positions, connections to people of influence, networks and expertise within related fields and so forth, and are likely to be significant in mediating and influencing 'choices' and decisions.

Cultural capitals, or, *"instruments for the appropriation of symbolic wealth socially designated as worthy of being sought and possessed"* (Bourdieu, 1977b p.495), may also provide a conceptual lens for examining both the real and perceived cultural value placed on computer science by individuals and organisations within a competitive system. For example, cultural capital in its *objectified state*, might be mobilised in relation to the ownership of various technlgies, the types, extent and so forth and reasons behind such choices. However, in its *embodied state*, cultural capital exists in the form of dispositions of the mind, behaviour or body, and where its 'external wealth' is converted into an integral part of the person. In this sense, it is the actions of actors, mediated by their embodied dispositions and prior experience, which in part will influence outcomes and the extent of the appropriation of symbolic acquisition. Furthermore, cultural capital in its *institutionalised state*, might be operationalised in relation to formal computer science and programming courses, opportunities, curricula and qualifications that different schools may choose to, or be in a

position to, offer their pupils, which potentially will be interdependent on the ownership of other capitals.

There are real dangers that computer science may become, in reality and perceptually, an elitist or subjectively selective subject area, with those pupils deemed not suitable, interested or capable, or considered unlikely to go on to higher education or enter related occupations, potentially being excluded from such 'choices'. Whether, or to what extent, computer science will be offered by all schools, and which factors will influence any differentiation, remains to be seen. So too does the type and extent of selection criteria that may be put in place, such as levels of academic achievement, or related subject selection, which may both objectively and subjectively exclude certain pupils or groups. Schools may attempt to impose criteria based on expectations of pupils' academic trajectory in seeking outcomes that will be reflected favourably in league tables. As the seemingly overtly related fields of education and employment are structured, it is possible that certain pupils may be discouraged, or themselves refrain from taking such courses. Given the increased symbolic vocational emphasis given to computer science, it is quite possible that some pupils will not be viewed, or do not perceive themselves to be, an 'ideal type' of pupil (Bernstein 1990) to pursue such a subject, or enter a specific sector of a particular industry. As the Skillset (*op cit.*) report identifies, there are existing gender, ethnicity and potentially class or socio-economic inequalities in some of the related sectors, and it is estimated that 87% of University Computer Science applicants are male (Cellan-Jones op cit.), with many related industries also dominated by white, middle class males. Such factors, alongside wider structuring effects, may have a profound influence in relation to perceptions and the formulation of individual and social identities and subsequent decision making processes.

Technology, computer science and spaces for oppositional practice?
This paper attempts to highlight the political and ideological motivations underpinning recent educational technology policies, questions the logic and evidence used to support them, and links this to the wider context of neo liberal informed reforms seeking to privatise and marketise education at all levels. The socially constructed, neo liberal informed vision for educational technology, also increasingly sees Higher Education being forced to compete with new market providers, or reconfigured offers from existing institutions, in a consumer-provider and profit and loss orientated landscape. The internal market logic being introduced through recent policies will undoubtedly mean that many institutions will be compelled to

react to the new conditions and challenge from new competitors. Developments in reconfigurable and open content, outsourced management and delivery, online qualifications and courses, are appearing in the field and will provide new options and choices with uncertainty surrounding the wider effects on the quality of University education. Given the usual pre-occupation with measurement, control and quality assurance in relation to qualifications, the relatively unregulated nature and more general trajectory of such developments, are cause for great concern.

Whether this necessarily means we are about to witness the dumbing down, as the opening up of digital content and courses provides the conditions for the development of 'digital diploma mills' driven largely by business motives in an educational marketplace, as Noble (1998) suggested, is unclear. Alternatively, it could be argued that the new conditions offer greater opportunities for both better learning experiences and also to challenge some of the traditional bases for the social and cultural reproduction of inequalities that educational institutions may themselves play a role in perpetuating. From another perspective still, it may be argued that there are ways in which institutions and individuals can actually assert their agency to best appropriate new technologies in line with wider beliefs about the purpose of education.

Whilst it may be read differently, this paper does not set out to suggest computer programming, or computer science education *per se* is a bad thing. Rather it questions the broader market logic and orientation behind its appropriation and related market discourse, which can and does limit perceptions of the possible and disregards alternative perspectives. In highlighting the ideological nature of policies, it is hoped that there is a greater likelihood for counter action and practices that seek to promote greater social justice and equity, which has largely been overlooked in the field of educational technology.

