

60 POSSIBLE INFORMATION-RELATED TRENDS FOR TODAY, TOMORROW OR WITHIN SIXTY YEARS (2007-2067)

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Information = "*Description objective faite en vue d'être communiquée et d'apporter une nouveauté pour l'auditoire*".

Philippe Breton et Serge Proulx. *L'Explosion de la communication à l'aube du XXI^e siècle*. Paris : La Découverte, 2002.

"*De onzekerheid en onwetendheid die ons huidige tijdperk bespoken zijn radicaal omdat ze niet voortkomen uit een gebrek, maar uit een overvloed aan informatie*".

Richard de Brabander, Universiteit van Amsterdam

Jan Luyten (coll.). *Science? Fiction! En 808 andere ludieke stellingen van wetenschappers in spe*. Den Haag : Sdu uitgevers, 2006, p. 49.

"*While the future can't be planned, events often can be foreseen*".

Peter Drucker

In the following article, we refer to some 60 possible information-related trends that are noticeable in the world today and will surely be part of it for the near and long-term future. We categorized them as follows: Associations and Profession (craftsmanship), Documentation Centre / Library / Museum / Archive, Economy, Information and Knowledge, Intelligence and Security, Learning, Science, Social Aspects of Information, Technology, Truth, Virtual, War and Terrorism. Some of the trends could also be placed in another broader category.

Association and Profession (craftsmanship)

001 Associations and Craftsmanship

Associations deliver an important contribution to the social capital within a society according to international research. They link people with each other and with public affairs. They serve as a barrier to individualisation and help spread democratic values¹. But are there still as many members as in the past? How will this evolve in the future? The observation that people are joining associations for only a short period leads us to wonder if organisations will survive or become obsolete.

Up to the end of the 1980's, some people looked at librarianship as a kind of craft. Will this view remain in the future or will it become more and more structured due to library and information science(s), licenses policy and information and communication technologies (ICT)?

002 "Cybrarian" – "Librasaur" – "Infopreneur"

Where is the time when people like R.I. **Berkman** were "*Rethinking the corporate information center*" (1995) and they were thinking then about Belgium, and about Michel **Bauwens**, like Tom **Peters**, who in 1994 wrote: "*These information spider's webs amount to what Bauwens calls an "unlimited, virtual library". The corporation that's serious about leveraging knowledge, he adds, may contemplate having at its disposal a network of cybrarians (librarians able to navigate in cyberspace), who'd perform three key functions: (1) "infomapping", or serving as institutional memory and knowing where the knowledge and expertise lie in the organization; (2) acting as gateways (not gatekeepers, Bauwens insists) to external data sources; and (3) networking, networking, networking!*" Lera **Chitwood** went even further in June 1994 at the conference of the Association for Global Strategic Information (AGSI) in Nîmes (France) when she called librarians, "librasaurs" a mocking reference to the now-extinct dinosaurs. In the "*Dictionnaire de l'information*", one can find back "*cyberthécaire*"².

Another one called himself an "Infopreneur®". But will there be still a place for a librarian with wisdom/"sagesse"³?

003 Historian of ...

Charles D. **Winslow** and William L. **Bramer** have described in "*FutureWork. Putting knowledge to work in the knowledge econom*" (1994) a kind of Andersen Consulting vision of a massive economic transformation in modern enterprise: "*No longer do huge capital facilities determine*

who wins and loses in competition. Managing intellect – knowledge-based assets and knowledge workers – has become the centrepiece for profitability in virtually all companies. They created an "Integrated Performance Support (IPS) environment" – consisting of a librarian, coach, coordinator, historian and assistant as the new integrated management unit.

The role of the historian in this system would be maintaining "historical data such as previous purchases, interpretation of company policies, and trends. Whereas the Librarian uses internal and external information sources, the Historian provides internal historical company/policy-related information". Will this kind of 'company memory' help, for instance, in a culture where many managers use their intuition, and where people are not very much interested in the history of science and technology (at Belgian universities)? Will this change in the future? And what's our role in the historical part (memory) of institutions? Will there be a role for "patent history"⁴?

004 Knowledge worker

In his book "The new society" (1949), Peter **Drucker** wrote about the fact that knowledge would be the biggest means of industry to create more welfare and employment opportunities. He would use the terms "knowledge society", "knowledge economy" and "knowledge worker" years later in his book "The landmarks of tomorrow" (1957). Simultaneously, Fritz **Machlup** was writing about the "knowledge sectors". In "The age of discontinuity" (1969) he (P.D.) stated that crafts and craftsmanship would no longer be the foundations of society, economy and polity: knowledge and knowledge workers would replace them. Until now, this shift has not yet taken hold and we have not changed the systems. What with knowledge fragmentation, the changing worldview, the social and political theory around it, the question is how to make knowledge (workers) productive, and how to change information into communication and foster social cohesion within the community⁵? Which part "we" will do business in?

005 Paul Otlet (guru) ... and the future

Will there be again a new "guru" like Paul **Otlet** in 2067 coming from Belgium or another place on earth to create something new from documentation? Or will we reread his works and understand his frame of mind? In 1934 he was already writing about a "te/eg"-room of a large library where a book was opened on a requested page and read on a screen in a different room⁶.

Documentation centre / Library / Museum / Archive

006 Archiving the past and the present for the future

Do we want to archive everything? Will we know more in 2067 about **Cleopatra's** nose than what appeared on the website of the ABD – BVD or in the old copies of its "electronic newsletter"? Everybody needs "roots". Can someone really exist without a past, without a memory? How do we have to deal with this issue, now, and in 2067, to ensure people's access to "our time"...? If we have to choose, do we now know what we will need in the future? Archivists, acting as "historians" are protecting certain sources for the future, but so do librarians, museum staff. But which fraction do we know? (For instance, from the old periods which puppets are found back in museums: dolls of the rich?). Does the Royal Library of Belgium has a collection of flyers of musical events hip hop, jumping, techno, gothic, ...) taking place nowadays in Belgium? And if they don't have it, which archive does have them? Would someone – if not the historian (dr.) Henri **Vannoppen** – have thought of using the message – describing their clothing – spread by media when somebody is missing [an archival source] to use it for "clothing history".

