

Epistemological Metaphors: Orders of Knowledge and Control in the Encyclopedist Myths of Cyberspace

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Abstract

The apparent freeing of information access and knowledge accumulation that was the promise of modern communications technology – the Internet, World Wide Web and mobile digitized telecommunications – heralded the opportunity to attain some of the ideals that have been expounded for liberal education, open and lifelong learning, informed democratic decision-making and overall an increasingly informed populace and participative, well-educated electorate. The prospects for a democratization of knowledge acquisition had broad appeal – de-institutionalizing formal education, enhancing learner choice and ‘de-experting’ authoritative knowledge sources. Failings of intellectual imagination, political will and insight together with the inappropriate organization of resources have limited such aspirations. Escaping the constraints of formal, institutionalized education and established forms of knowledge ‘transfer’ may be more difficult to accomplish than has been anticipated. Achieving the promised flexibility and adaptability in human learning may be hampered by the problem of balancing an epistemological dilemma between the efficient management of information and intellectual freedom. This paper addresses the connected issues of the costs and benefits of online encyclopedism, the production and management of intellectual capital within information systems, and the influence of the more latent metaphors for knowledge management which have subtle consequences for social order and social control.

Keywords: epistemological metaphor; cyberspace; knowledge; control; encyclopedism; Internet; fake news.

“Wisdom is not a product of schooling but of the lifelong attempt to acquire it.”
Albert Einstein

Introduction

There was once a time when we respected the illusion of balance in broadcast media, especially in public service broadcasting. These days we subject ourselves to the myths of open access, information availability and knowledge ‘transfer’ in the illusion of online encyclopedism. The idea that there is unlimited reliable knowledge available to us and that it can be transferred is singularly disturbing and its aptness as a metaphor barely thought through. People write of ‘knowledge production’ and gain funding to examine ‘knowledge transfer’. Yet how can knowledge be a ‘product’ which can, in any sense, be ‘transferred’? If I gain knowledge I neither bought it nor acquired it from anyone or anywhere. I gained it through the combination of information and experience (HM Government, 2016). Even assuming such a transfer is possible implies that the ‘known’, by being passed on, leaves a void at its source. Can gaining knowledge truly be considered a zero sum action? The physical distribution parallel with logistics is such that the produced knowledge ‘goods’ are removed from storage somewhere and ‘delivered’ to another location, only then can they be considered ‘transferred’. It also suggests that the knowledge product is marketable – can be bought, sold and ‘consumed’.

The availability of so much material/information online means that it could be impossible to choose appropriate products from the ‘knowledge store’. As a result we tend to look narrowly for those things that interest us and those views we agree with (See Wason’s concept of ‘confirmation bias’ in Charter and Oakesford 2001) and rarely find ourselves able to address a challenge to our comfortable assumptions about the world – even if those assumptions are un-comfortable, we remain contented with the discomfort. We do little about it on the grounds that we assume that little can be done. Now the commercialized algorithms of the Internet and the Web keep steering us to those topics that ‘it’ has learned we like. No commercial advantage comes from having us challenged. Rather market ‘optimization’ panders to our purchasable wants and not to our needs.

To compound this specialization of sought information, actors involved in the ‘virtual reality’ (truly an oxymoron) of gaming rather than looking up to actual charismatic leaders, become their own hero via their avatar. The experiences they have are promoted as *immersive* – which is the entire point: being so heavily immersed in a virtual world they are less likely to cause problems in the real world. The virtual habitat of cyberspace creates new illusions: that we are ‘informed’ when deceived, that we have ‘acted’ when we sign online petitions, that we can make a difference when little really changes. Any indignation we have is ephemeral – our indignation resonates with others (Hessel 2010) but is not sustained. There remain other indignations to address – online. Instead of enhancing any activism, instead of really ‘occupying’ (https://en.wikipedia.org/wiki/Occupy_movement), life in cyberspace *occupies us*. We are ‘occupied’ in shadow work (Illich 1981) which once gave employment to others in, noticeably, banking, retail sales and transport, but crucially also in information-getting and giving, and educating. “With the rise of this shadow economy I observe the appearance of a kind of toil which is not rewarded by wages, and yet contributes nothing to the household’s independence from the market.” (Illich 1981: 5) The growth of online petitioning

offers a similar case in point. ChangeOrg, Avaaz and the like bombard us with so many petitions that we could be signing several every day. It is hard to disagree with the many ‘good causes’ they espouse so we find it easy to sign and perhaps feel guilty if we do not show support. But the ease, frequency and quantity dilutes the effect of each individual petition. The ‘really good cause’ gets lost in the over production of petitions. We become occupied into believing we are acting collectively when we sign online and even if we do turn up for a real live ‘occupation’, it too lacks durability and we return to the virtual world to dream up new actions that fundamentally change little about the underlying systems of order and control. Petitions are no substitute for direct action. If I were a conspiracy theorist I could imagine a conversation at high political levels: “We have to do something about this Internet potential... people will be getting information themselves, we won’t be able to quite control it like we used to. It’s dangerous... If we can get people to spend more time in front of their computers they’ll be less likely to be out in the streets causing us trouble... Google needs to throw up busloads of trivia before it allows people to get to the real info.” This maybe not so consciously done so I wish here to explore the subtle ways in which this trick is accomplished and, by doing so, challenge us to find ways to substitute the real for the illusory.

