

Public Technology: Challenging the commodification of knowledge

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Introduction

Throughout the twentieth century there has been a tension between the public provision of higher education - the perception of education as a public good and the private provision, with the marketization and the commodification of education. By the start of the twenty-first century, balance between provision as public and provision as private had swung heavily in the direction of the private. Now, however, there is a growing dissatisfaction with the concept of a university education as a private commodity, bought by students primarily, if not solely, as an investment in their own future. 'Teaching in public' is the notion that what students and teachers do should be engaged with the wider community that the university serves and critiques. The purpose of this chapter is to describe how this concept can be implemented.

The argument presented here will be that the uncritical adoption of technology by those working in universities has, in the past, accentuated the tendency to commodify university education and thus create conditions in which higher knowledge can be effectively privatised by creating spaces, such as virtual learning environments, that require institutions to invest in commercial products, and keeping the public out, or more subtly, by subscribing to ostensibly free Web 2.0 services which in fact require their users to provide them with commercially valuable personal data, which they can then sell on to other services. This is a process inimical to the promotion of teaching in public since it renders the university a site of both capitalist production and of significant consumption. The position taken here is that higher knowledge is

inherently a public good; the chapter suggests that it is possible to identify similarities between the conditions that gave rise to the nineteenth century Luddite uprisings and the situation that modern academics find themselves in. While machine-breaking is not a course of action available to academics, the chapter goes on to suggest more positive ways in which technology can be adapted to serve a progressive, critical agenda that promotes student learning and social justice, and begins to reconfigure university education as a joint project between students, academic staff, and the wider public.

The commodification of teaching

Teaching is, historically at least, a relatively private activity. It is true that the teacher and students share an experience of learning, but this is rarely extended beyond the classroom or lecture hall. Because teaching is not, generally, a public activity it is often characterised inaccurately as a process in which information is transferred from the teacher to the learner, although this transmission model has been largely discredited by educational researchers in favour of what are sometimes described as constructivist models, which place greater emphasis on the student engaging in activities that promote learning (Biggs 2003, Laurillard 2002). This distinction is of interest in any discussion of the role of technology in higher education because, if teaching or learning are things that can be transmitted, there is an implication that they are effectively ‘products’, in the way that a piece of music or a holiday is a product. They have a start, an end, and features in common with similar products. This is the conceptualisation that has led to the growth of the inappropriate ‘New Public Management’ attitudes to higher education as described in [Chapters 1 and 4](#).

If teaching is a product, then technology can be seen as an opportunity to commodify university teaching; that is, in Marxist terms, to give it an exchange value beyond its use value. One result of this understanding of teaching has been the growth of claims that technology is going to have as profound (and negative) an effect on university education as it has had on the music and travel industries (Simmons 2001, Morgan 2010). Noble, for example, argues that by placing courses on-line, university administrations are 'now in a position to hire less skilled, and hence cheaper workers to deliver the technically prepackaged course' (Noble 2001: 32).

Universities' use of technology

Universities are a significant consumer of technology and many applications have been developed to service the needs of higher education. Perhaps the most pervasive of these applications has been the Virtual Learning Environment or (VLE). One study suggested that more than 95 per cent of universities have at least one VLE (Education for Change Ltd, The Research Partnership *et al.* 2005). Turnitin, a self-described plagiarism detection service developed by iParadigms has over 9,500 institutional subscriptions, according to their own documentation (iParadigms LLC, 2010)

Other examples of technologies produced to meet the needs of higher education include electronic voting systems for use in lecture theatres and lecture capture systems which record and make lecturers' performances available to students. On the administrative side there exist student management systems and curriculum management systems. Finally, while not specifically designed for higher education, data analysis software packages such as Nvivo and SPSS enjoy significant custom from the higher education sector. Higher education is also a significant consumer of

office suites: word processors, spreadsheets, e-mail, and presentation software that handle what might be described as the ‘business’ side of any organisation. Interestingly, many of these products have also been adapted for teaching.

