Summit for the Future Report

presented by the

Club *of* Amsterdam

Welcome

Felix Bopp, CEO, Club of Amsterdam

Sharing the Future

"There is a slightly odd notion in business today that things are moving so fast that strategy becomes an obsolete idea. That all you need is to be flexible or adaptable. Or as the current vocabulary puts it, 'agile.' This is a mistake. You cannot substitute agility for strategy. If you do not develop a strategy of your own, you become a part of someone else's strategy. You, in fact, become reactive to external circumstances. The absence of strategy is fine, if you don't care where you're going." - Alvin Toffler, the world's most reputable and influential futurist.

Our first Summit for the Future was visited by more than 100 delegates from Belgium, Canada, China, France, Germany, Greece, Hungary, Iceland, Indonesia, Israel, Latvia, Luxembourg, New Zealand, Portugal, Russia, Saudi Arabia, Spain, Switzerland, The Netherlands, UK and the USA.

The Opening Event was attended by 230 persons and in January we had more than 40.000 visitors on our website.

22 Partners: Bayer CropScience, Infolution, HES Amsterdam School of Business, École Polytechnique, Paris, the Medical Faculty, University Basel, Media Academie, Hilversum and the Corvinus University of Budapest, musik.woche with musik.lounge, KnowledgeBoard, The Association for International Broadcasting, Fuel Cell Markets, H2World, Promedia, Medical Knowledge Institute, The World Future Society, Health Management Forum, Shaping Tomorrow, European Health Telematics Association, World Summit Award, World Futures Studies Federation, Gemeente Amsterdam Economische Zaken and the Embassy of Switzerland in The Hague.

The general feedback was very positive - the participants especially appreciated the interdisciplinary aspect as well as the global presence at the Summit. The outstanding quality of the 40 speakers and stream leaders ensured inspiring lectures and workshops. Some key speakers were: Glen Hiemstra, leading futurist from USA, Simon Jones, director of the former M.I.T. Lab Europe, Frank-Jürgen Richter, former director of the World Economic Forum in Davos, Tom Lambert, leading consultant, Gerd Eisenbeiss, leading energy advisor to the German government as well as to the EU - to name just a few.

We would like to thank all partici-

pants, knowledge stream leaders, students of HES Amsterdam School of Business, partners, everybody who made this Summit for the Future an inspiring and energising event!

Sincerely

Felix Bopp
CEO, Club of Amsterdam

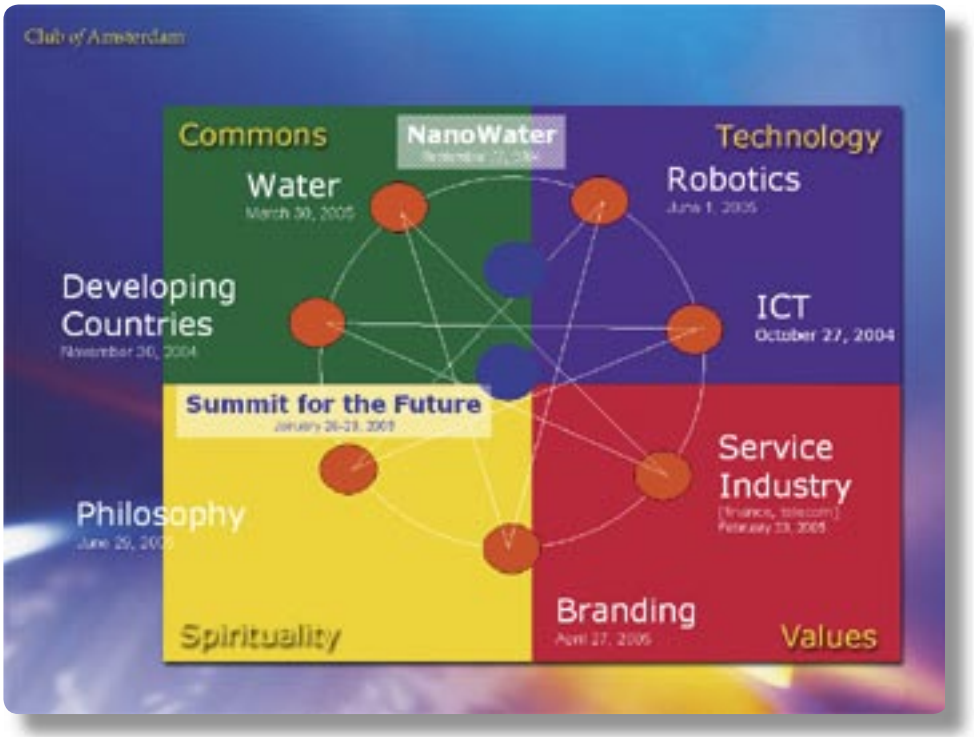
Amsterdam, February 2005

The Club of Amsterdam

The Club of Amsterdam is an independent, international think-tank that organises regular high-level discussions on preferred futures. It involves those who are not just talking about the future - but those who are active participants in shaping the outcome. So far we've organised more than 20 specialised events, each tackling a different sector within society.

We currently have more than 2.300 members, close to 30.000 unique visitors per month of our website. Members receive the Club of Amsterdam Journal. We recently also launched the Club of Amsterdam Open Business Club.

Please visit our website at:
http://www.clubofamsterdam.



Club of Amsterdam Season 2004 / 2005

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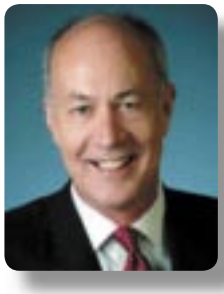
Quotes & Thoughts

Quotes & Thoughts

E.P. Cassee, Managing Director, HES Amsterdam School of Business: "We are very glad to host you this year, but also in the years to come: Davos is the World Economic Forum and Amsterdam is the Summit for the Future!"



Glen Hiemstra, Leading Futurist from Seattle, Futurist.com: "Together we have to preserve the planet; together we have to create peace. In the end the future is not something that just happens to us, it never has been. The future is something that we do and the challenge always is, to do the future as well as we can."

Vladimir Petrovskiy, former Director-General of the UN in Geneva: "What is needed is not only a knowledge-based economy, but rather a knowledge-based society."

Tom Lambert, Chief Executive, Centre for Consulting Excellence, Professor of Consultancy, Rushmore University: "If you are not scared, your dreams are not big enough. I hope that we can all share a big dream as we share these 3 days together."

Wendy L. Schultz, Futurist, Infinite Futures: "Let us dream with courage and let us do this by listening, collecting interesting and provocative ideas with implications for different possible futures. Clarifying our own goals, values and ideals. Sharing the visions that we have and are beginning to emerge and listening to other people."

Stefan Schneider, Chief International Economist, Head of Macro Trends, Deutsche Bank Research"
"The conference is very thought provoking especially since we have people here from so many diverse backgrounds - bringing their experience together - that really makes a very inspiring atmosphere."

Prof. Vasco Garcia, University of the Azores, former Member of the EU Parliament: "I think that the years to come will show us a tremendous progress and change in technology, in science, in the way the organizations are to relate themselves with the surrounding world. This is of extreme importance. I'm really very pleased with the way the works [at the Summit] are going on."

Thomas Schael, Research Manager, Institute irso (Istituto di Ricerca e Intervento sui Sistemi Organizzativi), Management Consultant, Butera e Partners: "So I think that events like this, which are physical events, have to continue to be run in the future. And I will be very glad – as KnowledgeBoard is mainly an online community – to link in to the events of the Club of Amsterdam in the future."

Felix Roth, student, HES Amsterdam School of Business: "It's not idealism today that is pushing us, it's a necessity. We are facing perhaps the end of our world. I think it's something we owe to our children."

Mathijs van Zutphen, Philosopher, educator, artist and creator of VISH: "Strategy means to have a plan and then react to your surroundings, see what happens in the marketplace… No, forget it….

Create your future ... vision, the vision-thing, that's what it's about. What you want the future to be? That's how you start acting."

Katie Begg, Principal Lecturer, Institute of Energy & Sustainable Development, De Montfort University: "This conference is absolutely perfect, because what it's doing is implementing trans-disciplinarity and that's exactly what we need."

Manfred Kern, Bayer CropScience: "From the viewpoint of a person working for Bayer CropScience, it is satisfying and challenging that the *Club of Amsterdam* with its agenda and visions and the platform *"Summit for the Future"* is closing a long lasting gap. There is now a center in the world for unconventional thinkers with courage and self-confidence, for interdisciplinary working groups pursuing common objectives, sharing common values, following the same rules, and enjoying a certain freedom of scope and even "protected areas". A platform which needs people who possess the ability to communicate, who have a questioning culture, who are big enough to allow mistakes, who are willing to take risks, and who ultimately have confidence in a positive future."

KEYNOTES

Tom Lambert

Chief Executive, Centre for Consulting Excellence
Professor of Consultancy, Rushmore University

Winning the Future - Dreams Can Make The Difference

It's good to be scared

Some time ago a woman, far wiser than me, sent me a note. It read, "If you are not scared your dreams are not big enough". Today I speak about a few dreams that are making a difference in the hope that although our dreams may scare us a little, we go on dreaming and work together to make dreams a reality.

One man's dream

250 years ago a man called William Shipley had a dream. He dreamed that if he could bring together the best, most original thinkers in the arts, science, manufacture and commerce with the real "movers and shakers" in the same fields they could alleviate the poverty that was all around them. In 1754 in London poverty was rife, but it was no worse that the poverty that we see in many parts of the world today. More than one in three babies born died without reaching their first birthday, of those that survived 9 per cent died before they were four years old. They still do. Almost half the population of London died without reaching the age of maturity.

The Royal Society of Arts was the outcome of Shipley's dream. It has not yet entirely eradicated poverty, but it has made a significant contribution to the massive improvement that has occurred. Today Sir Paul Judge and his colleagues are developing a new mission to continue to live Shipley's dream based on five principles.

- Bright Ideas
- Zero Waste
- Capable People
- Strong Communities
- Global Citizenship - and they continue to marshal the best minds that they can find to make the dream come true.

The world today

Today the 16 per cent of us that were lucky enough to be born in a rich country own 57 per cent of the world's resources. We have safe access to food, water, medicine and shelter and we spend our considerable residual income on luxuries undreamed of by even our grandparents. Meanwhile 84 per cent of the world is in a situation not dissimilar to that of the people of London 250 years ago.

The tsunami

The generosity of the ordinary people in all parts of the world and the total news coverage of the recent disaster in South East Asia has placed the word "tsunami" in almost everybody's mind, heart and on our lips. Michael

Howard a British politician not exactly known for his humanitarian credentials has pointed out, however, that every week of every year a similar number of people die from disease and poverty as were killed by that once in a lifetime wave and we easily push that thought from our minds.

Aid

People can be generous, but the total aid given by the rich part of the world to our poorer neighbours totals some $50bn annually. A considerable sum, but with 5 billion people living in the countries receiving this support this amounts to just ten bucks per person each year. It is hardly enough to make a difference. Trade can make that difference.

Trade

A one per cent increase in trade from the developing countries of Africa, Asia and Latin America could lift 128 million people out of poverty, but to grow trade by even one per cent demands fair trade. We, in the rich world do not offer fair trade, we offer trade on our own terms and those terms frequently include protecting our own inefficient industries.

The Law of Comparative Advantage demands that each should freely contribute what they can do best. We have created a law of comparative disadvantage in which we insist that we, in the wealthy countries use our comparative advantages of technology to maintain an environment in which our inefficiencies can still triumph to the cost of the rest of the world.

A cow in the EU can attract $2 a day, in subsidies. Meanwhile 800 million people subsist on less than $1 a day.

Other's dreams

The Prime Minister of Malaysia shares 2020 vision with his colleagues. According to the United Nations his government has already halved poverty in Malaysia, but his dream goes far beyond that achievement. As chairman of the International Council of Muslims his mission is to eradicate poverty in the Muslim world, but his dream is greater than his mission. In recent discussions he told us that he plans to use all that he learns to play a major part in eradicating world poverty. The Global Business Partnership Alliance, that has honoured me by inviting me to sit on their Advisory Board with some of the world's real business brains, has the dream of creating and using a growing body of knowledge to create and sustain global partnerships that genuinely deliver tangible and sustainable benefits to rich and poor countries alike.

My twenty year dream

For twenty years I have dreamed and worked toward a global partnership that enables the growth of all economies through cooperation and knowledge transfer. The establishment of our South

East Asian operation is fulfilling my dream of consistently enabling the best use of the best people regardless of faith or ethnicity. We are now bringing East and West together through our dedicated presence in Europe and the USA. Africa, Latin America and the Middle East will follow in quick succession.

Enabling partnership

Recent research (Global Business Partnership Alliance 2005 and ongoing) suggests that the key enablers of partnership include shared objectives and values, openness and transparency in dealings, mutual benefits, recognition of obligations and complete knowledge transfer.

The next three days

During the next three days we will be very rightly celebrating the future of medicine, technology and commerce. As we do so I hope that we will dream of how the often dramatic and exciting advances can be used to create a better life for all on this planet. And, at the back of our minds I hope that we keep the thought alive that if we are not a little scared by our audacity our dreams are not big enough.

Glen Hiemstra

Owner, Futurist.com

Lessons from the Future: Creating the Knowledge Society

If you don't go far enough back in memory, or far enough ahead in hope, your present will be impoverished.

Let's begin by going back in memory. My grandparents Tache and Fiemke Hiemstra left Friesland in 1911 and headed to Montana to attempt to become wheat farmers. Inspired by a postcard photograph of Montana and driven by an image of the future, they took the risk to go.

What is your image of the future? Your image of the future is vital, as it directs many of your actions today. To understand your image, you must ask three futurist questions about the future, what is probable, what is possible, and what is preferred?

When my grandparents arrived in Montana they lived in sod house. After nearly 20 years they gave up and moved on. Sometime in the late 1920's they must have looked at each other one evening and said, "you know, it is unbelievable how much life has changed since we were young children in Friesland." In fact, everything had changed, as they had lived through the last "Techno-Economic-Social Revolution" which was the electro-mechanical revolution. In about 30-35 years, they had seen the movie camera, the telephone, X-rays, the discovery of the cause of malaria, the use of electricity, the automobile and the assembly line, the radio, World War I, airplanes, and more.

Now, we are living though our own techno-economic-social revolution as once again a set of transforming technologies are creating economic and social change, which then accelerates the technology, which leads to greater change, a virtuous cycle. Ours is driven by energy technology, biotechnology, nanotechnology, and of course digital technology, all of which are driving us toward the knowledge society.

We are going to address the technologies of the techno revolution, but before we do, let's address one more powerful driver, the shape and nature of the population.

World demographics are changing, as the population becomes old, young, and gone. It is well known that populations in Europe as in the US and the rest of the world are getting older, much older. Historically people lived to be 65 but they were rare. Now it is common, and the percentage of the population over 65 will increase in the next 15 years from 10 or 12 or 14 per

cent to 20 or 25 percent or more. What does this mean? We are conducting a grand social experiment, and the experimental question is how shall we organize society when so many people are over 65?

The population is also getting young, in a special way. Some regions or countries of course have large youth populations, but in much of the world this group is not dramatically large. What makes them special is that they grew up with computers and later the Web. This makes them the first 'digital natives", born since about 1981. The rest of us are digital immigrants. We might be good with computers but the digital world is always new to us. For natives computers and the digital world are normal, the way it has always been. The word always is important, because if something has always been, you both take it for granted, and you extend the use of the technologies beyond what digital immigrants can conceive. Since it takes about two and half generations, historically, for a techno-economic-social revolution to move from the early inventions to the point that the new way is the dominant social economy, the digital native generation is key. Baby boomers invented the Internet, Generation X's built it into what it is, and the Digital Native generation will make it the norm but in ways not yet even imagined.

Finally we are reaching the end of population growth. A birth rate of less than 2.1 means that eventually your population will shrink. More than half the world is below replacement. Germany has a birthrate of 1.4, Netherlands 1.7, UK 1.7, France 1.8, Italy 1.3. Eventually this will mean shrinking populations, as Japan begins to experience this year. And, it means a fascinating economic question. How do you maintain a growing economy when there are fewer customers each year? The first reaction is to bolster national birth rates, but there are better choices, which would enable a higher standard of living.

Four technologies drive the techno-economic-social revolution and contribute to the creation of a knowledge society.

First on *energy*, we are nearing the moment of "peak oil" when half the world's supply is used up. That could be 2027, next year, or some time in between. Whenever it hits, we will have about 10 years to replace half of what we do now with oil.

The *biological* revolution is leading to enhanced longevity, so much so that we may increase the life span by 10-20 years in the next 30 years.

The *nanotechnology* revolution is well known at the Club of Amsterdam through your previous programs. This ability to manipulate matter at the atomic level is already yielding real products.

Finally there is the *computing* revolution. In 10 years we will see things like omnipresent sensors, ubiquitous computing and broadcast, fragmentation of content, credit-card sized computers as powerful as your laptop, national biometric ID systems, and spherical, holographic crystal memory devices the size of a golf ball holding one million gigabytes of data.

A significant and fascinating possibility: live, 3-D communications on the Web. The video sampleesented at the Summit] comes from a software developed by Mark Billinghurst, now Director of the Human Interface Technology Lab at the University of Canterbury in Christchurch, New Zealand, a sister lab to one with the same title at the University of Washington in Seattle, where I am a Visiting Scholar. The video illustrates that using desktop PC' s and today's Internet, it is possible to send live 3-D images of people over the net to remote people wearing Augmented Reality glasses. Put the glasses on, you see the other person in full 3-D plus you see the rest of the real world you are currently in. Take the glasses off, and you see only your current world. This is the eventual future of communication.

As we shift to a knowledge society, what kinds of social economic changes will we see and must we adjust to?

Stints or short time and temporary work will replace traditional jobs for a growing percentage of the workforce, eventually a majority. Stint workers will move from project to project and company to company in very fast cycles, necessitating a new way of looking at work and understanding your skills.

The **end of traditional retirement** looms as more people live longer, and we begin a reinvention of this third phase of life.

Homes will go back to the future, to being centers of life where you do some learning, some of your work, entertaining, and so on, more like what homes were for tens of thousands of years.

Learning will be available anywhere anytime, making the learning enterprise without boundaries or walls.

Finally, in a **knowledge economy** we will see revisions in how we make things, how we buy and sell things, how we communicate, how and when we travel, how our home relates to where we work, and so on, the basic stuff of the social economy. All will be rethought and reinvented, requiring new models and new knowledge.

That is a look at some of the drivers creating a knowledge society, and a few of its characteristics. What will it demand of us?

If you listen carefully to the future, you can hear what it is ask-

ing of us, what the future wants us to do.

A new enlightenment in the world is desperately needed, one that takes forward to the old concept of space ship earth, the idea that we are all in this together for the long haul. This means preserving the planet and seeking peace. The future asks us to build learning societies, because the acquisition of new knowledge on a continuous basis and the application of that knowledge is the key, and learning is the only pathway to get there. And a learning society must include the whole society, not just a few innovators.

The future asks us to convert to the **next energy era** as soon as possible, entering even crash programs to do so, for the sake of the planetary environment, for security, but most of all because it is so smart to do so. This shift, which will occur over the next 25-50 years will constitute the biggest business opportunity in the history of the planet.

The future asks to accelerate the shift already under way to manufacturing that uses less energy, wastes less, and is cradle to cradle in product design.The future asks us to figure out how to develop an integrated intelligent global labor system, moving beyond battles about the export of jobs.

Finally, the future asks us to built out the **broadband communications system**, bringing it the last mile to every inhabitant of the planet.

In the end the future is not something that just happens to us. The future is something we do. Let's use the Summit for the Future 2005 to do the future better, to create the future we prefer.

Glen in his preferred element ... in this case on Desolation Peak, Washington State North Cascades National Park.
In the distance, Mt. Hozomeen. Jack Kerouac, in Desolation Angels, wrote, "Hozomeen, Hozomeen, most beautiful mountain I ever seen."
I agree. (GH)

Vladimir Petrovskiy

former Director-General of the UN in Geneva

Knowledge-Based Society as a Way to Peace, Stability and Well-Being

The convening of this Summit by the Club of Amsterdam, the highly respected, independent international think-tank is an important event. The discussion of the Knowledge Society in all aspects by policy makers, high intellectuals and knowledge workers could not take place at a more significant moment. Five years, which have passed since the Lisbon European Council have proclaimed the knowledge based economy as the strategic goal for 20I0, give the chance to reflect on the lessons that can be learned from European experience in the global context and contemplate how best to continue to promote the knowledge based society.

In my statement I shall deal with the European approach, the efforts of international organizations and the importance of responsible constitutional democratic governance at all levels for building a knowledge society.

I

Since ancient times learning has been the major objective, pursued by Europeans. Nowadays this objective becomes the top priority not only for governments, but for society as a whole, for the private sector, for the players in the new economy and for each citizen, who, like Socrates, will never cease learning and learning to learn.

On March 23 and 24, 2000, the European Union has set itself a few strategic goals for the next decade: to become the most competitive and dynamic knowledge based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion. For achieving this goal an overall strategy has been formulated. It aims at:

· preparing the transition to a knowledge-based economy and society by better policies for the information society and R&D, as well as by stepping up the process of structural reform for competitiveness and innovation and by completing the internal market;
· modernizing the European social model, investing in people and combating social exclusion;
· sustaining the healthy economic outlook and favourable growth prospects by applying an appropriate macro-economic policy mix.

This strategy is designed to enable the European Union to regain the conditions for full employment, and to strengthen regional cohesion in the Union. This new European strategic goal has been

accepted as an inspiring example by many countries in the world, which are looking for the ways to have peace, stability and well-being in a new world by using fairly the fruits of Globalization, which has brought it to the forefront issues of technology and communication.

Indeed, as the European Council has proclaimed, the shift to the digital knowledge based economy, prompted by new goods and services will be a powerful engine for growth, competitiveness and jobs. In addition, it will be capable of improving citizens' quality of life and environment, in which we live.

In a new knowledge-based society, promoted by Europeans, businesses and citizens must have access to an inexpensive, world-class communications infrastructure and a wide range of services. Every citizen must be equipped with the skills needed to live and work in this new information society. Different means of access must prevent info-exclusion. The combat against illiteracy must be reinforced. Special attention must be given to disabled people. Information technologies can be used to renew urban and regional development and promote environmentally sound technologies. Content industries create added value by exploiting and networking European cultural diversity. Real efforts must be made by public administrations at all levels to exploit new technologies to make information as accessible as possible.

Of practical attraction for other countries are the efforts to modernize the European model by investing in people and developing an active and dynamic welfare state, which may be crucial for ensuring that the emergence of the knowledge economy does not compound the existing social problems of unemployment, social exclusion and poverty.

There is a real interest in many countries to understand how to offer learning and training opportunities tailored to target groups at different stages of their lives: young people, unemployed adults and those in employment who are at risk of seeing their skills overtaken by rapid change.

The international community needs the European experience in advancing new concrete future objectives of educational system, focusing on common concerns and priorities while respecting national diversity.

As well-educated and skilled people form the basis for the creation, dissemination and effective application of knowledge, a know1edge-based society depends on a comprehensive educational system that embraces the diverse spectrum of a population. Such a system shou1d ensure a growing share of highly skilled specialists in the workforce, while creating favourable

conditions for continuous adult and professional education.

The other lesson to be learned is promoting **social inclusion**. Europe gives an example how the new knowledge-based society can offer tremendous potential for reducing social exclusion, both by creating the economic conditions for greater prosperity through higher levels of growth and employment, and by opening up new ways of participating in society. The Europeans well understand that at the same time, the knowledge society brings a risk of an ever-widening gap between those who have access to the new knowledge, and those who are excluded. To avoid this risk and maximize this new potential, efforts are made to improve skills, promote wider access to knowledge and opportunity and fight unemployment: **the best safeguard against social exclusion is a job**. This encourages the flexibility necessary to adapt to the rapidly changing needs of social development and the knowledge-economy.

Last but not least, it is a great interest in a more coherent and systematic approach, which the Europeans advocate, to put decision into practice. A new open method of coordination as the means of **spreading best practice and achieving greater convergence** towards the main EU goals involves:

· fixing guidelines for the Union combined with specific timetables for achieving the goals which they set in the short, medium and long terms;
· establishing, where appropriate, quantitative and qualitative indicators and benchmarks against the best in the world and tailored to the needs of different Member States and sectors as a means of comparing best practice;
· translating these European guidelines into national and regional policies by setting specific targets and adopting measures, taking into account national and regional differences;
· periodic monitoring, evaluation and peer review organized as mutual learning processes.

I would like to stress that the European Council makes a special appeal to companies' corporate sense of social responsibility regarding best practices on lifelong learning, work organisation, equal opportunities, social inclusion and sustainable development.

The European Council also makes clear that achieving the new strategic goal will rely primarily on the private sector, as well as on public-private partnerships. It will depend on mobilizing the resources available on the markets, as well as on efforts by Member States.

With the time passing it becomes quite clear what is needed today is not only knowledge-based economy but rather knowledge-socie-

ty. As for education in the knowledge-society, it cannot be limited to the information technology and economy. It should include common human values, culture and religion, the policy-making and its implementation.

Looking into the future, we cannot ignore the experience of the past.

In Europe there were always two conflicting approaches to school education: traditional and liberal:.The traditional view, school education as a tool for preparing a child for entering adult society as a prepared citizen. The liberal one finds it most important to preserve the child's nature that is supposedly good and self-sufficient and does not need any interference on the parts of adults. Paradoxically, as we can learn from our life experience, these two approaches to school education intertwine and merge in practice.

Of practical importance is to preserve in the future the famous German philosopher Wilhelm von Humboldt's model of the university that unites teaching and research. The university is the unique institution of sciences that combines in itself analysis and synthesis, tradition and change, conservatism and liberalism. Entrepreneurial practices, that direct only at the expedient earning their own money erode not only subtle values of higher education but also weaken the foundations of the democratic society.

I deeply believe that in the new world decisive is not the quantitative factor, the size of the country, of its population, but the quality, which depends upon the level of education and social cohesion.

The European experience presented at the expert level could help the other countries to find the answer to the questions what is to be done and how to promote knowledge-societies, the basis for peace, stability and well being.

II

The application of the European experience in the building knowledge society in other parts of the world is very much facilitated by the fact that at the turn of the 21st century we face not only the challenges of globalization, but also the change of the civilizational paradigm. The world is becoming the interdependent global society, characterized by intellectualization and globalization of economy, on one side, and cultural differences, on the other.

For the first time in history there are no more debates at the high political level on the meaning of the major goals of the emerging global society.

I have been fortunate to participate in all the UN Summits, in 1960, 1995 and 2000. At the last Summit I was particularly struck

by the remarkable convergence of views by all world leaders on the question, what is to be done before the challenges of globalization. Leaders agreed on the necessity of actions to maintain peace and security, to provide stability, sustainable development and to protect the human rights. There was a consensus that no individual and no nation must be denied the opportunity to benefit from globalization. Global issues must be managed in a way that ensures an even distribution of costs. Those who benefit the least are entitled to assistance from those who benefit the most.

To build a peaceful, democratic and equitable international order, the leaders of the world have committed themselves to freeing our fellow men and women from the three major scourges:
1. abject and dehumanizing poverty to which more than 1 billion individuals are currently confined;
2. violence in all forms: civil conflicts and terrorist activities;
3. danger of living on a planet irredeemably spoilt by human activities.

World leaders have unanimously agreed that in order to achieve their goals, they have a collective responsibility to uphold the principle of human dignity, as the major guideline in their approach to all the issues on the global agenda. These words were followed by deeds when a year later in Johannesburg, South Africa, all the UN member-countries adopted the programme of actions. This programme is known as the Millennium Development Goals (MDG). It targets for 2015:

1. to halve the population of people living on less than a dollar a day and those who suffer from hunger;
2. to ensure that all boys and girls complete primary schools;
3. to eliminate gender disparities in primary and secondary education preferably by 2005, and at all levels by 2015;
4. to reduce by two thirds the mortality rate among children under 5;
5. reduce by three quarters the maternal mortality rates;
6. halt and begin to reverse the spread of HIV/AIDS and the incidence of malaria and other diseases;
7. to ensure environmental sustainability;
8. to develop a global partnership for development.

A global consensus on what the MDG are is not yet translated into a consensus on the priority of threats we are facing today. While some see terrorism, weapons of mass destruction and criminal networks as the biggest threats to security (the so-called "hard threats"), most see civil wars, diseases such as AIDS, poverty and environmental degradation as the key problems, although "soft threats" by comparison. Under these new conditions, the major issue today is how to deal with the hard threat

without neglecting all the others. After all, they are interdependent like our world and should be treated comprehensively.

The leaders of Europe, US and Russia rightly speak about strategic security, which in historical discourse means that security should be treated in all aspects.

It would be proper to remind that the concept of security in all its aspects, which has been jointly proposed by Moscow and Washington, was unanimously adopted by the United Nations at the 44th Session of the General Assembly in 1989 (Resolution 44/21). According to this Resolution, security should be dealt with not only in its military dimension but also in a comprehensive multifaceted manner, as the security from violence as well as from hunger, diseases, environmental degradation and any violation of human rights.

The achievement of this aim makes the protection of individual as the top priority in the new world. In other words, the core of the new vision of strategic security is the human security, which should provide positive peace - not only absence of terrorism and wars, but also stability and well-being.

The disagreement on how to cope with the threats we are facing today, has a negative effect on achieving the MDG goals. Eradication of poverty remains the most immediate concern for development initiatives of the New Millennium. According to the Food and Agriculture Organisation of the UN (FAO), the number of chronically hungry people shot up in 2004 to nearly 852 millions. This is an increase of 18 million people, including at least 5 million children, who are now dying from hunger each year. At the same time International Labour Organisation (ILO) reports that half of the world's workers or 1.4 billion people earn less than $2 a day, whilst 550 million live on less than $1 a day, the highest numbers ever recorded.

The achievement of MDG, in the words of the UN Secretary General, demands the mobilisation of all creative abilities and invention. The science and technology should play here a decisive role. The UN and its partners should use the best minds, their knowledge, experience and creative energy at the service of the peoples of the world, in order to achieve the goals of Millennium.

The promotion of the knowledge-based society makes it necessary to keep in mind that, though we live in an interdependent and multicultural world, there is a big difference between the countries, not only from the viewpoint of cultures but also of the level of development. Europe belongs to the highly developed countries, but there are also developing countries, countries in transition, underdeveloped countries and 'failed' states.

The pattern of knowledge society cannot be applied automatically all over the world. Take for example countries in transition. The UNDP has just prepared a special report for the Russian Federation "Towards a Knowledge - Based Society". The reference to this report at our Forum here today. is particularly pertinent, because one of the four common spaces of cooperation between the EU and Russia is the scientific research and education.

According to the UNDP report, the drivers of fundamental change in social capacity reside, first and foremost, in the concept of human development. Effective formation of a new society depends to a large extent on the underpinnings of a knowledge-based economy. Knowledge has already become a significant component of most products and services in the modern world. Intellectual effort, special skills and communication not only create added value, they ensure the competitiveness and economic development of organizations at all levels. A significant share of the value of many products is created at the stage of marketing, sales, research and development (RD), and service, rather than at the stage of material production. Knowledge stimulates the emergence of new types of activity, new production methods and industries; it becomes the driving force in renovating technologies and a key factor of competitiveness and consumer well-being.

Human development, new managerial and marketing technologies, and information systems have become the top investment priorities.

UNDP report underlines that innovation is now an indispensable part of renewal in every sector of the economy. The nature of information and knowledge processing has been also changed. Information and knowledge are transmitted in volumes and at rates previously unthinkable, while the costs of transaction have plummeted. Hardware and software technologies enable the translation of vast quantities of previously inaccessible information into knowledge and added value. Information resources themselves have begun to playa dominant role in the accumulation of social and financial wealth.

The challenge is to induce economic added value based on innovation as opposed to dependence on the exploitation of natural resources. Knowledge is, after all, the most potent renewable resource available to a society. Fiscal, amortization and customs preferences need to be combined with an effective institution for the protection of intellectual property in order to encourage investments in science and technology.

As well-educated and skilled people form the basis for the creation, dissemination and effective application of knowledge,

a knowledge-based society depends on a comprehensive educational system that embraces the diverse spectrum of a population. Such a system should ensure a growing share of highly skilled specialists in the workforce, while creating favorable conditions for continuous adult and professional education.

A high level of quality educational attainment across individuals and social groups facilitates greater social cohesion, trust in social institutions, democratic participation, open debate, and appreciation of diversity in gender, ethnicity, religion, and social class.

Proposed by the World Bank measures of institutional knowledge-assessment methodology (KAM) therefore examine "rules of the game", both formal and informal. They assess the ease of funding innovation projects, the degree to which education and the upgrading of skills are encouraged, how intellectual property rights are observed, etc.

As for Russia, the report recommends substantial changes in the structure of social production, education and the quality and composition of the labor force. The challenge is to induce economic added value based on innovation as opposed to dependence on the exploitation of natural resources. Knowledge is, after all, the most potent renewable resource available to a society. It is also vital to elevate human development as a top priority for Russian society, government and non-government: to breathe new life into the educational system and its network of scientific centers and to considerably improve the institutional conditions for business and entrepreneurship, and to achieve a breakthrough in the use of modem information and communication technologies. Change is needed not only in the sectors directly concerned with the reproduction of knowledge (education, telecommunications, IT, the science and high-technology sectors), but in all branches of production that use innovation, including the "low-technology" sectors. These objectives are predicated on a well-conceived national strategy for structural reforms, and adaptation of the capacities of various sectors for the reproduction of knowledge. Analogous strategies have been developed in many countries, providing a substantial international base of experience upon which Russia can draw.

The UNDP report on the development of human potential in Russia gives a specific example of the UN approach to creation of the knowledge-based society in the countries of transition. Encouraging the knowledge-based society, the reports say "Yes" to the market economy and "No" to the market society.

The reference to the UNDP report shows that the European experience in the promotion of the

knowledge-based society should be used together with the recommendations of the UN, UNDP, [LO and other international bodies.

III

The concept of knowledge society the UN promotes is not limited to access to technology and science. As long as the people all over the world are unable to approach the information critically, as long as they cannot analyze it, sort it and incorporate the elements, which interest them into their existing knowledge base, this information will remain a mass of undefined data. People should master information, rather than information masters them.

That's why the UNESCO emphasizes that the knowledge-societies "should be conceived as plural, variable and open to democratic choice". It implies a set of four interlinked principles: freedom of expression, equal access to education; universal access to information, including a strong public domain of information, and the preservation and promotion of cultural diversity.

The responsible constitutional democratic governance at the international, regional and national level is a top priority. The task of such governance is to make the effective decisions and to put them into practice through concrete and systematic approach and to facilitate developing the potential of each individual. The rule of law is the core of responsible governance. This rule starts with the principle, that no one is above the law, and no one should be denied its protection.

The rule of law starts at home. Unfortunately, in too many places it remains elusive. In theory the world is more democratic than ever: 140 out of 191 states now hold multi-party elections. In practice, only 82 countries are fully democratic in guaranteeing human rights with institutions such as free press and independent juridical systems.

With regard to international legal order I wish to remind that an objective proclaimed in the preamble to the Charter of the United Nations is to establish conditions under which justice and respect for the obligations arising from treaties and other sources of international law can be maintained.

The utility of law is true only as long as it is implemented and enforced. Without such a commitment of the states the rule of law in international affairs will remain little more than a remote abstraction. The evolution of today' s international political environment justifies the further development of existing international norms and its adaptation to prevailing conditions. The guidelines for these changes are the maintenance of peace and human dignity, the understanding that the only absolute sovereignty today

is the sovereignty of the human being.

The respect for the international law in a new world entails an adherence to common human values. The concept of common values is neither insensitive to cultural differences nor disrespectful of religious beliefs and practices. Fostering common values implies the existence of a political environment, which embraces the diversity of views and cultures in society, encourages national fora for debates and consensus building and promotes the important role and responsibility of individuals.

The comprehensive dialogue among civilizations provides a good opportunity to programs directed at the mutual enrichment of historical experience of different civilizations and meeting threats to their stability and well-being.

The legally oriented governance implies transparency and accountability in the management of public affairs.

Such governance also means that the public institutions fulfill their role and undertake to supply their citizens with the services they need. It goes without saying that responsible governance does not tolerate corruption or bribery. It re-invigorates public institutions by making officials accountable for their actions.

Furthermore, a competent, loyal and efficient civil service endowed with ethical standards is neither a luxury, nor a dream. Rather, it is a basic precondition for peace, social and economic development and regional and international cooperation.

