TOWARDS GLOBAL INFORMATION SOCIETY ????

Publications / Miles Conrad Lectures

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This will be another real lecture, only two guiding pictures, the rest for our eyes and for our ears and, after our sensors have fulfilled their function, followed by our brainwork. The idea for this lecture is "Looking at a Complex Puzzle" in n dimensions from different viewpoints including the changes brought about by time. Because of limited time and knowledge it will not be perfect! But we can expand it or make it shrink by using our creative capacity and thinking on it.

The title gives you anchor-positions with each single word - including one of the question marks - and with the possibility to combine two, three or all of them. I apologize if this may seem like a strong simplification to you, but my educational basis is engineering, that means I will try to show at least basic solution strategies out of an incomplete analysis for more than one piece and more than one layer of the puzzle.

In medicine and health sciences we would understand it as:

Anamnesis is followed by Diagnosis, then Therapy starts and hopefully the client will get better by Recovery or his Development.

I assume that in a certain sense we are all scientists because the main attribute of a scientist is curiosity and this is one of the forces which drives us, pushes us on in our life from one situation, one position to the next, and this is the reason why to start with:

Towards ?
Assume our first set of questions is:
- Where do we come from ?
- Where are we ?
- Where are we going ?

The road map is visible, but what does the vehicle look like?

It must also be asked: What do we mean if we say "We"?

If we define ourselves as "Information Professionals" the answers might be:

- We are coming from the Gutenberg age.

- We are in the midst of a wavy paper and digits ocean with underwater tunnels, sub aquatic glass fiber transport, mass transport by shipping, flying or even space travel for fast supply and operating with an incomplete GPS. We see shipwrecks, catastrophes and hurricane warnings. Our storage system and our access to products undergo vast modifications and we are looking for compatibility and bridges for gaps.

Here we should interrupt once again and ask ourselves:

- What are the reasons for this situation?

And we often get a simple answer:

- Technological developments forced us.

For the last question the answer could be:

- We do not know exactly where we are going, but how we are going. We are going, step by step, in a direction which results from our former actions. Naturally we have reasons for our steps, often economic ones like "Product Improvement", "Revenue Growth", "Customer Needs", "Efficiency" or even "Innovation".

But it is not only the "Technology Development", it is also mankind's fantasy that is driving us. Most of the developments that shaped our existing reality and our environment have been described already decades or at least years ago:

Jules Verne's imaginations have long become reality beyond his wildest dreams, other fantastic output like Isaac Asimow's robots and their laws, Arthur C. Clarke's computer intelligence, Stanislaw Lem's human and sociological implications and William Gibson's cyberspace are already part of someone´s mental boundary conditions somewhere.

Fortunately publishers are not restricted to journals only, as e.g. the Frankfurt Bookfair shows every year. J.R.R.Tolkien, Joanne K. Rowling or Philip Pullman with their fantasy books give additional food to the readers´ and viewers´ brains and they give very effective possibilities to escape mentally from problems in the real world as offerings in other media also do from Lucas's Star Wars over SS Enterprise to the movies and TV-products even closer to cyberspace imaginations.

The plot, the description and the map exist and they are documented and may introduce ideas and thoughts into the readers' and viewers' minds and so direct one or the other creative mind towards inventions either with positive or with negative implications for mankind.

We know very well that solutions that were put into practice always have two faces:

A hammer is a useful tool and also a terrible weapon - and mankind is not at all "peaceful only".

This fact leads to the puzzle layer of legal and security precautions which we will have to look into a little later. We also have to come back to "Cyberspace" when looking for society aspects created by the fantastically continuing Internet growth.

Back to our set of questions. If we try to look at it from the viewpoint of a "Member of an Industrial Society" the resulting answers - although in regionally varied wordings - may be very different:

- We are coming from an "Agricultural Society" after having been "Hunters and Collectors" and we have undergone dramatic cultural revolutions.

- We are in an industrial society and see steadily increasing productivity, slowly changing into a society of service providers .

- We go towards an "Information Society".

But - do we really have in time and space only one type of "Society" on this planet?

Let us look globally now!

Global ?
Looking around and taking our personal knowledge into account we have to realize that we have still all types of societies co-existing and if we would concentrate here and now on "Information" and combine parts of the title again and try to target on a "Global Information Society" the fact of a multi-society world needs a more detailed investigation. The results of such an investigation will finally force the players to a different treatment of needs and possibilities in the different regions and society segments, circumstances and conditions.

