

Reclaiming Digital Space

From Commercial Enclosure to the Broadcast Commons

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Abstract

In 2004, I floated the idea of creating a digital commons with public service broadcasters as the central hub in an online public space that would combine the holdings and expertise of established public cultural institutions with the energy and creativity of grassroots activity on the internet. The virtual monopoly control of the popular internet now exercised by a handful of giant commercial companies (the digital majors) renders this ambition more relevant than ever for the future of public culture and democratic life. Realising it under current conditions requires interventions that reach beyond the organisation of collaboration and co-creation to engage with the environmental damage and social exploitation embedded in the infrastructures and devices that support these activities. This chapter underlines the renewed urgency of building a digital commons, reviews barriers to its realisation, and details persistent and emerging issues that must be engaged.

Keywords: digital commons, cultural institutions, networked society, internet giants, media infrastructures, commercial enclosure

Introduction

One of the most memorable scenes in the lavish celebration of imagined Britishness that opened the 2012 London Olympics depicts the country's transition from industrial to information capitalism. A crowded vista of factory chimneys and molten metal, presided over by Isambard Brunel, the principal architect of the railways, bridges and iron ships that formed the connecting backbone for the new economic order, gives way to a plain cube in an otherwise empty space. Its only occupant is Tim Berners-Lee, inventor of the World Wide Web, the network of invisible digital connections that has become an essential support for personal, corporate, and governmental activity in the new capitalism. Behind him, a lighted banner, stretched around the stadium, declared "This is for Everyone".

This promise of universality was at the core of the Berners-Lee vision. As he explained on the Web's twentieth anniversary in 2010, he set out to build a system that

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allowed anyone, anywhere, to navigate the myriad of available sites in any way they chose and “to put anything on the Web [...] no matter what computer they have, software they use or human language they speak” (Berners-Lee 2010: 80). This design principle and the wider complex of professional and consumer digital technologies that are reorganising access and production, support new horizontal connections and new vertical pathways for distribution.

The first substantial project to employ digital networking to explore new forms of collaboration was the open source software movement. Launched in opposition to the growing domination of proprietary software controlled by commercial operators led by Microsoft, it invited programmers to contribute to developing a portfolio of freely accessible alternatives. This was followed by Wikipedia in 2001, which asked anyone who wished to share their knowledge of a particular topic to contribute to a universal online encyclopedia that could be continually updated. Both initiatives were based on peer-to-peer exchanges underpinned by a moral economy of reciprocity – the ‘gift economy’. Contributors donated their time and expertise but imposed a moral obligation on those who benefitted to return these gifts by making their own contribution to the pool of openly shared resources. Both ventures connected professionals and amateurs. Contributions were made by hackers and software specialists.

The expansion of horizontal networks of participation and collaboration was accompanied by a growing realisation that digital technologies could help address problems faced by museums, libraries and other publicly funded cultural institutions. Firstly, by releasing evaluations of success from previous raw counts of visitor footfalls or audience attendance and widening access, digitalising holdings and resources strengthened claims of delivering value for money which bolstered their claims on public funding. Secondly, by abolishing physical constraints on storage and display digital archiving offered opportunities to respond to mounting popular demands that public collections should include vernacular materials that recorded everyday experience and spoke to the histories of marginalised groups.

It was clear from an early point in the Web’s development, however, that the main public cultural institutions saw themselves as distinctive with their own unique histories and ways of working, rather than as clusters of resources within a wider network of provision whose public value would be maximised by collaboration. Relevant materials were scattered across multiple sites, each with its own conditions of access and participation. Thinking about this problem led me to argue that the situation offered public service broadcasters an unprecedented opportunity to demonstrate their continued centrality to public culture by integrating PSB with the open Web and thereby lay the basis for a ‘digital commons’ that would combine the dynamism of voluntary participation with the expertise of established cultural institutions. This could produce an unparalleled pool of openly available resources and opportunities for creativity, self-development, collaboration, innovation, and inclusiveness.