Responsible governance cannot achieve success without involving various actors from civil society and the private sector at all levels in its process. The role of the private sector within the context of responsible governance is particularly crucial and especially important. In the global context, it is noteworthy to mention the "Global Compact", an initiative proposed by the UN Secretary-General, to promote partnership with the corporate sector. Based on universal principles from international human rights, labor law and environmental protection, it is intended to make markets more humane by promoting corporate global responsibility. It attempts to do this by imbuing global corporate actors-and, in so doing, the process of globalization itself-with UN principles and values. In other words, the Global Compact is intended to spread responsible business practices through the adoption of appropriate minimum standards on human rights, employment conditions and the environment.

To quote from the Compact: "A commitment to multilateral engagement and open markets has spurred growth and development in the decades since 1945. But opposition to globalization is ris-

ing in many parts of the world, as the ability of markets to meet social expectations and needs is questioned and the spread of market forces outpaces the ability of societies and their political systems to adjust effectively. Safeguarding past achievements and preparing the ground for a new period of prosperity requires urgent action on two fronts: renewing a commitment to openness and inclusion; and finding new ways to embed global market forces in universally shared social values, thereby allowing all countries and cultures a sense of ownership in the global economy".

Last but not least. Within the context of responsible democratic governance it should be stressed that we live in the time when relations between media freedom and democracy has never been closer. Editorial access to information and rigorous professional standards are especially important for news agencies since they provide the news material and footage for so many other media outlets. This is the message from World Summit of Information.

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In conclusion, I would like to stress that the knowledge-based society should be accepted in a broader sense as the political philosophy of a new emerging global society, which advocates the investment in human potential and provides the optimal balance between the new transnational markets, nation-states and different cultures and religions. Of course, there is no ready-made blueprint for all countries.

The creation of the knowledge-based society is a process, which has already started, produced some positive examples and in the long run will bring the peace, stability and well being to all parts of our planet.

Wendy L. Schultz

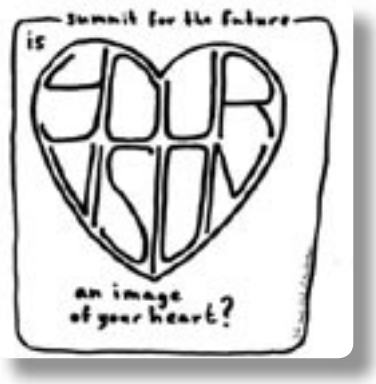
Futurist, Infinite Futures

On the responsibility to vision

I could say that there is no future without "vision," our image of the future preferred.

That would of course be untrue: the world will carry on without our consciously willing it to be so. Entropy and evolution will march relentlessly on, with or without us. The natural world has its own momentum, as does our built environment and its impacts on the natural. Social structures, organizations, communities, nations and their bureaucracies, all have, if not momentum, at least inertia, a staying power that would guarantee their existence for some time without our consciously willing it to be so.

But would the world carry on *well*? Tom Lambert has already addressed the chasm between the rich and the poor. If we exerted no conscious, responsible effort to change the systems and actions we have implemented up until this point in history, if we carried on tomorrow doing exactly what we are doing today, what would 2050 be like? 2075? 2100? This corner of the globe will be warmer, scientists say – and even wetter than it is now, given the forecast meltdown of the Arctic ice cap. Now that we know we can create change on a global scale, what ethical systems do we apply to creating change on any scale?



What do we care? We won't be here to deal with the mess – or will we? Given the acceleration of our understanding of developmental biology, and our ability to apply our understanding of genomics, maybe we will. Certainly our children and grandchildren will. They will have to live in the world our actions create – the actions we so often fail to ground in well-thought out images of possible and preferred futures.

Worse, our children will inhabit the world created by someone else's explicitly articulated, designed, planned and implemented image of a preferred future – because other people are envisioning their preferred futures and marshalling resources to create them. They are colonizing the future we shall all share. By our lack of explicitly articulated creativity considering what the future could be, what we want it to be, we are giving up our gift of choice as to what the future might be – and condemning ourselves to compete in conditions of our competitors' making.

I said ten years ago I didn't want to live in the computer environment Bill Gates and Microsoft were creating with their monopolistic image of the global soft-

ware future. Having now experienced pop-up windows, spyware, trojans, viruses, worms, spam, and the complete collapse of one computer system due to the installation protocol of Windows XP, I am convinced I am correct: letting other people colonize the future – setting aside both the creative opportunities and the responsibilities we each have to create a preferred future – produces a weak future, just as monoculture in farming creates vulnerabilities to diseases, parasites, predators, and shifts in environment.

We need an 'open source' approach to creating a preferred future.

And that begins with each of us articulating and clarifying our own individual visions. So let's borrow a vision test format from opticians: focus your vision by choosing among, for example, the following: is this better? Or this? Is this better? Or this?

The World Economic Forum at Davos is concentrating on tough choices – but so are we: choosing among alternatives means choosing to make trade-offs, compromises, and negotiating differentially distributed benefits and drawbacks. These negotiations are helped by the depth of field given us by parallax vision: the perspective gained from the overlay of multiple individual images of preferred futures.

In the early 1950s a Dutch scholar named Frederich L. Polak gave us the conceptual basis for that open source approach. His seminal work, The Image of the Future: Enlightening the past, orientating the present, forecasting the future,[1] takes as its task the analysis of cultural change based on the vibrancy of a culture's implicit image of the future.

> *The rise and fall of images of the future precedes or accompanies the rise and fall of cultures. As long as a society's image of the future is positive and flourishing, the flower of the culture is in full blossom. Once the image of the future begins to decay and lose its vitality, however, the culture cannot long survive.*[2]

While he acknowledges that many forces interact to create history, he nonetheless affirms that the positive ideas and ideals of humanity, expressed as positive images of the future, make history what it is. These images serve as "motifs and guiding stars" to the societies which create them.

Where can these images of the future, whether grand or petty, be found? Where do they arise? While every vision starts in one persons mind, they filter outward via religions, political ideologies, art, novels, movies, advertisements, and of course forecasts. Our cultures and languages are pervaded by images of the future, of alternative possible futures, some exciting, some

transformative, some idealistic, some nightmares. A foundation assumption of futures research is that people base their decisions and subsequent actions on embedded, internalized images of the future, as well as other values, goals, and motivators. Thus one critical area of futures research is the identification and analysis of images of possible futures that already exist in our cultures, no matter their origin.

Scenarios – exploratory images of possible futures – ought, by any effective working definition, to contain both positive and negative characteristics of a possible future: they should depict a possible real future, and in as much as reality itself contains delight, despair, and contradictions, so should a depiction of a possible future reality. Utopias and visions, on the other hand, are written and articulated to express ideal futures based on cherished values, and so should be entirely positive. Dystopias, or nightmare images, are articulated for the purpose of creating critiques of the present and the dynamic of self-defeating prophecies, spurring people tó create change.

The difficulty with addressing where an image falls on this continuum is that the evaluation is completely value-based and subjective: your ideal vision may be my nightmare (as my child's winning a school competition may be your child's nightmare), or merely an interesting possible scenario with disadvantages to me, or an image of the future very close to my own personal vision, but which would take considerable discussion and amendment for me to endorse wholeheartedly.

I have portrayed wild cards as explosions on the continuum located between downside scenarios and dystopias, and upside scenarios and utopias, respectively, because wild cards usually indicate a massively transformational change producing an improbable but possible future which people will either really love or completely hate.

Scenarios, let us be clear, are futures for the head; they are mind-experiments created to explore possibilities. Visions, on the other hand, are futures for the heart, created to express our values as a vividly projected image of a preferred future: they are designed to inspire and motivate.

Motivating images can exist, Polak argues, because people have the capacity to split their consciousness between recognition of the instant, the immediate, the here-and-now, and some time, space, and reality completely and discontinuously Other. Within the space opened up by this split consciousness, people can create images of a future time and a future world of ideal and idealized conditions, where the sorrows of the present are considerably or absolutely ameliorated. These images also subsume the expec-

tations people have regarding the behavior of the natural world, the behavior of other people, and the behavior of the gods, if any, in response to religious practices. Embedded in images of the future are the implicit notions people hold of what drives social change.

In order to affect cultural change, the images must picture another world vastly different and vastly preferable to the present and must be widely disseminated throughout society. Using these two criteria to select images for study, Polak analyzed them along two continua: essence-optimism and -pessimism, and influence-optimism and -pessimism. By essence he referred to the culture's perception of the untouched course of historical events: what would happen if people did nothing. By influence he referred to the possibility of human intervention in the course of historical events. Influence may either be direct, the action of people upon reality, or indirect, the action of people to sway a higher power to act upon reality. Utopian images of the future result from the secular approach dictated by direct influence-optimism -- we can create a better world; eschatological images of the future result from indirect influence-optimism -- if properly propitiated, God will create a better world for us.

If both essence-optimism and influence-optimism characterize a culture's image of the future, then it believes that history is basically unfolding for the best, but that people can work to improve it even more. These are vibrant, vital cultures. Cultures that are essence-optimistic and influence-pessimistic also remain vital, for although their members feel nothing they can do can change the way the world is, they feel the world is gradually improving all on its own. Cultures which are essence-pessimistic and influence-optimistic feel that, left to themselves, things would go from bad to worse, but that people can change that and improve things by applying themselves. The cultures which are in trouble have images of the future which combine essence-pessimism with influence-pessimism: things are going to hell in a handcart and there isn't a damn thing we can do about it.

The final concept on which Polak's analysis rested is that of challenge and response. For, he stated, the real puzzler is not the rise and fall of cultures, but the emergence of robust and dynamic images of the future. What is their genesis? To answer that question, he borrowed Toynbee's notion of challenge and response, pointing out that Toynbee never clarified what the source of challenge was, nor what form the response took. Polak suggested this clarification:

> *The challenge of the times need not only be based on the past, as it pushes into the present. It can also be*

> *based on the future, which draws the present to itself. The future challenges us to examine and prepare in advance to solve the problems which it has in store for us, problems which may well overwhelm us with their sudden onslaught if we do not anticipate them. It is the not-yet-existent future, or certain special possibilities out of a numberless infinity of poossible futures, which throws light or shadow on the present ... [And an] adequate response to the ever-shifting challenge of a rapidly-changing future can be nothing less than a comprehensive and inspiring vision of the future!*[3]

The problem, and the conclusion of his survey of cultural history, is that Western civilization no longer has a comprehensive and inspiring vision of the future, and that unless one emerges, the culture will wither away.

Where has our image of the future gone? According to Polak, into our arrogant confidence both in our ability to manipulate the present, objective reality and in our fixation on the tangible, material present. Humanity is so satisfied that it can create change that it spends little time asking why and for whom it should create change. And all the while change is, as Glen Hiemstra pointed out, accelerating. The images of the future that do exist in modern culture are fragmented, contradictory, dehumanized, and lack spiritual depth.

And our abilities to create images of preferred futures are also fragmentary, disorganised, and superficial. As Peter Senge points out in the Fifth Discipline, in any given organisation or community, experience in imagining and articulating vision varies widely. This makes participatory co-creation of visions difficult until people acquire the necessary perspective and practice.

But, Polak concludes, we can still save ourselves. Salvation will require a transcendentally idealistic, widely disseminated image of the future. Such an image must be "purposeful, vital, and inspiring:"

> *These images must have the power to tear our civilization loose from the claws of the present and free it once more to think about and act for the future. The seed of these images becomes the life-blood of our culture, and the transfiguration of our civilization waits upon the sowing of new seed.*[4]

Nothing retreaded from the past will do; nothing light-weight, ephemeral, or easily devised: Madison Avenue can't design a public service ad campaign for this. Polak advocates a tripartite strategy: 1) reawaken the culture's dormant awareness of the

future; 2) nourish cultural awareness; and 3) revitalize creativity.[5] In the five decades since Polak articulated this analysis of human history, the intellectual field of futures studies has been attempting those very tasks, with the insights contained in The Image of the Future as its conceptual core.

Reaching our full potential – as a civilization, society, organisation, or community – requires goals that challenge us to exceed that potential. Unfortunately, in this most instrumental of ages, daydreaming is unfashionable. An educational system inherited from the industrial era teaches us to keep our attention on the task at hand; the drive for upward mobility focusses our creativity on immediate problem-solving and practical matters of management. The post-modernist age of deconstruction awards more points to critiques than to castles in the air.

Given these barriers, little wonder that people are uncomfortable with the verbs "vision," "imagine," "dream." If not for the cases cited in recent leadership and management literature which underscore the utility of vision for motivating exemplary performance, it would be difficult to convince professionals to engage in visioning. Yet it is something humans do naturally, that in fact we must be trained not to do. Reinstating visioning as a powerful creative tool is simply re-balancing our internal environment: giving equal pride of place to intuition and imagination next to logic and calculation. Envisioning a preferred future requires them all.

Visioning is an exercise in structured idealism. It requires wrenching our "common sense" -ibilities away from the practical for a few moments to indulge in effective daydreaming and articulation of ideals. It not only assumes that people can create the future, but also that a sufficiently inspiring vision of a preferred future motivates people to do so. Most simply, it is an iterative brainstorming process, relying heavily on imagination, ideals, and intuition.

To begin, we state a handful of general characteristics for a preferred future: peace on earth, environmental stewardship, racial equality. These are too general to be useful building blocks; they must be refined into more precise statements.

Next, we perform an idealistic incasting (extrapolating details of an image of the future based on logical consistency with its determining characteristics) on the staple components of social reality: in our preferred future, what form will nation-states take? government? what will community social structures be like? how will people be educated? how will work be structured? how will goods be produced, distributed, and consumed? The next step moves further into the

realm of imagination, by asking what the components of an individual's everyday reality look like: describe a typical day in this preferred future -- begin with waking up and getting out of bed, being sure to describe the bed and the bedding.

This exercise has two primary goals: one, to create a richly descriptive image of a preferred future; and two, to get beyond the imaginative constraints of a purely practical, "yes, but..." mindset. Many people find it difficult to let go of the problem-identifying and problem-solving perspectives that work ingrains in all of us. Often the best bridge to the ideal is a string of complaints: most people know what it is about the present they do NOT like. Consequently, the psychologically natural opening exercise for visioning is a problem-listing or "catharsis" stage, in which we list those characteristics that we absolutely reject as components of our preferred future.

The statement of positive components can begin with restating the negatives as their opposites: if cultural intolerance is the hallmark of a negative future, the delight in cultural diversity may be a major component for our preferred future. Another way to shift to the positive is to identify our greatest recent successes, either individually or organizationally. This has the added benefit of reinforcing the belief that we can create change.

It reinforces, as Polak would say, our influence-optimism. And given all the very bad news we hear every day about the changing climate, the extinction of species, pollution, extreme political and philosophical beliefs creating more conflict, rising income disparities, and… well, you can add your worry du jour… it is unlikely, in Polak's terms, that we have much reason for essence-optimism: if left as it is, our world would not improve. Thus, in order to have any hope at all of a vital, flourishing, positive future, we need to enact our influence optimism by articulating our vision of that preferred future. And then building it.

Your task, for the next few days, is to focus all your imagination, all your analytic skills, all your education and talents on articulating, together, a preferred future – and imagining how our influence, and the influence of our colleagues, friends, families, communities, and organisations, can work together to create it.

I leave you with a quote from the conclusion of Cloud Atlas, a recent novel by David Mitchell nominated for the Booker Prize:

Why fight the "natural" (oh, weaselly word!) order of things?

Why? Because of this – one fine day, a purely predatory world shall consume itself. Yes, the Devil shall take the hindmost until the foremost is the hindmost. In an individual, selfishness ugli-

fies the soul; for the human species, selfishness is extinction.

Is this the doom written within our nature?

If we believe that humanity may transcend tooth & claw; if we believe divers races & creeds can share this world as peaceably as the orphans share their candlenut tree, if we believe leaders must be just, violence muzzled, power accountable & the riches of the Earth & its Oceans shared equitably, such a world will come to pass. I am not deceived. It is the hardest of worlds to make real. Torturous advances won over generations can be lost by a single stroke of a myopic president's pen or a vainglorious general's sword.

A life spent shaping a world I want [my children] to inherit, not one I fear [my children] shall inherit, this strikes me as a life worth living.[6]

To borrow a phrase from Tom Lambert's presentation, let us dream with courage.

Thank you.

1. Fred. L. Polak, The Image of the Future: Enlightening the Past, orientating the present, forecasting the future, vols. I and II (Leyden, Netherlands: A.W. Sythoff, 1961).
2. Polak, vol. I, 50.
3. Polak, vol. I, 51-52.
4. Polak, vol. II, 357.
5. Polak, vol. II, 363.
6. Mitchell, David. Cloud Atlas. New York: Random House Trade Paperbacks, 2004, p. 508.

Trade / Service Industry Knowledge Stream

Wanda van Kerkvoorden

SOLV new business advocaten
Knowledge Stream Leader Trade / Service Industry

Summary of the Trade / Service Industry Stream

Session I – Positioning (January 26th, 2005)

Frank-Jürgen Richter, President, HORASIS

Frank-Jürgen Richter fears that he has a somewhat negative, almost doom message for the audience. There is bad news everyday, full of conflicts around the world. Look at for instance President's Bush's state of the union.

It is time for new thinking. Governments, organizations (such as the World Trade Organisation) should govern our world in a new sense and not act like princes (as in Machiavelli's The Prince). It is a unilateral trend to look for a win-loose situation instead of a win-win. There are elections in Iraq this weekend. Will this lead to new stability or to more conflicts? We need more multilateral thinking.

Look at for instance trade. The BRIC countries (Brazil, Russia, India and China) are taking the lead. The US tends to react by protecting its own market and suggesting that it cannot afford free trade. But globalization is the future. We cannot neglect the trend of outsourcing to other countries, such as the BRIC countries. On the Davos meeting of the World Economic Forum (note: Frank-Jürgen Richter was director of the WEF, in charge of Asian affairs), globalization is the key issue. Think about the future.

Recent elections in The Netherlands, France, Germany and Italy show a growth for populist parties. We seem to be wanting to protect our wealth against globalization. Where will this lead to and how will this influence Europe?

In 2025, there will no longer be local companies; it will all be EU companies. If things stay as they are now, EU will have the worst end. There will be a drastic rise in unemployment, the EU will not be a real political entity and it will be worse off than for instance the US. EU might be turned into a big EU Disneyland for Chinese tourist, where no EU citizens or goods can be found anymore.

How about the service industry?

Some services, such as haircuts, are and shall always be local. Other services however can be moved.

EU needs to adapt itself to a new way of thinking. More freelancers, more projects.

According to Frank-Jürgen Richter we should adapt the idea of multilateral thinking and promote free trade.

What is the threat? Outsouring? Why? According to a Chinese saying, every crisis renders an opportunity. We have 'exported' our problems in the past, which turned out to be successful.

The Chinese participants in the Trade Stream bring forward that we should also try to look at it from the perspective of developing countries. They are 'fighting back', is that so bad? In China, the bubble is in the making, but it will not burst, as it did in Japan. It will be much bigger than Japan.

We (the western world) had the advantage of global trade and are now complaining because we might have to give a little bit back to the developing countries. Is that so bad?

What will the scenario be?

I) All manufacturing has already been outsourced
II) Now all IT services are being outsourced
Will scenario (III) be that everything will be outsourced? And if yes, what will be then left for us?

What we need according to Frank-Jürgen Richter is free trade and government (only) on demand.

Nathalie Yacheistova, Head of the Trade Representation for the Russian Federation in the Netherlands

Russia historically and nowadays has a very interesting position. It is the eagle with the two heads, one looking to the west and one looking to the east. From the past, Russia has a high level of fundamental knowledge. However, export from Russia mainly considers traditional industry, such as oil.

Many reforms are being executed by the Russian government in order to change this:
- creation of the sector of the "knowledge generation";
- innovation;
- wide use of IT.

One of the main issues the Russian government is dealing with is the lack of protection of IP rights. For this reason, the Russian government sees it as a key issue to also reform the legisla-

tion regarding for instance patent rights, in order to stimulate the filing of patents in Russia, but also for Russian companies abroad.

For the future, Nathalie Yacheistova thinks that companies will be more and more translational. The role of national governments will decrease.

Mr. Petrovskiy who is participating in this stream, remarks that it is a necessity that minimal standards will be set for multinational companies and communities. The sustainability concept exists nowadays, but it seems to be more of a fashionable thing, in order to be positively promoted, than that one realizes that it is a real necessity for everybody.

After this remark, that gets much support, the discussion relives again, by picking up the issue about the role of the governments.

The role of the governments should be rethought. Can governments actually achieve anything in 4 to 8 years? Shouldn't governments just promote their own national business and facilitate this? A loud NO is heard to this.

Does the EU have a role as such? What is the optimal size of a government? Should it be regional, at country level, the EU of the UN?

Brussels is good, because of the open process. But, as a German saying goes, "good intentions does not mean good results…". This not only applies to politics, of course.

We should all design new rules and then periodically review them.

You cannot outsource your culture and traditions. You cannot globalize without your own rules, traditions, and cultures.

There is a necessity for corporate social responsibility; it must be more than window dressing.

But we rule the government, so it is up to us to act. No, it is not, this is a rather naïve thought. Think of corruption and lobbying and the thin line in between.

Politicians do not understand the complex system anymore so they do not act let alone change things anymore. It is a pessimistic view, but this is how it is …

Session II – Knowledge Exchange (January 27th)

Pascal Kerneis, Managing director of the European Services Forum

The discussion of the day before ended by asking questions about the influence companies have on politics and the thin line between lobbying and corruption. In this respect, it is interesting to know that Pascal Kerneis is a professional lobbyist for the EU services industry.

He provides a lot of statistics about the services industry. It is strange to know that if you look at it worldwide, services only form 26% of the total of trade, but in the developed countries it is more than 70% of the GDP. Furthermore, 90% of all new jobs in the EU are jobs in the service sector. However, despite of the figures, services is not on the agenda of the politicians.

Trade negotiations should address topics such as where the services sector wants to expand. It is of a mutual interest. There are 148 countries in the World Trade Organisation. GATS is not going well, most say that not enough countries are involved, but according to Pascal Kerneis, that is not the issue. His concern is about the quality of the offers made. Furthermore, we should not only talk about trade in services but also transactions in services. Buying an office abroad, settling a branch, investments during 3-5 or depending on the business even longer, reinvestments made etc. is all not included in the current figures. An other interesting figure is affiliate sales of services. Getting access to an other country is important, but also giving access.

According to Pascal Kerneis, the future is all about: who is going to be the most competitive.

But how?

There is enormous potential in China and India, maybe even more in China than in India because of the political differences: India is one of the worlds biggest democracies, therefore, the economical development will be slower than in China. The potential of those countries not only lies in the potential market, but also in their role as producers.

In 2050, China will be the world's most important economy. The EU will only be number 4, followed by Japan.

If you are not part of the Chinese and Indian markets, you will be out of business in the next 15 years. There are 5 million (!) new subscribers for mobile phones in China each month! This is a giant market. And India is catching up. Originally, it exported its people to foreign markets, now it has thousands of IT engineers floating onto the market.

Pascal Kerneis rather speaks of global sourcing than outsourcing. Instead of hiring Indian engineers in their own local market, companies now go to India.

There are 4 modes in GATS:
1: cross border services
2: consumption abroad

3: commercial presence in other country
4: movement of natural persons

In the start phase of GATS, India focussed mainly on mode 4. Now mode 4 is not that important anymore, because of globalization or rather global outsourcing. Mode 1 is more important and India is starting to realize that. If it will not move to a mode 1 commitment, it will fall behind. China and India have to realize that there must be fair trade.

The participants in the stream remark that Pascal Kerneis's presentation is very much from the EU point of view, stating what countries as China and India must do. But India and China as much as EU have the right to play the negotiation game as smart as they want to, isn't it? They have the right to argue that the EU has an ambiguous attitude when it comes to agriculture, with all the EU subsidies. They have the right to ask for something in return.

Where do governments step in?

Julian Baggini, Editor and Co-Founder, The Philosophers' Magazine

Julian Baggini, the stream's philosopher, remarks that 'public services' is not the same as whether or not publicly owned. You have to understand whether there is a key public role. If there is, it must be made available to the people as a rule (compare water to MP3). Pascal Kerneis fully agrees. Liberalization is not the same as privatisation.

There should be fair regulation. The telecom sector is a good example. It was first privatised and then allowed private operators to step into that market.

Pascal Kerneis notes that public / private partnerships do not fall under the scope of GATS. And there is much interesting going on. See for instance banking potential in China.

Must the EU close the borders?

No. We cannot permit that and we do not want that. It is a big power game. Will the Goldmann Sachs study prove to be true? Whether the figures are accurate or not, China is definitely the most promising country. They twist the rules a little bit. But is that so bad? If you have rules, they must be obeyed, especially when it comes to Intellectual Property rights.

In his point of view (which reflects the ESF's view), developing countries have a great interest in GATS negotiations, in order to develop their own service industry. They now tend to play a dif-

ficult game, but by cooperating and sticking to the rules, there is much to gain.

Stefan Schneider, Chief Economist, Head Macro Trends with Deutsche Bank

Stefan Schneider works at Deutsche Bank which is represented in more than 74 countries. More than 50% of the shareholders are not German, so it is a real multinational concern.

After the burst of the internet bubble Deutsche Bank regards it as a necessity to have a strategic corporate foresight. The Macro Trend department will publish a study shortly that will definitely be better than the much quoted Goldmann Sachs study (a little PR is allowed, isn't it ;-))

Marco Trends has a trend map on which you find issues such as:
- female participation
- immigration
- job hopping
- different interfaces
- converge of technology

In this presentation Stefan Schneider wants to address three trends.

Trend 1: Affluent people are getting older and more demanding.

The expectations are going up for decades. Right now 2,5 month per year and this is a linear (!) trend. The female baby boomers will become an extremely important consumer group. Furthermore, realize that in 2050 there will be 98 million Chinese people, older than 100 years.

In the eastern part of Germany, a time bomb is ticking. The average person is male, 40 years old, no partner, still living with his parents and not highly educated. This group will be a problem in a few decades.

We are getting older in a healthier way, because of (a) technology progress, (b) better medical care, (c) better nutrition, (d) people are getting richer (for the first time wealth has not been disrupted by war) and (e) change in jobs towards more white collar jobs.

People are pretty stingy; they do not spend their money. The baby boomers will retire in some years and will then start spending. The services to benefit from that will be:
- Medical services. Holistic system, long term health outlook, consultancy.
- Wellness, don't get too sick too often. Demand for nice to haves (such as plastic surgery, boot) will increase
- Community planning services.
- Financial services (asset melt

down hypothesis)

The financial services may benefit from globalization; we can export our assets savings to other countries.

Trend 2: Potential for social friction may increase.

It is all becoming less equal, also within single countries. The effect of globalization will be that the gap between rich and poor will only become wider.

The severe labour shortage will not be solved by immigration alone. Also be aware of brain drains.

Tomorrow there will be a meeting in Geneva regarding global immigration. In the UK there are already many teachers and nurses from India. They do not get the best salaries. Germany will need 1 million immigrants per year to keep the work force stable. This is not doable, economical rational gets blurred by other (psychological) arguments.

When we look at India, remarks one of the participant, realize that the best people do not move. It will be the B-class people that search for their luck abroad. They import their cultural differences, which as a teacher who should be a social role model, may lead to problems.

There will be a rise in demand for security services, think about:
- identity theft on the internet and other forms of cyber crime
- terrorism
- social frictions
- education (underclass is not that well-educated)
- environment (tsunami).

Monitoring will become really important.

Trend 3: Knowledge intensity of goods & services increases

The difference between goods and services will disappear. A running jacket is now a body climate system. Everything will become a system. According to the chairman of Ford, his car company is more than 95% a services company.

The message Stefan Schneider has for us is: Think about the future outside of the current framework, since the framework will definitely change!

Session III – Preferred Futures (January 27th, 2005)

Graham May, futurist, Futures Skills

If you look at our wish list some 12 years ago, this is a pretty obvious list. We wanted peace, se-

curity and sustainability. It is not so much preferred future, but more preferred present. Are we there, yet? No we're not. But did we make any progress?

If we look at the wish for peace. Whose peaces are we talking about? Our paxes are based on military and economic power. Orwell said: war = peace.

The future will be the pax Chinoise or Indienne.

If you look at the recent tsunami catastrophe, striking is the following quote: "A proper warning was not given. If we'd given the warning and then it hadn't happened, then it would have been the death of tourism in these areas." Beware of the cry wolf scenario. How to make a choice between two catastrophes? It is a choice between sure money and a risk of death.

When evaluating preferred futures, ask the following questions:
- Whose preferred futures?
- Whose interest does it promote and whose will be damaged by it?
- Why, by whom and how will it be prepared?
- What is the timescale involved?
- How will it be achieved? There is more than one way to skin a cat.
- What might be prevented by it?
- Does it conflict with other preferred futures?
- Where might unforeseen results occur?

Essential is the 's' in preferred futures.

We need roadmaps, but where are blocks, diversions, alternative routes?

There is a paradox between:

"Where there is no vision the people perish"

but

"We would be often sorry if our wishes were gratified."

The futurist plays the role of the fool in the medieval court. Asking the awkward difficult questions. Asking why and why not?

Julian Baggini steps in to say that he always thought it was the philosopher's role to play the fool. But he is happy to be the meta-fool.

Here the discussion starts.

Who listens to the fools? Companies (Deutsche Bank, Shell, insurance companies) do. Governments do. Old Japanese foresight studies were technology driven. It has become a self-fulfilling prophecy.

Be aware that stated preferences are not always a roadmap for how people behave. Furthermore, you can only prefer something you know. What are the side effects, how do you take these into calculation?
From vision to scenario. Articu-

late your vision.

Let's focus on the future as an open future, revisiting, not static. What are our goals?

Most benefit for most people.

It is a game of give and take. Only 'gain' from developing countries is not how it should be played. Help them develop! The Asian Union is willing to open up, give more concessions.

Do we see fear as a problem or an opportunity?

Stefan Schneider summarizes that he would like the service sector to provide proper education and proper healthcare to empower people to live a rich life.

This will mean clean water, good food, education and sustainable transport.

Are our resources limited? It depends on your goals.

We should enable people to exercise their fundamental capabilities.

Food – water – health
Security – freedom
Education to make a change to your life

People always want more. But by following this you have something to offer to other people. Everybody can specialize. We do not need altruism. Enough is egoism exercised within basic rules.

Trade, not aid.

Encourage services in trade, more open communication and freedom to move. If you invest more in telecom and transport, you will have a more open world, we will all benefit.

You need an encouraging life, wealthy / rich in the sense of emotionally rich through communication with others and experiences. This is how 'rich' in the earlier definition should be interpreted.

Is it in the self-interest of the developed world that the rest of the world is not? No, developed economies will win from the other countries developing. It will enlarge the market to export your goods and services. It will be a win-win situation, it will lead to harmony.

Do we think this will happen?

Our philosopher makes a historical note. Look at Germany and France, now cooperating both for their own interest.

GLOBAL TRADE IS A PROMOTOR FOR PEACE. WE ALL NEED EACH OTHER!

Julian Baggini

Editor and Co-Founder, The Philosophers' Magazine
Participated as philosopher in the knowledge stream Trade / Service Industry

A fool speaks

Speaking in the trades and services stream, Graham May said that the role of the futurologist was like that of the court jester: to ask the awkward questions. At first, I thought he was trying to put me out of a job, for surely that was a description of the philosopher? Maybe I needed to step back and play the meta-fool, questioning the questions of the futurologist.

There's some truth in that, but perhaps the right response is to accept that - heart surgeons and certain other specialists aside - most jobs are not the monopoly of one person or type of person. In this respect, the philosopher has nothing unique to offer those thinking about how to shape the future. Nevertheless, perhaps a philosophical eye, with its critical questioning of some of the ideas and assumptions that ran through the Summit for the Future, might spot a few things others may pass over unremarked.

What I offer here are not fully-developed theses, but questions, provocations and suggestions that, if I'm lucky, might just freshen up at least some people' s thinking.

1. A preference for the preferred

Throughout the summit, we discussed the idea of our "preferred futures". It was felt we needed a set of general values or ideals on which we could build our more detailed vision of the future. What can provide this foundation?

The answer is assumed in the question: the reason we are talking about "preferred" futures in the first place is that we share as a fundamental value the humanist idea that people should be allowed and enabled to achieve for themselves what they prefer, and not what they just happen to have or others decide is good for them. A better future is one in which more people can pursue and achieve their own preferences. That is why the plural of "preferred futures" is so important. People differ in their aims and values, and allowing people to pursue their own preferences will lead to diversity, not a homogeneous, monolithic "bettor society". So, let our foundational principle be: *we should work to enable individuals to act according to their own preferences.*

2. The walk beats the talk

What do people actually prefer? Ask them and they may say one thing; look at what they do and the answer may be quite different. For example, in the 80s and 90s in Britain, the public repeat-

edly told pollsters that they wanted more money spent on public services, yet repeatedly voted for the party that they thought would reduce such spending. So anyone in the business of enabling preference selection has a tricky job: it is not enough to just ask people what they want. *Preferences are revealed through actions more than words.*

3. Preferring the impossible

It is futile to prefer what you can't have. I may prefer the eradication of poverty tomorrow, but I can't have it. At best, unrealistic preferences provide a starting point, from which more realistic ones can be derived. The impossible can help free the imagination, but if we let it guide our thinking and action too much, we're wasting our time.

This may seem a trivial point, but it did worry me somewhat that the summit frequently seemed to enter the realm of wish-fulfilling fantasy, as we kidded ourselves the whole future of the world was ours to mould as we saw fit. Dream big, by all means, but *make sure your action-plan is drawn at the scale appropriate to your abilities,* even if it is right at the limits of them.

4. Consumers are not constant

And nor are other economic actors. There is a trap which we fall into when thinking about the future, which is to hold as constants things that are going to change. While there are arguably many constants in human nature, how we change is extremely important. In particular - as Maslow's hierarchy of needs reflects - as we become more affluent, we become more concerned with the non-materialistic, such as the desire for self-actualisation. In the west, *these "post-materialist values" are going to become more important*, which means the consumer of tomorrow may look quite different to the one of today. Consider how, in the UK for example, twenty years ago, if you bought organic food and fair trade coffee, you are a freaky relic of the sixties. Now these are completely mainstream purchases. Contrary to simplistic models of capitalism (employed more by critics that practitioners) people don't base all their decisions on the crude basis of maximising their own economic advantage. Expect this trend to become een more marked. And to deal with it, you'll need to know what those other factors ere.

5. Classical economics is dead

That my seem like a sweeping statement, but it is really just a corollary of the above point. Classical economics sees individuals as "rational self-maximisers". None of these three words captures the truth. As we have seen, people are increasingly concerned with non-self (even if that provides some non-materialistic rewards to self in the form of greater satisfaction and so on). And nor are their decisions rational a lot of the time. Econo-

mists are only now beginning to build credible human psychology into their models.

Perhaps when economic necessity was the main driver for economic activity, we could afford to treat individuals as though they were rational economic self-maximisers, even if they weren't. But now times have changed, that model will have to be rejected.

6. Groups can be smarter than individuals

Societies innovate in ways which cannot be foreseen by individuals and which defy common sense. Consider how credible the argument used to be seem that a flourishing economy without a wide manufacturing base was impossible, and so services could not be the main economic drivers. Consider also how SMS messaging took off in ways that were not foreseen, whereas the much-trumpetted 3G has been much less successful to date.

In shaping the future, *we have to allow space for the future to shape itself*, as group wisdom finds solutions and allows new ways of working and being to emerge.

7. Beware the turkey

A simple point this, but one which cannot be stressed enough. Bertrand Russell once told a fable of the turkey, which receiving its feed at sunrise every day, thought this was the way the world would always be. When, come Christmas morning, his neck was wrung, nothing could have been more unexpected.

The problem, however, is that ,like the turkey, we only have the past on which to base our expectations of the future; and some regularities really are iron-cast laws of nature. *Our reliance on past experience is a limitation and a necessity*, so we have to be smart at how we learn from it.

8. Buzzwords bewitch

Wittgenstein said that philosophical problems arise when language goes on holiday. Listening to the way some business buzzwords fly around seminar rooms, you can wonder if language has taken another vacation.

Consider, for example, how easy it is to talk about a "more integrated world" as though we all knew what that meant. In one sene, the observation that we are all interconnected is just trivially true: you can trace some sort of connection between any two things, as the parlour game six degrees of separation illustrates. What matters is how and why things are interrelated. Until we understand that, simply parrotting the current mantra about the interconnected world is to voice empty words.

Likewise, what does it mean it say we live in a knowledge economy? One slide shown in our stream showed that, in fact, in 9 out or 16 advanced industrial countries, the growth in knowledge intensive services as a

percentage of GDP was actually *negative*. Many jobs have become dumber, not smarter. You used to have to do more maths working at a supermarket checkout than you now do, for example. And do we think that knowledge didn't used to be vital for the economy? We also need to be careful how we throw these buzzwords together. I heard the knowledge economy being linked to the alleviation of social exclusion and the creation of a plural, variable and democratic society. Well, I certainly don't see any necessary connection between them, and nor am I convinced I was told how these connections would be mde.

