

1 KNOWLEDGE NAVIGATION AND THE CULTIVATING ECOSYSTEM FOR INTELLECTUAL CAPITAL

LEIF EDVINSSON

1.1. Introduction

Let us look at 2 professional tennis players. One of them is serving. The other one is just preparing for the counter strike. Is this player then looking at the ball or the counter player?

Does it make a difference? What does it imply to focus on the ball versus the one who is serving the ball? Will this make a difference, e.g. by this shift in focus to be able of anticipating the path of the ball and then at an earlier time choose a suitable counter strike? The trained perceptive brain is doing precisely this, grasping and hedging what is to happen, a kind of Strategic Knowledge Navigation.

Knowledge Navigation is a complex and compounded challenging issue, especially when the global knowledge flow, like multiple waves at the sea is rolling in on the beach every 24 hours.

At Lund University the late professor Stefan Dedijer inspired a starting point for the subject on *Quizzics* - The art and science of questioning. This is a fundamental dimension for both the navigation in the Knowledge Based economy as well as the future. A good question triggers the brain to develop new connections or synapses. A good question might be more focused on whom than what, i.e. relationship rather than object.

In my practice of Knowledge Leadership it has become a part of the pedagogic to use images. One of the very first images, but still very valid, is the tree of knowledge. It is used to illustrate the holistic perspective and eco system of **Intellectual Capital(IC)** as well as its hidden dimensions. In this symbol of the tree, the fruits are highlighted as assets, based on a flow through the tree of nutrition based on the capabilities of the roots. The soil is the enabling cultural context for continuous renewal and knowledge growth.

However, to this can be added 2 major dimensions related to the Knowledge Era; a timeline as well as the logic. The time line is the present surrounded by the past and the future. The logic is based on, among others, the research of Professor Karl-Erik Sveiby, on **Human capital, Organizational capital and Relational capital**.

Furthermore, if the perspective is to prepare for the future, then the tree dimensions might be turned upside down to amplify the strategic perspective shift of this cultivating ecosystem, as illustrated below.

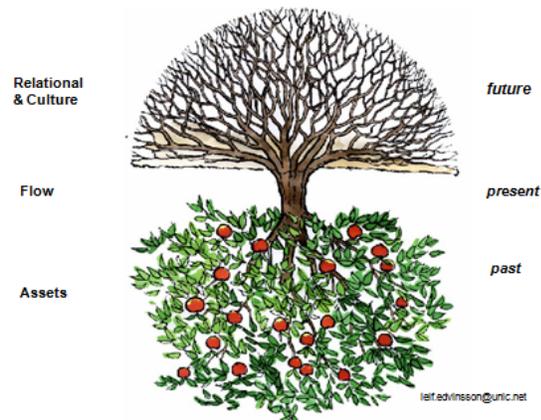


Figure 1. The tree of knowledge

1.2. IC of Nations

Some years ago I started to look for an enlarged perspective on how to view Intellectual Capital - IC of nations. Especially if we take a perspective of future earnings, i.e. a future outlook and capabilities view, this becomes very challenging.

Among others, Nick Bontis in Canada followed up on this. Later on, Carol Lin at TICRC - Taiwan Intellectual Capital Research Centre and her colleagues started to do interesting research on this. One of the most recent benchmark reports from 2007 list the following as the top 10 countries regarding Intellectual Capital:

- Sweden
- Finland
- Switzerland
- Denmark
- USA
- Norway
- Iceland
- Singapore
- Netherlands
- Canada

This leads to many interesting questions. How sustainable is such an IC of nation position? What kind of knowledge policy is needed? Why are so many of these listed ones from Northern Europe? Is there a reason behind why many of them are rather small scale nations? Why is not the USA on the top? And where is IC of China? What are the emerging IC trends?

The quizzics is still to be elaborated by much more research. But some emerging patterns indicate that island nations are scoring higher. Furthermore, the density of human capital as knowledge workers is a critical issue. But even more so is the surrounding infrastructure and structural capital.

