

Papers Submitted by IFLA Trend Report Experts - Full Texts

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The contributions enclosed in this document are framed by specific questions asked in the "Call for Papers" leading up to the Expert Meeting. They should serve as a stimulating starting point to the discussions, in conjunction with the literature review.

CATEGORY 1: Cross-cutting Political and Regulatory trends

Q5: How will tendencies towards a) greater transparency and open government; and b) political censorship, control and surveillance be likely to interact/develop over the next decade? How do we strike an appropriate balance between freedom and security?

The Internet has the potential to bring more transparency to governments and will therefore in theory promote democracy. As the literature survey explains, some observers say that the Internet will become, as it continues to take importance, one of the main warrantors for democracy in the world. This was a message initially relayed by civil society. In recent times, this message appears to have spread to some democratic governments as well as inter-governmental organisations. The big eye opener has been the Arab Spring. Even Gulf countries are now taking the political potential of the Internet much more seriously.¹

Two types of monitoring can be implemented for greater transparency:

- In-house monitoring – implementing e-government and automating tasks that would have otherwise been subject to a possibility of corruption. This is generally welcomed by all governments as their definition of "transparency"
- Outside monitoring – a task often performed by the political opposition, incorporating the monitoring of e-government services but also going further into enquiry, naming and shaming of out of line politicians

Both of these types of monitoring are catalysed by Information Technology. However, the use of Information Technology at all levels brings forth a discord:

- Greater transparency can only be achieved through the use of methods that will constantly be able to monitor and publish and irregularities. Is surveillance of politicians warrantable when surveillance of electors is refused? How far should it go?

¹ First Arabic Internet Governance Forum (IGF), Kuwait City, October 2012

- Any monitor could be lured to believe that all is well. As politicians acquire knowledge of Information Technology as a whole (as opposed to merely audio-visual and written media), it becomes increasingly possible for them to produce smoke screens and deceit and engage in “information war” – softly referred as campaigning
- A politically inclined security apparatus could be used to monitor the independent monitors:
 - Any whistleblower could be identified faster – and such identification is a significant chilling effect
 - Any whistleblower could be fed information so as to discredit it

As a result, if technology is used to bring greater transparency to a more open government, the legal framework needs to accept this transparency as being “non reprehensible”. If dissemination of information obtained thanks to greater transparency is traced back thanks to better control and surveillance, there is a risk to end up at a negative sum game scenario for democracy.

The balance of freedom vs. security is evolving and getting increasingly complex. The independence of the security apparatus would need to be enforced by courts – but it would be hard to have technological safeguards against abuse. Tracing the tracers is a cat and mouse game.

The warrant of democracy is therefore still firmly in the hands of politicians who need to make sure that the justice system remains independent and that legislation does not allow for chilling effects to overwhelm the use of technology to bring transparency in government.

This is where the world is somehow split into two tendencies.

- Democratic countries
 - today’s technology provides technical means to perform any kind of enforcement, eavesdropping and identification
 - the legislative state should provide the safeguards for such an abuse of power
 - it is therefore important that any new technical means to *eavesdrop* on population should be linked to legislation that will prevent abuse of such powers and also allows for an appeals process
 - law enforcement is independent of politics
- Undemocratic countries
 - Information Technology and the Internet could be used as a means to seal power (technical means)
 - Propaganda (using a more powerful and personalised medium to brainwash)

- hardware/software (firewalls) and filters
- tracing of political opponents
- there is no separation of politics with law enforcement

Bearing in mind this binary situation three scenarios therefore come to mind for the future:

1-1. convergence between democratic countries and undemocratic countries, with democratic countries becoming more undemocratic, through the mission creep of citizen “security”, where control of information and censorship are slowly implemented, bit by bit, for the pretence of saving lives from terrorism (or other great threats).

1-2. convergence between democratic countries and undemocratic countries, where more and more undemocratic countries crumble under the positive influence of greater transparency brought by the Internet, thus pinpointing officials and politicians benefiting from a corrupt regime

2-1. divergence where democratic countries continue on their path to further transparency by implementing further e-government and stamping down on corruption whilst undemocratic countries lock up their networks and use technology to control their citizens².

Relating to experience from my participation at the World Conference in International Telecommunications³, Scenario 2-1 appears to be the current path taken with regards to the Internet. However, there are instances when politicians in democratic countries have proposed scenario 1-1 – and this is of great concern since rolling back from such slippery slope is harder than sliding down.

It takes more time to dry a toe than to dip it in the water.

CATEGORY 2: Social Trends

Q3: How can we capitalise on the positive benefits of increased (technology assisted) access to information and enhanced possibilities for collective mobilisation while mitigating the risks?

Bearing in mind that “One person’s terrorist is another person’s freedom fighter”⁴ the question is equally as hard as defining the threat of terrorism itself⁵. The challenge itself is not the increased technology access to information. The challenge is the qualification of this information as being appropriate or not.

² see my answer to **Category 4** further down

³ World Conference on International Telecommunications (WCIT), Dubai, December 2012

⁴ Seymour, Gerald ; “Harry’s Game: a novel“ ; Random House ; New York ; 1975

⁵ Ganor, Boaz ; “Is One Man’s Terrorist Another Man’s Freedom Fighter ?” ; ICT – International Institute for Counter-Terrorism; downloaded from Web site.

<http://www.ict.org.il/ResearchPublications/tabid/64/Articlsid/432/currentpage/1/Default.aspx>

Focussing on the Risks:

- In *long term use* multimedia content, one possibility of *self regulation* is that readers themselves flag the material as being inappropriate. As a result, the information flow is hindered as soon as it leaves its “comfort zone” when it spreads in unsympathetic circles. The possibility of broad distribution is slowed down. However, this does not stop the spread of pernicious material in like-minded circles.
- Collective mobilisation however relies mostly on instant messaging and immediate readership. The window of opportunity that is opened by a posting being accessible and this posting being removed due to negative peer reviews is long enough for the immediate nature of the information to spread just like it does in instant messaging systems. Short of filtering this information using complex semantic analysis, very little else can be done to mitigate risks – especially if semantic analysis risks being abused to curtail freedom of speech.
- At a national level, some governments have formulated laws to be able to take down such material or shut the telecommunications network down altogether. From discussing the matter with an Egyptian Blogger⁶, the shutting down of Internet service had the exact opposite effect than the one desired: people following the Arab Spring events remotely, ended up going in the streets to be informed – and this led to the fall of the regime.
- The cutting of access to telecommunication networks and censorship only has a short term effect, as the population finds a way around the blocking. Today’s technology allows for such counter-action thanks to affordable powerful computing resources.
 - o There is a risk of a cat and mouse game
 - Extension into “whack-a-mole” censorship, where the censored information springs up elsewhere
 - Firewall leaks
 - Virtual Private Networks
 - Encryption to make information harder to filter and detect

We therefore need to approach this problem, again with a coordinated solution:

- International law enforcement cooperation to detect material that is reprehensible in a majority of countries (for example, pedopornography, terrorism etc.) and act locally to make arrests in

⁶ “Internet Town Hall: Emerging Issues for the Online Community”, CBS Interactive Studios, San Francisco, March 2011. <http://thepublicvoice.org/townhall2011/>

the real world. It is particularly important to emphasize the international aspect of the law which trumps any local politically-oriented motive that could be found in local or national laws

- Use of soft solutions to counter harmful information with facts. Indeed, a valid countermeasure that might be used is to issue counter-arguments to the information being sent out so as to mitigate the effect of the pernicious information.
 - o In commercial and political circumstances, the setting up of standby task forces which could intervene in defending the “official line” is a solution
 - o Reliance on facts is a convincing factor, hence the establishment of reliable factual databases that the task force could use is of great importance
 - o This type of arrangement is already in place in the private sector when it comes to brand management and public relations

The risk is to think that using a hard line will make harmful information “disappear”. Quite the contrary, it might make it more popular and harder to detect for law enforcement. In addition, a hard line attitude would undoubtedly stifle innovation because it will blunt the potential for innovation which was brought by the free flow of information and increased telecommunications.

CATEGORY 3

Q1: How will the consumptive tastes, preferences and political/economic aspirations of the new global middle class affect the demographic and cultural landscape of the information environment?

- A larger middle class might not entirely mean a better informed middle class
 - o Some middle class will keep very much up to date with information and will wish to take an active part in the events relating to them, whether of political or economic nature. Some will be completely oblivious to this type of information and not wish to take part at all.
 - o Some percentage of the population will fall into the trap of being manipulated. One could speak of the same today, but with the current media manipulation, there is a traceable “ownership” of such information. Furthermore, it is already well documented. In a deregulated world, sourcing the “ownership” of the manipulation will be increasingly hard, let alone documenting it. Web sites do exist to denounce hoaxes – but who reads them?
- A growing consumer market is an opportunity for online services
 - o In the Short to Medium terms, this is likely to reinforce traditional server-client scenarios where the majority of Internet users will be using Internet services that will be provided by content providers, at the detriment of user-generated content which is likely to represent a smaller share of traffic.

- In the long term, as those Internet users start becoming technology savvy, they will start generating content too – but in the meantime, if the Internet’s architecture of client/server content delivery changes the overall architecture of the Internet, making it less user-centric but more content-centric, hence optimising larger content providers, there is a danger that user generated content will not provide enough profit generation to infrastructure providers, for it to be prioritised. As a result, there is a risk that user-generated content will suffer a second level prioritisation (slower access; bandwidth restrictions; higher costs). With most corporate content generated in developed countries, this risks being at the expense of developing countries. There is also a risk of losing very valuable cultural content and a monopolising of the Internet’s “collective memory”.
- There is a mismatch between the concept of a growing middle class making full use of the Internet through bandwidth-hungry broadband services and network congestion which is increasingly evident. The flat pricing model is at risk from an increase in use of high bandwidth; some proposed solutions include a tiered service access based on traffic. There is therefore a risk that whilst the middle class in developed economies will be able to afford higher access fees related to the increased volume of content they “consume”, the middle class in developing economies will simply not be able to afford the broadband content they aspire to access. This is further exacerbated by lower band infrastructure found in developing countries.

The global middle class is therefore unlikely to be afforded the same level of access to information across the world due to costs, unless open competition principles are sustained to keep costs low. Even based on this assumption, it is likely that worldwide telecommunications would be dominated by multinational telecommunication corporations who will be inclined to practice a more rigid billing model in developing countries, as a percentage of the population’s average income.

CATEGORY 4

Q1: How can we balance the benefits of increasingly intelligent and automated data collection and processing against concerns about the privacy and security of personal information?

Data collection today is not constrained to the Internet: it is present in every action in the “real” world too, from shopping to travelling, working etc.

- If this is left to Technology, we have passed the point of no return: today it is technically possible to follow someone in their daily life simply with image recognition, their mobile telephone, their credit card and their Internet use
 - Image recognition: tracking in physical space;
 - Mobile telephone: tracking in physical space; tracking of communications;
 - Credit card: tracking in physical space; tracking of lifestyle purchases and activities;

- Internet use: tracking in physical space; tracking of lifestyle purchases and activities; tracking of communications; tracking of information access.

With a worldwide network such as the Internet, it is very difficult to have worldwide standards of acceptance concerning tracking of individuals bearing concerns for the privacy and security of personal information. Some countries do not even have any kind of legislation concerning privacy.

It is clear that a limitation of data collection and sharing is needed:

- Limitation on a national level (this first step is probably easiest to implement);
- Coordination worldwide on acceptable standards of tracking (this needs to be started now, but there does not appear to be any natural forum or authority to coordinate this);
- Establishment of legislation relating to tracking use. In principle, this is a natural step which should be taken at national level. However, tracking of customers has a high marketable value and it is unlikely that any consumer-based economy would consider restricting tracking of consumers if this was to affect competitiveness of its marketing industry, its service providers and its industry. Indeed, as Internet services disregard boundaries, services would just physically move elsewhere.

One possibility to control tracking is to implement restrictions on a large enough market via an overarching authority. For example, the European Union could define guidelines for tracking, both in the online space but also in the offline world. Privacy concerns in Europe are already high on the agenda and this looks like a natural progression.

Already today we are seeing tracking being used nefariously by some states

- This might have the potential to further divide the world into zones with several layers of tracking
- Tracking is likely to reinforce the oppression of some citizens in some states, the only current barriers being cost and information overflow. As computing power increases and computing costs decrease this natural barrier is likely to fall

Whilst being helpful in the fight against terrorism and crime, higher levels of tracking open the door to abuse. Any tracking system needs to have safeguards in its “DNA” so as to avoid it being used nefariously. An incentive to creating safeguards might be summarised as follows: in 1913, nobody forecast the rise of Hitler and the millions of deaths that resulted from his rise to power 20 years later. How can we be sure that another Hitler will not rise to power 20 years from now? With complex tracking, whether commercial or government, how likely is it that it would be impossible to defeat a new threat?

Security of personal information could be promoted through the general use of encryption. Ultimately, the rise in online crime relating to identity theft will require the use by individuals of strong encryption

to hold their personal data safe. Again, legislation will probably need to be established to place control of one's own personal information firmly in the hands of the individual.

Q2: Will the semantic web enhance access to information, research productivity and economic innovation – or will it simultaneously support more efficient Internet censorship, user monitoring and content blocking?

Internet censorship, user monitoring and content blocking is already possible with or without a semantic Web. If automated translators today are powerful enough to grasp the meaning of a sentence to interpret it, monitoring is already in place. If facial recognition is already in place in consumer software and Social Networking sites, monitoring is possible.

With this in mind, the Semantic Web is just another means to classify information so as to be able to access it more efficiently. It remains to be seen whether the semantic Web will make access to information more equitable. Today, vast amounts of the Internet are suffering from the fact that a single search engine has an overwhelming market share. As a result, the algorithm used to find information is the same for the majority of Internet users and will therefore exclusively privilege some content at the expense of other content. The semantic Web will just perpetuate this, unless there is a real competition in the search engine space.