Buzzwords bewitch. Before we know it, we're peppering our speech with them without questioning why. We need to think harder than that.

9. The CSR backlash has begun

From one side, pro-CSR bodies such as Christian Aid are more willing to dismiss CSR initiatives as empty PR. On the other, the *Economist* has led the charge from sceptical businesses which thinks CSR is misguided and wrong. *Advocates of CSR need to get tougher* to meet both sets of challenges. This requires a much firmer grasp of both economics and ethics, and less vague gesturing towards assumed goods, such as sustainability and employee welfare.

10. Give philosophers a job

The role of the philosopher in all this is perhaps not as great as some philosophers would wish. The main job that I think a philosopher can do for businesses and organisations is to help give content and depth to ideas and concepts that often stand as little more than placeholders for things we don't really understand: good, just, fair, preferred, sustainable, respectful, inference, deduction, values, rationality. Philosophers can help the people who use these ideas without fully understanding them to get a better grip on them. Philosophers can't just tell you how to run things better, but by giving your thinking a thorough examination, they can help you to do that for yourself.

Energy Knowledge Stream

Rob van Hattum

Head of Science Programmes, VPRO television, Content Director,
Dutch Science Centre NEMO
Knowledge Stream Leader Energy

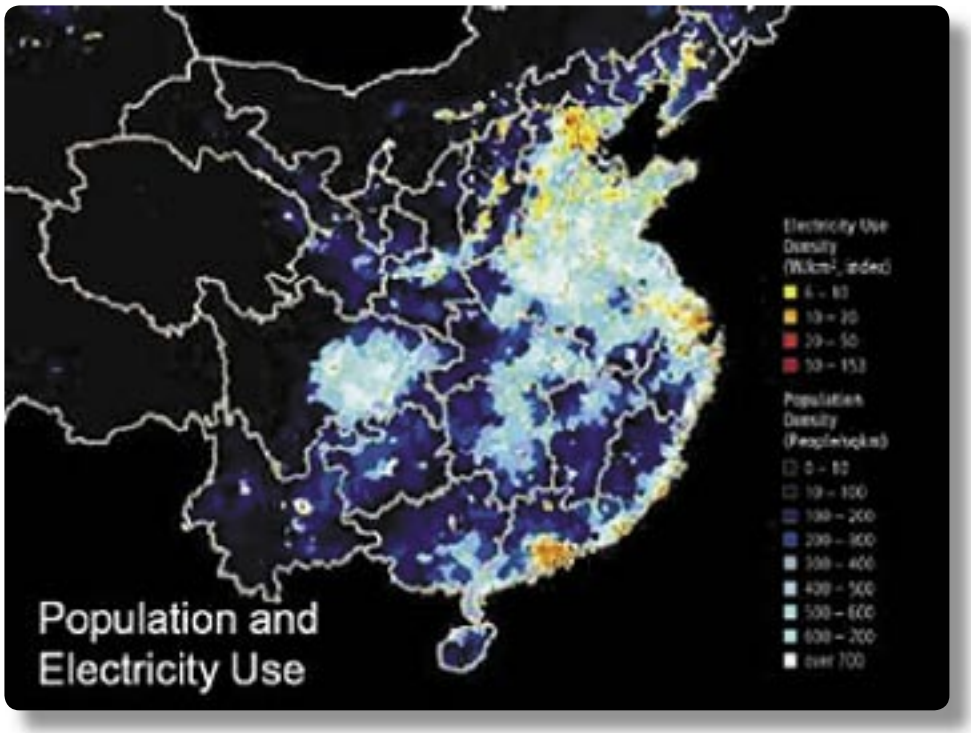
Summary of the Energy Stream

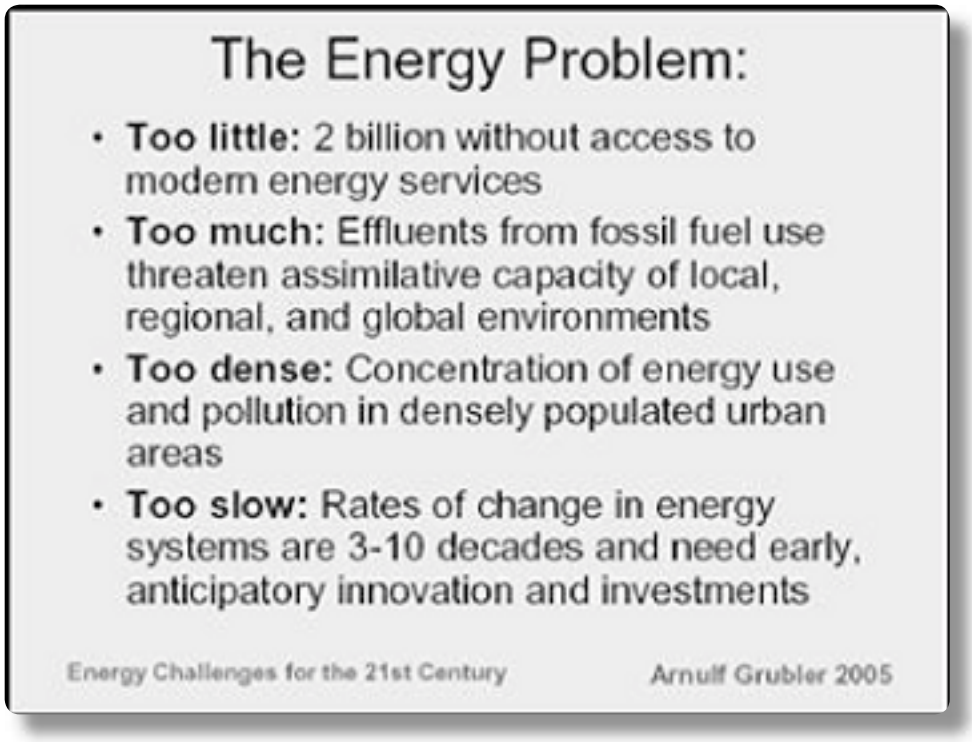
The message of this workshop was clear. We face a serious problem; in fact you could state that the energy problem is the mother of all problems.

Political and economic instability because of Oil interests and speculation. Climate instability because of the fast increase of energy consumption and accordingly a CO2 increase in an already unstable global climate. Social instability because the availability of energy is directly related to wealth.

Arnulf Grübler, IIASA - International Institute for Applied Systems Analysis

Arnulf Grübler was painting a dark picture concerning the problem we will be facing. People are





concentrating themselves in new cities. If you look from space at the earth you can make a light map. This light map is a good energy use indicator. If you look at the new emerging cities in regions like China (see picture) we get an idea about the future of energy needs.

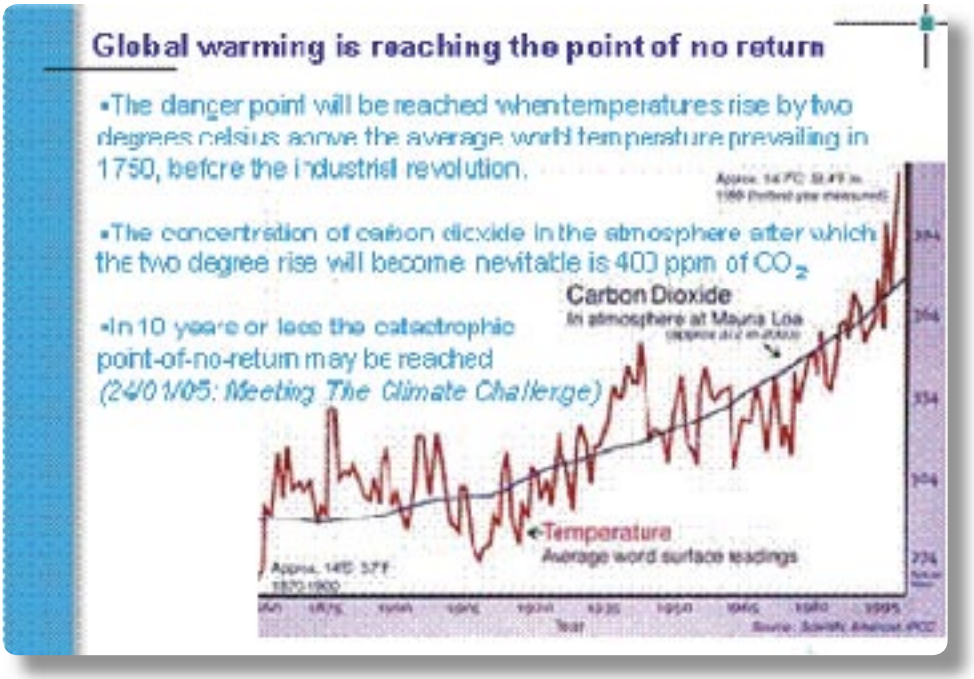
The need is huge ….. and renewables will by far not be able to provide enough energy in those dense areas.

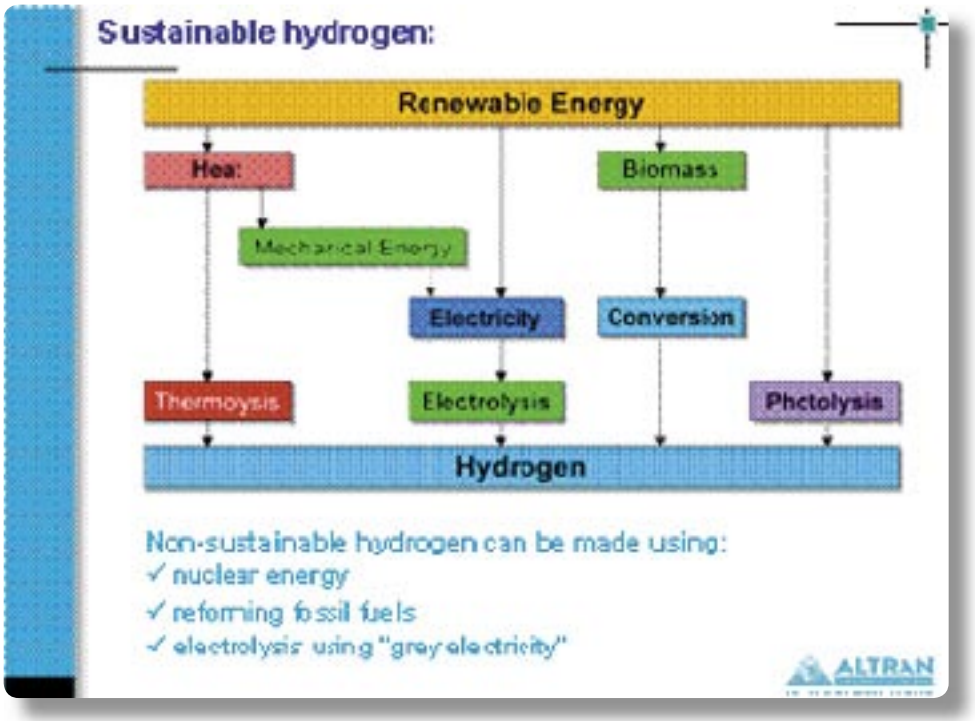
If we want it or not fossil fuels will still play a very important role the coming decades. It is an absolute necessity that we stop the decline in Energy R&D and Innovation budgets. All our research attention for the future should be focused at a Zero Emission Energy System.

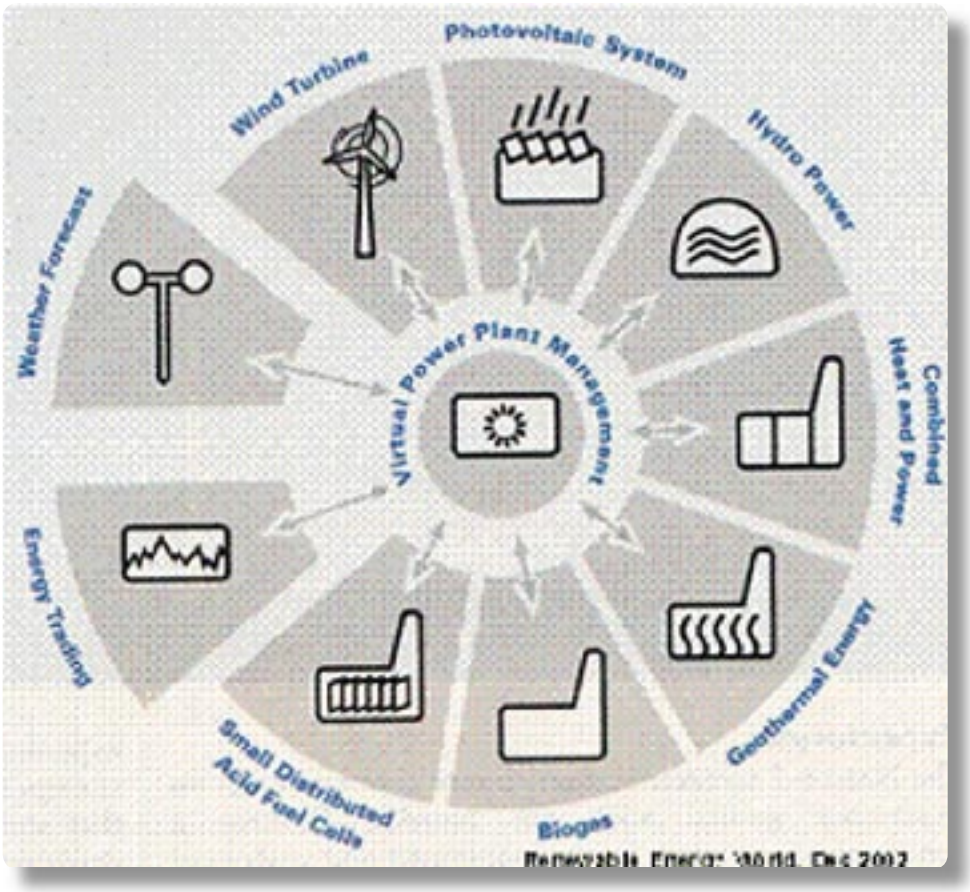
Michiel Jak, Senior Consultant Sustainability & Hydrogen, Altran Technologies Netherlands BV

After telling the same point, the emerging danger of a Global Climate Change Michiel Jak was clear in what kind of primary energy sources we can use and how to create a Zero Emission Energy System.

Hydrogen can be the Universal carrier of all energy types. Preferably Renewable Energy would be the most ideal option.
Hydrogen is an ideal storage me-


Global warming is reaching the point of no return
•The danger point will be reached when temperatures rise by two degrees celsius above the average world temperature prevailing in 1750, before the industrial revolution.
•The concentration of carbon dioxide in the atmosphere after which the two degree rise will become inevitable is 400 ppm of CO_2
•In 10 years or less the catastrophic point-of-no-return may be reached
(24/01/05: Meeting The Climate Challenge)
Carbon Dioxide
In atmosphere at Mauna Loa
Temperature
Average world surface readings
Year


Sustainable hydrogen:
Renewable Energy
Heat
Biomass
Mechanical Energy
Electricity
Conversion
Thermolysis
Electrolysis
Photolysis
Hydrogen
Non-sustainable hydrogen can be made using:
✓ nuclear energy
✓ reforming fossil fuels
✓ electrolysis using "grey electricity"
ALTRAN



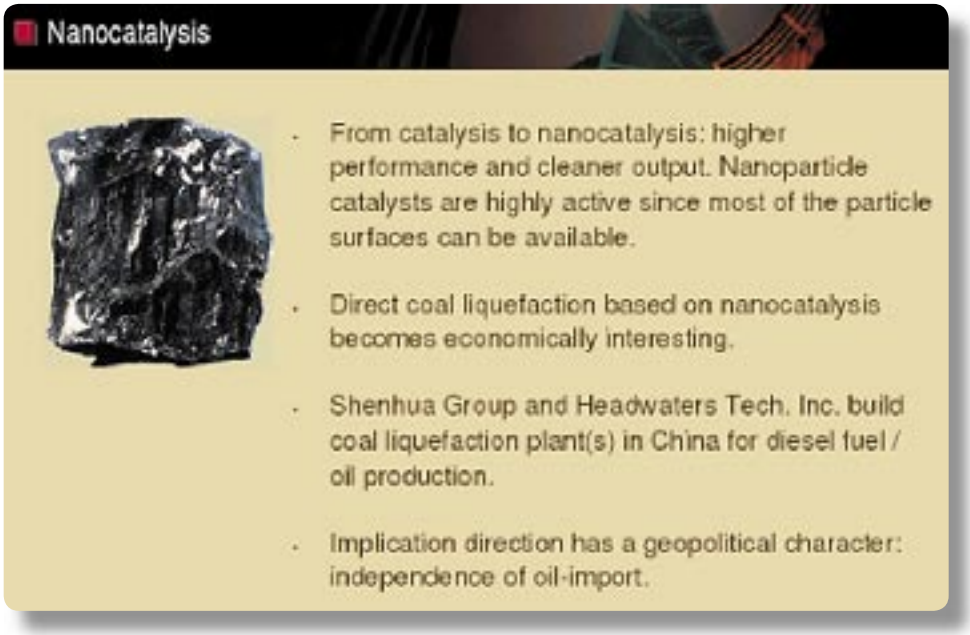
dium to solve their inherent discontinues character.

He was showing the possibilities of a future Virtual Power Plant where you use a combination of (un)predictable sources, storage (for example in Hydrogen) and conventional power units.

Harvesting energy from renewables is beautiful but we have to face reality and include Nuclear (Fission and in the future possibly Fusion), reforming fossil fuels and sequestration (storing CO2) as primary sources for the coming decades, if not longer.

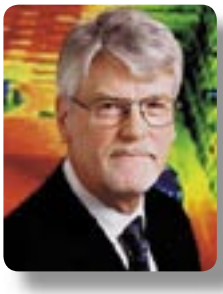
Erik Knol, Founder and director, Qeam

Nanotechnology could play an important role in the development of intelligent and efficient new energy systems. New material coming out of the field of Nanotechnology research could possibly produce better solar cells, more economic and durable membranes for fuel cells and electrolysis systems, increase



battery capacity or provide new ways to store hydrogen.

But not only the sector of renewable energy can benefit from Nanotechnology. Already Nanotechnology already provides new catalytic materials, which make it possible to economically, produce liquids (Diesel) from coal. China is building a plant to do so. An intensive use of coal as a source of diesel fuel will have a huge impact on the environment because of the 'dirty' nature of coal (High on carbons, Sulphur and heavy metals).



Gerd Eisenbeiss, Member of the Board of Directors, Research Centre Jülich

Gerd Eisenbeiss was very clear in his lecture. The world of tomorrow will be an electric world. Electricity is the way we will transport and use energy. In terms of energy sources we cannot expect anything fundamentally new, so we have to generate electricity with the sources we know. Efficiency is a large source. Using energy to heat our homes is nonsense. If we use insulation, solar energy and energy conservation techniques we can build offices and houses that need no external energy source for maintaining a comfortable climate inside. We should not rule out any primary source, we are not in the position to do so because our energy needs will be huge.

Nuclear, fossils (Gas and Coal, - combined with CO2 sequestration), biomass, hydro, PV and

- Public transport will use more electricity by trains, trams and trolley buses
- Air planes will need hydrogen or liquid derivatives
- The hydrogen will most likely come from electrolyses and therefore be more expensive than electricity
- Trucks and private cars will use hydrogen too, if the costs of the vehicles and the fuel is adequate
- Private drivers will buy electric battery cars if hydrogen and fuel cells are not cheap enough.

Thermal solar, wind … they will all play their role. They all will be used to produce electricity. Worldwide grids will distribute the electricity. Whether hydrogen or batteries will become the general storage medium the electricity will depend on technological developments.

Long ago we saw the benefit of going from a Hunter Gatherers Society to a Food Harvesting Agricultural Society. Now we face a new transition we have to go from hunting and gathering energy towards Energy Rationalization and Harvesting. The sources, the knowledge and the intelligence are there. Now it is a matter of will to shape a Global Clean and Wealthy Energy Future for everyone….

Gerd Eisenbeiss

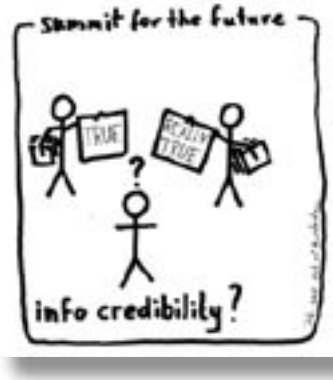
Member of the Board of Directors, Research Centre Jülich

The Future of Energy

Introduction

A lecture lasting just 30 minutes cannot deal with everything, especially not if it is concerned with the future since the future is open and this is also true of the future of energy supply and energy consumption.

We only have a rough idea of how many people there will be in 50 years time. Will it really be the **9 billion people** estimated at the present time? Can we assume that all these people will have the **same standard of living** that the Europeans have today? Will they need as much energy as we do or perhaps even as much as the USA? Or will they finally be saving energy? Will humanity submit to the rigorous demands of **climate protection** and thus burden themselves with the associated costs? Or will mankind essentially remain as egoistic as they are today? Is Kyoto the start of a new development in which altruistic generations renounce consumption and extravagance in order to actually bequeath equivalent circumstances of life to subsequent generations as required by the sustainability paradigm?



The energy problem in particular will take on quite different forms – depending on whether rigorous environmental and climate protection chooses to outlaw the most plentiful energy resource, coal, or whether mankind decides in favour of a life accompanied by climate change and its consequences. And it is a matter of no little significance whether nuclear energy is used extensively, not at all, or only in a few countries.

However, as a boundary condition for the future energy supply, for example in the year **2050**, we may well assume that

- global demand for energy services will be much greater than today
- costs and prices in all segments of energy consumption will be much higher than today
- revolutionary new energy technologies will not be available, not even fusion, which – if all goes well – will then just have been able to demonstrate its serviceability.

In order to make it quite clear from the very beginning: the speaker takes the dangers of a possibly rapid climate change very seriously and supports uncompromising climate protection. However, as an analyst he is at the same time also pessimistic as to whether mankind will be so noble as to abstain from consumption at the present in favour of the future!

After declaring his commitment to the goal of sustainability while registering his scepticism about its success, the speaker would like to note that as far as the lecture is concerned the four following chapters cannot deal with everything that needs to be considered. For example, energy consumption by industry really needs to be treated separately and some possibilities whose technical and economic practicability should be examined by future research will not be discussed at all or not in sufficient detail. In particular, it is impossible to go into detail about the large number of technological options that serve the priority goal of **efficient and economical use** of the energy to be supplied. These important processes are subsumed under the blanket assumption that there will be increased demand for energy services and that, in spite of successful savings, shortages will lead to major increases in the price of conventional energy sources. On the other hand, this may enhance the clarity of the lecture.

How will we heat our buildings?

This question causes few difficulties since the speaker has no doubt that especially in the buildings sector there is a great potential for energy savings in the long term. Today we are already familiar with technologies that enable a building to be designed in such a way that it hardly needs any energy for heating. Many buildings for quite different types of use have already been constructed which, by means of good thermal insulation in the external envelope, intelligent use of solar radiation (especially through the windows), optimized designs for ventilation and natural light, and the correct distribution of the intrinsic storage function of walls, floors and building materials according to physical laws, can reduce heating energy requirements to the region of zero.

Today, possible success is still hindered by the old building stock which would be uneconomical to renovate according to energy-saving principles. Furthermore, the still relatively low energy prices compared to the high standard of living in Europe and the USA do not provide sufficient incentive for people to change their behaviour with respect to consumption and investment. However, the significantly higher energy prices in the future will have the effect that in the year 2050 buildings with a considerably lower **heating energy consumption** than 3 l per m2 and year [This means per litre of fuel oil or the energy equivalent of other fuels.] will probably be the rule.

Incidentally, this will have consequences for the heating systems that will still have to be available for the very coldest days. Due to the low number of days on which heating is required it will hardly be worthwhile to apply capital-intensive heating technologies.

This particularly concerns the co-generation of heat and electricity with motors or fuel-cell units and heat pumps that is so attractive at the moment. Since cogeneration only has advantages if the heat produced is actually consumed, its market segment will be reduced in the residential sector to the provision of warm water and thus to very small power levels in the 1 kW range.

There are a number of indications that **residual heating requirements** will be covered by **electricity** since electric heating requires the lowest investments on the part of the consumer. However, consideration can also be given to the whole range of power plants which will probably have to provide such power levels on the coldest days from stored energy in order to avoid higher costs when capacities are not used to the full. But more on this topic in the following chapters.

How will we produce electricity?

Even today there is a clear trend towards more **electric current** in final energy consumption. This can be ascribed to the fact that electricity is unmatched in its user-friendliness. It can be concentrated precisely on user applications in space and time – one only has to think of the trivial example of infrared radiators in bathrooms. In these applications electricity is in fact efficient although today it is mainly generated in thermal power stations where 40 to 65 % of the primary energy is lost in the form of waste heat.

The assumed increase in the application of renewable energies due to the growing scarcity of fossil hydrocarbons and for climate protection reasons will further reinforce the trend since most of these energy sources provide electricity directly such as hydropower and wind energy or photovoltaics. Low-temperature sources such as geothermal power or solar collectors are not thermodynamically appropriate for providing electricity with sufficient efficiency and at a good price – unless research succeeds in the "hot dry rock" technology, producing high temperature heat from deep boreholes and artificially generated cracks at a depth of about 4000 metres and more.

Countries such as Norway and Sweden whose energy supply is mainly based on hydropower as a more or less conventional source of energy do not have any reservations even today in using this electricity for heating purposes.

The further application of **coal** depends quite decisively on the further fate of climate protection. At present, coal forms the basis of electricity generation and can only retain this function in a future energy policy directed towards ecological sustainability if we succeed in preventing its combustion product CO2 from entering the atmosphere.

Although such technologies are conceivable today they cannot be responsibly represented either in a technical or economic form. The separation of CO2 from the combustion residues is less of a problem, apart from the perceptible losses in efficiency and extra costs; it is much more difficult to guarantee that the CO2 to be stored in the deep underground will be prevented from entering the ecosphere for an infinite period. It can be said with certainty that no responsible positive answer can be given before 2025 and perhaps never will be.

However, if the ambitious climate protection goals beyond Kyoto should collapse, due to its abundant and long-term availability coal would provide a permanent basis for future electricity generation way beyond 2050. Under the same conditions, one can also think of the possibly gigantic oceanic resources of **methane hydrates** on the continental shelf, for whose existence there is as yet no clear proof. Nor is there any technology for extracting the methane – particularly if it is to be prevented from being released in an uncontrolled manner and rising into the atmosphere. This would then accelerate the greenhouse effect quite substantially since the radiative forcing of methane is about thirty times that of CO2.

Where it is accepted by the population, **nuclear energy** can also be used for generating electricity. The type of utilization will probably also depend on whether cost effectiveness is fully exploited in the form of large reactor blocks of 1.5 GW or whether, while accepting additional cost, failure and terror risks are minimized by inherently safe, smaller reactors of the gas-cooled high-temperature type built underground. Perhaps even efforts at transmuting the long-lived radioactive waste into waste with a much shorter half-life will be crowned with success so that final disposal problems can then also be solved more convincingly. The probability of success for such technologies does not appear greater to the speaker than that of permanent CO2 sequestration.

If one considers the cost aspect of the future electricity supply, especially under climate protection conditions, then a forecast is required of the future development of technologies that are relatively new today. This is naturally an extremely risky venture. The speaker can therefore only put forward his own very personal estimates.

Accordingly, **water and wind energy** – the latter on-shore – will probably not become very much cheaper. Even off-shore wind converters or the utilization of marine energy, including the costs of transporting electricity on land, are not expected to be cheaper; however, both strategies could considerably increase the electricity supply. Please ex-

cuse the use of German figures in this argument: Germany currently produces about 4 % of its electricity from hydro power and about 5% from wind power. The contribution of hydropower cannot be increased, in spite of the first signs of resistance in the population it may be possible to double the contribution of onshore wind: especially repowering (replacement of small wind energy converters by much bigger ones) may double the contribution of on-shore wind, but wind capacity can then only be extended on the ocean.

Of the **solar technologies**, electricity generation from solar thermal power plants in the world' s sun belt will probably remain more economical in the long term than photovoltaics – with costs roughly comparable to wind at good sites. It cannot even be ruled out that via high-voltage direct-current transmission (HVDC) electricity imported from thermal power plants in North Africa may even be cheaper in Amsterdam than photovoltaics from the inhabitants' own roof. It must be admitted that it is particularly difficult to make a cost forecast for photovoltaics because it is still so expensive at the moment. However, it has been possible to implement considerable learning effects: over a long period, doubling the PV power produced has led to a 20 % cost reduction. The sixty-four-dollar question is, of course, how long this welcome trend can be extrapolated. If consideration is given to the fact that a photovoltaic plant does not only consist of innovative components whose price could be reduced by further research and development efforts then this leads to rather cautious estimates as far as the future contribution of photovoltaics to the electricity supply is concerned.

At first sight, an ideal solution seems to be the application of **biomass** for electricity generation since such waste or specially cultivated energy crops are, of course, climatically neutral and can be used in a similar manner to coal in power plants. In particular, biomass permits demand-oriented electricity generation. In contrast, sun and wind provide electricity erratically giving rise to secondary costs for voltage and frequency stability in grid operation.

Attention must, however, also be paid here to the volume arising, that is to say availability. And the news is not good. For Europe, useful energy in the order of 6 to 10 % of requirements could be obtained from waste biomass. And this potential would also have to be fully exploited in order to produce heat and electricity in the short and medium term and predominantly electricity in the long term. Co-combustion in coal-fired power plants or special steam power plants on a wood or straw basis would probably be the economically and ecologically optimal form of exploiting biomass. The hydrocarbons replaced in this way could then be used in

the transport sector.

Apart from biomass waste, it is also possible to specifically cultivate energy crops. However, this involves some very critical questions, which are being answered in an unconditionally positive way by farmers and agricultural politicians only. Let us first look at the potential. From one million hectares of arable land a maximum of 200 PJ can be obtained per year from energy crops if cereals are utilized as a whole plant or just 100 PJ if oil from rape seed is involved. This is isn't very much! Germany has a total of 12 million hectares of arable land and could perhaps make 2 million hectares available. This would at best amount to 400 PJ in view of a primary energy consumption of 14,000 PJ, that is to say 35 times as much. Incidentally, 1.3 million hectares are already used for cultivating rape in Germany, which in some cases is applied in the transport sector as rape methyl ester (RME), sometimes after being subsidized three times by a set-aside premium, investment grant and tax exemption (see next chapter). In the Europe of 25 members the situation looks a little better in quantitative terms, but there is no basic change.

By way of summary, it can therefore be said of biomass for electricity generation that it is required in its entirety in order to be able to generate electricity in future in a climatically neutral manner at least in these parts. The fact that the German rape strategy performs very poorly is already well known outside the agropolitical lobby.

Moreover, it should not fail to be mentioned that the use of fertile soil for purposes of energy generation must also meet with ethical reservations in view of the hunger in the world. In other countries, the situation is aggravated by the fact that not only is cultivable land in short supply but in particular water and should really be reserved for feeding the world's population.

Forestry can also provide wood for energy production; to the extent that this involves wood residues, old wood and waste wood, it has already been taken into consideration in the previous comments. A careful evaluation should also be made of energy plantations with rapidly growing tree species, so called short rotation crop. In fact, the ecological development of the world tends to suffer from the overexploitation of woody biomass, whether due to the destruction of the rain forests as a reservoir for biodiversity or due to the associated reduction in the CO2 storage function of the forests. In a different context, experts recommend reafforestation as a win-win strategy in the climate protection debate, but not the fastest possible harvesting and combustion of wood.

The speaker accordingly has considerable doubts as to whether

extensive biomass strategies could lead to our goal from the perspective of climate protection and sustainability. Without major contributions of biomass the problems of stable operation of the electricity grid are even greater than with its stabilizing effect via the inertia of thermal power stations. This gives rise to the question of future **storage technologies**, which leads some individuals to immediately think of hydrogen. There are, however, other, competing solutions, particularly pumped-storage power plants with water or compressed air. If it should prove that the best solution would be to use the electricity otherwise not required in electrolysers for generating hydrogen and oxygen then the best use for these storage gases would be their application in gas turbines or fuel cells for generating electricity on demand. This has to be stated so clearly since from time to time whole hydrogen worlds are constructed on the basis of such network stabilization problems. This is quite absurd since the quantities of hydrogen required to stabilize the grid are very small in comparison to the demand, for example, of a hydrogen-based transport sector (see the next chapter).

In summary, it can therefore be said that there is no easy solution to a future electricity supply. The world will not be able to afford to give up any of the existing options, not even nuclear energy. Of all the potential candidates, surprisingly for many people it is **electricity generation by solar thermal power** that represents the substrategy making the greatest contribution to volume and cost if coal is to be cut back for climate protection reasons. In this case, we will have to accept the fact that only at the southern borders of Europe are there suitable climatic conditions for generating solar thermal electricity, which means that such solar electricity will have to be imported, in particular from North Africa.

How will we fly and drive?
This question is the most difficult. If the remains of the available oil and natural gas capable of being converted into fuel should actually become exorbitantly expensive there is no quick fix.

Without climate protection restrictions, use can of course be made again of coal or indeed possibly of methane hydrates. However, if climate protection is the aim coal could only be used if CO2 sequestration were to succeed (see above).

If we are to be essentially dependent on climate-neutral energy sources then the options are reduced to those energy sources that have already been dealt with in the previous chapter. It must be recalled that these energy sources supply, in particular, electric current so that the first question concerns electric transport. In **public transport** a re-electrification could accordingly be achieved with trains, trams,

metros, trolley buses etc., wherever possible. For aircraft, however, such a solution can be ruled out.

Especially the fuel supply for **aviation** makes it probable that hydrogen will be produced – whether from electricity by electrolysis or by the gasification of coal; it remains to be seen whether the aircraft will be fuelled with liquefied or pressurized hydrogen or chemically bound hydrogen in the form of a liquid fuel.

Since from the optimization perspective, biomass together with energy crops has to be used in the electricity sector there will probably be nothing left for transport. Many people who would like to make **biomass** in particular available for transport purposes will find this confusing, such as the EU with its directive for biofuel. This does indeed reveal a problem of political inconsistency since the same biomass has been earmarked twice. If the European Union intends to achieve the aim of adding 5.75 % renewable components to petrol and diesel fuel by 2010 then this biomass will have to be withdrawn from the power stations. This would, of course, be detrimental for climate protection and could only be justified from the perspective of reducing the specific supply risk in the transport sector.

At the moment, this blemish of European, and also German, policy is still being masked by the protective walls (customs duties, import quotas, market regulations) enjoyed by European farmers. When the WTO negotiations remove this protective system in the near future, the European producers of agrofuel will be at a disadvantage on the world market in the same way as the **cereal and sugar beet** producers are today. Bioalcohols for transport purposes won't originate from German or European fields, but from Brazil and elsewhere. You only need to compare the European sugar price of about € 630/t behind the protective wall with the world market price which is three times lower.

For private transport we will therefore have to think of something else than agrofuel or methyl ester. But what?

In technical terms, the speaker shares the conviction of many experts that the car of the future will be an electric vehicle. The question is still open of whether the **electric drive** will obtain its electricity from a more or less conventional secondary battery powered from a wall socket or whether the electricity will be generated on board, for example in a fuel cell, operated with hydrogen from the tank. If fuel cells should not be as successful as the speaker expects, then it could also be a combustion engine that converts the hydrogen; the **hybrid vehicles** just coming onto the market demonstrate how it can be done.

The exciting question is therefore whether **battery or hydrogen vehicles** will set the pace in future. In order to examine this question more closely (for at the moment it cannot be resolved!), let us describe the following scenario. In the year 2050, a car buyer goes to a dealer's salesroom; the salesman has two models on offer. On the one hand, he has a battery vehicle with a restricted range but otherwise with all the accessories required at price X, but which has the one disadvantage of having to frequently recharge or change the battery. On the other hand, there is a hydrogen vehicle without this disadvantage, although it is considerably more expensive to run since hydrogen is produced from the electricity that is directly obtainable from the wall socket for the first vehicle. From the present perspective, it is unfortunately impossible to say with any certainty whether the second vehicle will be cheaper or more expensive to buy (in the case of a **fuel-cell drive system** probably more expensive), this is why we don't know what choice the customer would make. It does, however, seem probable that there will be more affluent customers who will chose the hydrogen vehicle and others, less well off or less demanding, who will prefer the battery vehicle.