007 Electronic workplaces

The Delft University of Technology library (the Netherlands) – "This library is a building that really doesn't want to be a building at all, but a landscape". – was opened in 1998. The new library of the Catholic University Brabant in Tilburg (the Netherlands) already existed and had a lot of "electronic workplaces" for students and scholars: library catalogues, electronic sources/publications, electronic spreadsheets, e-mail, software to write publications, etc. Later on the tools were accessible on remote places: at home, on the street, ... The world as an "electronic workplace" 24 hours a day, seven days a week. But will this be the end? And is everything safe? What about computer viruses, spam, Trojan horses, hoaxes? What about our health?

008 Hybrid libraries – Electronic libraries – Digital libraries – what's next?

Late in 1993, the Internet went public in Belgium. Prior to this, there were already scientists, scholars and librarians using a part of the Internet to read information on for instance "cold fusion" [nuclear fusion at room temperature] in 1989. EARN

(European Academic Research Network), BBS (bulletin boards), Eudora (e-mail) were available during that middle time between 1969 and 1993. And with the Internet came the first texts on blowing up the corporate and other libraries. A library was no longer housed in a brick structure. In Leceister (Great Britain) they had an "electronic library" concept. Later the electronic workplace concept in Tilburg (the Netherlands) appeared.

More recently, people were not only talking about digital libraries (only digital materials) but also hybrid libraries. But will this be the end? Because we have now institutional deposits on D|Space and already for years "pearl" (document as "pdf" or other format on a fixed place on a fixed computer) we no longer have to stock the document itself on our library shelves. But what when the license stops? What if the other party is no longer in business?: What if a link no longer works... Will we lose data and information because no one saved a version of a publication, a web site for the future or will we have an ideal library "à la Umberto Eco" for a more than postmodern (pomo) time?⁷

009 Legal deposit

Legal deposit is the legal obligation, in many countries, which have a national bibliography for publishers and sometimes printers, to give one or more copies of book, periodicals, etc. to a governmental organisation, usually the national library. In France this goes back to 1537. In the library of the University of Leiden (the Netherlands) one can find a trace back of the one of the "Verenigde Nederlanden". In Belgium the official legal depot – most recent law dating from 1965 – is at the (national) Royal library of Belgium (KBR) and since 1994, phonograph records are also part of it. But what with web or other electronic publications? We should not forget to read and retrieve. It is not always enough to have the software. Cd-roms that are no longer in use could create problems after ten years. What with the material on microcards (and how could you nowadays make copies of them)? Will this be solved by 2067 one way or another?⁸

010 Libraries & heritage - Book culture (erudite) - How to become a (new) museum?

Will physical libraries or "libraries in brick(s)" become museums? Will book erudition become passé? Or is that already the case with people buying books to boast that they read something and are intellectuals. Several years ago, the head of the Royal Library of the Netherlands retired and when asked by a journalist of *NRC*

Handelsblad (Dutch newspaper) what he would do now, he stated that: "(...) *he would spend his time reading because in the final years of his job, he had not read a book...*" No time for books?! The same is happening with people reading newspapers like *Metro* – OK it's for free and more people are reading them – today: a short message with little context or comments ...

But what about the book heritage? How do we protect this paper heritage after 2067? By putting it in an electronic form that becomes obsolete if you are not having a policy within x number of years to change the electronic format (from pdf to ...)?

The library is a kind of memory of the group. Archives are another group memory, as are museums? The combination of libraries and documentation centres was already mentioned earlier. Would it not be useful to combine it, from now on, with the museum function? For instance just to forget not in a chaotic way... to have an identity? But please let us hope that we do not play the cultural heritage game with it: the more visitors the better. There are museums where people flock to visit exhibitions but the staff can not invest in what they have to put in the collections for the future as a kind of time capsule...⁹

Economy

011 Financial markets - Local info on mobile (tele)phone etc. – Niche (Toffler)

There was the first crash in 1720: the "South Sea bubble". There were others: "Black Thursday" (the crash of 1929), the "global crash" of 1987, the "Japanese stock market bubble" of the 1980s and 1990s and more recently the "dot.com boom" of the 1990s with the "Internet bubble" in 2000. And even when there is a difference in the perception of politics and economics, risk and uncertainty, we had the agreements of Bretton Woods in 1944 signed by 44 allied countries. This resulted in double stability: monetary and political. Apart from a hiccup in 1969, this double stability stopped on 15 August 1971 when "*la convertibilité du dollar est suspendue. C'est sans doute l'acte de naissance de la deuxième mondialisation.*" [The first period of globalisation took place between 1814 and 1914.] *Appuyée sur la révolution numérique et la réduction des coûts de transport, elle voit s'intensifier les échanges de flux financiers et de biens et services à l'échelle planétaire. À l'initiative des pays occidentaux qui en sont bénéficiaires, elle prétend affirmer comme valeur commune mondiale la suprématie de l'économie. Avec elle*

réapparaissent l'endettement, le désordre monétaire, les taux d'intérêt élevés. (...)".

In the mathematics of fractal geometry (of **Mandelbrot**) there is a distinction between three states of randomness – mild, slow and wild. "Conventional financial theory assumes that variation of prices can be modeled by random processes that effect, follow the simplest "mild" pattern, as if each uptick or downtick were determined by the toss of a coin. What fractals show, and [what "The (mis)behavior of markets (...)]" describes, is that by that standard, real prices "misbehave" very badly"¹⁰.

