

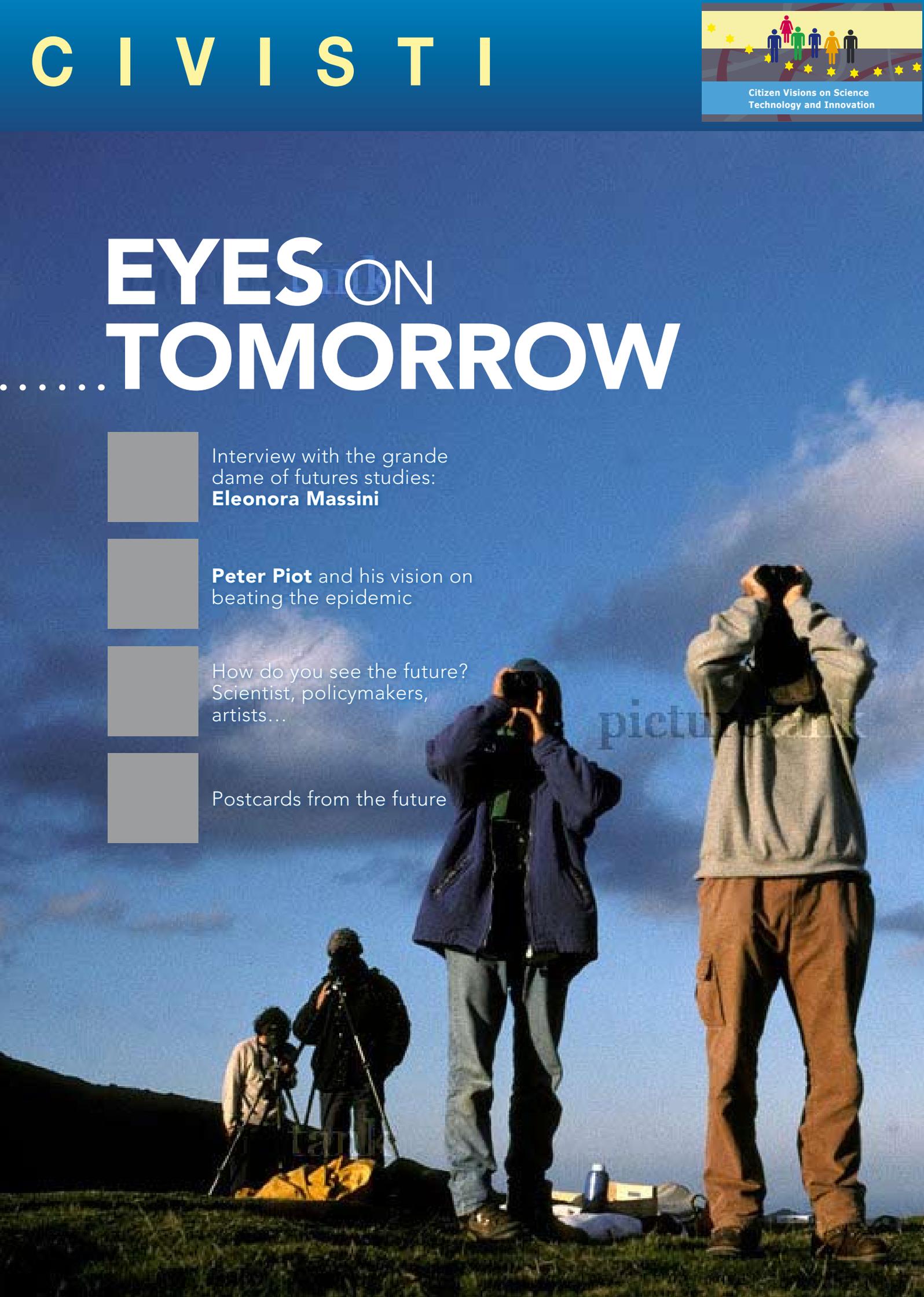
# EYES ON TOMORROW

Interview with the grande dame of futures studies:  
**Eleonora Massini**

**Peter Piot** and his vision on beating the epidemic

How do you see the future?  
Scientist, policymakers,  
artists...

Postcards from the future



“WHEN I WAS JUST A LITTLE GIRL  
I ASKED MY MOTHER  
WHAT WILL I BE?  
WILL I BE PRETTY?  
WILL I BE RICH?  
HERE’S WHAT SHE SAID TO ME:  
QUE SERA, SERA.  
WHATEVER WILL BE, WILL BE”



#### COLOFON

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#### INTRODUCTION

We all wonder about the future. We wonder at a personal level about how our life will turn out. Will we be rich and famous? Will we meet our prince or princess charming? Will we serve a big pot of pasta for a big family in a sunny garden? Will we climb mountains in exotic countries or maybe 'ride through Paris in a sports car with the warm wind in our hair'?

And we also wonder about the world. What will the future look like for all of us? How will life be in the next century? We can read Science fiction novels and picture the world like Jules Verne did or we can practise laser battles watching 'Star Wars' movies. Some of us dive in mystic waters of ancient predictions or worry about the end of the world.

We can read our horoscope or we can go to a fortune teller at the carnival, but actually nobody can really predict the future.

However, fortunately there is one thing that everybody can do and that is to think about the future and to formulate his or her opinion on what we would like this future to be. This formulating of ideas and opinions is extremely important. It is exactly by discussing these dreams and hopes that policymakers can set out a path to realise them and formulate the priorities in research and innovation necessary to meet the desires of the public.

This magazine would like to inspire you when you formulate your own dreams, wishes and desires for the

future of our society. As this is exactly what we are looking forward to hear from you during the CIVISTI discussion weekends!

