SMART SCHOOLS = SMART ECONOMY: INTELLIGENCE EQUATION OR TEXT-SPEAK POLICY

An examination of the influence of the concept of the knowledge economy on the framing of Irish Government policy for ICT in schools

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Abstract

This paper uses one recent significant document of State Educational policy in Ireland to explore the ideological underpinnings of a wider phenomenon known as the knowledge economy (and here also the smart economy). This paper situates Irish policy within the ideological milieu of the knowledge economy, drawing on a body of education research literature that shows how policy may be shaped by ideology. The knowledge economy is mapped in broad terms via its language to educational theorists such as Foucault and Althusser. From them we may trace its power (or knowledge-power) and its wide spread, such as via policy borrowing. Lastly the role of money and spending in knowledge economy policy making is examined and reasons offered why non-monetary solutions are not proffered by policy makers.

Introduction

This essay looks at Irish Government policy relating to ICT in schools through the lens of a policy document titled: *Smart Schools = Smart Economy*. The claims of this equation are clear: ICT use in schools will enhance the national economy. Behind its title's economy of words, is a long document speaking a particular policy language: that of the knowledge (and latterly smart) economy. How this language of the knowledge economy spreads, its global meaning and how it is used in an Irish context are examined here, including how through its use power relations may be etched or re-scored.

The state, manifested through various devolutions as Education, is one of these powers. Others are the multinational corporations who sell ICT products and services to schools. But to separate these groups like this is somehow to extricate the dancer from the dance, as it will be argued here that both are ultimately engaged in pursuing a particular common policy tack. Lastly, one alternative policy solution to ICT investment in Education, that of using free and open source software, is briefly discussed and reasons for current ignorance of this strategy posited.

Summary of the Report

The report - *Smart Schools = Smart Economy: Report of the ICT in Schools Joint Advisory Group to the Minister for Education and Science* - was published by the Irish Department of Education and Science, and launched by the Irish Taoiseach Brian Cowen, on November 16th 2009. The document bears the logos of the Department of Education and Science of the Irish Government, and also that of ICT Ireland which describes itself as, "the representative lobby group for the [Irish] high tech or knowledge sector" (ICT Ireland, 2010). A government press release states that the Telecommunications and Internet Federation; the Irish Software Association; the Department of Communications, Energy and Natural Resources; and the National Centre for Technology in Education (NCTE) were also involved (Department of Education and Skills, 2009). Another lobby group, IBEC (Irish Business and Employers Confederation) is not mentioned in this press release but four of its members are listed amongst the paper's authors in the document. The group was chaired by Paul Rellis of Microsoft and in all there are twenty authors named. Of these, six are from Government departments and agencies, three from IBEC with the rest made up of representatives of the multinational ICT companies: IBM, Microsoft, Dell, Cisco, BT, Oracle, Hewlett Packard and Steljes (a comparatively smaller multinational focused on educational technology). Mentions of the consumer technology multinational Apple feature strongly in a document appendix, although no Apple representative is named as an author.

The stated premise of the piece is that schools are "key contributors to economic growth and national competitiveness" and that an increased use of ICT in teaching will provide "the skills and abilities necessary for a vibrant economy and inclusive society" (Rellis et al., 2009, p. 5). This latter point is elaborated to state that employment in future ICT industries, which are characteristic of the "smart" or "knowledge" economy, are "dependent on ICT literacy levels" and also that use of ICT in schools will later encourage people to choose scientific and engineering careers (Rellis et al., 2009, p. 14). To these ends the group makes recommendations for implementations in five areas:

1. A virtual learning environment (VLE) to allow sharing of digital educational resources
2. Teacher Professional Development comprising on-going training in ICT for teachers
3. A strategy of ICT planning and multi-annual budgeting for buying equipment and software for schools
4. Growing a pool of educational digital content
5. Enhanced broadband for schools