Knowledge as Re-presentation

At different times and places, across different cultures and communities, the way knowledge is organized and re-presented changes as it develops and evolves. Our perspectives on what we know can change through history and between cultures. Traditions of ‘liberal’ education systems aimed to cultivate critical awareness of the sources and consequences of our precious knowledge (Ehrenreich 1994: 232-3). There is a problem that the representations of what we know and how we know it are so subliminal that the metaphors we use to describe knowledge are rarely seen for the analogies they are. They are not ‘the world’; they are re-presentations of it constructed by intelligent human beings. They are ‘as if’ statements which help us to make sense of the insensible (Vaihinger, 1924, Oppenheimer 1956). Indeed “All reflection, thought and criticism begins in comparison, analogy and metaphor... the world can only exist for man (sic) as man knows or imagines it.” (MacRae 1975: 59)

Such metaphors are often well hidden and are sometimes heavily mixed but they contain, control and possibly determine how we see and operate in the world. Before we come to understand how modern forms of ICT¹ accomplish this it is important to reflect upon how our commonly held perspectives on what knowledge is are governed by the terms which we use to describe and talk about it.

It seems hardly surprising that more commonly employed knowledge representations dominating the twentieth century have included variations on the themes of crisis, catastrophe, chaos and risk (see the work of René Thom, Christopher Zeeman, Edward Lorenz, Ulrich Beck, Mary Douglas and Aaron Wildavsky among many others). But we are largely only sensitized to epistemological metaphors when we are subjected to new ones and this happened when the Internet first took hold and the dominant metaphor for how we

¹ I continue to use ‘information and communications technology’ as a shorthand term for the composite forms of modern sources of information and communications – Internet, WWW and mobile digital telecommunications.

acquire, arrange, access and apply what we know was labelled the *information superhighway*. Metaphorically we could engage in global mental traveling. Our journey was a 'road to everywhere'. It was with the rise of the World Wide Web that knowledge became synonymous with information and there existed a belief and a hope that modern ICT offered a fast route to it. How fast modern highway traveling really is, given the pressure of *traffic*, remains a moot point, but the route metaphor implied that the knowledge traveller's most vital accessory would be a map.

Attempts to map cognition imply that we are dealing with navigable territory. But who does the cartography? In what sense could it be possible for anything really new to be discovered if 'someone' already has the map? The best strategy might be to hunt out the map - without it one would only discover hidden treasures by chance. In fact the truly vital questions about roads (literally and metaphorically) include: Who built 'the road' and why? Who currently owns the road and who will own and manage the road in future? Who pays for the road? Who repairs or rebuilds the road? Where are the crucial toll-gates and who really owns and controls them? It is simplistic and naïve to attribute it all to ICT 'heroes' such as Tim Berners-Lee, and in terms of the distribution of power we remain at the mercy of a high return economic infrastructure that can change hands rapidly if the price is right.

The discourse surrounding contemporary epistemological debates similarly leads us into to certain extrapolations. If we are journeying on a superhighway then, when we get to our destination we may 'unpack' the discourse which holds the knowledge - a luggage metaphor. The 'luggage' metaphor again suggests that knowledge can be somehow contained and may be portable. If we see knowledge as something built on solid foundations - when we need to understand how the building 'holds up' we can 'deconstruct' it. The building metaphor contains, if subtly, notions of planning, co-ordination and targets. It holds an implicit teleological perspective upon social order that most who use the term 'social construction' would explicitly reject. Even a deconstructionist perhaps does not intend to extend the metaphor to demolition, although the architectural metaphor is well-suited to the post-modern mind.

Ever since its inception more than one writer has pointed out the headaches involved with finding ways through the *quagmire* of information sources available on the Internet: "Anyone on the network can mount anything they like: there's no quality control, and the result is a labyrinth, mostly uncharted, which hides its best material in the midst of acres of trivia." (Gartner 1992). Little has changed in that regard in the intervening years since Gartner's statement, so much so that one ought to question the appropriateness of the highway metaphor. Thus Gartner's maze metaphor might be more appropriate. The labyrinth metaphor for knowledge and information still implies that a discoverable centre exists, but that, unlike most mazes, many different routes to the core are possible. There are still some cul-de-sacs and circular routes that return you to the starting point. Crucially there remains the assumption that there is an ultimate thing or things to know, a central knowledge core or an absolute truth - a 'heart' to the maze.

In fact the 'netsurfing' analogy reveals much. The Internet does not hold knowledge, but information and rather superficially at that - mostly infotainment, occasionally edutainment - but it remains an 'infosphere' where the boundary between the real and imagined is blurred

(see Toffler 1980, Floridi 2014). The surfing metaphor implies that the whole thing is fun - a leisurely exercise. Indeed, as any surfer knows, success depends upon staying ahead of the wave; once the crest passes you, you are left behind - something many of us feel is highly possible with the speed of the information revolution and which accounts for those who suffer 'information anxiety' (Wurman 1989). It is hard to resist checking e-mails or text messages and tweets continuously as they buzz their presence. To add to that anxiety is the culturally relativist concern that our knowledge remains speculative and tentative, no matter the extent of our current conviction as to its durable truth.

It seems ironic that one dominant route metaphor for organizing and representing knowledge - the 'course' of study - no longer holds sway. Its demise seemed inevitable in a more relativistic intellectual culture. The idea of following a fixed route to a finishing post implies a finite view of learning and information access that few could accept today. Instead courses of study are broken up into 'modules' - smaller than a course, packaged and bounded - all ready for travel in 'space' and capable of (lunar?) landing somewhere. It seems positively archaic to speak of a 'corpus' (i.e. body) of knowledge these days although 'embodiment' appears to have regained its epistemological relevance in recent years along with the promotion of a 'new materialism' (Dolphijn and van der Tuin 2012). Organic analogies have been heavily criticised in the social sciences in the past since comparisons between 'healthy' and 'unhealthy' societies and a social pathology perspective have been seen as removing responsibilities for action from individuals and locating them within 'diseased' social organs. The notion that certain 'bodies' of knowledge might not be good for our health does, however, hold a certain attraction and the organic analogy has been effectively applied to the cyberspatial experience (Featherstone and Burrows 1996).

