Nesta...

Digital Commonwealth

The case for growing the new digital commons as commons

Geoff Mulgan

Summary

The internet is a technology perfectly designed for sharing – making data, information and knowledge free. It is a pure expression of the idea of a commons – something everyone can use and share.

But, with a few exceptions like Wikipedia, most of the organisations that dominate the internet are organised on an almost opposite principle – run as private companies selling access, targeted advertising, and personal data to third parties. These organisations have many strengths. They have contributed to enormous gains for consumers and huge wealth for entrepreneurs and investors. But the models adopted by Uber, Facebook and eBay aren't the only ones available, and all healthy economies and societies should promote pluralism.

Remarkably little attention has been paid to funding new internet services as commons. As a result we are missing out in many fields – from health, to hyperlocal media, to law. There are many new business models on the internet; but there are few alternative economic models, and little clarity about who should pay for new commons, and how. This paper argues that this issue is set to become much more prominent, as attention turns to issues as varied as the data infrastructures needed for future transport to health advice. It sets out how the digital economy could become more plural; how the gaps could be filled; and how a new generation of internet services of value to everyone could be financed and organised. I hope that it will prompt argument - as well as action.

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Introduction

Many of the things we depend on are 'commons' – shared resources, like clean air and water, forests and libraries, and much of science, which are free for anyone to use. The last few decades have seen the rise of a new family of commons. These are the product of digital technologies that can provide services at zero marginal cost, which makes them well-suited to be provided as commons.

The Internet and World Wide Web are examples, as are open source software and repositories like GitHub. Many other services provided over the internet have some of the properties of commons, even though they are not organised as commons. The cost of one more person using the Google search engine or Facebook is close to zero, and these are provided free of charge and have quickly become shared resources, even though they are financed by advertising, turning eyeballs and clicks into money. Other digital services that are more obviously commons are supported by voluntary labour (like Wikipedia), and are funded by philanthropy (like the Khan Academy). Some are supported by government, or, like the BBC, by special taxes.

Previous generations of communications technology also had some of the properties of commons. When they emerged, there was feverish innovation to find new economic models – from tax and licenses to regulated monopoly, and various devices to redirect resources to support them (such as Channel 4, funded originally through a cut on ITV advertising revenues). Some of the most successful solutions funded the commons as commons – that is to say collectively, rather than through individual payments for particular services. What resulted were fairly plural, mixed economies for radio and television.

Although there has been plenty of innovation to discover financing tools for commercial internet services, today's policy makers and innovators have been less imaginative than their counterparts in the past. As a result we are missing out. In field after field (from health, to very local media, to identity) it's no-one's job to develop, orchestrate or grow the new commons, and a combination of high coordination costs and lack of incentives means that many potentially valuable new digital commons are not developing. Trying to fit them into the standard business models of the digital economy (advertising, paid for apps etc) simply doesn't work.

In this paper I set out a diagnosis and suggest some cures. I point to:

- New approaches to regulation;
- The need to direct finance in order to support R&D for new digital commons;
- The need for new organisational models, controlled neither by the state nor by the market;
- The need for new funding models, including at a global scale.

I argue that although the digital economy is very dynamic, we risk sleepwalking into unbalanced lock-in: on the one hand, dominant positions that subsequently can't be challenged, and on the other, missed opportunities to grow alternatives. And I argue that although we're in the midst of revolution after revolution in technologies which are founded on the ultimate commons – information and knowledge – we are trying to squeeze them into organisational models designed for the sale of baked beans and cars. We need, instead, to finance more of the commons as commons; and we need to match the imagination of the technologies with a comparable organisational and economic imagination, including at a global scale.

The nature of commons

What is a commons? The word is generally used to refer to:

- Things with common, or shared value
- Things which are owned, governed and financed in a shared, public way (but not run by the state)

Shared value: In economic theory, the term 'public good' is usually used to refer to resources that are non-rival and non-excludable, like air or defence. One person's use doesn't reduce what's available to others; and by their nature, these resources are hard to put boundaries around. The term 'commons' is more often used for resources that are non-excludable, but rival: if I make use of common land for grazing, there is less left over for everyone else, and the same is true of electromagnetic spectrum.