This scenario is based on a few assumptions, for instance that batteries are not significantly better than they are at present and that the hydrogen for the fuel tank comes from electrolysers and not from coal gasification plants. As a matter of fact, the speaker considers the latter to be very probable in a climate protection scenario since the conceivable alternatives such as thermochemical water splitting or biological hydrogen generation appear less attractive from the cost perspective. However, a degree of uncertainty must, of course, be admitted since surprising research results can never be ruled out.

In particular, the application of high-temperature reactors could enable hydrogen to be produced via thermochemical catalytic water splitting. These are the same reactors as for electricity generation but in this case the turbine and generator are replaced by a chemical plant, in which, for instance, a sulphur-iodine cycle could be applied. In a coal-based energy future, with or without CO2 sequestration, the basic unit for electricity and hydrogen could similarly consist of a gasification reactor, whose product gas is used to generate electricity in a gas or steam turbine process or is purified and applied for transport purposes in the form of hydrogen.

If these assessments are correct – and they are at least probable from the present point of view! – then this has serious consequences for **future power plants**; for in this case they will also have to take over responsibility for supplying transport fuel

and that means that they must at least **double** in output (in Germany fuel consumption for transport purposes is greater than the entire electricity production!). If we now look back at Chapter 2 and the assessment expressed there that the remaining residual heating requirements of buildings could be provided by electricity then this leads to a coherent electricity scenario. Incidentally, this system will have fewer storage problems than previously discussed because hydrogen generation for vehicle requirements can be used as a buffer just like the residual requirements for heating energy, which can be decoupled from electricity consumption to a certain extent via decentralized hot water storage tanks.

Final Remarks

This has all concentrated on Europe. Will it be different for other continents, especially in regions whose standard of living is low today? I don't think so, despite different regional conditions with respect to climate and natural resources. In many regions, especially in developing countries, electricity supply is just starting; there are no extended grids to bring electricity to rule areas. Therefore, there will be a longer transitional period in which decentralized small sources of electricity like PV-generators will start electrification. Based on these first steps small village grids will emerge or already exist. The speaker is, however, convinced that at the end of the development process almost everywhere – with the exception of small islands and extremely thinly populated areas – strong electricity grids will become established as the energy infrastructure of the future. These grids will be fed everywhere by a mixture of big centralized and small decentralized electricity generators. If, in particular, fusion technology should become commercial by 2050 then the priorities would once again be shifted towards large centralized power plants, according to the cost relations at that time – but who knows what the cost relations will be like then.

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Small-scale technologies for energy innovations: role and implication directions

1. INTRODUCTION

Energy innovations with sustainable fundaments are needed to fulfill energy demands for the coming decades. This leads to a seeking process for new knowledge and technologies in order to create incremental and breakthrough energy innovations. The question is what the role is of small-scale technologies (nanotechnologies) for these innovations? This paper examines in a brief and non-exhaustive manor the role and implication directions of small-scale technologies for energy innovations. First, the paper describes the necessity for energy innovations and small-scale technologies. Next, based on examples role and implication directions are discussed. The conclusion focuses on the outline presented.

2. ENERGY INNOVATIONS AND SMALL-SCALE TECHNOLOGIES

Several authors describe the essence of substantial transformations in a variety of areas like artifact production, energy usage, and recycling to facilitate wealth development on the basis of energy and material efficiency and to prevent future crisis in energy supply and irreversible environmental damage (e.g. Hawken et al., 1999, Rifkin, 2002; WBCSD, 2004). These transformations can be initiated via awareness and behavior change on energy consumption, regulations to limit the emission of greenhouse gases, or introduction of new technologies to boost the generation of sustainable energy. This paper focuses on the technology approach.

Small-scale technologies represent a domain in the field of physics, chemistry and engineering that offers specific functionalities due the miniature scale of involved matter or processes. Nanotechnology is seen as the small-scale technology cluster for the coming decades and is by Roco (1999: 1) defined as 'development and utilization of structures and devices with organizational features at the intermediate scale between individual molecules and about 100 nanometers where novel properties occur as compared to bulk materials'. These nanoscale structures and devices may have unique chemical, mechanical, electrical, magnetic, optical or biological properties, based on for example higher surface to volume ratio (usage: enhanced reactivity for catalysis or batteries), higher resistivity with decreasing grain size (usage: electronics), or increased hardness with degreasing grain size (usage: hard coatings and thin protection lay-

ers) (Köhler et al., 2003). For an overview of nanotechnology-based applications see European Commission (2004). A substantial part of these technologies are still in a phase of fundamental and applied research and it is hard to oversee the impact of these technologies.

Small-scale technologies offer new functionalities or properties for energy innovations for the coming years or decades (e.g. Arnall, 2003; Royal Society, 2004; Wood et al., 2004). Carbon nanotubes have the ability to make parts of cars or aircrafts lighter, influencing the fuel consumption per kilometer per kilo positively. Developments in catalytic nanoparticles improved the catalytic performance of fuel cells or batteries. Nanoscale-devices in semiconductor components can reduce the power consumption per bit processing or bit storage. Polymers are becoming a research fundament for new types of solar cells. Increased charge and discharge currents of batteries will be introduced via nanoparticles of specific materials. Research takes place in what way carbon nanotubes could store methane or hydrogen for fuel cells of mobile phones or laptops. Life cycle assessments is recommended to give complete insight concerning resources usage to develop, to produce, to use, and to dismantle the mentioned high-tech innovations (Royal Society, 2004).

3. ROLE AND IMPLICATION DIRECTIONS SEEN FROM A MULTIDISCIPLINAIRY PERSPECTIVE

Technological development processes do interact with a variety of stakeholders or elements in a variety of segments. Related theoretical discussions can be found in Dosi (1982), Parayil (1993) or Callon et al. (1992). A multidisciplinary perspective on technological developments gives insight in the dynamics related to and role and implication directions of these technologies. In order to stimulate awareness on the role and implication directions of small-scale technologies on certain (future) energy innovations, this paragraph discusses some examples from a specific perspective. First, via the case of polymer-based solar cells the creation of a new scientific and technology regime is shown. Next, the geopolitical dimension is shown via a nanocatalysis case in the coal industry. Third, the impact of intellectual properties is related to the fuel cell industry. In the last example, the implications of the public opinion on ethical, legal and societal aspects of nanotechnologies are introduced.

Scientific and technology regimes and polymer-based solar cells

Scientific research is a process of exploration (looking for and investigating new and unknown phenomena) and exploitation (producing scientific knowledge and - if possible - creating fundaments for new technologies). Specialization in research areas

leads to development of scientific and technology regimes with a certain degree of intellectual and economic lock-in. But in some cases, fundamental scientific or technological breakthroughs are based on the creation of unknown relations, not necessarily within the actual regime. With respect to energy innovations, a strong basis for the current research in the field of organic photovoltaic systems (polymer solar cells) was created by the discovery of light-emitting polymers to create next generation flat panel displays - a huge market for players like Philips, Samsung and Cambridge Display Technologies. Due to the fact that researchers did see the opportunities to use the scientific fundaments of polymers for solar cells, a new scientific and technology regime was created in the domain of photovoltaic systems (e.g. Nunzi, 2002; Spanggaard & Krebs, 2004). These systems will reach an energy conversion efficiency of 10% in the long run, together with interesting parameters like relatively low production costs and high mechanic flexibility (e.g. Brabec et al., 2001). This example shows the implication direction of new scientific and technology regimes: on the basis of creativity, knowledge from other regimes, and (scientific) entrepreneurship, new energy solutions based on small-scale technology-based materials are developed.

Geopolitical aspects of nanocatalysis for the Chinese coal industry

New technologies can facilitate leapfrog movements of organizations and countries. Knowledge generated and build-up for years can be bought and embedded in local innovation systems without hurdles related to pioneering technology development processes. In the energy sector, countries like China are able to use modern technologies to upgrade and expand their energy infrastructure. In 2002, the Chinese coal company Shenhua Group together with a subsidiary of the US company Headwaters Inc. started a project to build a nanocatalysis-based coal liquefaction plant to produce relatively clean diesel fuel / oil at an economically rate. For the coming years more plants are planned in China. Nanocatalysis creates possibilities for China to reduce dependence of oil imports and to produce coal-based fuel for its rapid growing transport sector (Nolan et al, 2004). The example shows that from geopolitical point of view coal liquefaction based on latest developments in nanocatalysis puts less economical and political pressure on oil-rich countries and places China - as a coal-rich country - in a new energy position.

Intellectual properties based on high-throughput synthesis and analysis

High-throughput screening is an efficient method to discover new material properties or reaction parameters by the usage of a constellation of parallel (precision) reactors, including

advanced material characterization possibilities and computing power, to test automatically a wide range of reactions based on slightly different materials (e.g. Murphy et al., 2003). Companies like Intematix, Nuvant, Symyx or Avantium use this high-throughput concept to synthesize and analyze breakthrough properties of for instance catalytic materials. Related to the energy sector, this kind of high-throughput screening offers substantial possibilities to find new, highly functional catalytic materials (efficient, durable, cheaper) for fuel cells, leading to new - economically interesting - intellectual properties (IP) (see also Veen et al., 2003). These mentioned companies - and their customers - have the technological and IP / legal means to influence the economic power balance in existing and developing fuel cell industries, due to their opportunity for speeding-up technological development processes and their potential to possess key patent positions for next generation fuel cell catalysis materials and catalysis constructions.

Public opinion (ethical, legal and societal) on nanotechnologies

The ethical, legal and societal aspects (ELSA) of new technologies needs to be analyzed and discussed, in order to seek and to define boundaries for technology diffusion and adoption. In the field of nanotechnology research projects, debates and surveys are initiated (e.g. Arnall, 2003; Bainbridge, 2003; ETC Group, 2004; Roco, 2003; Royal Society, 2004). Important topics are health, environmental and safety impacts of nanoparticles, fibres and carbon nanotubes. Academic research is necessary to map these impacts. Developments on energy innovations based on nanotechnologies do have a chance to be influenced by the attitude of the general public. The future path of nanotechnology-based energy innovations will be linked to open communication to stakeholders and boundaries given by concepts like responsible innovation.

The four examples show that small-scale technologies have a role for specific energy innovations and that implication directions can be found in specific domains; in these examples respectively scientifically and technological, geopolitical, intellectual property, and public opinion domains.

4. CONCLUSION

Energy innovations are fundamental for future societies and small-scale technologies have a role in the development and implementation of a variety of energy innovations. The given examples show that role and implication directions needs to be seen from a multidisciplinary perspective: e.g. scientifically and technological, market, geopolitical, intellectual property, legal, and public opinion. It is recommended to create awareness on the multiple roles and

implication directions of small-scale technologies for energy innovations. Instruments like scenarios and roadmaps (e.g. Millet, 1988, Knol, 2004, Walsh, 2004) trigger the mental models of involved actors and stimulate a broader sense of awareness. Let an multidisciplinary approach and involved actors with critical and creative mental models create the pathways to intelligent, clean and secure energy innovations.

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The Summit for the Future provided a special opportunity to discuss some of the challenges for the future and put forward a range of visions on how that future might look. It was special because five very different sectors in our society were represented; trade and industry, health, energy, science and technology and the media.

The summit allowed a discourse within these sectors and across the sectors so that a wide and varied set of perspectives emerged during the meeting. It is very unusual for example, for specialists in energy technologies and policies to be able to talk to people working in the media.

The summit fostered the kind of conversations, which need to take place in our society if we are to move forward into a robust future facing the complex problems, which are presenting themselves to us. There are plenty of these around.

In the week of the Summit, a report called 'Meeting the Climate Challenge' recommended immediate action on greenhouse gas emission reductions to avoid crossing the 400ppm CO2 threshold atmospheric concentration which they claimed would risk severe climate change effects such as famine, water shortages and land loss. The report pointed out that we are on course to exceed this threshold within 10 years. At the same time a paper was published in Nature[1] showing that new model simulations indicated that the climate is a lot more sensitive to change than had previously been thought, reinforcing the need for action.

At the same time we have a major challenge in addressing the inequity in the world and alleviating the poverty, which will be exacerbated by the problems of climate change. In the energy sector alone two billion people in the world lack access to an electricity supply.

How were these challenges addressed in the summit? Taking the case of the discussions on energy as an example, a range of very different perspectives was apparent. Energy supply is of course important for its impact on carbon emissions for climate change and for the provision of energy services for our well-being and economic activities. One view of the future suggested no real change to the existing system with large-scale power stations and a grid system with decreased coal use determined in a top down fashion by utilities. This is the 'technological fix' approach.

In contrast to the large power station grid system future, a transition to more distributed generation was also discussed and is already happening. Renewable sources tend to be limited on a large scale but more small-scale renewable projects and combinations of renewables are expected to be implemented at the individual level or community level. For a community, a range of sources, sizes of energy plant and energy storage systems can be treated as a 'virtual power station' linked and controlled as one plant to provide the heat and electricity requirements.

This perspective also acknowledges the need to decrease energy demand through a mixture of behavioural change and technology change using low energy buildings, efficient appliances, high efficiency fossil fuel based systems such as CHP and heat pumps and through cleaner production practices.

On this local scale much more autonomy would be transferred to the community or householder so that there is no longer a requirement for a top down structure. A transition to a low carbon future would be expected to involve initially both a top down grid system with its attendant problems of infrastructure and security of supply which will tend to beset gas installations and grid supply in the future and a more localised generation model. Small scale options may still require infrastructure as for district heating plant, or for storage facilities or for example in the future for the hydrogen economy. The current trend to liberalisation of the energy markets was seen as a serious problem as private companies are unlikely to make the investments required.

Many of the small-scale renewable technologies also have application in developing countries where access to energy is a major problem in combating poverty. Small-scale energy supply can reduce drudgery and subsistence living to provide opportunities for higher quality of life and employment. However the problem of densely populated cities is a major challenge.

The discussion showed that though there are developments to move to a low carbon sustainable future there is still insufficient awareness that we cannot sustainably continue with the existing model of energy supply and that there has to be a change in attitude to energy use. This was also evident in other streams where the visions for the future showed that attitudes to economic growth, technology and energy supply were not very different from now.

As an example, for the media strand, visions of technological changes and providing transparency and access to information were discussed in the sessions. However new media visions are needed to promote dialogue and foster understanding across

groups within nations, as well as across nations, to enable us to overcome complex problems. In the discussion on science and technology there was awareness that a wider set of values, placing human wellbeing in its widest sense at its heart was important.

Imminent risks to our future such as climate change and global inequality highlight the fact that visions of the future can only be placed within the context of a sustainable biosphere which provides all our life support systems and which is now patently under threat on many fronts. These threats arise because we are using resources from the biosphere to produce economic growth with the consequential production of wastes and pollution at rates, which are unsustainable. Do we need this rate of consumption and economic growth for our wellbeing and why are there such inequalities despite the growth? Is there no way of avoiding these problems?

A debate on these issues and how we might do things differently is currently taking place under the Sustainable Development Commission in the UK which highlights the need to acknowledge that increased economic growth, with its attendant resource use and pollution, does not deliver increased quality of life once basic needs are met.

In looking to the future therefore, the values associated with improving quality of life are paramount in decisions on how all these different strands of Trade, Energy, Health, Science and Technology and the Media considered at the Summit for the future might develop. These values are unlikely to be the objectives used under simple commercial decision making conditions and so the problem might be framed as how these values can be incorporated in a more explicit way in our society to ensure that developments really are in our own interest.

There are no easy answers. In order to incorporate values in decisions on how we develop in the future to increase quality of life and consume at a level which is sustainable we need not only government to manage that change actively but also to have individual incentives and opportunities to change.[2]

Participatory democracy provides one mechanism by which change could be implemented where decision processes at each level can include local perspectives and knowledges and incorporate values other than corporate interests. In finding solutions to the complex problems facing us today an approach which takes account of multiple perspectives is required providing not just short term solutions but looking more into the long term. Transdisciplinarity in the sense of bringing expertise and experience across a range of relevant issues or disciplines is needed. This summit has been important in providing

a forum for that interchange to start to understand different perspectives and interests as we try to meet the challenges for the future.

Lack of action so far to face the threats to our future was seen as a real problem but it is not surprising. The scale of change needed to reform basic systems within society is an immense challenge and people tend to resist change. Fostering the status quo are all the vested interests who have benefited in the past and who will resist moves to limit their short-term benefits. Nevertheless as the threats facing us all become increasing clear we will need to take action to think and behave differently before it is too late.

[1] Stainforth D A, Alna T, Christenesen C, Collins M, Faull N, Frame DJ, Kettleborough J A, Knight S, Martin A, Murphy JM, Plant C, Sexton D, Smith L A, Spicer R A, Thorpe A J, Allen M R (2005) Uncertainty in the prediction of climate responses to rising levels of greenhouse gases, Nature, 433-436 (January 11th 2005)

[2] Jackson, T (2005) Policies for Sustainable Consumption http://www.sd-commission.org.uk/news/resource_download_search.php?attach_id=OA492PF-KAOQ5IH-EAICDK6-H10C8GA

Arnaud Vanneste

Representing Student: École Polytechnique, Paris

Facing energy catastrophe: a matter of governance

The problem of energy is dismaying: however inevitable (we are going straight into the wall), pragmatically speaking, there is no realistic solution. Its features lie in the fact that it is a universal, long-term phenomenon, but already effective, so that everybody is concerned without being personally involved.

There are two ways to consider the current energy issue. The first one is to consider that the chasm between the developed and the developing countries could only be reduced through economic growth and therefore through an increase in energy demand, with a fuel mix mainly based on the fossil resources, which are exhausting with a time framework of 30 to 40 years. The second way is even emergencier: the environmental alteration is already severely irreversible. It is already too late to avoid any climate change. An overnight change could not even prevent any serious effect of this climate change. What could we do to try, not to face this topic, but to minimize the threatening damages before things get any worse? A short insight discloses two obivous pathways: technological innovation and control of energy demand.

Concerning the technological innovation, the first statement is that there is neither a short-term nor a long-term miracle. The project of fusion, which fuels the scientists' hope, is not to be expected before the end of the century, in terms of massive diffusion, and anyway is not the panacea. The H2 world is not for tomorrow, because of the problem of producing H2. And yet, the various, bright experts are not short of ideas, on the contrary, a short-term answer could very seriously be a combination of the existing means, which was proved by a Japanese study. Therefore, how come nothing has been implemented?

If no short-term solution is to be expected from the technological innovation, the sole response is a sharp control of energy demand, that is to say, a change of our consumption habits. Although no radical change is needed, nothing serious has been undertaken; there is a guilty lack of will and courage from us the consumers. People are just fed up with the climate change media coverage; they feel all the less personally concerned as it is a universal matter. It relies "even more" on the politicians who even prefer to rely on science to cope with these challenges rather than telling their electorate they have to change their consumption habits.

The entire energy topic boils down to the problem of energy governance. Who is to decide, implement, and back the necessary measures? One faces a long-term perspective, in spite of its emergency, but nobody is likely to drive any long-term requirement. The private protagonists are obviously forced into a short-term profitability, at least for the shareholders. Moreover these private partners proved to be incapable of both sustaining and developing capital-intensive facilities such as power grid. A case in point was provided by the Californian crisis in 2000. What about the state, which usually embodies the task of authority? Incredibly enough, the institutional partners steadily withdraw from the energy sector, for budget crisis, and liberalizing the energy sector was certainly the last reasonable thing to do. Anyway, considering the fact that a government's term lasts four or five years, it had rather leaving a burning issue with long-term consequences to the following governments. The Kyoto Protocol, however far too discrete, has to its credit to be the only place where the topic of energy governance was debated. We Europeans may have a piece of good fortune, since an institution prevails over the governments, and is likely to drive these measures. And this kind of regional cooperation organism is certainly the sole possible source of authority in the matter of energy and climate change. Nonetheless, what should be done with the USA, China, Russia, India, the developing countries? Nothing in sight for the moment...

To conclude, there is a dismaying lack of will, or at least an alarming lack of reality and necessity sense. We face a choice of society: either an energy abundance society or a sustainable society. We thus have to point out the priorities of our policies. Let's keep in mind that there is no society without sacrifice, burden or risks, but once chosen our priorities, no matter it is heavy to carry on, there is no regret to have, this is the cost of good, let's go forwards! A case in point: social security system is a heavy burden to the state, but it is necessary to the equality and to the wellbeing. Energy is another sort of priority to our society, though maybe not so obvious. And it is high time courageous measures were taken. To tackle the energy governance issue, rather than questioning democracy, we should call into question the human nature of the politicians who fall down into pranks and ploys. **As a student, I do want to believe it is a sheer question of will and tenacity.**

H2World

Future energy: dominant role for nuclear energy

Although the conference was divided into five streams, the Energy Stream was relatively undersigned with only a dozen participants on the first day. Gerd Eisenbeiss, member of the board of directors, Research Centre Jülich, held an interesting presentation. We mention here the highlights of his contribution.

From the past ten years we can learn that the energy consumption in Europe, related to the Gross National Product (GNP), has only dropped 1.5%. In other words the measures aimed at raising energy consciousness in Europe (and Europe is a forerunner in that field) have only resulted in a modest drop of the growth rate of energy demand compared with growth of GNP.

The relation between energy consumption and wealth can be viewed as an energy ladder. The energy consumption grows as the wealth increases. But at a certain level wealth increases while the energy consumption level stays at the same level, on one step of the ladder. The United States as well as Europe are now on different steps on the energy ladder, the United States one step higher then Europe.

Eisenbeiss vision on energy

Eisenbeiss foresees that in the coming years (up to 2050) there will emerge no revolutionary new options for the production of energy. That implies we have to live with the technology we have today. According to Eisenbeiss, fusion for example will, be only a commercially available alternative after the year 2050.

In the view of Eisenbeiss alternative energy can only partly fill the future gap between energy demand and production. For example in Germany the sustainable energy is mainly produced by wind power. However the figures on the total available wind power are biased. The actual energy produced by wind is a factor four less than the total power listed, because the wind is not always blowing.

Apart from having doubts on wind energy, Eisenbeiss is also not convinced of the usability of PV-panels in Europe. He states **"It is cheaper to import PV-generated electricity from Maroc, then to produce it in Germany or the Netherlands"**.

Eisenbeiss foresees great problems in the area of CO2 sequestration. Although lots of money is spent to commercialise the technique, the solutions are expensive and unsafe for the environment.

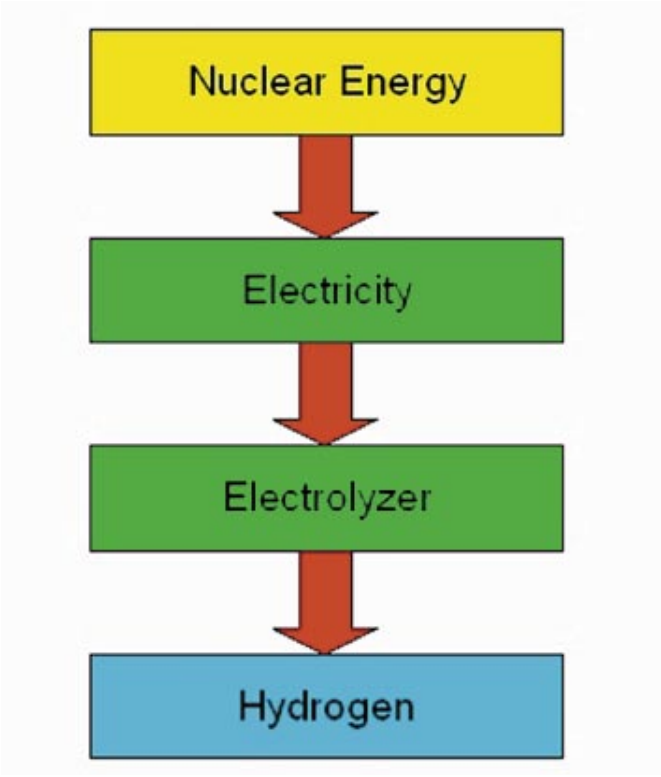
Eisenbeiss also does not believe in Combined Heat Power Production (CHP) running on hydrogen: **"CHP based on hydrogen from electrolysis is nonsense. Why not take the electricity directly?"**.

Biomass for energy also has its problems. On a global scale there is a shortage of land suitable to produce food. If you use that land to produce energy it must compete with food production. A very dangerous solution in a world that suffers from hunger.

Because of all of these problems with the various alternatives for energy production, Eisenbeiss believes strongly that the main solution for future energy shortage is nuclear energy. The energy chain then becomes: nuclear energy, electricity and finally for mobile applications hydrogen produced by electrolyzers. Electricity will be the main carrier of energy, and hydrogen will be produced using electricity.

Transport in the future: electricity and hydrogen

Eisenbeiss had some interesting



notes on future transport:
· Future transport will use more electricity (trains, trams and trolley busses).
· Hydrogen will most likely come from electrolysis. As a consequence hydrogen will be more expensive then electricity.
· Air planes will fly on hydrogen.
· Trucks and private cars will use hydrogen too, if the cost of the vehicles and the fuel is adequate.
· Private drivers will buy electric battery cars as long as hydrogen and fuel cells are too expensive.
· The production of energy will be mixed: centralised as well as on-site.

The cost of future systems is a key factor. If you double the production of a certain product (e.g. fuel cells), the production cost can be reduced by 20%. The cost reduction goes on as long as there is room for improvement of the production process.

Healthcare Knowledge Stream

Ronald Schreuder

CEO, STG/Health Management Forum
Knowledge Stream Leader Healthcare

Summary of the Healthcare Stream

Introduction
The healthcare session focused on the major topics influencing the future health status of the population, health strategies that might contribute to better health and healthcare and the opportunities for advancing healthcare through e-health technology.

Geoff Royston, Head of Operational Research, Department of Health, England

Issues related to the future health status were discussed on the basis of a presentation by **Geoff Royston**. Trends in the UK as well as in other West European countries show a declining mortality from circulatory diseases and cancer. Both life expectancy and health life expectancy are still on the rise.

The number of smokers decline. Unfortunately there is a growing number of excessive drinkers. Mainly due to demographic factors, the "greying" of the society and more (medical) technological possibilities there is a substantial demand for more healthcare workers and more healthcare facilities. This was illustrated by the 40% increase in medical school students in the period 1997 – 2005.

Spending on healthcare exceeds the growth of the BNP in most West-European countries. There is an unprecedented growth in planned spending on healthcare in the UK: 7% a year – 42% in real terms between 2002-3 and 2007-8.

The three key trends in healthcare where public expectations are the key shapers:
- Improving safety and effectiveness
- Improving speed and convenience
- Improving personalization and participation.

Particularly safety in hospitals is an issue of major concern. In the UK an average of 400 deaths or serious injury and 2 billion UK£ in additional length of stay.

Geoff Royston highlighted the importance of self-care in managing chronic diseases ("The average diabetic has about 3 hours contact a year with a professional; self care for the remaining 8757 hours"). Prevention is the hot topic for next decades.

Tamsin Rose, General Secretary, European Public Health Alliance (EPHA)

This was also the main theme of the presentation of **Tamsin Rose**. She highlighted the fact that the contribution of "health care" to (better) health is only 10-15%. Genetic factors, lifestyle and the environment are responsible for the other 85%.

A better health status of the population can be reached by better nutrition (less fat and salt intake), more exercise and better living conditions, particularly in big cities.

Many diseases, like diabetes and cardiovascular diseases can to a large extent be avoided: "Our future is not written". People can shape to a certain extent their own health. Health authorities could do a lot more to create healthy environments by further limiting smoking and banning unhealthy foods from supermarkets. The EU now spends € 1 billion on tobacco subsidies and € 15 million on public health.

The discussion focused on the issue of healthy living. Healthy lifestyles are for most people not very sexy. People enjoy unhealthy habits like drinking and smoking. Should consumers not have the right to choose their own lifestyle although that might be bad for their health? "You have to die anyway!" On the other hand "what about solidarity?" Do we have to pay the healthcare costs of people with very unhealthy lifestyles? Questions, which cannot be tackled in an easy way.

Gio Tettero, Managing Director, Siemens Medical Solutions, Director, Siemens Netherlands

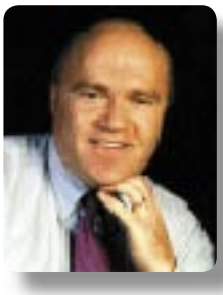
Joerg-Peter Schroeder, Healthcare Solution Manager EMEA, Microsoft

Future medical technology

The second issue debated in this session was the impact of new technological opportunities for better healthcare. Both **Gio Tettero** and **Joerg-Peter Schroeder** showed the immense possibilities of e-health and integrated healthcare solutions.

Most healthcare systems function very inefficient. All healthcare professionals and healthcare departments seem to operate as "stand alone" organizations. The goal must be to get costs down and quality up. Instead of "sick care systems" we are in need of real "healthcare systems". This can be realized by transforming present independent healthcare institutions to more integrated disease management processes. These options might be supported by e-health solutions like electronic medical records, all kinds of telemedicine applications (telemonitoring, tele-diagnosis and the long run tele-treatment) for a great number of diseases.

The discussions focused on the topic of the dangers of limiting the privacy and a rise of old aged people who are monitored at a distance, who might feel even more isolated. Recent experiments with telemonitoring in The Netherlands however showed that most people felt more secure with the installment of telemedicine applications.



Kevin Dean, Director, Public Sector Healthcare, Internet Business Solutions Group, Cisco

Health information systems

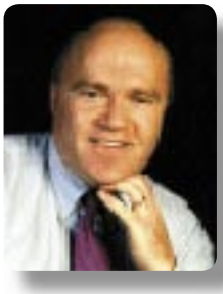
The last session dealt with the still rather primitive health information structures in many West-European countries. Every country, every region according to **Kevin Dean** should invest in the development of health information systems. Investments now will show its benefits 10 to 20 years later. The UK is one of the countries where very substantial investments are made in this area.

The expectations of the various stakeholders with respect to new healthcare information systems differ widely. The top priorities of most CEO's of health care facilities are to increase productivity, to improve patient care and to be the employer of choice.

The top of mind issues of clinicians are: "What did I do to the patient last time", "What did they do to you last time", "What should I do next time".

Top issues of patients are: "Just make me better, don't make me worse wherever I am or need to be and be quick about it."

Information systems should deal with these questions in an integrated way. The workshop concluded that healthcare systems have to be reinvented in such a way that all relevant information can be brought together on a national, regional and local scale. This requires an integrated health information policy of all stakeholders. on all levels.



Kevin Dean

Director, Public Sector Healthcare, Internet Business Solutions Group, Cisco

Connected Health – moving beyond eHealth

A topic that is hotly debated on a global stage and prioritised on most nations' political and social agendas is healthcare. There are formidable forces driving the issue up the agenda and in particular, the way information is used to support the management and delivery of healthcare. Some of these forces include:

A) An ageing population in the developed world, whose quality of life is ever increasing and placing more demands on healthcare services
B) Massive leaps forward in the tools, techniques and treatments available to prevent and cure diseases add to the demand and cost of care
C) An explosion of public access to information, through the Internet, changing the relationship between patients and the organisations that care for them throughout their illness
D) Finite resources, even in the richest nations, that can be devoted to public services
E) Increasing mobility of citizens both inside their own regions or countries and between countries
F) Rapid adoption of web-based technologies in many industries and in many countries driving up the productivity and quality of products and services, especially so in the healthcare sector

The advent of Internet technologies with the capability to increase access to information, facilitate rapid communication and reach remote locations is giving clinicians, managers and politicians concerned with healthcare the opportunities to manage and provide care faster, at lower cost and higher levels of convenience for their patients. The potential of e-health is therefore huge. At one point e-health touches active surgical intervention, with surgeons controlling robots over an IP (Internet Protocol) network to perform specialist operations on patients far away, thus scaling the specialist's ability to provide care beyond their own hospital. At another point, e-health involves providing potentially millions of health professionals with ongoing education via online learning through video-on-demand and web-based interactive teaching. Still further are the use of smartcards, home monitoring and tele-consultations within the world of healthcare provision.

However, IT in healthcare has been very slowly adopted over the last 20 years compared to other industries; importantly It has been seen as peripheral to the delivery of care. Experience elsewhere tells us that treating information technology as a

"bolt-on" addition to normal ways of working squanders the opportunities for quality and cost improvements provided by the power of connecting islands of information and automation. The healthcare industry therefore is at a crucial point – can healthcare processes be re-designed so information can be used to connect the journey through care, creating better experiences for the patient, fewer errors and lower costs? Three obvious areas of challenge must be overcome for success.

Firstly, how do patients' experiences change with the advent of a higher volume of more personal, and widely transmitted, health information? Information technology is becoming just as much a necessary health technology as any drug or surgical instrument. Without access to appropriate information, a health system is at best inefficient and frustrating and at worst dangerous. On the one hand, healthcare organisations want to provide public access to care and disease prevention through technology; on the other hand, they need to maintain the privacy of this health information.

Modern healthcare, therefore, needs highly connected systems to manage care safely and efficiently. In England, for example, the government is committed to all patients having access to their health record. This is made possible by exploiting access to here and now technologies. NHS Direct is an excellent example of this. Since its launch in 1995 it has become one of the largest providers in the world of direct access healthcare. The NHS now operates telephone centres, a NHS direct website and the group is currently piloting a personal health organisation called "My NHS HealthSpace", which is a secure web environment where users can record their own personal health information.

Secondly, the benefits really arrive when organisations and institutions start to interoperate. Therefore, there is a need to understand what is happening in other hospitals and in healthcare communities to take advantage of progress in information systems – although management, financial and political organisation changes from region to region and country to country, the basic necessities of providing high quality care across boundaries do not, and there is much to learn from other's experience. There are thousands of projects starting and in development around the world.

Lastly, is the issue of how to best use IT to improve the cost, speed and quality of healthcare in an entire nation, or across national boundaries. The NHS in England is providing an excellent example of a national organisation where the progress made in delivering high quality integrated care is being watched with interest. The NHS

recognises that without a major advance in the effective use of ICT the health service would find it increasingly difficult to deliver the efficient, high quality service that the public demands. The success of the NHS' programme must come from accelerating the adoption of eHealth through dramatically increased funding, strong governance through a Director General of IT and central Design Authority and a focused portfolio of activity implemented across the whole healthcare system.

Similarly Italy is in the initial stages of developing a nationwide database with the aim to counteract the significant devolution of power from the state regions, satisfy the fundamental levels of healthcare services protocol and reallocate resources and funding policies, particularly towards the elderly. The new National Healthcare Information System (NSIS) is based on the concept of open information access and filling in gaps in healthcare records by providing seamless access via IT.

Successful Connected Health is therefore founded on a number of core considerations. The importance of standards is critical in bridging the organisation and geographic gaps. Similarly no Connected Health service can be effective without a reliable, secure infrastructure. Finally health workers and patients both need to understand the full power and associated responsibilities that end-to-end information systems bring to care delivery.

In summary, the value that information management support for healthcare can bring is immense, offering everything from shorter hospital stays and waiting times for operations to radically lower costs of healthcare over a patient's entire life. Obtaining these benefits requires a much more cohesive approach at community, regional, national and international levels – a change from the past where activities have been mainly at very local levels. If implemented effectively the results of e-health could be tremendous, giving people wider access to information – and a greater understanding of how to interpret the information – to help them manage their health more effectively.

Media & Entertainment Knowledge Stream

Jonathan Marks

Director, Critical Distance BV
Knowledge Stream Leader Media & Entertainment

Summary of the Media & Entertainment Stream

The Future of Media & Entertainment was a well-attended breakout session, which appeared to hold the participants attention throughout the one and half days. Since the field of media and entertainment is a sector that easily generates hundreds of billions of euros each year, we focused on four main points for discussion

- Technology: What will technology do to the flat screen in the coming 5 years?
- What is the future of public service broadcasting? Is an evolutionary or revolutionary approach needed to update media laws?
- What is happening in the music and film industry? Are there lessons that can be applied to other area such as mobile and broadcast?

We were eager to engage in discussions, so the presenters often stopped their presentations to answer questions or to respond to comments from the audience. We felt this made the session different from the plenary and gave it far more of a workshop style. The speakers were also well briefed in their field to respond to this, thereby shaping their talks as they went along.

Technology with Paul Kafno

Paul Kafno, Managing Director, HD Thames

Paul's presentation was entitled

Is the Future Flat?

He started by suggesting that, in looking at the future of video entertainment, the future hangs on three, inter-related pillars

- Content
- Distribution
- Displays

It is almost cliché to suggest that things are no longer technology lead, but they certainly are very dependant on technology being affordable.

The challenges for the next 10 years include:

· The shift to digital. What will be the incentives for the industry to change?
· How will producers and distributors make money (surviving) in

a crowded marketplace?
· Understanding what new technology brings to the party – threats as well as opportunities
· Having a real and accurate vision of TV viewers today
· Having a new vision of content and how it is created.

Are viewing figures flat?