It could be suggested that the superhighway metaphor really ought to be replaced by the virtual 'garden plot' or 'vegetable allotment'. What we are really doing is pottering about, digging around, looking for and planting things. Actually this is not too far from that longest surviving epistemological metaphors - the agricultural one. We ask people "What field are you in?" without a second thought for the latent metaphor. Once again the extrapolation of the analogy rings true. Fields are bounded pieces of territory intended for cultivation, have fences (to keep things in or out) and gates (to permit controlled comings and goings). When we work in a field we plant ideas, cultivate them and develop new knowledge by either digging deeper or (thinking 'laterally' cf De Bono 1990) digging elsewhere. Seeds used to be 'broad cast' and might fall on stony ground - just as much random paper mailshot advertising still does today. Now there is a narrowing of the target facilitated by the records of our online 'searching' that aim to match those items of our curiosity...the 'gardeners' may reckon the seeds are being sown in more fertile ground. So much so that telephone cold calling continues despite the public distaste for it and targeted advertising via search engines grows apace - indeed the survival of many online applications depends upon it. But the force of a 'field' can be observed in the domain protectionism observed in many disciplines - intellectuals can be highly sensitive to what constitutes 'their' domain. Once more the field contains ownable knowledge.

Early public broadcasting had a mission to enhance mass culture. Sadly the virulence of the contemporary seeds emerging from broadcasting appears to have been diluted both by quantity and the lack of investment in the production process. Interestingly, educationists re-

imported the program metaphor back from the broadcasters. The idea of learning programs had clear appeal to behaviorist learning theorists: learners could submit themselves as passive audiences for programs presented in a particular order in a 'menu', as part of a 'diet' (note the mixed alimentary metaphor) which could be selected weekly in their version of the TV and radio guide. Media information is invariably parcelled in a menu format ready for selection and consumption - whether via texted mobile messages or a selection of file tabs on the application.

Analogic Traps

The great appeal of all such metaphors lies in the comfort of clear boundaries. We can feel secure in our intellectual territory and quickly recognize intruders. Thus while there exists a pedagogic rationale for owning knowledge, obsessions with intellectual property can lead to abuse in the form of secrecy or a narrowly instrumental exploitation of information: an attitude which inevitably acts as a check on the emergence of new knowledge (Schon 1979).

In a climate of increasing information anxiety, taxonomies are similarly psychologically comforting since they order and arrange information in convenient categories that beguile us into thinking we have knowledge. There would be danger if we came to believe that those pigeonholes exist in the real world and that nature orders itself into categories for our conceptual convenience: an intelligent design? Most of the metaphors we feel comfortable with do entail clear boundaries - boxes, packages, routes, bodies, fields. This may be why Western scientists initially had difficulty coming to terms with 'fuzzy' thinking; and why South East Asians took strides in applying fuzzy mathematics to advanced computer electronics. And this too is precisely why it matters that epistemological metaphors should not remain hidden and that we retain awareness of their subliminal effects.

Sensitivity to the danger inherent in all analogies again reminds us that they are only representations of the world and if extrapolated too far can misrepresent, confuse and mislead instead of fostering the emergence of new knowledge. Microsoft's original 'windows' metaphor now dominates all our front screens. We were warned that it would become the gate through which users enter the information superhighways of the future (O'Neill and Schofield 1996). It takes intellectual effort to remind ourselves that we are NOT looking through a window but a necessarily two-dimensional representation of content – not matter how 'real' the imagery appears. It is the combined power of our imagination and the promotional effort of those who delivered the medium that we 'believe' we are looking through a 'window on the world'. In reality it is what is now regarded on the Web as an 'older British term' – a Visual Display Unit (VDU). A VDU is a more literally accurate description of what it is we are looking 'at' and not really 'through'.

It has been suggested that it does not really matter what the front screen is so long as it is user friendly and does its job well. But another analogy can illustrate the problem: chiropractors and osteopaths have long been aware that one of the major causes of back problems today, along with incorrect lifting, is car driving position - something we largely accept and adjust to without question. Car manufacturers would not take kindly to the suggestion that the entire ergonomics of driving needs a fundamental reconsideration. Where else could we possibly put the steering wheel, or foot pedals or gear lever, or can you find a modern driver seat that is not a 'bucket' design? That's not the point. Where they are now and what they do to your

physiology is having unanticipated consequences. Our driving ‘front screen’ is causing repetitive (cognitive) strain injuries which those who suffer from them do not even recognize as the source of their complaint. What if there are hidden cognitive consequences to looking always at the world through the Microsoft-originating ‘Windows’? What might be the cognitive consequences of ‘seeing without seeing’ learning and knowledge as routed, programmed, coursed, embodied, packaged, planted or constructed?

The real value of an information superhighway to me would be the speed with which I can access the information which may help enhance my knowledge. Its value is decreased if it takes more time to access the information than the information is ‘worth’ - my more valued and valuable time is in using the information - not in the time taken in getting to it. With each new fashionable ‘app’ that I am obliged to download, my precious time has to be spent learning how to operate it. (More *shadow work* note.) Once I am comfortable with new software the market strives to persuade me I need to ‘upgrade’ to remain effective. At times they even suggest that I can help with ‘improving the design’ by accepting Beta versions and feedback comments to help improve the app. (Even more shadow work and absorption of my precious time.) The gardening metaphor may continue to be apt: I don't want to spend too much time digging the allotment - I want to be enjoying the produce. This is not to decry nor deny others the pleasure of digging. If someone enjoys mindlessly surfing the Internet then fine, I personally do get some joy in browsing the spines of books on the shelves in the library. By doing so I am acquiring a sense of the field. But I have long since learned that that is not the most efficient way of finding out what sort of information is contained in the books. In fact, neither is merely looking at the titles. I really need a cataloguing system that accurately covers contents and index.