The broadband issue is one that can be said to have been parachuted into the document, insofar as its details were already known from prior policies and also as it comes largely under the department of Communications, Energy and Natural Resources, rather than that of Education and Science. Therefore we will not go into the details of this aspect of the policy here. Points two, three and four are interesting for the obvious direct correlation of these areas with the members of the group who authored the policy. For instance, we might expect Dell, whose core business is selling desktop computers, to be keenly interested in helping to write a procurement strategy for Irish schools for these products. Likewise Microsoft, whose software is included on the majority of Dell PCs, and Steljes who sell products such as interactive white-boards, would be expected to want to input here. The ostensible quid pro quo

for inviting these vested interests to input into the plan may be the fourth point - the digital content growth strategy (which also ties in with the training of teachers). Here the report recommends that the ICT industry shares its training resources with teachers and help in teachers' "continuing professional development". Appendix 2 lists training materials and resources that the ICT industry has already made available for free to schools. (Of course it should be noted that these companies will be helping educate people to use their own products.)

Education and Knowledge/Power

There are some obvious places then to look at where this document may exert or extend power. But before examining what the corporations have contributed it is worth looking also at where the State might be more directly at work through the Department of Education and Science and its arm of the National Centre for Technology in Education (NCTE). It is tempting to start with the ICT multinationals, at the corporate behemoths, however, as the philosopher Louis Althusser warns us: "[...] one Ideological State Apparatus certainly has the dominant role, although hardly anyone lends an ear to its music: it is so silent! This is the School" (Althusser, 1971). The school is "squeezed between the Family State Apparatus and the Educational State Apparatus" (Althusser, 1971). For Althusser the school and the educational system are so dangerous because they are so pervasive and because they hide in plain sight rather than proclaiming their power. Although representatives of multinational corporations feature prominently in this document we should not stop listening for other influences that are older, slower moving and more silent. After all, someone has invited the corporations in.

For Althusser, the veins through which power flows are "rituals". But these are abstract and he does not elaborate much as to where we can find them. Foucault has gained comparatively more currency with educational commentators of late, perhaps because he does allow us to trace in greater definition the rituals mentioned by Althusser. For Foucault the ultimate

ritual of education is the examination:

> The examination combines the techniques of a observing hierarchy and a normalising judgment [...] in all the mechanisms of discipline, the examination is highly ritualised. In it are combined the ceremony of power and the form of the experiment, the deployment of force and the establishment of truth. (Foucault & Sheridan, 1977, p. 184)

Returning to our document, the first place we can see this is in the call for "continuing professional development" of teachers. In one sense it does not matter whether the teachers are being educated to use the proprietary ICT products of the multinationals involved in authoring this policy or not. All that matters, from the point of view of the educational arm of the state, is that these teachers submit to testing. This is where Foucault tells us we should detect power extending itself:

> The normal is established as a principle of coercion in teaching with the establishment of the teacher training colleges (écoles normales) [...] like surveillance and with it normalisation becomes one of the great instruments of power of the classical age. (Foucault & Sheridan, 1977, p. 184)

At the time Foucault was writing the teacher training college had yet to extend itself into the entire working life of the teacher via a new limb of the state educational apparatus: *lifelong learning*. The school perhaps no longer exists in the Althusserian interstice between the Family State Apparatus and the Educational State Apparatus but we may rather be moving to a conflation comprising "home as classroom" and "workplace as school" (Handy, 1985, pp. 146-147). If, as Althusser contended, education is the most powerful

Ideological State Apparatus, it is no surprise that it will extend itself in this way and that in a policy ostensibly about education of children, the main extension of formal education is to that of teachers. Thus the report claims that "teacher professional development is fundamental to the successful integration of ICT in schools" (Rellis et al., 2009, p. 18) and to this end makes the recommendation to "formally recognise teachers reaching certain standards in ICT-related courses in consultation with the teaching council" and that "credit accumulation for completed NCTE qualifications in ICT studies be enhanced and expanded" (Rellis et al., 2009, p. 19).

What links Althusser and Foucault is that, broadly speaking, both hold that societal control is increasingly realised not through overt coercion but rather through pervasive ideologies which exist *within* societal and state institutions but are not necessarily professed or stated (indeed Althusser entreats us not to look for where ideology is proclaimed, but where it is denied). To examine ideology here we will start with its clearest manifestations, that is where it is more or less professed. As we look further we may see some of its less obvious pervasiveness.