On closer inspection the distinction turns out to be blurred – even air isn't really non-rival, since my polluting car reduces the quality of air for others. And in the digital world, commons and public goods intermingle. The internet may appear non-rival, but depends on costly servers, spectrum and the like. Similarly, although services like Wikipedia, and tools like the internet, are organised in non-excluding ways, there is nothing to stop digital technologies being surrounded by paywalls. To this extent, they are rather less 'commons-like' than air or water, but still have many of the properties of commons.

Shared governance: The second part of the definition concerns how the thing is organised, with commons being owned and governed in commons. A traditional commons might be owned by a village; by a trust; or by a specific community (e.g. foresters), and traditionally, forests, lakes or grazing grounds were funded and run as commons – that is to say, collectively, or through combinations of collective and individual payment (and a sub-discipline of economics has grown up to understand them, pioneered by Nobel prize winner Elinor Ostrom). Public goods have tended to be funded through taxation, and provided by governments, but many have been organised through commons rather than states: security services providing protection for an industry or an area, or street lighting. There is no rule stating that public goods have to be funded by governments.

From these definitions we can distinguish at least four related phenomena, each of which I look into in more detail in the rest of the paper. The first two clearly meet both of the definitions of a commons:

- Classic **natural resource commons**, like air, water and forests

- **True digital commons** that behave as commons and are explicitly organised as commons – Wikipedia for example

Two other phenomena overlap in practice with pure commons, but don't fit the second criterion:

- Services that provide some of the value of commons but are not organised as commons (e.g. Google, Facebook etc), which I call '**value commons'.**

- **Public goods** financed by taxpayers and states (which may be democracies, dictatorships, empires or other forms which are not, in any meaningful sense, governed as commons).

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The new digital commons

Informational or knowledge commons are made possible by digital technologies which help us to find information at close to zero marginal cost. The internet itself is a classic commons. At the heart of the TCP/IP protocol are algorithms that distribute resources, and prevent overuse of capacity by any one user. Other examples are tools for handling information or knowledge – like search engines. Google can be understood as a succession of commons - copying the links across the whole web and indexing it on shared servers, and then offering a free search engine in exchange for personal data. Arguably the service Google provides is one of the most successful in history, providing a free service universally and greatly helping millions to take part in digital projects of all kinds, even though, of course, Google is not owned or run as a commons.

Some recent 'commons-like' digital services are platforms for exchange, like eBay, Alibaba or Amazon, that are not unlike the marketplace at the centre of a town which was a classic commons. Some are sources of knowledge – like open data, or academic research publications, or the organisation which has taken the name 'Digital Commons', providing a repository for educational materials. Some are ways of handling identity - like OAuth. And some are technological tools, like blockchains being used to create new types of money and verification without the need for a central authority.

The whole digital communications 'stack' can be thought of as a series of layers, each of which has some public good and commons characteristics and some private ones: from the underlying physical layers providing connectivity, through data, networks, and transport to applications and services. It rests in turn on other commons: the geostationary orbits used by satellites and the spectrum used for mobile phones.

Layer of stack (in original OSI formulation)	Commons/public good/private good
Application	Supports actual applications, many of which are commodities, others with commons characteristics.
Presentation	Usually part of an operating system like Windows.
Session	Manages conversations etc, again using TCP
Transport	Manages transport of messages, e.g. packetisation, TCP for the internet.
Network	Addressing and routing, IP for the internet.
Data	Sets up data links across the network.

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Physical	Domestic fibre broadband as monopoly alongside competing mobile, satellite etc.

All of these examples have some of the properties of commons, though they vary greatly in the extent to which they really are commons.

Are commons vulnerable?

Commons are often thought of as vulnerable, not least thanks to Gareth Hardin's very influential writings in the late 1960s on the 'tragedy of the commons', which argued that users of commons will always overuse resources because of lack of property rights. In this argument, overgrazing and overfishing are predictable patterns that need to be solved, either by a strong state or by strong property rights.

But several decades of research has shown that these tragedies are far less inevitable than theory suggested, mainly because the theory greatly underestimated how intelligently communities can manage shared resources, so long as they have plenty of time to build up trust and plenty of chances to talk.