Some like the French historian Robert **Bonnaud** who believes in a "futurologie historique" and states in "Notre fin de siècle. Le tournant de 1998-1999" that there will be a worldwide depression in the period 2017 – 2089 that one could historically compare with the one of 1618 – 1655. So what will be the results of such a long depression? And can we – information professionals – progressively act? And will (the year) 2029 be the most important year of the twenty-first century¹¹?

But apart from the financial markets... there will be more "niche" economies like Alvin and Heidi **Toffler** expressed it, and naturally more local information on your mobile with messages (text or sound) to explain you "on demand" the items: where is the closest library, museum, hairdresser, ...). Will we be one of the information deliverers¹²?

012 Information (or knowledge) of the second kind (projects, ...) - Intellectual capital

Intellectual capital has legs so we do have to document it! But what with virtual environments (firms working together for a short while on for instance the next Boeing or Airbus) and then splitting up without, apart for that project, ever being together. And is big science not becoming more and more this "knowledge/information production of the second kind" oriented – out of the control of governments and other old fashioned institutes, such as, universities, high schools, etc - all the places in this world where knowledge workers create new knowledge, information, data and perhaps wisdom. And is work not more and more merging with research? And will this way of looking at work and knowledge remain? And can we handle this in the long run? Don't we already see the problems at NASA that no longer has all sources of the Apollo project(s) and missions available¹³.

013 IPR – intellectual property rights : © - ® - TM - D.R. - patents – models - ...

How will the war on/of the "droits d'auteur(s)" and copyright(s) end? Protection, actions against piracy, ... and at the other site: right on information, right on culture, right(s) of a culture. Will the fact that was promised in 1996 at a World Intellectual Property Organization (WIPO) diplomatic meeting in Geneva still not be true: "Digital is equal!"? What is the role of the information professional in the intellectual property rights landscape? And on which side is (s)he? Because privacy is part of it, but also genes (genetic discrimination, genetic privacy, genetic testing), stored human tissues, insurance policies, software, native arts and crafts (folklore), indigenous intellectual property rights, biological diversity, economy (patents, models, registered trade marks,...) is everything becoming IPR (because of TRIPS, GATT,...)? And that for something that was in the beginning *La révolution des auteurs* in France (1777 – 1793) and **Beaumarchais** or on the other side of the Channel, the Government Press Control, the Stationers' Company and his Copyright, ... And are the authors or the publishers the ones who have the rights? Was the starting point in 1508 with the publishing of **Erasmus' Adages** – a vast collection of the proverbial wisdom of Greek and Roman antiquity that became one of the most influential works of the Renaissance because it looked ahead to the development of copyright and back to an ancient philosophical tradition that ideas should be universally shared in the spirit of friendship¹⁴?

014 Knowledge economy - Paying for information (wanting to pay)

Years ago people found the communists poor people because they had to queue for toilet paper and they had to do a lot of things themselves due to the lack of service industries. But in what was called the "new economy", we started to do things ourselves and were paying sometimes more and even a piece of our time to do the service ourselves without an employee doing it for us ("selfbanking", booking a journey on the Internet,...). Finally, it was "Extra service one has to pay for. So do it yourself!" was the message.

On the other hand, a lot of small and medium-sized firms (SME) in Belgium do not want to pay money for good information. And if they get it for free they think it is good information. By 2067, will this concept of what Toon Lowette calls "good advice is expensive" (translation of "goede raad is duur" abbreviated to the name of his enterprise: GRID) be good for information and knowledge?

015 Information anomaly (resource)

When one uses the resource information, (s/)he normally increases the resource by creating new information. The opposite is true for other resources. That was what A.O. **Kouwenhoven** called the anomaly of information, when in 1992, he discussed the selection and the preservation of information related or in documents. Will we have a real and good solution for that in the long run¹⁵?

Information & knowledge

016 Data overload

A lot of people are talking about "information overload". Yet can there ever be information overload when the information has to contain something new and spark your interest. Otherwise it is just data... So perhaps it is better to speak about "data overload". Is it the influence of the Anglo-Saxons: our data = their information, our information = their knowledge? As David J. **Hand** says "*data rule the world*". Will software like data mining or "data/information fusion" make the harvesting of correct data possible so that with the information that we extract, we have the right knowledge to take action? Or will we be drown in the data floods, no longer finding what we are searching for as a community/society? Should information professionals not have the mission to protect our (future) society from that¹⁶?

017 Document

Boyd **Rayward** says that "*for Otlet the document was at the centre of a complex process of communication, of the cumulation and transmission of knowledge, of the creation and evolution of institutions*". **Otlet** also created the word "documentation" it was "*the name he gave to a new kind of professional, bibliographical practice and its associated institutions*", like Bernd **Frohmann** writes in "*Deflating information. From science studies to documentation*" (2004). How do we handle dynamic documents? Do we have to crystallize them – a moment in time – and stock them for the future? What do we have to archive? The end results? The process¹⁷?

018 Documenting knowledge

Bernd **Frohmann** in "*Deflating information*" states that: "*For Otlet, therefore, scientific labour was based upon, as it was for Bacon, preliminary work of careful and meticulous gathering, and arranging of phenomena, observations, and*

*experimental results. But not just gathering and arranging; again like Bacon, these "facts" must also be carefully documented, as the reference to catalogued facts indicates. In the natural sciences, "each new contribution ... seems to be recorded immediately and to become for everyone the point of departure for future research"*¹⁸. One can ask today if this is still enough? Do we have to document (our) knowledge so that novices from their electronic workplace may learn faster – seeing the links between certain articles, internal comments on certain research (reports) – and senior staff notice that, more or less, the same problem was solved in one way or another in the past? And will our society make this happen?