Child Prodigy: Smart Economy, son of Knowledge

This title of the document mentions the "smart economy", however this particular phrase does not appear much in the body of the text itself. The related term "knowledge economy" does however. Trench (2009) has studied how "knowledge economy" and "knowledge society" became key phrases in policy discourse in Ireland in the decade or so preceding this document and also how "smart economy" began to emerge as a replacement (though also contemporaneous) term around 2008. (In examining the public reception of these terms Trench finds a colourful account in the grey literature: "the new 'Smart Economy' was none other, it turns out, than a vague amalgam of the old 'Knowledge Economy' bullshit that various quangos have been churning out for a decade" (O Connor cited in Trench, 2009, p. 17). These terms belong to an international educational policy discourse and Peters (2001)

gives a good overview of the history of the construction of "knowledge economy" in national educational policies.

That 'we have changed into a knowledge economy' has been long heralded (Drucker, 1969). Although the concept can be used in a variety of ways, knowledge economy is generally held to correlate with globalisation and with high-tech and science-based industries (particularly ICT). It may also mean new ways of working and living via ICTs and generally implies some shift away from primary (land-based) and secondary (manufacturing) economic activity. Powell and Snellman (2004) define the knowledge economy as "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence" whose key characteristic is "a greater reliance on intellectual capabilities than on physical inputs or natural resources" (Powell & Snellman, 2004, p. 1). It is instructive that they choose the patent as the artefact through which to attempt to gauge the effect and extent of the knowledge economy i.e. indicating that the building blocks of the knowledge economy are intellectual rather than physical.

Powell and Snellman claim a strong positive correlation between educational attainment and level of earnings in the knowledge economy, with third level qualifications conferring particular advantage in the workplace. There are also those who contend that this can be extended back to earlier schooling, and that the quality of primary and secondary education that a person receives can be linked to their eventual earnings as workers. Schweke (2004) for example, makes this case in a book, which, it is interesting to note, is titled *Smart Money: Education and Economic Development*. This is a strong theme of the purported rationale for *Smart Schools = Smart Economy*, although there seems some confusing conflation, or circularity, between schools driving the smart economy (in particular the ICT sector) and the ICT industry boosting ICT-use in schools. Another "driver" of the policy added here is the claim that use of ICT in schools will encourage pupils into

Science Technology and Mathematics (STEM) careers (it is not explicit whether this relates *solely* to the ICT sub-sector or not, but ICT is singled out).

Knowledge/smart economy policy-making may cast education in the service of economies and markets. This is explicit in the document: "...our education system must continue to be responsive and supportive of the economic life of this country" (Rellis et al., 2009, p. 5). Considine and Dukelow (2009) put this trend in Irish educational policy in an historical context against two forebears which they see as the previous influence of organised religion and the Irish language. In this they follow O Sullivan (2005) who identifies a "mercantilist paradigm" in Irish educational policy. Policy-wise he sees the mercantilist pardadigm to be a neo-liberal intertextual construct comprised of six separate but disentanglable sub-strands: the commercial, managerial, vocational, consumer and market texts . It's themes include "consumer rights, performance indicators, devolved budgets, private investment in education, enterprise, corporate linkages, new forms of school management, quality and efficiency". (O Sullivan, 2005, p. 177)

Smart Language = Smart Policy

O Sullivan describes how commercial, managerial, vocational, consumer and market sub-languages are distinct from each other, but also, how they permeate each other in something of a linguistic soup in Irish policy discourse from the 1990s on (O Sullivan, 2005, p. 156). In a related vein Peters talks about how the language of ICT business promotion has infused knowledge economy policy in education:

> This body of literature on communications and IT resists simple classification or characterisation, as contributions come from a wide range of disciplines, including electrical engineering, computing science, telematics, informatics and cybernetics. 'Soft' promo-

> tional work by large multinational companies such as IBM and Microsoft - carried out in the name of business - have penetrated education like no previous media form. (Peters, 2001, p. 6)

However, it is worth pointing out here that commentators such as Peters and O Sullivan are mostly speaking about an *indirect* influence of industry on educational policies. *Smart Schools = Smart Economies* cannot be accused of allowing the language of "soft promotional work" of IBM and Microsoft to creep into it like a sinister mist. Rather, these people are actually the named authors.