Of possible benefit would be the implementation of several independent search engines, each with their own algorithms, whether triggered by keywords, semantics or commercial placement, all performing meta-searches across more search engines. This has been tried in the past... but failed. Alas, it was found that the multiplication of results ranging from “better” to “worse” search engines made the information less pertinent to a user than by using a single search engine rated to be “better”. Pertinence of information for a general consumer has come at a disadvantage to diversity. On the face of it, pertinence is a good thing; however it has the tendency to rely too much on a single source, which opens the door to information manipulation.

Unfortunately the diversity of sources is not going to be addressed in the semantic Web except if a new range of semantic web search engines, each with its different algorithm, is implemented. With the market being what it is, it is hard to imagine this happening today except if this was implemented strategically – and even then, the market would decide, so the initiative might swim against the flow. Market forces favour concentration of resources around a leader and the Internet is known to respond dynamically to trends.

Perhaps by exploring subject niches and diversifying the search for information in those niches, would the vast parts of the “Deep Web”⁷ be reachable and the saying “if you are not found in Google, you don't exist” will stop applying.

⁷ http://en.wikipedia.org/wiki/Deep_Web

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CATEGORY 1: Cross-cutting Political and Regulatory trends

- Migration towards new intellectual property, copyright and patent regimes which accommodate technological innovation and new social patterns of consumption whilst supporting creativity and economic sustainability in both the developed and developing world.
- Greater transparency, access to public sector data and a growing momentum behind open government initiatives designed to empower citizens, reduce corruption and strengthen governance through new technologies.
- An increased appetite and capacity for certain governments to monitor their citizens' activities and control/limit the information they can access, assisted by progressively sophisticated approaches including the bulk monitoring of communications data across multiple platforms.
- The challenges of regulating a global borderless Internet at a supranational level whilst accommodating overlapping and competing national legal jurisdictions and frameworks will continue.

Q5: How will tendencies towards a) greater transparency and open government; and b) political censorship, control and surveillance be likely to interact/develop over the next decade? How do we strike an appropriate balance between freedom and security?

Increased transparency and open government will have profound impacts. Open government has both a voluntary and involuntary dimension. On the one hand governments are, with varying degree of success and political will, trying to be more open and transparent. On the other hand, keeping secrets, or even maintaining reasonable confidentiality, has become incredibly difficult. The result is that governance processes and institutions are increasingly over-exposed. This does have positive impact in creating greater (voluntary or involuntary) transparency and awareness among citizens of what is happening at 'government' level, but not necessarily at 'governance' level.

Information becomes available in a very immediate sense. Often there will be awareness of a decision or policy before it has been 'cooked' properly. Negative or 'bad' behaviour on the part of governments become public before internal processes have been able to deal with them. Government incapacity and corruption is exposed in a way that is very challenging to them. Dealing with being watched and having your mistakes exposed all the time, as an institution, is extremely difficult—governments don't like this. One of the big challenges in poor governance is political will, but lack of capacity and lack of resources are also major contributors.

Trends in openness challenge governments enormously. The is still a relatively short-term response to this—an approach that saw ICTs as a means of fast-tracking progress from inefficient or poor governance to good governance—and that has not turned out to be true. In fact, I think the contrary:

rather than the ICT revolution making it easier for governments that lack capacity and the political will to improve their governance practices, it makes it harder.

Citizens are more empowered by these trends, but are governments? For a government to be a good government and do its job well, it does need to be empowered. But most of all it needs to be accountable and legitimate – two interconnected processes. The sad thing is that so many governments are responding to these trends by becoming more authoritarian rather than by becoming more legitimate.

Institutional capacity is absolutely critical. Political will is also absolutely critical. A government must want to be a good government, one that makes policy and implements policy and regulation in the interest of the public, with a particular focus on those who are excluded in its society. Once that is in place, I think they will manage.

Governments also need more human capacity development. But what will happen with governance will be a consequence of institutional capacity development at all levels of society, because the stronger other institutions (civil society, the media, institutions of learning and culture, and so on) are at a national level, the more likely you are to have a stronger public sector. Investments in education and in political and social development that integrate information and communication trends and tools can make a difference. This opens up enormous opportunities for the library sector.

Freedom and security are not mutually exclusive. They should never be set off against one another. They depend on one another. There can be no security on the internet without people having the freedom to communicate, to use encryption tools to protect their communications. Security is not just important to States and businesses, it is also important to internet users.

Criminal acts and use of the internet exist, but they should be dealt with through due process not by restricting online freedoms.

CATEGORY 2: Social Trends

- Behavioural advertising and personalised search optimisation contribute to the creation of balkanised “echo chamber communities” insulated from unfamiliar or alternative cultures and perspectives.
- The size of the digital universe will continue to expand exponentially with information and content shaped by a kaleidoscope of social, political, corporate (and on occasion extremist) agendas.
- Technology which makes access to information easier and cheaper while facilitating communication and collective action will support both positive outcomes (empowering individuals, increasing civic participation and corporate accountability) and negative outcomes (empowering cyber criminals and terrorist/extremist networks).

- Populations in the developed world will continue to age, while the developing world grows younger leading to differing usage patterns and competing demands on the information environment. Hyperconnectivity expands the influence and role of migrants and diasporas.
- Rising impact of online education resources (including open access to scholarly research and massive open online courses) combined with the emergence of new media and information literacy skills offer flexible non-formal and informal skill accumulation pathways.

Q1: Will the Internet foster further social balkanisation and division?

Yes, and no. But ultimately I think more 'no' than yes. There are efforts by e.g. internet companies to 'balkanise', to create walled gardens, but if they make the walls too high or too tight they might end up making less profit, reaching fewer people.

I also think that users are enormously inventive and this will always serve as a counter to their drive to engage with one another, to collaborate, to create.

I don't see the internet as something that fosters division. In the sense that it is a platform of media and content, yet it may. E.g. computer games and films that depict bad guys speaking with Arabic accents and hanging out in tents in deserts. But the Cold War is not that far back; then in the West the villains were all communists, Russian or East European or Chinese. But public perception has already changed.

The problem with divisions is that they exist, and that in some cases new exclusions are getting bigger. The internet will remain in my view a tool to close those divides, but those divides need to be addressed at an offline level as well as online.

Poverty, discrimination and other exclusions and divisions in the real world will find its way onto the internet; and, it will affect how people are able to access and use the internet – therefore they have to be addressed head-on.

Q2: What role will information literacy skills play in enabling us to effectively manage, digest and correctly interpret content within a rapidly expanding digital universe?

A critical role. The challenges will be around how to build these skills. how to get them across in direct but also indirect ways, and how to hard wire them in the tools and applications people use on the internet. E.g. by making protections of privacy and personal data the default options on social media platforms.

Q3: How can we capitalise on the positive benefits of increased (technology assisted) access to information and enhanced possibilities for collective mobilisation while mitigating the risks?

This is difficult. Primarily because there is so much change in how people access and generate information at the level of platforms, and tools.

I think that the library community needs to be able to monitor these trends, respond to them and utilise them. But, most of all I think it needs to 'go back to basics' at the level of building on its understanding of how human beings create and use and share information and how trends in technology and social change more broadly is impacting on these processes. Questions to address would include:

- Are people learning differently?
- Absorbing information differently?
- Creating content differently?
- Are notions of authorship, and ownership changing?
- Are notions of community and how communities identify with and relate to information that they use, and create, changing?
- What can libraries do to strengthen 'good' information flows? What role at the level of tools, spaces, capacity building, content aggregation and dissemination?
- How are relationships with users evolving and how can increased access to networks and technologies provide opportunities and challenges for libraries? But these of course are questions that the library sector is already addressing.

Q1: How can we balance the benefits of increasingly intelligent and automated data collection and processing against concerns about the privacy and security of personal information?

Here libraries can be at the forefront of creating awareness among users of these risks, and also trying to counter them in the sector's policy advocacy work. Libraries have played a very important role in advocacy around intellectual property at global level. Much of this was done in partnership with others – governments, NGOs, etc.. They can also do this in collaborating with processes and organisations that are trying to get both governments and businesses to make policies that protect privacy, and that tries to prevent 'unfair' (needs to be defined) exploitation of personal information.

Protections will need to be reactive, and proactive, and libraries are able to play a role at both levels. Libraries can also try to promote themselves as places, platforms, spaces, for providing access to information in ways that is 'safe' – where users can be confident that they are not being monitored or surveyed, or their personal data being misused.

Divina Frau-Meigs - Divina Frau-Meigs – Professor at l’Université de Paris III

Key relevant trends in the matter of media and information literacy

This report aims at providing answers to the following set of IFLA’s call for paper

Social trends

Q2: What role will information literacy skills play in enabling us to effectively manage, digest and correctly interpret content within a rapidly expanding digital universe?

Q5: How can we best leverage online education resources, new learning technologies (including mobile learning platforms) and non-formal/informal learning pathways to meet the widening skills gap in both the developed and developing world? How can we address the knowledge gap between students (digital natives) and teachers?

Technological trends

Q1: How can we balance the benefits of increasingly intelligent and automated data collection and processing against concerns about the privacy and security of personal information?

Q2: Will the semantic web enhance access to information, research productivity and economic innovation – or will it simultaneously support more efficient Internet censorship, user monitoring and content blocking?

Q3: Assuming current trends in artificial intelligence supported translation continue to progress, what will be the likely consequences of a truly global, accessible, multilingual and multicultural Internet?

I will be speaking from the perspective of the sociology of media uses and consider online practices, motivations and finalities. Then I will be considering how they affect Media and Information Literacy (MIL), focusing on “transliteracies” in particular. Finally, I will provide some views as to how these heavy trends affect the future of cultural institutions such as schools, libraries and other repositories of knowledge.⁸

I. Social and Cultural patterns of use

The previous pre-digital era status quo between the cultural industries, cultural producers and cultural infomediaries such as libraries, archives and museums (even universities) is being reshuffled online, with

⁸ Much of the material used in this analysis is based on two reports I recently made. The first report is called “Exploring the Evolving Mediascape: towards updating strategies, to face challenges and seize opportunities” for Unesco, in preparation for WSIS+10 in Paris, 25-27 February 2013. The second document is a background paper “Assessing the impact of digitisation on access to culture and creation, aggregation and curation of content” for the Council of Europe’s Conference of Ministers of Culture, to be held in Moscow, 15-16 April 2013.

an unavoidable shake-up for those that have underestimated, neglected or missed their transition to the digital era. Broadband and broadcast media intervene more and more in the ways people are empowered or inhibited in their creativity, their social learning and their cultural participation.

I.1 The Shuttle Screen Situation (beyond the split between print and screen cultures)

The current trend shows a “shuttle screen situation” in which what happens on the top surface screen of broadcast media sources for fiction (film, games...) is discussed within the deeper netroots screen of broadband media with feedback to the top surface screen (with fanfictions for example). The two subsystems of the “Information Society” era -TV-based developments (connected-TV) and Internet-based developments (Web-TV)- are competing against each other, with a multitude of formats such as tablets, smartphones, laptops and other forthcoming e-devices. Legacy publishing and media (books but also film and music) are being displaced as the preferred mode of creative output: long and short narrative forms (books and series) as well as images and sounds are fast migrating to the digital screen and its underlying IP infrastructure. This dominant trend can contribute to the cultural divide between media-rich and media-poor countries and communities, especially in terms of access to high-speed broadband, still rarely available to artists and creators.⁹

From the perspective of users, this mediated culture produces a seamless experience as both broadband and broadcast media are screen-based rather than script-based (even when they use text) with implications in terms of learning, from linear and structured forms of attention and dissertation to non-linear multi-tasking forms of consumption and production, altogether impacted by mobility, ubiquity and shareability. From the perspective of the users still, as shown by the resilience of publishing during the audiovisual era dominance, the digital equivalents of books and movies will persist—though displaced in importance—, because they fulfil cognitive needs and sensorial differentiations (the internal voice of reading or the hearing attention to music) that will, hopefully, remain reflected in the heterogeneous and generative media modes and formats of the digital era.

Broadcast media continue to be major providers of shared stories (novels, movies, games...) that are recycled and remixed on the digital networks of broadband media to produce new contents and comments because common narratives, be it online or offline, constitute a central piece of culture as social learning and human interaction. These engaging narratives have a great collective value, as they contribute so social interactions and provide a distributed intelligence of how to live together in culture as “cognitive network”.¹⁰ However, these stories also increasingly come from institutions other than “the media” and from individuals other than “artists”, with different perceptions of formats, genres, production values and quality. Such participants have emancipated themselves from the dominant figures of the author as creator or the user as consumer, often by producing collaborative pieces for

⁹ See, for instance, MARCEL network (Multimedia Art Research Centres and Electronic Laboratories), dedicated to high-speed broadband musical experimentation across borders <http://www.mmmarcel.org>.

¹⁰ M. Donald, 1991, *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition*, Cambridge, Harvard UP.

which no authorship is claimed. Other elements affecting content are the juxtaposition of parodies, copies, remixes together with original content whose worth and durability is difficult to evaluate.¹¹

I.2 The driving force of users' needs: self-actualization, play and life-longings

The social model that accounts for the shuttle screen situation and the rise of amateurs and pro-ams points to the centrality of the users' social and cognitive needs. These needs are complex and can be summed up in three key elements.

The first trend relates to "self-actualization"¹², defined as the desire for self-fulfilment and the use of media affordances to that effect. It can be seen in the display of reputation sites, the intense use of micro-blogging for updating profiles and interpersonal relationships, and also the exhibition of one's tastes and aesthetic preferences on websites that act like galleries or publishing outlets for fanfictions.

The second trend is "play"¹³ as related to problem-solving and to testing dynamic models of real-world processes without risk. It can be seen in the creation of personalized or monetized avatars in online role-playing videogames or simulated environments where artists and amateurs can design virtual realities of their own.