019 Entropy

What came first the chicken or the egg? And is there more entropy in a chick(en) than in an egg? Because of the second law of thermodynamics, there is always more chaos in total which yields entropy (the degree of devaluation). The egg with a chicken in it is breathing, it is an open system. Entropy – Rudolf **Clausius** created the term in 1859 – is a unit of how inaccessible a quantity of energy is, the bigger the entropy, the less you could use. If we want to know something, the price we pay for it is the second law of thermodynamics and the related demon of **Maxwell** if we had to believe Leo **Szilard**. But he was wrong, and in 1982 did Charles **Bennett** found the solution. It is not the measuring itself, the collecting of information that costs something. It is the loss of information that costs something. Knowing doesn't cost. Wisdom costs. (Calculating is a form removing information/data in which you are not interested. You throw away what is not relevant. Entropy is a measure for information we have no direct interest in. (But we have to know more about the coarse-grainedness of the observer to define entropy.)) The information theory of **Shannon** was, in reality, about information-entropy. There is more information in chaos than in order. And so Leon **Brillouin** was wrong with is term "*neg-entropy*": information is negative entropy, chaotic chaos, therefore order. Will we ever learn this lesson¹⁹?

020 Holding for the future / forgetting – finding back (images)

As stated in 019 losing data or information is not always that easy. We want to hold information and data so that, for instance in 2067 or even later, others can still continue to build on what we know today. But do we have to agree with Dee **Hock** (business visionary and creator of Visa) who said, "*The problem is never how to get new, innovative thoughts into your mind, but how to*

get old ones out". Tom **Peters** in his book *"The circle of innovation (...)"* (1997) talks about forgetting. How can we handle this in the future? By making libraries into museums? By forgetting in degrees? Or have we forgotten already enough²⁰?

Do we have to put more keywords when we are indexing images to find these images later? Is image finding software (looks like ...) already OK? Will we put ourselves in the place of somebody who would later be in search of something...?

Intelligence & Security

021 Calamities

If you are not the Vatican, you have no tradition to put your things away in archives so you can find them back – 2000 years – later. With terrorism in the neighbourhood more and more firms and institutes want to stay in business whatever happens. So there are now standards to follow. But one other industry is also thinking long-term: the nuclear waste industry. How can we let people in the future know that we buried waste somewhere? How can we be sure that under normal circumstances, and also considering the possible calamities, people now and in the future will retrieve and understand the information / data in the archives. How to get rid of the malediction of the Pharaoh? Can information specialists help them²¹?

022 CI / BI / CTI

Is it competitive intelligence (CI), business intelligence (BI) or even better: corporate intelligence (CI)? And what about competitive technical intelligence (CTI)? Do we have to go back to market intelligence (MI) units?

What's CI? Is it what SCIP – Society of Competitive Intelligence Professionals – will continue to do: searching(gathering, harvesting), analysing and using (putting it to work) "*actionable information about the external business environment that could affect a company's competitive position*"? Will CI be the management discipline of the 21st century as Josèph H.A.M. **Rodenberg** thought in 1999²²?

023 Exclusive information

In the 1990s professor **De Schoolmeester** (Vlerick Management School – University of Ghent) told his students and managers that in the future, information that was really important would no longer be accessible to the greater public. Instead a small group would be created

around the information, which is even closer than that around grey literature.

Is this true? After a certain time (some weeks, months, years) do we not get to know why? For instance the triangle-like UFO's that were above Belgium on 29 November 1989 appeared later to actually have been secret American airplanes (some of them made by the University of Berkeley). And was there not already a patent for a Lockheed disc aircraft on 10 September 1963 (inventor: Nathan C. **Price** – *High volicity high altitude V.T.O.L. aircraft* – USA patent 3,103,324, that was already delivered to the patent office on January 23, 1953)²³. Or did you find a lot of information about the books – for instance "*Des sujets interdits*" [on nuclear proliferation by the USA, France and Germany to for instance to Iran] – of Dominique **Lorentz** in regular French newspapers²⁴?

Will the secrecy play a bigger part of society in the future?

024 Security services – protection of what?

In Belgium, State Security is increasingly involved in the protection of the scientific and/or economic potential. But until recently the service was not given the needed manpower to do a good job. So Kristof **Clerix** shows that at Sart-Tilman (Liège) secret services from other countries had a free play given by the service. With the changes in the service and better means this will be solved because otherwise our country is missing the boat... because "*Information is a substitute for capital, for labor, for time, and for space, and everyone now understands that information has a value, a value they were not previously willing to recognize or budget for*". (Alvin **Toffler**)²⁵ Is there a greater role for an association like BISA – the Belgian Intelligence Studies Association?

025 Privacy

Years ago public librarians found it abnormal that people would know which books were read by others: for instance, to know who was reading the works of Karl **Marx**, and **Lenin**. Nowadays everybody loses part of his/her privacy everyday: shops, VISA, ... know what we are buying. A lot of software can follow everything we do on the Internet. When we are walking in the street or in a railway station, we are filmed. When we phone someone with our mobile, we can be traced by the distance to certain pylons and the telephone numbers are put in lists for a year or more. How can we as information professionals now and in the future learn more about the privacy issues and also how can we protect (on

one hand) the client and (on the other hand) the public²⁶?

Learning

026 Enabling the end user (courses)

Can we enable the end user the way we enable the information specialist? Do we have to put ourselves out of service like the people who work at the till in banks? Or can we at least teach the user through real-time courses or courses on the Internet how to find his/her way in the information landscape (libraries, catalogues, databases, Internet, ...) Is the most important thing: "asking the right question(s)"?