With this magazine we give you a glimpse of different visions on what the future can look like. Experts in various fields of science and technology, from nanomedicine to AIDS research give their ideas about the future. Will biotechnology bring a solution for Alzheimer patients and what could we expect from the field of bio-energy in the future? Besides these suggestions and visions from scientists, you can also read the creative ideas from artists and citizens from all over the globe.

There are many different methods for approaching the future. What we will ask you to do is to formulate your visions on what the future should look like. If you are curious to know other methods, you can read all about these methods at the end of this magazine. And last but not least: if you cannot wait to start thinking about the future, you can hop immediately to the last page where you will find a bombardment of questions to start dreaming and reflecting!

We wish you much reading and dreaming pleasure and look forward to see you soon and hear all about your visions about our future!

*The CIVISTI project team*

# CITIZENS FROM AROUND

# THE GLOBE

Each and every individual has a unique approach to looking forward and an equally unique idea of what the future might bring.

 **TURKEY**  
ZEREN - Student



 **BELGIUM - ANTWERP**

**MOHHAMED** - Schoolboys  
Everything will be broken, a thing needs to be replaced from time to time. A bicycle chain rusts, if you don't replace it, you can't ride.

 **FINLAND**  
ANDREAS - Radiomaker



 **USA - NEW YORK**

**TARA** - Composer  
Do I think about the future? I do. Sometimes I feel like I have these warring factions in my head. It changes whether I think about my own life tomorrow, next Monday, next week or about New York in the next two years, or the world in the next 200 years. I guess I am trying to better connect those different aspects.

 **AUSTRALIA**  
NOOSSA HEADS

**TONY** - Futurist  
My interest in futures is really an interest in the here and now. The future helps to redefine the now. It gives you the potentials that have to be dealt with now. So I'm in favour of thinking ahead, I very much like foresights which help us re-imagine the future. Then you can come back from that future and ask 'How does that change the now?' It is the next step we take today or tomorrow that helps to create the future.

 **MALI - KAYES**

**KOMAN** - Radiomaker  
If you were to make a comeback here with us in a 100 years time, I think you wouldn't find the same here, you would find more.



 **GUATEMALA**  
MANUEL - Nightguard



 **CUBA - HAVANA**

**JUAN** - Babalao  
The worst thing that can happen in the next twenty years is the destruction of the earth, of the atmosphere. Mother nature is the greatest and if we destroy her or the balance of the world, then we will find ourselves in an impasse we cannot overcome.



 **GERMANY - KRIFTEL**

**PAUL** - Entrepreneur  
The bicycle will survive and reach the future. It is always the simple solutions that make it.

 **BELGIUM - ANTWERP**

**WOUTER** - Software developer  
I would like to go to a situation in which I could be stored, together with hundreds of thousands of other lucky people, in the databanks of some friendly service company. Then I could choose every day, how I would enter the world, what shape my body would take.



 **CHILE - SANTIAGO**

**THOMAS** - Economist  
I believe science and technology will always play an important role. Over time they have developed more and more and they will keep doing so. They impact on our lives and they will keep doing so. If you see what is possible in medicine and in communication today, you know what I mean.



 **CUBA - SANTIAGO**

**ELIADES** - Musician  
In two or three hundred years? If nature were to change and it would be announced that no human had to die anymore, I would be the first to sign up. It's not that I am afraid of dying, what I don't like is the time you spend being dead. So in 500 years or even in a million years, I would like to be alive, playing a concert.

 **SWEDEN**

**LYNX** - Teacher  
It seems fairly evident that we are finishing the earth's resources faster than stocks can be replenished. Soon there will be a time when we will not have the resources we have today. So maybe we should look back at a time when humans were very successful as a species, like when we were hunter-gatherers. There might be some wisdom to be learned from those savages.



 **FINLAND - HELSINKI**

**PIRJO** - Student  
I think about how cities will be, how people will move around in them, who they will meet on the street and how neighbourhoods will look like, what their functions will be and how they will connect places and people.

 **CUBA - SANTIAGO**

**ELIADES** - Musician  
In two or three hundred years? If nature were to change and it would be announced that no human had to die anymore, I would be the first to sign up. It's not that I am afraid of dying, what I don't like is the time you spend being dead. So in 500 years or even in a million years, I would like to be alive, playing a concert.

**Diversity: a vision formulated by a European citizen in the Meeting of Minds project:**

"We need to focus on the acceptance of diversity in order to prevent stigmatisation. Diversity should not be seen as a problem but instead needs to be viewed as a positive aspect, in fact European society can only move forward if we learn to accept diversity. Diversity is a basic prerequisite for democracy. It is therefore a fundamental concern for us as citizens."

# ON VISION

## What is a vision?

In the CIVISTI project, the following definition of a vision will be used: A vision is a picture or an imagination of a desirable future. A vision can be based upon hopes and dreams- but also upon concerns and fears in relation to problems or imagines threats, which we want not to become future reality. In the CIVISTI project, we will try to formulate visions on a future 30 to 40 years from now.

A state of will defined by a person, group, organisation or other actor; a view of possible and desirable state of future, which is reasoned from the point of the view of an actor's well-being and values. (Kamppinen-Kuusi-Söderlund)

A description of a future state – not the path to the state; where would the person, group, organization or other actors (such as nation, Europe) would like to be in X number of years? (Wellford)

**A vision of the future**, is the articulation of a vivid and detailed mental image of a possible future. Some professional futurists only use the word visions when preferred or desired futures are concerned. Commonly, imaginations of catastrophe or other undesirable future possibilities are also called visions of the future.



**Visions are not predictions or forecasts.** A vision describes what can be imagined for the future, it does not predict what the future will bring. While visions may be based on specific forecasts, they do not foretell what will actually take place. Neither are visions scenarios. CLEM BEZOLD pointed out: "scenarios are futures for the head; visions are futures for the heart." Visions may underlie strategic planning. They are the output of dedicated effort to imagine and formulate what the future could be like and the input for the design and development of strategy that may or may not lead to the envisioned future.