I first floated this argument in a public lecture in Canada titled, *Building the Digital Commons: Public Broadcasting in the Age of the Internet*, which celebrated the life

and work of Graham Spry, the principle driving force behind the country's decision to develop a public broadcasting system. The transcript was later published in the RIPE@2005 Reader (Murdock 2005). The ideas were further developed in a series of writings (see Murdock 2010, 2014). Everything that has happened since has convinced me the case for public broadcasting's role as the pivotal node in a digital commons is stronger than ever. There are two main reasons.

Firstly, we are witnessing an accelerating enclosure of digital space with command over routine daily uses of the internet increasingly concentrated in the hands of corporations that exercise monopoly control over their primary areas of operation. Google dominates search. Facebook monopolises social media use. Amazon has commandeered online retailing. Apple is a major provider of smartphones and tablets that have overtaken laptop computers as the primary point of access to the Web. Because of its continuing embeddedness in everyday life, public broadcasting is the only effective counter to the deepening commercial colonisation of digital public life. This role matters fundamentally to the democratic health and general commonwealth of a networked society. Secondly, at the very moment when a concerted push to build a comprehensive digital commons is most needed, the combination of continuing cuts in public funding and a political climate anchored in militant advocacy of market competition has seen PSB scaling back ambitions. Should this continue, the future of public culture is seriously at risk. Thus, what does and doesn't happen is of central relevance to the character and quality of social life in networked societies.

The rise and rise of digital majors

Neither Google nor Facebook were major forces in shaping the digital landscape that was emerging when I delivered the Spry lecture in 2004. That year saw the launch of Facebook and a significant expansion in Google's operations as the company issued its first tranche of public shares. I failed to anticipate how rapidly they would come to dominate everyday internet use. I was not alone. Many observers maintained a residual romanticism at the time, viewing the internet as a force for creative disruption, for undermining established centres of power, for replacing vertical hierarchies with horizontal planes of interaction, and operating to support widening participation rather than entrenched domination. Commentators conceded that control over established print and audiovisual sectors was becoming concentrated in the hands of a steadily shrinking number of mega communication conglomerates and imagined the internet as a system without a centre, constructed to distribute rather than consolidate power. This optimism has dissipated.

Initial enthusiasm for the internet as the essential hub for an emerging digital capitalism led, between 1997 and 2001, to a flurry of speculative investments in new dot.com companies without a track record of profits. The dot-com bubble burst in 2001-2002, which significantly reduced the level of competition and left the field

open to a few companies like Google and Amazon that survived the meltdown. It also opened the market to new entrants with clear business plans, like Facebook whose CEO, Mark Zuckerberg, recognised he was entering the platform business rather than the content business. He was a landlord, not a factory owner. Aside from advertising, everything that appeared on the site was provided by users whose interests and social networks were then tracked and analysed to produce data that could be sold to companies wanting to target promotional appeals precisely. The business model was based on systematic and continuous commercial surveillance, a point to which I will return.

Once established, the leading players have enjoyed cumulative advantages from network effects that encourage people to join sites with the largest number of users, and from financial resources that enable these firms to diversify services they offer and buy-out potential competitors. Google's purchase of YouTube in 2006, and Facebook's acquisition of Instagram in 2012 and the instant messaging system WhatsApp in 2014, are textbook instances. A virtual monopoly position in one sector allows the leading company in each to promote other services at the expense of competitors. In June 2017, following a lengthy inquiry, the EU Competition Commissioner, Margarethe Vestager, announced that "Google had abused its market dominance as a search engine by promoting its own comparison shopping service in its search results, and demoting those of competitors", thereby denying "European consumers a genuine choice of services" (Boffey 2017). This illegal practice resulted in a record fine of 2.42 billion British pounds.

The digital giants have also moved into television programming to become direct competitors with established public service broadcasters. Amazon offers an expanding suite of programmes on its Prime service, Google has established dedicated channels on its YouTube subsidiary, and Facebook has launched its Watch service. In addition, online programme distributors, led by Netflix, are developing a significant presence in original production. None of these offerings match the full diversity of output provided by PSB. They are expressly designed to promote genres already popular with viewers (younger ones especially) who increasingly access television on smartphones and tablets.