The use of these products presents some problems for the university, which is itself a significant producer not only of knowledge, but of complexity (Barnett 2000). The ways in which these proprietary technologies are used serve to undermine its role as a producer of knowledge and to effectively discourage attempts at teaching in public. First, such technologies are often supplied under license conditions that limit their use to members of the university, and thus maximize the sense of the university as being separate from society, rather than an integral part of it (you can not read a Microsoft Word document if you do not have access to Microsoft Word). In effect they privatize university education. In the case of the office products this is mitigated somewhat by their ubiquity but, even here, different versions of word processed documents can present problems for tutors receiving student submissions produced in versions of the software that they are unable to read.

Secondly, these technologies open up spaces for capital to exploit the university, not only by creating a debate around ownership of intellectual property, but also by creating a sense of expectation among academics and students, along the lines of ‘We’re not a proper university if we don’t have Blackboard or Nvivo’, or whatever product happens to be currently fashionable. Certainly, access to such technology can be and is used to market the university to potential students (Cornford and Pollock 2003) but again, the use of these technologies is inimical to attempts to teach in public, first because the public is largely unfamiliar with them, and secondly because

in many cases a username and password, only available to members of the university community, is required to access them.

Thirdly, many of these technologies have themselves begun to influence university practices. Information technology, as the name implies, deals in information. Information is not, however, synonymous with knowledge, and the consequences can be unfortunate:

the curriculum is reorganised as a sequence of knowledge gobbets (Bytesize as it is on the BBC revision website) which can be transferred as ‘credits’ and combined in novel ways with no guarantee of internal coherence – they are made ‘readable’ in the jargon of the Bologna Declaration (Ball 2004: 5).

There are works that advocate precisely this kind of ‘chunking’ of knowledge as a technique for managing change in higher education (Ford *et.al.* 1996), and this kind of approach is becoming evident in the way VLEs are being used to provide ‘lecture notes’. The emphasis here is on managing change, not necessarily on improving learning, although there is often quite a high level of student demand for this kind of service (Rolfe 2002); this is unsurprising if students are treated as consumers who are to be provided with knowledge in return for their tuition fees. As Ball (2004) suggests ‘chunking’ is a rather incoherent approach to pedagogy, but the danger for attempts to teach in public is that the ‘chunks of knowledge’ themselves become private commodities, inaccessible to those who might be able to develop them by building them, or using them to build their own understandings of a new subject.

Finally, there are regulations concerning the use of technology, often arising from a quite proper concern to extend opportunity. As pointed out in Chapter 6, the Disability Discrimination Act (1995) in the UK states that no-one should be denied access to a service by reason of a disability. In theory, academic staff providing electronic learning content should ensure that it is available in formats that are accessible by any student, irrespective of any potential disability. It is also the case that not having access to a computer connected to the Internet is, to all intents and purposes, a disability since the student cannot access electronic materials. Again in the UK, the Data Protection Act (1998) requires that data about individuals is registered centrally and that individuals can request to see that data. These requirements are not in themselves unreasonable, but they do add to the workload of teachers and administrators wishing to take advantage of technology. Furthermore, technological products are often marketed as a solution to generic problems, taking no account of individual preferences. Even without the regulatory framework, which in many cases is largely ignored (Chapter 6), technology requires that its users constantly adapt it to their own, or their students' needs.

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Given these difficulties, it is appropriate to ask why proprietary technologies have been relatively successful in universities. One likely reason is their claim to make life easier for users; there is undoubtedly something in this argument, especially where the software is conceptually similar to the task it is facilitating. A good example of this is Microsoft Word, where users are presented with a blank white screen and a keyboard, thus effectively mimicking a typewriter. Similarly, e-mail resembles traditional mail services. A user posts messages and receives them in an inbox, conceptually similar to a letterbox. The more successful Virtual Learning Environments appear to have

learned this lesson so, for example, Blackboard offers spaces in which tutors can post learning materials, assignments, contact information, course announcements and so forth. Blackboard also allows individual course tutors to completely redesign their sites, although research by the author found that academics rarely take advantage of this facility (Beckton and Penney, 2011). It is also the case that there are concerns about student privacy. Certainly, universities do have a legal responsibility under the Data Protection Act to keep personal data about students confidential.