The language in this document relates closely to those described by Peters, O Sullivan, Trench and others. Vocabularies of management; business; communications and IT; jostle with educational policy specialities such as "lifelong learning", "student-centred learning" etc. and sometimes in confusing or contradictory ways. The policy may be said to resist analysis or argument at times through its tautologies and paradoxes: the coherence of the text dissolving under close reading as footing for critique falls away. For instance, the report recommends skills that will be "essential for active, *social* and productive participation in the knowledge-based *social* and economic environment" (Rellis et al., 2009, p. 8) [emphasis added] (*tautology:* social participation in social environment); and that "A digital learning environment will support teachers to devise, manage and direct student centric learning activities ..." (Rellis et al., 2009, p. 8).

Similarly, terms with a particular aura from one field may be redeployed in another to achieve a particular effect. Thus *growth*, which has almost universally benign connotations in economic discourse, is deployed in this document to give instant impetus and rationale for proposed activities e.g. "Digital Content Growth", which is one of the five major recommendations. Similarly *smart* economies and *smart* schools themselves have a self-evident or inargu-

able quality (for who would want stupid schools?).

A document with an ambitious twenty authors might not be expected to read flawlessly, or even with a consistent style. Indeed, in a postscript to their appearance as its originators, is proclaimed the caveat: “The opinions expressed in this report belong to ICT Ireland and do not necessarily represent the views of any individual or organisation that participated in the work” (Rellis et al., 2009, 3). This legalistic idiom, presumably a familiarly to the industry-based authors of the document, is spatchcocked in beside a list proclaiming their authorship that is characteristic of an academic text, where traditionally writers are professionally defined by, and utterly responsible for, what they say in print. The disclaimer and the authorship, taken together, are nonsensical, a dissonant collision. Perhaps the disclaimer is there because these authors have no proxies to hide behind. This is in contrast to the Government Minister for Education, for there exists between him or her several proxy bodies which feature in this policy, such as the NCTE, the Teaching Council and the Departmental Inspectorate of Schools (to say nothing of the committee charged with the policy’s implementation) through which responsibility may dissipate. In looking at how the policy is written in this way we may find evidence of where ideology is being fashioned into state apparatuses, precisely at the point where ideology is claimed to be absent. In the neo-liberal ideology the state is explicitly diminished and retracted, this follows from the knowledge economy ideology where the state is implicitly absent because the non-state industries of high technologies are key. And at the point where the state should be in retreat we find ““a ‘rolling out’ of state power, but in new, dispersed, forms”. And a dispersal “that engages more agencies or agents into the field of state power, empowering them through its deregatrory mechanisms and subjecting them to processes of regulation, surveillance and evaluation” (Clarke & Newman, 1997). Although for Foucault, it is not the state *per se* that extends itself, but rather that state and non-state parts come to resemble each other in growth of a wider *governmentality* (Foucault, 2007). Foucault uses this term for a broader (and

older) conception of government that is not solely political but also encompasses general individual conduct in society.

Policy Borrowing

One further general aspect of knowledge economy policy is worth identifying in this document - that of *policy borrowing*. The appropriation of educational policies from other countries (usually a select peer set) may well be an inevitability of globalisation, but it is also a conscious strategy of neoliberalism according to Olssen and Peters (2005). It is not exclusive to "knowledge economy" governmental policy-making but is established in wider education research, generally within a broadly positivist tradition (Halpin & Troyna, 1995; Dale, 2005). Firstly, Ireland's position in various league tables is discussed, such as reference to Ireland's 19th place in a list of 25 European countries whose schools who are "ICT ready", with only 30% of Irish schools being so (Rellis et al., 2009, p. 12). This is based on the levels of ICT equipment and infrastructure in schools and the data is from both a 2006 European Commission study and work by the NCTE (Korte & Husing, 2006). In particular, student and/or classroom to computer ratios are divined to rate Ireland relative to European peers. In other measures, such as teacher confidence and competence in using various types of software, Irish teachers are said to outperform the European average. Findings from the 2006 PISA study show growth in use of computers in Irish schools that still left them behind their European peers, but of "greater concern" was that 30% of Irish school-goers were not using ICT in school at all, compared with a European average of 13% (OECD cited in Rellis et al., 2009, p. 13) . For teachers' usage and effectiveness of using ICT in schools there are two required factors the report states - professional development (i.e. training and education) and individual teacher motivation. This is claimed from studies conducted in Northern Ireland, the Netherlands and of course Finland (one of the most consistently highly rated countries for its schooling in international educational policy) (Rellis et al., 2009, p. 18). In making the case for investment in ICT in schools "Asian and Eastern European countries" are invoked