It can easily be forgotten that a map is not the territory, a mathematical formula is not the physical process it is adopted to re-present, the language (say) of emotion is not ‘the’ emotion. We employ discourse to create and share meaning – it is not the meaning. That discourse ‘means’ something is a quality of our interpretive capacities as human beings – the bridge between the noumenal and the phenomenal qua Immanuel Kant (via Vaihinger 1924). We must strive to remind ourselves that the Internet is not necessarily inclusive of all available ‘knowledge’, it contains information which requires transposition into knowledge. It is not necessarily fast since we have to be sufficiently skilled to find the quick routes to information. It is not necessarily liberating since ordinary citizens do not control it. It is more time-consuming than time-saving if we cannot control how it is made available and how we use it. Its claimed democratising, liberating, and free access to knowledge is an illusion. But the maintenance of such illusions is underpinned by these common metaphors – those are the analogic traps.

The Beguiling ‘Efficiencies’ of Encyclopaedism

The conventions adopted for presenting knowledge mirror our intellectual practices. Trained in a modernist tradition I used to organize my knowledge in numbered lists; in some senses prioritizing facts via number. I have now learned to ‘see’ my facts as a series of bulleted points, often removing all sense of priority and, incidentally, making them harder to recall from memory. But in modern texts, course-writing and open learning design, this is seen as user-friendly. We are encouraged to write in short, punchy paragraphs. My students naturally did this through their reading the popular tabloid press. Are we just being old-fashioned in

encouraging them to write continuous prose in decently sized paragraphs to produce sustained argument? Or might it be the case that fragmented, tabloid paragraphs encourage fragmented, tabloid thinking? (I sense some ‘tweets’ on the horizon?)

The dilemma is perhaps revealed in the distinction between the modernist and the post-modern paradigms. Navigationally, modernism would advocate using a critical path flowchart to knowledge, while postmodernism might favour serendipity – or fuzzy logic. Clearly, we need not counterpose algorithm to anarchy. Both paradigms remain as metaphors which can vary in their validity and usefulness for intellectual progress.

The problem of balancing the algorithmic with the anarchic was reflected in debates over deschooling and the creation of de-institutionalized liberal education in the mid to late 1960s (see, for example, Illich, 1971; and Neill, 1960, on the ‘free school’ at Summerhill). The promise of liberal education was true freedom in learning. All possible avenues to knowledge could be kept open. Openness was seen as essential to innovation – to the planned as well as the unplanned, the chance discovery of new knowledge. The latest manifestations of openness are supposed to be found in the various forms of Open Access in publishing – something strenuously advocated by research funding agencies.

There are, undoubtedly, problems with this approach to learning. How can one balance the distinct advantages that a tutor has over a learner in knowing the field, as against the possible novel lines of thought that could be opened up if the learner is allowed a degree of freedom? Does freedom to learn mean that we all have to explore the same cul-de-sacs that others have visited before us? How can freedom be best balanced with efficiency? Yet others have argued against the structured collective amnesia which inhibits the accumulation and accessible storage of the knowledge base of ‘normal’ social science (Gans 1992). And this is only part of larger problem of keeping up with a literature that grew throughout the twentieth century (De Solla Price 1963; Toffler 1970) and continues to grow exponentially.

Clearly there are trade-offs. Such an encyclopedist approach to the organization of knowledge, which could enhance both the tutor's and the learner's efficiency might serve to discourage more serendipitous routes to learning and the discovery of new ideas. It can lead to finite syllabuses and curricula, and static course assessments – as in one-off exam papers. But that may be only because of that rather primitive system for organizing and distributing knowledge - the printed textbook. The opportunity to reconcile liberal education with the efficient acquisition of knowledge lies in the promise and ideals of truly open learning that appeared to be offered in cyberspace. The principles of learner autonomy, flexible access to a ‘corpus’ of knowledge and escape from the rigidities of traditional ‘courses’ could be ‘embodied’ in new ways of arranging the tutor/learner relationship and new ways of accessing the available knowledge. (I wonder if these highly mixed metaphors would barely have been noticed without the earlier argument in this paper and the inverted commas in the last sentence.)

Epistemological Consequences of Metaphors

It is in the area of epistemology that the problems of flexibility, efficiency and freedom must be primarily confronted. The epistemological problems facing any human society can be simply classified - the corpus of human knowledge must be established and grow; it must be stored somehow; it must be accessible; and, although some would debate this, it must be used

or applied. It could be argued that the first category is more prescriptive, a value judgment - but the latter three are essential to a society's survival. Individual learning is certainly dependent on all four problems being confronted and the success of any 'impact agenda' gives weight to the 'useful knowledge' motive.

The potential efficiency to be gained from encyclopaedism has to be balanced against the possible cost that not many students/learners will strive to look elsewhere, outside the available corpus or 'knowledge store', for their information. Especially if time is short and fees have to be paid. Who then can legitimately take on the task of deciding what should be incorporated in the corpus? Online encyclopaedias or learning companies primarily and necessarily motivated by profit cannot be entrusted with such a high responsibility. Even universities and colleges may not be trusted to be comprehensive and equitably selective in their knowledge inclusion policies since even they are increasingly required to be at least self-financing if not actually profitable. What will happen to 'excluded' knowledge? Will any more be lost than is already lost in the more randomly competitive knowledge contest that we have witnessed hitherto? And what will happen as education and training institutions increasingly become privatised?