Nearly all the commercial technologies designed for university teaching and learning support this provision by only permitting access through a password, a selling point for many applications. There is no doubt that this is an essential service, but it is, paradoxically, inimical to attempts to teach in public. After all an academic opinion is not personal data. As discussed below, academics are finding ways to overcome this difficulty. A final reason for the success of such systems is that technology, as Cornford and Pollock (2003) note, can be used as a marketing tool to attract students. It is hard to imagine a modern university that would not provide computer laboratories, Internet access, library catalogues and, increasingly, e-journal and e-book provision, along with software for creating assignments which, beyond the obvious word processing tools, might include quantitative analysis software, computer aided design packages, video and audio production software and others appropriate to the disciplinary profile of the institution.

All this is an example of the way capital has successfully used technology as a mode of colonizing human activity, in order to maximize value from human labour.

Initially, it appears that the adoption of these technologies reduces costs. It is not a

novel observation that Virtual Learning Environments are very effective at transferring the cost of printing from the institution to the student, although that is a very small-scale example of this kind of colonization. Equally, if students' opinions are hidden from a wider public, the university can avoid the costs of litigation under the Data Protection Act (1998). More serious is the fact that over-reliance on technology means that students cannot attend university unless they are prepared to make a significant investment in technology, as well as a regular re-investment in assorted upgrades. Academics too are obliged to subscribe to corporate values in their work. Cornford and Pollock (2003) have argued that the adoption of technology almost always changes working practices. Such practices are always informed by a particular philosophical standpoint, not so much 'we've always done it this way', but 'we've always done it this way because...'. This point is discussed in more detail in the next section. Returning to the theoretical discussion of technology as a colonizing force, it can be seen that even those products that are sometimes described as Web 2.0 will eventually lead to the alienation of academics from their discipline. Google, for example, offers software that provides much of the functionality that commercial software does, for free, ostensibly offering universities a significant saving and thus an attractive proposition in times of public sector retrenchment:

Having signed up for a Gmail account, a user can publish websites with Blogger, manage groups and mailing lists with Google Groups, videoconference with Google Talk, write collaboratively with Google Docs, track topics with Google Alerts, manage syndicated feeds with Google Reader, share video with You Tube, post images with Picassa [sic]

and do whatever it is that Google Wave is supposed to do (Groom and Lamb 2010: 54).

Groom and Lamb (2010), however, point out that such software is not as free as it might appear. In the first place, they draw attention to concerns over privacy. While the corporations behind Web 2.0 products might be largely benevolent, the fact remains that users of these services, including universities, are effectively handing over enormous amounts of data to a third party. Secondly, the business models of nearly all of the corporations are predicated on advertising, which means that the values of the corporations that are their customers inevitably take precedence over the values of educators and learners. These values are essentially monetary, but money is merely a social form (Neary and Taylor 1998) of the value that is being extracted from the labour of academics and students. That labour is commodified into chunks of information which can be sold and controlled, often through intellectual property rights.

Lessig (2004) argues that over-enthusiastic protection of intellectual property can privatise ideas that were once in the public domain and, as such, were themselves an encouragement. Intellectual property is an important right for the protection of creative artists' work but paradoxically it can, if used inappropriately, lead to a significant stifling of creativity. In Free Culture, Lessig (2004: 15) gives the example of the Disney Corporation, which jealously protects its interpretations of folk tales (such as Cinderella and the Sorcerer's Apprentice) from attempts by other artists at re-interpretation, seemingly oblivious to the fact that its own work was based on re-interpretations of stories that are freely available in the public domain. Boyle (2008)

sees our intellectual property system as an attempt to solve a variety of public goods problems. Intellectual property rights are essentially incentives that encourage the writer to write, the inventor to invent, the investor to invest and the corporation to sell the property. Essentially they are mechanisms that create legal entities that can be traded in various markets. Such entities are thus private goods, in that the public can only access them through exchange mechanisms, such as money or barter. The question then becomes, to what extent is university teaching a private as opposed to a public good? This is far from clear. If it is a private good, then it has a duty to protect its own commercial interests. If it is a public good, then it has a moral obligation to make the knowledge that it has developed through public funding freely available to the public. Again, that is not a position that is likely to be welcomed by those anxious to sell hardware and software to universities and their students.