Naturally we know that the world consists not only of STM information and that information is there to be used by human beings. If you are hungry or ill you are not at all concerned about primary and

secondary publishing or A&I layers. But does this knowledge influence our activities? What would this mean for our business behavior?

The individual circumstances of our current and potential users lead to a regional differentiation of the general situation of the population between several parts of the world, especially between our beloved western industrialized zone and Russia, Asia, South America and - to set an even sharper contrast - Africa. Although technology is spreading out and the INTERNET grows like hell the differences are there as well in culture and life style as in the individual situation and the available economic resources.

Facts are:

Even today, still more than 50% of the global population have never made a phone call.

Far more than a billion people of the global population are starving or working at starvation wages.

The advantages of fast and broadband global communication for education, knowledge formation, and economic development are obvious, although not everyone in every corner of the globe or even everywhere in our personal environment can make use of it. People need skills, users need equipment or its availability and they must be "a little rich" or be enabled to overcome those deficiencies.

Does it make sense to speak of "globalization" under those boundary conditions? What can our money-driven culture do for those without the respective "change" in hand to get well educated, to have the necessary information and the know-how to improve their conditions of living?

For the production factor ENERGY in the fifties of the last century your President Dwight D. Eisenhower initiated the "Atoms for Peace"-Program with the intention to enable more countries to use nuclear power for needs of supply and their industrial improvements. Worldwide networking was initiated including advanced information exchange.

Do we think it is possible to combine the forces of the UN, for example WHO or UNICEF, with those of the main industrialized areas on earth US, EU, Japan including NFAIS, EUSIDIC, IPA, IFLA and others to set up and perform a worldwide "Read, Write, Calculate and Think"-Program for a demonstration of the advantages of information usage and knowledge formation to more people on earth. I know that several projects on a more limited scale are already in existence.

Do you think we can combine those attempts with our expertise to begin such a precompetitive ReWCaT-Project? It may start from points with multiplying capacity in all continents to give help for self-helping. By the way, this is one prerequisite to widen the information market place, a must for us and an investment to reduce specific costs for production and distribution.

But now let us first have a closer look at:

Information?
Information is information. It is neither a physical substance nor energy. Information can be seen as a link in the chain:

Sign - Word - Information - Knowledge.

Technology is not information. Its content and its availability and understandability for the right people in the right place and at the right time makes information on "products" and "production methods" to be one of the "production factors" equal to capital, energy, raw material and manpower.

If we assume that information is important for the steadily growing global population and take an information world point of view, we see a large number of players in the arena:

- Before looking at professionals we should not forget the mass of children and young people under education (or not) and in training courses aiming to develop their individual skills under very different conditions.

- Scientists, more and more of whom are producing publications as preprints, in journals, in books - the flood of information may gain tsunami dimensions.

- Publishers, struggling between Gutenberg and Digital Media, merging to gain a better and more competitive size or working in niche markets, looking for copyright infringements or not and developing new prizing schemes for changes in distribution channels and conditions.

- Printers, who are very happy that readers want to have paper in their hands including journals and books. The digital, paperless office envisaged by information pioneers has not become reality, and probably never will.

- Secondary publishers see a clear necessity to bridge a gap between digital media and traditional library shelves to ensure accessibility of references and quality material. Work is underway to organize the Deep Web as far as allowed by the content owners.

- Librarians are restructuring their skill-necessities and their position in supply and education for better services in the multimedia environment although the problem of long-time archiving is not solved yet for most of the new products. The bandwidth for their duties is growing far beyond collecting, archiving and preservation. They must and will play a significant role in the future of information societies.

Following that line, we certainly should include

- Accumulators,
- Booksellers,
- Professional information brokers and
- Knowledge managers.

Then we may reach

- Readers and Viewers - and here we close the cycle with the so-called end user, who may be Scientists. They still prefer having paper documents in their hands, which leads to rising local paper consumption for printing and copying. But in order to be able to use new media additionally and to handle information retrieval from a multitude of providers they will either have to improve their skills or they may reject the offers and deliver results out of their work with reduced and limited quality.