For the further development of more refined Agenda of Knowledge Era Politics a group of knowledge oriented volunteers have gathered in the name of The New Club of Paris. See www.the-new-club-of-paris.org/

Such Knowledge Era Politics dialogues have taken place in, among others, Finland, Morocco, and soon Austria and Singapore. It indicates the growing interests among national leaders and institutions to investigate how to prepare for the challenging knowledge economy issues. Denmark was one of the first countries to have a special Competence Council already in the early 1990's. Finland has also been in the forefront. One of the more recent consolidated ones are the AKEA- Arab Knowledge Economy Alliance, initiative in Middle East. See www.akeame.com

METI in Japan is also addressing these new economic dimensions. And recently PRC- Peoples Republic of China has started to address them. This large part of the world has in terms of IC of Nations

- Human Capital 1,3 billion or about 20% of world population, and expected 2015 to supply 5 million University graduates annually at the same volume as USA and EU together;
- Relational Capital , a growing proportion of world trade, and is now soon the largest exporter in the world, with an impact on among others , trade flows, currency reserves, and investments flows, and
- Structural Capital, still in progress, but today with the largest harbors in the world, as well as the nation with the most Internet users in the world, more than 210 million.

The aspirations are high. In December 2008 an IC Summit is planned to be held in Beijing, with academics, business and political representation. To this can be added that PRC is now planning for a start of some 5 IC centers, with Hong Kong as the starting hub. There The Hong Kong Polytechnic University has taken a lead in pioneering initially KM Research as well as now Asia Intellectual Capital Alliance, together with HKSTP-Hong Kong Science and Technology Park.

1.3. Knowledge Longitude

With a time line and the navigation metaphor it might be easy to think of the Longitude. This is a special dimension, actually a third dimension beyond altitude and latitude to describe position. The unit of measurement is time. So it is a relative 3 dimensional position. Could it be that knowledge is of the similar character?

If knowledge is not in our heads or an object, but seen as a relationship, we need to discover new ways for navigating into the unknown, to be able to develop a universe of not value chains but value stars, as stated by late R. Normann.

The Past - Some observations with a 60 years perspective

What were some of the major events in the baby boom year 1948? One of them was of course the birth of Karl-Erik Sveiby. He later grew up to become a world leading pioneer in the subject of Knowledge organizations. Some other notable points from 1948

- WW2 is over and the Soviet Union starts a blockade of West Berlin, and a new air bridge is born
- BRD-Bundes Republik Deutschland is created
- Declaration of Israel's independence
- Andrew Lloyd Webber is born as well as the famous soccer coach Sven Göran Eriksson
- T. S. Eliot gets the Nobel Prize in literature
- The United Nations launches the Universal Declaration of Human Rights
- WHO – the World Health Organization is being established
- Harry S. Truman is elected President of the USA

With an even longer perspective it is now 500 years since Amerigo Vespucci drew his discovery map of the new continent, later called America, following the female name tradition. In the same way globalization discovery has been at the forefront both by China and Portugal.

The present - Some observations

On a Google search for the name Karl-Erik Sveiby there are today about 15 900 hits and on Yahoo 46.100 hits. KM has become an overwhelming and most mature subject. Karl-Erik Sveiby was one of the very first PhDs on the subject. Today they are numerous. Dr. Sveiby and Dr. D. Amidon were among the early pioneers in the late 1980s.

Today in every corner of the world there is something going on with a relationship to the Knowledge Era, research, education, consulting, networking, seminars, conferences, projects, and enterprises.

For the intensified flow of knowledge there is the evolution of internet and media on line. It is not only the mobile phones, but now smart phones and mobile media devices. The www is still a youngster, but is having a great impact on the networking of brains and thoughts.

How will this impact the Knowledge Era dimensions? Will the phenomena of blog and wiki, as knowledge sharing tools, lead to a new level? The well-acknowledged Professor Dave Snowden, earlier at the IBM Knowledge Management Center and Cynefin, now on Cognitive Edge, sees blogging as a social global knowledge sharing tool, resulting in improved knowledge productivity. See www.cognitive-edge.com

The Future - some observations

What are some of the emerging signals to look for and perceive? What kind of updated mapping and deepening compass system do we have for our Knowledge Navigation?