"Visioning is the process of creating a series of images or visions of the future that are real and compelling enough to motivate and guide people toward focusing their efforts on achieving certain goals." (World Future Society).

**Why everyone should have a vision of the future** according to **WENDY SHULTZ** of Infinite Futures:

Because modern society abounds with people \*using\* visions: politicians, businesspeople, social change organizations, city planners, spiritual organizations -- the list is endless. Successfully selling a vision of the future can legitimate political action, accelerate consumer sales, increase volunteerism, garner support for urban projects, recruit true believers, and in a wide variety of arenas suspend critical evaluation and demonstrate all the strengths of ideology. Articulating one's preferred future takes work, and many people choose the easy road, adopting one of these pre-packaged visions. It is less risky, and in fact almost guarantees a community of fellow travellers -- safety in numbers. But those who take the time to create their own images of the future create for themselves both the lever with which to move the world, and the place to stand from which to exert that leverage: a clearly articulated, holistic statement of values and ideals.

**Vision of the Future** is the title of one of the Star Wars Novels, the last one written by TIMOTHY ZAHN.

**"Vision without action is a daydream. Action without vision is a nightmare."**  
Japanese Proverb

**PER VEBER – Denmark - Teacher**

Per took part in the Meeting of Minds project set up by the European commission and looks back with enthusiasm. "To be part of something great!! – Meeting of Minds, it does sound interesting. I got curious when I received the invitation to take part in a Danish and Cross European project. Would this be an opportunity to influence development – make a finger print – in both Denmark and EU? Here half way through the project this seems to be the case. Through hard work – many hours of tough dialogue and discussions – are we getting closer to the goal: to be able to communicate to policy makers and scientists what citizens are thinking and hoping regarding society's use of brain science."



**"A vision is like a lighthouse which illuminates rather than limits, giving direction rather than destination."** JAMES J. MAPES of Foresight First)

## KURT VANDENBERGHE

head of the private office – or cabinet - of the European commissioner for Science and Research

Ideas about the future have to be an important element in the work of the Science and Research commissioner and his team. It would be very strange if they were not. Research, by definition, is about trying to create the future. That is what science is about, so we have to perform a lot of forward-looking activities. Anything we do today only produces results after a number of years. We fund research today, we set policy priorities today, but the real results only come after a number of years.

By nature and by definition, everything we do is forward-looking. This means that an important part of our agenda is devoted to foresight activities, prospective studies, etc. We have an institute, based in Sevilla, Spain, which is called the Institute of Prospective and Technology Studies. It is doing exactly what its name suggests: trying to see what is happening today and how this will project into the future, so that we can base our priorities and objectives on these scenarios.

I would not claim that a shared vision comes from such forward-looking activities; I would rather argue that the shared vision stems from a consensus that the future of Europe lies in knowledge. If we want to sustain our prosperity and our

competitiveness and take on the grand challenges our society will face in the future, then we have no choice but to invest in knowledge, that is in research, education, and innovation. I think there is a shared consensus about that.

In the future, we propose to do much more joint programming with member states. The European research budget may be big in absolute numbers, it is very small in relative terms. It only represents 5% of the total public spending for research and development in Europe. Some 80% is spent by individual countries and regions, the rest in inter-governmental structures. That is why we should try to have a leverage impact on what is done in member states, building joint visions and agendas in particular research areas, which are too big for individual member states. In that context we have been proposing that foresight activities should be an important part of building a European Strategic Research Agenda.

Much of what we do in Europe tends to aim at the long term. When we talk about our climate and climate change policy we set targets and objectives for 2020 and 2050. When we talk about a research programme on clean airplanes for instance, it is

clear that we're not talking about tomorrow but about planes for 2020 or 2025.

The role of the citizens is very important because in the end, it is their future and that of their children that will be affected by the chosen policy. As a matter of fact, very recently we received the results of a study showing that citizens of Europe value science and research a lot. They associate them with progress, even though there are also some fears and reservations on issues like genetic engineering, GMOs, nuclear energy, etc.

It is obvious that we need to bring in citizens and we are trying to do so. It is also very important to consult citizens on what should be priorities for European action and within different policy areas and on what they expect from actions and research at a European level. Before proposing new initiatives, the European Commission now has a policy of performing impact assessments. We try to reflect and lay out what impact reasonably can be expected from the proposed initiatives. This research includes a public consultation so that interested stakeholders can say what they think about it. This is not so much an opinion poll; it is more about seeking active input from organised civil society.

# Looking forward with **ELEONARA MASINI**

Her Australian colleague TONY STEVENSON described ELEONORA BARBIERI MASINI as “the mother of Futures Studies, who dedicated her professional life to nurturing hopeful visions of the future. She was a leading proponent for studying the future and a reviewer of the field. An Italian sociologist, MASINI was first influenced by French thinkers, then by the advocacy of AURELIO PECCEI, co-founder of the Club of Rome, with whom she became a close friend.” ELEONORA BARBIERI MASINI was one of the pioneers of futures studies and when she talks about her chosen subject, she is thoughtful and precise. We asked her to introduce some of the main insights from her research area.

**You have a long career of focusing primarily on questions about the future. What attracted you to this field and was it the same as what attracts you to it today, more than forty years later?**

In my career I have primarily focused on futures studies. I am a sociologist and I was very interested in social change. Social change theory seemed not to give sufficient answers to questions about what might happen or could happen or should happen. And so I started reading in my own time and discovered people like HUGHES DE JOUVENELLE, ROBERT JUNK, JOHAN GALTUNG, working at the end of sixties and the seventies. I just wrote to them that I would like to understand more and so I got connected and extremely involved. This was my interest at the time.