Nevertheless, whether they like it or not, a legal entity that can be sold or traded can also be given away, or more accurately licensed for use by others; usually, although not necessarily, free of charge. If the original producer owns the copyright they are in a position to specify the terms under which it is used. This is the philosophy behind the Creative Commons movement (Creative Commons 2011). Through Creative Commons licenses academics can share their work with others on terms that they decide although, as noted in Chapter 7, this does not in itself reduce institutions' reliance on capital funding. There is something of an irony in the fact that funding models in the UK put great pressure on academics to publish and that, as part of this process, they are almost always required to transfer the copyright to publishers. There is some evidence of resistance to this. For example Martin Weller, Professor of Education at the Open University, has stated that he will only publish his research in

peer-reviewed Open Access journals (those that make work freely available for others to use) and likewise, that he will only peer review work for such journals (Weller 2010). As well as research, there is a movement to develop Open Educational Resources, materials that can be freely adapted for use in Virtual Learning Environments; a critical analysis can be found in Chapter 7.

Luddites in the academy?

It would be absurd to deny that there are powerful social and economic influences encouraging universities to adopt particular technologies but, as discussed above, technology can be, and is being exploited by universities, or more properly those working and studying in them, to develop a more socially just praxis. Holloway (2005) made a useful distinction between potestas (power over) and potentia (power to) and develops an argument that as human beings, we will alienate ourselves from our own activity if we do not develop our own potentia. In other words, in a capitalist environment university teachers who allow the use of technology to be imposed upon them will ultimately, as Noble (2001) argues, lose control over their own intellectual output:

Teachers as labour are drawn into a production process designed for the efficient creation of instructional commodities, and hence become subject to all the pressures that have befallen production workers in other industries undergoing rapid technological transformation from above ... their activity is being restructured via the technology, in order to reduce their autonomy, independence, and control over their work. (Noble 2001: 32)

This should not be seen as a reactionary proto-Luddite cry to smash the machines, tempting though that sometimes may be! As Jones (2006) argues, the Luddites were themselves skilled technologists, who were actually mounting a social protest against the misappropriation of their livelihood through the use of cheaper technologies. These technologies produced what they regarded as an inferior product, in the sense that it did not benefit from the care and attention of a craft worker. A modern Luddite argument may be that machine-made education may be of a standard quality, and may reduce or even eliminate production flaws, but has no inherent ability to inspire the individual. In other words, the context of the Luddite uprisings is being replicated in the modern university. Technology is often seen as providing opportunities for organisations, including universities, to reduce costs in much the same way that nineteenth century mill owners saw the introduction of stocking frames as a way of extracting more value from the labour of their operators. A contemporary version of this can be found in a description of what universities can learn from e-business. Buller (2008) explained how Cisco Systems exploited technological capabilities to save \$2.2 billion:

They leveraged additional value from all areas of the business; Customer care, workforce optimisation, supply chain improvements and staff development/additional services via e-learning provision. Technology has impacted on processes across the business to such an extent that customer orders placed via the web can be routed to outsourced manufacturers with the finished products being delivered to the customer without Cisco itself touching the actual product (Buller 2008: 37)

One might therefore wonder what Cisco's role in the enterprise actually is, and this passage reflects a very real fear among academics that they themselves will be rendered redundant by technology. It is not, of course, technology itself that is the threat, but the way in which it is used to extract greater quantities of surplus value from academic labour.