Will the Knowledge Era be replaced by some other era? Early signs indicate that we are moving towards more and more intangible perspectives. So the next era might be called the *Mind Era*, according to Professor Csaba Varga, at the Institute of Strategic Research in Budapest, Hungary.

Will there emerge on the National level some new dimensions of Knowledge democracy? Emerging research and prototyping is already under way in Hungary, Croatia, the UK and many other places.

In Second Life, shaped in 2003, a new virtual economy is emerging. Is this reality or actuality? The economics is there as well as the currency exchange to Linden dollar. See www.secondlife.com

1.4. Culture and Values

A deeper and more intangible ecosystem dimension of the Knowledge Era is presented by culture and values. Are culture and values the soil or context for value creating activities as well as standard of living? Which culture or context will then shape future well-being and sustainable wealth?

A special and very interesting mapping has been designed and elaborated by Inglehart and Welzel from the World Values Surveys. See the map below (Figure 2) or at www.worldvaluessurvey.com

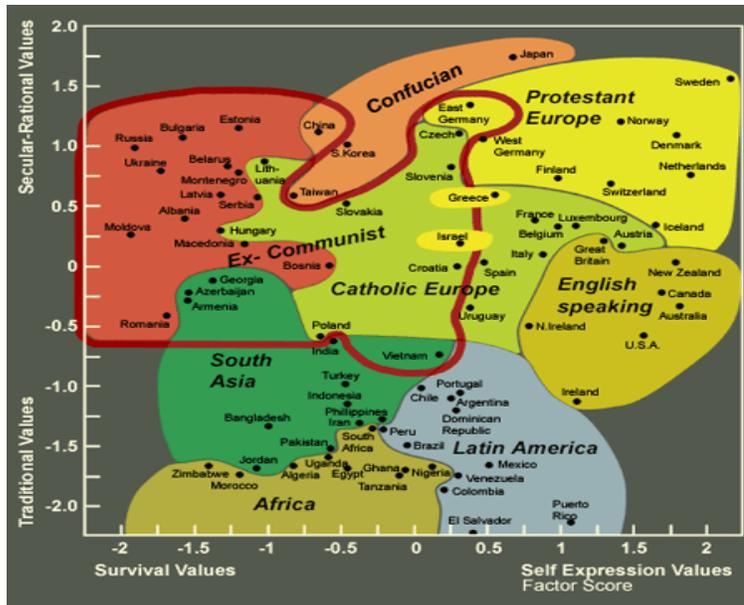


Figure 2. Inglehart –Welzel : Cultural Map of the World.

What they found is that 70% of cross national differences is described by evolution in the dimensions of traditional/secular values versus survival/self expression values. This might imply a shift from the tangible Survival economy to the culture of intangible Knowledge Relational Economy dimensions. Societies ranked high on self-expression are also ranking high on interpersonal trust, tolerance and political moderation. This is said to shape a culture of high individual freedom and with self-expression values for participation in environmental protection, tolerance of diversity and rising demand for participation in decision-making in economic as well as political life.

It is very interesting to find nations such as Sweden, Norway, Denmark, and The Netherlands and to some extent Finland as well as Japan and Hong Kong in top ranking positions. It seems to correlate with the earlier mentioned study of IC of nations as well as more common economical wealth statistics. Another interesting observation can be made related to the position of China versus the USA on the map.

If the above map is relevant for nations, could then the same values dimensions be relevant for enterprises? If so, then the management and leadership in the Knowledge Era need a much more refined management approach of value creation based on culture and values. The traditional economics approach will be too narrow. Something that Dr. Charles Savage, since long, has been elaborating, now on the www.kee-inc.com

The difference in values is also what the recent work of D. Andriessen and M. van den Boom is looking into, with a special focus on West versus East. In short the Asian perspective is more focused on the relationship dimensions while the West is focused on the object **and intellectual property ort copyright** dimension.

Furthermore, it looks from work by Ruut Veenhoven's World Database of Happiness that happiness has been raising in many of the top listed countries.