In the digital world there have been parallel anxieties that the new commons might be ruined by anti-social behaviour, trolling, criminal activity, and so on. But as with the natural resource commons, regulatory and governance rules have been developed to constrain many of the worst abuses.

Digital value commons as businesses

Most of the recent digital platforms and services that have some of the characteristics of commons have grown up as private businesses, with fairly traditional ownership models, including stock market listings, as public companies.

As a result they have had to focus their energies on making money and paying dividends to shareholders, and their governance looks very unlike traditional commons. Moreover, whereas recent generations of digital technology have tended to encourage the maximum flow of information and knowledge, the business models used by these private firms often depend on creating artificial barriers.

So, when Microsoft sells software, it has to construct ever-more elaborate security barriers to prevent copying (though it could have chosen, like Linux, to offer it as an open resource). Either Netflix or Sky has to turn what could be a commons (like traditional broadcast television) into classic commodities, surrounded by expensive barriers and paywalls. Other commons depend on business models that generate revenue from secondary activities. Google continues to make some 85% of its revenues from the sale of targeted advertising (the figure was 98% in the late 2000s). Facebook likewise depends heavily on advertising, along with revenue share arrangements of various kinds. Some are very big – like Pinterest, effectively a commons for everything from home decoration to fashion – and some are small, like Ravelry for knitting and crocheting, a for-profit firm funded by advertising, but serving as a de facto commons for a community of interest.

There are also other more traditional business models – such as taking a small cut of transactions (as with AirBnB, M-Pesa or Amazon). But a high proportion of the business models at the core of the digital economy either depend on reducing the utility of the technology, or on an indirect model in which the apparent customer is not, in fact, the true customer. Google or Facebook rarely articulate their business

model to users, presumably because users would feel uncomfortable if they were reminded too often that the company's true customers are advertisers – very different to buying a loaf of bread, or paying to see a film at a cinema. Many media businesses in the past used similar methods - the front page of the London Times was all classified advertising until the 1960s, and TV viewers have always had to put up with advertising. But the extent of the mismatch is much greater now.

To be fair, the new digital businesses had little choice – they opted for pragmatic answers in the absence of alternatives. Google was, notoriously, on the point of being forced by investors to hand over its data to a New York ad broker before it worked out how to do this well for itself, and new digital start-ups are under intense pressure to demonstrate plausible revenues – sometimes from direct payments, but often from advertising sales, or from paywalls of various kinds that make their service more exclusive. As a result, in the words of Jeff Hammerbacher former head of data at Facebook, 'the best minds of my generation are thinking about how to make people click ads.'

Some digital commons have succeeded with very different models. Wikipedia is one of relatively few that have been funded by philanthropy, and supported by a huge input of voluntary labour. The Creative Commons is both a legal tool for providing information as a commons, and is also, itself, run as a philanthropically funded commons, as is the P2P Foundation, and the various FLOSS (Free/Libre and Open Source Software) foundations, such as the Apache Foundation.

The Khan Academy is another example of a non-commercial approach, providing free access to a huge range of teaching tools, and funded by grants, notably from Bill Gates. Campaigning platforms like Change.org are different again, and are run as private businesses dependent on fees from NGOs, but have some of the properties of commons - a modern equivalent of Speakers Corner, albeit answerable to commercial investors.

Transport information services like Transport for London are different again, provided by public bodies as classic commons. There was intensive debate about whether they should charge for their data, but offering it for free prompted an explosion of new transport apps.

The BBC is now innovating in interesting ways around commons, particularly contributing through GitHub to the development of new software (a topic covered in a new Nesta analysis of the technology spillovers from the BBC, operating in a much more open way).

In science, which has thrived for two centuries largely as a commons, there are the movements to open up raw research data, and to open up all research findings to public availability within a year of publication.

Open data – the movement to open up the data generated by publicly-provided or publicly-funded activities – links many of these themes together, and has turned what used to be an internal resource for governments and businesses into a commons, prompting rapid progress in some fields such as transport. The Nesta/ODI Open Data Challenges are an example of how value can be reaped from this commons, generating a series of radical and very cheap innovations.