This is one possible loop but several other circles are feasible as well because networking is 'in'! The list shows clear necessities for activities by different players which are partly underway but in all cases are not switch-on/switch-off - events:

Education
Education
Education
Efficient Linking between Information Sources and the Media
    Standards for a more Economical Work Flow
    Legal Development according to Global Trade Conditions
    Linking between Local and Regional Solutions

Naturally all of these are technology dependent and vice versa.

If you say, these are not all of the players around, you are right. There are the governments, national and international scientific societies, the lobbying groups, NGOs, some hundreds of consortia, the telecoms, the education systems with schools, colleges and universities etc. etc. etc.

Looking at those puzzle pieces it is obvious that it would be a good thing to agree on the following statements:

- None of the players can do everything alone by himself!

The consequence is, that cooperation is necessary wherever possible and feasible.

- Competition is one of the driving factors of innovation and progress!

Therefore monopolistic strategies can never be ultimate solutions.

- Communication as part of the networking process is a must:
- for handling and understanding cultural differences,
- for understanding each other's language,
- for integrating local progress into a global net.

Those statements at the same time should cause concern about our ability to reach sufficiently useful solutions at least for a greater region than one school or one town.

Let us go back from players and human aggregations to information itself. For information we can differentiate between a symbolic, a syntactic and a semantic level as well as a rating level of the effect of information.

If we concentrate on information usage and on human receivers of information it is important where the receiving person deposits the incoming signals from the respective sensors after perception and interpretation in his or her knowledge storage, the brain. Within this process information can also be understood as the difference between the perception and the already existing experience.

This organizational process of consciousness leads to a modification in the intellectual structures of the individual - this is the formation of knowledge with the target to reduce e.g. the uncertainty level of an individual or to fill gaps created by active curiosity. In total this is an individual process and not transferable, but it can result in higher quality of information produced by this human being for subsequent knowledge formation processes by others. Knowledge is more than information!

Unfortunately knowledge often is not clearly defined, which leads to uncertainties in common understanding e.g. of what knowledge management means. Here we are in a similar situation as in attempting a definition of life, consciousness or intelligence.

To use another metaphor we are talking of Information flow to be distributed via channels in separate directions from senders to receivers and back again. Once more, together with manpower, capital, natural resources and energy the information on products and production methods is one of the five production factors. Therefore it is one type of goods for trade. Goods which are distributed in open or closed channels. Both, the goods and the channels are of value and have owners and these facts need special protection and legal attention, e.g. under WTO considerations.

Technical protection creates a new need for regulation to keep the technical potential harnessed within the limits of social acceptability. Examples here are the encryption discussions between US and EU or the fact that European customers are reluctant to give their credit card numbers via Internet as long as they are not convinced of sufficient technical and legal safety.

Conferences on DRM (Digital Rights Management) show in detail what is happening around intellectual property protection. Napster in music, DeCCS (CCS: Content Scrambling System) for ripping of videos, the differences between DMCA in the US and the European approach in digital copyright, the intelligence services´ activities and the human rights protection are main topics there.

In the environment of cyberspace, the books of William Gibson, Burning Chrome (1986) and Mona Lisa Overdrive (1988) give you an idea what this may mean to societies´ development, under powerful and global and uncontrollable connections as well as distribution and usage opportunities.

We create a totally "New World" for legal and regulatory developments compared to the traditional roman law used in continental Europe and Japan or the case law approach in the Anglo-American environment. The difficulties of harmonization are obvious not only because of the lack of results of the Global Business Dialog around 2000. The importance has also been demonstrated in a dramatic and drastic manner on and after September 11 and:

We are not ready!
This means also "Cyberspace" is an absolutely undefined environment for society development and this has to be taken into account in the case of educational, legal, business and other activities also in the "Information Arena", an expression which certainly limits our view too much! Again "Ocean" may be the better term!

This is now the step to

Society?
Although we touched already on the different types of typical descriptions which are used to characterize societies and their development from the sociological viewpoint:

- From hunters to farmers to industry to information as guiding mainstream.

but with the fact in mind that all the revolutions have not been global, that all types of society still exist in parallel in all parts of the globe, with different needs to survive or to progress. We might feel that jumps are possible from hunter to industry or to information. But certainly this needs special education procedures, special information material and time for adaptation of those cells of mankind.

We are listening to our customers! What did they tell us? Did we ask the non-customers? Should we?