Therefore, we must raise questions regarding how technology and computer programming can be reframed and shaped as a tool for social good and to support greater social democracy, equality and justice. Indeed, computer science and the ability to produce and manipulate algorithms is not only important but should be considered in relation to its role in producing alternatives to market driven models in education and elsewhere. As commentators such as Rushkoff (2011; 2011a) argue, as technology and programming is here and is already part of a wider power struggle, then we have a choice of either directing technology by becoming the

producers, or we become at best consumer, directed by those who have harnessed its potential for their own needs and to maintain power. In this sense technology, and programming in particular, can be seen as important tools and spaces through which to challenge existing orthodoxies and power bases. It is important to recognise technology as a socially, politically and ideologically constructed force situated within national and global contexts and bounded by relationship to power. They can, and do, transform the modes of production, the nature of labour, the value of knowledge, and the ways in which it is accrued and mobilised in the digital era of cognitive capitalism (Peters & Bulut, [Eds.] 2011). The challenge therefore must be to highlight the existing ideological orientation of technology in education policies and also new possibilities for action and practice to challenge the predominant market orthodoxy and to promote greater social justice and equality.

Conclusion

It has long since been argued that subject knowledge through school organisation within competitive systems can reproduce inequalities, structure and frame practice, and classify and inform 'choices'. (see for example: Bourdieu 1977b; Willis 1977; Bernstein 1961, 1981 Gewirtz et al 1995; Ball 1987, 2003; Apple 2004). The authors of the 'Next Gen' report claim, *"coding is the new Latin"* (cited in Cellan-Jones 2011), yet Latin itself is and was a subject structured through institutions within private and public education systems, and not always equally available, accessible, or perceived as meaningful or relevant to all. The coalition's rhetoric and new emphasis on computer science presents technology as a *total deus ex machina.* Not only is it presented as a technical fix to mend a 'broken' education system, it is also a core component in an attempt to resolve the unfinished neo liberal project of the marketisation of education by foregrounding the needs and involvement of private enterprise, thus symbolically reframing the purpose of education. The seemingly plausible, yet highly selective evidence and questionable assumptions, require much closer scrutiny, particularly in relation to a potentially new and subtle form of digital exclusion. As Bhasker (1991) argues and Bourdieu (1999) implies, the failure to consider the effects of power within structures and the impacts they have on individuals and groups presents a view of 'freedom' that is grounded in ignorance and represents *"a demagogic resignation that accepts the verdicts of supply and demand"* (Bourdieu *op. cit*., p.628).

Further research is needed to examine the effects of vested influences on policies at a macro level but which also focus on meso and micro-level interactions. There is also a need to

promote greater critical analysis of the presence and effects of ideology and dominant discourse to support policies which may structure new forms of exclusion and inequality against a backdrop of austerity. Only by examining practice in detail at the organisational and individual levels will we better understand how policy and ideology plays out; how it is transmitted, mediated or refracted; and what the implications may be for education and society and on related perceptions of social justice, equality and democracy. In developing a more informed understanding of how technology is ideologically constructed as a tool for domination and control, we may also be better placed to harness it in order to challenge existing predominant orthodoxies and counteract neo liberal approaches to the marketisation of education and promote greater social justice and equality.

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[1] The 'Bonfire of the quangos' had its origins in Conservative Party pre-election debates. Whilst publicly this term was dropped from official discourse, it continued to be widely employed in the media. See for just one of numerous examples, (BBC 2010). www.bbc.co.uk/news/uk-politics-11536323. Quangos are also referred to as Non Departmental Public Bodies. [1] 192 such bodies were earmarked for closure, alongside a further 118 non departmental bodies (Cabinet Office 2010), with simultaneous and significant cuts in funding to local authority departments.

[2] Numerous perspectives regarding Becta's validity were put forward following its closure on various online forums, for example, the ICT Research Network (ICTRN).

[3] Only a percentage of key documents were transferred to the 'national archive' and many key documents are no longer available.

[4] The notion of choice in an education marketplace is a contentious issue with questions being raised regarding oversimplification regarding equity of choice and various other factors that can mediate and limit choice (See for example: Gerwitz *et al.* 2005; Ball 2003)

[5] British Education Technology and Training Show

[6] Disapplication is intended from September 2012. ICT will remain compulsory at all key stages but English schools will no longer have to follow a curriculum.

[7] The inclusion of Computer Science as an option in the English Baccalaureate is under consideration

[8] Edison Inc. have been significantly criticised in relation both outcomes and conduct during their provision of such new forms of privatised provision (See for example: Moberg 2004; Steinberg & Henriques 2002; Quart 2003; Saltman 2005, Glassman 2005).

[9] British video game publisher

[10] The UK's largest film-only visual effects company

[11] The trade body that represents and promotes over 140 service companies working in film, commercials and television in the UK

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