Market dominance and their aggressive pursuit of competitive advantage has propelled a small group of digital majors to the front rank of global corporations. In 2016, Apple, Google's holding company Alphabet, and Microsoft led the list of the world's largest corporations by market capitalisation, with Amazon in sixth place and Facebook in seventh – in total, five of the top seven (Economist 2016: 5). Ownership is unusually concentrated because shares issued to the public generally carry no voting rights in elections to a company's governance boards. Control over corporate decision making and strategy remains securely in the hands of company founders. As a consequence, the dominant organisation and vision of the networked culture and its sociality are determined by a handful of young, privileged, white, American, males. Other social interests and claims are pushed to the margins, or excluded altogether.

Digital enclosures

The history of the commons is a history of enclosure. From fences erected around land and natural resources that had previously been available for collective use, to private developments that colonised public space in the industrial city, struggles to preserve the commons have centred on opposition to the commercial appropriation of shared resources. In the same way, digital enclosure operates to restrict and regulate control over access, information, interaction, and identity.

One of the most far reaching and least noticed alterations in terms of access to the internet has been the shift away from hyperlinks that facilitated internet navigation on desktop and laptop computers to applications, ‘apps’ for short, that organise access on smartphones and tablets. This is a movement from open to closed systems because hyperlinks allow users to travel freely between sites by clicking on the URL (uniform resource locator) that allocates each site a unique identity, while apps lock users into bounded domains they must log out of to move to another site. Added to which, the suppliers of hand-held devices reserve the right to determine which apps can be loaded onto their machines. As Tim Berners-Lee noted, “people may find that closed worlds are just fine. These worlds are easy to use [...]. [But] ‘walled gardens’ no matter how pleasing, can never compete in diversity, richness and innovation with the mad, throbbing Web market outside their gates” (Berners-Lee 2010: 83).

Enclosure is central to Facebook’s organisation, evident from the company’s total control over the way information contained in participants’ postings are assembled and interrogated to micro-managing external material posted on their sites. Computer algorithms analyse user activities and their networks of on-site friends to direct precisely targeted advertising and tailored selections of news. As a result, users are locked into a series of ‘filter bubbles’ that reinforce already established tastes, opinions and affiliations, screening out novel experiences and contrary positions (Pariser 2012).

This intensified personalisation runs directly counter to the core democratic principle of open and respectful deliberation on issues of common concern. Providing these essential cultural resources for the exercise of active citizenship has been at the heart of PSB’s social project from the outset. It has not always been achieved, but it is an abiding core ambition. Erecting self-defined enclosures online undermines the promise of a universal public sphere by discouraging engagement with unfamiliar lives and ideas, and reinforcing the potential for misperceptions and antagonisms. One outcome is an increase in abusive speech online as opponents confront each other across walls with language rooted in contempt and insults that reinforce partisanship and antagonism. This discourages principled engagement and begs the question as to what type of society a networked society really is.

Algorithms are an essential feature of commercially networked media that exercise power without accountability. Producing news and comment for any communication medium inevitably involves making creative and editorial choices of what to present and how. The selections that comprise broadcast programme schedules are immedi-

ately visible to anyone watching and can be evaluated and critiqued against publically negotiated professional and ethical standards, with responsibility assigned to those who made the decisions. In contrast, the bases on which algorithms make decisions is embedded in proprietary computer code that is vigilantly guarded as commercial trade secrets. This allows code owners to operate as “stealthy but extremely potent gatekeepers unaccompanied by transparency and visibility” (Tufekci 2015: 209). The argument that transferring selection from humans to machines abolishes partiality and bias conveniently forgets that algorithms are written by people and therefore likely to reflect their world views. They may also have unanticipated consequences.

The digital majors operate a system of programmatic advertising in which advertisers bid for particular audience segments but don't know what content will appear alongside their ads. As the history of tabloid media demonstrates, sensation attracts attention. As a consequence, some advertisers using YouTube found themselves sharing space with videos promoting extremism and hate speech. The problem was compounded by Google's long-standing arrangement of passing part of the advertising revenue on to the originators of the post, thereby placing advertisers in the position of inadvertently funding extremist causes. In the Spring of 2017, a number of household name companies, including Pepsi and Wallmart, boycotted Google. The company responded by hiring more human moderators to root out offensive content, a strategy also adopted by Facebook, which faced similar criticisms.