<http://worlddatabaseofhappiness.eur.nl/> Could this be a signal for a new type of reward system, based on a more intangible dimension? Here the Neuro Science will navigate us to more understanding around the dopamine and serotonin dimensions for the Mind Satisfaction.

From this follows many different approaches to the Knowledge Navigation, Knowledge Management and Knowledge Leadership. A new bottom line approach will emerge. See more on www.bottomline.se

For board of directors it will require a closer look at the past as well as present culture, but also take culturally oriented leadership actions on these intangible mapping dimensions for a new actuality.

1.5. IC Accounting and Measurement

One of the starting areas for the KM movement was the measurement of Invisible Balance Sheet and the pioneering work of Professor Karl-Erik Sveiby in a project group in Sweden called Conrad Group. This was some 20 years ago. Now this has grown into a world community of measuring intangibles, Intangible Assets and IC. Some of the early important contributions are around IC efficiency and the work of both Ante Pulic on VAIC, Nick Bontis on IC value dynamics, Jan Mouritsen on Knowledge Reporting and Goran Roos on the IC index.

Some of the recent developments are among others the following ones.

RICARDIS- Reporting on Intellectual Capital to Augment Research, Development and Innovation in SME's – a European Commission project finished in 2006.

In Germany started a special, now very successful, project in 2004 called Wissensbilanz Made in Germany, under the leadership of BMWA - Bundesministerium für Wirtschaft und Arbeit. It has now evolved to incorporate small as well as large German enterprises, both public and private. It has resulted in open software that can be downloaded on www.akwissensbilanz.org, By now more than 20.000 enterprises in Germany have downloaded the software.

This work is a pioneering work as it goes from reporting IC as a position to a process view of the interaction between the components to shape value. It has a lot of benefits from leadership viewpoint. This systems dynamics approach is also described in articles and research papers, among others in *Journal of Intellectual Capital* 2007, Vol 8, and No 3. ; *IC or Wissensbilanz Process – Some German Experiences*

Another EU project called InCas-Intellectual Capital Statements made in Europe 2007 was launched as a follow up on these. It focuses on expanding the learnings from the German Wissensbilanz project to 5 countries with a target for 50,000 EU SME's to be using InCaS knowledge tools and techniques by the end of the project dissemination phase (Dec 2008). Since January 2008, a "Wiki", or special InCapedia, has been under

development at LSE within the InCaS project. It provides an emerging interactive encyclopaedia about anything to do with Intellectual Capital and Intellectual Capital Statements. See www.incas-europe.org

In March 2008, EFFAS – European Federation of Financial Analysts officially published the 'Principles for effective communication of intellectual capital'. It can be downloaded on the EFFAS website: http://www.effas.com/pdf/EFFAS_CIC_web.pdf.

In Asia there is also a lot of progress, especially in Japan with METI – Ministry of Economy, Trade and Industry. But also South Korea, Malaysia, and China have work in progress on the measurement and reporting of IC/Knowledge Capital. Australia is of course, in the forefront based on early input from Professor Karl-Erik Sveiby and Professor Goran Roos.

Accounting and measuring has since long been an instrument of and for knowledge. The core of this measuring might be refined to a dynamic navigational dimension, *me-assuring*, meaning to be on the right track with the right direction and speed. In other words much more of systems dynamics eco process view of value creation.

1.6. Networking and Relational Capital

One of the core dimensions for the Knowledge Era seems to be in the Relational Capital. If we are looking upon knowledge as an interactive issue, and put networking and contactivity into the forefront of knowledge leadership, then new types of relational capital mapping emerge. In CMM – Center for Molecular Medicine, at Karolinska Institute in Stockholm, Sweden, this is being done and reported in its annual IC report.