**If something has changed it is that the future has become even more important.**

Whatever I see, whatever I study, in whatever area I am working or teaching, or whichever students I am working with -at my university the students come from many countries, Latin American, Africa, Asia, etc - whatever topic I am dealing with, futures thinking, futures studies is becoming increasingly important. Of course in the past ten years, this has been extremely evident. Futures became more and more interesting and more important. So, I actually get more enthusiastic every day. I worked a lot on philosophical and ethical aspects of futures studies. Two other areas I have concentrated on have been women's roles for the future and human ecology (meaning ecology that takes into account social organizations and human beings). Both women and ecology are subjects

extremely connected to futures. Especially women's roles often are not taken into account so carefully. It is important to make women visible to themselves. They often do not realize they are building the future.

**You talk about futures studies, can you tell us about the 's' behind the word future? Why is it there?**

In the seventies a few people, among them myself and JIM DATOR, realized that there cannot be one future. We cannot speak about the future. There are many futures which are related to trends coming from the past and from trends in the present and choices made in the present. We cannot think of one future because the possibilities and the probabilities vary according to how trends move or relate to a choice in the present. If you take drastic decisions on a certain subject then... This is the point: if...then...

A single trend future means that all the trends that have existed in the present, just continue as they are. Every time I work on this in exercises done with children or policy-makers, it is found the most disappointing future. If nothing changes what then? That's the most dramatic possibility! Futures are related to the different ways trends can develop, to the choices made in the present, to the actions or inactions of the present.

**Many futures are possible, only a few are probable, and a very few are desirable.**

Desirable futures present another point of reflection because desirability is related to choice and to wider choice, to ethical aspects. If a more humanistic world is desirable, if a world with water for all is desirable, is it possible at all? Is it probable?

**So there are many futures, are they all equal?**

Of course all these futures are not equal. Futures thinking is never neutral. How could it be? It must always be clear what ethical bases are used in a futures exercise. We always want to know what certain visions or choices are based on. In futures you have to declare what you are working for, it is not an exact science. Much damage has been done by interpreting foresight as strictly scientific. It cannot be scientific; basically because the future has not yet happened and that means of course that it cannot be repeated. This means it cannot be understood as science, where experiments or findings have to be repeatable.



**Women should know they are building the future**

There are no facts about the future. We can simply describe what might happen. We cannot even say what will happen. The main capacity of futures studies or foresight, whatever we want to call it, is to lower levels of uncertainty. Whoever has to decide in the present, knowing that his or her actions will have an impact, needs to think about what may happen later on.

**In a situation with a high level of uncertainty like in our society, where everything is rapidly changing and interconnected, complexity and globalisation are big challenges.**

What we have to do -what futures studies is about- is lowering the level of mistakes as a consequence of decisions and choices in a situation of continuous change. Whatever topic you are dealing with, it is always very important to have the best possible knowledge of the present and the past. Some topics have very long timeframes, like women's issues, education and environmental issues as well as some social issues. One of the big tasks for the futurist is to look not only for the big trends, the big choices and actions, but also for the seeds of change. These days seeds of change are called weak signals.

**You have met many people who had more or less developed visions of the future? They have included scientists, researchers, activists, policymakers, citizens, young and old. What are the most important differences in how each of these groups look forward to the future?**

Quite a few people that have worked on futures come from physics. Of course they will use scientific methods as much as possible. Then they will find that there is something more, that choice counts. Even scientists have to admit that, from a certain moment on, looking at the future is a matter of choices and very little about the future is simply provable. Scientists have been great contributors to futures thinking, researchers of course, activists get extremely excited about it too, policy makers are usually the most difficult. All of these people, when they are looking at the future, have to come back to the present and see how much they can effectively do, and what they can't. One thing is the same for all different groups - scientists, citizens, policy makers... When they discuss the future, they know that they build a part of that future, that they are a small part of it. Whoever you are, a teacher, a family woman, a scientist, you are part of the future.

**Desirable futures, not just perfect versions of today**



# KURT AAGAARD NIELSEN: VISION IS THE SALT OF DEMOCRACY.

Kurt Aagaard Nielsen is a professor in social science at Roskilde University. Leader of the research group 'Sustainable working Life'. Published articles and books about Sociology of knowledge and about Action Research. Actual field of research is "Sustainability and democracy in working life and in communities". He has been active in creating national and international networks about action research and science policy.

## What is your understanding of what a vision is?

A vision is a well thought out fantasy of a desired future. The vision comes into existence on the background of a combination of values, desires and knowledge about the world as it is today and the problems you see in everyday life. Thus the vision is crucial for thinking in suggestions for changes. The vision is also a part of the human nature; the fact that many people imagine a desired future as a starting point for a democratic debate of planning is the ground element of a human democracy. Dialogue is difficult without referring to visions.

## What are common elements in the vision you have come across in your work?

It is characteristic when you work with visions with lay people that the visions seek answers to the big questions of today. Threats against nature and climate are today so widespread recognized by most people that visions often contain aspects of a sustainable society, i.e. a society where we become better able to live in harmony with nature and ecosystems. Another characteristic about visions of today are that they on the one hand point to something modern – more freedom of choice and flexible ways of living your life – and on the other hand that there should be more time and room for solidarity and for joining around democratic solutions

Visions that are developed in professional contexts are difficult to characterize, because they often refer to strengthening the systems you work in. In contradiction to lay peoples visions they will often be competitive – strengthening my system at the expense of the competitors. That is why lay peoples visions often add something very

important to professional visions – that is the focus on the ordinary or really common and social in our society.

## Can a vision also be a bad thing:

A vision can also be a bad thing if it is stuck in a context, which only is focusing on the problem, how "my system" can show off in relation to others. Seen in this light, visions may in fact just as well be negative as positive. You have to observe that visions must always be open to discussion. If a vision is used as an argument to cut off critique – because this does not fit into the idea of, what somebody decided was "our vision", then it will be framed into an authoritarian agenda and this is very damaging.