This is significant because it repositions these firms as publishers with responsibility for the material they distribute. But the staffing levels in both companies now devoted to making editorial judgements fall far short of what is needed to cope effectively with the daily torrent of postings. Facebook's moderators complain they only have ten seconds to make a judgement. Leaked copies of the guidelines raise questions about decision-making criteria. Threatening speech is allowed if it is judged to be generic or not credible in prompting action. Instances offered to illustrate include, “Let's beat up fat kids” and “I hope someone kills you”. The company classifies these as expressions of frustration and anger, not actual intention, arguing that users “feel safe” voicing such sentiments online because they “feel that the issue won't come back to them, and they feel indifferent towards the person they are making the threats about because of the lack of empathy created by communication via devices as opposed to face-to-face” (quoted in Hopkins 2017). Tolerance of contempt sharply contrasts with PSB's ambition to cultivate a community of citizens who merit mutual recognition, and tolerance, encouraging audiences to enter the lives of strangers with respect, to experience and understand the world from unfamiliar vantage points, and to negotiate differences through measured discussion.

By now entrenched features of online interaction demonstrate why it has become so difficult to sustain a generalised public cultural sphere based on informed deliberation. The digital majors are eroding the culture of citizenship. This assault is compounded by relentlessly addressing users in their role as consumers rather than citizens, and by deploying user data for commercial rather than social purposes. From its outset,

PSB has sought to address listeners and viewers primarily as citizens, as members of a social and moral community with political rights to self-determination and corresponding responsibilities to contribute to the quality of collective life. In contrast, the business logic of advertising-supported media requires companies to address users as consumers pursuing personal pleasure and advantage through the purchase of commodities and services. Media as a marketplace displaces the civic realm as the primary space for self-definition and social action. In an instructive study, when researchers asked participants to think of themselves as consumers rather than citizens, the participants were significantly more likely to endorse values of wealth, personal success and competition (Bauer et al. 2012).

The rise of the digital majors has intensified the citizen-consumer opposition. In the absence of effective regulation, one consequence is a massive expansion in ‘native advertising’ that integrates commercial appeals into the flow of creative expression, news reporting, and everyday conversation. Company logos and products are incorporated as enticing advergames for children. Bots and ‘sock puppets,’ masquerading as ordinary consumers, endorse and recommend products online. Product placement deals ensure that brands are presented as indispensable supports and signals of the aspirational lifestyles promoted in films and televisual programming. The growth of mobile devices as the preferred point of entry to the internet makes them the primary engines driving the hyper-consumption this new promotionally-saturated cultural environment supports, and makes them key players in reorganising purchasing behaviour by popularising touch-based payment systems that encourage the instant translation of desire into possession. This self-enclosure within a world view that equates society with the market and promotes its core value of competitive individualism is reinforced by the digital majors’ co-optation of effective social agency.

The heart of the citizenship ideal is the right of everyone to participate in shaping the institutions that govern their lives and allocate their life chances. The digital majors have suspended that right. Users have no control over what information is collected about them, how it is subsequently used, or who purchases it. In the physical world, regulatory regimes give citizens the right and opportunity to hold schools, hospitals, tax authorities and other social agencies that store their personal data accountable for mistakes and misuses. Online they become serfs whose labour produces a surplus that is appropriated by their digital landlords to use and distribute as they please.