for their "national skills development programmes" through which they are "building a competitive advantage" (Rellis et al., 2009, p. 14). This is worrying because "emerging studies indicate a correlation between economic development and ICT penetration and integration in our education systems and society"(Rellis et al., 2009, p. 14).

We can divide these references to other countries into two categories. The first category is based on studies of ICT resources in schools in various countries and their effective usage by teachers. Measuring the *presence* of resources is relatively straight forward (broadband speed, number of computers etc.). Measuring their usage we can imagine could be a more problematic exercise; measuring their *effective* usage is definitely not trivial (for instance, in the Irish study referenced no impact on learning is claimed at all, though improvements in teaching are *self-reported* by teachers); but the next leap, of correlating national "economic development" with "ICT penetration and integration" into education systems, is if it were possible, a most impressive arch-positivist enterprise. Rather, the references to countries in this context fall into a second category that is not based on real research but a form of speculation about the future common to knowledge economy policy, which for Peters is evidenced by the "'language of futurology' - steeped in hyperbole and laced with prediction" (Peters, 2001, p. 12). This may be part of a form of "policy magic" even "witchcraft" (Ball, 1998) so called for the simplicity of the solutions proffered when compared to the complexity of their associated problems e.g. investment in ICT in schools = creation of economic success.

Without disputing the methodology behind these claims, or looking for the studies upon which they are supposedly based (which are not cited in the document itself, where only reference is made to a separate government report) we can still show their fallacy quite well. Fear that other countries have discovered special (but non-secret) developmental formulae and are deploying them to economic advantage in a global zero sum game, is a well

known tool to give legitimation to strategies of a domestic policy. For instance, Peters points to how the New Zealand government held up countries such as Australia, Finland, Ireland, Canada, Singapore, and the United States as knowledge economy models who were experiencing strong economic growth and from whom much could be learned (Peters, 2001,p. 12). Ireland was singled out for its particular accomplishments which were claimed to be based on:

- investing heavily in education, especially technical education
- correcting major imbalances in government finances and putting fiscal and monetary policies in order
- controlling excessive costs and keeping wage increases moderate
- opening up the economy and privatising many state-owned enterprises
- positioning Ireland as the 'hub' between Europe and the global marketplace (Ireland trades 153 per cent of its gross national product)
- enacting strong legislation designed to open up previously sheltered activities to competition in the interests of consumers
- creating incentives and stimulating the economy through lower taxation

(Frederick et al., 1999, p. 10)

Indeed Ireland's success had lead itself in one decade "from an ailing, virtually bankrupt economy into one of the most fastest growing, dynamic economies in the developed world" and a "model of fiscal restraint, tax re-form, income moderation and labour market flexibility" (Frederick et al., 1999, p. 10). The irony is that only another decade later, at around the time of the *Smart Schools = Smart Economy* report, events were crystallising that would see Ireland reverse this position and face "virtual bankruptcy" once again. Indeed, the ruinous state of Ireland's economy is, at the time of writing, garnering greater international attention than its successes ever did

ten years earlier. Neither Ireland's economic success, nor its subsequent collapse, were predicted with any wide agreement which is a real problem for comparative education that dabbles in futures. The prescriptions of policy borrowers may turn out to be poison pills.

Spending Haves and Have-Nots

"If I have it I spend it, If I don't I wont" - Quote widely attributed to former Irish Finance Minister Charlie McCreevy of unknown exact origin.