The third trend is based on the satisfaction of "life-longings"¹⁴, defined as the intense desires that are remote or unattainable and the use of compensatory strategies, as adaptive self-regulation to cope with blocked goals or incompleteness of real life. It relates to older users (in the original theory) but can also be applied to new comers (young people), as they evaluate their options and weigh their costs and benefits when engaging in online interactions, with conjoint focus on the past, present and the future, in search for symbolic sense-making of their practices.

This individual hierarchy of needs can be related to people in developed as well as developing countries. It is not without similarities with development economist Amartya Sen's notions of "functionings" and "capabilities", that associates communication to real freedoms, such as self-respect or the capacity for participation in community life, etc.¹⁵ Media can provide such affordances for collective intelligence and dissemination of knowledge, especially if they are made available in public spaces.

¹¹ D. Frau-Meigs, 2011, *Penser la société de l'écran. Dispositifs et usages*. Paris, Presses de la Sorbonne nouvelle.

¹² A. Maslow, 1970, *Motivation and personality* (2nd ed.), New York, Harper & Row.

¹³ D.W. Winnicott, 1971, *Playing and Reality*, London, Routledge ; see also D. Frau-Meigs, 2013 (forthcoming), "Child and Adolescent Well-Being From the Perspective of Media and Communication Studies" Ben-Arieh, A., Frones, I., Casas, F. and Korbin, J.E. (Eds.), *Handbook of Child Well-Being. Theory, Indicators, Measures and Policies*, Heidelberg, Springer.

¹⁴ S. Scheibe, A.M. Freund and P.B. Baltes, 2007, "Toward a Developmental Psychology of *Sehnsucht* (lifelongings): the optimal (Utopian) life" *Developmental Psychology*, pp. 778-795.

¹⁵ A. Sen, 1985, *Commodities and capabilities*, Amsterdam, North Holland.

I.3 Cultural practices as creation, aggregation and curation

Online activities that tend to build on symbolic or social capital evince such cognitive needs. Production of original content can be seen in the heavy volume of videos on YouTube for instance that present a very heterogeneous mix of broadcast television and user-generated homebrewed productions. An emerging trend in broadband media is self-publishing, generated by users themselves, as they take advantage of the low entry costs afforded to them to fulfil their needs for self-actualization and life-longings satisfaction. Self-publishing bypasses traditional broadcast and paper publishers, as authors distribute their work themselves, with software to that effect such as with Smashwords or platforms such as OverDrive or Amazon's Create Space.¹⁶ In 2012, Apple created iBooks Author, for interactive teaching iBooks for its iPad, with an End User Licence Agreement (EULA) for content-generators that gives it exclusive and unlimited distribution rights.¹⁷ This trend may be mitigated by other strategies, as some corporations have developed cost-per-click (CPC) systems such as Microsoft AdCenter or Google AdSense to test ways to monetize user-generated content by sharing the advertising revenue with creators, driving video posting online in particular.

More interestingly, online crowd-sourcing, as empowered by broadband media, often in the shape of open calls for problem-solving, appeals to a global network of people.¹⁸ It benefits from the contributions of pro-ams and amateurs, not any more the pre-digital era definition of the artist as a lonesome sui generis "genius". Pioneering successes such as Threadless (open calls for the production of T-shirt designs) or iStockphoto (open calls for royalty-free stock photography, animations, and video clips), exhibit alternative ways of producing cultural content, away from mainstream fashion and top-down design values. Some artists have been tapping this trend for crowd-sourced art, such as Sam Brown's *Explodingdog* (with finished pictures printed on canvas and sold to collectors) or Lorie Novak's *Collected Visions* (with randomly collected family snapshots that people place together to form a picture). Ambitious projects like **Swarmsketch** (one random topic a week) or **The One Million Masterpiece (online canvas of one million squares) openly invite artists to contribute to a work in progress.**¹⁹

This erodes the boundaries of professionalism as exemplified by the use of "modders" in the world of commercial video game developers, to tap on the creative practices of fans willing to modify or to add content to their favourite game. Knowledge and content production are taken away from specialists while individuals' skills and abilities, not always validated by degrees, diplomas and careers, are being recognized as a source of wealth. This array of literary, musical, artistic cultures relate less to ICTs than to new modes of producing and navigating with knowledge and content creation, together with the new

¹⁶ <http://www.smashwords.com/>; <http://www.overdrive.com/>; <http://www.createpace.com/>

¹⁷ <http://www.apple.com/legal/itunes/appstore/dev/stdeula/>

¹⁸ D. Brabham, 2008, "Crowdsourcing as a Model for Problem Solving" *Convergence: The International Journal of Research into New Media Technologies*, vol. 14 1 pp. 75–90, available at <http://con.sagepub.com/content/14/1/75>

¹⁹ www.swarmsketch.com/; <http://www.millionmasterpiece.com/>

social relations that they elicit.²⁰ New ways of creating, disseminating, recording, playing and simulating are thus emerging, though they are hardly recognized or even rewarded by mainstream culture.

These practices bring creativity into the more muddled territories of aggregation and curation and are motivated by self-actualization, play and life-longings as crowd-sourcers like to update their skills and their experiences while also hoping to be noticed on the marketplace of ideas and compensated for the worth of their work. Curation of one's life interests can be more personal; it is visible on the multitude of websites on design, cooking, interior-decorating, etc. Compensatory or alternative strategies are combined with curatorial tendencies as evinced on content sharing services such as Pinterest, Stylepin or visual bookmarking options such as Zootool.

This affordance is also known as "curated consumption", a term coined by trendwatching.com in 2004 to account for the growing role of users as trend-setters, reputation-builders and (self)curators thriving on social networks such as Flickr or Facebook.²¹ This new form of curation is not necessarily built on collection, hierarchy and professionalism and it impacts on traditional curatorial practices of museums and libraries, as it places pro-ams in this new role, with different criteria for choice on what is quality in art, what will stay and what will disappear in the future, with attendant heritage issues (what to preserve, what to discard). Such curation is no longer about scarcity of art and isolation in a high-culture environment but about managing abundance and shareability, by putting together pieces that make a new pattern in a new context, by third parties that are not all artists, far from it, though they can claim a certain level of (self-)taught expertise.

Such curation can be seen as a sorting-out complement to aggregation that corresponds to a search for alternative quality criteria in a chaotic digital world of abundance where interesting and unexpected, - some would say serendipitous-, connexions are made, that provide new statements for the shared meaning of culture. "Para-curatorial" practices appear as supplements to professional curation, with comments, additional links and performances of various kinds, with user aggregated comments on non-official websites. However, these uses and practices are not without interest for all media stakeholders as they fuel e-presence, attention, engagement, participation and interaction of unprecedented volume though quality is not ascertainable and ever more subjective.

These practices and needs also fit with more collective needs for participation in culture, with media as affordances for collective innovation and information dissemination. They can be further connected to "civic agency"²², defined as the capacity of human groups to act cooperatively on common issues in spite of diverging view. Civic agency requires a set of norms, symbols and practices that support and enhance the group's capacities for collective action. In this process, information and communication contents are recycled, remixed and re-used and put together into a dynamic repertoire of strategies for

²⁰ P. Lévy, 1995, *Qu'est-ce que le virtuel ?* Paris, La Découverte.

²¹ S. Rosenbaum, 2011, *Curation Nation: How to Win in a World Where Consumers are Creators*, New York, McGraw-Hill.

²² P. Dahlgren, 2006, "Doing Citizenship. The Cultural Origins of Civic Agency in the Public Sphere", *European Journal of Cultural Studies* 9 3, pp. 267-286.

appropriate participation in a given society.²³ These change the patterns of consumption as they tilt the balance towards participatory forms of culture that do not necessarily pertain to ownership.

I.4 The changing status of original content: windowing, versioning and merchandising

These needs and practices affect the way original content is distributed, with broadband media affording speedy information, speedy sales and unlimited storage, that allows for niche production and consumption, not to mention the internationalization of markets.²⁴ Evans and Schmalensee describe the new means in which original content can be distributed:

- Windowing: organizing the dissemination of one product on several types of vehicles (a movie in theatre, on DVD, on premium, commercial channels). The same consumer is targeted but at different moments. The chronology of media diffusion on various vehicles becomes important and it is often regulated;
- Versioning: changing the format and price of a product, so that different consumers can be reached who would not have been interested in first version (hardback book, paperback version, electronic version...). Reputation helps and will always benefit the first sector to produce the product, even if it is later sold to other sectors.
- Merchandising: adding products to the original product, with several formats and shapes, like creating figurines from Disney characters, or using a novel to make a movie... IP rights are important but less and less credible (and enforceable) as the derived products move away from the original.²⁵

Such variations on original content are likely to affect arts and arts outlets considerably, with new ways of creating content but also new status of copyright issues. Windowing is visible in the use and re-use of the same news items over several vehicles (television and internet websites for instance); versioning is visible with online extensions of original analogue creations, often for free; merchandising is at work with the addition of collector pieces, yearly print versions of select material ("best off") or the repurposing of content (with added expression, different context...). This very system is at the core of content aggregators that recombine windowing and versioning while submitting the new product to advertising and merchandising.

Such initiatives reveal a lack of visibility of how supply and demand sides interact to determine online value of content creation and appropriation. This can lead to a situation where high premium prices, strict licence restrictions and stringent advertising schemes may make it difficult for broadcast media outlets and cultural institutions such as libraries and archives to be viable and sustainable. Various scenarii around IP rights need to be considered, though a lot of legal uncertainty surrounds online

²³ D. Frau-Meigs, 2011, *Socialisation des jeunes et éducation aux médias*, Toulouse, Eres.

²⁴ C. Anderson, *The Long Trail. Why the Future of Business is Selling Less of More*, New York, Hyperion.

²⁵ D.S Evans and R. Schmalensee, 2005, *Paying with Plastic: The Digital Revolution in Buying and Borrowing*, Cambridge, MIT. Press.

cultural activities. Claims of abuse and misappropriation or even downright theft are made by various competitors as they see curation and aggregation lead to yet other forms of versioning and merchandizing that seems to be putting art and original content at risk. States and policy regulators will need to ensure legal rules are put in place that promote flexibility and free access to such forms of art appreciation as library lending or museum visiting. Member states may have to engage with WIPO to gather support for an internationally binding instrument on copyright use online, as argued by IFLA. Conditions for purchasing, licensing and overall pricing of online content will need to be carefully weighed. Exceptions and limitations (for fair use, archiving, education...) will need to be protected from stringent contracts to ensure public access to information and knowledge in the globalised cultural networks. Building an online public domain to disseminate the collective wealth of content and culture will also need to be a priority, especially for developing countries.

1.5 Vying Economic models: cultural goods vs. relational goods

From the perspective of the users, the shuttle screen situation seems to involve the search for cultural goods whose logic does not correspond to the pre-digital logic of cultural industries. These goods do not respond to rational choices of consumers but are rather tuned to “non-linear adaptive networks”²⁶ where the logic of use is stronger than the logic of supply-and-demand. The mechanisms for decision-making are related to non-rational choices based on socialization motivations (such as self-actualization, life-longing, playing, belonging, peering, wellbeing...).

Hence, in this new hyper-connected context, the emergence of two complementary (though traditionally opposed) types of goods: relational goods and experiential goods. Relational goods foster enduring interpersonal relationships and are local public goods (in the tradition of the “commons”), not necessarily related to market exchanges, maintained through non-contractual, coordinated actions, in line with “civic agency”.²⁷ Their value is predicated upon the interaction between people, especially the reciprocity in the pursuit of intimacy and mutual perceptions of understanding and caring, as evidenced in social networks where time spent “friending”, playing and curating about relationships and emotional involvement seems unlimited. Experiential goods must be experienced and tested before purchase is considered; they are predicated on use prior to ownership (contrary to consumer goods that must be bought before they are tried).²⁸ They rest on social learning that creates habits of use, and media contents such as music, video games or software applications lend themselves to such tailored needs.

Experiential goods have integrated the socio-cognitive needs of online users. They have provided a number of intermediary services before (trials and tests) and after sales (satisfaction surveys); they have shifted their platform access from Graphical User Interface (GUI) to User-Centered Design (UCD) to be user-friendly, reinforcing in the process their proximity with relational goods. To many users, iTunes or YouTube feel like a relational good though they rely on advertising and information brokerage models,

²⁶ J. Holland, 2006, “Studying Complex Adaptive Systems” *Journal of Systems Science and Complexity* 19,1, pp. 1-8.

²⁷ C. J. Uhlener, 1989, “Relational goods and participation: incorporating sociability in a theory of rational action” *Public Choice* 62, pp. 253-285; C. Anderson, 2006, *The Long Tail. Why the Future of Business is Selling Less of More*, New York, Hyperion.

²⁸ R. E. Caves, 2000, *Creative Industries: Contracts Between Art and Commerce*, Cambridge, Harvard UP.

producing the general myth that Internet is free and open (or low-cost), even when using proprietary tools and platforms. This perception has implications for culture and art in particular as the users have been in the habit of not paying for online content, because it feels like relational goods to them, making it very difficult to find a sustainable model for pre-digital media outlets and for legacy arts. It also has implications for public service goods and public domain commons, as their defence seems less necessary due to the ambiguous blurring of the barriers between experiential goods and relational goods.

The co-existence of such goods with other cultural goods does not go without tensions in the business world as the logic of free-feeing spectacles meets the logic of pay-per-view services. The economic models of the pre-digital era are still extent, like the flow model of mass media or the editorial model of news as well as the information brokerage model where infomediaries collect advertising revenue.²⁹ They are visible in the audiovisual sector that sells “premium” contents on niche cable networks or satellite movie channels; they can be seen in the cultural industries’ struggle to protect their digital rights managements behind pay-walls accessible via credit-cards that exclude the poor; they appear in the increase of licence and copyright restrictions for lending to public libraries, making their curatorial tasks of collection and dissemination difficult.