In addition to identifying market niches, data analysis can be used to categorise people as generally valued or risky. Taking the ubiquitous ‘Like’ function on Facebook, researchers were able to predict not only the age, gender and ethnicity of users, but also their sexual orientation, personality traits, and religious and political views with eighty to ninety per cent accuracy (Kosinski et al. 2013). Facebook routinely supplements these basic analyses with a wealth of material provided by our other online interactions. In May 2017, an investigation by the French regulatory agency, the Commission Nationale de l’Informatique et des Libertés (CNIL 2017), found that in addition to the massive compilation “of personal data of internet users in order to

display targeted advertising”, Facebook had “collected data on browsing activity of users on third-party websites, via the ‘data’ cookie, without their knowledge”. These data-driven identities have real world material consequences in areas from insurance and health care to employment and housing. As the authors of the Facebook study concede, “the predictability of individual attributes from digital records of behaviour may have considerable negative implications [...]. One can imagine situations in which such predictions, even if incorrect, could pose a threat to an individual’s well-being, freedom or even life” (op cit: 5805). Belated recognition of the unaccountable power accumulated by the digital majors has prompted a series of counter measures to restore individual rights. Breaches of personal privacy revealed by the CNIL investigation led French authorities to fine Facebook 150,000 Euros, and a number of countries in Europe and elsewhere are planning to introduce variants of ‘right to be forgotten’ provisions that will give users the right to delete misleading or other stored digital materials about them.

In a 2016 speech, President of the European Union Parliament, Martin Schultz, warned of a new cultural totalitarianism because our digital future is being determined behind closed doors without public consultation and is designed to advance corporate ambitions rather than the public interest. “Facebook, Google, Alibaba, and Amazon”, he warned, “must not be allowed to shape the new world order. They have no mandate to do so! It is and must remain the proper task of the democratically elected representatives of the people to [...] take decisions which apply to everyone” (Schultz 2016). This warning acquires added urgency with rapid growth of the ‘internet of things’, built on the basis of intelligent machines. The digital majors who already command the social internet are playing a leading role in this development. There are already more machines communicating over the internet than human conversations and interactions. Machines are talking about us and collecting ever more information about the ways we live and what we think. In 2015, it was revealed that the voice recognition feature on the remote-control console for the latest generation of Samsung’s smart television sets could record whatever was said when the console was turned on. As the small print in the company’s purchase agreement noted, “if your spoken words include personal or other sensitive information, that information will be among data captured and transmitted to a third party” (quoted in Hern 2016). The responsibility for protecting personal privacy by keeping up with changes to conditions of use lies squarely with the user, not the company that collects and uses the information.

Moves to enact regulation of the commercialised digital domain are a necessary but insufficient counter to the power of the digital majors, insufficient because they leave their underlying business logic and world view unchallenged. Only public service broadcasting has the institutional purchase and ubiquitous presence in everyday life (in Europe, at least) to provide a viable basis for a cultural commons able to provide a comprehensive alternative and demonstrate how digital technologies can be deployed to reinvigorate and extend the ideal of citizenship in digitally networked societies.

The promise and compromise of the digital commons

In searching for indications of how this project might be pursued, developments at the BBC offer an instructive case study, although not because the Corporation is prototypical of PSB more generally. On the contrary, it is because the BBC is unique in being shaped by a distinctive history and enjoys advantages not always granted to other PSB organisations. This case of relative failure in recent attempts to build a comprehensive digital commons points up the difficulties this project faces with particular clarity.

From 2008 until 2016, when he left to direct the digital strategy of the New York Public Library, arguments in favour of the BBC taking the lead role in developing a digital commons were put with particular force and flair by the Corporation's Controller of Archive Development, Tony Ageh. He proposed the creation of a new Digital Public Space that would co-ordinate the "ever growing library of permanently available media and data held on behalf of the public by our enduring institutions: Our museums and libraries; our public service broadcasters (all of them); our public archives; government services" (Ageh 2015) and make this "vast archival wealth of nations – our Collective Abundance – here in Europe and well beyond, accessible" (Ageh 2012: 9).

The Google Arts and Culture domain, which is a partnership with over 1,200 leading museums and archives, already offers elements of this vision. Why, then, should public service broadcasters enter into competition? The answer is because they also make programmes that can play a key role in sparking viewers' initial interest and providing points of entry into the wealth of associated materials online. Programming can be organised into series and seasons that foster cumulative engagement, and tap into communities of interest that can be mobilised to contribute ideas and materials. This dynamic collaborative potential was central to Ageh's vision of a digital space that would be "freely available for anyone to use for research or for amusement, for discovery or for debate, for creative endeavour or simply for the pleasure of watching, listening or reading" (Ageh 2015) and "encourage and even require contributions from the whole of our society... a place where conversation thrives, where all contributions are welcomed and where every story, no matter who tells it, has value" (Ageh 2012: 9).