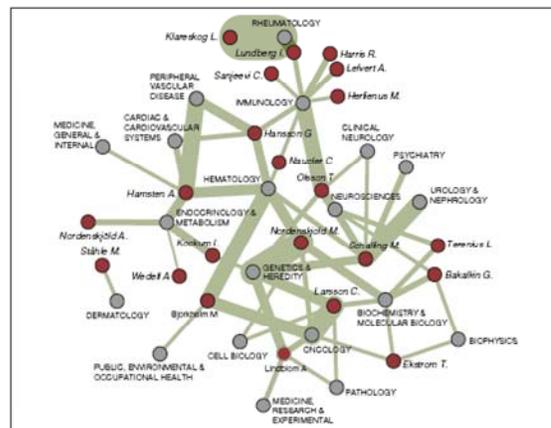


Figure 2. Publications pattern of the CMM research groups. Data produced by Catharina Rehn, Karolinska Institutet Library.

www.cmm.ki.se

Figure 3. Publication patterns of the CMM research group.

CMM is a leading research group and community of scientist, ranked as number two in the world in its field. A special structural capital model is shaped for the around 400 in-house scientist, of which around 50% are Ph.D graduates. However it is the networking between the scientists that shape different kinds of productivity, illustrated by the map above. Next step is to start going deeper into this internal perspective and then add the external perspective. Especially since the knowledge flow is done on a global base in more and more virtual networking enterprises.

The traditional economical tools are too limited to capture the flow of knowledge, the impact of the flow and value creating dimensions over time. For the Knowledge Era this kind of Social Network Analyses is becoming more and more used as a tool. Especially for Science and R& D communities this seem to be a good starting point for understanding knowledge flow as well as getting a base for further investigation and investment.

1.7. Knowledge Innovation and Future Centers

Knowledge innovation has recently become a very elaborated concept. It started among others with Dr. Debra Amidon as a concept 1993. It is now a registered trademark of Entovation International Ltd with the following distinction – *The creation, exchange and application of new ideas into goods and services*, as stated in her book *The Innovation Super Highway* (2003). It has been refined into many dimensions. See www.entovation.com.

In my work in Skandia we also launched in 1996 an arena for such knowledge innovation, called Skandia Future Center. It became one of the world's first prototyping labs for Organizational Capital. We were focusing on the innovation dimensions as an organizational issue. In this work we also collaborated with Dr. Debra Amidon. The critical question became how to build a bridge between brains inside, called Human Capital, and brains outside the enterprise, called Relational Capital. This bridge, as Organizational Capital, was and is the channel for flow of knowledge. So the Renewal and Innovation dimensions of Organizational Capital became a very essential ecosystem perspective.

After us came many other similar places, however with different context and aspirations, such as ABB Future Center, Sweden, EON Future Center, Sweden, Minc for Malmö City, Sweden, Mindlab, Denmark, Future Center, Norway, Mobilion/LEF and many more in the Netherlands, Innovation Lab for Royal Mail, UK, Scottish Intangible Asset Centre, the UK, Beér Sheva in Israel, Mind Tree in India. Today there are more than 30 such hubs for knowledge innovations and more in progress among others in Asia. The most recent one was launched in November 2007 by ABN Amro Bank as a special hub for dialogue, learning, prototyping and incubators. See www.dialogueshouses.nl

The learning is now being captured in a European Commission funded project called Open Futures, describing the operating systems of such Hubs. The project report will be available in the early autumn 2008. See www.open-futures.net.

Some of the learning is related to the following aspects

- in sourcing of outside intelligence;
- experiential Knowledge Exploration;
- dialoguing across disciplines and generations;
- reduction of fear for collaboration and meeting the future;
- location, space design and furniture;
- psychosocial architecture, and;
- icons for the timeline past –present-future.

The usage of some old artefacts of the past gave perspective, harmony and some aha´s. For example this little trolley, used 100 years ago (Figure 4), to move Knowledge from one office room to another, in the shape of the general ledgers, as big heavy accounting books. It was the Wi-Fi of that time or Skype...



Figure 4. A 100 years old trolley.

Today Google has designed its new European HQ in Zurich (Figure 5) with many of such dimensions. Among others, the flow of human capital, seen below. See also <http://picasaweb.google.com/zurich.office.images>. It is said to be related to a kind of management style and culture within Google that nurtures artful exploration and innovation.