The UK is an interesting market for the rest of the world to watch because of the high penetration of digital TV and radio services, and both BBC and commercial broadcasters heavily into new services such as interactive TV and extensive websites. The analogue services are making way for digital services. For instance:

· Last year in the UK viewers in Sky digital households watched more satellite than terrestrial TV for the first time.
· BARB reports non-terrestrial services had a record 51% share of the market compared with 49% in 2003.
· BBC's main channels fell to an all-time low – 25% for BBC1, BBC " lost 9%", despite quite a lot of "dumbing" down to make programmes more popular.
· BBC4 and ITV2 together got 2.1% (compared to 2.3% UK Gold)

Traditional broadcasters see technology as a threat, and with good reason.

There is an enormous competition for a finite resource, namely the consumer's available time. The competing channels use different methods of distribution – terrestrial, satellite, cable, broadband. Advertisers are worried as Personal Digital Recorders and TIVO-type devices let viewers skip commercials. And the evidence suggests that they DO use this facility. DVDs offer perceivably better image quality than most digital services because of compression on the channels, especially Freeview. Terrestrial digital networks like Freeview do not have the bandwidth available for high-definition services – unless they reduce their package of channels, restricting choice. Many people have already seen high-definition TV – their LCD computer screens can display better images than any analogue TV.

What else is wrong?

· Young people are watching less television and spending more time on the Internet and computer games.
· Old people increasingly feel that there is "nothing for them" as broadcasters have tried to capture the elusive "young" audiences. No wonder 6-12 year olds are chatting via MSN. Microsoft says there are 250 million chat sessions a day via their MSN service, worldwide and the number is growing exponentially.
· Even the figures for Sky's movie channel are down – only Sports is on the up, perhaps due to exclusive deals they have made taking viewers away from BBC TV.

This means that

· Broadcasters are looking for new ways to grab their audience and "immerse" them in the way that computer and console games do.
· That leads to increased demand for interactivity – getting audiences to lean forward.
· Broadcasters need to make new types of new content at affordable prices.

In effect, in the living room we are saying goodbye to that "box" in the corner, usually placed there because of the size of the CRT, and "Hallo" to the big flat screen which is either hung on the wall or positioned at a different point in the room because it can be positioned for better viewing angles.

The big screen sales story for the UK

LCD screen sales 2001	15,700
Plasma sales	16,300
Rear Projection	157,500
LCD screen sales 2002	**103,400**
Plasma sales	70,600
Rear Projection	198,500
LCD screen sales 2003	**742,500**
Plasma sales	218,700
Rear Projection	256,000

The sales figures show the volume in Britain, France, Germany, Spain, Italy, the Netherlands, Belgium, Switzerland, Sweden and Austria combined. Source: The Economist Summer 2004

Bigger screens need better pictures

DVDs already code better pictures than most domestic TVs can display. Computer Games on computers are generating graphics in real time and give terrific quality. To appreciate this you need a better screen – and the industry is ready to supply the solution - High Definition Television. Talked about for the last ten years, it looks as though the dawn is about to happen. HD marketing offers a new "wow" factor and test markets in places California are proving to be very successful. Once seen, the customer is loathed to go back to standard TV, especially NTSC (North American standard).

Why does HD wow the viewer?

The system gives better pictures than we have now – usually 4 times as much detail and that means four times the emotion is captured in the picture. An example of this has been the live

pictures of a solar eclipse transmitted by NHK Japan from Antarctica. They look rather plain on a standard TV – spectacular on a HD screen.

HD generally uses a wide screen (16:9) format. This is an electronic format that originated in the Japanese desire to overtake 35mm film. International standards' battles in the eighties and nineties prevented a world standard emerging. FCC's decision to go digital has forced USA networks into line. But there are may be competing standards. However, since sets are becoming more and more of a software solution, compatibility across the Atlantic is going to be less of a problem than it might seem at first.

Why is HD emerging now?

For reasons, like:

· *Manufacturers* need to sell new display products
· *Broadcasters* need something new to hook viewers
· *TV pictures* have to compete with digital images from DVDs and computer games.
· *Interactive services* need more text – therefore better screen quality to show it
· *Domestic screens* are getting flatter, slimmer and much larger – 35inch plus in Europe

The international market wants HD. USA increasingly demands delivery of programmes in HD (generally 1080:25). Sources like Datamonitor predict 4.6 million HD users in Europe by 2008, Germany, UK and France leading, with Italy fourth. Sky intends to launch a service in 2006 and the BBC has made a commitment to producing all its programmes in HD by around 2008.

The new TV sales could be an important boost to the UK Economy

4.6 million HDTV homes are expected in Europe by 2008. Germany, UK, France and Italy will lead. Average price of an HDTV set in Europe currently Euro 3,900. There is a standard battle in the background. Paul Kafno believes that MPEG-4 will win against Windows Media 9. Take-up will be slow at first because of cost of receivers, set-top boxes and a shortage of programme material. Euro 1080 is already on the air, but this HD channel on Astra is mainly aiming at pubs and clubs with football coverage.

On the Production Side: the feel-good factor
· HD is a great production medium for the creative team. There is terrific picture detail – acquired images often seem like 3D because the rendering of surfaces is so accurate. There is an almost tactile quality to pictures. Much improved colour as well as the advantage of a "more natural" widescreen format. The content also looks terrific on cinema-sized screens –which is good for e-cinema alternative content to film (often called D-cinema).

· HD pictures have a different quality to even the best film. The effect is often thought to be 3D. Stability of the image gives a unique way of communicating texture, something that you don' t get with film because of the mechanical jitter of the film gate in the projector. HD production directors frame their productions differently – they can spend longer on wide shots, which in standard TV would be reduced to a minimum (because they are thought to be boring). Paul explained that editing is different and the viewer experience is more immersive.

And - the feel-not-quite-so-good factor

HD television will bring with it the need for greater transmission bandwidth. This is OK on satellite platforms, but Freeview has limited bandwidth. It is unlikely to be able to support HD. In the meantime, we are dealing with compression techniques during acquisition, post-production and distribution. There ARE conflicts between proprietary compression protocols and this can lead to some curious visual effects.

The cynics have a list of rather negative business questions like:

· Does picture quality really matter to the viewer?
· Isn't TV all about content?
· Aren't HD displays too expensive?
· How many homes have space for a big display?
· Won't pirates be able to pinch high quality images from the screen?
· Isn't it hard enough to persuade viewers to sign up to SD digital?

In general the group thought that once prices drop and there are some interesting programmes (like Olympics or films), there will be a gradual switch to HD. But it will be driven by the price of displays and content!

Paul shared with us some more positive business questions

· *Differentiation* is a well-established competitive strategy. Shouldn't TV come in a range of qualities like soap powders?
· *Product Cycle?* Is the standard definition *"cash cow"* of programmes declining? Is HD the replacement? Paul definitely thinks so.
· *Something new?* Doesn't TV need a new "wow" factor to sell itself? Internet and, especially games, are attracting audiences away from standard TV.

If we produce in HD can we deliver it to the viewer?

We need to be aware of compression everywhere – at acquisition, post-production, distribution. Transmission multiplexes already deliver variable quality with standard definition TV. Will this get worse with HD? In the short term, probably yes.

Digital modems need constant rebooting. Won't this get worse with higher data flows? We have terrible lip synch problems with

digital now. Won't that be even more objectionable with HD pictures? Yes!

So what are the markets

Paul Kafno believes that Europe is falling behind the rest of the world in terms of HD rollout.

· Broadcast now (USA, Japan, Australia, Latin America)
· Broadcast soon (France, Italy, Germany, UK). Unfortunately, public broadcasting in the Netherlands is stuck in internal structural squabbles and ignoring technical advances.
· Alternative content for Digital cinema/Electronic Theatre?
· HD DVDs for home cinema.

The Cost factor
· Manufacturers are delivering very cheap camcorders using compression, but full bandwidth HD still expensive
· High Definition editing, image processing, and graphics cost more – investment in new cards, software, HD monitors.
· Design elements may require higher finish.
· Buying rights to library images – paintings etc – may well cost more because of the risk of piracy.

The Compatibility Issue
The Producer will inevitably also have to deliver – and pay for - standard definition versions. As a result, the production teams are faced with difficult format choices – use the widescreen for best effect or shoot and protect for 4:3? Making a good 16:9 version into a good 4:3 version takes production times (decisions) and machine time (format conversion/pan and scan) and stock.

And Audio?
· Better pictures need better sound. Lip synch needs to be absolute. Apart from acquisition there are dangers at edit conform, relays through the TX system, and at the home receiver.

Paul Kafno then summed up with a **SWOT** analysis for High Definition.

Strength
· Better Pictures
· Pictures will also work on big screens as "Alternative Content" for e-cinema.
· Higher quality for archive/library use in future.

Weakness
· Systems may not deliver full quality
· Expense – need for upgrading acquisition, PP and display.
· Displays need to be big to see quality
· Extra costs – and concerns – for producers and consumers.
· Need to convince consumers.
· System alone will not succeed – it needs appropriate programming.

Opportunity
· Provides a high quality home cinema type of experience that attracts audiences.

Threat

· If full quality not delivered by broadcasters consumers will feel cheated.
· Producers invest in HD production but cannot recoup their extra costs.

The media stream then discussed the use of the "red button", an interactive button on the Sky Digital platform (7 million homes in the UK), which starts some form of interaction.

Some words about Interactivity

· Broadcasters like interactivity. The red button is appears more and more frequently. There is evidence to show that people like to vote. For instance, in the UK :

· Olympics - 10 million viewers accessed the service.
· Wimbledon last year - 4.2 million Sky viewers accessed the service.
· Test the Nation (actually a Dutch format from BNN) – I million
· Big Brother – 700,00- viewers paid 25p for enhanced NTL/Telewest service.

Interactive menus will be clearer on HD. But….

· Consumer experience in all systems is fairly weak because of TV's "asymmetry (only phone lines back). Cannot compete with the speed of Internet or computer games.
· The middleware platforms – Open, Liberate, Freeview are incompatible. Producers have to code separately for each system.
· Some attempts to bridge the gap – EnSequence, Chello are commercial solutions. The BBC has written its own system.

The first day of the Media Stream concluded with the following comments on other media alongside the all-powerful TV.

The Internet

This is the Broadcasters' salvation. They can put more public service material on related websites and in a form that can be called up 24/7. BBC's website seen as a major plank of their remit, unlike in the Netherlands where the web is still regarded as an "extra" and is under investigation for breaking competition rules. There is a full symmetry for interactivity.
And these developments allow the broadcasters to keep a toe in the broadband world, so far virgin territory in many countries (except Korea).

The miraculous mobile

We must not ignore the consumer's "favourite" device. It has also become the producer's favourite device also – consumer pays to receive messages, and billing is automatic. The new Nvidia GoForce chip for the US manufacturer puts the power of a multi-media computer onto a mobile device. But there are limits to how many users an individual cell can support – in a crisis; there is a danger that cells could not cope. Likewise, Skype technology via W-Fi would be an interesting. Meanwhile a battle

royal is shaping up between Microsoft and Symbian to dominate the operating system market.

So what can consumers get?
· Extra information.
· Personalised services
· Special offers
· Opportunity to gamble.
· Additional storylines from a favourite soap.

We already know from trials in many European countries that just relaying TV content onto mobiles does not work. The challenge is to find a way of producing extra value at small cost. Producers such as Endemol are experimenting with customised content and broadcasters also need good, cheap content. This puts the squeeze on producers to make more for less.

A number of possibilities are emerging.

· *Animation Synthetic images* Animated films like Shrek-2 and Toy Story are among the most popular kinds of content. But they are still slow and expensive to produce. Software like MAYA and 3D Studio Max is good but complex to operate. Television needs series to build viewer loyalty – Monkey Dust, South Park, The Simpsons. So is there a way this kind of creation can be speeded up?

The answer may be in the games industry. Some examples:

· *3D Story Creation*. The Settings, objects and characters are created as 3D meshes built from polygons, and "skinned". Once built they can be observed from any position – a filmmaker's dream. They are inherently interactive.

· *The Machinima "movement"*. This a form of "Animated filmmaking within a real-time virtual 3D environment. It uses games engines – Quake, Unreal Tournament - to generate content. Spielberg used it to storyboard his latest movie, but this technology is still very basic.

· *Virtual Storytelling – using virtual studios*. Virtual studios (clever use of the blue background) mean you can create fantastic worlds easily. Such systems are capable of infinite special effects and you can create a story in real time (no rendering afterwards). Viewers can even put themselves in the story, this creating new storylines and characters.

All this new technology is certainly having an effect on content and style of new programmes seen on TV:
· TV drama moving further away from strict realism to incorporate games and interactive styles (e.g. Green Wing).
· Sports (Olympics, Wimbledon) offer more alternative pathways through experience.
· Reality Shows (Big Brother) dependent on voting
· News channels mimic "Windows" approach of the Internet.

So is the Future Flat?
Yes, displays will be flat, big and immersive. But High Definition will give the illusion of 3D pictures, bringing depth to productions. Content will be everywhere, customised for devices. There will be more use of fantasy (history, sci-fi) settings since mystery sells. Viewers will be increasingly given the chance to enter the experience and interact with content. And finally, virtual storytelling will use 3D characters, objects and settings to author "flat" images.

The Gap Between Consumer and Citizen: Helen Shaw.

Helen Shaw, Managing Director, Athena Media Ltd

See below.

A New Map & Compass for The Netherlands : Wim van de Donk

Wim van de Donk, Chairman of The Netherlands Scientific Council for Government Policy. Professor, Faculty of Law, Tilburg University
The Netherlands

Wim van de Donk gave us an overview of the thinking behind the report on the Dutch Media Landscape commissioned by the Dutch government and published on February 2nd, 2005.

Wim explained that the Dutch media landscape is changing rapidly, heavily influenced by technological advances. Traditional and emerging media follow each other, getting intertwined in all sorts of new and surprising ways. Today, you can watch TV via the Internet or listen to the radio via a mobile phone. Radio listeners can time-shift programmes to enjoy them in the train on a personal MP-3 player. Dutch newspaper publishers are introducing digital subscriptions on the web and even consider introducing digital-only editions of their 'paper'. Telecom and cable companies are developing competing infrastructure alongside traditional

broadcast transmitters. There is an explosive growth in the total media offering to the public. An increasing proportion is interactive and originating from abroad.

Free newspapers, given away to commuters at train stations put pressure on the editors and publishers of the existing quality press. Foreign shareholders, in turn, increasingly control them. Even the smallest newsagent displays a vast selection of specialist titles - on music, kitchens, computers, cars and motorbikes – sometimes you'll even find a periodical with opinion and analysis on the week's events!

But technological advances are not the only forces that are stimulating paradigm shifts in the media landscape. Developments of a socio-cultural, economic, legal and governmental nature also contribute. They interact in a complex fashion. This all makes for turbulent times for the entire media sector, both now and in the future. Yet, despite this rapid pace of change, much of it will outstrip the ability and willingness of many members of the public to keep up with it all.

National Governments Circumvented

National governments watch these developments unfold, but are increasingly confronted by the fact that media companies are operating in a European and international regulatory environment. The traditional media such as TV, radio and the printed press and distribution channels such as broadcast transmitters and cable heavily influence their approach to new policy making. However, this way of looking at things is becoming less and less appropriate to maintain an overview of rapid developments, let alone responding with adequate policy and legislation.

On top of all this, glaring inconsistencies are emerging. You need to obtain a licence if you plan to transmit a TV programme over the air. The government also imposes strict quotas on the content, such as the level of advertising. Yet, a similar TV operator distributing content via broadband (high-speed Internet) is not governed by any government media restrictions.

Media policy must move with the times. Indeed, the way the media landscape functions directly impinges on the quality of democracy, economy and society. Media policy cannot - and should not- determine the entire media landscape, but it does make a significant impact on the way it develops. It also impacts directly on the quality of society. Media policy helps fashion an answer to the question as to what sort of society we actually want to have. Hence, the policy for the future must be rooted in a current and realistic view of developments happening today – a view summarised in this report. Only in this way can policy makers decide whether existing policy

should evolve gradually to cover new developments, or whether fundamental changes need to be made in the entire approach.

Demarcation and objectives

The report **Focus on Functions** deals with the way society communicates, when it comes to open, public dissemination of information. So this includes media services provided by the broadcasters and publishers using the written press, TV, radio and the World Wide Web.

The Netherlands Scientific Council for Government Policy aims to realise two objectives with this new report.

The first objective is to offer a scientifically backed picture of how, over the next five to ten years, the many, mutually interlinked developments can and will impact on the media landscape. What are the significant trends in the next several years? Which variables must definitely be taken into consideration?

And, secondly, the report develops a sustainable rationale expressed in the form of conclusions and recommendations. These are intended as input in both the form and substance for future media policy.

Values as pillars for policy

The turbulent developments in the media landscape can often distract people from the core values that remain more or less implicit in media policy. In the council's view, it makes sense that the fundamental core values, on which Dutch media policy is based, should once again be stated and taken as starting points.

These values are being brought into foreground and act as pillars for future policy. First and foremost, the council differentiates between the fundamental, broadly accepted values that transcend media policy, - such as **freedom** and **equality** - and three specific values linked to the media sector. These specific values are **pluriformity**, **independence** and **accessibility**.

The analysis yields several fundamental developments within the media landscape:

A) Increasing digitalisation and technological convergence: Increasingly, several types of terminals, devices and infrastructure carry a mix of services with steady improving quality. Recent examples include TV programmes broadcast over mobile phones and via broadband Internet. This puts the significance of the medium into a different perspective vis-à-vis the content to be transmitted over it, and/or the function to be fulfilled;
B) There is a shift from a nationally oriented and regulated media landscape to an internationally oriented one;
C) There is a shift from a publicly oriented media landscape to an increasingly private and com-

mercially oriented and organised media landscape. This is also characterised by increasingly indistinct borders between public and private, described by some as a trend from mass media to "cash media";
D) There is a breakdown of the traditional dividing lines between traditionally separate services, functions and genres, e.g. infotainment, edudrama, polimercials and docutainment;
E) There is a shift – if not a conversion – from a supply-oriented media landscape to a more demand-oriented one. In some cases it is even a demand driven, landscape; this is development is empowered by the digital platforms, which offer new forms of interactivity and commerce within the media services;
F) The supply shift is in the direction of amusement and entertainment at the expense of other genres.

In addition to these empirical core developments, the analysis sheds light on two additional matters. First, the evaluation framework for media policy needs to be expanded with three supplementary values. In the council's view, the values **'quality'**, **'social cohesion'** and **'protection of personal privacy'** should also be added.

Secondly, the findings have exposed serious shortcomings in the perspectives and overview of current Dutch government policy. In particular the tunnel vision, for by concentrating solely on traditional media and it infrastructures, government is ignoring major developments in other mainstream sectors of the media. If ignored, these developments will mean more and more legal loopholes and policy inconsistencies which are difficult, if not impossible, to justify. This is an undesirable development in terms of implementation, lawmaking and public legitimacy. In the council's view, a new perspective is needed a sustainable media policy.

Public broadcasting: beyond city limits of Hilversum

At the end of the previous section, the council gave an example of the policy rationale developed in this report, applied to one of the more prominent dossiers in media policy. This refers to the current debate on the future of public broadcasting.

The council takes the view that way in which the core issues are formulated, as well as their order of priority, are not contributing to a constructive debate on public broadcasting.

The 'what/which' issue should come first – which social risks and public interests can be identified in the turbulent media landscape, whereby these become a policy topic for government as the body with final responsibility. Answers are needed per function and, in particular, unbiased answers seen from a future-oriented perspective. Government, as a legislator, will need to argue its

case far more explicitly.

Only then comes the 'how' question, that is, how recognized public interests are to be safeguarded. The current design of the Dutch public broadcasting system is only one of the conceivable options. More organisational options need investigation. The criteria here are how well organisations represent society, suitability, efficiency, what is admissible by law and politico-democratic decision-making.

Given the previous analysis of the overall media landscape, the council concludes as follows for the first, 'what', question:

Public interests primarily relate to an independent, pluriform and high-quality **news service**, the function of forming **public opinion and social debate** and, to a lesser extent the functions, **art and culture** and the provision of **specialized information**.

In principle functions such as **general entertainment**, **advertising**, **public relations** and other forms of **persuasive communication** are excluded from the public sector and do not form a core task for Dutch public broadcasting of the future, in whatever form it may take.

Some of these functions could be used by Dutch public broadcasting of the future, but not as a core argument for its existence. For instance, a programme organising a public debate may well need to use entertaining formats in order to share its message with the target audience. This report is not a call for the marginalisation of the public media sector so it only serves elites. But content simply designed to "fill airtime" or which is purely consumer orientated, rather than in the interests of the citizen, would be difficult to justify in future for public subsidy. This functional differentiation means relinquishing the current assumption in the Netherlands that public broadcasting should provide a broad and comprehensive programme offering.

Looking at the "how" question, the conclusion is in line with the general findings of the report. Once content is produced, the technical choice of which medium, channel and platform is mainly a matter of selecting the most effective media mix to ensure the best coverage of the intended target.

This media mix may vary depending on the function and public interest. However, it is clear that TV will remain an important mass medium for the dissemination of content in the public interest.

Four models for the new structure of Dutch public broadcasting:

Model 1: **statutory regulations for suppliers of media services.** In this model, public

interests are safeguarded by statutory obligations, which apply to suppliers of public broadcasting services, independent of the type of medium they use. In this model, there is no question of a specific public offering. The advantage of this model is that it meets the robust developments such as convergence, internationalisation and individualisation. The short and medium term downside is largely a matter of current uncertainty surrounding convergence as well as the effectiveness and workability of the model. There are also insufficient safeguards for social embedding, i.e. the involvement of civil society.

Model 2: **ongoing news services and production fund.** This model calls for a minimal public service. It comprises of a rolling news service, a production fund and possibly distribution of content that is linked to other public interests. In both sectors there is total independence from government. The production sector is subject to the tender-system and is open to any potential suppliers. The major plus point of this model is its flexibility; this contrasts with substantial negative points in the form of transaction costs and hence restricted suitability.

Model 3: **a 'BBC'-model**. Here, the Dutch government would categorize the determined public interest into legislation and formulate a charter. A public body (which has more of a permanent nature than described in Model 2) would implement the charter, following its remit. Compared with Model 2, the advantages for social effectiveness and functionalism also imply less flexibility. Moreover, social embedding in Dutch society is not such a strong point with this model.

Modality 4: **mixed and open model**. Here, implementation of the public interest differs per function. News services are implemented by an independent, publicly funded organisation.
The function of opinion, background and debate is in the hands of several 'broadcasting associations' in the broadest sense of the term, that is to say approved organisations representing sectors of the society. They must regularly demonstrate that they are socially embedded, much more than is now the case with the Dutch broadcasting societies (so-called omroepen).

Meanwhile, there will also be an open and generally accessible system of tendering for the functions of art and culture, specialised information, and if the range and implementation of other functions require this, entertainment.

An initial advantage of this mixed model is that it combines the strong points of the other models already presented here. A second advantage is the more contemporary and focussed structure taken from elements of the current Dutch public broadcasting

system, which contribute to social embedding and pluriformity.

Wim van de Donk said that he and his colleagues feel, the fourth model outlined here is the most obvious for the Netherlands over the next several years. Important considerations in this country are the well-implemented functional differentiation, the importance of further evolution and the varied development options offered by this mixed model throughout the medium term. However, the council emphasizes that, given the rapid changes in the media landscape, fixation on a single model must not be allowed. Otherwise, tunnel vision will quickly ensue. The most sensible course would be for creative and flexible solutions to safeguard public interests in the media landscape as a whole.

The Film & Music industry. What can we learn? Gerd Leonhard

Gerd Leonhard, Music Futurist

See below.

Sign-Off

In short, instead of dozens of markets of millions, the future of much of entertainment and certainly music is more like millions of markets of dozens….with mix and match being the norm.

The Media & Entertainment stream concluded its work in Amsterdam, but the discussion is continuing in various circles, including the **Club of Amsterdam Media & Entertainment Forum**.

Helen Shaw

Managing Director, Athena Media Ltd

The public right to know in a sea of global media.

'We have to stop thinking of public broadcasting as a stand-alone organisation and see it as the principal node in an emerging network of public and civil initiatives that taken together, provide the basis for new shared cultural space, a digital commons, that can help forge new communal connections..' – Prof Graham Murdock (Loughborough University, UK)[1].

How could there be an issue about information flows and participatory democracy in an age of global media? We are, it seems, drowning in a sea of content and choice. Yet despite the plethora of digital choices and new media offerings the debate over media control and freedom and its impact on the quality of information in the public domain has never been sharper. Public broadcasting is frequently proclaimed dead or dying but beneath the surface the reality may be the concept of public media content is not dying but being transformed, by both the landscape of new technologies and a move to seeing information as both a global resource and public good beyond the matrix of media conglomerates.

In Europe public broadcasting in the last twenty years has gone through a wave of peaks and valleys dictated often by the level of national and state support for the concept of publicly funded broadcasting content. In the mid 1980s-to 1990s the push to deregulated, open markets and the prospect of expanded broadcasting horizons through digital led many to see the death of public service broadcasting.

The Peacock report in the UK in 1986 recommended all BBC services would be sold on subscription and defined public broadcasting in the future as largely delivering only the things that commercial operators would not provide – leaving commercial operators free of public obligations. That market view of media content production has prevailed from the centre of the European Union. As the European Commission's Director General for Competition has stated – 'the emphasis has shifted from protection of some broadly defined public interest ….towards opening up markets, ensuring free and fair competition and promoting the interests of consumers' (Lowe 2004:1)

Yet since the turn of the century, and particularly post 9/11 and the subsequent invasion of Iraq, many states are reflecting on not just the need to protect some vague concept of public interest

but also the clear connections between public, not for profit media and participatory citizenship.

The overwhelming market emphasis on consumer needs and rights is being balanced by a renewed public focus on the needs and rights of citizens and the recognition that consumers and citizens are not the same creatures. Indeed not only are they not the same but the needs and rights of consumers versus citizens can frequently be in conflict.

The market view of media content creation has also ensured that public broadcasting is frequently defined in terms of its audiences pushing many mixed economy broadcasters, who, like RTE, receive both public and commercial advertising revenue, into a populist model chasing audience figures as aggressively as their commercial competitors. In a sense, this confusion of mission has at its core confusion over whether public media is serving consumers or citizens. Unless citizenship comes first many broadcasters have ended up in no-man's land attempting to please both advertisers and public interest simultaneously. For public broadcasting the other dilemma it is facing is the impact of media fragmentation where the concept of a public tax, or TV licence fee, on content becomes challenging when many people are watching a diverse range of channels, mostly commercially funded, and feel reluctant to pay a content tax or fee for something they may not wish to receive or want.

The BBC in its strategy for its Charter renewal has anticipated this by defining public media content as a public good similar to public health and education and similar to other civic public goods like libraries and museums. Even if you never use the libraries the western European intellectual philosophy which anchors their public funding in that it is in everyone's social and civic interest to have free and open access to information, knowledge and ideas.

In Ireland the debate over public media was altered by the bringing together of a temporary, ad-hoc committee of independent professionals in the Forum on Broadcasting (April 2002)[2]. The Irish public broadcaster, RTE, had previously applied for a TV licence fee increase which was rejected by the then minister although RTE's funding was, at that stage, two thirds dependent on commercial advertising revenues. A somewhat hostile stand-off, with some political and newspaper commentators calling for the privatisation of the public broadcaster, was changed through the work and report of the Forum which provided an intellectual framework to consider the nature of media content and society beyond the self-interested positions of the players involved. The Forum placed the continued need to fund RTE in a social and civic framework and indeed the civic

and cultural needs of a small nation (just 4 million people) where over 80% of homes have access to trans-national broadcasting from the UK BBC and commercial channels.

It defined the need for enhanced regulation and increased accountability for broadcasters, particularly the public broadcaster, but clearly outlined the social and national need to have a securely funded, and clearly mandated, public broadcasting system. Such a system underscored national and civil society in conjunction with a healthy and openly competitive market. It is that competition between providers, both public and private, which secures choice and quality.

The work of the Forum report and the Government's response led to a significant increased in the TV licence fee by the end of 2002 but with increased accountability mechanism, including a Charter for RTE,[3] which defines its role and social contract with the public. The Charter effectively creates a public mandate for RTE and provides the public broadcaster with operational and ethical framework, which can be used to measure the broadcaster's performance on an annual basis.

Other initiatives also included a decision to combine broadcasting regulations and create a super-regulator (Broadcasting Authority of Ireland) across public and commercial broadcasting (a process which is still awaiting new broadcasting legislation).[4] Even more interestingly a Ministerial decision to siphon off 5% of the RTE TV licence fee to create a Broadcasting Funding Scheme which any broadcaster can avail off to make specific content including cultural and heritage programming.[5]

This debate over the future of broadcasting as serving consumers or citizens is seen in the UK super-regulator Ofcom which states its exists to serve the interests of the 'citizen-consumer' – merging the two together in a typical Anglo-Saxon kenning. The initial and primary focus of Ofcom was consumerist but lobbying from public advocacy bodies forced the word 'citizen' into the frame creating what is, I believe, an unrealistic hyphenated animal, which suppose that all consumer interests match all citizenship interests.

That gap between consumers and citizens is one we see every day in both our own lives and in public policy's attempt to manage the often-conflicting rights of individuals and communities. As consumers we tend to think as individuals – what is the best price/result for me – often regardless of the social impact of that result. Naomi Klein's best-seller 'No Logo' attempted to get consumers to look behind the price and the label at the origin of the product and the social and human price paid for goods manufactured in developing

world sweatshops. As individual consumers we think short-term rather than long term and seek to maximise our satisfaction in the market place and frequently need incentives or penalities to think of global price tags in terms of the environment, natural resources or human rights impact of our consumer decisions.

In Ireland there are a couple of examples, which fit the bill[6]. Some years ago our Government introduced a levy on plastic bags to order to reduce their use on a national environmental basis. The levy was not popular with consumers or retailers yet within six months it had reduced the use of plastic bags radically, changed the living environment for people, and increased consciousness about waste and resources. The levy was a citizenship rather than a consumerist focused measure, which, within a matter of months, saw people not just using clothe 'green bags' but actually ticking off retailers who gave them a plastic bag for free. Equally the smoking ban in Ireland which last year saw all buildings including pubs having to implement a smoking ban was resisted by both smokers and retailers who argued their consumer and market rights. The social, communal and long-term rights of the entire country won out and again within one year had not just become a way of life but had reduced cigarette smoking by 18-24%.

In a global media environment where a handful of mega-conglomerates dominate the world's content creation the public domain aspect of information and citizens is paramount.[7] While previously the concerns about media independence generally centred on excessive state control or political interference - today the axis of influence is seen as both state/political and market/commercial. Intensive media ownership concentration has become the hallmarks of media markets like the US and a state directed market liberalisation policy influenced the US Federal Communications Commission's (FCC) June 2003 media ownership deregulation and the UK Communications Act 2003. Ironically in the UK it was the House of Lords, led by film director Lord Puttnam, which pushed vigorous debate on the UK Communications Act and forced the insertion of the public interest clause, which can be used as a veto in media mergers.

The House of Lords debate in 2003 used US examples of the impact of media ownership concentration, particularly in the radio market, and how it had eroded real choice and public news service obligations. In the US the impact of increased media deregulation from 1989-1996 was accentuated by the US's weak public broadcasting model which is neither securely funded nor clearly defined. PBS TV has no more than 2% of the TV market share and its lack of resources has undermined its foreign news coverage which resulted in it being the only TV service in the

US which actually lost audience during the US invasion of Iraq in spring 2003.[8]

The subsequent debate over the role of the media in reporting the post 9/11 environment is now the subject of many books. Influential US media like the New York Times have had to apologise to readers for cases of unquestioning coverage in the run up to war. The lack of independent media sources has been blamed on the connections between politics and big business in the US and on the relatively insignificant role the public broadcaster plays. While NPR is both admired and trusted its coverage of the conflict remains dependent on the BBC since it has a small foreign bureau staff - smaller than most middle-ranking newspapers in the US – compared to the BBC which is the largest news gathering force in the world. Public TV's foreign news gathering is equally limited by resources and its reputation is more based on commissioned quality factual documentaries.

The extremes of the US media market have provided warning flags to both public and policy debates in Western Europe. In Ireland over 80% of all homes have access to trans-national TV services and over a third has digital TV[9]. Ireland has the second highest penetration of digital TV in Europe yet no digital terrestrial platform. Digital is delivered through BSkyB satellite or NTL cable networks and BSkyB alone has at least 25% of Irish homes. The challenge rapidly facing the Irish state is how to secure the free to air delivery of its terrestrial services, particularly its publicly funded services, in a global TV world where half the TV content being watch is delivered from non terrestrial and therefore non regulated companies through a satellite offering which again is non-national.

The issue of sports rights and the challenge of maintaining the Irish language, which is overwhelmed by English content, have also focused policy attention on the need to protect and ring-fence the public and national interest in what the electronic media provides.

Throughout 2004, following the Hutton report in the UK, and the resignation of the Chairman, Gavin Davies, and the Director General, Greg Dyke, of the BBC there has equally been a focus on the level of political interference and control in public broadcasting and indeed on the accountability of public broadcasting to its public audiences. One year after the BBC resignations the BBC is now facing into its Charter renewal negotiations, for its funding, with a commitment to increase mechanisms of good governance and accountability but equally with the knowledge that it was the BBC, not the Blair Government, which won the public relations campaign and that, if anything, the level of Government pressure highlighted through the Andrew

Gilligan/David Kelly case has probably made it more difficult, not more likely, for the Government to exert direct pressure on the organisation again. In reality the history of public broadcasting's often tense relationship with the state is that these high profile flares up can often secure future independence by showing both sides, and indeed the public, the stakes that are being played.

Increasingly the public good aspect of information and knowledge is linked to public representation and participation as well as to deliberation. 'A better informed political debate is the only way for...people to determine how broadly or narrowly to define our interests', Prof Joe Nye of Harvard University wrote in his study *The Paradox of Power*[10]. Essentially the connection between a healthy popular democracy and information has been well mined from Plato to Thomas Jefferson and while media globalisation can challenge and threaten that connection the digital era also offers us the potential to reinvent and expand the concept of a public information domain.

Prof Graham Murdock talks about a new digital commons in his model of a re-invention of public broadcasting in that he, like others, sees the potential for public media to expand and make real their connection to their public through interactive multimedia. Far from seeing public broadcasters are media dinosaurs he sees not for profit content media as the key means of balancing our hyper consumerist and free market model by ensuring that new media is used as a social and democratising tool rather than solely a profit engine. New media offers public communities the potential for greater representation and participation through digital offerings but only if that space is defined and retained through legislation and regulation. In Ireland the development of community radio and television, in association with the new 5% Broadcasting Fund could mean that previously disenfranchised minorities and communities get a voice and the ability to exercise their Article 19 right of the UN Charter on Human Rights to 'seek, receive and impact information and ideas through any media and regardless of frontiers'.

In many senses the very pressure of the global media market has re-ignited the public media fire not just for broadcasters but for policy-makers. Joseph Stiglitz at the World Social Forum in Mumbai in 2004 talked of the need to convert the market globalisation model into a social one where global needs and rights like health, education and information would be seen and identified as global goods[11]. The concept of a global goods philosophy has been re-kindled by the Tsunami tragedy on Dec 27th 2004 in South East Asia. For many across the world the human, social and environmental impact of the disaster underscored the inter-connectedness of our global

world and the need to find new global civic means of managing it.

The free flow of information, independent of commercial and political pressure and control, is the backbone of both national and international civic society. As Jefferson said 'the information of the people at large can alone make them safe' while James Madison saw 'free communication among the people' as the core of self-government and that it was 'the only effectual guardian of every other right'.

Health, education and environmental rights and issues cannot adequately be dealt with without the existence of such a free flow of information, knowledge and ideas. This has been dramatically seen in international AIDS programmes in the developing world which failed to have impact because there was a trusted and free means of communications and indeed the World Bank is now investing millions in making that and serving that connection between development and media.

As we move forward in 2005 the potential and need for a reinvention not just of public broadcasting but of the concept of a social model of global information is evident. The raison d'etre for public broadcasting at a national level is common across the global, indeed our market driven global economy makes that more apparent all the time. The rationale is there to extend the national to international, the local to global and connect the communication forces, which can help us humanise our world.

Nye makes the point that globalisation pushes downwards as well as upwards, increasing the significant of the local in the global sphere and fuelled not just the increased speed of e-communications but the falling cost of communicating at speed across the world. His phase 'soft power' reflected the growing significant of global cultural and communication goods in the new, digital information age.