These models are challenged both by online piracy and illegal dissemination of copyrighted content on sites like Megaupload or Torrent and by digital “pure player” models based on information-provision and data-mining by third-parties that exploit the individual and collective needs of users in terms of self-actualization, play, life-longings and civic agency. They feature the intervention of non-audiovisual actors from the hardware and software industries that become content-aggregators or by ISPs that push for information brokerage as in the example of Google and its Adsense system for collecting advertising revenues. New means of mining and valorising content around aggregation and curation thus take into account not only consumption habits but also socialization processes and practices that allow more and more direct development of services with added-value to the person and to business.

I.6 Shifting sands challenging pre-digital status quo

1/ highbrow culture vs. lowbrow culture components: painting, dance and opera used to be contrasted positively to movies, pop music and videogames. Yet the attendance to museums and live spectacles of the classical kind is dropping and public financing is reducing while videogames are becoming the biggest cultural industry in Hollywood and elsewhere though not reaching the full status of 8th art that it could pretend to (considering the creativity they mobilize). This trend doubles with the generational divide, highbrow culture being connected to older people and lowbrow culture to youth.

2/ institutional loci of culture vs. non-official sites: museums, libraries, archives and other cultural centres used to be contrasted positively to street art, game arcades and websites. Yet for most people non-official sites have become the first place they go to in order to have their first encounter with culture, be it by browsing practices or more participatory relations.

²⁹ Evans and Schmalensee, 2005, *Paying with Plastic*; X. Greffe et N. Sonnac, 2008, *Culture Web. Création, contenus, économie numérique*. Paris, Dalloz; see also P. Bouquillion et Y. Combès, 2007, *Les industries de la culture et de la communication en mutation*, Paris, L’Harmattan.

3/ high context cultures vs. low context cultures: implicit exchanges of information and participation through social activities used to be the norm in many countries while explicit exchanges of information and participation to be transmitted via media performances and spectacles were considered as less desirable. Yet broadband media with their social needs for self-actualization and life-longings satisfaction generate a lot of explicit exchanges of all kinds, displacing the accepted limits of what is implicit and private.

4/ homogeneous cultures vs. heterogeneous cultures: some nations with low immigration levels and little mix of indigenous people are becoming heterogeneous cultures with high immigration levels and various indigenous groups, whose cultural needs are not easily taken into account. Such groups can make up for lack of cultural content by relying on transborder media content and diasporic communication that can be a challenge to their integration and to their contribution to the national identity.

As they reconfigure the mediascape, such sea changes offer unexpected opportunities for all stakeholders but also unprecedented risks. Far from signalling the demise of culture, these evolving issues and values usher in a new age of media amplification and diversification that holds promises for democratization, participation, empowerment and creation of cultural capital. But they also bring serious risks to access to public interest content and challenges for analogue and legacy arts intermediaries with physical infrastructures for the provision of public access to cultural goods such as libraries, archives, universities and museums.

II. Media education: towards transliteracies

To embrace fully and effectively such cognitive needs and the affordances allowed by media to produce and modify original content, literacy has to be combined with equity of access (such as libraries, schools, media centers...). Access is a complex term, defined in terms of degrees by international bodies, with a growing consensus that universal access (or threshold access) is not enough, especially as universal access does not bind the private sector to cover all sections and constituencies of a country (contrary to universal service), leaving poor people and communities at risk to fall through the net. To reach connectedness beyond connectivity, effective access (or real access) is needed, that is to say people with enough training, skills and competences to use the ICT-driven media. The last degree has to do with sustainable access (or access for opportunity), where the users exhibit real appropriation of all the opportunities afforded by the mediated culture and can effect change, from the demand-side rather than just the supply-side, with the capacity to create and innovate for themselves.

II.1 Transliteracy and pro-poor empowerment: fighting “illelectronism” for sustainable access

To become screen-smart in the shuttle screen situation, users have to fight “illelectronism”, that is to say the kind of illiteracy that results not only from the incapacity to read, write and count with digital screens but also from the lack of mastery over the news skills required to deal with information (searching, navigating, networking, coding...). To become screen-smart, new literacies are required (visual literacy, information literacy, digital numeracy...), to be added to the indispensable old ones.

Illectronism thwarts effective access and sustainable access as it prevents a critical understanding of and full engagement with creation, curation, aggregation and civic agency.

The broadcast and broadband media allow for play, simulation and augmented reality to foster cultural remix and multimodal circulation, as people can navigate across many sources of information looking for help or additional resources. They tend to do so in a tacit intuitive manner that does not necessarily ensure full appropriation of the media and effective knowledge construction; they need to attach their practices to a repertoire of e-strategies and e-competences that incorporates skills such as computing and programming, so as not to depend exclusively on the platforms designed by the corporate sector to increase their “portal effect” (e.g. the capacity to keep the user constantly within the bounds of their commercial offer, with a continuous and seamless flow of related services and spectacles).

But to be fully effective, research shows that such plans need to add online resources and courses to the technical access of computers. They need to provide support for the training of teachers and librarians as well as students in information and communications technology skills, to master code for innovative and participatory purposes (being able to upload content...). To cover the more or less stable set of uses and practices in relation to computers and digital tools and platforms, and to understand their design, their functioning and their finalities, media education has to move to “bundled literacies” (that embark visual literacy, news literacy, computer literacy...) or “transliteracy”.³⁰ Transliteracy takes into account the double meaning of today’s convergence around the notion of “information” and tries to effect the necessary transition from basic literacy (3r’s) to enriched literacy:

- 1) the multi-media dimensions of current literacy —being able to read, write, count and compute with print and digital tools and via all sorts of formats from book to blog;
- 2) the trans-domain requirements for digitally sustainable literacy —being able to code and to search, test, validate, modify information as understood in computation (code), in communication (news) and in library science (document and data).³¹

Transliteracy goes beyond the rather functional approaches currently proposed by the European Union or the United States, based on competences, to encourage a more integrated system of editorializing content for mediated cultures, with engaging narratives and projects and sense-making activities, such as collaborative crowd-sourcing or curated co-construction of knowledge. It is constructed on a full-fledged integration of the notion of “information” as it has evolved with digital convergence (from news to code and data), in its relation to knowledge and culture.³²

³⁰ See conference http://www.stef.ens-cachan.fr/manifs/translit/colloque_translit.html; See work of Alan Liu, Transliteracies Project available at <http://transliteracies.english.ucsb.edu/category/research-project> and Sue Thomas, Production and Research in Transliteracy (PART) group available at <http://nlabnetworks.typepad.com/transliteracy/>

³¹ D. Frau-Meigs, 2012, “Transliteracy as the new research horizon for media and information literacy”, *Media Studies*, vol 3 n°6 pp. 14-27.

³² A. Serres, 2012, *Dans le labyrinthe. Évaluer l'information sur internet*, Caen, C&F éditions.

In this context, transliteracy tries to go beyond the rather functional approaches currently extent that are mostly based on competences. It encompasses a more integrated system for creating, editorializing and interpreting content around the learner's needs, functionings and finalities.³³ The learners need to be capable of articulating knowledge (content level) and pertinent information search (access, validation...) in such a way as to construct their own understanding. They also need to be able to intergrate learning in cultural practices where content creation depends on information management, such as aggregation and curation, which can be seen as processes for sorting out the online noise, to make it reflect personal choices and establish real e-presence.

II.2 Transliteracy and e-presence

Long distance learning for all facilitates such situations of intercultural dialogue as all learners, whatever their national and ethnic identity, are brought together around a learning project, and develop different group dynamics to elaborate their tasks. Transliterate situations and affordances make it possible to establish online presence, not just as reputation but also more deeply as "e-presence". This e-presence is composed of different layers, among which Garrison and Anderson signal two: cognitive presence defined as "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry"; social presence defined as "the ability of participants in a community of inquiry to project themselves socially and emotionally, as 'real' people (i.e. their full personality), through the medium of communication being used".³⁴

Cognitive presence is about all the cognitive processes that associate facts and events to ideas and concepts, in a transitive movement from action to abstraction, that is crucial to reaching autonomy. It implies to make the transition from concepts to action explicit, and to communicate it via various outcomes and outputs. It is thus associated to critical thinking, as a high-order reflection process that incorporates discourse, imagination, intuition and action. It is built on two knowledge bases: the public information that is available online and offline and the learner's private world of experience and needs (self-actualization, life-longings, play).

Social presence lays the emphasis on the collaborative whereas cognitive presence lays the emphasis on the reflexive. Social presence is not at the same level as cognitive presence but it is necessary to turn online distance into proximity and engagement. Garrison and Anderson suggest three broad categories of social presence: affective socio-emotional feelings, open communication and cohesive communicative responses. Social presence has to do with creating interactions in non-verbal environments as much as visual environments.

Cognitive and social presence are necessary to show the importance of effective use over planned use and they are important to ensure full mastery over "designed" presence defined as the extent to which learners are aware of the constraints and the affordances made available to them by the medium of

³³ D. Frau-Meigs 2013 (forthcoming) "Transliteracy: sense-making mechanisms for establishing e-presence" Goteborg: UNESCO Clearinghouse issue on "media and information literacy and intercultural dialogue".

³⁴ D.R. Garrison and T. Anderson, 2006, *E-Learning in the 21st century. A framework for research and practice*. London, Routledge, pp. 28-29.

communication being used. This implies full recognition that many of the tools that are available for information aggregation, curation and creation are designed by others with their own finalities that in turn can affect their performance. The industrial designers have facilitated a number of options and hampered others, as their declared purpose is to favour usability, cancel ambiguity and enhance predictability.

As a result such interfaces are both extremely user-friendly and designer-controlled. But as a learning tool, such process has to be made explicit especially in its relation to platforms whose avowed economic model is data mining (via profiles, portfolios...). The learners have to mobilize their own cognitive scripts (as units of meaning and units of decision-making) and call on their experiences to adapt and control their own online performance and interaction with others. They have to call upon their representations of the authorities that control the performance of the digital tools and be able to tailor them to their own needs. In that sense, transliteracy needs to integrate a certain amount of computation and algorithmic knowledge, so that code is not an opaque sequel of digits but a transparent system of signs that is modifiable at the learners' will.

Transliteracy has the potential to enable learners to make sense of their experiences and the continuous social changes they need to expect, in particular the opening of the traditionally disjointed spaces of school and work as well as the greater empowerment of learners in locations other than schools (libraries, media centres, workplaces...). It also attempts to capture the nature and quality of engaging narratives and sense-making activities, such as collaborative crowd-sourcing or co-construction of knowledge. It aims at giving learners the mastery over the cultural and situational constraints around information as the raw and refined material of the "Information Society". It deals with the various ways of editorializing information in the digital era whose organisation stems from networks, screens, platforms and programmes where "documents" acquire a radically original plasticity. It also encompasses the transferability of diverse practices and skills in contexts that are differentiated in relation to information: at school and out-of-school, in the personal sphere and the professional sphere, in one's country or in cross-cultural exchanges with other countries and regions.

III. Policy-relevant consequences for institutions of culture

The policy-relevant consequences of such a situation imply the revision and retooling of old principles and missions and the addition of new ones. Some of the basic principles that led to the creation of cultural institutions still apply, around an enlarged and enriched notion of curation as heritage, stewardship, collection, but also para-curatorial practices and crowd-sourcing experiences. Other missions can be added such as equity of access, openness and participation. Finally education can be extended to transliteracy and its practices around information search and editorialization. To ensure the largest possible access and participation, cultural policies at large will need to promote circulation between lowbrow low context cultures and highbrow high context cultures. Each should incorporate a modicum of media (for instance, have media in museums and conversely show museums in media and as media)... It also means that governments but also IGOs and CSOs have to ensure access to cultural infrastructures, provide information about cultural resources, promote participation of citizens in culture and be accountable for inequalities and discriminations.

III.1 In relation to social trends

New challenges for cultural institutions lie in promoting access to and participation in culture/s, and in fostering individual needs and functionings, especially via information literacy skills to foster editorialization of documents and new modes of content creation.

Cultural institutions should establish their presence on line and offline, based on people's needs for self-actualization, play and life-longings. This may imply to change their current infrastructure and their physical premises. Infrastructure remains key to accommodate screen cultures alongside script cultures and encourage their cohabitation and complementarity in the future. Institutions of culture need to change their image of repositories of culture to become fablabs of culture. They are in a unique position to provide a setting for creativity and connectedness (by contrast with connectivity). They can ensure that relational goods continue to endure and to encourage face-to-face relationships. They can foster spaces for collective creativity where people can share their contents and give them material shape (like printing one's own books on the premises for instance). Conversely, they also need to identify new repositories of culture (websites, networks...) that are emerging on line and preserve them with heritage policies.

Cultural institutions should become places where MIL and transliteracy are available to young people and adults alike. Key skills for lifelong learning are related to information and communication competences. Media and Information literacy should be extended to transliteracy, adding computation skills so as to create learners that can be independent in the design of their digital tools, to establish their e-presence. This implies to ensure that librarians are also trained as educators, and that aspect of their mission be recognized in their status, to ensure full collaboration with the rest of the teaching body (as is the case of France where there is a competitive exam for teacher-librarians). Such a nationwide policy should effectively address the knowledge gap between learners and teachers.

Cultural institutions should add open online resources (OER) and courses to their supply of material available online and offline. They need to provide support for the training of teachers and students in information and communications technology skills, to master code for innovative and participatory purposes (being able to upload content...). They should collaborate with schools and universities to develop transliteracy curricula that allow for sustainable development, with emphasis on content- and process-competences. They can provide the capacity for outreach to a variety of actors (media producers, journalists, artists...). They can map out the professions at the interface between users and contents (such as ombudsmen, webmasters, list moderators, computer tutors, online coaches...) and train them with regard to media and information literacy. They need to extend their help to the netroots and communities of practice outside the schools, be it media labs, fablabs, Community Media Centers or other physical spaces for testing, practicing and participating with information.