The original Luddites are often characterised, however unjustly, as unthinking anti-technology reactionaries, but their supporters began an intellectual tradition, sometimes described as neo-Luddism (Jones 2006), that has continued ever since. Compare, for example, these three extracts: from Lord Byron's maiden speech to the House of Lords; the Communist Manifesto; and Donna Haraway's Cyborg Manifesto:

However we may rejoice in any improvement in the arts which may be beneficial to mankind, we must not allow mankind to be sacrificed to improvements in mechanism (Byron, 1812, Speech to the House of Lords, quoted in Jones 2006: 96)

Owing to the extensive use of machinery and to division of labour, the work of the proletarians has lost all individual character and consequently all charm for the workman (Marx 1888: 15)

Technologies and scientific discoveries can be partially understood as formalisations, i.e. as frozen moments of the fluid social interactions

constituting them, but they should also be viewed as instruments for enforcing meaning (Harraway 1991: 164)

What runs through these arguments is not so much a fear that machines will replace people, but that they will in some sense diminish what it is to be human. The value of teaching in public is that it reinforces the wider connection with society, and counters these rather isolationist tendencies of technology.

In the educational context, efforts to extract the human element from the teaching and learning transaction have been around for considerable time. Noble (2001) describes the rapid growth of correspondence schools in the USA during the first half of the twentieth century, which offered what we would now call ‘distance learning’. These schools promoted themselves as widening access to the university for those who could not, for financial or social reasons, attend campuses themselves. Theoretically at least, this is very much in the spirit of teaching in public. However the reality was less idealistic. Most of these schools offered little or no support to their students, and indeed relied for their continuing existence on what became known as ‘dropout money’, essentially the fees collected from students who did not continue with their studies (in some cases as many as 80 per cent). [Noble, \(date\)](#) This less than successful record did not prevent US universities leaping onto the correspondence course bandwagon, even though in many cases they did not even offer academic credit to the few students who did manage to complete them.

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The foregoing should not be read as an attack the idea of distance learning itself. Clearly, along with the notion of teaching in public, this does have the potential to

provide access to educational opportunities to those who are otherwise unable to attend university. Indeed the Open University, a UK institution set up in the 1960s to offer distance learning courses (as discussed in Chapter 3) and which now makes extensive use of digital and networked technology, reported a significant increase in applications during summer 2010 from disappointed A level students who had failed to secure places at conventional universities (Ross 2010). The significance of the movement towards distance learning is that it indicates the extent to which the degree (however delivered), rather than the university experience, has come to be seen as the product. The degree has become a commodity that can be exchanged for future higher earning power.

Although distance learning is a different order of educational experience from a conventional campus-based education, the techniques of distance learning are increasingly being deployed on the conventional campus in order to save money. This is taking the form of the provision of lecture notes, digitised readings and other ‘learning content’ made available through VLEs. There is little evidence that students use technology for anything learning-related other than accessing resources. A 2007 study found that the ‘VLE was not used principally as a means of communication; even discussion boards served more as a resource/logistical function than as a communicative one’ (Heaton-Shrestha *et al.* 2007: 460).

This is essentially the transmission argument discussed earlier in this chapter. If knowledge can be transmitted, it can be bought and sold. However, what is being stored ready for transmission is not knowledge, but information. Information is valuable, in many cases indispensable to knowing, but it cannot itself become

knowledge without the ‘active intervention of the theoretical imagination’ (Roszak 1986: 109). Students learn not by receiving information, but by relating it to other information from their personal, professional and academic lives, building ideas around it, and exposing these ideas to criticism from others. One of the strengths of digital technology is that it allows the widespread sharing of ideas, and this is perhaps one way in which academics can follow the path of the Luddites through, for example, creating more research-like curricula, as argued in Chapter 5.

Even the strongest advocates of technologically-advanced learning appear to recognise that teaching that takes place in public has some value. For example Buller’s argument above is not that universities should become purely private e-learning based institutions, but that, with regard to standardising infrastructure and developing common business practices, they ‘can learn from the best practices of e-business’ (Buller, 2008: 47). If this is so, then it is not hard to see how it might ‘enforce’ (as Harraway (1991) terms it) a meaning of education as a commodity. The students in the e-university are ‘producers’ only in the sense that factory workers are producers. Students take knowledge (raw material) that they are given by the expert (the teacher) and reproduce something for that same expert, that the quality of their reworkings might be judged. The work the student produces in this environment is defined not by any sense of the student as an individual, but by the requirements of the syllabus. Clearly technology has the capacity to package, re-format and deliver this ‘raw material’ but, if that is the case as with the example of Cisco Systems above, one might be forgiven for wondering what the university’s role in the educational transaction is.