Many other examples have built on enthusiasm and values: the spread of creative commons and other open approaches to intellectual property; offering tools like WordPress as open source resources.

Finally, in some cases law can turn private goods into commons. This happens when laws open up land for rights of way for walkers. A parallel debate is underway now across the world about opening up commercial data – particularly for firms in receipt of public funding.

Are we seeing *less* innovation in economic models than in previous periods of history?

The period after the invention of radio offers interesting parallels to today. As with digital networks, there was great uncertainty about how radio could be financed, and lots of experimentation.

Some thought radio would be financed by members of the public renting short slots. Marconi experimented with subscription broadcasting of news. 200 colleges in the US applied for radio licenses to create an educational medium.

Policy-makers considered 'toll broadcasting' and taxes on equipment. It took some time for people to realise this was a one-to-many medium rather than one-to-one. But before long, the world stumbled on an array of solutions, from advertising spots and sponsorship, to donations and the invention of the license fee, and a wide range of public broadcasters ended up being funded out of taxation, with varying degrees of independence.

Other fields have seen great innovation in the funding of commons, including a vast range of tithes and levies to fund the stewardship of rivers, beaches, forests and parks. Recent examples include Business Improvement Districts, levies on businesses in city centres decided by vote to fund improvements to common areas.

The ubiquity of the internet has led to feverish innovation to discover new funding models, with extraordinary creativity around harvesting of data to finance services, around turning clicks and eyeballs into revenue, as well as subscription models, crowdfunding and micropayments.

But very little of this effort has gone into the discovery of new ways of funding commons as commons, as opposed to ways of commoditising privately-owned data.

Historians will ultimately assess why this is so. My guess is that the main reasons are the dominance of neo-liberal ideology, which means that any model which cannot pay its way commercially is frowned upon, and the dominance of Silicon Valley in the creation of new digital technologies which tends to privilege quite traditional models of commercial investment (while, of course, depending on vast public subsidies for the underlying R&D).

One practical result of this is that so many digital platforms have to rely on venture capital funding, which tends to push them towards rapid revenue growth, and also towards models of behaviour that are less collaborative and more predatory (since there is only one metric of success which matters), a pattern may often, paradoxically, undermine their long-term sustainability.

The internet was created in the US, and many of its pioneers had a strong commitment to providing it as a commons. But, despite exceptions like the open source movement, they struggled to find ways of translating that spirit into viable economic forms. If the internet had emerged in Europe, things might be different

(though not necessarily better). After all, Europe pioneered public service broadcasting, with its various missions to educate and inform as well as entertain, just as in a previous period it pioneered the idea of free museums, or of science provided freely for the common good. But in the age of the internet it has pioneered nothing comparable, with the partial exception of Skype. And of course in other parts of the world, this is an age of tightening controls rather than freedom, where the new commons are threatened by power, whether that is state suppression (Russia, China); corporate power over information (India); or fear from organised crime (Mexico).

The gaps – what we're missing

The difficult challenge of turning zero marginal cost products and services into an economically-viable model means that there are many new commons that don't exist, but should. They don't exist because they would need to be funded as commons, but no one is willing or able to do so. Here are a few examples:

- **Hyperlocal media** – news services run at the level of neighbourhoods of a few thousand which tell you what's happening. There is good evidence that the public have a strong demand for reliable information on what is happening in their neighbourhood. Surveys show this as the biggest gap in the media ecology. But it's not at all obvious how such hyperlocal sites can be financed. A traditional answer – and a traditional answer for local news of all kinds - was classified advertising. But that is now the preserve of another commons – Google – making it hard for new local organisations to compete. For example, Everyblock in the US was purchased by Comcast/NBC Universal, shut down, and then revived, then, again, hit by crisis. So a commons that is clearly wanted, and relatively cheap to provide, is systematically underprovided, dependent in practice on ultra-enthusiastic volunteers or being taken over by bigger media companies.