Figure 5. Google's European HQ in Zurich

Close to this is also the Japanese concept of BA, developed by Professor I. Nonaka. Ba is a special place that bridges the sharing of information and knowledge. Ba means context, circumstances and connections in which knowledge is created, shared, utilized and stored. A Ba is an arena where knowledge becomes “visible”. Different types of Ba exist related to the famous SECI model, to originate dialogue, systematize and apply or internalize knowledge. The concept is now used for workplace design in for instance Hitachi.

Based on the research of professor I. Nonaka the famous SECI model below (Figure 6) can be related to the various types of area for knowledge creation, as has been done by Y. Yoshimoto. It highlights among others different models for different focus and context.

As Noburo Konno writes, closely collaborating with professor Nonaka, most enterprises today have designed their offices for administrative work, based on old paradigms and inadequate understanding of knowledge creation. Now it is time to look for cognitive design, social knowledge dimensions and knowledge campus models. So we might learn from another type of ecosystem that is less adequate for for administrative functions and more apt for knowledge innovation. In Japan this is also referred to as a Ba.

FCs and other Centers in SECI Model

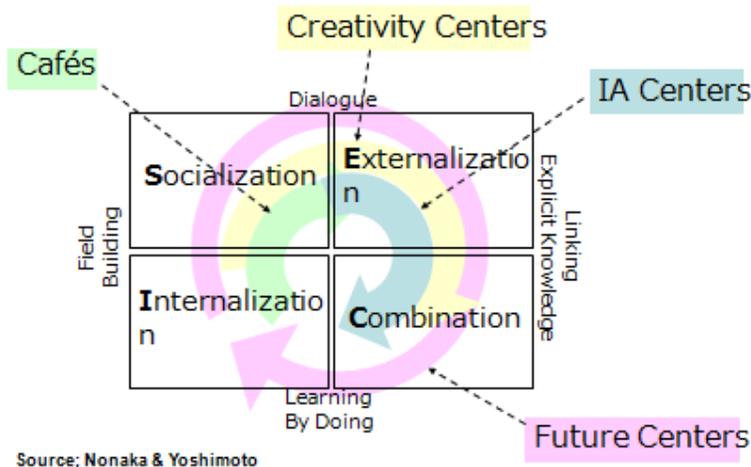


Figure 6. The SECI-model.

1.8. Knowledge Innovation Zone

On an aggregated level such spaces are now emerging. KIZ has a special meaning as an area, or larger space for knowledge innovation. In the global development of knowledge economy this becomes very important. The definition by Dr. D. Amidon is as follows:

A Knowledge Innovation Zone (KIZ) is a geographic region, product/service/ industry segment or community of practice in which knowledge flows from the point of origin to the point of need or opportunity. In short, focus is on the flow of knowledge, not finances or technology per se (Amidon 2003).

For a long time there has been a search for intelligent zones for enterprising and society wealth creation. Besides the famous area of Silicon Valley, another interesting and successful one can be found in Malaysia, The Super Multimedia Corridor. Famous European areas are the Science Park Sophia Antipolis, outside Antibes in France and Ideon in Lund, Sweden, and both the 22@ and the Forum in Barcelona. Many more are now in progress. See www.inthekzone.org.

A recent interesting example is Shenzhen, China. This is a city on the borderline close to Hong Kong. This city had some 20 years ago about 40.000 citizens. Today its population is over 12 million. It was selected as the very first prototyping city, region or area for transforming China, as a Special Economic Zone - SEZ. Shenzhen was later followed both by Shanghai and Tianjin as SEZ. Now they are looking for how to upgrade an integrated Shenzhen and Hong Kong to become more of a KIZ.

These areas are characterized by for instance city leadership focus in combination to a larger context, attraction of talents, special economical incentives, refined infrastructure and architecture.

But the challenge for the future might be even more of a SIR – societal intelligent region, as a knowledge ecosystem.

SIR is characterized by being both a KIZ but also by social renewal in a creative way, based on societal intelligence and high degree of consciousness, energized by volunteering human capital, leveraged by a digital infrastructure and collective self governance, thereby bridging local society and global opportunities.