One might thus infer that the argument that the implementation of technology is ‘business-like’ in the sense that its adoption will increase quality, is based more on optimism than evidence. Certainly there are administrative functions within the university that will greatly benefit from the approaches described Buller (2008), but the teaching function is profoundly different. A recent paper by Groom and Lamb (2010) recalls that as recently as 2004:

The difficulties in migrating learning materials from one system to another, or even from one version to another were so severe that urgent activity was dedicated to defining interoperability standards ... [which] were mind-bendingly complex and almost impossible to justify to the bemused educators expected to adopt them (Groom and Lamb 2010: 52)

Groom and Lamb (2010) go on to describe the development of participatory approaches including social bookmarking, podcasting, online video and blogging that have collectively become known as Web 2.0, and it is in these areas that there lies some hope for the application of the theoretical imagination, and for some practical examples of how teaching might take advantage of technology so that it can become a more open, public activity.

Public teaching: Wikipedia and the Academic Commons

There are reasons to think that some of the neo-Luddite concerns expressed earlier arise from attempts to automate the practices associated with teaching in private, rather than from inherent features of the technology. There are a number of features of the traditional classroom that militate against a more public approach to teaching. It is

further arguable that the confines of the classroom, the syllabus and the end of term assessment reinforce the notion of learning as the relatively unproblematic acquisition of authenticated knowledge rather than the complex, iterative process it actually is. First, in traditional forms of assessment, the student is typically writing for an audience of one: the person they believe will assess their work, and so they see no reason to consider any other audience. Second, their work is bounded by the time and place in which it is created, that is the environment created by a given class cohort, and thus students are unlikely ever to return to it. Even if knowledge is created this way, it is unlikely to be further developed. Thirdly, objectives for learning are limited by the set curriculum, with no reason for students to attempt to go beyond them and explore different aspects of the topic. Lastly, the students' work has no impact outside the class, making it difficult for them to see any worth in what they are doing beyond its potential to secure them a grade, and ultimately a qualification. A tool such as Wikipedia, which has come in for a great deal of criticism from academics for its many inaccuracies, may prove to have real value in changing the learning process, if the nature of the learning process is rethought.

Martha Groom at the University of Washington Bothell in the USA has experimented with asking students on two of her courses to submit articles to Wikipedia (Groom and Brockhaus 2008). Her findings are that students valued the public peer review process that Wikipedia offers, even when other editors pointed out that their work was derivative, and even if other users of Wikipedia subsequently deleted it. ('Deletion' is a slightly misleading term when discussing Wikipedia. All edits are actually preserved and can be discovered through the page history.) Students were much more cautious about checking the value of references, and the work was further developed as other

readers contributed to the debate or requested further information. The message for those who wish to use technology to promote teaching in public is that it is important to prepare the students, both conceptually and technically, for learning in public. In spite of claims about ‘digital natives’ (Prensky 2001), Groom felt that it was worth explaining to students what Wikipedia was, and how it worked. There were also technical issues about privacy of students (resolved by asking them to create pseudonymous accounts); learning the markup language used by Wikipedia and making students understand that writing for an encyclopaedia requires a different style from a more traditional academic essay. Nevertheless, Groom and Brockhaus (2008) argue that the investment required pays off dramatically in students’ much greater understanding of how knowledge is created.