Cultural institutions can use online education resources in formal and informal learning settings to bridge the skills gap in both the developed and developing world. They can share sense-making practices, materials in various languages, and build capacities by maintaining online networks of support. In order to ensure pro-poor empowerment, transliteracy must harness the transborder capacities of broadband media to make high quality education available to under-equipped locations and under-served populations. Open access initiatives can provide use to otherwise expensive and rare resources. Models such as Massive Open Online Courses (MOOCs) or Khan academy offer some perspectives as to how to make a digital culture savvy population but they need to be accompanied by human tutors. They also need human resources with library skills for maintaining, referencing and updating such materials.

Cultural institutions are uniquely placed to promote public interest and production of local and indigenous content on platforms that ensure the presence of minorities and the pluralism of their voices. They can play on the devolution to municipalities of the infra-national responsibilities for cultural development (with such examples as Creative Cities, European Capitals of Culture, Brazilian Points of culture...) that decentralize the notion of culture. They can enlarge the inclusion of their users and civil society organizations, to increase their participation in local content production and to strengthen intercultural dialogue via forms of artistic expression.

III.2 In relation to technological and economic trends

New challenges for cultural institutions at a time of social, economic and financial changes need to take into account the opportunities of the digital era and in interaction with civil society, with a view of promoting social justice and freedom of expression. Increasingly intelligent and automated data collection and processing requires policies to enhance digital access and protection of the privacy of users while fostering productivity and innovation.

Cultural institutions need to have a clearer view of the blurred differences between experiential goods and relational goods, as well as between Crowd Sourcing and Open sourcing. These have implications for dealing with the shuttle screen situation as well as the creation, aggregation and curation of online original content. They also have implications for the stewardship of the information commons.

Cultural institutions should retool their missions and instruments for their internal governance or self-regulation. Among the basic principles for such governance, there could be suggestions for the desirable characteristics of creation (originality, shareability...), curation (heritage, stewardship, collection...) and aggregation (windowing, versioning, merchandising...). Other principles should also be included such as equity of access (universal, effective and sustainable), openness and participation.

Cultural institutions need to re-engage governments about the issues of concentration of content ownership and the implications of the "portal effect". This is crucial in terms of pricing, licensing, borrowing and lending as well as in terms of independent forms of content creation, curation and aggregation. More transparency and accountability should be required from the private sector intermediaries. Currently unaddressed issues such as prohibitive pay-walls, damaging IP rights, cost of digital labour and means of rewarding online creativity should be tackled with a view of protecting and

promoting cultural diversity as well as minorities and poor communities who stand most to lose and risk digital exclusion. This may imply that cultural institutions become full-blown portals of their own.

Cultural institutions need to identify strategies for promoting and enhancing democratic access to culture and participation in cultural life. Inter alia, it means to call attention to their legitimacy as public interest networks for preserving and disseminating content. It also means to ensure users' rights to access to content, extending these rights to content based on collective collaboration and user-aggregated knowledge. It implies to monitor strategies that can potentially create discrimination of premium content vs. non-premium content, highbrow culture vs. lowbrow culture and therefore damage the diversity and pluralism of content as well as its shareability across borders.

Cultural institutions need to enhance their cooperation with like-minded organisations to spread their legitimacy and reduce risks of marginalisation. They can advocate for international measures on political dialogue on cultural matters, promoting cultural exchanges and equitable access to world markets for cultural goods and services. They can seek this through agreements that grant preferential treatment to developing countries or through assistance measures related to training and to the provision of financial and technical support (preserving cultural heritage, promoting cultural activities around the world)

Conclusion

The years to come are still going to see an explosion of innovations in ICT-driven media with crucial consequences in defining the balance between commercial interests and public interests. All parties involved will need to be ready to change the range of their options for negotiation, while not losing the main achievement brought by the digital era: the democratisation of access to and use of information, communication, knowledge and cultural content. Cultural institutions such as libraries, publishers, museums and universities are at risk if legal and regulatory support is not brought to them by states and if civil society (especially young people) is not made more aware of their public value. They may find themselves in need to create their own version of relational goods, offering users' multicultural experiences and affordances. Their legitimacy in terms of public goods that are of interest for all citizens, with opportunities for self-actualization, life-longings and civic agency, needs to be retooled and reasserted for the digital age.

John Houghton - Professorial Fellow at the Centre for Strategic Economic Studies

(general comments on draft literature review)

Brief comments on the review document

The review focuses primarily on consultancy and lobbying documents that are often produced for a particular effect. It is good that this leads to a balance in presenting all sides of the arguments, but as yet it rather lacks a sceptical and critical treatment of the content being reviewed.

There are a number of what seem to me to be rather extreme and sometimes false dichotomies presented, which gives the impression of a need for choice or trade-off. This may be due to drawing on opposing lobbying documents to set up the debate. However, I think it may misrepresent the situation and overlook opportunities for resolution.

There is a strong business sector focus and marketing bent in the identification of trends and issues. This is somewhat inevitable given that it is based on a review of futures, but there are more official government, semi-government and academic source on futures and foresighting that could provide a broader perspective (e.g. UK government foresighting, APEC futures, etc.).

Comments on themes

CATEGORY 1: Cross-cutting Political and Regulatory trends

Internet governance probably requires greater attention than the outline suggests.

Q1: What will be the likely characteristics of future intellectual property/copyright regimes?

Many of the activities fundamental to the Internet are, or can be, illegal under certain copyright regimes (e.g. caching, search engine previews, etc.), leading to reforms extending exceptions and/or fair use provisions that seek to enable innovation where there is an advantage to doing so and no material impact on rights holders.

Reform is a trade-off between interests, which has in recent years reflected the enormous power of vested interests in the film, music and publishing industries, far more than it reflects any legal, economic or market logic. Nevertheless, a number of developed countries (e.g. the UK, Canada, and Australia) appear to be moving towards regimes with greater emphasis on extended exceptions, safe harbour provisions, and/or fair use / fair dealing provisions. Licensing and exceptions are not alternatives, as seems to be implied in the review document.

Q2: Will these regimes be led by market driven liberalisation or technology driven enforcement?

I think this is a false dichotomy. New technological possibilities drive the push for liberalization, while the information and content industry incumbents tend to resist change. The latter can employ technology in enforcement, but the trade-off is between new players and incumbents, not between the market and technology.

Q3: How will these regimes cope with the needs of developed and developing economies?

The regimes are essentially national, with due regard to international and regional harmonization. I imagine that the trend towards extending exceptions, safe harbour and/or fair use / fair dealing provisions in developed countries will be beneficial for developing countries. However, I do not see that the needs of developed and developing countries are substantially different.

Q4: How will intellectual property rights interact with patent regimes?

Patents are IP, but they are a separate class facing somewhat different issues. I would expect to see separate development.

Q5: How will tendencies towards a) greater transparency and open government; and b) political censorship, control and surveillance be likely to interact/develop over the next decade? How do we strike an appropriate balance between freedom and security?

I think this is a false dichotomy. While political (government) surveillance is extensive and censorship is an important issue, private sector collection, use and loss of personal data is probably the bigger threat to freedom and security in most countries.

Ditto: security is freedom.

CATEGORY 2: Social Trends

In my opinion the review document gives far too much attention to good versus bad use of the Internet (e.g. open government vs. surveillance, participation vs. cyber-crime, etc.). Moreover the treatment seems rather naive as one person's terrorist is another person's freedom fighter. Whatever the technology, some will use it for good, others for ill. The review document seems rather too inclined to treat social issues as technical issues.

Q1: Will the Internet foster further social balkanisation and division?

It is not clear to me that the Internet has all that much impact on how people consume information or on minority social and political groups. People have always sought reinforcement for their beliefs and shunned opposing views (e.g. in subscribing to one newspaper rather than others), and could just as readily be more widely exposed on the Internet as they could be more narrowly focused. It depends on how the technology is used. As elsewhere, information literacy is crucial.

Q2: What role will information literacy skills play in enabling us to effectively manage, digest and correctly interpret content within a rapidly expanding digital universe?

Information literacy is crucial, with new areas and application emerging.

It is not true that an individual's ability to read and absorb information is fixed in an age where information can be searched and analysed automatically.

Q3: How can we capitalise on the positive benefits of increased (technology assisted) access to information and enhanced possibilities for collective mobilisation while mitigating the risks?

Assuming the chief risk is to privacy, there is a clear need for greater attention to skills relating to handling personal information and privacy regulations. However, since much personal information is already openly available and traded, and use of Internet functionality demands its forfeiture, the more practical regulatory approach would be to control what can be done with it.

CATEGORY 3: Economic Trends

Broadband access is a worldwide problem. The intervention of governments in developed and developing countries in building broadband networks suggests that the private sector has failed to some extent, and that different "public good" business models are required.

Q1: How will the consumptive tastes, preferences and political/economic aspirations of the new global middle class affect the demographic and cultural landscape of the information environment?

It is not clear why the focus is on the influence of the middle class. What about the others?

Q2: How can governments in the developing world ~~can~~ successfully transition from taxing technology purchases and infrastructure projects towards incentivising technology adoption as multiplier of jobs and economic growth?

It is not at all clear what the question means. Taxation is a national matter, although as factors of production become increasingly mobile in a globalised world (e.g. capital and labour) attention shifts towards taxing immobile factors (e.g. resources and mining taxes) and consumption (e.g. VAT/GST) rather than income or trade (e.g. tariffs).

General purpose technologies, such as the Internet, can be a strong force promoting economic growth and development. However, it is one factor among many, as the example of Japan's recent economic performance shows. Japan was one of the earliest and most advanced adopters of broadband infrastructure and communications, and yet has experience very poor economic performance over the last 10-15 years.

Where there are government operate monopolies over telecommunications, prices can be inflated as a means of generating revenues. However, this problem has declined over recent years as de-regulation has spread.

Q3: How long can vertically integrated business models (e.g. Amazon/Apple) resist long term trends towards standardisation and interoperability?

Q4: What would be the likely consequences of new proprietary horizontal cross-industry business models on the information environment?

The general shift is away from business/revenue models that depend on the content towards models that build value-adding services on free content. Proprietary, walled-garden models (e.g. Apple) can be useful in capturing the value of information in times of transition. For example, the i-Tunes model of distributing music revolutionized the recorded music industry, both in terms of removing the main motivation for piracy and generating revenue from the content. However, Apple captured the revenue from the music industry, and now depends increasingly on i-Tunes related services add-ons. The same is happening to film and TV content.

At the moment, it seems that the basic online model is free content and value-adding services, be it through use of the content in apps, providing search and discovery services, or providing more focused value-adding (e.g. data analytics for behaviourally targeted advertising).

Q5: What are the implications of mobile payments and financial services for the developing world?

Developing countries typically depend more on mobile and less on fixed line communications and Internet access than do developed countries. Consequently, all mobile applications and services are likely to be more important for developing than developed countries.

The impacts of mobile payments, micro-payments and micro-financing are likely to be large.

CATEGORY 4: Technological Trends

Not sure what mobile means (e.g. is wifi mobile?). While there are some important opportunities in location-based content services and in remote sensing, I do not see mobile as such a big deal.

Q5: How can the explosion of data traffic be accommodated within a sustainable business model which delivers the necessary investment in new communications infrastructure whilst preserving the principle of net neutrality and a level playing field for the transmission and consumption of information from different public, commercial and individual sources?

Communications investment (and regulation, as the two are connected) are key issues. There is no doubt that data traffic volumes are increasing and over-the-top services are an issue of some concern. Recent shifts include:

- Governments investing in broadband (esp. fibre) networks, which should imply the adoption of a social returns model in assessing cost-benefit. This brings a different light to network use, relative to purely privately constructed networks. Both priorities and the relative length of payback periods may affect the relative priorities of activities, shifting towards such applications as education and health.
- The trend for mobiles is away from premium pricing speed towards pricing volume (and apply data caps), which is becoming increasingly applied to fixed networks and solve/alleviate the problem from a congestion and an economic point of view.

- Peering arrangements may also further evolve in terms of the balance between access to users (e.g. ISP subscribers) and content (e.g. major content sources at organisational and/or national levels).

As a principle, net neutrality is laudable, but can become difficult in practice. Many carriers do discriminate between data types and services (e.g. blocking or restricting peer-to-peer traffic).

John Houghton - Professorial Fellow at the Centre for Strategic Economic Studies (main submission)

Background

The focus of my research is on information economics and business/revenue models for information-based businesses. Major strands of work of relevance to this meeting include:

- A number of studies, spanning Australia, Europe and North America, exploring the costs and benefits of Open Access (OA) publishing and dissemination for research journals, scholarly monographs, and “grey literature” at the national, sectoral and institutional levels;
- Studies looking at the use side, including an exploration of the information access needs and practices of small high-technology firms in Denmark, which estimated the cost of access barriers and the value of access to academic research for the firms;
- Case studies of the agency and national costs and benefits of open access to public sector information (PSI), looking at national statistics, fundamental geospatial data, and hydrological data;
- A series of studies examining the value of research data curation and sharing services, including the UK Economic and Social Data Service, the Archaeological Data Service, and the British Atmospheric Data Centre; and
- A number of studies looking at copyright reform, online privacy and the use of personal data.

In all of these areas the focus is on both the substantive topics and the economic methods that can be used to address them (See <http://www.cfses.com/projects/knowledge-access.htm>).

Comments on issues and themes

As I found the literature review document and the specific issues and questions raised rather difficult to comprehend, I make some general comments on issues as I see them. More direct comments on the review document are attached separately.