- **Providing knowledge about health**. Reliable guidance on how to handle an illness or symptoms is clearly of great value. It is also a classic commons – since any evidence-based guidance depends on synthesising huge amounts of data and knowledge. Parts of this are provided as commons through public health systems like the NHS and through projects like the Cochrane Collaboration. By contrast, the thousands of health apps in the marketplace, and the health information provided in newspapers and magazines, is of very variable reliability and quality. That's why two years ago Nesta set out in detail how a health knowledge commons could be organised, combining formal clinical knowledge with the experiential knowledge of patients. Describing it wasn't so hard, and the UK has many of the elements it would need, in the skills of the BBC, the Open University and others. But funding it is much harder because this is a commons that needs to be funded as a commons. There are many other apps and services that could create a lot of value in health - but aren't easy to turn into business models. Some should simply be financed by governments, or health systems - with rewards closely tied to usage levels, and fostered through R&D programmes that aim to maximise public value rather than private profit.

- Providing **reliable knowledge for users/citizens** in other systems: labour markets; housing; or schools. In all of these cases there are many obvious needs for reliable and comprehensive information. But it's often hard to find viable business models for providing this information, sometimes because it

threatens incumbents. Equally, it's not obvious that governments are well-placed to provide this information either.

- Providing **trusted identities** for online activities. A truly reliable system for creating and managing identities is a classic commons that creates great value, not just directly for individuals, but also for the whole society and economy. It's a task that is not well suited to private companies, nor to governments unless they're trusted (though India's Universal ID scheme has done well on a very large scale, and the UK government is attempting to create its own standard through Verify). The recent development of OAuth as an open standard is a good example of the emergence of a new commons - encouraging take-up both because it is free, and because it is more reliable, having been scrutinised by more experts than proprietary equivalents. It's now used by Google, LinkedIn and Twitter amongst others as a de facto global standard. Other promising examples include models like Open Mustard Seed at MIT and Mydex in the UK.

- Providing **useful evidence** for fields of practitioners, like teachers. Despite the vast scale of global spending on education, no one has seen it as their job to provide distilled knowledge about what does and doesn't work to the millions of people working as teachers. The UK's Education Endowment Foundation is a recent example of an attempt to fill this gap, and is doing so well, building on the pioneering work of figures like John Hattie. Other new What Works Centres will also try to provide comparable knowledge. A recent work in progress is the attempt to provide an independent source of guidance for teachers on what technologies to buy: there are powerful incentives for marketing technologies, but far weaker incentives for anyone to appraise how well they work. The former is a private good; the latter is a commons.

- Providing **truthful commentary** in the mainstream media. There are plenty of organisations with a strong commitment to truth – from the BBC to the Financial Times and the New York Times. And many volunteer bloggers now do investigations of their own. But it's surprising how many media organisations don't place much value on truth and accuracy, and economic pressures often explain this. And it's striking how hard it is now to secure funding for serious investigative journalism. Propublica is one exception. The Conversation – which now gets over 20m hits a month - is another interesting, and rare, example of a countertrend: a new kind of commons that is also funded as a commons, drawing on content to comment on events from academics in universities and editing their material using the best methods of modern journalism. It's (modestly) funded through a combination of grants from universities and philanthropy (including Nesta). But it highlights the surprisingly fragile economic base of truth-telling in the internet age.

- **Law and its practice** is a classic commons. But while the laws themselves are collectively decided, the interpretation and practice of law is not. Large law firms organise legal knowledge in costly and proprietary knowledge management systems. For the public, the craft knowledge of individual lawyers or legal advice centres provides some help. But law could be organised in dramatically more efficient ways using current technologies – orchestrating access to the results of cases in real time, so as to give predictive guidance to potential plaintiffs; opening up the world of contracts, or using blockchains (as Honduras is using the blockchain to create a secure land registry). Again, however, this is a commons which has to be financed as a commons.

- **Urban transport.** One of the most intriguing future commons is the aggregation of transport data in cities. Within the next few decades it will become feasible to transform how mobility is organised. In principle, traffic in cities could be organised much more like traffic on telecommunications networks. The driver would enter a destination, but the network would choose the optimum route, orchestrating traffic to maximise efficient use of the system. This is already happening to some extent with SatNav systems and will be taken a stage further with driverless cars. But the full benefits of a transformed system would depend on all data sources being aggregated into a commons – presumably with some shared multi stakeholder governance and ownership as well as rules on how data is provided and used.