A further example of teaching and public is the CUNY (City University of New York) academic commons, a mash-up of WordPress, MediaWiki, and BuddyPress into what has been described as an ‘appealing and highly sustainable environment’ (Groom and Lamb 2010: 56). The website, (CUNY 2011), is a public site, which facilitates the open and free interchange of students’ and academics’ knowledge and ideas, allowing them to publish them in a forum which anyone can access and is therefore an

excellent example of teaching in public; in fact other institutions have adopted WordPress to take a broadly similar approaches. In the United States, Mary Washington University has developed a sophisticated publishing platform for the entire university community which, as well as providing blogs, has extended to providing course sites, spaces for group interactions, clubs and societies (Mary Washington University 2011). Again, this is largely available to public users.

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Similarly, universities in the United Kingdom are beginning to look at this kind of provision (Hughes, 2009), providing blogging platforms based on WordPress.

This kind of model is susceptible to the arguments made by Groom and Lamb (2010) that Web 2.0 products such as WordPress are just as much the products of corporations as Blackboard, Microsoft Office and Turnitin, and are thus primarily driven by their values. However there is an important difference in that Automattic, the corporation behind WordPress, derives most of its profit from its hosted service. Users can, if they wish, download the software for free and maintain it themselves, thus ensuring that they use it in a way that matches their own values. Of course, Automattic provides additional services such as spam filtering, which organisations are charged for. An important benefit offered by this model is that the educational technologists behind it are forced to collaborate with a wider developer community; this ability to draw on a wider community can result in considerable savings on consultancy and licensing fees, while at the same time building a pool of expertise among an institution's own staff.

Conclusion

This chapter has demonstrated some practical ways in which higher education institutions can make learning spaces that are open, public and free from overtly commercial interests, and given some examples of how teachers can take advantage of social technologies to make their work public. Teaching in public is not, though, entirely unproblematic as universities employ a wide range of staff primarily for their disciplinary skills, rather than for their skills in using technology. This raises a question of how far it is reasonable to expect people to use Web 2.0 services. The

description by Groom and Lamb (2010) of Google services, quoted above, reveals that the functions rely not only on users having a Google account, but on their making regular use of it. It also relies on their being prepared to engage with the various functions sufficiently to be at least comfortable with using them.

For all users, even those with the relevant skills, technology, as mediated by capital, presents an undoubted threat to higher education through its tendency to commodify knowledge. However, informed by an approach to higher education based on teaching in public, technology has the potential to challenge this commodification because the students, as much as their teachers, are the producers of their learning and as such can decide its exchange value (Neary and Winn 2009). There remain therefore reasons for optimism. Noble's (2001) rather gloomy prognostications have not been entirely borne out, since academics have proved it is possible to use technology for their own ends. This chapter has explored two ways in which academics and students can regain control over their work, while retaining its quality.

The use of Wikipedia is an excellent example of how a sharing model works, since the students take from Wikipedia the space in which to work and the peer review process and, in return, provide content for the project. This content can then be used to inform future work in the same area. In this way, the educative process of supporting students in producing publicly-accessible information offers a direct challenge to the commodification of knowledge and contributes to a process of teaching in public. Similarly, the academic commons opens the work of university to a wider public especially, and importantly, through the use of the Creative Commons licensing model. Academics do not abandon their intellectual property rights in their

ideas, but they do license others to use them, thus facilitating the development of those ideas while resisting the commodification of that knowledge. Hence, both Wikipedia and Creative Commons have a significant contribution to make to 'teaching in public'.

In summary capital will, by its very nature, always exploit technology in ways that maximise value from academic labour, (for example through the use of VLEs to 'chunk' and commodify 'learning content', or the use of e-portfolios to package 'skills'). This process will tend to alienate academics from their discipline, as they are forced to become adept in the new technologies. Yet capital has also rendered technology ubiquitous outside the academy. It cannot be ignored. So the argument is made that academics must embrace technology or be left behind. But to argue thus is to misread the nature of both academic work and technology. The former deals with ideas that are free and uncommodifiable and the latter in information, which is not. The latter is not sentient, but is infinitely adaptable to human purpose. The challenge then is not to follow capital in a futile race to keep up, but to resist its influence by the spreading and sharing of ideas through our own uses of technology, by teaching in public. Teachers and researchers should, therefore, share work and ideas since, in order to share, there must be someone to share with – a wider public.

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