A variant of this vision, relabelled as Ideas Service, was incorporated into a manifesto for change (titled *British, Bold and Creative*) that the BBC issued in 2015 in the debate around charter renewal. The manifesto envisaged bringing "together what the BBC does across arts, culture, science, history and ideas and add to it work done by many of this country's most respected arts, culture and intellectual institutions", thereby creating "an online platform that, working with partners, would provide the gold standard in accuracy, breadth, depth, debate and revelation". In practice, "it would offer audiences the thrill of discovery and the reassurance of reliability" together with opportunities to share, curate and mutate material and participate in collective projects (BBC 2015: 70).

Ageh left the BBC voicing regret at the institution's lack of progress, noting "I told them they have to shape this challenge, the internet, before it shapes you" but "every-

thing I told the BBC to do they didn't understand or do" (quoted in Kiss 2016). Caution is partly due to bureaucratic resilience and partly to intellectual property constraints. But those difficulties are negotiable. More intractable are pressures exerted by shifts in PSB's operating environment. The British government discussion paper that was issued to canvass views on the renewal of the BBC Charter only invited respondents to consider whether, "Given the vast choice that audiences now have there is an argument that the BBC might become more focused on a narrower, core set of services" (Department for Culture, Media and Sport 2015: 23). There was no equivalent question of whether there was a case for expanding BBC services. On the contrary, successive British governments have been in the forefront of efforts to pressure public cultural institutions to share resources with commercial companies. The BBC is now required to "leverage its size and scale to enhance and bolster the creative industry sector by working more in productive partnership with players of all sizes so others can benefit more extensively from its expertise and reputation" (DCMS 2016: 6).

The BBC announced plans for developing co-operative relations in its *Culture UK* manifesto in April 2017. It focuses on links with major arts organisations and emphasises creating landmark national events that would offer 'festivals of Britain', which represents a relative retreat to the safe ground of legitimated cultural forms that have traditionally formed the paternalistic bedrock of the BBC's construction of national culture and falls somewhat short of Ageh's vision of a collaborative space hospitable to grass roots creativity. There are problems, too, with the BBC's plans for more 'personalised' forms of delivery. In 2016, the Corporation announced the launch of a new app called BBC+ that will direct selections of programming to smartphone and tablet screens by selecting "content [that] users are likely to be interested in based on the categories they chose on sign up and what they have previously watched or listened to" (quoted in Jackson 2016). This adopts strategies favoured by commercial operators by erecting digital self-enclosures. It suggests a worrisome willingness to accept a logic that runs directly counter to the ambition of placing public service broadcasting at the heart of a networked public commons.

The new centrality accorded to smartphones as the point of contact with audiences flags up another major issue that has so far received far less attention than it merits in debates on the future of public service media (PSM): its environmental impacts.

Destructive technologies

Measurements for global average near-surface temperatures (a metre above ground level) have confirmed that 2016 overtook 2015 as the warmest year on record since 1850. Fully 90 per cent of the increase is attributable to high levels of carbon dioxide in the atmosphere, levels not seen for 4 million years (Met Office 2017). The consequences are far reaching with "climate-related extremes such as heat waves, heavy precipitation and droughts increasing in frequency and intensity" disrupting food

production, aiding the spread of diseases previously confined to the tropics, and accelerating species extinctions (European Environmental Agency 2017: 12). Digital media are contributing to these negative environmental impacts in two significant ways; as primary drivers of intensified general consumption, and as assemblies of infrastructure and machines that rely on the extraction of rare metals and resources in their manufacture, consume substantial amounts of energy in their production and use, and are replaced at ever accelerating rates, further exacerbating problems of waste and pollution (Brevini & Murdock 2017).

