IFLA Trend Report Expert Meeting

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Synthesis of Discussion

Contents

Executive Summary

The future of copyright, new business models and the public interest

This session examined the growing importance of copyright issues within the public consciousness over the last decade and the rising inclination of young people to fight for their right to access, share and download online content. It was noted that there is a growing consensus around approaches to copyright enforcement – although technical measures to enforce copyright are unlikely to be fully effective without significant curbs on innovation and online freedom. Discussion also suggested the development of new revenue generating business models will be the swiftest route towards providing attractive legal alternatives to copyright piracy. The copyright landscape is also likely to become more complex as the boundary between the consumers and producers of online content and services becomes progressively blurred – and further challenges emerge in relation to applying copyright to content dynamically created by machines. The future creative incentives for content producers and the implications of advertising/commercially driven content creation models were also explored – alongside the role of trust networks in supporting collaborative online creation and consumption. Finally, it was considered whether access to the Internet should be defined as a human right or public good, or whether the best approach would be to leverage and enforce existing human rights within an online context.

The disruptive democratisation of education

This session examined the decentralised capacity of the Internet to nurture and disseminate innovation and ideas that promote an open and participatory online culture which is increasingly incompatible with authoritarian principles. Further discussion identified the essential importance of lifelong learning and iterative/on-going education strategies to maintain and update skills in an ever evolving digital market place – as well as the progressive erosion of academic credentials in favour of professional achievement and verifiable current skills. Over the next 5 years online education and Massive Open Online Courses (MOOCs) will cause serious disruption to the incumbent players in the higher education market – but with an expanded role for value added intermediary services, guidance and support which are complementary to these new digital learning pathways. Online education will open up new learning opportunities in the developing world, although shortfalls in literacy skills and disability barriers will need to be addressed. Finally, it was suggested that professionalised information management skills can help democratise and rationalise access to online education resources – particularly through the effective tagging and referencing of content to support the retrieval of discrete course/subject components.

Online activism, governance, privacy and security

This session examined the capacity of hyper-connected digital technologies to enhance government surveillance and control, alongside the potential impact of these technologies on democratic an authoritarian regimes. Discussion referenced the importance of legally prohibiting governments from demanding other organisations release personal data without due process. The role of online activism in transforming the future landscape of political activity and participation, as well the impact of open government and transparency initiatives were explored. Consideration was also

given to the challenges of multi-jurisdictional Internet regulation and the future role of online privacy and anonymity tools in an environment where sophisticated tracking and data correlation techniques can be used to de-anonymize personal data (and potentially engage in price discrimination). Open government data and services will require more robust and professionalised information management skills – and should be demand-driven as opposed to just supply-driven. Finally, online engagement with the public poses challenges in terms of accurately identifying eligible electors, but also offers benefits through the political empowerment of diaspora communities, support for evidence-based policy making and a mechanism for disseminating authoritative information on climate change, health, welfare and education.

Economic and demographic trends

This session examined how the developing world will begin to exploit the demographic advantage associated with young and growing populations while the developed world continues to struggle with the economic challenges of an ageing population and workforce. The narrowing of the income gap between developed and developing countries will cause significant disruption, and potentially result in protectionist responses from the developed world nations (such as artificially complex standards and compliance requirements for developed world products and services). Discussion referenced the opportunity for increasing numbers of small and medium sized businesses in the developing world to dis-intermediate developed world firms who have until now occupied the higher margin areas of the commercial value chain. Rising levels of urbanisation (70% of the world's population will live in cities by 2030) will yield cost saving opportunities for governments administering services to concentrated populations, as well as higher demand for services and infrastructure. In the long-term, an increasingly hyper-connected world will enable individuals to participate in the global economy from any location which will potentially reanimate communities as drivers of entrepreneurship and innovation. Finally, the iterative process of technology adoption confers a competitive advantage on the younger generation's capacity to rapidly assimilate new concepts and working methods – although newer touch screen devices and dynamic interfaces are also more accessible and intuitive to older users and the disabled than any previous generation of information technology.

Technological trends

This session examined the role of automated translation technologies combining statistical and artificial intelligence approaches in servicing the future needs of a multilingual internet. Discussion also referenced the increased incidence of commercial filtering, personalisation and behavioural targeting to individually tailor services and content options for Internet users. Consideration was given to the role of the Internet in eroding the costs of accessing diverse sources of information, alongside concern that excessive reliance on filtered and personalised services/content can undermine creativity, spontaneity and choice. Future education models will need to focus more on how to authenticate and exploit online information rather than traditional approaches of learning though memorisation. The low cost production and rapid prototyping opportunities offered by 3D printing technologies will revolutionise and disrupt the global manufacturing industry, although many of these innovative uses are likely run into conflict with existing copyright and IPR regulations. Attempts by governments to apply national laws to the Internet in relation to inflammatory or defamatory material will potentially pave the way for further regulation of other aspects of online

activity which runs the risk of creating an increasingly balkanised Internet. Alongside the need for digital preservation strategies to address the long term sustainability of physical and online information, a key challenge for internet governance will be to strike a balance between vertical information management structures and effectively harnessing the unprecedented potential of the Internet for horizontal communication and engagement.

Synthesis of Discussion

1   The future of copyright, new business models and the public interest

1.1   Increasing importance of copyright in the public consciousness

One of the most significant developments in the field of copyright over the last 10 years was the arrival of Napster in 2001 which put copyright and intellectual property rights on the front page of virtually every magazine in the world, as well bringing such issues to the forefront of young people's minds. So pervasive was Napster's impact in this area that it rapidly became one of the top 5 most recognisable global brands, without spending a single penny on marketing or advertising.

Thanks in part to the extensive coverage of the rise and fall of Napster, copyright issues have risen to the forefront of the public consciousness and vigorous debate is happening in a wider social space than ever before. Young people are increasingly prepared to fight for their right to access, share and download online content. Indeed this has become a significant social issue which cuts across political divides. Against this backdrop there are also examples where the realm of copyright is expanding. In 2003 the Mexican Congress amended the 1996 Copyright Act to extend the term of copyright to be the duration of the author/creator's life plus 100 years – an action which some would see as supporting copyright rentierism.

1.2   Growing consensus on enforcement approaches and rising challenges

There is also increasing consensus on approaches to enforcing copyright. From the EU perspective, site blocking is now seen as an entirely appropriate response to deal with websites hosting infringing material. A number of countries including the US are also embracing the approach of sending warning notices to Internet users who upload/share files which are subject to copyright restrictions.