The rapid development of the internet, allied with the roll-out of broadband networks, has on the one hand opened up vast new territories for the media empires to colonise but on the other hand it has also presented the means of transforming public, or not for profit, content and participatory communications. While Ithiel de Sola Pool's description of new media as 'technologies of freedom' has been challenged in many ways the internet, and its ability to truly become an interactive multimedia content space, remains the means by which public media is and will be transformed and re-born. The net combined with new digital transmission platforms like DVB-M – which can make television a mobile medium – offer both commercial and social opportunities.

The forces, which drive global

profits to companies like News Corp and Viacom can also be used in a counter-flow to build and expand global not-for-profit media. In the future public 'broadcasting' may be more accurately re-named public media reflecting the convergent nature of new technologies and content creation for public media will become more diffused and decentralised with the majority of the content being made by independent production houses rather than centralised within public companies. The internal competition between producers will ensure better quality and accountability than the old centralised model and indeed more and more countries may begin to adopt a public media competition model where there is more than one public 'broadcasting' or media house and where some funds are made available to all broadcasters in order to stimulate 'public interest' content across both the private and public media. Our view of the old PBS model will become less dependent monolithic institutions and more on a spread of outputs, which can benefit the widest stretch of the public. Many of our existing public broadcasters are and will become content providers ensuring the best value for public funds through a content market and independent production. The nature of the global information age will means more content can be shared internationally – so that public media can at one level enhance the local through specific cultural programming and connect to the global through production partnership and alliances ensuring that the combined resources of five or six public providers can deliver high quality and shared content.

While the challenge to a truly global reinvention of public media will be the vast difference in resources and technologies from north to south, the long-term potential remains that media globalisation forces can also ensure a greater spread of existing public media content into the development world.

The World Bank's symposium on broadcasting in Washington last May brought together public broadcasters from across the world to explore the connection between global media and development. The project raised the potential for the combined resources of global public media to become a lever not just in development but in diffusing the concept of not-for-profit information across the world. SABC in South Africa is attempting to play that role Africa while the spreading ideal of content beyond the conglomerates is generating debates in India and China.

While the Internet can be controlled through service providers and portals it remains the vehicle for new global communities, virtual communities which cross territorial and political boundaries.

For public media's the envisaged future must include the development and creation of virtual global public media communities where information can be received, disseminated and exchanged, extending our national visions into a shared global public space which crosses language and boundaries. The nature of this development will be that more international public resources will be used to support the a global public information space in the recognition that through that all our other global public goods ambitions, like the UN Millennium Goals the Kyoto Protocol or the UN Charter on Human Rights, will be more effectively and efficiently achieved. Francis Bacon's adage that 'information is power' is more true than ever today and the most powerful means of affecting change in the world will also be through the realisation of information as a global good which provides the framework for the realisation of all other global goods.

[1] 'Building the Digital Commons: public broadcasting in the age of the Internet', The 2004 Spry Memorial Lecture, Vancouver, 18 November/Montreal 22 November 2004.

[2] The Forum on Broadcasting was established under ministerial order to produce an independent report on the future of broadcasting in Ireland. The Forum report was issued in August 2002 and the ad hoc members were Dr Maurice O'Connell (chairman), Gillian Bowler (businesswoman), Jean Callanan (business sector), John Horgan (leading media academic), Donal Kelly, (former RTE political broadcaster), Declan Kiberd (literature academic and writer), Patricia Quinn (then Head of the Arts Council). The Irish Department for Communications responded by November 2002 and its documents are available on its website www.dcmnr.gov.ie

[3] Published by Dept of Communications, Marine and Natural Resources (DCMNR) June 2004. RTE's response to the Charter is RTE's Guiding Principles which were issued in November 2004 and both documents are available on www.rte.ie

[4] The Government had initially planned to speed track this new legislation and regulation but it has now put back the publication of new legislation until Autumn 2005 reflecting the current debate over the scope and scale of the new regulator and the need to create a viable, long-term digital content and transmission strategy.

[5] The Broadcasting Funding Scheme was passed into law in December 2003 and the fund will be operated and managed by the current regulator, the Broadcasting Commission of Ireland (BCI). The fund is worth in excess of Euro 8 million a year and the funding scheme will begin to operate by mid 2005 – by which point it will be worth in excess of Euro 20 million. The genres of content open to be funded include Irish language, history, culture, heritage, archive programme initiatives etc. The fund will be open to all terrestrial broadcasters regulated in Ireland both public and private.

[6] Taken from 'Regulating for Consumers

and Citizens' – presentation by Helen Shaw to the Broadcasting Commission of Ireland (BCI) annual conference November 18 2004.

[7] For a detailed breakdown of the top ten global media conglomerates and current interests see MediaGuardian media Directory 2005, edited Chris Alden.

[8] See 'The Age of McMedia' Helen Shaw, Weatherhead Center for International Affairs (WCFIA) which studies the US media market, ownership concentration and the impact on public information and knowledge – www.wcfia.harvard.edu/fellows

[9] ComReg (Irish telecommunications regulator) market survey end 2004.

[10] Nye, J. 'The Paradox of Power – why the world's superpower can't go it alone' Oxford University Press (2002), pg 139 chapter 5 'redefining the national interest'.

[11] The Irish Times, op-ed by Helen Shaw, Jan 27 2004

Gerd Leonhard

Music Futurist

Music Like Water – the inevitable music ecosystem

I strongly believe we are heading into a 'music like water' – future, based on this very simple fact: today, there are more people in more places around the globe that are tuning into music with more enthusiasm and sheer determination than ever before, and they are using a myriad of their own particular ways and means to get what they want. And to a large degree the 'traditional' record industry is simply no longer invited to the party - the bottom line is that consumer empowerment has finally reached the music business, and many consumers have now taken charge of their own entertainment.

Music fans (or, in Silicon Valley speak, 'Users') tune into online radio, buy satellite radio receivers, record terrestrial radio broadcasts onto their PCs, rip (copy) CDs checked out from libraries, swap tapes, vinyl records and CDs via the Internet, trade files on Instant Messenger, exchange entire hard-drives of music, firewire playlists to each other, trade loaded IPods, buy or create their own ringtones, transcode music streams provided by online radio stations, distribute or trade files on a multitude of P2P networks, topsites and darknets, edit samples and loops with free audio software tools, buy games and videos that feature their favourite music, tune into music shows on television and record it with their TiVo, and stream music to their cell phones. And all of this is just the tip of the iceberg – we could probably continue this list for the next couple of pages. **Music is BIG. Major. Crucial. Full stop!**

The trouble for the record industry - not for the music publishers, really - is these are mostly non-traditional ways of using and getting music (assuming there's still a difference) and that the industry can't control them nearly as well as CD sales could - in that glorious 'top-down' past - be controlled and monitored, therefore the entire system is starting to crumble. A system that is all based on total and relentless control, obscenely high margins, and an amount of customer passivity and user sacrifices that is unparalled in any other industry. And things are getting worse, yet: technologists and entrepreneurs all over the world will continue to invent new ways to find, discover, share and consume music every other day. The cat, or rather, the MUSIC, is quite literally out of the bag, and – as my dear colleague and pho-master visionary Jim Griffin likes to say – nobody is going to succeed to put friction back in a frictionless world, much less make a strong business of it.

The only thing left to do is to monetize the existing behaviour of the user / consumer / music fan – and there are many ways to do that once we have accepted the fact that we have indeed morphed into a customer-driven, bottom-up world that renders many widely accepted 'analogue' paradigms and traditions instantly useless.

Now, once we go down that inevitable path we will quickly realize that actually metering the use of music on a per-unit base, as if we were still in the days of Colonel Parker and Elvis Presley, is simply becoming a 'mission impossible'. Notwithstanding the distinct possibility of precisely tracking what is actually used, and distributing exact royalties accordingly, there is no way we can continue to ask for fixed fees on a per-track basis, when it's no longer even clear what a copy, a download, a performance or a mechanical actually is – on digital networks, just about any performance creates copies, somewhere along the way, and every copy is being publicly performed somewhere (witness the latest discussions about 'timeshifting' music). This may sound a bit Orwellian, but it sure creates a significant transactional dilemma: a performance may be considered a copy that may be downloaded and that may be transferred to some people under certain rules….? Simply an unworkable Babylon of outmoded definitions, imho.

The argument reverberates in the latest definition of 'music purchasing' on the Napster-2-Go (U.S.) download service: the user can download as many tracks as desired, as long as the subscription is valid, and the tracks are not used outside of the Napster application and the computer it is installed on. Amazingly, and quite conclusively already tilting towards the Music-Like-Water model, these downloads are not considered purchases – at least not until I want to burn a CD with them, and therefore own them 'free and clear'. Clearly, we have already reached and crossed that border between performance and copy, between access and ownership, and pushed it further out to a more economically feasible and much more palatable place. Hats off to Napster for pushing the envelope (now try to monetize your brand ;)

But the bottom line is: the only way to monetize people's actual behaviour and underlying desires on digital networks is to give them a simple, no-brainer blanket deal, an all-in offer or a flat-fee bundle - without wanting to sound like EasyGroup's Stelios: make it EASY. Call it what you want, but the conclusion is that this is a subscription model not a 'pay per download' model: one payment has me covered, but in addition I have many opportunities to spend my cash on many other things. Call it levies, taxes, bundles, flat fees – that's all just a variation of the same subject. Music-Like-Water is where we are going, and up-selling addi-

tional services is the name of the game.

There's plenty of precedent here: we make automatic, habitual, seemingly 'thoughtless' yet fully accepted payments for water, gas and electricity bills, we pay for cable television, Internet access and wireless services; and here in Europe, we are paying a flat yearly fee for the use of any devise (radios, TVs) that can receive public broadcasts. And most of us pay quite happily for our utilities and subscriptions! Imagine if you were asked for your ID and password every time you flushed the toilet at a public bathroom, or if your TV would measure and bill the numbers of hours that you spend in front of it, or charge you more if 10 people watched the hockey game rather than just you alone. Economically speaking, 99% of us already make these kinds of payments, all the time, and the pool of cash that's being generated is VAST.

Back to Europe: in Germany alone, approx. 80 Million people pay approx. 70 Euros per year for public radio and television – and this is compulsory by law, not optional -, so that's over half a BILLION Euros per year that's available to support the activities of the public broadcasters. But this is an extreme example, and one that would certainly not go over too well in the U.S., where such public levies are resoundingly despised (only to then face the constant barrage of mind-numbing ads that scream at you from every TV in every bar and airport lounge in America).

But I am digressing - consider this: a much lower monthly payment, say $3, something akin to a 'content fee' imposed on some hardware or devices, and some services or transactions would get us there, just as well, and we would finally have a feels-like-free pass to do what many of us seem to already be doing, albeit with official blessings: enjoy our music where we want, when we want and how we want, without having to worry about RIAA agents hunting me down, adware loaded software on my PC, which DRM is used, which country I am in, which files in what format are actually complete and don't have viruses in them, which Operating System I use, which devices are compatible with which PC and which application, and on and on. Of course, that $3 may end up being €3 in Europe, 3 GBP in the UK or, more importantly, the equivalent buying-power amount in other territories such as India, China, or Brazil.

If we don't go down this road, how could we possibly expect the music industry to be successful in the future, when at this very moment the customers have to practically kill themselves to give the industry their cash, on the exceedingly narrow terms that are being enforced today?

Once we can subscribe to music

just like we subscribe to water, the music business will EXPLODE and we will enter a new eco-system that will make the previous music industry look like NY taxicabs from the 30th floor of the BMG building. DRM will morph into CRM, copy control will become usage-control (file-tracking and monitoring), record labels will morph into 360-degree music companies, radio will down-(load)-cast, devices will truly plug-and-play, and yes, cell phones +music will likely kill the IPod.

There's only one thing: we MUST stop asking the consumers to fill up their bath tubs with Evian, or to use Pellegrino to boil pasta – they have already discovered the tab water! So let's just sell them tap water, via cheap flat fee deals, AND the Pellegrino, as well – and this does not equal a flat-out, whole-sale devaluation of music; quite the contrary. Ubiquity is a very powerful thing, and will create a nice pool of money for all involved parties – a pool which will only be the very first starting point for a much increased monetization of music.

Because here's another thing that will happen when the water/music flows freely: the up-selling opportunities will be huge, diverse, and multi-channel. We will have all the user data we could ever dream of having: opt-in profiles and lots of user feedback, usage patterns, program preferences, personal profiles, locations and access modes. Apart from the obvious concerns over data security and privacy (now there's another huge business opportunity!), this data will allow the content providers / rights holders to zero in on one person at a time, and offer relevant and timely upgrades to him / her, and maybe to place very unobtrusive and friendly product messages. Imagine listening to your digital radio station while you're driving, and seeing a message on the display informing you of an upcoming show of your favourite artist that just happens to be in a location that you will be travelling to. Simply push a button on the display, or send an SMS from your mobile phone, and within 10 seconds you have purchased a ticket for the show. Then, when you get to the show, you take up the venue management's offer to zap the entire evening's concert onto your memory stick on the way out, for less $ than the cab ride back to the hotel. And on from there…

Once music is unleashed and we can stop the dinosaurial fight for the simple privilege of having access to it, distribution seizes to be a barrier to entry: all music all artists and all writers will be in those pipelines. Then, however, artists and their representatives will be facing the real challenge: getting anyone to pay attention to them, and surviving in this world of 'digital darwinism', since the old marketing mantra of Exposure + Discovery = Sales (Income) will be even more pronounced in a Music-Like-Water

world. Ultimately, of course, people will consume, or shall we say, use more media (music) all the time, yes, but the real limiting factor is people's TIME. Simply put, all of the world's music (and its creators) will be competing for attention in this new ecosystem, and everyone will want a piece if your precious time. THAT will be the real challenge going forward: getting exposure and being discovered – the rest is already build into the pipeline. So, brave new music ecosystem – yes, but not a build-in goldmine.

Finally, here's my take on the big question of just WHEN will this come about: any business that is build based on the next 2-3 'interim window' that exists while we morph from 'music like bottled wine' to 'music like water' will have to have (at least) 2 parallel strategies. One that works and makes money, now, and one that makes the real money when Music-Like-Water is a reality.

In other words:
"The future is already here - it's just unevenly distributed."

~ William Gibson

John Grüter

Systems Thinker, ICT Generalist, Technology Affectionado, Change Agent and Principal, Digital Knowledge

Participated as philosopher in the knowledge stream Media & Entertainment

For me, the most wonderful aspect of the Summit for the Future is to have met so many interesting people who are prepared to think critically about what is happening in our society.

In the 'Media & Entertainment' stream we looked at the impact of digital technology from several perspectives. The way audio/visual content is created and broadcast; Legislation from a National and European perspective; and the emerging effects on content producers once broadband access becomes ubiquitous, particularly in the music industry. We had relatively little interaction with the speakers, mostly because of their presentations were so utterly immersive.

Throughout the Summit, many issues emerged about the relationship between community (or citizenry), government and (global) enterprises. The actions of governments increasingly lag behind what is actually happening in society. Occasionally, governments seem to over-react (e.g. anti-terrorism legislation). Global enterprises spread wider and thinner, occasionally changing the power balance of nation states and slowly transforming citizens into hyper-consumers. Citizens copy behaviour from other parts of the world and either convert to 'brand religions', topple governments and force multi-nationals into changing their actions. It is clear no one can really infer what the future looks like. However, changes in power structure are becoming visible.

In ten years time we will find out that by then we have through a series of radical changes. Our centuries-old foundation of society is transformed into a brand new digital infrastructure. We yet have to find out what the impact will be on our societies, on the ways we work, on the ways we communicate, on the ways we live… In this respect, the division of the (Western) population into 'Analogues', 'Digital Immigrants' and 'Digital Natives' is a very interesting view on these changes. For 'Digital Natives' ('Generation X' and 'Generation Y' – born after 1980) digital technology is fully integrated into their life and lifestyle. The 'Digital Immigrants' (the 'Baby Boomers') have consciously adopted and embraced digital technology, but haven' t grown up immersed in it. The 'Analogues' are largely still struggling with digital technology.

The new, emerging digital foundation of our society is fundamentally altering the communication and interaction between citizens, governments and enterprises. This revolution is fuelled by ubiquitous access to the

global, transparent and digital infrastructure. Knowledge and information sharing will flourish, but likewise the application of that knowledge. Scale and scalability of infrastructure may no longer require centralised control. Smaller scale infrastructures may well become feasible once the information about them can be shared easily.

On the last day, the forum discussions summed up the awareness of these changes. The student forum (Digital Natives) demanded a stake in modelling and shaping the future. Only when Digital Natives start to get influence, real changes in policy (on government level and within enterprises) will start to shape digital society properly.

I'm looking forward to the next Summit to continue the discussion we've started.

SCIENCE & TECHNOLOGY KNOWLEDGE STREAM

Patrick Crehan

CEO & Owner, Crehan, Kusano & Associates sprl
Knowledge Stream Leader Science *& Technology

Summary of the Science & Technology Stream

Many workshops in recent years have considered the future of science and technology from a thematic perspective. Most governments now accept that science and technology is a fundamental driver of social and economic progress. The simple consequence of this is that many have proactively set about boosting their national investments in research and innovation. Knowledge has therefore become a commodity to be sourced globally and already we see trends emerging in the off-shoring and out-sourcing of research and innovation related tasks by companies in Europe. Our conviction is that the key to the competitiveness of companies and nations in the future will lie not only in the ability to produce knowledge but in the ability to organize and manage its production as part of an innovation process. We therefore decided to look at the exploitation of scientific and technological know-how from an organizational point of view and ask the questions - what now and what next?

The workshop sessions were highly interactive. To preserve the narrative considerable editorial license was exercised in summarizing the discussions that took place in each session. The following sections do not represent the rigorous positions of the speakers but an attempt to synthesise what they said along with the discussions that ensued. This document provides a series of perspectives that try to give answers to some questions and to raise as many more.

The reader is asked to consider this account of our meeting in Amsterdam as part of a work in progress on a very important issue that we will continue to explore for many years to come.

Richard Hawkins, Senior Strategist and head of The Networked Economy programme at TNO of The Netherlands

Two basic challenges facing a research manager are:
· How to create value through research activities and
· How to find, train and retain the kind of people who can help create such value for the organization and its clients.

The second issue poses a par-

ticular problem at this time. It seems increasingly difficult even for large organisations to maintain the breadth of activity and know-how required to address all complex problems of a scientific or technical nature that must be addressed if the organisation is to grow and prosper on the basis of its research and innovation. As a result there is an increasing need to bring into the organization on a project-by-project basis, people with the right know-how at the right time. Increasingly it makes sense to buy in 'services' on an occasional basis rather than finding and training people with skills in a wide range of areas just in case their specific know-how is required. This is not simply a question of bringing in domain specific knowledge but a much broader range of skills that includes the ability to communicate and coordination work within multi-disciplinary teams. It is very hard right now to find this kind of human capital.

There are real challenges in linking the production of knowledge with the application of knowledge. The term innovation is applied too indiscriminately. The idea that knowledge has value is harder to justify than one initially believes. The production of knowledge is very costly yet – producers of knowledge are generally quite poorly paid. We value knowledge but we are less and less willing to invest in it. It is important to distinguish between innovation, technical problem solving and research. All are important for industry and all need high levels of scientific or technical know-how. Innovation is radical, paradigmatic, system changing and scope based, whereas technical problem solving is incremental, situational, instrumental and scale based. Universities need to retain people with scientific and technical know-how to carry out research. In many ways companies are in competition with universities to obtain such skills. Companies also need project managers capable of working on scientific projects and capable of managing the risks and investments these entail. As a result when companies find and hire people with the right talents they are quickly moved into management positions.

Unfortunately science does not attract the best and the brightest talent. In the UK today there are 20 times more people enrolled in media-studies than in engineering disciplines. A Chemistry Department at the University of Sussex cannot attract enough students to justify the provision of courses in chemistry despite having two Nobel Prize winners and there are plans to concentrate all UK chemistry studies in only 6 laboratories. What do trends like these mean for the future of science-based industry?

A major challenge for the future will be to develop human resources able to conceptualize and integrate the work of research consortia. Eventually it is likely that there will be a struc-

tural shift in organisations from a model which focuses on finding, training and retaining talented individuals on the basis of their scientific and technical know-how to a model which places greater value on the ability of an individual to conceptualize research work intended to create value for the organisation, and gives prominence to skills for building, organizing and managing such teams to execute research and innovation related work using a mixture of in-house and outside expertise.

Simon Jones, Director of Dublin based former MIT Media Lab Europe

Companies not only need to carry out research, they need to cut the cost of research and manage their research related risk. A business decision to invest in scientific research is usually based on an evaluation of the risks involved. In this sense the distinction between applied and basic research is not very meaningful. Applied research can be very risky and basic research can be entirely risk free. [1]

Challenges arise because research and innovation don't naturally fit well together. Science is organized in terms of disciplines and in this sense is conservative, it is organized to preserve and perpetuate disciplines. It is not organised to create innovation.

Innovation is a way for extracting value from assets. It is easy to describe the kind of people you need to support innovation but it is very hard to find them. They must have a pre-disposition for inter-disciplinary work. Those with multiple degrees in different areas sometimes fit the bill. They can be thought of as gifted professionals - as opposed to gifted amateurs. They are not only gifted but willful and articulate. They are very hard to manage. They never do what they are asked to do. They get upset over small things. Managers of teams of such people need not only to be charismatic innovators themselves, they must also be prudent stewards and they must pay great attention to process and method in order to maintain a high level of creativity in their teams. They need to create structure and maintain a form of instability. To do this staff-turnover or 'churn' is essential. At MIT Media Laboratory in Dublin half the staff must leave very year.

Demonstration is essential. Innovation Centers tend to have an obsession with publication. This publish-or-perish syndrome is an artifact of research culture. The right attitude for innovation is demo-or-die. To achieve this,

a rapid development methodology can be employed. Individual innovation projects culminate in a form of research 'installation' that amounts to the practical articulation of an idea. The lives of the great creators are dominated by failures but we remember them for their successes. It is important to emphasize that failure is the route to great success. It is important to recognize that almost all ideas fail.

To attract and maintain the interest of sponsors it is important to offer three 'stuffs' – stuff for today that appeals to the needs of business units, stuff for tomorrow that appeals to the needs of product development and stuff for later on that engages the interest of the corporate R&D departments. It is essential for an Innovation Ccenter (as opposed to a research center) to deliver on all three levels to retain the interest of its sponsors.

Innovation is a hard sell - much harder than research. The seller needs special skills, an ability to demonstrate that these efforts will deliver very real, tangible results in the end and good stories from the front-line that expose the process of innovation and that reveal the ultimate productivity of mistake and failures that pave the path to success.

[1] Determination of the properties of matter or the values of fundamental constants are examples of research tasks that are at once low-risk and fundamental.

Bror Salmelin, Head of Unit, New Working Environments Unit
European Commission IST Programme

There is no single model for competitiveness. Competitiveness is a complex issue and it is highly likely that politicians over-simplify it. When we compare the EU with the US it is true that productivity per person in the EU is lower than that in the US. However it is also true that productivity per hour in the EU is higher! In the EU when it comes to work - we seem to know things that others do not and we need to capitalize on the very real strengths that we posses.

It is also useful to note that countries such as China and India each have more brains than all the countries of Europe combined. In the long term they will be the net creators of knowledge in the world. We are not simply talking about a future in which European companies will subcontract work from Europe to China or India. We are looking at a total change in the world order in which these very populous countries - full of bright, talented and creative people - will become the focus for most of the research done in the world. It is

an important research issue to understand the nature of these changes taking place.

It is helpful to think of economies as being built on intangibles. This simple truth can be observed in the evolution of everyday objects such as the mobile phone. In many countries mobile phones are basically free. They provide platforms or vehicles for the provision of services. The client pays for the service instead of for the phone. Without 'service' the phone as an artifact has little or no meaning in itself.

Organizations are groups of people whose intangible assets include the relationships that link those making them up. Organizations possess qualities, which enable them to catalyze or inhibit success through innovation. In modern industrialized societies job arrangements are increasingly diverse and complex and many consider that organizations exist to serve the people in them and not the other way around. This has implications for the future or work in general and for the future of research and innovation.

Monolithic centralized control no longer works as well as it did in the past - society expects more. Organisations to some extent are 'opening out'. This is reflected in particular in the more general adoption of the open source model. We live in a society of innovation, creativity and inclusion. The innovators and creators are no longer those who work in a laboratory, they are everyone scattered throughout society. The modern laboratory is no longer a room in a building it is the whole of society. The challenge for research mangers in the future is not to harness the creativity of the 100 or so people in their research labs but how to harness the creativity of the 450 million citizens of the EU.

The classical approach to the use of copyright and the patent is Orwellian in nature. These tools are uses as technologies of control to limit the sharing and use of intellectual property. In many ways this goes against the natural tendency of people to share as social animals. It has already been demonstrated that sharing on the basis of open-content or open-source models can create real value at both a professional and personal level. Open source philosophies underlie some of the new and emerging organizational paradigms that will underpin research and innovation in science and technology based industries of the future. Peer-to-peer technologies got a bad reputation because of the controversy over Napster. Nevertheless they respond to a very human need – the need to share. These technologies will enable many new and emerging forms of collaboration-sharing that depend on novel concepts of work.

Technology alone is not enough though. These new organizational paradigms will need to be thought through on a social and

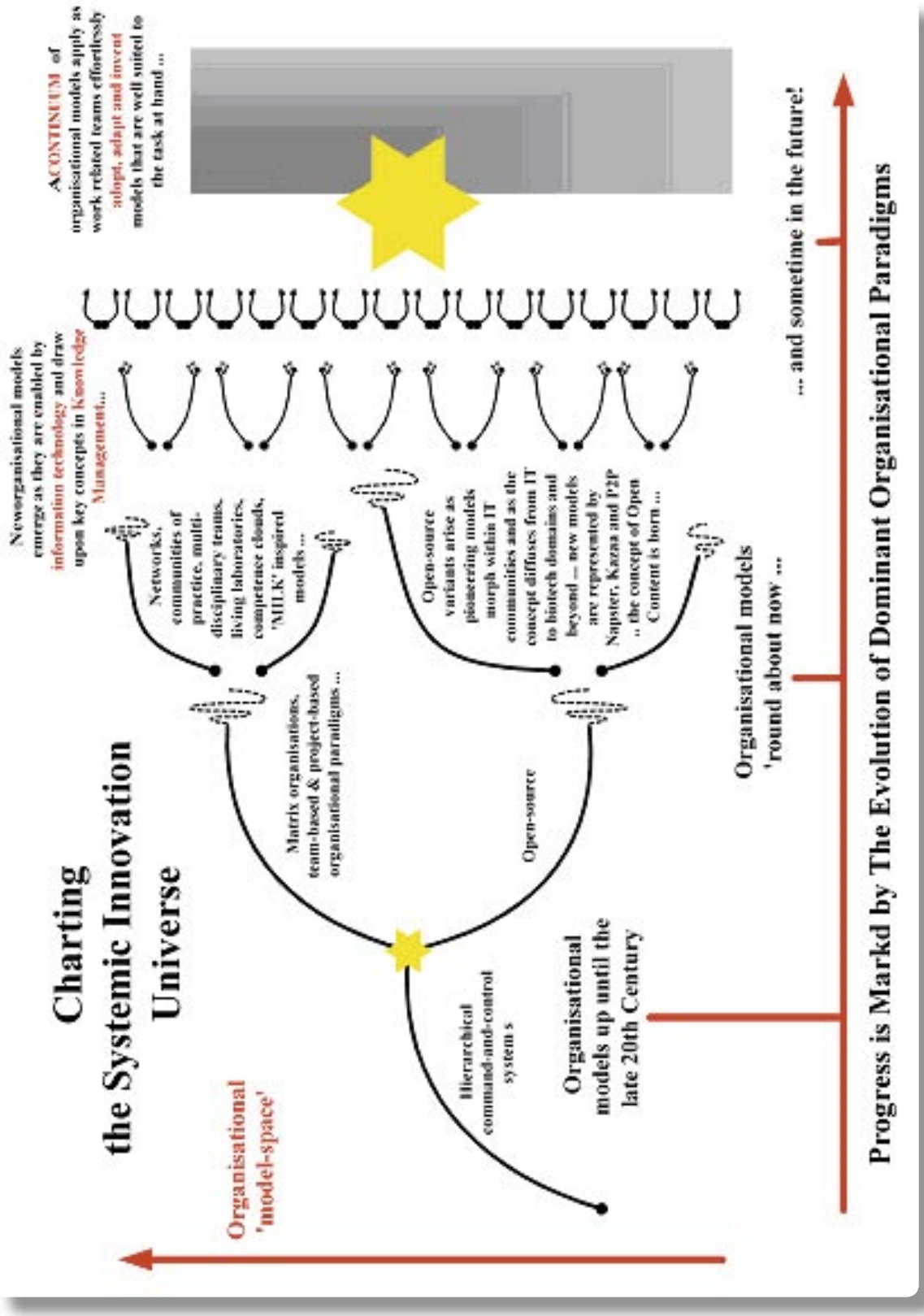
ethical level. Technical infrastructure and working practices will require support from new systems of ethics and values that must also be invented and explored. It makes sense to talk of a soft-infrastructure of ethics and values that will underpin these new ways of working in a global knowledge society.

To lead in the domain of workplace innovation we need to ask what is the future of skills and careers at the level of the individual, the company and the system? What is the future of specialization? We should ask how will we organize collaboration and look at workplace-innovation as an important part of multi-factor productivity.

Ultimately no single organizational model will prevail. There will be many models. Groups of people will create their organization in the way that suits them and the task at hand. Right now we need to understand how it is possible for these groups to self-assemble and self-organize. We need to define the new cognitive challenges that working in complex cross-functional groups will pose at different levels – that of the worker, the managers, the team leader and the company executive. How will people create the different organizational settings that they require for their success as individuals, members of networks and communities, employees in companies? We can already observe and work within radical new organizational models that have really only emerged in recent decades. It is increasingly common to refer to multi-disciplinary teams, communities of practice and even 'competence clouds'. There are already many different flavors and philosophies of open-source development and licensing. This model is no longer confined to Information Technology it is now being discussed in other domains of innovative and research intensive activity. It is clear that we face an organizational branching future.

An important frontier for creativity and invention in the future lies in the configuration of relationships and groups for work. Such new organizational practices will bring new cognitive challenges – do we understand these and are we developing the skills to address them? What incentives and other driving forces will act to support change at different levels of organization? New paradigms mean new power structures. How and where will they emerge? What role will the existing centers-of-power play? Will those who are strong on the basis of the old paradigms support these changes or defend the status quo?

The transition to chaos in a dynamical system can sometimes be characterized by a series of bifurcations in a space that describes the state of the system. We can use this image to understand how the prevailing organizational models have evolved through time and speculate as


Charting
the Systemic Innovation
Universe
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Matrix organisations,
team-based & project-based
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Open-source
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'round about now ...
... and sometime in the future!
Progress is Markd by The Evolution of Dominant Organisational Paradigms
Neworganisational models
emerge as they are enabled by
information technology and draw
upon key concepts in Knowledge
Management...
Networks,
communities of
practice, multi-
disciplinary teams,
living laboratories,
competence clouds,
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models ...
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variants arise as
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organisational models apply as
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adopt, adapt and invent
models that are well suited to
the task at hand ...

to what the future will hold. An important driver of change in this respect will be the enabling effect of new information technologies - technologies for mobility, presence, collaboration & communication that transcend the limits of geography, support experimentation in the way people work and create a space for change based on new needs and expectations of our society.

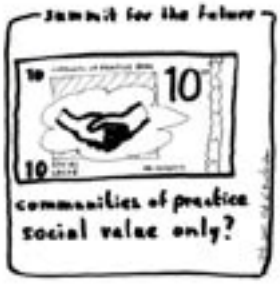
We are not facing a transformation but a revolution. This is not a change in the 'industrial' paradigm but a much older one the paradigm. Hierarchies may fall, the old model of dominance and disempowerment will be laid to one side and 20 or 30 years will be required to complete this cycle of change.

Thomas Schael, Research Manager, Institute irso (Istituto di Ricerca e Intervento sui Sistemi Organizzativi), Management Consultant, Butera e Partners

Work is a set of practices - not procedures and not processes. The CoP or Community of Practice is a venue or a work-place for creating social value. Although these have always existed we are interested in them now because they provide a new way of thinking about work from the point of view of the social relationships that characterize the working environment. What social value is created in these organizational systems? How is this created and how does this lead to the creation of value from work?

One of the most important ideas to help us think about this is the idea that organisations exist for communities and the people in them. People are at the centre of any organisation and the processes that create value for the organisation also create value for the individual. The communities we have in mind are both professional and social and this leads us to a different way of thinking about labour as a resource.

We are in the process of trying to understand such communities and how they create value for their members. The glue that holds them together is social in nature. We are in the process of trying to understand what kinds of social value are created through communities? Members of communities such as Knowledge Board cite inspiration & stimulation as benefits they receive from membership or participation. We have observed that members of this community often do not directly gain knowledge on the basis of membership but peripheral awareness of knowledge – a form of knowledge about knowledge – what kinds of knowledge exist within the community, where do they resides



and how can they be accessed.

We use MILK as an image to think about the acquisition, processing and consumption of knowledge in our working lives. MILK is a metaphor that captures something of the nature of knowledge in that knowledge is a commodity with a short lifetime – maybe 2-3 days - just like milk. In the morning you need it but if you don't use it right away it quickly goes 'stale' and it will probably never be used. Although knowledge for work is very like MILK we often try to store it forever!

Knowledge Board is a social experiment. It is a community of about 12,000 people that can never collectively meet face to face. They can meet in a virtual place but even that has its limits. As a community we are exploring these limits right now and different groups have started to self-organize into thematic communities. Many of the members have joined informally. Although their organisations do not allow them to join as employees, they often receive informal approval to join. The employer sees value in it and the employee sees value in it. Participation is on company time and uses company resources. We can think of asking about the return on this investment but in reality it is very hard to put a figure on it. Can communities become an economic unit? Are they somehow similar to NGOs that blur the boundary between social life and working life? For the moment we don't quite know.

Work-practices in general are changing and these changes will affect work relating to RTD and Innovation, not just administration, sale and marketing. Less and less work takes place in the office. An increasing number of organisations are multi-site. Technology has enabled this change and the workplace should not be seen simply as a physical place where work is carried out, but also as a set of communities and relationships that make up working life. These are intimately linked with the infrastructures that support them - infrastructures such as the communication systems, the conversations, the meetings and the media that support work-related activity. The choice for employers is to accept an accidental or imposed place of work and do their best with it or to take control of this fundamental aspect of the working environment and design it so that it performs in optimal way. Employers in workplaces of the future will therefore face the challenge of how to 'design' the workplace or the workspace of the future so that work is productive and so that those who work there find a sustainable balance in the way they work and live. The research laboratory is not simply a set of buildings or rooms – it is a series of venues that support specific kinds of communities – communities of researchers – in a way that provides them with value ay both a social and professional level.

Valerie Souchkov, Director, ICG Training & Consulting

Logic does not help us to be creative. Creativity requires an 'informal' rather than a formal approach to thinking. However that does not mean that one cannot be systematic about being creative and apply methods or processes to improve our creative problem solving ability.

There are many approaches to boosting the productivity of people who routinely carry out creative or inventive work. Brainstorming is a 10,000-year-old creativity method. It is often used today yet it has not changed very much through the years and it is very inefficient. It is basically a trial and error approach and it is almost devoid of process that could make it more efficient or more effective. Gartner estimates that to launch a new product, companies that routinely employ brainstorming techniques generate up to 3000 initial ideas and retain 1000 in the first phase of the work. Of these 100 could be selected for further consideration and 10 tested. Eventually one of these will be selected as the basis for the new product solution. There are two main types of method - random methods and systematic methods. Random methods rely on a shot-gun approach and the creation of very large numbers of ideas out of which winning ideas are eventually selected. Systematic approaches however create a much smaller number and rely on specific methods that can be used to help create the new ideas. The best methods use a combination of divergent and convergent thinking techniques.

In 1956 it was noted by Soviet scientists that 98% of patents are created through the use of known principles. Only 2% represent a truly radical departure from what is already known. Inventors all have their own 'ways of thinking' and they employ patterns for problem solving without any awareness that they are doing it. All in all 126 specific patterns have been identified. This is a far greater number than even the most talented inventors apply and it means that even gifted problem solves can improve their performance by learning to apply the full range of patterns. This is not a magic bullet in that it does not generate solutions, but it shows how to think about problems systematically in ways that make finding solutions much more likely. Different people using TRIZ to tackle the same problem may come up with different solutions, but they will solve more problems, harder problems and more quickly than using a naïve approaches alone. The TRIZ method is based on the efforts of 300 researchers over

a period of 40 years. One of the important aspects of TRIZ is the formulation of the problem. The first thing you do is formulate the problem and ask yourself is this really the problem you want to solve.