As suggested earlier, efficiency also depends on the learner being able to navigate the body of knowledge effectively. (The anatomy metaphor holds here – bones, arteries, organs, tissues and, better still, neural networks have to be 'navigated'.) But how is it possible to avoid irrelevancies, timewasting, false starts, dead ends, and yet, at the same time not miss something 'vital'? (Life-giving – essential to survival.) Systems will have to be designed in such a way as to 'know' in advance what questions the learner will need or want to ask. Such questions should not be forced on the learner by the system's built-in framework. It may not be possible to construct a useful flowchart which maps the field if one doesn't know the extent of the corpus. If the corpus can be assumed to be relatively *finite* then the learner needs alternative routes *through* and *round* it. If the corpus must be assumed to be *infinite*, then the learner needs routes to key elements of the existing corpus and the stimulus to move *beyond* it. It could be impossible for course designers and knowledge controllers to anticipate all journeys within and beyond the corpus. At some point, and with advances in artificial intelligence and machine learning, the human learner might come to be supported, inspired and guided by the learned learning machine and its supportive software.

Clearly, with the rate of information growth we currently experience and will undoubtedly continue, learning has to be managed somehow. If it is not managed we are in danger of suffering the *information anxiety* mentioned above, leaving us "...inundated with facts but starved for understanding" (Wurman 1989). Perhaps ironically that is why machines are not yet knowledgeable. They can increasingly handle massive amounts of facts, but they lack understanding – without, yet(?), suffering from it. To repeat: information alone is not knowledge and it has been some time since anyone believed that the tutor was the only one doing the teaching. Knowledge is created at the intersection between the educator and learner, it requires the combination of information and experience. If the sought-after information has been digitally stored and accessible, then the growth of knowledge and the solution to information anxiety must lie with effective learning management systems. Learners must be able to negotiate their own curriculum in truly open learning environments. This becomes especially complex (but nonetheless vital) in the management of what were

originally called ‘open hypermedia’ systems (Hall et al. 1992). Attempts were made early on to confront these problems so that, as in more traditional systems of information storage, the user's cognitive map and their spatial awareness of the location of elements within the system could be enhanced (Hill et al. 1992).

Sociopolitical Constraints with the Transposition of Learning

Over and above problems of organizing knowledge and navigation through it, attainment of the educational ideal is, as it always has been, constrained by politics, economics and culture. Recall the origins of the term ‘cyberspace’ in the political science fiction work of William Gibson in the early 1980s. His vision was of a virtual world in which there were no laws and no politicians – just raw, brutal, corporate power. Subsequent writers saw a potential for a new utopia in the Internet and Web – a new safe world in which our liberal dreams could be realised – a democratic, free and countercultural space running parallel to the real world. (See John Perry Barlow's ‘Declaration of Independence of Cyberspace’ at <https://www.eff.org/cyberspace-independence>.)

To take the political issues first. Running through each of four epistemological stages is a problem of social control: that is, who can or may (1) establish, (2) store, (3) access and (4) apply knowledge? Who is allowed or is seen as having the right to do each of these things? There may be unparalleled learning web opportunities in cyberspace, but governments have long been casting wary eyes on the vast reach of the Internet and the Web. There is a danger that it could become possible to ‘know too much’ through international networking. More recent and significant examples here include Edward Snowden's disclosures and Julian Assange's Wikileaks. Open ‘learning’ – the general and wide release of information – cannot yet be extended into open government. This is not even merely a concern with the growing power of the State but can be found in academic, professional and multinational corporate protectionism. Professionals cling to fears for their intellectual territory; lecturers still have a fear of becoming superfluous to requirements and corporations go to great lengths to secure rights to knowledge.

In a characteristically prophetic vein, Maurice Kogan once warned that “...if the new elites are educated within a do-it-yourself framework, it follows that authority in the larger society will equally well be diffused and up for recurrent tests, if not for permanent revolution” (Kogan 1978:102). Diffusion is not devolution. We have already witnessed problems with the locus of authority in the ‘revolutions’ which have taken place in recent years, such as the Arab Spring. The same is true of the USA now confronting a reactionary ‘counter-revolution’ as the Trump administration reverses climate change protections, the Affordable Health Care Act and a range of other civil protections that President Obama installed. Instability and uncertainty characterize these developments. I certainly would not want to re-impose outmoded hierarchies of learning, but neither do I believe the solution to lie in what counts as appropriate learning being decided by the vagaries of the market for, say, environmental, health, social care and education services.

As we move to Web 3.0 – or the Semantic Web – issues arise as to who has control of the required knowledge and skills to manage the massive developments in information-sourcing this implies. Halford et al (2012) are clear that: “It is important that we work to make the social construction of the Semantic Web visible: to ensure that the micro-politics of its

artefacts are understood *as politics*, representing choices and interpretations, rather than as neutral fact or engineering design.” (Halford, Pope and Weal 2012) There is, and will be, nothing ‘neutral’ or inert about it – but it is certain that it will be difficult to disclose its latent control structure – even if no ‘one’ actually controls ‘it’. It is in remaining aware as to how it can be accessed and manipulated by difficult to identify actors that some degree of power remains in public and in publicly controllable hands.