A 2012 report from the Hautes Autorité Pour la Diffusion des Oevres et la Protection des droits sur Internet (HADOPI) – the agency created in 2009 by the French government to administer a graduate response approach (sending warning letters) to combat illegal downloads – concluded that the initiative had been largely ineffective and had generated only a handful of successful prosecutions. The report also suggested that increased emphasis should be placed on monitoring streaming and direct download services (as opposed to simply P2P sharing services).

While graduated enforcement responses may have an initially positive impact for content creators (in terms of reduced numbers of transgressions) – it was suggested that attempts to combat illegal downloads using site blocking and Internet user monitoring techniques will be likely to provoke a technical "arms race" in which the only winner will be the pirates (as ever increasing numbers of mainstream users adopt practices to circumvent these measures using proxy servers…etc). It was concluded that there is no effective technical solution to piracy which does not throw they baby out with the bathwater in terms of limiting Internet freedom and stifling innovation.

The point was made that across society copyright is not universally understood which creates significant challenges in terms of effective national and international. Another challenge is the level

of innovation associated with piracy. Another factor is that digital licences have replaced the concept of ownership in many commercial contexts – which leads some young people to declare "if it is not mine – then it is everybody's"! Internet users are also becoming increasingly aware of extortion schemes where service/content providers charge for access to material which should be (or is already) publically available.

1.3   Copyright in emerging economies

An important question will be how these trends play out in different parts of the world including emerging economies. It was suggested that the next three billion Internet users will be significantly poorer than those that gained online access in the past.

Micro content purchases which can be supported by online credit card-supported payment systems like PayPal are functional in a developed country context – but in the developing world where people are far less likely to have reached this level of financial inclusion, this could lead to large numbers of Internet users being excluded from such new services. In many instances students rely on piracy to access online content. In India, Brazil, South Africa and Russia the local film production industries are totally reliant upon pirated software.

There is a need for enhanced cooperation at a global level in relation to copyright and IPR implementation, in a context where the second largest country in the world (China) sees little incentive to comply with Western IPR regimes. In China the decision to ignore copyright is essentially economic in nature. It was also contended that societal or communal enforcement routines (tribal mechanisms) are more important in effectively incentivising law abiding behaviours than technical countermeasures or mechanisms.

In Africa access remains the most important issue with less importance accorded to copyright. Africans are increasingly generating their own local solutions (such as young people designing their own mobile applications) although as these solutions gain in maturity and commercial appeal, there is concern that they are currently insufficiently protected in IPR terms. Nevertheless it was predicted that in the next 5 years Western businesses will be competing with young African entrepreneurs who will successfully build the next batch of billion dollar companies.

Access to the benefits of the Internet is not the same as access to the Internet. The latter simply involves an Internet connection, while the former requires skills, information literacy and access to content and services. In addition, certain Internet services depend upon individuals achieving a baseline of financial inclusion in order to complete transactions or register to access content platforms (such as a credit card or a PayPal account).

In Africa many libraries are embracing the "tech hub" model with information/content hosted on shared Dropbox accounts. In five years' time many Africans will be browsing library content on their mobile phones.

1.4   The rise of new business models

Today the debate is gradually migrating from a focus on digital piracy towards an emphasis on digital business models. Figures released in 2012 by the International Federation of the Phonographic

Industry (IFPI) showed that worldwide music industry revenues increased by 8% in 2011 to reach $5.2 billion.

Ultimately the war on online piracy will only end when new business models supersede that battle by successfully generating revenue. There are a range of new business models which are worthy of consideration. For example in India many devices come with free pre-loaded content, with the option of purchasing value added services related to that content. There are also free children's e-books which come with embedded video content and text to speech functionality which can be unlocked for an additional fee. There are also examples of Western companies voluntarily adapting to the constraints of particular markets, such as in India where Microsoft elects to sell DOS-based desktops and laptops in recognition of the fact that most customers can only afford to install bootleg software on these machines.

Moving forward the important question should be "which business models should be developed and implemented?" as opposed to "which enforcement methods should be adopted?" The primary purpose of government should be to ensure a level playing field for businesses, rather than acting as an enforcement agent in a context where punishment is manifestly not achieving the desired results.

It was commented that users are generally more comfortable with employing legal approaches to accessing content – but that these must be priced appropriately and sensitively and above all must contain the content that users want to access. Young people use iTunes because its large repository of desirable content. However, users are increasingly resistant to being imprisoned or locked into particular platforms or proprietary systems.

1.5　The blurring of the boundary between consumption and production

Previously there was a general demarcation between Internet users (usually individuals) and producers (usually organisations). This demarcation is now becoming increasingly blurred. Furthermore, as more and more users become content producers they will often be more supportive of copyright enforcement as they begin to be more interested in compensation for their work. Alongside copyright and IPR regime enforcement, there are also other routes emerging for content producers (amateurs, professional-amateurs, and professionals) including licencing through the Creative Commons framework, as well as other options which strip out traditional intermediaries such as direct donations from users, global sponsorship opportunities and crowd sourced micro-funding.

1.6　Machine to Machine connectivity and communication

Another big trend is the rapid increase in machine-to-machine (M2M) connectivity and communication. This in turn raises the question – how do we apply copyright to content which is dynamically created by machines in a context where both people and machines both produce and consume content and information. It is not clear whether current business models are equipped to accommodate these new developments. In a situation where a human being aggregating content from various sources (in terms of say writing an online news article) will usually not breach copyright (effectively it creates new copyrighted content) – and yet a machine aggregating material from numerous sources and applying automated methods to produce an article could well be judged to

be in contravention of copyright. This could have significant implications for open source and open access resources in terms of their future position vis-à-vis copyright and IPR regimes.

1.7   Future incentives for content creation and potential for monetisation

The question was posed – in the absence of effective copyright regimes, what is the incentive for creators to create? One response was that they should seek to capitalise on revenue from added value services or advertising. A further point was raised in relation to confusion between the distribution and creation of content. The traditional content providers use a number of mechanisms (versioning, windowing and merchandising) in order to maximise revenue. However, our new hyper-connected world has fostered the growth of a diversity of different narrative forms of content as well as the ability to recycle and remix that content. In a context where many content providers and platforms merely offer aggregation services, there is significant scope for other actors (such as libraries) to deliver curatorial strategies which more amply respond to the values and needs of local cultures. However, it was also commented that in some instances aggregation can be a form of content creation in and of itself (depending upon the sophistication of the aggregation process).

It was suggested that the fact that the group discussion had focused on "monetizing content" instead of copyright was a potential indication that the centre of this debate had migrated from IPR protection towards an examination of viable business models.