- **Providing a global data infrastructure** – common standards and definitions for important activities like carbon emissions or companies. Data on companies is held by private firms like Dun and Bradstreet, and recent initiatives like Open Corporates (who claim access to identifiers for some 80m firms). But there would clearly be advantages if data like this was treated as a global commons, and governed as such.

Other examples include digital versions of old art forms, like NT Live (funded by Nesta) and many of the initiatives in our Digital R&D Fund for the Arts. These could easily be streamed for free on the internet, but of course that might undermine the revenue for live shows. There are examples like jobs platforms in cities which have commons-like properties; or platforms linking providers and users of education (like the School of Everything).

In most cases, the value spills over precisely because these are commons – trying to force them to operate as commercial companies may mean that they end up less useful than they could be. The huge energies of the digital start-up world often get distorted in the desperate search for revenues, which can mean serving quite trivial needs of relatively affluent groups, rather than much more basic needs of large populations. Likewise, because revenues can be elusive as digital platforms seek out viable business models, support from venture capital funds (or foundations) with very deep pockets is often needed to survive through years of high costs and low returns.

It should already be apparent that commons can be found at multiple levels, from the very local, through the national to the global, and some of the most valuable knowledge commons are very global by nature.

In the age of TV and radio the new economic solutions mainly came at a national level, with funding through national taxes, license fees and hypothecated funds. National governments are still likely to play a decisive role in governing the newer commons. But there are also options for using global commons to fund global commons, for example directing license fees for geostationary orbits or spectrum to support the creation and sustaining of content production, or useful knowledge in fields like health. And there are many potentially feasible ways to fund other types of commons – through crowd-funding, pledgebanks and other devices that combine free choice with collective action.

Handling new digital monopolies that grow out of commons

There are not that many ways of running commons or public goods which, because of low or even zero marginal costs, have a tendency to become monopolies.

The most common solution in the 20th century was to run them either as public corporations, or as privately-owned but publicly-regulated monopolies – the model used in the US for utilities like AT&T, or for ITV here in the UK. In theory, this made it possible to reap the benefits of monopoly – economies of scale and scope – while also preventing them from exploiting consumers. Policy aimed to ensure that these services were provided fairly, at affordable prices and with reasonable quality, and succeeded well over long periods of time. Understanding of the dynamics of competition in oligopolistic or near-monopoly markets has advanced greatly in recent decades, thanks to the work of figures like Jean Tirole, and has shown how much the details matter.

Other organisational solutions include regulated consumer or employee-owned mutuals (Welsh Water is a current example). There are charities or trusts (of the kind often used to finance, and run, things like bridges in the past). There are public monopolies, accountable through democratic representatives (the traditional model for PTTs and post offices), and there are hybrids like the BBC or the Open University (public corporations with some of the characteristics of trusts). Amazingly, very few of these forms have been used for the recent generation of digital commons, with a few partial exceptions like Wikimedia/Wikipedia.

This hasn't mattered so much during the growth phase of new commercial digital platforms and commons. We all reap the rewards from their work. The faster they grow the more their costs decline. And so we appear to get a wonderful windfall – free internet services like Google; cheap new routes to services like AirBnB or Uber. We get a useful commons at apparently very low cost.

But in a second phase, economic logic is likely to push all of these platforms to ratchet prices up and exploit their monopoly position, creating ever more intense conflicts of interest between the commercial interest and the public good. It's possible this won't happen. But you have to have a remarkable faith in the altruism of owners, managers and shareholders to believe this.

What are the implications for policy?