## What are the counterarguments to those who equate visioning with daydreaming?

Daydreaming is not necessarily a bad thing. Every vision or idea of the future will partly take-off in daydreams. But while a vision has to be prepared thoroughly and be well reflected – daydreams are often stagnant and without conflicts. When they have thought about their fantasies – have made visions – most people find out that they do not want a stagnant nirvana society or for that matter, a society without conflicts and challenges. But if a society does not recognise that there are bits of daydreams in most visions, then it may happen that planning and politics go in the direction of technocracy, meaning a society with expert power and undemocratic culture. Vision is the salt of democracy.

## Can everyone have a vision?

Yes, but normally it is developed in dialogue with other people. Individual visions may be formulated in research, art and culture, but basically the vision is connected with dialogue and social relations – because future can only become reality together with other people. On the contrary, you can imagine processes, which are so authoritarian that visions will not develop at all. This means that if there is a lot of power and repression in a group, many participants will not dare to formulate visions, because they are afraid of the consequences.

# POSTCARDS FROM A FUTURE



Dear Grandma,

I'll be back home for Easter, so it will not take long anymore before we see each other without the screen. Meanwhile, I have made many new friends here at the university. Even some of the students who are only in my distance learning classes have come to meet the campus dwellers. The oldest among them is 92 years old, she is a tough cookie, you would like her. She uses a neural implant for retention and will probably do much better at the exams than I. Looking forward to getting back together, hope Tobie the robo-dog has been mended so that you've at least been able to enjoy his tricks again.

Sweet greetings, Mira



## THE VISION OF SUSTAINABLE DEVELOPMENT

The Belgian Federal Council for Sustainable Development was founded in 1997 to regulate the co-ordination of federal policy on sustainable development. The Council has advisory duties and acts as a multi-stakeholder forum to encourage the sustainable development debate. For Civisti, the secretary of the council, JAN DE SMEDT, explains the concept of sustainable development and its roots.

### The council works on the vision of sustainable development. Can you tell us what this concept entails?

The concept of sustainable development was used for the first time in the Brundtland report, entitled 'Our Common Future'. This report was produced by an expert commission for the UN in 1987 and contained the famous definition: "development that meets the needs of the present without compromising the ability of future generations to meet their needs".

After that, the idea of sustainable development became a public good, officially taken up by the international conference on the environment and development in Rio 1992.

The idea of 'sustainable development' consists of two concepts: 'sustainability' and 'development'. 'Development' is regarded as evolution or progress. Often it is reduced to mean only material progress, but in fact it also refers to the improvement of the quality of life, of well-being, for everyone. That requires the development, of not economic capital, machines, buildings, and financial means, but also social development, health, education, culture, as well as natural capital, natural resources and biodiversity. The second concept 'sustainability' means that a development can be expanded in time and space. It takes into account contemporary development.

It requires a model for living, consuming and producing that is attainable for all people on this planet and for all societies. Enough capital must be left for the next generations to allow them to fulfil their needs in a sustainable way.

### Is our development sustainable?

Sustainability is still an objective, the concept is relatively innovative. This objective requires that we let go of short term thinking and short term solutions. Today it has become abundantly clear what the consequences of short term policy are. In the area of climate for example, sustainability requires that temperature changes stay within a margin of two degrees Celsius. That demands long term thinking. So far, the ecological and social costs of growth have been passed on to the generations that follow us.

Sustainable development really entails a paradigm shift. It means not just looking at the economic or the social or even adding the ecological to the equation. No, you have to look at all three of these in relation to each other and in a global framework. Of course, this is a very complicated exercise. That is why we attach great importance to the idea of 'governance': involving people from diverse societal groups, social organizations and businesses in the process of change.

## PASSING IT ON TO OUR CHILDREN

ELS and her husband GUY are pensioners in a European capital. When asked about the future ELS does not use the word sustainability but with her very personal approach she expresses the ideas behind it as aptly as any experts.

I enjoy living in the moment. I do not know if I am so imaginative that I can think hundreds of years ahead... It is essential that we leave something good and pass it on to our children, then it is up to them again to manage their future well. It is not up to us to impose anything on them, as long as we preserve to the maximum what we give them. That is it.

### Social scientist looking for sustainability SANDRA HUPKA – Germany - TREE

Sandra Hupka is a young German scientist who works on the project TREE (Transition from Education to Employment). She has studied Pedagogic, Psychology, Sociology and Political Science with focus on sustainable development. When asked what she expects for the future and what visions she has she refers to an applied project she is involved with.

"We are different groups in the association "Futur X-Society for Intergenerational Justice", but the common target of the association is a fairer world, perhaps something like a World Society. A world, where within a generation greater measures of justice prevail, but also one where fairness exists between different generations. We do not want a world that does not meet the needs of future generations. We want a world in which each generation leaves open possibilities for action of others or even provide them greater chances."

## COMMENT BOX

**BIODIVERSITY** is the variation of life forms (plants or animals) that can be found in a specific environment. This environment can be a specific area or the entire earth. Biodiversity is often used as a measure of the health of biological systems. The biodiversity found on earth today consists of many millions of distinct biological species, protecting species and preserving diversity is high on the environmental agenda.

## THE FUTURE IN THE PAST

### Since pre-history

People can conceive of the future, we have the ability to anticipate and foresee and we have used this ability throughout history. As Wendell Bell puts it:

“Thinking about the future is not new, of course. It is a universal phenomenon, that can be traced back to the dawn of human pre-history. In every known society, people have conceptions of time and the future, even though some of their conceptions appear diverse, with different emphases on past and future and different degrees of elaboration and detail.”