027 Future studies

Today's rate of technological change is unprecedented. With all these technological breakthroughs (Internet, cell phones, ...), the social impact of technology has never been as profound. That at least is what a lot of people do think; but they might be wrong. Bob **Seidensticker** shows in *FutureHype* several myths of the technology change: (1) Change is exponential, (2) technology is inevitable, (3) important new products arrive ever faster, (4) the rising tide of valuable information, (5) today's high-tech price reductions are unprecedented, (6) products are adopted faster, (7) invention time is decreasing, (8) the Internet changes everything, and (9) **Moore's** law really matters. Is "futurology", in any sense a real science, is it a semi-science or is it essentially a guessing game like Jonathan **Margolis** calls it²⁷? Or do we have to follow Alvin and Heidi **Toffler** with "trusting on knowledge" with "truth filtering" as one of the pillars of a new revolutionary wealth²⁸?

028 Making knowledge really available

Is it enough that we archive knowledge and make it only available if people are willing to pay for it? Can we afford a situation in which only people who have Internet have access? Is it normal that we only deliver knowledge to people of one country? How far can we go in broadening scopes this way? In the end someone has to pay, is the society willing to pay for it? Do we want to have "vigilant civilians"? And what is the role of experts, schools and information specialists in it?

029 Memetics

It started with the eleventh chapter of a book called *The selfish gene* (1976) of Richard **Dawkins**: *"Memes: the new replicators"*. For

Susan **Blackmore** in her book *"Memes are instructions for carrying out behaviour, stored in brains (or other objects) and passed on by imitation. Their competition drives the evolution of the mind. (...) the explanation of biological diversity by the simple process of natural selection - becomes the explanation of mental and cultural diversity by the simple process of memetic selection. The overarching theory of evolution provides a framework for both"*. Will this science help information science(s) explain things in the future about our information learning behaviour²⁹?

030 Teaching

How many teachers in Belgium high schools and universities teach how to use a library, sources, and the Internet? And naturally not only for historians! When will we teach student engineers to write their papers in a standardized fashion with end- or footnotes included? How can we teach students and future generations the difference between citing someone and plagiarism? Is the problem in Belgium that too much of the education is *ex cathedra*? Will a project that teach these things will be a help? How many students in the Flemish universities are aware that their libraries give access to the *Web of Science*?

Science

031 Black holes and Hawking

In *Scientific American* of April 1997, the front page read: *"Black hole paradox : data lost in collapsed stars may not be gone forever"*. In 2005 the same author - Leonard **Susskind** (not the author of the novel *"The Perfume"*) and James **Lindesay** were writing a book on black holes, information and the string theory revolution. Steven **Hawking** who raised profound issues concerning the loss of "information" in black hole evaporation and the consistency of quantum mechanics in a world with gravity is now more or less confirming the fact that data lost in a black hole may not be gone forever. Where will this take us in the future? An extra from the quantum theory of gravity...³⁰

032 Information strategy

Would it not be useful if we wrote a strategy for the information field? Do we have to make a SWOT? What will be the goals on the short, the middle and the long-term for instance in the year 2067? Germany has had 5-year programs on

information! And what is the role of ABD – BVD in it? What is your role? And mine?

033 "Médiologie" (French) -> "mediology"

In 2000 the book called *"Introduction à la médiologie"* was published. The back flap states that it is not: "media sociology". In the *"Dictionnaire de l'information"* this discipline was defined as: "Néologisme créé par Régis Debray pour définir la discipline qui s'attache à l'étude de la communication des idées et des médiations par lesquelles "une idée devient force matérielle". Par "médiations", Régis Debray désigne "l'ensemble des moyens de transmissions et de circulation symboliques". La médiologie déborde donc largement l'étude des medias pour s'intéresser à la totalité des vecteurs et des lieux de sociabilité, de diffusion et d'échange des idées". Will there be new sciences in the next 60 years that are about our field? And what will the results be of something like "mediology"³¹?

034 New information paradigm

In the 1970s books were published about the intertwining of information, mass and energy, or biology and thermodynamics or even biological organisation and information theory³². Recently (quantum) physics is posing the question(s) again: "What is information? And why, if information is such an essential ingredient of the world around us, is it not yet part of the vocabulary of physical science"? Will there be a new information paradigm, in the future, found by people related to the Santa Fe Institute (in the Sciences of Complexity) that would be a force even bigger than what we now find back in $E=mc^{233}$? But can science in the end escape from what Kurt Gödel said: "in arithmetic it is impossible to choose axioms where one could deduce from all true arithmetic judgements"? Or does has Stephen Wolfram a possible solution³⁴?

035 Old facts, laws ... and what now?

D. Hillenius wrote in *"De hersens een eierzeef"* that science always splits up in increasing specialities. But how can we make it a coherent whole, once again? Is there a system that delivers information to me and not only from my own field? People think that it already exists, but there are too many gaps. Hillenius wants to have a synthesis and not only vertically – in one field – but also horizontally (different sciences). And he knows that people can deduce right laws from wrong facts³⁵. But perhaps in old (bad) laws there is also a reality – for instance: Lamarck in stead

of Darwin regarding the learning behaviour between generations in virtual life on computers? Is there a role for us information specialist to dig up the past, to datamine, to harvest old laws, old data and make them available so that others can combine them with other information and perhaps create new scientific data out of them?

Social aspects of information

036 Global brain (Internet)

"The billions of minds of humanity together into a single system... [like] Gaia growing herself a nervous system". Is that what the Internet, the World Wide Web is about? And is there enough critical mass to speak of a "mass mind"? And is there an evolution in this kind of "global brain" during history³⁶?