The pivotal role played by advertising-supported digital media is deepening the commercial colonisation of online culture, and thereby the negative environmental impacts of intensified and accelerating consumption. This supports the case for developing PSM that should stand outside the system fuelling hyper consumption. In doing so, PSM acquires both added social value and added urgency. But this still leaves pressing questions around equipment and devices used in producing and accessing content, and the infrastructures that support these activities. Academic and professional commentary alike tends to set aside any sustained consideration of the infrastructures and devices that underpin communication. Questions around technology are too often presented as mainly technical issues, the specialist province of engineers and computer scientists. They are not. The choices make urgent many issues related to control, exploitation, and environmental damage. Smartphones are a poignant illustration.

The famously stylish facade of an Apple iPhone conceals a history of intensified depletion of scarce resources, continuing exploitation of the 'offshore' labour involved in assembly, and exacerbated contributions to waste and pollution generated by accelerated rates of disposal. Consumers are encouraged to look forward to the launch of the next iPhone, but discouraged from asking what has happened to all the previous versions that have been discarded. The conversion of telecommunication networks from public utilities to privatised companies, and the digital majors' construction of their own proprietary networks, is presented as a self-evident extension of consumer choice. Questions of who controls these key supports of our digital environment, how they plan to use them, and what environmental penalties may be incurred are buried under the weight of corporate promotion.

Once recovered, however, the social and environmental costs of foundational technologies present advocates of a digital broadcast commons with an acute moral dilemma. Sean Cubitt has clarified this in pointing out that no popular platform for innovation can stake an ethical claim to equity and universality "so long as the infrastructure that would permit it is founded on the integral wastes of finite resources" and the labour entailed in producing and maintaining it is exploited (Cubitt 2017: 168). Any proposal for developing PSM as the hub of a digital commons must therefore address, as a matter of urgency, not only issues of access, representation and accountability posed by the organisation of its core activities, but also dilemmas raised by the production systems and environmental impacts associated with the infrastructures and equipment on which these activities depend.

Mountain climbing

The preceding discussion has sketched key challenges facing advocates of PSM as the hub for an open digital commons that plays an essential and unique role in sustaining the health and well-being of life in a networked society. We now turn to possible ways of addressing these challenges, and do so in three broad areas: contents, operating systems, and devices and infrastructures.

Content

The first and most fundamental precondition for a digital commons is that it should refuse any form of advertising and product promotion. This, in turn, entails a concerted defence of adequate public funding for PSM.

Secondly, PSM should provide a single point of entry to the full range of resources held by public cultural institutions (museums, libraries, galleries, universities, performance spaces, and archives) and voluntary organisations and dedicated enthusiasts. The priority is to construct a comprehensive national digital network that links collections that illuminate national experience from different, and contested, perspectives. In planning programme production, every opportunity should be taken to mobilise what appears on the screen as a point of entry and a stimulus for audiences to access and use the full range of relevant digital resources available in the network.

Thirdly, audiences should be enlisted as active contributors, collaborating on shared projects and encouraged to create new artefacts that can be added to the shared archive. This does not mean professional expertise and judgement are downgraded. As recent experiences with YouTube and Facebook make clear, opening up to vernacular contributions requires developed procedures for moderating and curating on the basis of transparent criteria. These will always be open to dispute, but debate about boundaries is healthy and must be conducted in public – not behind closed doors

Fourth and finally, any information participants provide about themselves should be retained only if they have given prior consent in the full knowledge of how the data will be accessed and used. And no personal information should be passed to a third party.

Operating Systems

On the basis of the argument I have developed, we can identify two essential features of the systems needed to organise access and use in a comprehensive digital commons. These are network architectures and navigational aids

Any project aspiring to build a digital commons must adhere to Berners-Lee's aim of maximising openness by refusing temptations to develop personalised 'apps' or material for Facebook. In addition, it must lend full and unreserved support to the principle of net neutrality which accords equal status to all traffic moving across the Web, regardless of origin. There is a concerted push by some commercial operators to claim privileged status for their productions, to create an expressway and relegating

other users, including public cultural organisations, to slower minor ‘roads’. There is a clear public interest in resisting all moves in this direction. The Web should be seen as a public utility providing a universal service