Divination is probably the oldest, most primitive form of envisioning the future. It is an effort to discover and sometimes to control the future, just like the forward looking efforts of the modern age.

### Early technology assesment

In 1937 a US government report entitled: Technological Trends and National Policy foresaw what a profound impact television would have on society, altering everyday habits. The authors pointed out the eventual emergence of colour television and even three-dimensional television was on their list of future technologies. Research into the latter possibility is on going. Impressive was also the report's foresight concerning the impact of the invention of air conditioning which stimulated the industrial growth of southern US cities, as described by the experts who put the report together.

Some of the expectations elaborated in the report turned out to be less justified. A bright future was depicted for the 'roof-hopper' which would be used to transport passengers for short intercity flights. The report also talked of an aircraft for

personal use, which could land on any usable field, fold up like a beetle, and proceed along the highway like an automobile and be stored in the home garage

### Vision from the sixties: the earth from space

At the end of the fifties cold war competition was fertile ground for President Eisenhower's vision of Americans on the moon, inspiring the establishment of NASA. After several unmanned Apollo satellites had successfully been brought into an orbit around earth, in 1966, the hippie photographer Stewart Brand also had a vision. Sitting on a rooftop contemplating the curved surface of the earth, he imagined how from a certain distance, the curved horizon closes and the Earth can be seen as a whole. A week later he was hitchhiking across the country selling badges with the question: "Why haven't we seen a photograph of the whole Earth yet?". The next satellite launched in to orbit, Apollo 8, did send back photos. One of them featured on the cover of the Whole Earth Catalogue that Brand successfully published later on. Seeing the earth from outside, as a single globe may seem ordinary today but at the time it was thought this image might have the power to unify the people of the earth.

The implications of technological possibilities, such as space-exploration are multiple and always complex to asses. Human ventures into space have contributed to the materials we use in daily life, such as Teflon in pans. Even if photos of the whole earth have not brought about world-peace, they have influenced the global mind-set and encouraged new ways of imagining our futures.

# PETER PIOT HAS A VISION ON AIDS



**Dr. PETER PIOT, 59, is currently Under-Secretary-General of the United Nations and has been Executive Director of UNAIDS for 13 years. He is the co-discoverer of the Ebola virus and one of the early researchers working on HIV-AIDS. As a scientist, he combines a strong sense of social justice with a methodical approach. He was one of the first people to literally see HIV and one of a few who elaborate a complex vision on the subject. His ideas guide responses to the challenges the virus poses. When Piot is asked about his vision he bases it firmly in the history and every day reality of humanity's encounter with the HIV virus.**

“Twenty-eight years into the epidemic, we start having results. Less people are becoming infected, less people are dying. There are scientific breakthroughs such as the anti-viral therapy. Aids is the first serious viral infection that could be treated and as such it has provided a model for many other treatments, like that of hepatitis. Where we have not made a real impact is scientifically in the development of a vaccine - where we are back to square one - and also in aids prevention. Now it is time to take a long-term view and that is why I have launched a project called Aids 2031. 2031 is fifty years after the discovery of the virus. The idea comes from the notion that aids should be considered as a long wave event and that we need long-term strategies in order to take the best decision today, to have a horizon that is longer than our usual five-year or even two-year plan. We do not want to decide what we have to do in 2031, we want to see what we have to do today to have the best possible outcome in the long term. That is the way forward.

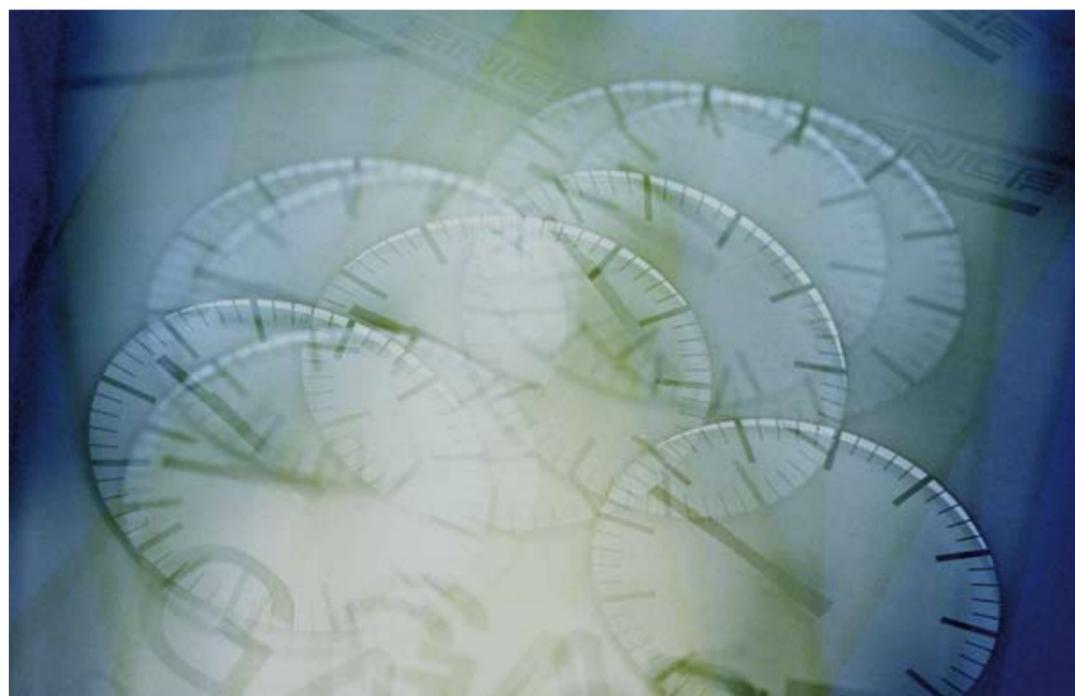
There are internationally developed targets, for example universal access to HIV treatment by 2010. I think we always need to set a vision and some ultimate goals: that nobody should die from aids because there is treatment and that nobody should get infected. We've got to work towards that objective. I think it is possible to achieve some of these goals in some countries but not in others. We look at what science and technology will contribute and what will be the part of social change. It is not all technology that is going to solve the problem... That is for sure! There is often a total disconnect between new technology development, policy and social change. A certain naïveté characterizes those working in science and technology. The biological or physical sciences seem to think: "if we have a product, it is going to change everything". We cannot tackle this without policy type research to see how social change can be done. Translational science and research is at least as important as discovery and development. Thinking about science policy is key, and very neglected, including in Europe.