037 Information profile (private, personal, ...) – identity theft

In another item, we talk about the control others can have on us (tracking of Internet behaviour, buying at a shop, ...). But our profile and those of others – virtual or electronic profiles – for instance in MySpace – can also be used by thieves. What is our role in the protection of the end user, our customer/client? Do we have to teach people the problems of identity theft? And what do people have today when they are confronted with it? How we tell people that they have the right to check what in certain databases exists about them³⁷?

038 Intermediary

A lot of firms following certain guru's like Tom Peters were "killing" middle management and also intermediaries, such as librarians in the 1990s. "Leaner meaner" and that kind of stuff... Nonaka and Takeuchi showed the importance of middle management for optimal results of a firm in the knowledge economy. An article in the magazine *Business 2.0* in late 1998 did the same for the intermediary. Do we have a role in 2007? Given that software is now used by everybody to do his/her research, it seems to be less "(information) professional oriented" [complexity] than it was some years ago? What is our added value? Do we still believe there will be a role for us as intermediaries in 2067³⁸?

039 Media

With Kevin Kelly a lot of people think everything nowadays is "out of control". But do not the media mostly belong to economic entities. Do

they not have an agenda different of ours? For instance: Why is American media describing war in Iraq from a certain angle? Why do newspapers in Belgium discuss certain items a certain way³⁹?

040 Social software (Wiki, ...) / Web 2.0 → ...

Will the future lay in the wisdom of crowds? Are the many really smarter than the few and how this kind of "collective wisdom" is imported in the world is explained by James **Surowiecki**? Can we put this also on social software as part of Web 2.0? And are things like Wikipedia part of it?

But do not forget that apart from people who want to put the right information / data on line, there are many who want to change the content because it's negative about somebody, an institute, a country or a political fraction. One can compare it with the photographs "photoshopped" by removing a part of the bodyfat of the president of France on holidays in the USA (*Paris Match*). Years ago the same happened in communist Russia with people who had fallen from grace and were no longer in the official government photograph. How can we protect the democratic use of the Internet? Do we believe people can trust this kind of software if it is "Out of control" but the question might be 'who has the control'⁴⁰?

Technology

041 Carriers - technologies

We may never forget the words of Michel **Buckland**: *"the purpose of and justification for library service should not be confused with the techniques and technologies adopted as means for providing service, even though our options are limited by the available techniques and technologies"*. When a new hype appears a lot of people think this or that new technology will be the solution⁴¹.

042 Computers - Spiritual machines (Moore)

Are computers spiritual machines like Ray **Kurtzweil** says and can they take over the job from us to search for what we want: quality information and does this all fit with the law of **Moore** (1965) which says the surface area of a transistor (as etched on an integrated circuit) being reduced by approximately 50 percent every twelve months⁴²?

043 End user – better software (thant the old?)

Today we have a lot of software that is made for the end user. Everbody can do something with it. But information professionals could do more and still can do more. We have lost certain ways to information. Will new technologies give us back the tools we had earlier? Or have we already forgotten how to use complex boolean esuations in questioning databases?

044 Mobile (tele)phone

The wristwatch phone in the old science fiction stories became a reality one can say with Arthur C. **Clarke** and today with the "cellphone" or "gsm". It is a modern Swiss knife... I did saw the Communicator of Nokia for the first time in June 1996 in Finland at an OECD gathering about Internet, and thought what will come next? How will we use the mobile telephone in the future in new information contexts? Will it not only fuse telephone, television, radio, music listening, cinema (film theatre), computer, word processing, texting (txt (msn- or sms-language), Internet and at last potentialities or opportunities we never dreamed of or we never wanted, like "always being in touc"? All this thanks to the algorithm of Andrea **Viterbi**⁴³.

A fact is that the mobile telephone and other means of mobile communication are hot on the work floor and that our sector will also get its part... [Do not forget that during the last ABD-BVD annual meeting (Inforum) few people had ever used some of these gadgets – apart from mobile telephones – yet ...⁴⁴] We will be part of smart mobs that "consist of people who are able to act in concert even if they don't know each other"⁴⁵. Will these "things" be useful for "digital nomads" living sometimes in mobile homes as in the USA where, in the year 2000, this type of housing in the year 2000 "accounted for about 20 percent of all new single-family housing starts and about 30 percent of all new single-family homes sold, and enthusiasts predicted that mobile homes would soon comprise more than half of all new homes"⁴⁶?

045 Technology assessment

Charles **Lindbergh** is said to have used the term "technology assessment" (TA) for the first time in a discussion with Mr **Daddario** at that time a member of the U.S. Congress. The Office of Technology Assessment (OTA) was established in 1972 in the USA. At the moment it no longer exists. The European Parliament has STOA (Scientific Technology Options Assessment), the Flemish Parliament has VIWTA (Vlaams Instituut

voor Wetenschappelijk en Technologisch Aspectenonderzoek). J.F. **Coates** described it as follows: "(...) is the name for a class of policy studies which attempt to look at the widest possible scope of impacts on society of the introduction of a new technology or the extension of an established technology in new and different ways. Its goal is to inform the policy process by putting before the decision maker an analyzed set of options, alternatives and consequences. (...) a most general and important form of applied futures research. (...) is extremely wide sweeping in its scope, it is not the decision process itself, but only one input that process". It would perhaps be useful that a TA-study would be done on the impact of new technologies in the information field. Are we losing or winning a lot by these new means⁴⁷?