For further considerations we might like to shift the focus again from global in general to the global industrialized layer of the world. There we may feel the future is to be developed, it is the leading cell structure on earth.

Let us look at the daily behavior of people there at work and during leisure time:

The communication activities moved strongly to telecommunication, youngsters blow up the SMS traffic, in business e-mail is absolutely common, fast and widely accepted, although it may be legally of some threat as lawsuits have demonstrated. Working conditions change a lot and fast by teleworking and computer assisted workflow. Companies appear and disappear, merge or separate, reorganize or move faster and faster. The cellular structure is under evolution.

And how about the often-cited cultural differences within this industrialized layer? In a certain way they seem to disappear in the electronic environment. Language barriers are reduced either by shifting communication to English or by the use of automatic translation systems. Fear of losing one's cultural heritage is rising already, especially because there is no market for it.

There are areas of high interest for local or regional societies with cultural developments to be protected or for transfer of cultural heritage together with a free flow of information into archives for the growth of a collective memory. But who takes care and pays for the work to be done? Parts - naturally incomplete - may be covered by the tourist and travel industry. Others are nationally subsidized with tax money.

Free flow of information requirements, the use of distance learning materials, the differences between the US Freedom of Information Act and the special protection of databases in the EU create fear in

scientists that access to information will be closed. But look, how institutions reacted to viruses and physical terrorism. Doors and windows got closed! Security got high ranking!

Is information supply our only task? What about information legacy, skills for information production? When we look at the titles of the Miles Conrad Memorial Lectures we see that a lot of details have been treated and explained during the last ten years:

1994: Angst and Anticipation: How Will We Fit in the New Information Age?
By Robert G. Dunn

1995: Killer Apps
By Morris Goldstein

1996: The New Information Paradigm: Threat or Opportunity (or Both)?
By Roger Summit

2000: How to Prosper in the Era of the Internet
By Bela Hatvany

2001: Looking Back to Look Forward
By Karen Hunter

But our experience and our knowledge show that the constantly developing market for information also needs a continuous and comprehensive anamnesis/analysis, careful diagnosis and efficient therapy. This includes the more detailed investigation of the changes in human behavior - because our customers are all human. And this we have to do over and over again not to be overrun and wiped out by the uncontrollable legal and illegal technical and behavioral developments on earth.

The human time constant to modify, to adapt and to change behavior is much longer than the time constant for technical progress. This is one of our most serious and unchangeable handicaps, which we should always keep in mind.

Towards Global Information Society?

The use of metaphors to describe the development of and the search for the real truth may be methodologically questionable but it helps us not to lose the connection to the past when we are trying to form our future. This is the intention in summarizing and giving you a chance never to forget the following metaphor:

The development towards a global information society looks like the baby's development lying now in our hands. Please remember the nice photo of Georgia (five days old) from Anne Geddes, Australia:

Please recognize, Georgia is

- ready to develop into a changing environment,
- to grow and collect knowledge by information gathering through all sensors available,
- her brain already has billions of neuronal cells,
- the bones and muscles may give a strong backing against physical load,

- the whole chemical and pharmaceutical plant is operating.

What is missing?

- Naturally the good food for growing up.
- The education by a family in a safe home and later by the uncontrollable environment in the outside world as soon as she enters it.

In total: The changes brought about by time.

And although we are not able to look into the future we know for sure:

This character under development is unknown!

It is clear that without contours, clear structures and interfaces to other types of societies the risks for an information society cannot be kept as low as we might want, and more important, a global growth will develop incompletely and at least partly unsatisfying. In any case the future of the information complex needs steady careful observation and improvement whenever and wherever necessary and possible.

The structure is there, the basis is formed, the development is now in our hands.

I am optimistic to see solutions arising, but being realistic I expect good and bad ones. Analyzing the literature, e.g. like the bible, should help us to form a better future. It describes many scenarios and events, dating back thousands of years. And many of the current events are replicates of history in a new costume.

This was an attempt to transform a multi-layer puzzle into a cell structure with a growth program. The metaphor is visible, let us not forget the difficulties and risks in the coming next steps of the growth process.

Finally I want to thank the NFAIS president and his team for inviting me and giving the honor to me to present the NFAIS 2002 Miles Conrad Memorial Lecture.

I thank you very much for your attention. It was a pleasure for me and I hope for you as well, but:

Please, take care of the baby!