We know that good health is an important determinant for economic development and productivity. So it is not a soft thing you invest in, when some money is left. We cannot be satisfied until everyone who needs it has access to treatment. That is a matter of rights. In my vision, policy should not only be based on scientific evidence but also on values and human rights. Health is always high on people's minds, it is very real and affects people's lives. "

## COMMENT BOX

**MAKING THE BEST OF IT:** Peter Piot has taken on a huge problem: his ultimate vision of zero mortality and zero infection is not one he expects to see come true. Nevertheless, he feels it is the vision to work towards. Nothing else can guide action.

**HEALTH:** People wish each other good health at anniversaries and celebrations of all kinds or when raising a glass. Good health means a lot, when we loose our health we can be hindered in many areas of our lives. Health is part of personal as well as global visions of the future.



# SCIENCE IN SHAPE FOR TOMORROW

Science and research in any field are necessarily future-oriented. The scientific research process is one of building finding upon finding, with every new finding revealing new possibilities and new questions to ask.

## Engineering increasingly multi-disciplinary

**JOHAN SCHUBER** – Sweden  
Royal Engineering Academy of Sweden

“Applied science is fast-evolving. Engineering developments are versatile and can be connected to specific issues in society. There are information technology -software- developments, developments in materials, in imaging and so on. Most often, radical innovations that really improve society, the environment or the way people are living are built upon new technology.”

“Take the energy sector. With environmental issues high on the agendas, most countries in Europe are looking at their future energy supply and there is a strong drive towards investment in frontline technologies”. Schuber names electricity transmission technologies, bio-energy, electric vehicles, lithium batteries. “These developments are needed because many countries wish to replace fossil fuels with renewable fuels.”

“What we see now is multidisciplinary co-operation. Nanotechnology, information technology, biomedicine and so on, all have to work together. Connections between different disciplines and joint networks and programmes are gaining strength as technologies and fields of knowledge converge.”

“This creates new innovation platforms, for example in health diagnosis for the human being with different imaging techniques. Research in medical imaging is getting so specialized that physicians need physicists and scientists from other disciplines in order to make a breakthrough. If they want better microscopes, they connect with nanotechnology physicists that have this tool and pool their efforts towards an application in biomedicine.”

“Softer approaches, like research on behaviour and how to change it, also make their appearance in information technology research. For such research, one needs to understand how people use technology, how people act... but technologists do not have the research skills to gain these insights. An aging population for example, calls for research on the brain,



demographics, social science. It is a mixed bag of approaches. It has to be.”

## Information and Communication Technologies

**OLIVIER GLASSEY** - Swiss

The revolution brought about with changing Information and Communication Technologies (ICT) may seem like old news, but these technologies and the way they are used are actually still evolving in significantly new ways today. OLIVIER GLASSEY studies the uses of technologies in the field of ICT. He sees the state of the art in technology development in the hands of its users.

“We observe an important lag between the moment in which a new technology is introduced, the moment this technology becomes widely used, democratized, and the moment when people begin to invent new uses for the technology, when they make it their own. The appearance of new technologies or a new possibility by itself is not enough. There needs to be a community of active users who are genuinely interested: early adopters. Later, a second generation of more ordinary users also needs to adopt and appropriate the technology. Users actively re-invent the functions of the technological object that becomes available to them.” The chosen uses, new dynamics, contents and meanings created by the users as



they apply their social and moral sensibilities, contribute to the direction of further technological developments.

“As far as convergence in ICT is concerned, micro-messaging, mobile telephone, geo-localisation, online social networks, all previously separate tools, are merging into increasingly unified appliances. This is an important dynamic that in the long term will certainly have a meaningful impact on daily life. What this impact will be is an open question. We can put forward big brother type scenarios with serious privacy issues, but we can also imagine that these technologies will bring about new forms of freedom rather than restrictions. Both possibilities are real.”

## Climate change modelling

**JAMES MURPHY** – United Kingdom

“Climate research as we know it, is an activity that has been booming in the last two or three decades. Our ability to simulate the climate and then make projections of the future relies on complex computer models of the earth’s climate. The complexity of these models has developed over time, as the computing capacity to run them has been increasing.”

“We started off with simple models of the atmosphere. What we could say about time-dependent climate evolution was limited and that is precisely what we need to know to make projections relevant to the assessment of impacts, adaptation, and mitigation.”

“More recently, more comprehensive models developed, enabling us to check how well we can reproduce past climate changes from the industrial revolution up to present day, and also to predict changes for various decades to come. A key development in the nineties was the use coupled climate models containing a full representation of ocean dynamics. The models have been increasing in resolution and sophistication ever since. More recently, there have been further developments to include a wider range of earth system processes in the models.”

The drive for new developments comes from our physical or more accurately now our bio-geo-chemical understanding.”

“Current models may be good enough to project fairly basic aspects of future climates, like temperature changes over the next thirty years in some region, but people also want to know how the characteristics of daily weather at their location might change. So we want to refine the way the models represent existing processes (ideally to the

same level of detail achieved in weather prediction models) to be able to make projections of those kinds of things too.”.