Taking a lead from the review document, I comment on: Open Access and related information business models; copyright reform and internet services; and personal data and online privacy. I also add a theme: namely, the role of information and ICTs in climate change adaptation and mitigation, and in fostering and enabling sustainable development more generally.

Open Access and related information business/revenue models

I believe that Open Access (OA) to research publications and data, and to public sector information (PSI), are more important trends than is reflected in the draft review document. Open Source is a related, but

slightly different issue. Open Access focuses on how the content is published and disseminated, rather than how it is produced and developed.

The economic rationale for public funding of research is that the knowledge created has public good characteristics (i.e. it is not exhausted in consumption and it is difficult to exclude others from consuming it). Consequently, the yardstick for the return on the public investment in research is social return, rather than simply private return, and those returns are maximised through dissemination, use and re-use. Any cost to access that is above the marginal cost of distribution, essentially zero when distributed in digital form on the Internet, involves a deadweight loss as it reduces use.

OA publishing and dissemination of research findings makes them available for anyone to use at very little cost, and because no access toll is charged there is no reason to put restrictions on how the material can be used. This enables the use of standardised, non-restrictive licensing, such as CC-BY. Thus, OA is about making the content free (libre) and free (gratis).

Many studies have shown that OA publishing and dissemination of research articles and monographs would be more cost-effective than the current, largely subscription, system.³⁵ Most research institutions would save money, and the wider economic and social benefits would be significant.³⁶ More open science would also reduce scientific fraud and plagiarism, and accelerate the process of research discovery and application/commercialisation. All of which would have substantial economic and social impacts.

OA involves a transformation of information business models and dissemination (e.g. by libraries). As is increasingly common online, the OA publishing model shifts from charging for the content to giving away the content and charging for related value-adding services – be it at the ingest end with author services such as peer review, or at the access end with user services such as search and discovery or text mining and analysis. Research libraries partially reverse their role, providing access to the research institutions outputs as well as aiding their institution's staff and students in accessing the outputs of others, while public libraries shift from collections towards connections. Nevertheless, there remains a very significant and increasingly challenging role in curation and preservation. I believe that this is not yet fully recognised in the review document.

³⁵ Houghton, J.W. and Swan, A. (2013) Planting the Green Seeds for a Golden Harvest: Comments and Clarifications on "Going for Gold" *D-Lib Magazine* 19(1/2) January/February 2013 (<http://www.dlib.org/dlib/january13/houghton/01houghton.html>). Swan, A. and Houghton, J.W. (2012) *Going for Gold? The costs and benefits of Gold Open Access for UK research institutions: Further economic modelling*. Report to the UK Open Access Implementation Group (July 2012) (<http://ie-repository.jisc.ac.uk/610/>).

³⁶ Houghton, J.W., Rasmussen, B., Sheehan, P.J., Oppenheim, C., Morris, A., Creaser, C., Greenwood, H., Summers, M. and Gourlay, A. (2009) *Economic Implications of Alternative Scholarly Publishing Models: Exploring the Costs and Benefits*, Report to The Joint Information Systems Committee (JISC) by Victoria University & Loughborough University (<http://www.jisc.ac.uk/publications/publications/economicpublishingmodelsfinalreport>). See also the Addendum to the Report ([http://www.cfses.com/EI-ASPM/JISC%20EI-ASPM%20Report%20\(Addendum%20April%2009\).pdf](http://www.cfses.com/EI-ASPM/JISC%20EI-ASPM%20Report%20(Addendum%20April%2009).pdf)).

Research data curation and sharing extends the OA model to data, allowing a greatly increased transparency of science, and enabling research time/cost savings through use and re-use.³⁷ Emerging work on valuing research data centres and services suggests that they are highly valued by their users, contribute to research efficiency, and exhibit benefits well in excess of costs.³⁸ Again the challenge is curation and preservation.

Making Public Sector Information (PSI) openly and freely available can also have very significant economic and social benefits. Transparency and open access to PSI can affect efficiency and productivity in many ways. These include:

- Direct efficiency and productivity impacts for government agencies, through activity cost savings, activity streamlining, enhancing service delivery, improving the services delivered, etc.;
- Efficiency and productivity impacts for users of government information and services, through accession and activity cost savings, simplified and/or improved services, integration of services, etc.;
- Wider impacts for users, through enabling the development of innovative products and services drawing on openly accessible PSI, thereby generating new revenue streams and business opportunities; and
- Wider impacts for the consumers of these new products and services, through cost savings, enhanced product and services availability.³⁹

OA transforms information business models and has far reaching economic and social impacts, as well as implications for information professionals and organizations involved in information access, dissemination, curation and preservation.

OA is of enormous importance for developing countries, not only in enabling access to worldwide research where there has been limited capacity to pay the price of toll access, but also in giving a voice to developing country research that is often of greater relevance to developing countries through the creation of new platforms.

³⁷ Beagrie, N., Chruszcz, J. and Lavoie, B. (2008) *Keeping Research Data Safe*, JISC, London and Bristol (<http://www.jisc.ac.uk/publications/publications/keepingresearchdatasafe.aspx>). Beagrie, N., Lavoie, B., and Woollard, M. (2010) *Keeping Research Data Safe 2 Final Report* JISC, London and Bristol (<http://www.jisc.ac.uk/publications/reports/2010/keepingresearchdatasafe2.aspx#downloads>).

³⁸ Beagrie, N., Houghton, J.W., Palaiologk, A. and Williams, P. (2012) *Economic Evaluation of Research Data Infrastructure* (ESDS), Economic and Social Research Council, London (http://www.esrc.ac.uk/images/ESDS_Economic_Impact_Evaluation_tcm8-22229.pdf).

See also studies of the Archaeological Data Service (<http://archaeologydataservice.ac.uk/research/impact>) and British Atmospheric Data Centre (<http://www.beagrie.com/badc.php>).

³⁹ Houghton, J.W. and Gruen, N. (2012) *Transparency and Productivity*, Transparency Occasional Paper No 2, Australian and New Zealand School of Government (<http://www.anzsog.edu.au/research/publications/other-publications>).

OA has no particular relationship to copyright, which is automatic in its application. An issue worth consideration in the context of OA is moves in some jurisdictions towards requiring the registration of copyright. Many economists would see this as a more efficient and effective system, and the case becomes increasingly compelling when so much content is generated and made available online under circumstances that make it clear that the creator expects no return.

Copyright, internet services and related business models

I believe there are important aspects to current “Digital Agenda” copyright reforms that are not yet fully reflected in the review document.

Driven by technology enabling unforeseen uses of information, many of the activities fundamental to the Internet are, or can be, illegal under certain copyright regimes (e.g. caching, search engine previews, etc.). This is leading to reforms aimed at extending exceptions and/or fair use / fair dealing and safe harbour provisions, which seek to enable innovation where there is an advantage to doing so and no material negative impact on rights holders (e.g. current reforms in the United Kingdom, Canada, and Australia).⁴⁰

While a review of economic thought on copyright would reveal a wide range of views, I suspect that it would surprise many that most economists are sceptical about the role for, and impacts of, copyright. Many economists, but by no means all, accept the necessity for copyright protection, but would warn against its strengthening or extension of terms.⁴¹ There are somewhat less mainstream, but none the less credible arguments to suggest that copyright is not necessary and that it tends to stifle innovation.⁴²

While the proposals mentioned in the review document for low cost, online licensing clearing houses are an important contributor to lowering transaction costs, they are not in themselves a solution to the economic issues. First, because any cost above the marginal cost of distribution, which is essentially zero online, involves a deadweight loss. Second, because there are valuable users and uses for which any cost may be too high. For example, certain *users* may be excluded where capacity to pay is extremely limited (e.g. students), and certain *uses* may be excluded, where:

- The nature of use means that a large number of pieces of copyrighted material are required as inputs and willingness to pay for individual items is close to zero (e.g. transformative uses, text mining, etc.);

⁴⁰ Houghton, J.W. and Gruen, N. (2012) *Excepting the Future: Internet intermediary activities and the case for flexible copyright exceptions and extended safe harbour provisions*, A Lateral Economics Report for The Australian Digital Alliance (ADA) (<http://www.digital.org.au/content/LateralEconomicsReports>).

⁴¹ Thorpe, J. (2003) *Economic perspectives on copyright law*, Centre for Copyright Studies, Sydney (<http://www.copyright.com.au/assets/documents/research-reports/CCS0203Thorpe.pdf>). See also Towse, R., Handke, C. and Stepan, P. (2008) The Economics of Copyright Law: A Stocktake of the Literature, *Review of Economic Research on Copyright Issues* 5(1), pp1-22 (<http://ssrn.com/abstract=1227762>).

⁴² Boldrin, M. and Levine, D.K. (2008) *Against intellectual monopoly*, Cambridge University Press (<http://www.dklevine.com/general/intellectual/againstfinal.htm>).

- Use is non-commercial and the revenue generated from it is low or non-existent, limiting capacity to pay for the optimal level of use (e.g. education and research);
- Use is transformative and the resulting products or services face uncertain value (e.g. innovative new products or services for which potential demand, prices and revenues are unknown); and/or
- The use has high positive externalities (a market failure), such that the users do not capture the value of their use, as it spills over to others (e.g. education and research).

Proprietary rights and licensing cannot produce efficient outcomes in such circumstances. Rather the benefits of the use are simply lost, while the incentive to produce remains unchanged. Consequently, extending exceptions, fair use / fair dealing and safe harbour provisions plays a vital role in enabling the use and realising the value of information, and is a key element in “Digital Agenda” copyright reforms around the world. Moreover, this area of copyright reform is likely to be more central to the role information and library professionals.

Personal data and online privacy

There are aspects of the debate around personal data and online privacy not yet fully captured in the review document. While monitoring and possible censorship by governments and others is an issue, the major threat to privacy for most people is the voluntary and in-voluntary loss of personal data during online activities, and the collection and use (and misuse) of that data (e.g. for behavioural targeting in advertising).

Advertising is a major means of support for Internet content and services, with online advertising spending growing much faster than advertising in other media and accounting for an increasing share of the revenue support for the Internet.⁴³ Advertising-oriented tracking is common practice,⁴⁴ and there is now an increasingly large and sophisticated industry operating around the collection, analysis and use of personal data.⁴⁵ Often, accessing online content and using Internet services necessarily involves the forfeiture of personal data, and the only way for an individual to protect their personal data is to forego online access and services. Hence, there is relatively little practical defence, making privacy regulation crucial.

⁴³ Deighton, J. and Quelch, J. (2009) *Economic Value of the Advertising-Supported Internet Ecosystem*, Report to the Interactive Advertising Bureau, June 2009. See also McKinsey & Company (2010) *Consumers driving the digital uptake: The economic value of online advertising-based services to consumers*, Report to the Interactive Advertising Bureau (Europe).

⁴⁴ Angwin, J. and McGinty, T. (2010) Sites Feed Personal Details To New Tracking Industry, *Wall Street Journal* 30 July, 2010 (<http://online.wsj.com/article/SB10001424052748703977004575393173432219064.html>). Gomez, J. et al. (2009) *Know Privacy*, UC Berkeley School of Information (<http://knowprivacy.org/>). Thurm, S. and Yukari, I.K. (2010) Your Apps Are Watching You, *Wall Street Journal* 17 December 2010 (http://online.wsj.com/article/SB10001424052748704694004576020083703574602.html?mod=what_they_know)

⁴⁵ Angwin, J. and McGinty, T. (2010) The Tracking Ecosystem, *Wall Street Journal* (<http://graphicsweb.wsj.com/documents/divSlider/ecosystems100730.html>).

There are mixed and sometimes conflicting incentives at play in personal data collection and use. Targeting advertisements to individuals can be a win: win, as there are lower search and consumer disturbance costs per sale, better conversion rates to sales and lower advertising spend per sale for the advertisers. However, there are many issues arising and some concern that targeted advertising may encourage differential pricing and price discrimination. In moving content online, the media, entertainment and many other industries are also developing individualised marketing and pressing towards individualised pricing (*i.e.* price discrimination) and optimised bundling.

As suggested in the review document, tailoring what is seen can be isolating and have undesirable social consequences. It can also have undesirable economic consequences. As Odlyzko (2003) suggested, price discrimination has a chequered history.⁴⁶ Ultimately, the drive to price discrimination allows producers to capture the entire surplus as profit and to reduce consumer welfare. Such strategies may meet with consumer resistance, which might reduce the overall economic and social value of online activities and undermine attempts to fully realise the benefits of the Internet.

The role of ICTs in climate change and sustainable development

One thing that is not mentioned in the review document is climate change and the potential role of information and ICTs in adaptation and mitigation, and in fostering and enabling sustainable development more generally. While this may not be directly relevant to IFLA stakeholders, it is an important economic challenge facing the world over the coming years and one in which ICTs and information do, and will continue to, play a crucial role.⁴⁷ Moreover, it embodies many of the issues addressed in the review document, including:

- The importance of identifying and using legitimate and credible sources of information in a context where some parties are more interested in spreading disinformation (*i.e.* information literacy);
- The importance of automated and assisted remote monitoring and data collection (e.g. global air, water and soil observations);
- The importance of curating and openly sharing data in such a way as to inform (e.g. access to the global and local data necessary for climate modelling); and
- The importance of using ICTs in information dissemination, from early warning and disaster response, through to formal and informal education and information dissemination.

There are a number of focus areas. “Green IT” focuses on the direct contribution of ICT equipment manufacturing, use and disposal (e.g. in the extraction and consumption of rare metals, energy use in transport and distribution, electricity use in operation and for cooling, and the problem of e-waste and

⁴⁶ Odlyzko, A. (2003) Privacy, Economics and Price Discrimination on the Internet, Digital Technology Center, University of Minnesota, In ACM, *Fifth International Conference on Electronic Commerce*, 355-366, 2003 (<http://www.dtc.umn.edu/~odlyzko/doc/privacy.economics.pdf>).