1.8   Copyright is a brake on innovation – but many creators are pressing ahead regardless

Copyright is not part of the value chain and in many cases acts to stifle innovation. For example an on-going European Court of Justice case (referred from the Swedish Court of Appeals) will determine whether publishing a hyperlink to content (without the author's consent) can be considered a communication to the public, and therefore implicitly a breach of creator's copyright (it is already considered illegal in France). In this context it is easy to see how copyright represents an impediment to value creation.

Nevertheless it would appear that many creators do not seem to care, judging from their enthusiasm for sharing and uploading their work (for example 72 hours of video are uploaded to YouTube every hour). Indeed it would seem that creators are not waiting for new business models to be finalised or copyright reform to be implemented – they just getting on with it. The opportunity of sharing creative content with others remains a primary and powerful motivator for a large number of Internet users. In this context, the use of crowd-funding and advertising revenue are key routes to successful monetization. However, the proliferation of the advertising driven revenue model will have implications and consequences for privacy, surveillance and ultimately protection of the public interest.

1.9   The importance of online trust and public interest considerations

The phenomenon of collaborative online consumption depends on evolving networks of online trust which develop in a non-linear fashion. Communities (both offline and online) are powerful vehicles for building trust. The question is - can new ways of mobilising trust supplant the copyright system? Could a trust renaissance replace copyright?

Trust between application developers and platform providers will certainly be of paramount importance. Application developers need to trust the platform providers to deliver payment. In addition, in the context of digital platforms the era of scarce shelf space has been supplanted by abundance, availability and (in theory) limitless storage capacity.

The question was posed – what happens to the public interest and non-commercial values in a context where monetisation and market value are the key drivers? It was argued that a worst case future scenario would be one where neither top down regulatory structures or industry self-regulation approaches are effective, producing a regulatory vacuum where the law of the jungle prevails.

It was also commented that the new information environment will be the sponsor of several waves of creative destruction with established industries (such as the publishing industry) being replaced by other new industry players (Amazon….etc).

1.10 Is Internet access a human right; is the Internet a public good?

In discussing the concept of the "public good" or "public goods", and defining access to the Internet as a human right, concerns were raised that these approaches invite government intervention. It was suggested that government intervention through, for example a system of treaties and regulatory accords, could have significant and unintended consequences for a free and open Internet. A case study was offered of the UN Special Rapporteur on the Internet Frank LaRue who contended that it is better to leverage existing human rights (such as freedom of speech and freedom of association) in relation to Internet usage, as opposed to creating a "new human right to the Internet." It was also pointed out that in a context where Internet access is swiftly becoming an indispensable economic and social enabler within a modern hyper-connected world – without Internet access it is becomes increasingly challenging to take full advantage of existing human rights (such as freedom of speech, civil and political freedom as well as potentially social and economic freedoms). Libraries have role to play as institutions which support human rights and freedom of access to information in a digital world.

The question was posed – should the Internet and access to the Internet be considered a global public good (like access to water and breathable air) in that the ideal future scenario is one in which no citizen of the world can be prevented from accessing and enjoying the benefits of the world wide web? How can the public interest be protected in the absence of suitable regulation? It was also questioned what mechanism should be used to support public Internet access – constitutional right, legislative requirement or universal service commitment from government? Should this be expanded to include additional components such as freedom of access to unfiltered search results?

It was commented that we are potentially witnessing a fundamental shift towards a bi-polar world where one side believes that the availability of Internet access and resources should be driven by free market forces – while the other continues to see government as the primary agency behind successfully expanding access to the Internet.

2   The disruptive democratisation of education

2.1   The future impact of the Internet on education and lifelong learning

The most sought after skill today is creativity. This is a non-linear skill and difficult to teach within a traditional educational context – but it is catered for by the decentralised non-linear capacity of the Internet to nurture and disseminate innovation, ideas and creative output.

It was suggested that the open and participatory culture of the modern Internet makes its benefits less compatible with cultures based on authority (e.g. Wikipedia versus traditional academic journals). Most approaches to teaching and education are still based upon a 19th century paradigm – which offers an opportunity for libraries leverage their experience in the professionalization of information management and media literacy to better inform educators on the demands of the modern digital learning environment.

Currently in the developed world people are now going to have an average of 5-6 different jobs during their careers. Therefore the concept of paying $250,000 for a four year degree is a scam in a context where one degree cannot possibly prepare an individual for the learning/educational challenges of those subsequent six jobs. This begs the question, in an era where digitally enabled lifelong learning and iterative/on-going education is essential – are traditional higher education approaches fit for purpose for the modern world? This contributes towards the dismantlement of the "myth of credentials". A degree from Harvard will become less relevant than a solid track record of professional achievement. Skills will be increasingly assessed and valued on the basis of "doing something" or "achieving something" as opposed to possessing an academic certification of those skills.

2.2   The rise of Massive Open Online Courses (MOOCs)

The availability of MOOCs is expanding rapidly – according to the Chancellor of the University of Southern California, that institution currently generates around $114 million per year from operating such courses. It was predicted that in the next 5-10 years online courses will be serving more learners than the combined provision of physical courses offered by the world's universities. This will have both revolutionary and disruptive effects on the global education landscape over the next 10 years.

Online courses will replace the classroom to become the dominant educational mechanism. Alongside this there will be a crucial role of value-added intermediary services which help students who want additional guidance or to explore more detailed subjects/interests. People will be prepared to travel significant distances to access the education that they think is relevant (as opposed to that which others define as relevant). This education will not be a simple of transposition of that provided by high end universities – it will look different and be more driven by individual/localised demand.

It was also pointed out that effectively communicating and teaching information requires more than just making information available online. As such online education resources and courses will still need to be supported in many instances by intermediaries – although whether these intermediaries

will remain the same as those who run the traditional higher education systems in the past is not clear.

2.3   Online education in the developing world

Lack of reading skills and literacy skills will remain key obstacles to providing access to online resources and opportunity to the third billion of Internet users. In particular in Brazil where blindness and visual impairment rates are high with 6.5 million people suffering from blindness or impaired vision (the global figure is [285 million](#)) the availability of audio description software and other disability support options will play an important role.

The assumption used to be people required traditional literacy in order to become computer literate. However this is no longer a straight forward sequential relationship. Information and technology literacy can often precede the ability to read and write.