The *managerial* discourse O Sullivan traces in Irish educational policy is evident in this document in one of its key recommendations: the proposed changes to schools' ICT procurement guidelines. And unsurprisingly so, as the authors whom we might expect to have keen interest at this point are indeed senior managers in long-established global private sector corporations. One of a manager's key prerogatives is to spend. Not as a consumer - that is not in an exercise of choices, freedoms both enabled by, and generative of, markets - but more simply as a functional hegemonic act. In this respect we might expect the report not just to recommend a procurement strategy favourable to the ICT industry authors, but one generally of procurement, one recognisable to a managerial class of the state and its agencies.

The *Smart Schools = Smart Economy* report makes several recommendations to the purchase of ICT equipment and software for schools. It proposes:

- Multi-year budgeting for ICT for schools (a move away from year-to-year spending)
- More centralised and "aggregated" purchasing under a "nationally procured solution"
- More funding of ICT in schools from parents (incentivised via tax breaks)
- VAT reduction on equipment and content used for ICT in education

- Centralised and aggregated purchase of technical support for schools (a move away from arrangements made by individual schools)

An investigation by NCTE of new cheaper hardware options for the future, in parallel with an immediate purchase of current technology
For software: open source, proprietary and mixed solutions to be considered under the key criteria of "fitness for purpose" and "total cost of ownership"

It is obvious how most of these recommendations will benefit large sellers of ICT equipment, software and services. Although it is unclear how much of the recommendations were implemented, HP and Dell do feature amongst the preferred suppliers in the NCTE's May 2010 procurement guidelines and Microsoft software is standard across all preferred machines (NCTE, 2010). However, this document does in many respects follow national policy. For instance, "procurement aggregation" is a strategy of public procurement policy from 2005, issued by the National Public Procurement Policy Unit (NPPPU) which exists under the aegis of the Department of Finance (NPPPU, 2005). The NPPPU, which was established in 2002, describes its mission as to "develop public service procurement, policy and practice through a process of *procurement management reform*" (NPPPU, 2005, p. 2). The emphasis here is from the original text and highlights the extension of managerialism, under the banner of an axiomatic doctrine of reform, in state policy. Thus the authors of the *Smart Schools* report are merely repeating back the language of government policy in their contention that "multi-annual budgeting is a necessary change in management approach" (Rellis et al., 2009, p. 32). If we go back further we can trace the establishment of a body called the Forum on Public Procurement (FPP) as an attempt by those involved in public sector procurement to self-organise around their profession (or in Foucaultian terms to self-regulate). The FPP describe themselves as a "voluntary organisation" which aims to "identify, develop and promote best practices and thereby enable buyers and suppliers participate effectively in the public procurement market on the island of Ireland" (FPP, 1996). This

is then echoed back in subsequent government policy, at local level, where the aim is stated that "the attainment of professional procurement qualifications among key procurement practitioners in the sector will be promoted, facilitated and encouraged" and that this will be achieved by link-ups with third level education institutes and "professional procurement bodies" such as the FPP (CCMA, 2003). Thus, following a series of *interpellations*, procurement managerialism culminates in an act of investiture - a bowing to the state test.

Managerialism may be "a generic activity [...] technically and socially superior to other previous forms of social practice" (Deem et al., 2007, p. 102). The ICT industry and the NCTE on the one side, and the more amorphous public procurement policy makers on the other, may be engaging in what Foucault terms an "agonism", a relationship "reciprocal in citation and struggle" (Foucault, 1982, p. 790). What is clear is that buying is key. "Discretionary wealth" is for Enteman the most definable aspect of managerlaism (for after all "an organisation without any management may lack the ability to participate in transactions") (Enteman, 1993, p. 162) and so the ability to spend is one of the central assumptions of the document.