Cultural concerns hinge on how one establishes the criteria by which certain aspects of knowledge is valued and included in the corpus. Once again one cannot rely on market forces alone to establish these criteria. One cannot assume that the learner/consumer will independently come to value de-institutionalized learning. If anything, studies consistently suggest a growth in an instrumental attitude to learning across all social classes - most adults embark on courses in the interests of occupational advancement (ACACE 1982; McGivney 1990). Over many years of teaching I personally found students to be growing increasingly goal oriented. They became increasingly primarily concerned with passing the exam and gaining the qualification. An attitude which is by no means incongruent with pressures from Government and employers for more efficient ‘training’. As long as open learning is seen as alone holding the key to our educational future, then its ideals are bound to be sacrificed for the sake of educational goals which amount to no more than meeting training targets.

The reproduction of social inequalities in cyberspace have frequently been pointed out. There are technophobes and those unable to handle autonomous learning who may be found (though not exclusively) among the old, the lesser educated and the economically-deprived; sectors of the population who have continued to remain disadvantaged despite the growth in post-16 education in recent decades. There is a wide range of more individual barriers to learning which may even be exacerbated rather than relieved by opening learning opportunities (Rogers 1991: Ch.8). In fact those people who look to the possibility of enhancing interpersonal relationships via a collective educational experience may be sadly disappointed today. The growth of social networking via social media might have offered such opportunities, but not if the current motivation for their use is anything to go by. At ‘worst’ they seem to be used for chatting, meeting people and sharing images, at best they share emotional intimacies and political resonances (see Woodfield 2017). What has certainly grown is the spread of facility in the ability to employ the ‘basics’ of the technology, even amongst older people.

Framing both the political and cultural determinants of knowledge acquisition is a powerful economic argument. Access to information can be cheaper and therefore may be made more easily available to all. Here the continuing fallacy of the economic model of perfect competition and the free market reign. While it is true that “...the competitive marketplace is best served by all the participants knowing the rules” (Rein et al. 1987: 339), the problem arises in that not only do all participants not know the rules, very few rules have been established. Governments have funded initial capital investments but paid relatively scant attention to the latent costs of such developments, to the human resource requirements and certainly even less attention to the opportunity cost - what we could lose by moving entirely in one direction (Iphofen 1993).

In this market, due to the high capital expenditures required and despite some attractive packaging, principles of *caveat emptor* must be comprehensively applied. Indeed the classic marketing design response to the threat of product monopoly is not to challenge it, but to sidestep it - find the market niche and fill it! This might be acceptable with many economic goods and services, but there are dangers of doing this with intellectual property. History is replete with the disasters wrought as a consequence of the failure to confront an intellectual monopoly.

A particular feature of cyberspatial informatics is their similarity to popular television and audio technology. It could appear that the problems of users' confidence and intimidating unfamiliar formats are overcome and marketability increased by fitting it in to the existing domestic media infrastructure. Hypermedia should be easy to understand for a relatively sophisticated audience of television and audio/CD users. Once again the learning system is being dictated by technological developments harnessed to an established economic structure. As with all 'fashion' industries, the ICT market requires continuous product modification and refinement. New hardware and software, new apps, flood the market, requiring time spent learning and adapting – not to say purchasing – instead of enabling action based on what had already been learned. Clearly this could be seen to represent an improvement on the linear sequential thought processes implicit in printed media and it may even have helped overcome a learning passivity induced by broadcast television viewing (see for example Neil Postman 1985 and Jerry Mander 1991, 2013). Sadly the level of intellectual and political discourse has steadily been reduced to a shrinking, sound bite mentality as predicted by both Postman and Mander; employment of the visual grammar of entertainment-dominated television already accounts for the financial success of video based learning – look at the wealth of video-education available on YouTube; ordinary televisual attention spans prescribe five second cutting/editing principles - all the equivalent of the short, fragmentary paragraphing discussed earlier which now dominate texts in most fields. The range of sound-bite sized social media devices is testimony to how far along this lowest common denominator of 'fact' sharing we have become.

This view is not merely a protest at the lowest common denominator principle that pervades modern culture. What must be questioned are the unknown consequences of framing peoples' worlds in these ways. No more stark evidence of the power and concern of lowest common denominator soundbites has been the election of a US President who 'twittered' his way to electoral success and whose policy development continues to be contained in equally succinct 'tweets', not even going to the length of a decent 'blog'.

Imminent and Immanent Concerns

A future in which the focal learner is not the human being is not hard to imagine and elements of that are already with us. Such great strides have been made in artificial intelligence that the idea of an 'independent' learning machine is no longer such distant science nor fiction. Truly autonomous learning machines could only be said to exist if no human is involved in their *in vivo* decision-making. Thus, once released into the world, an autonomous learning machine is one which would be enabled to make its own decisions. Autonomous vacuum cleaners are already on the market. Driverless cars are being pilot road-tested. And, while at present, considerable attention is given to weaponised drones, they still require humans to select and action targets. But the prospects are so imminent that high level

discussions on international bans on autonomous lethal weapons – ones that could select and engage a target without human intervention – are already being considered.

Learning systems can be tested quite well in controlled simulated/laboratory conditions but cannot easily be tested in ‘the field’, in a real environment, since they have to operate in highly complex adaptive systems – that is, other adaptive systems constantly challenge the learning and actions of the machine; that includes humans and other animals as well as the changing physical environment. Driverless cars offer a useful example – they can learn/be taught about driving down a motorway lane – but cannot adjust to ‘edge-cases’ – say, for example, how they will fare with broken traffic light systems and emergency police or members of the public giving hand signals at the site of an unanticipated incident.