Truth

046 Disinformation / Propaganda

When you look up the term "disinformation" in an encyclopedia published in 2003 about "Propaganda and mass persuasion (...)" you could read: "(...) is a term used to describe propaganda that is usually covert and therefore considered a form of "black" propaganda. The term is derived from the Russian *dezinformatsia*, which comes from the section (known as Service A for "Active Measures") of the KGB devoted to black propaganda. Disinformation means false, incomplete, or misleading information that is passed, fed, or confirmed to a targeted individual, group, or country. Disinformation is not merely misinformation that is erroneous". How much that we now read in the media is "disinformation"⁴⁸?

047 Ethics of the information

When we are talking about information ethics are we talking only about the deontology of the journalist⁴⁹? Are we, information specialists, not responsible for the information we deliver? Are we (not) responsible for what others do with it? We as the soldier who, after the war asks a superior if that superior was not responsible (for the killing of others)? The superior responds by saying the soldier could have chosen not to kill. Is this story of "Drausen vor der Tür" (Wolfgang **Borchert**) also part of our reality?

048 Game / Yester (– playing with words)

Is there still somebody able to tell the truth to the manager or to tell the emperor he is not wearing

any clothes? Can information professionals become yester⁵⁰?

Alternatively is it possible for us together with IT-people to learn from the young and how they play video or computer games with creativity, to make better interfaces to information for end users?

049 Rumour – soft information – viral marketing/information

Soft information would, long before hard information (that is always retrospective), show the way to what will come one day before it became trends or data. That was what **Seena Sharp** said about these indicative informations.

Rumours are a part of soft information. **Fernand Van Langenhove** wrote about those of the First World War in 1917.

The techniques of spreading the news / the rumour (Chinese whispers) are also found back in viral marketing (also called "viral information" or "marketing epidemics"). Do we have to document soft information in our systems? When will we take it seriously⁵¹?

050 Trust

One of the issues we must fix with a lot of what is going on in Cyberspace is to build trust in it. So you can pay and that no one steals your VISA number when buying a book. Is the information on that web page the official information? How can we certify this information /data in a neutral way so that people can trust it? Is there a role now and in the future for information professionals like us?

Virtual

051 Browsing

We did it in libraries or bookshops. Even in disordered bookstores, we enjoyed the fact that, in the end, we bought a book we weren't looking for. Is it the same on the Internet? Until now I do not believe that randomness is the same as following hyperlinks on web pages. Will this factor that is useful for creativity, science, etc.... be created in one of the following version of the Net? Will "information people" have a role in developing it⁵²?

052 Paperless office and "clean desks"

We can not put poison in certain books to have fewer readers ("*The name of the rose*" – **Umberto Eco**) or let books revert to trees ("*Flying to Nowhere*" – **John Fuller**). When the myth of the paperless office still exists, we can still think

about censorship and book burning or digitisation of books. But we may not forget that because of e-mail we use 40 percent more paper. Which carrier will make the change: "electronic ink and electronic paper" or will we continue using, the old-fashioned technology that refuses to die as a medium: paper? Will desks never remain clean because "clean desks are a sign of a sick mind", or in the words of Albert **Einstein** "If a messy desk stands for a messy brain, where would an empty desks then stand for"⁵³?

053 Plastic word – enigma

Uwe **Pörksen** did state that some words can replace others: words like communication, process, sex or information as a consequence of our society and language becoming more and more scientific. Thomas **Weck** called these words plastic words. Others called them connotative stereotypes, amorph plastic words (**Pörksen**) or amoeba words (Ivan **Illich**).

But do we information professionals know what information is? Some do not differentiate data, information and knowledge or they have other definitions. Who is the information manager? Is it the guy from IT (information technology) or one with a background in information and library sciences?

And what about reality? Is it more complex than the thesaurus or ontology we use? How will our systems of classification have to evolve to find back on the long run in the ever growing number of publications... and from the information point of view: what's new in every new publication? Is it only "publish or perish" plus 'copy and paste'? Will the moment of enigma stand between secret and revelation⁵⁴?

054 Virtual communities

The central idea in John Seely **Brown's** and Paul **Duguid's** book "The social life of information" (2000) is " (...) that information and individuals are inevitably and always part of rich social networks". Net communities follow a long tradition of communities forming/formed around documents. Text communities may be as old as text themselves: modern scientific communities, "invisible colleges", among others⁵⁵. Can we document science and technology history better through them? What about communities of practice (CoP) as part of the support of KM (knowledge management)? How will these developed "MUD's" (multi-user dungeon) or electronic communities be used in the future? Can we document knowledge this way?

055 Virtual life

Some years ago there was virtual reality (VR). Now a lot of people speak about life in virtual worlds. An article published in the *New Scientist* says "Second Life has morphed from a playground into a force for change in the real world". Because you can meet over there people you would not normally meet in normal life. Simulation of a version of the US military prison at Guantanamo Bay is one of the examples given by Peggy **Weil** of the University of Southern California, Los Angeles who says about it: "(...) such simulations are "more powerful" than a library or museum, because they exist 24 hours a day, and anyone from around the world can enter, keeping issues alive even when they fall out of the public eye". Do we think Second Life is just a technological game or will we also put our "institutes" and "services" in this part of Cyberspace? Do we have to take into account that reality bites back because in the virtual worlds also vandals, terrorists and lawyers can spoil the fun? Will we get a fusion of the real and the virtual in the future⁵⁶?