The prospect of diminished budgets and gloomy financial outlooks are broached in the document. In spite of this the report recommends that a purchasing strategy be put in place for top of the range laptop computers, and advice from the National Competitiveness Council that newer, leaner and cheaper classes of devices such as netbooks might be perfectly suitable, is dismissed as suspect. Instead, the report calls for immediate purchase of "proven" technology, whilst separately investigating newer technologies for their fitness for purpose. Devices like netbooks are cheaper for several reasons such as falling hardware costs but also because of a significant increase in the diversity of the software ecosystem, particularly in operating systems, that run on new smaller classes of computing devices. That a netbook running Ubuntu Linux and Open Office costs considerably less

than the same machine running Microsoft Windows and Microsoft Office, is unlikely to have escaped Paul Rellis, Microsoft Ireland managing director and chair of the group charged with this report.
The report's recommendations acknowledge a "mixed software environment" in use in schools but the recommendations on software quickly descend into a defensive rebuttal of free and open source software:

> It is important to note that even though a free product may seem at face value an attractive proposition, software licence costs are only one aspect of the total cost of ownership of any ICT solution. For a valid comparison to be made, extrinsic factors, including hardware, software, training, support, transition costs and exit costs etc, and intrinsic factors (accessibility / usability / language support / collaboration) must be fully considered and evaluated in the procurement decision. (Rellis et al., 2009, p. 35).

Nowhere are the report's recommendations more defensive. For nothing is to be more distrusted than something that is free. Open source, means the source code of a piece of software is freely available to view, copy and modify (which makes the software itself free). Those who develop the software are often doing unpaid work. These aspects of open source software do not fit easily into the basic neo-liberal model of economies enabled by markets, and of related social structures defined by paid work. The notion of procurement and its profession comes into question. Open source software is particularly heinous because it may not involve any purchase at all. This is not just a fundamental problem for the ICT industry but also to the a managerial class generally including here that of the state.

Open source has started to feature in policy. The UK government recommends equal consideration of open source options in ICT procurement for

instance, while others have gone much further to mandate its use or sponsor particular open source initiatives directly (UK Cabinet Office, 2010). There may be arguments to consider a particular class of "societal infrastructure software" which has not only technical and functional requirements but also an onus to put knowledge into the public domain via open source licensing (Bricklin, 2004). Nonetheless open source and free software are making only slow progress in public policy, and indeed they may never fit into the mainstream. In something of a paradox open source cannot be easily accommodated into the knowledge economy because it makes knowledge freely available. Powell and Snellman's quantification of the knowledge economy is via patents; their analysis omits any intellectual artefacts that are gifted.

Conclusion

The call to consider the "total cost of ownership" of open source software is an attempt to co-opt something that may be free into the standard economic model. Everything must be paid for. And everyone must pay: the report recommends that parents become involved in buying ICT for schools. This will be incentivised by tax breaks, so the state will still bear at least some of the cost. Who bears the cost is almost irrelevant (unless you are a cash-strapped parent of course!) but what is important is that everyone takes a hand in the procurement enterprise. Parents, state and industry are all part of a professional, managerial complex that becomes ever more self-similar.

If something cannot be bought and sold there is an implication that it does not exist; if something cannot be procured then state agents, companies and schools cannot function. To finish, an anecdote from my recent experience may illustrate this conundrum. As part of an assignment, undergraduate students were charged with contributing to and improving a Wikipedia article by editing it themselves. The article was about on an economic theory known as Porter's Five Forces model which describes ways competition occurs in markets. In particular it details how technological innovation may disrupt existing business models. A further part of their assignment involved

writing an essay on how Wikipedia may have disrupted the encyclopaedia market and apply Porter's model to explain this process. The idea was that as students edited their own Wikipedia article they might reflect on the fragility of the traditional business model for paid encyclopaedias.

No sooner had students begun, than the Irish government announced that as part of its "smart schools" initiative it was to spend €450,000 on licenses for the Encyclopaedia Britannica and World Book for use in Irish schools. By way of contrast, copies of Wikipedia for offline viewing are often produced for developing world countries for free. Without opening a Pandora's box of issues surrounding Wikipedia and education (which often centre around legitimacy of knowledge arbiters) it is reasonable to class the purchase of these encyclopaedias for Irish schools as simple hegemonic acts, as reassuring evidence that the rituals of procurement are not ceasing and that through such incantations smart economies will blossom.

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