India has over a million schools – but in any one day 3,500 of them have no teachers. Therefore access to online education resources will continue to have a huge impact. In India not enough young people are going to university. High school dropout rates are at 70% with the total number of students in university at 10-12 million. The government wants to raise this to 30 million. In this context 1000 new universities are required, along with the appropriate number of professors with the right skill sets to teach 20 million additional students. This is not something that can be quickly achieved. Instead a hub and spoke model has been adopted, where a professor with the right skills can broadcast online to a series of different classrooms supported by less experienced teachers. This creates a blended learning environment which maximises the potential of intermediary supported remote access to teaching expertise.

2.4   Future consequences for higher education

In his 1997 book, "The Innovators Dilemma", Harvard Professor Clayton Christensen describes what he calls the mechanism of "disruptive innovation". His model starts with a group of incumbent industries chasing a high margin over-served customer (because that is where the highest profits are). As a result the incumbents fail to pay sufficient attention to new market entrants who are focusing instead on the low margin customers.

Eventually incumbents wake up to the reality that the new entrants have captured the entire base of their industry (and the new entrants become the new incumbent dominators of the market). In a higher education context, this process will play out in the areas of learning traditionally ignored by high end universities (such as vocational learning) and then proceed to migrate up the educational food chain. By the time universities realise what is happening significant disruption to the market will have occurred.

The wave of impending disruption driven by online education is going to benefit users and learners – whilst undermining significant players in the education market including publishers and providers of existing proprietary education platforms. There is also the potential for polarisation of education towards courses which are popular or economically relevant – at the expense of other subjects or topics.

2.5   The role of libraries in online education

Libraries have many roles in relation to education and learning, but some need to be invented or reinvented. Libraries need a "push" component – they need to proactively advertise and market their services as opposed to just waiting for people to visit.

MOOCs and blended learning approaches would benefit from the skills of librarianship in order to optimize, tag, reference and label the material for the retrieval of discrete components (e.g. tagging 15 minutes segments of online video lecturers). Otherwise academia will be creating the online equivalent of the "Indiana Jones warehouse" (a vast fictional warehouse used by the US government to store thousands of top secret crates for safekeeping in the film *Raiders of the Lost Ark*). Traditional 19th century approaches to knowledge segmented information into disciplinary silos. The reality of the digital age is that more cross-sectional approaches are both valuable and necessary.

Professionalised information management skills are generally invisible – librarians don't know how to promote/articulate the value of these skills, teachers often ignore them, and students tend to assume that they know better. There is a significant gap in this area and these skills are not sufficiently understood or respected within academia and government. Ultimately one of the reasons that universities, schools and libraries are still useful is that are they only actors capable of scaling up educational access on a national basis.

Some learners in developing countries may be prepared to walk four hours to a centre where they can download access MOOCs – but that activity in isolation will not effectively or rapidly disseminate knowledge and skills across an entire nation or population. A long term sustainable approach to this is essential. Learning from the experience of others and mentoring programmes in the context of the digital age will become increasingly important.

It was predicted that there will be substantial future demand for intermediaries who provide context and added assistance, direction and value as complementary services to users of online courses. Students and learners will need to access these services somewhere – and that somewhere could be the library, but it would require new marketing approaches. One potential obstacle is the number of shy, uncharismatic librarians in public libraries.

3   Online activism, governance, privacy and security

3.1   The future outlook for government surveillance and control

There will be far more control of networks by agencies in terms of surveillance and content filtering. This will not be purely for security reasons – another potential driver will be the protection of copyright. Decryption methods, including deep packet inspection techniques will be likely to increase in frequency. All these developments will erode privacy – possibly undermining social and political activism in many countries – whilst stifling transparency and access to information. Increasing hyper-connectivity can also be harnessed to increase the capacity of governments and companies to track and trace the activity of Internet users.

Three possible scenarios:

i)   Democratic societies become less democratic

ii)   Undemocratic regimes may crumble as a result of the Internet

iii)   A divergence between democratic regimes which continue to become more participative and transparent using technology and authoritarian regimes harnessing that same technology to consolidate control and surveillance of their populations.

Governments are not going to be equally able or interested in mastering the technology behind advanced Internet surveillance. China has made an enormous investment in both personnel and technology behind surveillance – but most countries will lack the resources to develop this kind of infrastructure. There will also be widespread pressure from governments on private entities to outsource their surveillance operations. Every government will not build its own "Great Firewall" – instead they will look to the private sector or other undemocratic countries. Overall, filtering and surveillance will become cheaper and easier for governments over time.

However, it was also argued that the right of access to information has increased in many countries. Many others offer the right of asylum to bloggers and activists. Education and awareness of the importance of freedom of expression and privacy feed increasing self-regulation on the part of the individual which will also generate more due process on the part of governments.

3.2   Rising pressure on private entities to supply personal data to governments

As advertising becomes a dominant Internet business model, private companies will increasingly invest in an array of different tracking and monitoring technologies and infrastructure. Governments will seek to exploit this resource. Therefore it is essential to keep governments accountable and make sure that they are legally prohibited (without due process or at least transparency) from demanding the private sector to surrender user/customer information and data. Multinational companies from the US and Europe will be under increasing pressure from third party governments demanding them to surrender domestic information covering the Internet activities of their citizens. Refusal to comply could lead disputes to escalate to become international trade issues.

3.3   Political trends and the rise of online participation and activism

By 2020 we will see a substantial reinvention of politics driven by the progressive evolution of online activism techniques. After the SOPA battle in January 2012 large numbers of lobbying organisations in Washington will have sought to hire online expertise to synthesize the approaches which yielded success for online activists in the campaign against SOPA – but harnessed towards the prosecution of their client's objectives. The future of the political system in most democratic countries will look like American politics does today. There will be more money involved and there will be more professionalised manipulation of public sentiment. It will be less about getting people to vote on particular issues and more about mobilising mass feeling (usually around single cross-cutting issues). The political elites realise this is how you get what you want from the political system – and the Internet is an incredibly effective tool for mobilising mass popular sentiment. This mobilisation process will become increasingly less organic and more organised and deliberate.

There will be more and more single issue political movements which cut across traditional party lines, generational lines and geography. Political and business lobbying will become increasingly interwoven across transnational lines. The state to state or intergovernmental mechanism will not

be the dominant decision making locus – this locus instead will lie with cross-cutting international business connections. This will lead to large scale commercial arrangements being agreed under the radar of traditional intergovernmental negotiations.

In the future governments will not just gain legitimacy through elections – they will also be measured against their ability to deliver on open government and transparency objectives – enabled by digital technologies and hyper-connectivity. These will become new major sources of political and institutional credibility.

Increases in the use of gameification and simulated environments where people can test out potential decisions in a virtual context before executing them in a real world context will have a profound effect on a range of areas of human activity. In particular, such simulated environments will allow voters to project the potential social and economic impact of different political party policies before deciding which to support. This will potentially be hugely disruptive to traditional party politics – and hopefully compel many political actors to consider projected outcomes more carefully before making attractive (yet probably unrealistic) promises to their electorates.