War and Terrorism

056 Echelon (eavesdropping) – COMINT = "communications intelligence" or interception of communications

When Brussels was European cultural city of the year 2000, an exhibition was taking place in its centre: <<http://WORLD-INFORMATION.ORG>> One of the themes of the exhibition was Echelon. Duncan **Campbell** then a journalist at IPTV Ltd. did a presentation on it at the World InfoCon Conference in Brussels. He made a report about Echelon – IC 2000 or Interception Capabilities 2000 – for the European Parliament in 2000 that was translated into French one year later as "Surveillance électronique planétaire [S.E.P.]" by Éditions Allia. The report explained how organisations that intercept signals (SIGINT or "Signals Intelligence") made dispositions in 1947 – to have access to big parts of international communications including illegal listening to: commercial satellites, long distance communications in space, underwater cables (using submarines), and interception of communications on the Internet. Echelon is managed by UKUSA (UK – USA) – a secret deal between NSA (National Security Agency - USA) and GCHQ (Government Communications Headquarters - GB) in 1947. Partners end 1990s were the USA, Great-Britain (GB), Canada, Australia and New-Zealand. Interception as

stated by an earlier STOA-report (Scientific and Technical Options Assessments Office of the European Parliament) of all e-mails and telephone or fax communications was not possible by that part of the structure. But all world communications by satellite could be checked by a related service. A question one can ask now and in the future: "How can I be sure that only my client knows..."⁵⁷?

057 Infobomb = cyberbomb = information superhighways? -> "information feudalism"?

"La bombe informatique" written by Paul **Virilio** explores the relationship between speed, war and information technology. Three historical deflagrations were evoked by Albert **Einstein** in the early 1960s and are from now on the agenda for the next millennium (1998): the atom bomb, the information bomb and the demographic bomb: "And the second is also present, with the threat of cybernetic control of the politics of states, under the indirect threat of a generalized accident". Why does **Virilio** think like that?: "But what we might add today is that this global systemic risk is precisely what makes for the strategic supremacy of the future "weapons systems" of the infowar, that electro-economic war declared on the world by the United States and that, far more than the viruses and other "logical bombs" hidden away by hackers in the software of our computers, this integral accident is the true detonator of the information bomb, and hence of its future power of deterrence over the political autonomy of nations. As the ultimate exemplar of monopoly, the cyberworld is thus never anything else but the hypertrophied form of a cybernetic colonialism, with the interconnectedness of the Internet prefiguring the imminent launch of the cyberbomb - the future information superhighways - and subsequently, the establishment, still under the aegis of the United States, not just of an expanded NATO but also of new all-out defences on the Cold War model, with cyberglaciation here supplanting nuclear deterrence"⁵⁸? Is it about the ownership of the Internet? About the control of/on the Net? And is this what some already call "information feudalism"⁵⁹?

058 Infowar

Marshall **McLuhan** wrote one day that "World War Three is a guerilla information war, with no division between military and civilian participation". Paul **Strassmann** who stated that there has to be an information doctrine, became involved in teaching information management at West Point, the American Military Academy. In the

same period the first course in information war started at Fort McNair, Washington (USA). But related documents were already published. Infowar is equal to information warfare and is a concept that was created around the Gulf War (Desert Storm) and advanced by an increase of information exchange in a military context. The info-war targets the info and information functions of the enemy, while protecting its own system with an objective to destroy the decisive system of the enemy or his command. So infowar is the war to control the information, power and riches in our world. Concepts that will be known better after what happened with Estonia in 2007 in what some call a botnet attack or WWI (Web War One): C2 = Command and Control; C2I = Command, Control and Intelligence; C3I = Command, Control, Communications and Intelligence and C4I = Command, Control, Communications, Computers and Intelligence). The question is: are the information infrastructures and the data/information they will contain in the future our backbone or our Achilles' heel⁶⁰?

059 Counterterrorism and "information fusion"

In a report written by the Committee on the Role of Information Technology in Responding to Terrorism - Computer Science and Telecommunications Board - National Research Council of the National Academies on "Information technology for counterterrorism - immediate actions and future possibilities" (2003) a chapter title reads: "Rationalizing the future research agenda". What's in?: Authentication, detection, identification, containment, recovery, cross-cutting issues in information and network security, C3I (= technologies for command, control, communications, and intelligence) systems for emergency response, information fusion for counterterrorism, privacy and confidentiality, and human and organizational factors.

But what does information fusion mean?: "Information fusion promises to play a central role in the future prevention, detection, attribution, and remediation of terrorist acts. Information fusion is defined as the acquisition of data from many sources, the integration of these data into usable and accessible forms, and their interpretation. (...) Information fusion gains power and relevance for the counterterrorist mission because computer technology enables large volumes of information to be processed in short times"⁶¹.

Is this the kind of software concept needed in a "war room"? Will it be used in this context only in the future and not also for, among others, industry and science?

060 Virtual war

Virtual war was at the end of the twentieth century the latest phase in modern combat: war fought by remote control. The wars in Iraq and Kosovo were such kind of wars. In 2000 Michael Ignatieff asked if this would become the way superpowers impose their will in the century ahead⁶²?

But is war possible without information? In a "Military dictionary English – French / French – English (...)" that was prepared under the direction of the Chief of General Staff, Canada and was published and printed by Edmond Cloutier – Ottawa (Canada) in 1945, one could find already the following lemmata: "*informant, information [=i.] (dissemination of false i., dissemination of i., essential elements of i., field i., i. centre, i. obtained, by reconnaissance, from*

prisoners, spies, by troops themselves, etc., i. obtained from neutrals on hostile territory, private letters, enemy's newspapers, etc., interpretation of i., meteorological i., military i.)/(i. météorologique, i. radiogoniométrique, service d'i.), informer, intelligence (aviation intelligence, combat i., i. annex, l. Branch, l. Corps, l. Department, i. journal, i. liaison service, i. net, i. officer, i. personnel, i. photography, i. records, i. registry, i. report, i. room, i. section, i. section and i. officers, i. service and i. situation map), rumeur, rumour, sabotage (sabotage et dissemination de fausses nouvelles), war game (Kriegspiel); war talk, ..." Because wars go together with mankind, many of us, worldwide, will, in the future still have to work for the military complex to feed it with the correct data – even in "virtual wars".

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