There is little value, however, in assembling a comprehensive repository of informational and cultural resources if users cannot easily locate what they need. This requires navigational aid. At present, Web searches are monopolised almost entirely by Google which ranks sites according to the number of connections they attract. There are two problems with this. Firstly, it elevates popularity over social value. Secondly, it can be ‘gamed’ to move sites up in ranking. Since most searchers only view the first two pages displayed, these manipulations deliver considerable commercial gains. For both reasons, this system is not useful for navigating the digital commons. Solving this requires a public navigation engine that ranks sites on the basis of social value (see Andejevic 2013). This inevitably entails difficult judgements. In the spirit of openness, these need to be made on a basis that is both transparent and contestable, and in the full recognition that in many areas there will be plural, conflicting and possibly irreconcilable positions. This once again underlines the unique advantages of public media’s ability to link Web resources to programming that introduces issues, evaluates evidence, and gives space to contending perspective as a stimulus for viewers to embark on their own online explorations.

In a further practical endorsement of the core commons principles of openness and collaboration projects, developing a digital commons should, wherever possible, employ open source software to organise operating systems.

Devices and infrastructures

In contrast to the above, there are no viable alternatives to the commercial equipment used to produce, access and use broadcast and online resources. This inevitably implicates public media in chains of manufacture and disposal that make confronting issues of labour exploitation and environmental damage imperative. There are two possible responses. In the short term, public media professionals can introduce policies based on clear social and environmental criteria for all equipment they purchase for their own use. Their institutional centrality offers an opportunity to establish a ‘gold standard’ for procurement across all public organisations, purchasing only from companies that meet agreed standards.

Historically, public broadcasters have played a central role in pioneering innovations in communication media. In collaboration with universities and other public agencies, PSM should intervene in shaping how emerging technological possibilities can be employed to advance social inclusion and environmental sustainability. Otherwise, the development of 3-D printing, quantum computing, and artificial intelligence will be monopolised by the digital majors and applied to the ends they determine.

In short, they will own and operate the backbone features of the networked society. This prioritises the infrastructure that connects the network for a digital commons.

Over the last thirty years, telecommunications systems around the world have been converted from public utilities to commercial providers, making it increasingly difficult for governments to regulate pricing levels and standards of service. Regulation has repeatedly failed to guarantee universal and equal access. Recent figures in Britain, for example, reveal continuing inequalities by both age and social class. In 2016, almost half (47 per cent) of those over 74 years of age, and more than a quarter (26 per cent) of those unemployed or in routine manual occupations, had no internet access at home. In stark contrast, 94 per cent of those in professional and managerial groups had home access (Ofcom 2017). The price of connectivity is not the only reason for persistent ‘digital divides’, but it is a major factor for low-income households. Unequal access to the internet has fundamental implications for PSM’s core principle of ensuring universality. Unless infrastructure is addressed, any move to develop a digital commons would cement a two-tier service, giving “those with access an enhanced service compared to those without” (Ramsey 2013: 875). Reconstituting essential telecommunications links as publically regulated utilities with price controls and cross-subsidies from affluent to poorer users is an essential first step in equalising opportunities. It would not be sufficient in itself, but without it any proposal to create the universally accessible digital commons will deliver less than it promises.

These requirements for reclaiming public service media as the essential hub of a new digital commons is formidable and situated against a backdrop of an economic orthodoxy that continues to promote commercial expansion at the expense of public value. My view and recommendations may appear hopelessly utopian. But the choices that I have presented cannot be avoided. The digital majors already play a commanding role in determining how we access the Web and what we find there. They are the vanguard shaping the communications environment crystallising around the next generation of digital technologies. As a matter of great urgency, we need to challenge their visions of the future and construct practical proposals for developing a digital commons that is informed by values of openness, diversity, equal entitlement, and ecological responsibility – core values for public service media in a networked society.

It is a daunting mountain to climb, but as successful attempts to scale peaks that were previously thought unconquerable demonstrate, a combination of preparedness, persistence and collaboration can achieve the seemingly impossible.

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