⁴⁷ Houghton, J.W. (2010) 'ICTs and the Environment in Developing Countries: Opportunities and Developments', in Ed. OECD (2009) *ICTs for Development: Improving Policy Coherence*, OECD & infoDev, Paris, pp.149-175. (<http://www.oecd.org/bookshop?9789264077393>).

importance of appropriate recycling). ICTs also have enabling effects, being widely used in applications that can have impacts on climate change mitigation and adaptation, including:

- Dematerialisation and substitution (e.g. digital music and video downloads replacing the production and distribution of physical CDs and DVDs, and the substitution of business travel with teleconferencing and videoconferencing, etc.);
- Optimisation of a wide range of processes (e.g. manufacturing, transport and logistics, energy use in “smart building” and via “smart grids”, etc.);
- Monitoring, collecting and processing information (e.g. environmental monitoring, smart meters, sensor networks, climate modelling, etc); and
- Communicating and educating (e.g. mobile early warning systems, disseminating information on agricultural responses to climate change, etc.).

The advent of what is variously called the Information Economy or Information Society, the Knowledge-Based Economy, and the Weightless Economy, has seen the end to the old linear relationship between energy use and output. Developing countries following the same economic growth path as that followed by the developed countries is unthinkable in terms of climate change risks. Ultimately, climate change adaptation needs to involve alternative development pathways that are not centred on growth through low cost, export-oriented manufacturing.⁴⁸ ICTs have played a fundamental role in moving towards knowledge-based economies, and are central to efforts to mitigate the effect of, and adapt to, climate change, as well as being fundamental to the emergence of alternative development pathways (e.g. India?).

⁴⁸ Sheehan, P.J. (2008) *Beyond Industrialization: New Approaches to Development Strategy Based on the Services Sector*, UNU-WIDER Research Paper 2008/60, Helsinki (http://www.wider.unu.edu/publications/working-papers/research-papers/2008/en_GB/rp2008-60/).

Deborah Jacobs - Director of Global Libraries Global Development Programme

Global Libraries paper in response to the IFLA Trend Report 2013 – Literature Review

Working Draft: February 15, 2013

The paper is written by staff of the Global Libraries initiative of the Bill & Melinda Gates Foundation in response to the IFLA Trend Report 2013 Literature Review. Global Libraries works to ensure that all people, especially those in disadvantaged communities around the world, have access to information through technology in public libraries.

Individual and community development is dependent upon being able to use the information, network and resources provided by the Internet, but in most of the world basic access is either not available or limited to those with the financial means and literacy skills to acquire and use it. While the IFLA Trend Report highlights many of issues related to accessing information, new technology, broadband adoption, and copyright in the digital age, many of the trends will not affect the majority of the world's population as currently only 35% are connected to the Internet, with people in rural and poor communities the least likely to be online. And as necessary as basic access is, it is not sufficient. Equality of opportunity in the digital age requires that all individuals, especially those living in poverty, have access to online information, content relevant to their needs, and the skills to navigate the digital world. In a world where social and economic health increasingly depends upon digital literacy, the ability to continually learn new skills, and access to the Internet at speeds sufficient to produce and share content, no other institution, public or private, has the ability -- or possibility -- to reach people who have been left behind in today's economy, need new skills or knowledge, or who simply need help navigating an increasingly complex world.

Despite the critical benefits libraries provide, government officials, researchers, and policymakers, largely fail to recognize public libraries as a vital 21st century resource that provides citizens with resources otherwise unavailable to them. Library staff and supporters often want to address communities' needs but lack resources. In some cases, they fail to adjust to meet the changing needs and expectations of their communities or to make a case for their continued support. In other cases, they are simply too busy meeting the demands of the day to plan for the future. Additionally, while libraries all over the world share a mission of meeting community needs by providing access to information, the challenges they face, though related, have been shaped by their historical, cultural, and economic circumstances. Efforts to improve equality of access to information must recognize the wide variety of today's libraries and address the factors internal and external to libraries and the library profession that hinder their evolution.

Of the estimated 315,000 public libraries worldwide, more than 70 percent are located in developing and transitioning countries. The developing world faces two challenges with increasing access to information and technology: modernizing existing libraries and creating new ones to reach those who otherwise do not have access. Some libraries in developing countries can be modern, showcase libraries

with the newest technologies. Many are often in high demand, full with people using the sparse, outdated and deteriorating resources. Yet others sit empty as the resources are so outdated that visitors have stopped coming. Some library staff see themselves as enablers of community knowledge, but too often they can act as protectors of scarce resources to be safeguarded from users. Additionally, developing nations often do not have public libraries in the number and locations as population sizes would suggest. Without a number of vibrant libraries serving as examples to show the benefits libraries provide, such as access to government services, business support and training, and safe spaces for vulnerable populations to engage, making the case for the modernizing or building libraries is extremely challenging.

In developed countries, public libraries serve as important resources for underserved communities although this role is not recognized as they are often thought of as cultural institutions supporting reading as a leisure activity. For those countries which have long traditions of public libraries, the IFLA 2013 Trend Report outlines some of the disruptions impacting the fundamental political, financial, and regulatory underpinnings that support public libraries as currently structured, imagined, and valued. Library staff in these countries often are unable to show their value in terms relevant to community leaders and government funders. While public libraries are often cherished for their conventional roles, they are not perceived as critical community resources for the digital age and funding, policy, and regulations in support of this new role have not kept pace. In developed countries, access to content is increasingly being limited to those who can afford to purchase it. The need to transfer the policy, regulations, and cultural values that ensured access in the print world -- providing access for those not able to afford it and support to those endeavoring to improve their knowledge and skills -- to the digital age will be more powerful when coinciding with a reimagining of the role libraries play in a world of information and technology abundance.

Public libraries in both the developing and developed world are at a crossroads. Where libraries currently exist, there is a clear need to develop a common vision for the mission and role of public libraries that meets personal and community needs in the digital age. Where they do not exist, libraries need to be created to bring information to underserved communities. Both needs are made more challenging in today's global environment of increasing populations, decreasing resources, and nearly relentless change. A widespread, constructive dialogue about the role of public libraries in achieving common community and societal objectives needs to include the library profession, publishers, leaders, businesses, educators, and all other key community stakeholders. Only when communities and community leaders begin to see their public libraries in new ways -- as platforms for community engagement, learning and innovation -- can libraries evolve to support modern communities' needs. Only when librarians and library supporters acknowledge the need to update their own skills and attitudes and foster new relationships can we begin to make progress towards a truly vibrant library for the digital age. A starting point can be built on the commitment communities have to their younger, poorer or less educated members, recognition of the role information has in their development, and a reaffirmation of the value of providing opportunity for all.

Marième Jamme – CEO of SpotOne Global Solutions



How do libraries further develop by using technology...

Some ideas to consider....

Marieme Jamme
Founder of Africa Gathering



Identity and Location



Library in the technology hubs

- Library moving from traditional learning to modern learning
- Offering Exchange
- Support the growth of Start Ups
- Fostering trust, access, collaboration and sharing
- Learning corners in Tech Hubs

"With the absence of Palaver Trees, physical spaces like coffee shops, libraries, and internet cafes, Africa's "hub boom" has emerged to fill the gap, fostering openness, access, collaboration, education and sharing in the region's tech community, while offering nodes for international exchange, where people like Eric Schmidt can drop in to get a sense of what's going on."

africa gathering

sharing ideas for positive change





Libraries with Citizen Empowerment

- Access to online or printed materials
- Information and knowledge
- Learn to understand and create content



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Content via Mobiles

- Encouragement to read, share and learn via Mobiles
- Mobile as learning tools
- Easy downloadable podcasts
- 3D printing of content to be encouraged
- Apps for libraries
- Technological competition can help generate content and visibility for libraries



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Fred von Lohmann⁴⁹ – Legal Director for Copyright at Google

Prelude: An Optimistic Observation

I would like to begin with an optimistic observation about our topic, “themes in contemporary society which affect the information environment.” Here is one theme that was not identified in the literature review: For most of the 20th century, the brightest minds in the world were focused on developing technologies of war and destruction. In the past 20 years, in contrast, the brightest minds around the world have been drawn into developing the technologies of communication and information. In my view, that is probably the most important “theme” to note, celebrate, and nurture. I am optimistic it will remain true for the near future.

The Future of Copyright

While I agree with the literature survey that there is a trend in copyright toward increased acceptance of technological innovation and new social patterns of consumption, I am not optimistic that wholesale reform will be likely in the coming

5 years. Instead, I believe legal changes will be a slow process that comes only after robust new digital markets emerge. The good news is that this market transformation is taking place.

The Beginning of the End of the Digital Piracy Wars: I predict that every year going forward, the focus on “digital piracy” and enforcement will diminish, as new opportunities presented by online commerce take hold.

There are several reasons that I believe we have “turned the corner”. First, and most importantly, copyright owners are finding ways to successfully meet consumer demand online. Services like Spotify, Hulu, YouTube, and Netflix are turning former “pirates” into customers with convenience, low cost, and large inventories, and doing so far more effectively than court judgments can. As these new revenue streams become a larger and larger portion of the overall revenues for major media companies, those companies are likely to reduce investments in lawsuits and lobbying in favor of investing in improving popular services to reach more customers. Furthermore, it is increasingly accepted in media company circles that there is no antipiracy enforcement remedy that will succeed unless legitimate operators offer customers something better than they can get through illegitimate channels.

Second, the mass mobilization around SOPA in the United States and ACTA in Europe have made it clear that if asked to choose between the free and open internet and greater copyright enforcement, citizens

⁴⁹ The views expressed in this paper are purely my own, and do not necessarily represent those of past or present employers.

will choose the former (and punish elected officials who do not heed their preferences). Digital copyright has come of age as a political issue.

Notice-and-Action and Graduated Response as Emerging Consensus Enforcement Mechanisms: While the heated policy debates around online piracy gradually cool, copyright owners will not be abandoning enforcement efforts. Two particular mechanisms are emerging globally.

Where commercial cyberlockers and streaming services are concerned, the de facto enforcement norm is “notice-and-action,” as defined by the DMCA in the United States and the E-Commerce Directive in Europe. Similar regulatory regimes will likely take root in other parts of the world, perhaps with some variations on the theme (see Canada’s recent “notice-and-notice” law).

The potential for abuse of these notice-and-action regimes will be a recurrent and increasing concern for those concerned about free speech online. The ability to censor material quickly with a fraudulent copyright infringement notice invites some to abuse the system, and anti-abuse mechanisms will likely have a hard time keeping up as the small number of abuses are lost amid a steadily increasing number of legitimate notices filed by rightsholders.

With respect to noncommercial P2P sharing directly between individuals, “graduated response” approaches are becoming common (examples include US, France, UK, New Zealand). These regimes, whether implemented by private agreement (as in the US) or by government regulation (as in France and the UK) are intended to deliver “warnings” through ISPs to individual Internet users, with further punishments (either modest fines or degraded Internet access) for repeat offenders. We can expect these regimes to be pushed in more jurisdictions. Those concerned about free speech and access to information will need to remain vigilant to prevent these copyright enforcement mechanisms from becoming accepted for other forms of speech regulations.

Overall, as notice-and-action and graduated response become more common and institutionalized in both policy and practice, we can expect to see these becoming more standardized and routinized, resulting in rapid increases in the number of notices sent to intermediaries (on the notice-and-action side), as well as in the number of notices sent to individual users (on the graduated response side).

There is one other enforcement mechanism that is still being pursued in some jurisdictions – site blocking by ISPs. While that mechanism was soundly rejected in the US when proposed in SOPA, site blocking by ISPs has become increasingly common in Europe. In the US, moreover, there will likely be more domain name seizures by US law enforcement agencies. It is difficult to predict whether some variety of “site blocking” will become a commonly accepted enforcement tool, or whether the courts and the public will reject this approach. Site blocking represents the most serious threat to free speech and access to information, as this approach necessarily sacrifices innocent speech in the effort to block infringing speech (because blocking at the site level blocks all the material on the site, whether infringing or not). In addition, once a site blocking mechanism is implemented for copyright infringement, there will be efforts to expand it to address other concerns, such as defamation, unpopular political beliefs, or dissident religious views.

What Comes Next: Personal Uses

As an enforcement consensus emerges with respect to user *sharing* of copyrighted content, I anticipate an increasing number of controversies about *personal* uses of copyrighted material.

For example, there have been a spate of courtroom battles in recent years about next-generation digital video recorder (DVR) products (see, for example, recent cases in the US involving Aereo's service, the Hopper DVR, as well as similar cases in Australia, Germany, and France). Some in the media industry view these new services as a threat to existing broadcast, streaming, or video-on-demand services. Similarly, policy-makers and courts in Europe are confronting questions about how the long-standing "private copying" exceptions to copyright law should be understood). Accordingly, we should expect more legal and lobbying action around the question of what personal uses of media should be allowed by copyright law.

The outcomes of these debates will strongly shape the kinds of freedom that citizens will enjoy to engage with the media. Accordingly, those concerned with access to knowledge should carefully monitor these developments to ensure that citizens continue to have access to the tools necessary to "remix" media and protect their personal privacy interests.

What Comes Next: Mass Digitization

It seems self-evident that citizens in the developed world will soon expect that all information will be available in digital form online. As a result, the information locked away in books, periodicals, and other "hard copy" will effectively cease to exist for a large segment of the population – if they can't find it online, it likely will never be consulted. The risk is particularly strong for older, scholarly works without obvious commercial markets. If that enormous legacy of information is not to be lost to the next generation, we must digitize it and make it accessible online.

The Google Books project has made it clear that digitizing all the world's books is now within our technological grasp. But copyright law presents an obstacle, particularly as it applies to "orphan works," whose owners cannot be found, and to "disputed works," where a dispute between multiple potential owners leaves the work in copyright limbo.