Party politics will recede and engaging with the state as a set of processes rather than an institution will increase. Now that it is becoming progressively easier to determine which bit of government (national, local and municipal) is dealing with the issue or area you care about – more people will engage with particular parts of government on that basis. People will continue to aggregate around single issues which resonate with their values and interests – but not around traditional century old political parties.

It was suggested that in the short term (for example by 2020) the Internet is unlikely to radically change the electoral system in terms of the concept of democratic voting - but the trend towards rising voter engagement via the Internet will certainly continue. This is likely to weaken traditional political parties as they are less likely to be able to mobilise these new digital channels and opportunities than newer single issue political movements. This may produce progressive fragmentation of the party system in the developed democracies as the younger generation increasingly focus on specific issues which matter to them as opposed to generational or partisan alliances which have defined party systems in the past. This may also yield to individuals developing political and intellectual affinities which transcend traditional boundaries along national, regional, generational or geographical lines.

It was suggested that in one sense the future is already here but its impact has not yet been evenly distributed. Governments and large centralised institutions and organisations will continue to fail to grasp the full extent of the opportunities presented by the Internet, whilst continuing to grapple with the trans-national and multi-jurisdictional regulatory challenges it presents. Monolithic states will find it particularly difficult to adapt as the next generation of young people will continue to be increasingly technologically empowered. However, monitoring and tracking techniques will also increase in their sophistication with emotional metering and retina movement tracking replacing traditional click tracing. It will also become harder to differentiate between different agendas and which corporate or political forces are driving them.

The question was posed whether the future would see a consolidation of religious fundamentalism in digital form. It was highlighted that it is important For example there are large Muslim populations

in Indonesia, India and the Philippines who would not necessarily conform to the traditional Middle Eastern fundamentalist stereotype.

The "no more secrets" factor will continue to consolidate by 2020. It has become increasingly difficult to keep information secret which has a counterbalancing effect of attempts to exercise control. The pressure to accommodate freedom of speech will be on-going, particularly from bottom-up civic engagement and advocacy initiatives.

3.4   The role of online privacy/anonymity tools

Will privacy and anonymity tools be increasingly available and used? Will use of some of these tools be criminalised? It was suggested that there will be an on-going arms race between privacy/encryption tools and monitoring/surveillance tools which will continue to escalate.

Tools to preserve anonymity online are an important feature of democratic society. However, it is a mistake to place excessive faith in online circumvention tools (email encryption, proxy servers…etc) because the vast majority of people will not use them (or know how to use them correctly). Centralised services are going to be a fact of life in 2020 for the vast majority of uses. Therefore laws will need to be in place to secure the personal information on those services and prevent government acquisition of that data without due process.

The mainstream of Internet users will always opt for interactive and user friendly services before considering security. This is also because that many of these circumvention/privacy tools have moderately degrading effect on online user experience However, in order to preserve their future market share and protect their customer base increasing numbers of online platforms will start embedding encryption and security into their services.

It was suggested that it is useful to distinguish between user demand for online privacy and online "clandestinity". Online privacy involves personal data, postings or online choices/tastes not entering the public realm, or being used for commercial marketing or targeting purpose. Online clandestinity – involves the ability to potentially place a post or information in the public realm whilst preserving anonymity. In this instance the output of the user's behaviour is visible (in the form of a blog post or an email) – but the origin of that behaviour remains concealed.

Virtual Private Networks will primarily be used by individuals seeking to circumvent copyright related surveillance. If privacy tools are adopted by such individuals, what are the implications for the legitimacy of those tools? If only pirates use anonymity tools then governments will have a stronger basis to make those tools illegal.

It was advanced that pseudonymity could become popular as the middle range privacy solution for the average person. This does not constitute total anonymity (required by users engaging in illegal behaviour) but is instead dependent on context. Essentially this relates to education surrounding avatar management, allowing people to manage a range of different pseudonymous identities across different online fora.

There will also be increased use of private information lockers, frequently household based. This will be coincidental with a closer connection between habeas corpus and habeas data (bringing together the concept of freedom from imprisonment without evidence or due legal process and freedom

from the exploitation or access to private data without evidence or due legal process). However, it was also pointed out that the problem with pseudonymity is that users will often confuse it with anonymity. Internet service providers will always know who their customers are.

3.5 The future of online privacy and the security of personal data

Generally speaking the trend towards ever expanding digitally-enabled opportunity in relation to education and democratic/political participation will continue across the developed and developing world – on a scale which is too large and diffuse for governments to prevent or control. However, freedom and privacy must not be taken for granted. Greater public education and awareness on these issues will be increasingly essential in order to promote an active public and consumer voice. This will also require enhanced levels of individual responsibility/regulation.

With the increasing uptake of cloud based services with companies operating across national boundaries with servers based in multiple national jurisdictions – what will be the implications for the security and privacy of personal data? There are already instances where national governments are seeking to compel companies to release personal data. For example it has been contended (see article) that the US Patriot act provides a legal basis for the US Government to access personal data held by servers by companies operating within its jurisdiction but not its borders (i.e. having some form of US-based commercial presence, even when the servers themselves are located in a different national jurisdiction.

The collection of personal information by one organisation is an important issue – but the correlation of multiple separate data sets and the migration of personal information to other databases are also significant concerns. It depends on who holds the right to the information itself and where that information is physically located. Privacy laws vary in different national jurisdictions – with significant variances between, for example, laws in the United States and the European Union (with the latter having higher privacy safeguards/requirements). Global companies often receive information in one country and then process it in a different country where a different regulatory framework applies. Therefore in a globalised world it becomes ever more challenging to ensure uniform standards of privacy.

These new developments also open the door for companies to engage in price discrimination based on personal data – for example in relation to the provision of discriminatory insurance policies based on enhanced knowledge of people's lifestyle and dietary habits harvested from multiple online databases based upon online behaviour/choices.

The importance of building a legislative wall between governments and private entities which hold personal data was highlighted. In the US the 1986 Privacy Act attempted to do this – but this legislation is now obsolete in the modern information age. There is a pressing need for a legal framework which effectively prohibits Internet service providers and private repositories of personal data from acquiescing to government requests (or pressure) to release this information without due process. This is particularly important in terms of requests which cut across national jurisdictions. It was also suggested that such a framework should also be operated in relation to government departments sharing personal information – for example between the public health authorities and immigration authorities.