The problem gets even more complex if there are moral elements to that decision-making. Moral processing in humans alone is complex and unclear. We know little enough about how humans decide who is an ‘enemy’ and who might ‘legitimately’ be targeted. There are enough examples of non-combatants suffering ‘collateral damage’ (i.e. being maimed or killed) and allies subjected to ‘friendly-fire’. Such are the flaws in human decision-making that the idea that machines can learn morality seems far in the future – but that will not prevent some from trying.

Before we can morally guide learning machines, we have to have greater concern for how we guide our own moralities via ICT. It has always been a challenge to monitor the spirit of an ‘age’ or era since we can never be fully informed of its constitutive elements. The encyclopedist myth of the Internet and the Web led us to believe that if we search long and hard enough we can find the important things out. But take the example of the films of Adam Curtis (From *The Power of Nightmares: The rise of the politics of fear* 2004, to *HyperNormalisation*, 2016) that demonstrate how little we knew, when mass communications manipulations were being done, about how our world was being crafted by people greedy for power and/or money to form the world we bemoan today – a world of chaos and crisis, of terror and despair, of an unknowable and uncertain future: “...we have retreated into a simplified and often completely fake version of the world”. Islamic fundamentalism did not suddenly appear with the Arab Spring, it had been festering ever since the US under Kissinger tried to control the middle east for its own ends – i.e. oil supplies. It allowed Wahrabism to literally provide the fundamentals of a primitive, savage, medieval value system that opposed all the ideals of liberal civilisation. Not only did these messages not get through the more formal mass media outlets, they were not easily ‘discoverable’ on the Internet. What is particularly obscene about US President Donald Trump’s ‘tweet-like’ claim to ‘make America great again’ is the failure to remind us what that ‘greatness’ entailed: support for evil dictatorships, undermining of democratically elected governments, supply of weapons to whichever side offered the most immediate favours to US interests and so on. Worse, all of that allowed the banks and financial corporations and multi-nationals to manage the world in their own interests and even be rewarded for their failures (see e.g. Joan Smith 2001). Trump’s use of Twitter is such that it is almost impossible to pin him down on policy and if you do he could easily change his approach – not his ‘mind’ since we have no way of knowing what he is actually ‘minded’ to do. Indeed even if the ‘facts’ contradict his views, his press team appear ready to offer ‘alternative facts’ – provable lies – that enough of his popular supporters appear ready to accept. There is nothing new in that

approach and its accomplishment is facilitated by that well-worn 'field' metaphor. Keep on digging and you may 'find' something. "The word 'findings', implying that it is almost due to chance that certain information has come to light, misrepresents a deliberate search for certain data as against others. New knowledge is constructed not 'found'." (Webb, 1992: 749) Trump's misrepresentations do not constitute democratic accountability since such rapid, instant opinion does not have time to be fully formed, and it can easily be changed and amended if unsuited to the current climate since no sustained position has been established: "You always have to say something, even if you say the opposite the next day. On Twitter, who cares?" (Naughtie 2017). Trump's success has been attributed to the failure of journalism and the triumph of TV. (<http://www.bbc.co.uk/news/entertainment-arts-37952249>)

More likely it is the 'success' of the Twitter format and the easy growth of the 'fake news' phenomenon (BBC Trending 2016).

It is ironic that Trump and his press team challenge the media organisations and content that is critical of his administration with the charge of producing 'fake news'. The double irony is that news has always been 'fake' to some extent (Cohen and Young 1973) and the Trump electoral campaign was certainly complicit in the manufacture and spread of news that favoured him and denigrated his opponents. But the more serious concern is the deliberate growth of 'genuine' fake news: "...within social media real and fictional stories are presented in such a similar way that it can sometimes be difficult to tell the two apart and there is no way of knowing whether that is done deliberately or not...more of us are seeing - and believing - information that is not just inaccurate, but totally made up" (BBC Trending 2017). One could, of course, further pursue the adoption of narrative metaphors for news 'items' – they are all 'stories'.

While information conveyance to humans has always been best transmitted via a narrative medium, fake news intentionally employs this vehicle to generate sites imitating 'real' newspapers, government announcements, and some purporting to be satire while intentionally misinforming. One culprit is *The National Report* which advertises itself as "America's Number 1 Independent News Source" and was set up by Allen Montgomery (an alias). For example, *The National Report* aired a false scare about a US town being cordoned off due to a deadly epidemic. Montgomery's rationale being: "Beyond the headline and the first couple of paragraphs people totally stop reading, so as long as the first two or three paragraphs sound like legitimate news then you can do whatever you want at the end of the story and make it ridiculous." Profits are made from web advertising so most money is made from the most popular stories no matter how inaccurate. Many of the fake news websites appearing during the US election campaign were traced to a small city in Macedonia, Veles, where teenagers manufactured sensationalist stories drawing from right-wing websites again earning thousands from advertising (Kirby 2016). A similar process has been occurring during the French presidential elections, the enduring ability of five false stories illustrates: <http://www.bbc.com/news/world-europe-39265777> But the serious concern is when the fake items are passed on via the major social networking sites. Facebook with 1.6 billion users has become an increasingly important outlet for news sharing news. More than 40% of the population of the United States say they get news on Facebook. The encyclopedist myth of the Internet continues to beguile, swamp and convince by circulation and repetition.

Conclusions

Throughout the mid-twentieth century it is true that any consensus about knowledge acquisition, about learning “...was often the least line of resistance rather than the critical path determined analytically” (Kogan 1978: 162). It continues to be important to guard against the complacency of learning developments driven by economics, technology and a reluctance to question the assumptions of an established cultural and political order. A broader access to information has clearly not de-institutionalized formal learning systems. It has the potential to do so but it still falls victim to all the myths which equate schooling with learning.