We are in a period of experimentation in copyright with respect to mass digitization. Europe, for example, has recently adopted a pan-European directive on orphan works, which must now be implemented at the national level. In the US, in contrast, a variety of efforts are being undertaken relying on the existing flexibilities of US copyright law. For example, Google has undertaken to scan millions of books in order to make them full-text searchable. US universities, meanwhile, have begun experimenting with making scanned texts available in a variety of circumstances involving educational uses or access for the visually disabled. Copyright owners are in the process of challenging these efforts in court. Final rulings are expected within the next year or two, and should help clarify the copyright footing of mass

digitization efforts in the US. The US Copyright Office, for its part, is also undertaking an inquiry into whether further legislative changes may be necessary.

What Comes Next: Moving Hard Copies from the Developed to the Developing World

Another important potential mismatch between copyright law and emerging societal trends arises in the area of cross-border movement of used goods, an issue that copyright experts refer to as “international exhaustion.”

If we accept that physical media is inexorably moving into digital form in the developed world, this leaves the question of what happens to all the “hard copies” that are left behind? For example, today, as US consumers increasingly migrate their CDs and DVDs to their digital devices, they are beginning to discard the physical media in large numbers. Many of these are being purchased by aggregators at very low prices and shipped to the developing world, where the relative scarcity of computers, MP3 players, tablets, and smart phones mean that physical media will retain its value for some years to come. These imports, however, exert price pressure on the domestic market, something that copyright owners may not welcome, despite the benefit to local consumers.

As digitization continues to be taken for granted in the developed world, this process of “de-accessioning” (to use the library term for it) will accelerate and spread to other media, including books. Those who are interested in promoting inexpensive and widespread access to knowledge in the developing world should be looking closely at how copyright law can impede or facilitate this transfer of “hard copy” to eager audiences who will not be able to jump directly to full reliance on online sources of information.

The Battle between Open and Closed

In his influential book, *Code: And Other Laws of Cyberspace*, Professor Lawrence Lessig made a crucial observation:

Government’s power to regulate code, to make behavior within the code regulable, depends in part on the character of the code. Open code is less regulable than closed code; to the extent that code becomes open, government’s power is reduced.

While the importance of this observation is hardly limited to the copyright arena, it correctly identifies a crucial part of the reality in which copyright policy is made. The continued mainstream availability of open source alternatives, whether web browsers like Firefox or web servers like Apache or the widely available programs to rip DVDs or unlock mobile phones, has been an important constraint on the kinds of copyright enforcement mechanisms available to governments.

For open source to exert this restraining function, it is not important that it be the dominant product in a market. So long as open source represents a *potential* alternative, it will be relatively more difficult for a government or copyright industry interests to design technologies to operate against the wishes of citizens. For example, if one web browser were to incorporate surveillance technology in the service of copyright enforcement, citizens could choose to use Firefox, instead. And even if the government were

to mandate the use of only “approved” web browsers that incorporate surveillance mechanisms, it would be very difficult for the government to prevent users from obtaining alternative web browsers created by the open source community.

Accordingly, for those concerned about restraining private and government efforts to constrain individual freedoms, the existence of a vibrant open source community remains important.

The continued vibrancy of open source tools and open platforms (like the World Wide Web), however, is in considerable jeopardy, given the increasing dominance of closed, proprietary platforms. There is considerable risk that trends in favor of greater surveillance and control over online information tools will lead governments to favor and collaborate with closed platforms at the expense of open alternatives.

In this connection, I disagree with the conclusions of the literature review prepared, which concludes that “increasing levels of technological standardization and interoperability (potentially coupled with pressure from regulators) is likely to result in the long-term disintegration of many vertically integrated business models which ring fence consumers into proprietary walled gardens.” In fact, I see the trend running in the other direction. The recent ascendance of closed platforms like Facebook and Apple’s iOS ecosystem shows that “walled gardens” remain a potent force. And to the extent that these platforms offer both governments and private interests the ability to more effectively impose restrictions on end-users, there is a substantial risk that regulators will embrace and favor closed systems over the more open portions of the internet.

3D Printing and the Risk of Technology Mandates

The forgoing observations suggest that the democratization of manufacturing technologies, thanks to innovations like inexpensive 3D printers, is likely to be met with proposals for laws to restrict what such printers can be used for. In our increasingly connected world, these laws are less likely to rely on punishments for law-breaking citizens, but rather on technical restrictions built into the printers themselves.

The difficulty with technology mandates of this kind is that they tend to quell innovation and can result in new mechanisms of surveillance and control. For example, one can easily imagine governments calling on 3D printer makers to prevent the printers from being able to reproduce certain items, whether to protect public safety, patent rights, or trademark rights. Such a mechanism, however, would need to be constantly updated as new prohibited designs were circulated. This, in turn, could lead to a requirement that the devices be monitored and regularly updated, and that all objects created with a printer bear a unique fingerprint that could be used to trace it back to the printer that created it (a similar system already exists for color laser printers, intended as a mechanism to trace currency counterfeiting).

To the extent that technology mandates require mandatory updating, surveillance, and other mechanisms of control, the potential for abuse is plain. Such mechanisms also tend to retard innovation, as new innovators must satisfy the requirements of the mandate, rather than the desires of customers.

The Coming Disruption in Higher Education

I strongly endorse the literature review's recognition that online education represents a paradigm-changing potential for higher education and for society as a whole.

In his book, *The Innovator's Dilemma*, Prof. Clayton Christensen identifies the conditions that make an industry ripe for "disruptive innovation," where the incumbent market leaders are likely to fail and be eclipsed by new entrants that radically change the marketplace. In recent interviews, Prof. Christensen has identified higher education as an industry ripe for exactly this kind of disruption.

The conditions are these:

- Incumbent market leaders who are pursuing profits "up-market," by improving their products to satisfy the demands of the most lucrative and sophisticated customers;
- A large set of potential customers who cannot afford the products provided by incumbent market leaders, and who would be perfectly happy with a less sophisticated product (perceived by the incumbent market leaders as "low quality") at a much lower cost; and
- A new market entrant who is eager to serve the "low-end" customers who incumbents are not pursuing, and whose entry is effectively uncontested by incumbents (who are happy to have them absorb this "low-end" customer).

It is easy to see how Prof. Christensen might conclude that the higher education industry is poised to be disrupted by the new online education offerings (such as companies and institutions offering MOOCs – "massive open online courses").

If these new entrants in the higher education market are able to gain a substantial foothold in the education market, they promise to lower the costs of, and radically democratize access to, education globally. This, in turn, could unleash an unprecedented level of cross-border innovation and collaboration, as dispersed global talent is developed and is able to find communities of interest.

Libraries will need to consider how to best embrace the coming disruption in higher education. For centuries, libraries have been identified and bound up with leading institutions of higher learning. If those institutions are likely to be eclipsed and disrupted by new online educational innovations, and if those innovations are likely to reach billions more people than traditional institutions can, libraries must make it a priority to figure out what the online students of tomorrow want from libraries.

Alejandro Pisanty – Professor at the National Autonomous University of Mexico

This paper will be submitted separately and distributed before the meeting.

Suneet Singh Tuli - Founder and CEO of DataWind Ltd.

As we look at key emerging trends (regulatory, social, economic and technological), impacting the information environment, it is important to understand that as affordability barriers are broken, allowing new economic classes to get their first access to the internet and computing, an additional 3 billion users are about to join a hyper-connected human community. The impact on a person with a \$200 monthly income having access to the internet cannot be accurately predicted – but it is universally recognized that such access is imminent.

CATEGORY 1: Cross-cutting Political and Regulatory trends: How will these regimes cope with the needs of developed and developing economies?

In developing nations, we observe two specific trends where regulators implement policies, which are not in harmony with those of more developed economies:

Some regulations seem to be implemented to insure affordability for the masses. By creating nationalized patent regimes, in some developing economies, key technologies are defined as ‘essential patents’ and regulated limits are set for licensing fees on such patents that are more appropriate for local markets. Such examples are most often observed in the pharmaceutical industries, where in places like India, copy-cat drugs are allowed to proliferate. In such markets, some companies even voluntarily allow and accept intellectual property breaches, in order to create affordability and seed the local markets. For example in India, Microsoft ignores, and allows ‘DOS’ based PCs from its major partners, with the clear expectation that bootleg copies of the latest operating system would be installed after the sale.

The purpose of regulation should be to create a level playing field, and an open opportunity for industry to innovate and excel. Unfortunately, instead in many developing countries regulation is mostly being used as a budget balancing tool. In some cases lack of understanding or fear of damaging legacy revenue streams act as barriers to growth. For example, regulations against VOIP in India artificially kept telecom pricing high for a long period, which hurt the competitiveness of its industry.

CATEGORY 2: Social Trends: Populations in the developed world will continue to age, while the developing world grows younger leading to differing usage patterns and competing demands on the information environment. Hyperconnectivity expands the influence and role of migrants and diasporas. What will be the net effect of competing demographic trends across the developed and developing world on the information environment?

As computing and internet access becomes available to the ‘next three billion’, which primarily reside in the developing world with a lower age demographic, the permutations of technological evolution will happen faster in the developing world than the developed world. The younger demographic will adapt to technological changes faster, and will iterate improvements faster than that of the older demographic in more developed economies. We expect this trend to potentially result in a slowing rate of

technological change in developed economies compared to developing economies. This has been evident over the last few years in the rate of adoption of SMS in the Philippines compared to the United States; or mobile payments in Kenya compared to the United Kingdom.

The other key trend to note is the fear that the ageing demographic trend in developed countries will result in a significant loss of productive work force, maybe overly exaggerated. This may not happen as fast as expected because technology is allowing the elderly to continue as part of the workforce for a longer period, since manual labour is less of a requirement.

CATEGORY 3: Economic Trends: The global middle class will grow to exceed 1 billion over the next decade (with the majority of this growth in Asia) creating a new generation with access to information, content and services.

Q1: How will the consumptive tastes, preferences and political/economic aspirations of the new global middle class affect the demographic and cultural landscape of the information environment?

Internet access eliminates isolation, and allows an open and collaborative platform for discussion and dissent. Coupled with the diversity of opinion generated by the diaspora across the globe, the new middle class in developing economies will demand a greater say in their future. The Arab Spring was a prime example of this trend. In India, the middle class came out to participate in mass protests in support of a social activist, Anna Hazare in an anti-corruption movement. Even cultural gender biases get questioned, as was reflected in the public reaction to a gang-rape in India recently.

After the mobile phone, we see the trend of computing and internet access as a key aspirational technology, represented in the form of tablet computers.

Q2: How can governments in the developing world can successfully transition from taxing technology purchases and infrastructure projects towards incentivising technology adoption as multiplier of jobs and economic growth?

Governments in developing nations need to move away from using tax regimes as a direct budgeting tool, and instead need to recognize that the indirect implications of reduction in taxes often results in greater economic growth and eventually taxes. In India, affordability of mobile phones allowed for a huge industry to grow that over 70% of its population adopted in a mere span of 10 years. The duty structure for mobile phones at 2% allowed such products to be affordable for the country's masses. In comparison, computing and internet devices carry 12% to 14% duties. Regular mobile phones have a sales tax of 5%, whereas smartphones carry sales tax of 14.5%. Simply eliminating or reducing duties and consumption taxes of technology products will help incentivize their adoption.

Q5: What are the implications of mobile payments and financial services for the developing world?

Mobile payments are a key trend that'll help bring transparency and reduce corruption in the developing world. In India, with a significant portion of the population without bank accounts, cash is literally stored in closets and mattresses. The result is that it does not provide a return to the individual, while reducing the capital that banks can deploy for economic growth. Government subsidies that need

to pass through many hands result in leakage and corruption, which can be eliminated by mobile payments. Mobile payments can result in financial inclusion that helps improve tracking of transactions, greater transparency and reduction of corruption. In India, large projects such as Aadhar are being implemented with financial inclusion as the ultimate goal.

Louis Zacharilla - Co-Founder of the global Intelligent Community Forum

Title: "The Middle of Nowhere no More"

- For the first time in human affairs, people in communities are able to live anywhere they wish and at the same time participate in a global economy. These two coexistent conditions are remarkable and can (possibly) transform the potential of "home" and "place" as they make both relevant again.
- What is necessary for this transformation to occur is an adequate physical connection (telecommunications) to enable a virtual one. This allows every community to participate in what ICF calls the "broadband economy."
- Each year seven communities serve as global references and examples of how this transformation is occurring. The "Top7" are studied and presented as representative of the renaissance in communities. Their libraries play a role in most cases.
- As communities continue along the path toward rediscovering and re-energizing places – including those once given up for dead - a new social and economic order will emerge. This will lead to an opportunity for an "enlightened tribalism," where kindred knowledge centers are no necessarily geographically linked, but rather intellectually connected.
- The knowledge economy and a return to the virtues of living in a place which one fully embraces has the potential to revive culture and to make it the essential material for economic expression. It allows communities to redefine, reinvent and recover culture. A recent Knight Foundation report referred to the "soul of the city." If a soul is a deep expression of unseen bonds and generational investments leading to a sense of hope, then it has value and can be unlocked for good.
- Libraries play a significant role in preserving, finding and helping to reinvent traditional cultures in communities. I call this requirement one which has as its mandate the need to give "new voice to old truths. My participation on the Expert Panel seeks to explore how to harvest culture and build upon it.
- Are libraries the best source for digital literacy & creative courage? Will they stop what former USA Vice President and Nobel Laureate Al Gore calls the "hacking of democracy?"
- How do we enable "luck?" How do we establish communities that thrive on the unexpected?
- What are the three noble truths which the award-winning communities cited in the 2012 Wealth Report (Suwon, Korea; Eindhoven, The Netherlands and Waterloo, Canada) have in common? They are to communicate well, embrace change and never lose sight of their daily, higher purpose to citizenry and posterity.