It was pointed out that many governments are reluctant to accept foreign companies refusing to hand over data held on domestic servers based on protections afforded by their own country's legal framework – and that in many instances such companies eventually give in (e.g. RIM in India).

Centralisation of services is increasingly irresistible from an industry perspective because of the rise of mobile. Users want to be able to access their data from any device, which effectively requires that data and services be based on a cloud-based server. Whilst the open source community correctly identifies that individual households running their own servers would be the best way to safeguard privacy, civil liberties, freedom and competition – in reality consumers are unlikely to do this, which makes private sector operated cloud-based servers and services the most attractive and feasible option. Few individuals will want to actively administer their own server infrastructure.

It was pointed out that open source intelligence statistical techniques are able to collect, correlate and triangulate data in such a way as to de-anonymize previously anonymous information. In this context any potential mechanisms designed to protect private information could be subject to circumvention – and Internet users need to be educated on the importance of such developments, while organisations and entities which employ such techniques unlawfully should be held liable for such transgressions.

Current levels of trust in the online world may eventually plateau or even significantly decrease. Right now many people are quite comfortable with sharing significant amounts of personal information online (either via social networks or online activity tracking systems) – but this is likely to change. As the Internet matures people (and particularly young people) will wake up to the potential consequences of their behaviour online. This may create a broader and more energetic and innovative market for online privacy tools.

3.6   The future impact of open government and open data initiatives

For the benefits of open government data to be fully realised there needs to be a greater professionalization of information management skills within the public sector – both in terms of the quality of the data acquired/recorded and the referencing/indexing regimes applied to that data to allow multiple data sets to be interoperable and intelligible.

It was contended that the process of governments aggregating public data can be described as developing a tax payer funded data resource using public property (data collected from citizens). Offering that resource back to tax payers to use for private and commercial applications is essentially government returning that property to the citizen. It was also suggested that in the future the public sector may also seek to monetise the data it collects in the same way that social networks and private companies do today.

By 2020 governments will have realised that it takes more than rhetoric to deliver effective and transparent open government services. Currently what is available in terms of open government services and data is mainly supply driven, when in reality it needs to be driven by citizen demand. There will also be an added importance placed on mechanisms or intermediaries which make it easier for citizens to interact with open government services – given that the act of merely making such services available will be insufficient in driving citizen uptake and engagement with these services.

Governments will need to work with other organisations and partners to improve the use-ability of open government interfaces. Intermediaries can play a role in helping governments provide information which is retrievable for citizens and ensure that it is available in a way which is valuable and useful for citizens. At present a lot of potentially valuable information is buried several clicks down within the architecture of government websites.

3.7   Online engagement and identity

There is also an issue with open government services and interactions using social media in terms of identifying the electorate. Traditional electoral systems go to great lengths to ensure that each eligible individual is connected with one singular vote. When a particular government initiative, proposal or programme has 20,000 likes (or online endorsements) it is difficult to determine how many of these come from one individual registering multiple times – or even if those endorsements originate from people who are either under age or residents of other national jurisdictions.

On the positive side – the ability offer an online endorsement (via social media and other related mechanisms) to politicians and leaders from countries other than your own gives a global voice to citizens who lack the right to participate foreign political systems – even when those political system (e.g. the US) frequently take decisions which have a significant impact on their social and economic livelihoods. This trend also has the capacity to further empower and energise online diasporas.

It was also pointed out that the value/significance of an online "like" is limited given the minimal barriers and cost to citizens expressing themselves in this way through a single mouse click – in comparison to citizens actually organising, mobilising and proactively advocating, which carries far greater weight and substance.

3.8   Evidence based policy making

Improving standards of health, welfare and lifestyle are crucial in developing countries. Effective approaches depend upon authenticated information and evidence-based policy making and consumer choice. The capacity of new hyper-connected information technologies to disseminate health information is an unprecedented opportunity. Relatively simple targets such as expanding the availability of reliable information on pregnancy, sexually transmitted diseases and rape can help transform the lives of the next female generation in Africa and beyond. It was predicted that we will see substantial changes in the status of women in many parts of the world over the next 10 years, driven by increasing access to hyper-connected information technologies.

Evidence based policy making depends upon the quality of the evidence used. The debate around climate change is interesting because there are large disagreements around the evidence – even when relying upon automated atmospheric temperature observations. Libraries have a role in terms of maintaining our capability of curating, understanding and preserving evidence upon which current and future policies can be based.

4 Economic and demographic trends

4.1 Trends in migration, population and demographics

African immigration to Europe is decreasing and members of the African diaspora are returning home. Whilst some have concerns about the stability of domestic African governments and the quality of infrastructure – there are many who are concluding that they can't wait for the public sector to deliver the solution and that the diaspora need to work alongside communities to generate these solutions themselves.

More broadly the traditional syndrome of "brain drain" from developing to developed world is becoming increasingly less relevant because the Internet allows diaspora communities to contribute politically, socially and economically to their home countries and communities of origin.

In the developed world economies have evolved to depend less on manufacturing and manual labour which to an extent diminishes the challenges of an ageing population. Nevertheless, this situation still poses a problem for established welfare and pension systems where an increasing number of elderly citizens depend upon a decreasing number of young people to generate the necessary tax base to support them in their old age.

4.2 The developing world benefits from a demographic and economic competitive advantage

It was suggested that the disparity between developed world and developing world incomes will begin to narrow – with potentially unpleasant repercussions in the developing world. For example, as $40K incomes drop to $30K in developed countries, $10K incomes will rise to $20K in developing countries. Many services and functions can now be provided remotely which will benefit the developing world in terms of further job creation.

There is a significant correlation between economic growth in the developed world over the last 30 years and immigration patterns. For example Canada imports around a million new immigrants per hear (3% of the population) – and the growth rate of the Canadian economy is usually around 3%. As countries in the developing world start to exploit the demographic advantage associated with young and growing populations, the developed world will continue to struggle with the economic challenges of an ageing population/workforce. This will cause significant disruption over the next 10-20 years.

China has invested a lot of resources in Africa and has gained significant political influence. However, there is also a growing realisation that the deal China is offering in Africa is not substantially different from the deal offered by Western countries during the 1960s.

Alongside the rise of the middle class in Africa, 40% of Africa's population still lives within diaspora communities in other countries. This diaspora is now returning home to set up businesses, investing their money and skills and penetrating policy making circles. However there is a need to educate young people on how to appreciate and exploit the value and resources in their own countries – rather than allowing foreign operators to monopolise the high margin components of the

supply/value chain (for example in the area of mining of minerals and metals). There needs to be more coordinated national and transnational discussion and debate about how to better exploit and share existing innovation.