The first thing to do in developing ways to boost productivity in problem solving is to understand why problem solving is hard. There are many reasons why problem solving is hard. One reason is fear but the main reason is mental inertia. It is believed that people peak in terms of personal creativity in the age-range 4-14. In the Soviet Union it is taught to children at a very early age using fairy tales. TRIZ uses techniques that it calls 'functional analysis' which is effectively an extension of 'value engineering'. Other techniques are based on the idea that systems evolve through the elimination of contradictions. The approach is to evolve a system towards a solution by identifying and eliminating the contradictions in the system. It is possible to apply problem-solving techniques to these contradictions and derive new solution paradigms. The role of failure is important. Failed solutions indicate contradictions in the system. Failure motivates and stimulates a systematic search for contradictions. When problem-solving techniques are applied to these contradictions and they are eliminated new solution paradigms can be found. TRIZ itself is evolving and TRIZ has been applied to improving TRIZ. It used to take 1 week to train to use TRIZ now it takes only two days. It can be applied to a wide range of domains not just to problem solving in engineering and technology, it has applied to conflict resolution by the oil and gas industry, to marketing and to politics.

Business Week recently referred to LG Electronic and Samsung as the most innovative companies in the world. Samsung is also the most active user of TRIZ in the world today. Using TRIZ savings of as much as €1B have been estimated on a single project. In the case of Boeing - another intensive TRIZ user - TRIZ techniques have helped create € 1.5B in extra revenues from a single project. The average success ratio in creative problem solving is about 75% when TRIZ techniques are applied compared to 15-25% when other or naive methods are used. Tests have been done where a random group of engineers is divided in two. One group is given two days training and the other group used as a control. Both groups were tested on the basis of a series of engineering design problems that they had to solve in a limited period of time. The untrained group provided solutions to 2% of the problems and the trained group was able to succeed on 68%.

It is remarkable how poorly even large RTD intensive companies understand innovation. Working with some of the largest and most dynamic S+T intensive companies in the world it often

transpires that top management considers innovation as something that only happens in the product development or in R+D. Research may be done in laboratories but research methods can be used in many parts of the company and innovation should be done in all departments – marketing, sales, finance and business development - not just product development. Innovation is a horizontal capability that should exist in all parts of an organization and it is possible to teach people skills to be more innovative. Companies of the future will use tools such as TRIZ on a regular basis to systematically develop the capacity of their workers to creatively frame and solve problems and contribute to growth through innovation.

Andreas Neef, Executive Manager, Z_punkt, The Foresight Company, Information Scientist, Futurist

The time lag between innovation or invention and the introduction of a new product or service to the market-place is decreasing, companies can no longer create or acquire all of the knowledge they need in-house and it is getting harder for companies to build knowledge monopolies. Companies must now increase the speed with which they can introduce new products and services in the marketplace. Increasing productivity and efficiency in RTD and Innovation is now one of the main goals of competitive companies worldwide. RTD and Innovation is both expensive and risky so the challenge is to increase the rate of innovation without increasing costs.

At a strategic level some companies are using tools such as foresight to help them define their RTD strategy, their product strategy and to manage their IP assets. Foresight provides innovation managers with the tools to do this on the basis of

· Anticipating of **change**, understanding

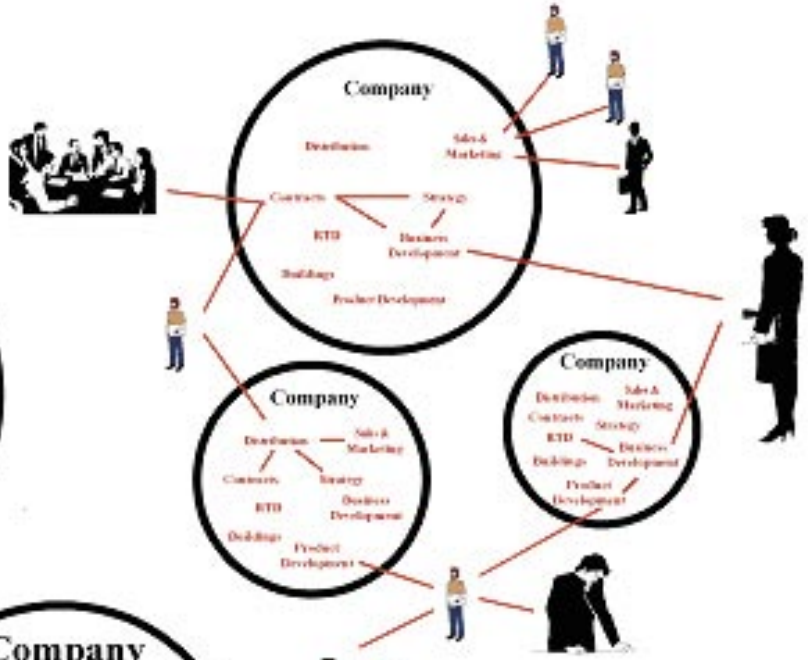
· What new consumption or usage **contexts** are enabled by technologies, and

· What new **qualities** are provided (to consumers/clients) by specific innovations.

Nevertheless it is becoming increasingly difficult to have dialogue that involves both technical and social innovation. There is a paradigm shift from closed innovation systems to open ones. IBM recently gave away 4000 patents to the Open Source community. IBM invested a lot of money in the research that lead to this, in the registration and maintenance of these patents and now it is giving these rights away! This is truly puzzling be-

The Changing Focus, Location and Configuration of Research and Innovation Related Work

PHASE I- Centrally located laboratories meet all internal needs of the company



PHASE II- All parts of the company are involved in research and innovation activities. Research is connected to other functions. In some cases it is even co-located with other activities such as manufacturing

PHASE III- the company can no longer meet its knowledge needs internally. It must establish research and innovation related partnerships and services externally. RTD and Innovation tasks are dispersed in work-related social networks and 'competence clouds'. Groups configure and self-organise on a dynamic needs-driven basis.

havior by traditional standards.

This behavior reflects the fact that many companies fear a looming creativity crisis a crisis not only for skills but also for leadership. Many companies are wondering where they will find the personnel to lead innovation projects in the future. They are starting to look beyond the company, and even beyond their own country. They are willing to look anywhere to find the right kind of people to meet their needs. Many companies are conscious of opportunities in convergence in emerging domains whose names start with bio-, nano- or cogno-. These areas pose specific problems not only due to their interdisciplinary nature but to the level of uncertainty of what will succeed and to the long time scales needed to see a return on investment from activities in these domains.

We have already observed offshoring and out-sourcing as strategic practices by those who manage research and now we see a new behavior – the open-sourcing of research and innovation. The game has taken on new dimensions as science and technology based industries innovate at an organizational level to maintain competitiveness.

Philosopher, educator, artist and creator of VISH

Behind our action and our decision lies our purpose and the importance or strength of that purpose is determined by our values. Ultimately values are what drive our actions. Knowledge is not important but what we do with it. The exercise of power lies not in the retention and protection of knowledge but in its application. Dominance is the value that underlies the social organization of power at this time. Power is used to control, stifle, obstruct, delay, prevent, hoard and protect knowledge. So much energy is dissipated and so many hopes and dreams dashed as those with power seek to confound all progress except their own. Few have most of the power and most have none.

But there is truly an opportunity to move towards a new way of thinking. The foundation of the organization of work is changing and there is a shift – from the prevailing model of hierarchical dominance and control to one in which the professional lives of people are supported through organizational systems in which individuals have power over what matters most - themselves, their

time, their place, their relationships and their work. The need to hold-on is replaced by the desire to let go. There is no need for governance. Control or management is exercised through leadership. Not hierarchical leadership but a leadership that is distributed, dynamic and occasional. A leadership that emerges in context to provide an organizing point of reference for a group for the duration of its task and that dissolves when this task is finished.

The fact that creativity can be cultivated and learned, that innovation permits a structured approach to invention in the way that Jazz does in music, means that the myth of the scarcity of creativity can be laid to rest. Imagination is abundant in diversity and creative abilities can be multiplied through appropriate training. Unlike in the industrial age, uniformity no longer serves progress. Innovation requires the abolition of uniform ways of thinking, combining and organizing. Uniformity must be replaced with diversity. Innovation and creation are products of

· Diverse minds,
· Irreconcilable positions,
· Flexible thinking.

We have become alienated from our own true nature and allowed ourselves to believe in the rarity of creative talent. There is rarity only in the accidental development of talent. Breaking up successful teams is essential for activating creativity and releasing innovative potential. Innovation confers only a temporary advantage. This advantage may persist for a while but it will become neutralized in the wake of large-scale adoption or irrelevant as the structure of systems change. We must shape our future deliberately and make ourselves responsible for doing so.

Mathijs van Zutphen

Philosopher, educator, artist and creator of VISH
Participated in the knowledge stream Science & Technology

A Transvaluation of Business Values

In this paper, which may be considered a dispatch of the summit' s events, we will liken the changes to a philosophical concept of profound and sweeping transformation formulated by Friedrich Nietzsche. I have chosen to present a Nietzschian Transvaluation of Values in the form of a list of values that are shifting. The list was inspired by a number of presentations and seminars I was present at in addition to discussions and inspiration provided by many others present at the summit.

… you better start swimmin'
Or you'll sink like a stone
For the times they are a-changin'
Bob Dylan

Nietzsche is the great diagnostician of European culture; no philosopher exposed the implicit moral mechanisms, and hence faults, behind our ideas, practices, and institutions more fiercely than he. His concept of Transvaluation expresses a depth and reach of change that complies with many of the insights developed during the few days of the Summit. I'm fairly confident that the old Prophet of Nihilism would approve of my use of his term.

Property is out, sharing is in.
Property is the foundation of our economic system; property rights are the backbone of our legal system. A number of things are happening that subvert this principle. New developments in business show us ways in which sharing rather than owning becomes the way of the world.

The scientific world has been structured around knowledge sharing for a long time, even in the face of political or institutional obstacles knowledge sharing remained a crucial element of scientific practice. Sharing is really the central idea behind the concept of a Knowledge Economy. Knowledge that is not shared cannot grow or be applied to create value, it cannot contribute to innovation or invention. Now the virtue of sharing is entering the business world, although many players are extremely reluctant to accept the new values.

Selling is out, giving away is in.
Giving software away does not fit into our economic paradigm, but it is happening all over the place. A whole host of free web services is available: file sharing, blogging, email, mailgroups, knowledge exchange.

The central idea is that the value is not in the ownership of the intellectual property, or the sell-

ing of the product; the value is in skills necessary to benefit from the product. Value lies in knowing "how to", in additional services.

This will surely change the business model of many a producer of intangible 'information' products. The open source movement has created so much business value it might be considered the key example of the new value of giving away.

Holding on is out, Letting go is in.

Never break up a winning team? Nonsense. Simon Jones, Managing Director of MIT's media lab Europe, explains that the strategy of constantly forming new combinations, breaking up successful existing teams, is essential in activating creativity and innovative potential. The constant change feeds the creative process.

Knowledge is out, Creativity is in.

Knowledge does not produce innovation. Organisations that produce knowledge (R&D labs, universities) do not of necessity produce creative new ideas that spark innovation, in fact they often fail, as Richard Hawkins points out poignantly. Creativity requires completely new organizational structures and practices. So we find ourselves in somewhat of a dilemma. The future of our knowledge economy, our ability to compete globally, depends not on knowledge but on the creative use of knowledge: innovation, yet we find ourselves obsessed with the protection of knowledge and traditional ways of increasing knowledge. It is what you do with knowledge that is key.

Individual reward is out, collective reward is in.

MIT Media Lab Europe was an innovation factory with an exceptionally effective organizational philosophy, former manager director Simon Jones explains. One aspect of this philosophy is the focus on multi-disciplinary teams. The team creates the innovation together, in cooperation. There is competition, but between teams, not between people.

Scarcity is out, Abundance is in.

We traditionally believe that creativity, good ideas that drive innovation, are rare and special things. We believe only rare and special people posses creativity and are able to produce innovations because of a unique creative capacity. We have allowed ourselves to become so alienated from our true nature and ubiquitous power of the imagination that we have created this myth of the rarity of creative talent. And it is a myth.

We are finding out that creativity is abundant. Innovation methods like TRIZ (www.xtriz.com)

make innovation a matter of following a certain path, using the right tricks, choosing the right perspective. Innovation permits a structural approach, the way music does. In Jazz creativity is a result of training as much as in other contexts, with musicians studying different structural approaches to melody. You still have to add the ideas yourself, but a structural approach makes the creative process more effective. No more creative scarcity: innovations, solutions, inventions, creative ideas, they can be produced easily, in small teams, with little effort, by all of us.

Success is out, failure is in.
Success, especially in combination with smug complacence, leads to failure ... yet failure, combined with perseverance, is the road to success. MIT Media lab's experience shows the value of failure, making failure a central aspect of the organizational model. Nothing is more educational than a failed project. As such it is the greatest contributor to eventual success. It is said that Thomas Edison had to try out 10.000 different ideas before he was able to finally produce a functioning lightbulb. One might say there is an inevitability about success, but it must be reached through the combination of failure and perseverance. This is something we can now start to understand and appreciate.

Monopolies are out, diverse markets are in.
Survival in the world of temporary advantage means a constant shifting and adjusting of strategy. Monopolies are impossible to defend in such a context, and that is a good thing. We don't need monopolies, monopolies are bad for innovation, and thus bad for business. They increase complacency, decrease the quality of customer services and obstruct development and growth.

National is out, Global is in.
The students present at the Summit taught us a valuable lesson. They have grown up in a world that effectively is global. To them, and more so to even younger generations, it does not make sense to design policies or think about challenges within the confines of a national perspective. They see events fundamentally as global issues, they email and chat to friends all over the world, and share their views with exchange students from different continents. They view themselves as global citizens. The understanding that causes and effects have a global impact is a fact of life to them. The interdependencies between communities and citizens of this planet are so obvious, the concept of nationality is like an obstruction. In the world today, one cannot not think globally.

Reaction is out, Vision is in.
Why are we so modest? Certainly not out of a natural sense of humility. We are creating the future right now, in our decisions and

actions and the inevitable consequences they have. We have a strong tendency however to disempower ourselves in relation to our future, as if not we but some (malignant?) divinity steers our destiny. Why not make the realization that the future is something you create the starting point of our decisions?

Wendy Schultz explains how the concept of preferred futures captures this idea. It is important for futurists, and all other mortals as well, to not just discuss possible scenarios but to make choices about them. We have to not just think about the future, but build it in a deliberate manner. Creating a vision means shaping the future, that is the significance of the "Vision thing". Stephen Covey means to teach us the same when he speaks of starting with the end in mind as a crucial habit for shaping our lives. Trivial as it may seem, creating a future is as simple as imagining what you want it to be. Our vision becomes what mathematicians call a chaotic attractor: an implicit yet definite shape that unites all complex dynamics into a single whole.

Specialization is out, integration is in.
There exists a traditional concept of balance as an equilibrium, a static opposing of forces that creates stability, like a scale with equals weights on each side. Such a static concept of balance is no longer applicable to the powerful dynamic balance that can be used to harness creativity. One of the drivers behind the success of MIT Media Lab Europe is the way it incorporates constant change. All employee contracts last two years, and are never renewed. Fresh blood is continuously flowing through the system. Projects have immutable deadlines, and teams are constantly under pressure. No peace and quiet, no status quo, no standing still.

"Contradiction bad" is out, "contradiction good" is in.
Valeri Souchkov, an expert in the TRIZ method for catalyzing innovations, explains that contradictions are, in fact, good. Contradictions form the essence of a problem, and so they are the root of the solution. A well-formulated contradiction points the way to the solution. Finding the contradiction becomes a coveted step in the creative process that leads to innovation.

Uniformity is out, diversity is in.
Innovation and creation are products of diverse minds, intermingling perspectives, irreconcilable positions, and flexible thinking: the opposite of uniform behaviour. Innovation in this sense requires the abolishment of uniform ways of thinking, combining and organizing. If we regret the disappearance of traditional values in our multi-cultural reality, we should realize that we

need even more of it. In fact, the cultural diversity within the European Community creates a powerful competitive advantage in a world where value creation is increasingly driven by creative innovation, according to Bror Salmelin.

In closing

These ideas are written down here to unhinge your mind from the comfort of familiar presuppositions. They are meant to wake you up, provoke you, empower you at the same time, and above all help you develop your own ideas about the crucial issues we've been discussing. It is important that we shape our future deliberately, and that we make ourselves responsible for doing so.

An extended version of this article is at http://www.clubofamsterdam.com > Articles > Science & Technology

Réka Várnagy

Representing Student, Corvinus University of Budapest, Futures Studies Department
Professor's Assistant

Visioning the world of digital natives

The Summit for the Future 2005 called for our attention: we have to think, decide and act for the future right now. The spirit of the conference represented by Wendy L. Schultz clearly articulated the need for future-oriented thinking: if we do not shape our own future, someone else will. So it is our responsibility to create the world where our grandchildren will live.

I entered the Science and Technology knowledge stream with that message in my mind and heart. Previously, I feared participating at such stream as I doubt that technologic development in itself is capable of driving our society towards improvement and overall well-being, which is a common perception nowadays. As a digital native, I have always been surrounded by machines – computers, phones, PDAs and other gadgets – and I have always wondered how we could really profit from the development we have made. Certainly, our society is heading towards the creation of a knowledge society, since information is already the key to success and even survival. It is common sense that IT development has accelerated the flow of data and information and has changed our lifestyle. Technology is now integral part of our everyday lives, and we slowly learn the appropriate methods for processing this overflow of information. Looking at this trend, I can see as technology drives humanity and forces individuals to learn its language.

Does it really have to be this way? Do we only follow the technology that we or others create for us? Having such preconceptions, I was greatly pleased to hear the human-centered approach that characterised our speakers and participants: using science and technology as a tool and not an objective was a crucial part of the conference's message for me.

Humans were in the focus during all three days: through talking about our previous experiences and today's challenges we envisioned a future where humans are encouraged to innovate and to create, where embracing virtual communities are created to support individuals, where scientific and technological developments serve us and not vice versa. In my understanding, we envisioned a knowledge society where empowering individuals is the key task. Humans are born with a great sense of curiosity and creativity; every day they improve and innovate, and they continuously develop new skills and competences as they discov-

er the world around them. Our objective was to create an environment – which could be either a working place or an educational institution – where these human characteristics are nourished.

This vision of knowledge society differs greatly from the world of today. While investigating the problems of today, it became clear that simply in the old set of paradigms it is impossible to create our preferred future. As Bror Salmelin pointed out we live in the phase of change: this is an unstable period where sequence change occurs as in chaos theory. Our task is to give orientation and guide to drive this change. This is the point where we need to set our priorities for the next sequence: what is important, and what is precious. As the philosophers stated in the round table discussion, we have to think about our fundamental values, and define our new guidelines, such as multidisciplinarity, holistic view and open-source approach.

During the stream, these new values appeared in a lot of presentations, as lecturers told us about their success stories. Clearly, employing people who have very different backgrounds is the key to success at an innovation lab, and evoking the hidden creativity of people can produce breakthroughs. Still, I was wondering why do these stories represent the exceptional cases? If we do have such valuable characteristics, which I believe we do, and if we all envision a new world, where did we get stuck?

During one discussion, I got the answer for this question: the old paradigm does not only live in individuals but also in organizations and structures that hinder qualitative development as this could endanger their existence. The example of the university was brought up as these institutions were blamed by many participants for killing creativity and the sense of innovation by following rigid rules and inflexible schedules. Coming from a university, it was hard for me to see this truth, as I have experienced so much good-will from our professors who were eager to share their knowledge and experience. I did see the disadvantages of the huge bureaucratic organizations, but I still thought of them as the main constructive element of knowledge society. I mean how can you imagine a knowledge society without the institution where the knowledge itself is transferred?

However, the main problem lies in this industrial perception: the university's role is to produce items of information in the brains of its students. By the time you build all the bricks of knowledge into your brain, your creativity and innovative sense is locked in and cannot break through. Surely, there have been attempts to change the system and integrate creative and participatory education methods. Still, these were only improvements that locked

us in the vicious circle even more tightly, since the much stressed phase of renewal mentioned by Richard W Hawkins, is still missing.

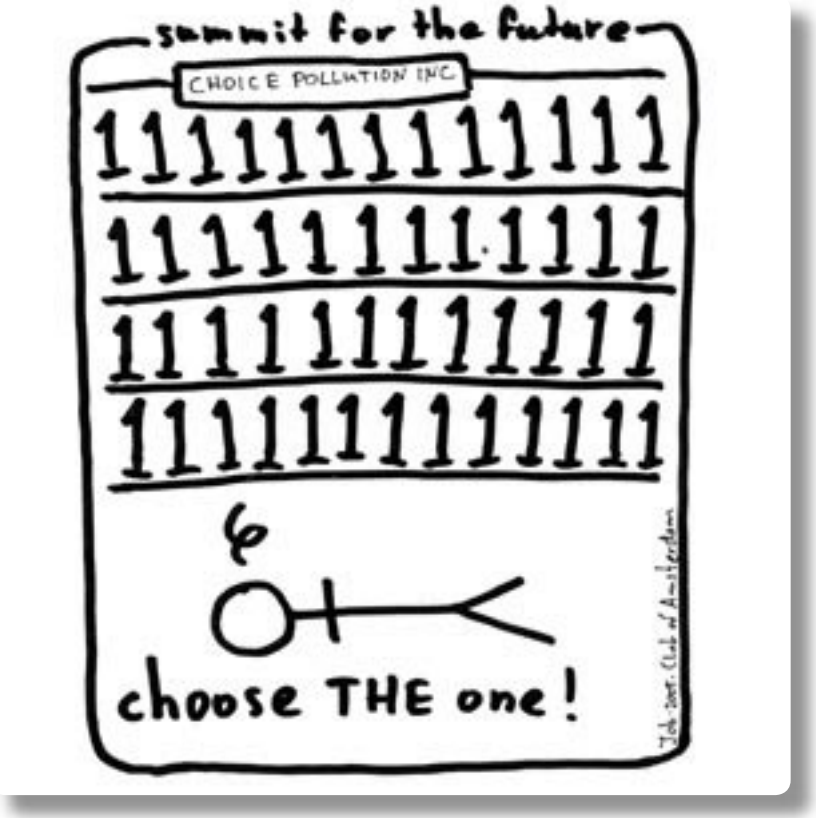
In my opinion this renewal is much needed not only in universities but also in other social and social and economic organizations and institutions to shape a structure which empowers us. A new structure based on our new values could create an appropriate framework for the knowledge society. In a human-centered world, all the gadgets could find their place and really add value to our lives. Embracing this structural renewal besides the mental and operational one would be a future-oriented step in order to make our common vision come to live. Universities are essential in this sense, since the education of younger generations takes place there, so this is the place where future seeds are planted. Thus, without reforming universities, we are not able to reform our future.

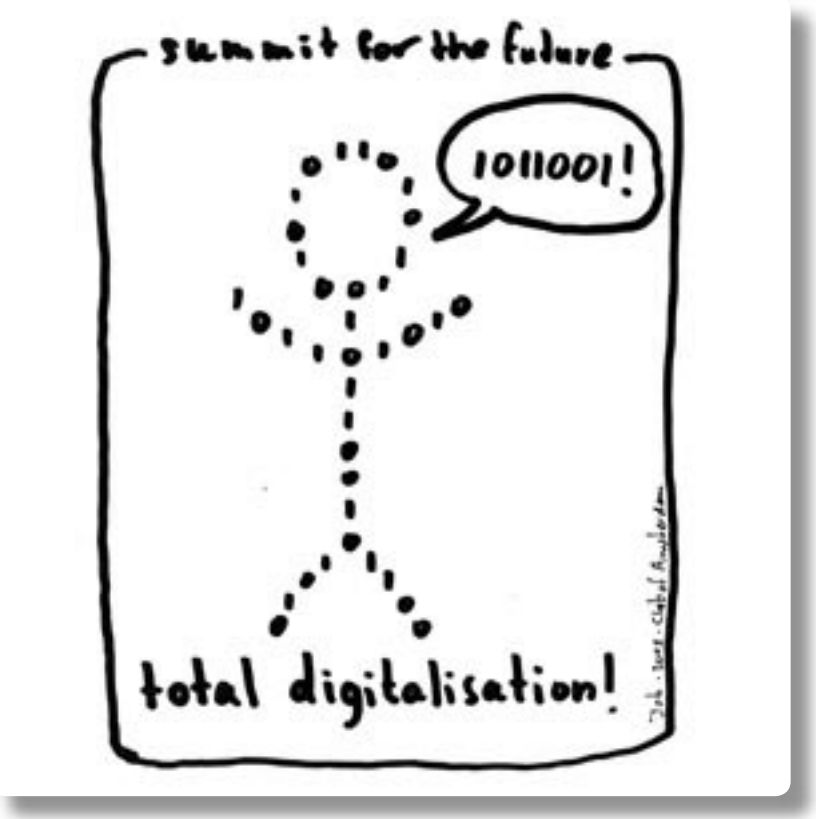
I still believe in universities though. The Summit for the Future proved me that there is a great need for an institutional forum where experiences and ideas, and yes even knowledge can be shared and discussed. At such a place where multidisciplinarity, creativity and innovation are embraced, skills and competences can be developed and new knowledge can be created. Here the participants not only shared their wisdom with the younger generations but clearly trusted us to act upon it.

Thank you.

Illustrations by Job Romijn

Illustrations by Job Romijn



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- our only value.


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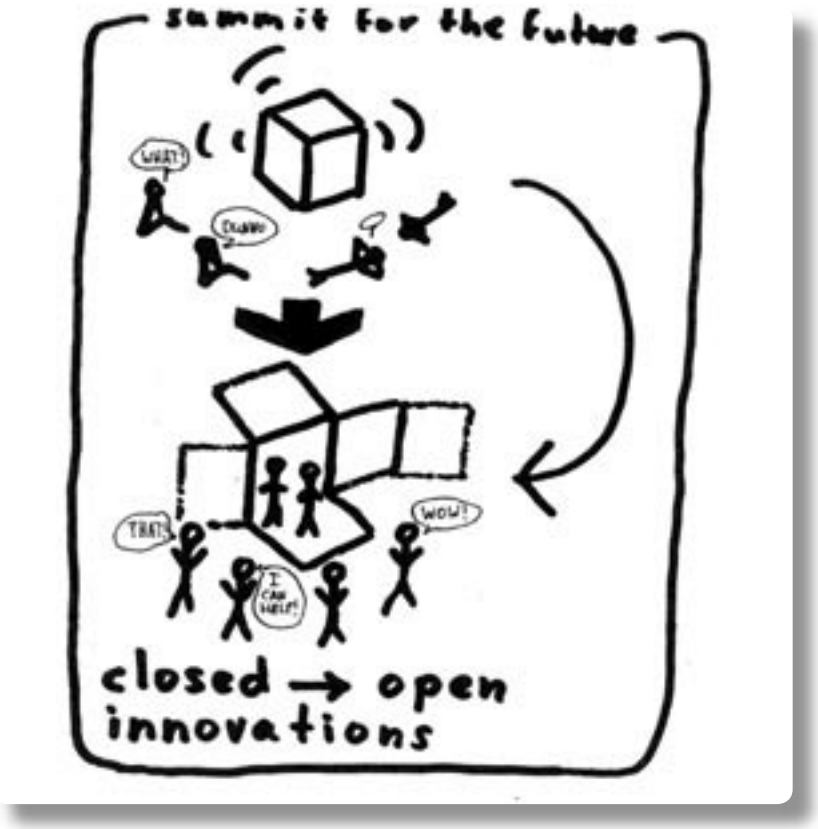
I know what the future will be!
really?
let's do something more important
let's play!
who has the future?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WHAT?
WOW!
closed → open
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SOCIAL VALUE
communities of practice
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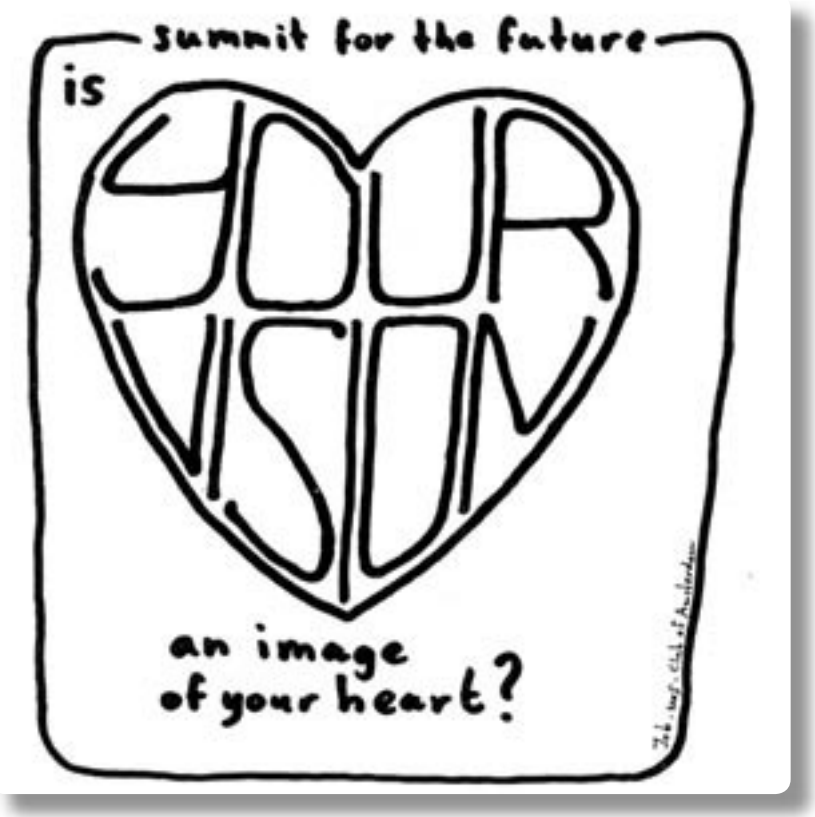
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an image of your heart?


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HOPE
MEMORY
balance required!


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... your dreams
aren't big enough!


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Amsterdam
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CEO, STG/Health Management Forum

Knowledge Stream Leader Healthcare

Corporate Partners

Bayer CropScience

Bayer CropScience, a subsidiary of Bayer AG with annual sales of about EUR 5.8 billion (2003), is one of the world's leading innovative crop science companies in the areas of crop protection, non-agricultural pest control, seeds and plant biotechnology. The company offers an outstanding range of products and extensive service backup for modern, sustainable agriculture and for non-agricultural applications. Bayer CropScience has a global workforce of about 19,000 and is represented in more than 120 countries, ensuring proximity to dealers and consumers.

http://www.bayercropscience.com

Infolution

INFOLUTION provides scalable knowledge management solutions that utilize the power of new semantic technology to enhance the performance and intelligence of enterprises. The solution seamlessly integrates into information domains, which allow customers to instantly source and manage any business critical information. Infolution is unique in that it processes, comprehends and retrieves concepts in the same way as humans do.

With large and small clients including ABN Amro, The Boston Consulting Group, Dutch Police force and others world wide INFOLUTION has the products and the recognition to ensure higher return on information and investment from your corporate information.http://www.infolution.com

http://www.digital-knowledge.com

University Partners

Trade / Service Industry:
HES Amsterdam School of Business

Honouring a tradition in business studies that goes back to 1867, HES Amsterdam School of Business (hereafter referred to as HES Amsterdam) is one of the largest single-faculty institutes of professional business education in the Netherlands. It offers a wide range of business-related programmes preparing students for Bachelor and Master Degrees. Support courses are included in the degree programmes such as foreign languages, law and psychology. Currently, the school

has a staff of 300 and some 5,500 registered students.
http://www.hesasd.nl

Energy:
École Polytechnique, Paris
Research and educational programs on energy at the Ecole Polytechnique: In 2004 the EP created a chair focused on sustainable development in partnership with EDF, the leading French firm in the production and distribution of electricity. Out if its 23 laboratories of research, several focus on thematics linked to energy, among them plasma reactors, pulsed power, high power lasers and nuclear engineering.
In keeping with the Bologna process, the EP has opened 4 masters in fields relating to energy: materials for structures and energy, fluid mechanics and energetics, transportation and sustainable development (in partnership with Renault) and economics of sustainable development.
http://www.polytechnique.fr

Healthcare:
Medical Faculty, University Basel
The Medical Faculty is an integrated part of the University of Basel and fullfills the mission of teaching and research in the adjoined curricula and academic diciplines. Furthermore the Medical Faculty plays an important role in the postgraduate education and continuing education of physicians. The performance stimmulates an ecellent medical care and influences the developments in health policy. The focal points in research are: imunology, neurobiology, oncology, cellplasticity and tissue engeneering, clinical morphology and biomedical engeneering.
http://medizin.unibas.ch

Media & Entertainment:
Media Academie, Hilversum
The Media Academie is the training institute for the Dutch broadcasting companies and the audio-visual industry. The Academie was founded by the NOS (the Dutch Broadcasting Foundation), the NOB (the Dutch Broadcasting Production Company), the Amsterdam School of Art (AHK) and the Utrecht School of Art (HKU).The aim of the Media Academie is to provide quality training for radio, television (national, regional and international) and new media in the field of both programmes and facilities. In addition, the Media Academie organises courses for the audio-visual industry. The Media Academie designs tailor-made courses and training-projects for national and international companies or organisations. The Media Academie also provides presentation and media trainings for companies and insti-

tutes. The Media Academie is a training centre, not a school. The staff consists of project-managers and trainers, whereas professionals are asked to give training in their field of work.
http://www.media-academie.nl

Science & Technology:
Corvinus University of Budapest
Futures Studies Department
http://www.uni-corvinus.hu

Media Partners

musik.woche with musik.lounge
For all German-speaking music professionals, musik.woche features useful services, trends and opinions in the weekly print format "musik.woche". It also features up-to-date news on a day-to-day basis with the web and mobile services contained in the "musik.lounge". More on http://www.musikwoche.de

KnowledgeBoard
KnowledgeBoard, the online community to create a global exchange of Knowledge Management expertise and interest. KnowledgeBoard is a KM portal funded by the European Commission under the Information Society Technologies Programme (IST-). and is a growing community of over 7,000 KM professionals throughout Europe and the world.
http://www.knowledgeboard.com

The Association for International Broadcasting
AIB - the industry association for the international broadcasting community
'The Channel' is the quarterly journal published by the AIB. It is the definitive news source for the international broadcasting industry. The magazine reaches more than 4,000 decision-makers in international television, radio and related manufacturing and service provision companies in over 100 countries world-wide. To ensure that you receive this important industry publication, follow the link to our web shop below.
http://www.aib.org.uk/ticketCart.asp?node_id=14,15,22&eventID=77&ticket_quantity=1

Fuel Cell Markets
The marketplace is an interactive communication platform for the Hydrogen Economy, providing 24x7x365 exposure for Fuel Cell and Hydrogen industries. Amongst many other features, you can follow the latest developments, buy products, and look for opportunities within

the industry... Fuel Cell Markets Ltd are a market catalyst, to help develop the fuel cell marketplace, open opportunities, and to promote Hydrogen and fuel cell technologies to the mass market.
http://www.fuelcellmarkets.com

H2World
The European Journal for Sustainable Hydrogen, is the first independent journal writing specifically for professionals and management within the Hydrogen Community.The Journal is produced and written to high journalistic standards and therefore gives reliable, in-depth information on relevant developments in technology, politics, markets and new applications. There is adequate exposure of companies and views of people (opinion-leaders) working within the Community. National political developments are closely followed along with developments within the European Union.
http://www.iconpublishers.nl/Publications.htm

Promedia
Promedia takes care of the production of internal and external magazines, (e-mail) newsletters, content for websites, reports, speeches, etc. Communication projects that build bridges between sender and recipients. Promedia gives shape to your communication goals and advises about the multi media approach.
http://www.promedia.nl

Supporting Partners

Medical Knowledge Institute
The Medical Knowledge Institute (MKI) is a healthcare education and healthcare information organization dedicated to the premise that healthcare is truly a human right, both in industrialized or developing and transitioning countries. The programs of MKI are designed to improve the quality of and to promote humanitarian values in healthcare through education and public health programs. The educational and information tools to confront related matters come from experts who are leaders in their healthcare fields. They offer information and guidance honed by experience. Our faculty is drawn from some of the finest institutions around the world.
http://www.infomki.com

The World Future Society
The World Future Society is an association of people interested in how social and technological developments are shaping the future. The Society was founded in 1966 and is chartered as a nonprofit educational and scientific organization in Washington, D.C., U.S.A.
The Society strives to serve as a neutral clearinghouse for ideas

about the future. Ideas about the future include forecasts, recommendations, and alternative scenarios. These ideas help people to anticipate what may happen in the next 5, 10, or more years ahead. When people can visualize a better future, then they can begin to create it.
Who belongs to the Society? Membership is open to anyone who would like to know more about what the future will hold. The Society includes 25,000 people in more than 80 countries--from Argentina to Zimbabwe. Members come from all walks of life. They include sociologists, scientists, corporate planners, educators, students, and retirees. They are thinking people who seek a better future for themselves and society.
http://www.wfs.org

Health Management Forum
The Foundation for Future Health Scenarios (Stichting Toekomstscenario's Gezondheidszorg - STG) is a non-profit organisation. Its objectives are: to execute future research, to develop strategic policy options and to support strategy development in the Dutch health care sector. The Foundation assists in: - executing a future-scanning or scenario project; - gathering and analysing strategic information; - drafting and calculating policy options; - supporting the development of a vision process on an (inter)national, regional or local level; - organising and conducting conferences and workshops; - providing presentations and introductory lectures; - realising an exchange of international experience. A combination of these activities leads to a better view on the future needs of certain services, innovation possibilities and new strategic opportunities.The Foundation assists in the development of visions on the future of parts of the (health) care system. On the basis of the knowledge of the results of future research a well-structured dialogue is started with the most involved decision-makers. New policy options are developed in intensive workshops comprising carefully selected participants. Experienced facilitators guide the development of a shared vision.
http://www.stg.nl

Shaping Tomorrow
Shaping Tomorrow helps busy people and organisations better anticipate the future, profit from tomorrow, manage uncertainty and create opportunities for growth, today. How will the future be different and what should you be doing about it? Find out if you are fit for the future and why, and how to track trends and likely forces for change. Learn about futures studies, strategy creation, change management and action planning. Find fresh ideas for your innovations and competitive intelligence only at Shaping Tomorrow.
http://www.shapingtomorrow.com

European Health Telematics Association (EHTEL)
The European Health Telematics Association ("EHTEL"), provides to its members a platform for information lobbying, representation, networking and co-operation in support of the implementation of information and communication technologies (ICT) in health and social care in Europe. EHTEL believes that using ICTs in health and social care in Europe offers an unparalleled opportunity to revolutionize: a) The quality of health and social care services provided to patients and citizens, b) The speed and ease of access to those services; and c) Their efficiency and cost effectiveness.The association brings together under one roof all of the constituencies with an interest in ICTs in health and social care: National and regional health authorities and systems, hospitals and other health institutions, public and private insurance providers, health professionals, health managers and executives, patients, citizens and consumers, industry, researcher and academics, national and regional member-based organizations.
http://www.ehtel.org

World Summit Award
The World Summit Award, a global project, held in the framework of the WSIS, seeks to demonstrate the benefits of the Information Society in terms of the new qualities in content and applications, by selecting, presenting and promoting the best products from all over the world with a special emphasis on bridging the digital divide.
http://www.wsis-award.org

World Futures Studies Federation
The World Futures Studies Federation is an organization of some 500 individuals and 60 institutions around the world whose mission is to promote futures education and research. The WFSF is a global network of practicing futurists - researchers, teachers, scholars, policy analysts, activists and others from over 80 countries - established in 1967.
http://www.wfsf.org

Gemeente Amsterdam Economische Zaken
http://www.ez.amsterdam.nl

Embassy of Switzerland in The Hague
http://www.eda.admin.ch/denhaag_emb/e/home.html

HES Amsterdam School of Business

University Partner Trade / Service Industry

Reflection on the action of the Summit for the Future 2005

The HES being a business school of economics is often challenging its students to take a fresh look at what is going on in their future-work-field or at their preferred corporates. It is therefor that we are proud to have hosted the summit 2005 which brought a world of innovative ideas under our roof. Being a busines school we claim to educate our students to become professional thinkers and do-ers.