Such new regions or zones are of course challenging the traditional models of governance and public administration. According to the work by C. Varga and E. Ugrin, we are heading for a civil society and *globnatil* (global and national) regions. They are said to have more social consciousness and activated social engagement, among others based on IT, with promotion and conversation of knowledge into social capital. Such a prototyping city is Aba in Hungary with an intelligent city program. Intellectual Capital is said to play a vital role for the co operative mixing of its fragmented components, based on a triple process of combining global, national, and local sphere – *globnatil*. See www.strategiakutato.hu.

Innovating social and societal organizations becomes critical for the collective wealth and well-being. For this work a special framework has been developed and described by Bennet, in the book Knowledge Mobilization (KMb) in the Social Sciences and Humanities. It is about how to bring knowledge, people and actions together to create value streams and social improvement. As once Peter Drucker also pointed out, it is about committing current actions with future value outcomes.

1.9. Brain and Neuro Science as part of the Knowledge Eco system

Einstein once said “Imagination is more important than knowledge”. Today we know that one of the more central parts of future research of the knowledge subject is related to emerging insights from brain research and neuroscience. It is evolving rapidly in the medical field, but less rapidly in the connection to social science and management. However work is in progress for instance in Japan, France and Sweden at Stockholm Brain Institute, for integration of neuroscience and cognitive behavior with our social behavior. But still most of it is uncharted territory yet to be discovered, especially related to the ecosystem of the knowledge era.

A grown up brain has some 100 billion brain cells. The brain is said to store about 1 million such new connections every second of our life, resulting in 100-500 trillion such synapses or connections in a mature brain. These synapses are the bridges for information transfer. By exploring the context a young brain adapts its connectivity and continuously improves its network, by keeping only the essential links.

Chemicals are important for our creativity and functioning of synapses or connections in our brain. One such chemical signal is dopamine, perhaps one of the strongest as reward system, also for knowledge workers. Recently it was released by British research that the volatility of the stock exchange could be linked to the hormones of testosterone for upside movements and cortisol for downside movements.

For the release of new thoughts and creativity it appears that the frequency of brain waves in terms of Hertz units will give different outcomes. The frequency of 4-12 Hz seems to be a good frequency to release our creativity. So we need to find the mindful context for that frequency in both office planning as well as urban planning.

The global information flow as well as our understanding is increasing and with a humble approach we can find new patterns for a better well-being. A well being that is based on new interactive patterns between billions of brains with a continuously growing larger societal perspective. A recent book is even talking about the Political Brain.

What we started to prototype at the Future center has now more and more verified that context and culture, as knowledge ecosystem, have a great fertile impact on our brain and thinking and human relationships for the future as an asset.

So with these thoughts and perspectives I want to salute Dr. Karl-Erik Sveiby for being the Great Pioneer, inspiring so many Brains, Projects and Learning around the World.

Happy Birthday!

Some References

Amidon D., *The Innovation Super Highway*, Butterworth and Heinemann, NY, USA, 2003

Andriessen D. & van den Boom M. , *East is east and West is West*, Journal of Intellectual Capital, UK, No 4, 2007

Bennet A. & Bennet D. *Knowledge Mobilization in the Social Sciences and Humanities*, MQI Press, USA, 2007

Edvinsson L. & Kivikas M *IC or Wissensbilanz Process – Some German Experiences*, Journal of Intellectual Capital 2007, Vol 8, and No 3.

Edvinsson L. & M. Malone, *Intellectual Capital-Realizing your company's true value by finding its hidden brain power*, Harper, 1997

Edvinsson L. *Corporate Longitude – Navigating the Knowledge Economy*, Bookhouse & Pearson, 2002

Konno, N., *Knowledge Workplace and Office Design*, Paper, 2008

Lin C. & Edvinsson, L. *National intellectual capital: Comparison of the Nordic countries*, Journal of Intellectual Capital, UK, 2007.

Nonaka I. & Yoshimoto Y., Presentation at METI, Tokyo, Japan, 2007

Normann R. ; *Reframing business – When the Map changes the Landscape*, Wiley, UK, 2001

Varga C. & Ugrin E. , *New Theory of State and Democracy*, 2008, Institute for Strategic Research, Budapest, Hungary

Western, D., *The political Brain*, 2007, Public Affairs, NY, USA