It was suggested that there are limitations to bi-polar approaches which split the world in developed and developing countries. For example, China is currently experiencing rapid rates of economic growth, although their competitive advantage is substantially based on large social and economic inequalities. As those inequalities become increasingly difficult to maintain in the face of rising pressure for political, social and economic freedom, then this competitive advantage will start to be eroded. Higher levels of welfare and environmental protection for Chinese citizens will inevitably involve higher costs and therefore higher prices for Chinese exports.

4.3   The potential for economic dis-intermediation in developing countries

It was commented that it can be misleading to focus too much on where the next billion dollar company will be founded – given that in aggregate billion dollar companies' account for a small minority of economic activity when compared to the vast array of small and medium sized firms. The exciting future proposition is not just whether an African company will become the next Google (although this may well happen) – but whether the thousands and thousands of small and medium sized enterprises will begin to dis-intermediate developed world firms who have been acting as middlemen in the international economic equation (occupying the most high margin areas of the value chain).

The product branding industry is insufficiently developed in Africa which creates problems in relation to effective brand protection. Western companies will usually have far more success in taking an African product and marketing it within developed economies than African companies themselves. This needs to be addressed through better awareness and education of African entrepreneurs.

4.4   How will the developed world respond to these economic challenges?

There is also a risk that the demographic and economic challenges facing the developed world in the face of rising competition from developing economies may yield increasingly protectionist economic responses. This could be achieved in stealth by applying artificially complex standards and compliance requirements (for example in the field of telecommunications) which make it difficult for developing world companies to compete with domestic companies in the developing world.

In response it was contended that such protectionist approaches could be significantly damaging to developed world economies in the long term – and that realisation of this would be likely to involve those countries opening up immigration and increasing the use of entrepreneurial visas.

4.5   The shortcomings of labour intensive development pathways

Historically labour intensive economies are less effective. Labour shortages incentivise innovation - which was one of the primary drivers behind the industrial and manufacturing revolutions in the West. The traditional route towards development has been the manufacture of goods using low cost labour. However, in light of the present urgency in cultivating sustainable development pathways and mitigating the effects of climate change this approach is no longer compatible. Therefore one of the central challenges is to ensure that the developing world increasingly follows a developmental

approach driven by rising levels of skills and innovation instead of just exploiting low labour costs. However it was recognised that this will be exceptionally difficult as it involves invoking the "do as I say not as I do" axiom.

The emergence of China, Brazil, Russia and India as global economic actors will certainly involve a reconfiguration as to where global power lies – although there will also potentially be additional challenges in relation to shortages of food, housing and resources alongside environmental factors.

One of the primary differences between the developed and developing world is the point at which they invested in infrastructure. It is more expensive now to build road and rail networks, and invest in housing than it was 50 years ago. Countries that have a backlog in infrastructure investments will struggle unless they have significant reserves of natural resources (e.g. oil and gas) or high standards of domestic governance.

4.6   The decreasing importance of location and the reanimation of communities

A key trend is that for the first time in human history people can participate in the global economy from anywhere. Communities are using the Internet in different ways – but we are starting to see the notion of Gross Domestic Local Product (GDLP) becoming increasingly relevant as a tool for policy makers at regional and national level, given that communities will increasingly become key drivers and providers of employment. Innovation in the availability of microfinance also represents a significant opportunity for successful community development and local entrepreneurship.

Public libraries in Chile have helped small businesses get online so that now they selling products that they used to sell in courtyards to a national and international market. Community libraries in Nepal have empowered local women to sell honey which serves to sustainably fund both the public library and support local community infrastructure projects.

4.7   Intergenerational trends and technology adoption

Adopting technology is not a one-off task – it is an iterative and on-going process, given that technology is continuously evolving and adapting. This automatically confers a competitive advantage on the young who are better placed to assimilate and absorb new concepts and working methods. However, research has demonstrated that the older generation find newer touch screen device interfaces to be far more user friendly and intuitive to operate than the old mouse and keyboard combination.

100% adoption is not necessary in the developing world to achieve significant social and economic impacts. In India currently only 15 million people have Internet access at home (of which probably 12 million work in the ICT industry). If that figure rose over the next few years to 100 million (still a fraction of India's 1.2 billion citizens) that would clearly have substantial positive social and economic consequences.

Need to foster mechanisms and opportunities for intergenerational learning, which is a process that can benefit both old and young alike, whilst creating social capital which can trigger new forms of economic activity.

4.8 Increasing urbanisation

By 2030 70% of the world's population will live in cities – and yet a potential long term trend could be for people to exploit the arrival of increased hyper-connectivity to relocate themselves to smaller communities which will in turn reactivate the economic, social and cultural fortunes of those communities.

The trend towards urbanisation can also have benefits in terms of governments and municipal authorities taking advantage of concentrated populations to administer services (which are more costly to provide across spread out populations). This can also involve the reuse of inner city spaces and the intelligent design of new spaces and infrastructure to maximise the livelihoods and sustainability of those urban populations.

5 Technological trends

5.1 The future of automated translation technology

Use of automated translation can be problematic in diplomatically sensitive circumstances. In some instances the use of free but imperfect or inaccurate tools can have negative outcomes. Frequent problems are encountered in processing acronyms and industry or sector specific terms as well as vernacular/colloquial expressions and jokes. It was conceded that in more informal settings even imperfect automated translation still has the capacity to provide valuable/helpful levels of access to multilingual resources.

In 5-10 years there will be automated translation techniques which will adequately support 90% of most communication needs. This will involve a combination of statistical and artificial intelligence methods along with increased mobilisation of crowd-sourced input. India in particular is potentially fertile ground for supporting advances in this area given the number of official languages in that country alongside high level intellectual and engineering resources. In general terms it was predicted that within a decade there will be more and better automated translation services which will be serving more people across a greater range of languages.

5.2 The future of filtering, personalisation and behavioural targeting

Artificial intelligence techniques are already being used by the intelligence community to analyse large numbers of articles, blogs and websites in order to assess moods and trends. The next step will be for these kinds of approaches to be rolled out with increasing frequency in the consumer sector (which is already the case to an extent in terms of online product recommendations and behavioural advertising) to generate valuable data for suppliers of commercial products and services. This will increasingly be about second guessing what options particular users want and providing them automatically. As users become increasingly at home with such services their behaviour and approach to using information and technology will be accordingly altered.