There are at least five profound policy implications, none of which is being clearly debated yet:

  i. The first concerns the future of regulation – how, and at what point, should regulators intervene to break up or otherwise constrain commercially-owned digital commons that are becoming monopolies? Should they enforce structural separations, divestments, formal regulations or transfers of funds from one part of the system to another? And how should they cope with the geopolitics of handling mainly US based companies? The answers to these questions aren't straightforward. Should there be higher taxes on platforms as they near monopoly positions, or some hypothecated redistribution to the sources of value they benefit from? Should we worry if vertically integrated monopolies take shape around the Internet of Things, and the management of energy for example? What's certainly needed is much sharper thinking about the thresholds which should trigger action (a topic covered in Nesta's Manifesto for the Creative Economy).

  ii. The second is that we need as broad a debate about the long-term finance of new commons as we had when other media arrived: radio, TV or film. In each of those cases, clever solutions were invented – like public service broadcasting

funded out of its own license free, or arrangements to channel revenues from one part of the system to another (like Channel 4, originally funded through redirecting advertising revenues from the main commercial channel, and the [Eady Levy](#) here in the UK, which redirected film revenues from distribution into production, or France's support for magazine distribution). Other options include mutuals, membership organisations and clubs of various kinds. For each new generation of digital technologies we need to pay explicit attention to the commons aspects of their potential, and how these can be funded, whether it's the Internet of Things, machine-learning, or near-field communication.

iii. The third is that we need a new way of thinking about R&D, and particularly 'D'. Who pays for experimentation around new digital commons? Colossal sums are still spent by governments to subsidise digital innovation in the military and for surveillance. There are also powerful incentives for investment by Samsung, Apple or Google in new services that can generate revenues for them. Meanwhile, venture capital is financing experiment around new commons that can generate profits. But public, open variants are drastically underfunded. The BBC has a small R&D budget. Foundations like Knight in the US provide some finance. The European Commission does too. Nesta provides some funding – through, for example, the Digital Arts R&D Fund and our programme for hyperlocal media, or our initiatives creating health platforms like [Dementia Citizens](#). But we are small in comparison to the main R&D funders. In my view, we need dedicated R&D funds to promote experiments in digital commons, to run alongside the very substantial subsidies there are for new digital business models.

iv. Fourth, we need to start designing 21st century public services as commons, and funded as a commons. Some curriculum material in education is of this kind – and the TES repository of teaching and teacher generated materials is a great example (originally created to attract teachers to TES job advertisements threatened by the web). Health is another obvious example and one where there is a powerful case for change, combining the very best of the NHS, BBC and Open University into a reliable, comprehensive, ubiquitous and personalised source of advice and guidance.

v. Fifth, we need to begin designing, and arguing for, global solutions that fund global commons as commons, whether through purely voluntary cooperation or through hybrids that can potentially access some of the wealth created out of existing commons such as spectrum, or physical commons such as the oceans.

How to finance commons

Payment method	Examples
Advertising	Google, Facebook etc
Payment for services	Academic journals, Netflix, Open University
Voluntary donation, including crowd-funding	Wikipedia, Khan Academy
Taxation	Public service TV, scientific R&D

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License fees	BBC
Redirection	Channel 4, Eady Levy, spectrum revenues
Collective payments	Business Improvement Districts
Regulated monopoly	Traditional telecoms
Resource based endowments	Alaska Permanent Fund

Pluralism and avoiding monoculture

There is a large place for commerce, venture capital and advertising in the digital economy. But pluralism requires that these are part of a more complex ecology, just as television ended up with a mix of public and private, and benefitted from competition between models, not just competition between private companies.

For now we risk a monoculture – an internet dominated by only one kind of organisation (the listed commercial company), based in only one place (California), and using only a limited range of business models (either advertising or harvesting personal data). That can't be healthy.

We should also seek to promote adaptability. For now, the digital economy is very dynamic and delivering spillover benefits of all kinds. But we risk sleep-walking into lock-in: dominant positions that subsequently can't be challenged. The lesson of all commons (and the lesson of much of the work of Elinor Ostrom, the great analyst of commons) is that they require very active dialogue, negotiation and governance – overly generic rules don't work well, and nor does rigidity.

The 21st century could be a great age of new commons. We're in the midst of revolution after revolution in technologies which are founded on the ultimate commons – information and knowledge. But we are trying to squeeze them into organisational models designed for the sale of baked beans and cars. We need, instead, to match the imagination of the technologies with a comparable organisational imagination.

info@nesta.org.uk   @nesta_uk   facebook.com/nesta.uk   www.nesta.org.uk

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