Understanding the personal, political and economic structures of cyberspace and our metaphors for the knowledge it contains, may help control to increasingly reside with the user. Information about what is on offer and how to access it cheaply must remain freely available. The management of knowledge innovation in cyberspace is vital; this is done in a rather random, haphazard way at present and is dependent on the curiosity and fanaticism of a few. Somehow a balance will have to be struck between the legitimate returns on R & D investment that an online/media company can expect and the danger of so tying up rights to knowledge that innovation is discouraged. Government must resist the temptation to clamp-down on the vitality of large and open data. Learning systems will have to be managed so that both freedom and efficiency can be maintained. It is vital that the essence of Socratic discourse is not lost; the special relationship between those with knowledge and the seeker of knowledge is part of the human value of learning; some direct access to tutors, educators, and/or authors needs to be maintained. That can be achieved by the right kind of open and full dialogue – even in cyberspace.

Although metaphor as a way of making sense of the world is inescapable since it ‘encases’ language, there is a way to a self-understanding that enables us to raise our consciousness of the analogic traps. Lakoff and Johnson (2003) advocate developing an awareness of the ‘metaphors we live by’ and of where they enter into and affect our lives and where they do not. They urge us to allow the experience of alternative metaphors and acknowledge the cultural part played by modern rituals in those experiences – perhaps this must even include the rituals of checking e-mail, the tweets, finding friends, blogging and liking/being liked on Facebook. Haraway (2017) rejects the self-reflection almost required of modern scholarship (reflexivity) preferring an alternative optical metaphor – diffraction. She writes of ‘situated knowledges’ which generate novel forms that are open to contest. Such a metaphor sidesteps the false choice between realism and relativism. Knowledge is always ‘located’ somewhere. Perspectives are necessarily partial.

There is hope. There are those who believe that in a ‘post-truth’ world that the correct use and interpretation of statistics can still offer essential service to the public (Pullinger 2017) “...the technology that has allowed us all to be so wonderfully connected has also allowed us each to live in our own world, separated from others. In our online lives, we risk connecting only with those with similar views to our own and not encountering those who think differently ...our real challenge is to take our statistics off the page and find ways to listen and connect with those people who have been left perplexed and disappointed by “experts”...our mission has to shift fundamentally, from being mere producers of numbers to providers of an essential public service.” Similarly the ‘Big Data’ opportunities for algorithms that capitalize upon the frequency of online interactions and cloud data capture

offer untold analytic possibilities. Both Facebook and Apple might have begun to recognize how they have become complicit and appear to be taking some responsibility for addressing it – Tim Cook, the head of Apple has charged that fake news is “killing people’s minds” and that firms such as his own need to create tools that help stem the spread of falsehoods, without impinging on freedom of speech. Sir Tim Berners-Lee has said he wants to put “...a fair level of data control back in the hands of people” and outlined a five-year plan in an appeal to web developers to help come up with practical solutions to make a web “that gives equal power and opportunity to all” (Berners-Lee 2017).

In some respects this appeal to ‘openness’, mirrors the attack on experts and expertise that surrounded the Brexit debate. “The internet is radically decreasing the costs of identifying diverse forms of expertise and segmenting audiences on the basis of credentials, experiences, skills and interests.” (Novack 2016: 7) Novack’s argument is that narrow and specific expertise can be ‘systematically searched for’ and that processes such as crowdsourcing can offer epistemic advantages – ‘building’ knowledge from missing information and generating ‘alternative’ hypotheses. The problem is that in this case the principle of equal opportunity is the very thing that allows unscrupulous actors with even minimal hacking and/or web-production skills to abuse those original aims to democratize knowledge acquisition. The belief in the ideal is blinding optimists to the reality of online knowledge sources – in the “ideologically localised echo chamber of the Internet” (Hooton 2016).

There are now many attempts at assessing the veracity of online information. The French newspaper, *Le Monde*, concerned for the accuracy of information during the French presidential election of April/May 2017, introduced a new tool, Decodex, aimed at helping readers check the reliability of information online: “In a digital world where the traceability of information is often confusing, or deliberately garbled” the *Le Monde* website stated: “...[we will] provide everyone with good practices for checking their sources.” In the US, Facebook is providing users with a service that allows them to highlight fake articles on their feeds as a hoax. Facebook has said that it will also work with organizations such as the fact-checking website Snopes, ABC News and the Associated Press to check the authenticity of stories (BBC News 2017).

The epistemological metaphor implied by the term ‘cyberspace’ is that of a systematic but infinite opportunity to expand knowledge. But ‘space’ is also a vacuum in which ‘time’ takes on another dimension. Other people’s time is simply not valued highly enough – especially if all those with the power only have to push a button to ‘take’ our time. People think twice about imposing on others if they have to make a telephone call or write a letter. Just because you ‘can’ do something does not mean that you ‘have’ to. When we are constructing challenging and exciting sites, we need to continually remind the information seeker and the provider that this may not be the only (or even the best) way to acquire knowledge. We need to remain aware of those that construct deliberate falsehoods. Of course that is no different to the way lies have always been spread – through trust in the authority of sources. It is just that the myth of online encyclopedism has beguiled us into a trust of sources that we would have withheld from even those we knew well – family, friends and educators as well as the popular press. Intellectual freedom does require that people should even be free to see and hear those falsehoods, to explore cul-de-sacs that others have already visited. Even if only metaphorically, it is important to leave some books on the shelves, so that the intellectual

hunter can still experience the sensuous delights of the ancient scholar who eyed an attractively embossed spine, held a finely tooled tome, blew the dust from the leaves and stretched their imagination in ways which produced new knowledge and which could not be expunged from the collective consciousness by the mere press of a button.

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