Some advanced that this will be a positive time saving development – and has significant implications in relation to new approaches to education. Is it relevant to teach children to memorise key facts or statistics that they can easily find out through a search engine? In a context where

information is progressively easier to identify and acquire, education approaches should focus more on how to authenticate and exploit this information rather than committing it to memory.

There is a distinction between finding the information you need and finding the information that commercial entities have persuaded you that you need in order to maintain their revenue streams. While the use of automated filtering and personal tailoring of information and services is valuable in helping us navigate the vast and expanding universe of available content and services – the importance of choice should not be ignored. Choice is a central concept within economics, and where the availability of choice is constrained or reduced then arguably freedom is constrained or reduced as well. These restrictions may serve to undermine opportunities for spontaneous or creative discovery of ideas and concepts which exists outside our day to day terms of reference (serendipitous discovery). It was advanced that citizens need to be educated and provided with tools which effectively constitute sharp needles they can use to puncture their filter bubbles.

The concept of the online filter bubble was substantially derived from the work of American legal scholar Cass Sunstein. Sunstein argued that individuals with certain political and ideological leanings tended to consume media and information which confirms their preconceived beliefs and inclinations (Democrats watching CNN and Republicans watching Fox News). For example it could be argued that if reading your daily Twitter feed (news feeds from Twitter users you are following) doesn't regularly make you irate or upset then you are probably not following a sufficiently diverse cross-section of society.

5.3 The Internet expands the diversity and availability of low cost information and content

In contrast it was suggested that the Internet itself should be seen as the sharp needle which has punctured the historical information filter bubble. During the immediate pre-Internet age and television represented the primary source of news and information (with newspapers and radio operating as more distant secondary sources). With the arrival of the Internet this limited range of information choices has exponentially expanded beyond recognition delivering a spectrum of social, political and cultural content which simply would never have been accessible in the pre-digital age. The presumption that people are only exposed to online content and opinions they already agree with is mistaken. On social networks people are bombarded from all sides by newsfeeds, posts, blogs and links from more diverse sources than they have ever previously encountered.

Much of our previous appetite for content diversity was constrained by the costs of accessing information. An individual might be interested in a range of different areas but would lack the sufficient resources to acquire content or information across all those areas of interest. With the arrival of the Internet this cost barrier disappears which empowers and enables individuals to radically expand the horizons of their consumption of news, content and information. Optimists would argue that information technology drives more (as opposed to less) opportunities for diversity of experience.

5.4 A burgeoning private sector market for services which address information overload

Being overwhelmed by information is a developed world consumer problem which information technology companies will spend significant resources trying to solve given the significant

opportunities for profit in this equation. It was also suggested that there is a generational component to this – whereby older generations are more likely to feel overwhelmed by the myriad of different potential sources of information and content, the young are more likely to metabolize these developments by employing new tools and techniques to effectively manage these information sources. It was predicted that private companies (both large corporations and start-ups) will invest significant amounts of money to develop services which will relieve the human brain of having to deal with functions and activities which are menial enough that they could be covered equally as well or better by a machine.

People increasingly rely upon social networks (e.g. Facebook and Twitter) and professional networks (LinkedIn) to filter, recommend and suggest information they might be interested in. This process also plays a part in undermining traditional broadcast news delivery channels and promoting more flexible on-demand style consumption of information and media.

5.5   The future impact of 3D Printing

It was predicted that the adoption of 3D printing technologies will revolutionise manufacturing in Africa and reduce reliance on Indian and Chinese imports. The most disruptive technologies are usually those which are cheap enough to be adopted and used by large numbers of people. 3D printing technology will become increasingly low cost and support cheap and rapid prototyping processes which enable people to swiftly turn ideas into physical tools and products. 3D printers currently produce solid thermoplastic objects, but this could soon expand to cover metal and ceramic objects. Libraries could be key community providers of access to this new technology.

One of the biggest looming issues surrounding 3D printing is the shadow of oppressive international copyright regimes and the likelihood that many innovative and useful functions (particularly in the developing world) will be considered violations of intellectual property rights.

One of the chief sources of China's economic competitive advantage is not simply low cost labour (many countries offer labour at lower cost) but their capacity to offer rapid prototyping of products. One of the key economic benefits of 3D printing will be to enable many other developing countries to offer this facility.

It was also suggested that low cost 3D printing could also support a greater propensity among consumers to repair products, devices and appliances (if small but crucial replacement parts can be quickly and easily manufactured). However this would depend upon the availability of the digital designs/data files which could support such activity – which may of course be restrained by copyright and IPR regulations.

5.6   A borderless Internet challenges national legal frameworks and jurisdictions

The capacity of the Internet to connect people and businesses across national jurisdictions has begun to steadily erode the power and relevance of the traditional nation state. However, it would seem that few of these nation states have fully woken up to that reality. As governments start to recognise this development, it is probable that they will react by attempting to divide or segment the Internet on a national basis – which will lead to an increasingly balkanised Internet experience.

In many ways historically speaking the Internet has gotten a "free pass" from governments for longer than might have been expected.

Right now there is rising concern on the part of governments seeking to apply their national laws to a global borderless Internet. Ranging from the prohibition of Nazi propaganda in Germany to the prohibition of anti-monarchy statements and expression in Thailand – many countries proscribe specific types of behaviour within the boundaries of their nation state which the Internet makes progressively more difficult to effectively enforce. Sites like Twitter and YouTube receive daily court orders in different countries asking them to remove material which is considered defamatory or inflammatory in a particular national jurisdiction (ranging from hate speech to jokes, political criticism or statements which are deemed to be unacceptable or perceived to undermine public morals). Many of these laws (such as the hate speech laws in France and Germany) were enacted using perfectly sound democratic processes and principles. This domain effectively represents the thin end of the wedge where governments will set publically acceptable precedents for regulating Internet content – precedents which are then likely to pave the way for further expansion of the scope and reach of this regulation to other areas of content and Internet activity.

5.7   The importance of digital preservation

It will become increasingly important to address the long term sustainability of both physical and digital information and ensure that this knowledge is diffused across society. Traditionally libraries have served as the archivists of information and knowledge – potentially this approach should be applied to the digital world. Without a comprehensive approach to digital preservation, physical books may be lost forever while inane Facebook comments will be preserved for eternity. We currently create more new digital information each day than was created in during all of human history. If physical books are not available online they might as well not exist. Historically speaking less than 1% of human knowledge was captured in physical books, which makes those that remain even more valuable given that vast amount of information and knowledge that we have already failed to capture/acquire.

A balance needs to be struck between implementing top down centralised information management structures/regulation and harnessing the capacity of this Internet for horizontal communication and engagement whilst drawing upon the innovative potential of crowd generated information and knowledge.