These type-categories are used by Kolb in his theory about the learning proces. In this proces he describes four stages: do (accommodate); contemplate (divert), think (assimilate) and decide (convergate). Kolb states that you will have to cover all four stages: if you contemplate on a specific experience you will consider that experience again and reflect on what happened; if you then put your mind to it you will be able to take the specific experience to an abstract level and conceptualise the experience by analyzing the input, cluster the data and connect them with the help of ratio or the visions of others, you will then be able to decide what you need to best perform in the kind of situations like the concrete experience. By going through this learning-cycle repettatively you will enhance your learning and take it to a higher level. Where you start in this proces is less relevant and mostly defined by your personal style of learning.

As an educational institute and especially in our department of Communication we are highly interested in the way people learn, or should I say, the way people can expand their capabilities. Apart from skills it takes knowledge and especially in that last field of 'knowledge', researchers have tried to get a better grip on it since knowledge- management has become one of businesses (in the western world) most strategic instruments. Matthieu Weggeman (a dutch professor) has formulated it as:
(K = f R (i.ESA)) Knowledge is the factor of Reflection on (the information times the Experience, Skill and Attitude). So, knowledge is no longer data that has been given meaning to by aggregation times experience. A "new way" of learning has emerged.

Experience

In Japan a group of elderly peo-

ple play an important role in the organization, although if you observe them their job consists of drinking tea and telling stories with an open end. Their experience serves as a mirror for the other members of the organisation. In our western world we are often too busy solving the (daily) problems to collect collect experience and aggregate patterns. Only when experience is combined with 'reflection', can new ideas take a (constructive) shape.

Skill

You can consider skill as a purely professional activity (enlarge speed, complexity and quality of a specific object) But it also takes highly important general skills such as: problem solving, communication skills (listening, summarizing, interviewing and conveying your message to others), creative disorder (=natural curiosity and room to take risks), internal coaching (not only obbey and adjust but stipulating direction from your own conviction) and attaching collective learning to individual learning (skills to teach others). The filosopher Arnold Cornelis explains in his book 'The Logic of Emotion' the necessity to create a space in which you can experiment to explore curiosity without fear. In a business environment it could mean that you stimulate research, experiments and think-tank groups without it being immediately converted to costs and return on investment only in dollars. I sometimes cannot help blaming the writer of "Curiosity Killed the Cat" of killing a lot more in our western society by warning people to explore.

Attitude

Attitudes are the groundlevel of our convictions and judgements. It is usually constructed by our social environment. Our appreciations are a component (or consequence) of our attitude and create our willingness to act. Only if you mirror your experience to a new context (a new framework) can you create change in your groundlevel. It does take a positive attitude to change, though. Only if you are prepared to be non-defensive, vulnerable and not 'on guard', is your mind open for new ideas. If you truely see feedback as a opportunity to learn you can learn from your social network.

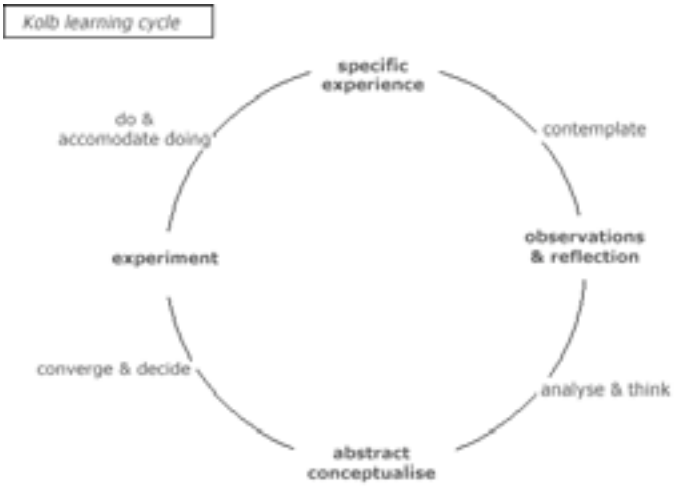
Why do I bore you with this 'lecture on knowledge'? I hope it will awaken your thoughts on reflection. Not only the reflection in action (where you acknowledge that there is a problem in finding the problem and reframe the problem to find your new path to action) [Argyris called this frst-loop learing], but also the reflection on action (where you look back at the proces of finding the solution to avoid routines and rusted patterns in bahavior and thinking and mainatin a fresh outlook) [Argyris called this second-loop learing]. Both ways of reflection are necessary especially in an organisational context. But there is a triple-loop: where

you take a shared responsibility to transfer insights to new areas of development and convictions. Where you expand the borders of creating meaning and step out of your comfort-zone. Where the adagium is 'that the only certain thing is that everything is uncertain'. And where the open mind to the stories of others will deepen the sharing of knowledge. The level at which true innovative thoughts can emerge.

If I had to summarize the Summit 2005 in one sentence (which is impossible since it was a mind-boggling flow of impressive thoughts) I would say that it was a compression-tank of third-loop learning. It was stimulating to see so many open-minded people who shared the same passion for crossing borders and taking the risk of exploring an uncertain future.

In my conclusion I return to Kolb' s learning proces. I hope that all the members of this year's conference enjoyed the exchange of experience and contemplating this with eachother, and will be better equiped to round off their learning-cycles by converting the contemplation into action. But most importantly I hope that the Summit and the knowledge circles that will continue to support the knowledge exchange, will urge all members to "keep their learning-cycles rolling", to repetatively explore the capability to improve.

A well-known international television programme has the slogan: "the next strategist, the next visionary, the next person who will impact your life" I look forward to welcoming you all next year, at the next summit to boggle our students minds and provide them with challanging and postive feedback about the innovative future to come. I guarantee you that it impacts their vision of their professional life and helps them to identify their motivation to become professionals that value shared responsibility and are willing to have an impact on the future.



Media Academie, Hilversum

University Partner Media & Entertainment

One step beyond

How does the future look for the Dutch public broadcasting system? Are which route should it take from now on?

Dutch public broadcasting is going through a period of cutbacks, improvements to effectiveness and efficiency and becoming more results driven. But there is a danger that further (programming) improvements may stall because of significant changes to the production processes and the organisational structure.

It is clear that questions remain about the overall management process, who is responsible for which budgets and the challenge of change management itself. But as long as there are political uncertainties as to the definitive future structure for public broadcasting, the media scene in the Netherlands remains paralyzed. This matter is complicated by some broadcasting societies threatening to leave the current public system. Private media moguls are busy cherry-picking talent from the media pool in Hilversum to set up their own network(s). To cap it all, the Netherlands is planning to move to a tapeless environment for both radio and TV by the middle of this year.

The danger is that we cannot see the wood for the trees. We become focussed on the here and now, leaving the step into the future far too dependent on external factors. Therefore, one step beyond, defining the most important goals and how they can be realized both in the short and long term.

The most important goal is to retain and grow the numbers of viewers, users and clients.

This means the focus of the organisations MUST be kept in the outward direction.

· In the first place we need to look towards the clients, (viewers, listeners, web users,), the people in society that we wish to address.

· In the second place, we must build stronger alliances with external partners, such as other large public/consumer organisations, centres of arts and culture, publishers, etc.

How do we achieve this?

We need to listen more closely to the themes in society that motivate people to speak up. These themes are not always universal and vary depending on the sector. But they have one thing in common – the community feels it is so important they want to enter into a dialogue with others. Broadcasting organisations need to come up with concepts that deal with these issues in new and

compelling ways. A TV-only concept is no longer enough – radio, web, mobile need to be involved too. The idea is the driving force; the various delivery platforms need to work in harmony to share those ideas with different sectors of society.

What does this mean for broadcasting organisations and their staff?

Senior management and departmental heads need to return to the power of ideas as the driving force in their organisations. That may mean they need to re-structure the way they operate now. Concept development, research and marketing need to get a more prominent role in senior management. The qualitative input from the creative professionals needs to break through and be re-discovered.

Broadcasting staff need to learn that sharing ideas as a collective team is essential. Different project teams may be needed to cover all the various platforms used to distribute the idea. People need to believe in an "energetic collective ambition" to quote Prof.dr.ir.M. Weggeman, whereby all members agree to share a common goal.

This is the optimal way forward. But what about the current situation? To what extent do the following influence our further development?

· Extensive digitalization
· Alternative methods of distribution such as mobile phones
· The ageing of the Dutch population
· The short attention span of the youth
· The cutbacks being forced upon public broadcasting.

Digital Future

The primary production process is changing. Going digital means there can be far more emphasis on creative use of archives. Only them will it be possible to re-use material for different platforms.

But if material is not properly tagged, no one will be able to find important content that may have enormous historical value later.
Programme makers need to understand that they are not working from a personal vision, but in the public good. To what extent the public can demand access and use of all material made for public broadcasting is still a matter for some intense discussion. In that regard, developments by the BBC of a public archive will be followed closely here in the Netherlands.

Content Providers

New opportunities are emerging for creative people. One thing is certain, broadcasters, commercial and public, will not be the exclusive providers of interesting content. And what of the distribution platforms? Terrestrial DTT, Cable and Telecoms are all hungry for content.

Ageing
Society, and thus the clients, is getting older. This means that younger audiences need to be addressed too or the broadcasting societies will only reach an increasingly older population. It will eventually die out. This puts demands on creative and conceptual talent to come up with effective ways to reach this group in society,

The Hap/Snap culture
Kids and youth still watch a lot of TV, but less and less of that is to public networks. Alternative pastimes are also eating into available time. As long as 80% of the broadcasting staff has never chatted on MSN, the generation gap will remain. It is also important to listen to the needs of younger audiences. The youth also need to play a much more prominent role in the dialogue we want to engage in.

Cutbacks
By concentrating on the effects of the cutbacks, there is a danger that broadcasters become far too inward looking, just at the moment that they should be looking outwards to their role in society. A lower budget can never be a reason for a cutback in creative energy…indeed it should be a stimulus for clever ways to do new things. In some cases, production staff need to make a clearer motivation of why they believe certain productions should be made with public funds.

Changing Media Landscape
In the end, the only constant is change. It is a huge challenge to remain motivated and focussed when the world around you seems less familiar than it used to. But there is no going back and so flexibility and creativity will be demanded of organisations and its staff to "go with the flow".

What does this mean for media managers of the future?

This is a mix of talents they already have that might need refreshing as well as new things they need in the future?

Several themes remain important

· Leadership (on the work floor)
· Integral Management
· Change Management

Managers need to be able to think and decide "out of the box". They need to be creative and flexible. Networking will become more and more important to ensure that programmes are serving the needs of society and that duplication is avoided. Sitting back and accepting the status quo is not acceptable. Seminars may be one method to work together to achieve common goals. Think tanks made up of members from different organisations should be the basis for further horizontal thinking and discussion.

Managers need to be able to spot and stimulate the creative poten-

tial of their staff. Their competencies need to be developed and this leads to higher motivation.

Initiatives, such as the Club Of Amsterdam's Summit of the Future play an important role. There need to be platforms where professionals from all walks of life can think "out of the box" and where general concepts can be discussed in various scenarios. The Club of Amsterdam plays an important role, not only for the discussion of present day challenges but primarily for the cross-media future that is just beginning to dawn.

Corvinus University of Budapest

Futures Studies Department

University Partner Science & Technology

As a futurist, a professor and the head of the Futures Studies Department at the Corvinus University of Budapest (CUB), I am proud to present the knowledge partnership between the Club of Amsterdam and our university. Upon the invitation of the Club the CUB participated at the Summit for the Future 2005 in Amsterdam for the first time this January.

Today, education faces the challenge of introducing future-oriented thinking and action to universities. Overwhelmed by the change and information of now it is already a difficult task to understand the complexity of today, let alone think about the unstable and unpredictable future. Still, I strongly believe that young generations need stronger future-orientation: they need to be educated about their responsibility for the future, they need tools for exploring and evaluating the future alternatives and they also need motivation and support to recognize their future shaping power.

The academic sphere however offers only one image of the global kaleidoscope and thus it is unable to motivate holistic thinking about the future in itself. The initiative taken by the Club of Amsterdam to invite universities and among them the Corvinus University of Budapest as a knowledge partner is unique and precious in that sense. This cooperation opens up new perspectives as it enables both partners to gather a wider knowledge base and offers opportunities to exchange information.

The Summit was clearly a good example for such cooperation. Inviting student representatives from different universities proved to be a perfect tool for integrating younger generations into futures thinking. On the other hand, students also offered fresh insights for participants and revealed new aspects of the discussed topics.

After taking these first steps towards creating common futures intelligence, I believe that we have a long way to go. I am very eager at supporting further the cooperation between the Club of Amsterdam and the Corvinus University of Budapest and I am looking forward to our mutually beneficial partnership in the future.

Erzsébet Nováky, DSc, Professor, Head of the Futures Studies Department, Corvinus University of Budapest

www.knowledgeboard.com

linking people with people

KnowledgeBoard is a community-based knowledge exchange for academics and professionals

KnowledgeBoard is a community collaboration space moderated and facilitated by the community

KnowledgeBoard contributes to the building of the knowledge society and strengthens innovation in Europe and globally

Knowledge BOARD

your global community

Healthcare is a Human Right

The Medical Knowledge Institute (MKI), based in the Netherlands, is a healthcare information and education organization dedicated to the premise that healthcare is truly a human right, whether in industrialized or developing and transitioning countries. The programs of MKI are designed to improve the quality of and to promote humanitarian values in healthcare through education and public health programs.

With this in vision, the Medical Knowledge Institute has initiated a partnership with the International Confederation of Midwives (ICM), to provide an international educational project on HIV/AIDS for midwives. In collaboration with the World Health Organization (WHO), the project is designed to educate a critical mass of midwives to become "trainers of trainers," thus providing continuing education programs for the regular update of the skills, knowledge, practices, and attitudes of midwives worldwide.

MKI has also joined forces with other organizations such as the Amsterdam Cancer Centre and the Institute of Prevention and Early Diagnostics (NIPED), and the department of Vascular Medicine at the Amsterdam Academic Medical Centre (AMC). The purpose of this is to inform healthcare providers and policy makers on current achievements in the field of prevention and early detection of cancer and cardiovascular diseases. The projects specifically aim at providing assistance in establishing priorities and short-term goals for prevention and screening policies and guidelines, taking into account of course the regional and national context.

For more information about the Medical Knowledge Institute, including current projects, faculty, and workshops, visits our web site at www.infomki.com

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The **World Summit Award** (WSA) is a global initiative, launched in the framework of the **UN World Summit on the Information Society (WSIS)**. It seeks to demonstrate the benefits of the Information Society in terms of the new qualities in content and applications, by selecting, presenting and promoting the **best-practices from all over the world** with a special emphasis on bridging the digital divide.

Categories

e-Learning

e-Culture

e-Science

e-Government

e-Health

e-Business

e-Entertainment

e-Inclusion

In 2005, **168 countries** have committed to participate in the WSA initiative and more than **1.000 outstanding products and services from all over the world** are expected to be evaluated by the WSA Grand Jury, which will take place in Bahrain in September 2005. The winners will be announced at the WSA Gala in Tunis (Tunesia) on November 16th, 2005 during the second phase of the **UN World Summit on the Information Society**.

For more information please visit: www.wsis-award.org

SHAPING TOMORROW

How will the future be different?

No-one can doubt that tomorrow will be very different from today. Change is the only certainty in life and its accelerating pace in all industries means organisations are looking for new ways to survive and succeed in markets quite different from those of yesteryear.
Long-term strategic planning has given way to action learning, organisational hierarchies are morphing into networks, alliances and ultra-flat decision structures, new competition arrives from left-field almost daily and products have shorter and shorter shelf-lives.

Once, you could only 'Have a break' with just one type of KitKat. Then KitKat added a tasty, and attractively packaged, variant and the whole confectionery industry soon followed suit with each product now offering a bewildering array of different colours, flavours, additives, wrappers, shapes and sizes. Today no-one in the confectionery industry has a break; it's relentless, grinding daily competition borne out of spotting the next innovation ahead of one's rivals. And, what is the best you can hope for? That yours is better than theirs and will be spotted among the hundreds of competing products on the shelf earlier, and for just that little bit longer, by an increasingly fickle consumer. If it's not like that in your industry, it soon will be!

Accelerating change presents both new opportunities and new risks so how can an organisation be more nimble but at the same time chart a preferable path to its future and stay roughly on course? What can a business do to determine 'how the future will be different', and, if it knew, 'what should it do about it?'

Clever businesses and some governments have been finding the answers by looking much further ahead than the next quarter or financial year; in some cases for a long time. Now with the development of the Internet companies are springing up with competitive intelligence products, trends analysis, and environmental scanning services to suit every industry.

Some of these Internet based companies scour the web look-

ing for near-term insights that their clients can use to better 'anticipate the future'. Companies like Mirrormirror' a fashion trends site, CoolBusinessIdeas, a gatherer of brand new promising business ideas and TrendWatching.com a trends agency which scans the globe for the most promising consumer trends and insights.
They all use people from around the world to spot the latest fad or fashion and bring their gleanings to their clients through the Web.

Other businesses have learnt how to use their own stakeholders - staff, suppliers and customers to be their regular trend scouts building robust information gathering systems to sift, sort and prioritise intelligence into coherent learning and subsequent action.

It works on the assumptions that we all know something, all have ideas, and that as individuals we are blind but that collectively we can see. This combined 'Wisdom of Crowds'* is helping to keep these organisations fresh and their people alert to the next forces for change without needing traditional five year plans that gathered dust on shelves.

Is your organisation fresh? Do you know where the next forces for change are coming from? If not, you surely, should start exploring what's coming now and reduce the possibility of potential failure in your life and all those around you. And who knows, you might just 'Have a break' as Kitkat did and steal a march in your marketplace.

Dr. Mike Jackson

Dr. Jackson is Chairman of Shaping Tomorrow. (www.shapingtomorrow.com)
Shaping Tomorrow exists to help people and organisations better 'anticipate the future' and recognize the opportunities and trends that will affect them. As environmental scanning and trends researchers they help businesses manage uncertainty and create opportunities for growth and profits - today.
Their searchable web portal boasts the largest collection of trends, potential blindspots and material on what's coming anywhere in the world.

** From the title of the book 'The Wisdom of Crowds' by James Surowiecki*
http://www.randomhouse.com/features/wisdomofcrowds/

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Bayer CropScience

Dr. Manfred Kern

Two other very well known global events took place at more or less the same time – the *World Economic Forum* in Davos, Switzerland and the *World Social Forum* in Porto Alegre, Brazil.

The agenda of the *World Economic Forum* captures the prevailing zeitgeist. Since the beginning of 2005, sixty leaders from the worlds of business, civil society and government have engaged in a debate on 'Partnering for security and prosperity' and discussed economical, socio-economical and political global challenges.

The agenda of the *World Social Forum*, created by organizations and people wishing to build another world with peace, justice and equality, was related to visions for a new Earth Democracy and fairer Social Justice for all living beings on this planet.

The focus, the necessity, the relevance and the consequences of these meetings will not be discussed here.

However, both forums are failing to address knowledge, innovations, creativity, courage, and cutting-edge technologies.

More than ever before, the world is dependent on innovations to overcome the challenge ahead and to provide all people with what they need in order to live a healthy life.

From the viewpoint of a person working for Bayer CropScience, a multinational company, which combines cutting-edge technologies such as genetics, robotics, artificial intelligence and nanotechnology in order to cope with a growing demand for food, feed, fiber, fuel, and many industrial products based on raw materials from plants, it is satisfying and challenging that the *Club of Amsterdam* with its agenda and visions and the platform *"Summit for the Future"* is closing a long lasting gap. There is now a center in the world for unconventional thinkers with courage and self-confidence, for interdisciplinary working groups pursuing common objectives, sharing common values, following the same rules, and enjoying a certain freedom of scope and even "protected areas". A platform which needs people who possess the ability to communicate, who have a questioning culture, who are big enough to allow mistakes, who are willing to take risks, and who ultimately have confidence

in a positive future.

Club *of* Amsterdam offers an excellent opportunity to work towards a creative world, based on creative societies characterized by technical creativity (innovation), economic creativity (commerce), and artistic and cultural creativity (culture).

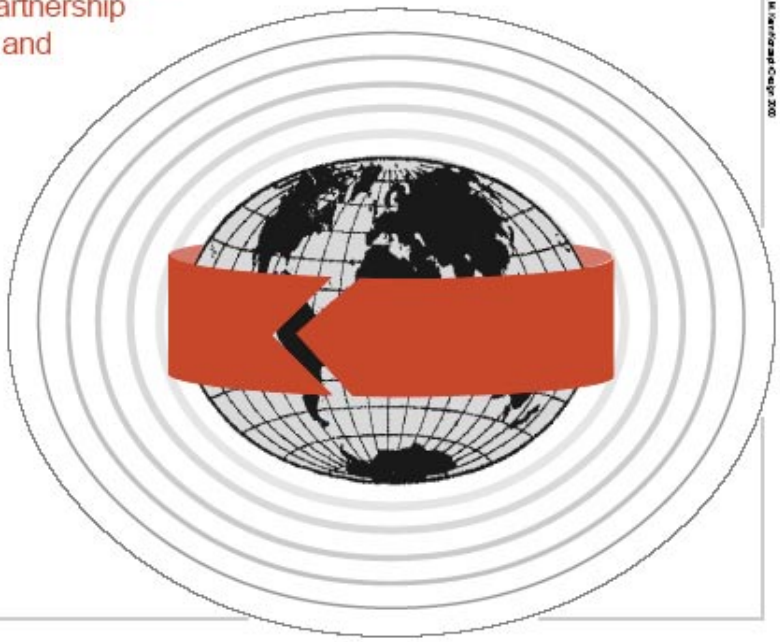
If the world can achieve this, it will take on a new life and can look forward to a positive future in a constantly changing world.

From the Exhibition

Agenda 21 and Rio + 10 Development Targets

Agenda 21 Principle 7, Earth Summit, Rio 1992

Principle 7 States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem...



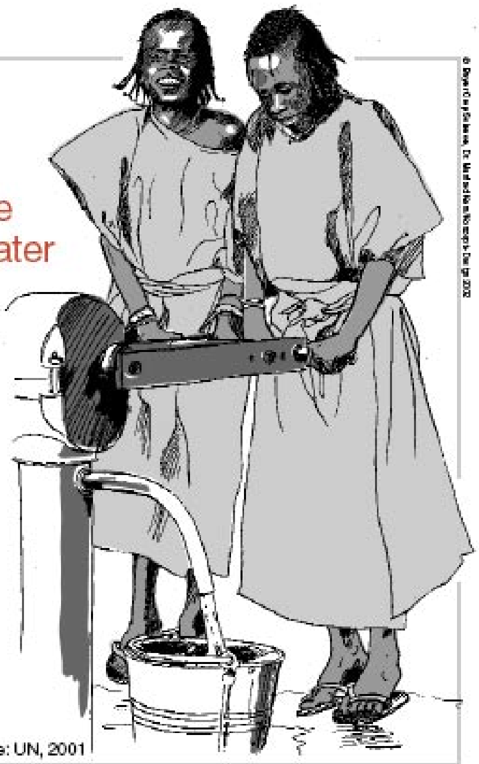
Agenda 21 Principle 21, Earth Summit, Rio 1992

Principle 21 The creativity, ideals and courage of the youth of the world should be mobilized... to ensure a better future for all.

Agenda 21 Rio + 10 International Development Targets 2002

Target: Water

By 2015: to halve the proportion of people who do not have access to safe drinking water (currently 20% of global population)

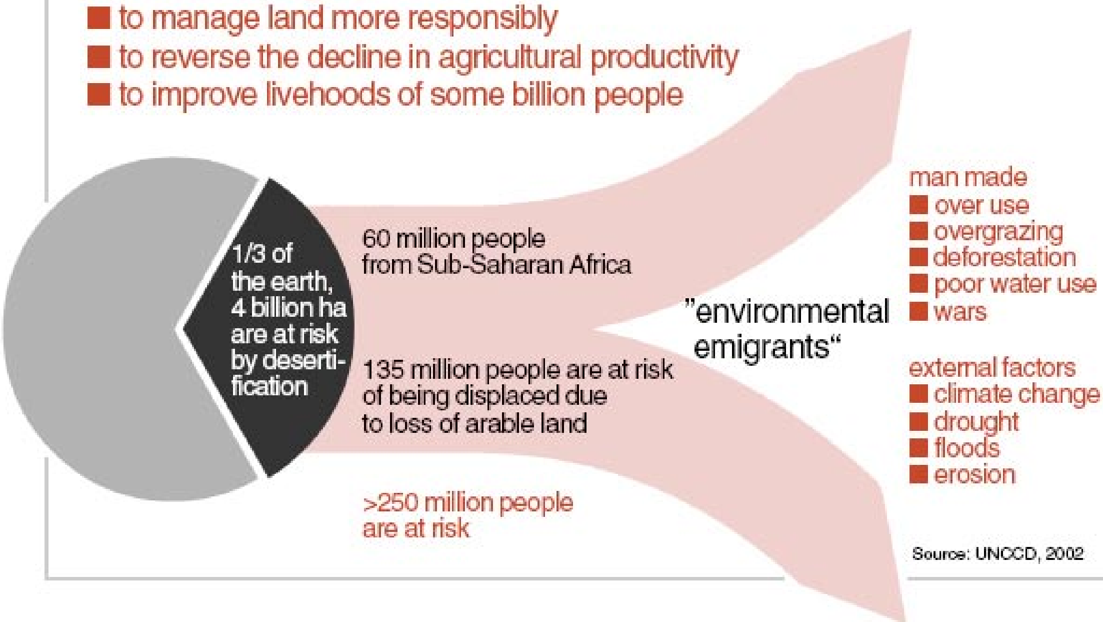


Source: UN, 2001

Agenda 21 Rio + 10 International Development Targets 2002

Target: Soil

- to halt land degradation
- to manage land more responsibly
- to reverse the decline in agricultural productivity
- to improve livehoods of some billion people



Source: UNCCD, 2002

RESOURCES

RESOURCES

Summit for the Future 2005

Video

Home page > Past Events > Summit for the Future > Video
http://www.clubofamsterdam.com/press.asp?contentid=373&catid=61

Photos and Illustrations by Job Romijn

Home page > Past Events > Summit for the Future > Album
http://www.clubofamsterdam.com/press.asp?contentid=460&catid=61

Presentations

Home page > Past Events > Summit for the Future > Presentations
http://www.clubofamsterdam.com/press.asp?contentid=464&catid=61

Club of Amsterdam Website

We inform about our events and provide lots of resources like articles, links, books ...
http://www.clubofamsterdam.com

Club of Amsterdam Journal

Club *of* Amsterdam Journal

The Club of Amsterdam Journal appears every 2 weeks and is sent to you for FREE by email.
http://www.clubofamsterdam.com/subscription.htm

Club of Amsterdam Open Business Club

Are you interested in networking, sharing visions, ideas about your future, the future of your industry, society, discussing issues, which are relevant for yourself as well as for the 'global' community? The future starts now - join our new online platform - and it's for free ...:
http://www.openbc.com/go/source/coa

Including our Forums:
Club of Amsterdam Open Forum moderated by Felix Bopp

Club of Amsterdam Asia Business Forum moderated by Peter Luiks

Club of Amsterdam Science Forum moderated by Patrick Crehan

Club of Amsterdam Media & Entertainment Forum moderated by Jonathan Marks

Club of Amsterdam Energy Forum moderated by Erik Stevens

Speakers, Partners ...

Welcome Notes
E.P. Cassee, Managing Director, HES Amsterdam School of Business, http://www.hesasd.nl
Natalie Yacheistova, Head of the Trade Representation of the Russian Federation in The Netherlands, http://www.rustrade.nl
Harold Robles, CEO and Founder, Medical Knowledge Institute, http://www.infomki.com

Keynotes
Tom Lambert, Chief Executive, Centre for Consulting Excellence, Professor of Consultancy, Rushmore University, http://www.centreforconsultingexcellence.com
Vladimir Petrovsky, former Director-General of the UN in Geneva
Glen Hiemstra, Owner, Futurist.com, http://www.futurist.com
Wendy L. Schultz, Futurist, Infinite Futures, http://www.infinitefutures.com

Music
Marcus Weiss, Professor of saxophone and chamber music, Music Academy in Basel, http://www.marcusweiss.com

Knowledge Streams

the future of Trade / Service Industry
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Natalie Yacheistova, Head, Trade Representation of the Russian Federation in The Netherlands, http://www.rustrade.nl
Pascal Kerneis, Managing Director, European Services Forum, http://www.esf.be
Stefan Schneider, Head of Macro Trends, Deutsche Bank Research, http://www.dbresearch.com
Graham May, Futures Skills, http://www.futuresskills.co.uk
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the future of Healthcare
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Gerd Leonhard, Music Futurist, http://www.musicfuturist.com
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digital-knowledge.com
University Partner: Media Academie, Hilversum, Representing Student: Roy Straatman, http://www.media-academie.nl
Jonathan Marks, Director, Critical Distance BV, http://www.jonathan-marks.com

the future of Science & Technology
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Bror Salmelin, Head of Unit, New Working Environments Unit
European Commission IST Programme, http://www.cordis.lu/ist
Valeri Souchkov, Director, ICG Training & Consulting, http://www.etria.net, http://www.xtriz.com
Thomas Schael, Research Manager, Institute irso (Istituto di Ricerca e Intervento sui Sistemi Organizzativi), Management Consultant, Butera e Partners, http://www.irso-bep.it, http://www.knowledge-board.com
Andreas Neef, Executive Manager, Z_punkt, The Foresight Company
Information Scientist, Futurist, http://www.z-punkt.de
Mathijs van Zutphen, Philosopher, educator, artist and creator of VISH, http://www.vish.nl
University Partner: Corvinus University of Budapest, Futures Studies Department, Representing Student: Réka Várnagy, http://www.uni-corvinus.hu
Patrick Crehan, CEO & Owner, Crehan, Kusano & Associates sprl

Leisure Evening
abbuffata, Gerrie Bezuijen, http://www.4tune.nl

Live music during Summit
Marynka, http://www.marynkanicolai.com

Video
cliptrax, http://www.cliptrax.com

Partners
Bayer CropScience, http://www.bayercropscience.com
Infolution, http://www.infolution.com
HES Amsterdam School of Business, http://www.hesasd.nl
École Polytechnique, Paris, http://www.polytechnique.fr
Medical Faculty, University Basel, http://medizin.unibas.ch
Media Academie, Hilversum, http://www.media-academie.nl

Corvinus University of Budapest, Futures Studies Department, http://www.uni-corvinus.hu
musik.woche with musik.lounge, http://www.musikwoche.de
KnowledgeBoard, http://www.knowledgeboard.com
The Association for International Broadcasting, http://www.aib.org.uk
Fuel Cell Markets, http://www.fuelcellmarkets.com
H2World, http://www.iconpublishers.nl/Publications.htm
Promedia, http://www.promedia.nl
Medical Knowledge Institute, http://www.infomki.com
The World Future Society, http://www.wfs.org
Health Management Forum, http://www.stg.nl
Shaping Tomorrow, http://www.shapingtomorrow.com
European Health Telematics Association (EHTEL), http://www.ehtel.org
World Summit Award, http://www.wsis-award.org
World Futures Studies Federation, http://www.wfsf.org
Gemeente Amsterdam Economische Zaken, http://www.ez.amsterdam.nl
Embassy of Switzerland in The Hague, http://www.eda.admin.ch/denhaag_emb/e/home.html

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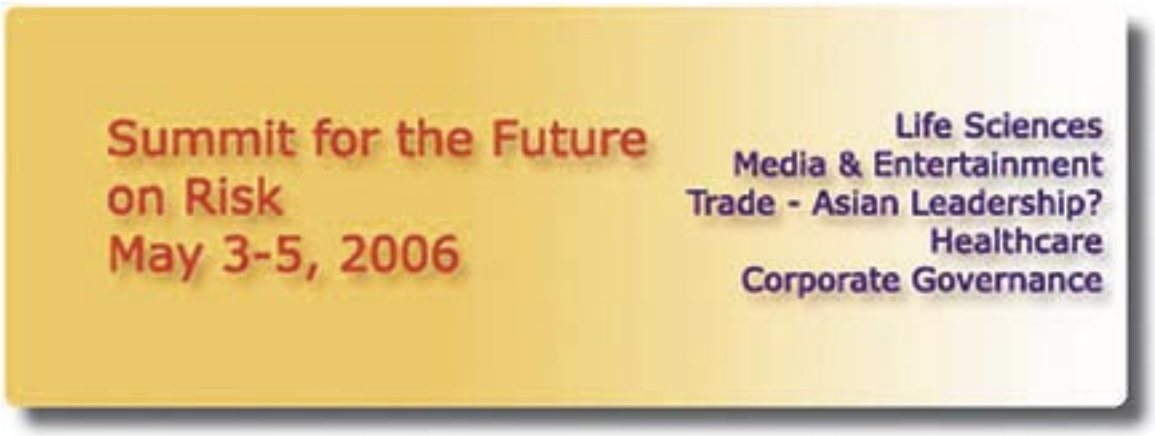
http://www.clubofamsterdam.com



Summit for the Future on Risk

Club of Amsterdam
Date: May 3-5, 2006
http://www.clubofamsterdam.com/summit2006.htm