“In climate research today we need to put more processes in the models, add resolution and refinement, run ensembles to characterize uncertainties, and start implementing models with real observations as starting points. We expect further steady progress. We hope that such developments will narrow the spread of future projections. However, it is also possible that the spread may get wider, as we discover new uncertainties.”

## Neurologist believes the burden of brain disease may become lighter in the future

**SAMUEL KOMOLY** – Neurologist - Neurology Clinic of the university of Pecs

“Neurology studies the structure of the brain and the material mechanisms that take place there. We work on the hardware, while psychiatrists work on the software. Neurology is important for the future because it can help people have a greater quality of life despite illness or injury. For example, we put much effort into finding new treatments for dementia. If we find such treatment in the next decade or two, it will be a real breakthrough. Demented people are a big burden on society and their families. People in Europe are living longer and longer so that we are increasingly confronted with dementia. If we find symptomatic or causal treatment, society would not have to care for the elderly anymore like today and it would also have a great economic impact

## COMMENT BOX

*Sciences of the brain touch the very core of our being human. Researchers continuously enhance their understanding of the biological and material basis of the brain. From this success, questions arise about the responsibility that comes with an increasing power to impact on, change, enhance or damage the brain.*

*The greying population brings new health questions to the attention of medical researchers, carers, policy makers as well as individuals who expect to live longer. Growing old without losing clarity of thought and reasoning is what people wish for in their own lives but it is also something that determines the conditions for social welfare and health care.*

# VISION VARIETY

The future is an area that fascinates natural and social scientists alike? It is explored in theory and in applied sciences as well as in creative professions and in the arts. Every vision is unique; every specialization brings its own perspective. A top-notch selection of visions emphasizes the variety, the plurality and the specificity of what can be seen in the future.



**BIO-TECHNOLOGIST SEES DELAYED AGING PROCESSES AND MEMORY CHIPS**  
CHRISTINE VAN BROECKHOVE – Belgium  
Universiteit Antwerpen en Vlaams Instituut voor Biotechnologie

Professor Van Broeckhoven specializes in research into the aging processes of the brain. She points out that we are a long way off from a treatment of dementia as an illness of the memory. Such a treatment should halt or slow down the dying of brain cells during the aging process. The scientist is only half joking when she says: "The aim is to delay that whole process till after the end of your life. This is still a long way off."

"The brain is the most complex organ we have. In the long term we will be able to do things with it most people today are not aware of." Van Broeckhoven thinks of the example of a man who lost his arm and who can now send

signals from his brain directly to a computer. "We still do this with a fixed connection, but it will also be possible to capture thoughts directly inside the computer. Brain chips can make different forms of communication possible, not just direct interaction with a computer, but also between different people."

"I believe that a memory chip to support the memory of people or even to add extra memory, is completely acceptable, also for children who have a less good memory for example. There is so much knowledge and technology in society. Today almost everybody already uses a second memory, the memory in the computer. Why could all that information not be stored in the brain? I'm not only thinking of people who are losing their memory but also of people who would otherwise not be.

**SOCIAL SCIENTIST FORESEES GENDER EQUALITY IN THE NEXT FIFTY YEARS**  
RISTO HEISKALA – Finland  
Institute for Social Research, University of Tampere.

"The changes I foresee for the next fifty years are smaller than

those that took place in the past fifty years. Nevertheless, I do not foresee a linear development. I think that some time before the year 2050 a break, a rupture, will take place. I cannot predict what will be the exact cause of that break but there are some overarching evolutions that can be pointed out. The sociologist Parsons remarked that in America around the second world war the differences between male and female work were considerable. At that time the so-called male duties were considered more valuable than the female ones. Men held more status than women in a social system where women stayed at home and men represented the public sector.

"This state of affairs was part of the Western industrial or traditional modern model, flourishing in the fifties. The erosion of the modern industrial model was the most important evolution benefiting equality between men and women. The growing power of the state and the birth of the welfare state brought gender equality back. The kinship system that had bestowed women with the caring family role and men with the public professional role, disappeared.



The state treated everyone on the same basis. Today we experience the consequences of that development and in fifty years time the evolution will be complete "

**ANONYMOUS NANOSOC PARTICIPANT REFLECTS ON SMART ENVIRONMENTS**

In the Nanosoc exploration of the international materials research institute Imec and several other partners, scenario's for possible futures describing the development and proliferation of nanotechnology, were presented to a diverse group of citizens. The idea of a smart environment that would monitor and interact with people engendered various reflections and visions of what that would be like.

"I am happy for a 'smart environment' to get to know me better. Such a system must have the freedom to combine all data about me creatively, so that it can surprise me."

"It would make my life easier, so it could actually also stimulate laziness. But if I want to pursue objectives in my leisure time such as running a marathon, machines may be able to help me. For example by telling me what to eat, where to run, what to do. So while convenience may lead to a certain degree of laziness, it would also create more opportunities to reach more in life."

"People are quite prepared to pass on personal information to the digital system, but there is a reluctance to let others get close physically. Contacts in the

physical world seem to be different than the passing on of private data. Of course if you want to be helped by the system you would have to freely give out personal information."

only safe nanomaterials will be used and enter the environment. Also here communication between disciplines can provide the backbone for a sustainable nanotechnology."

## COMMENT BOX

Van Broeckhoven talks about health, but also about education. She suggests that the lives of children going to school and of people learning at all stages of their life, may be affected by the use of new technologies. Pupils might one day be able to store infinite amounts of information and even download skills. Even outside of learning institutions this could happen. Want to play the violin on this year's Christmas party or drive a motor-bike along the European coasts? Just download the skills directly onto your brainchip.

**EVOLVING GENDER ROLES.** We live our gender roles every day and everywhere. Clearly these roles are evolving. In the time of our grandmothers, in most Western countries, it was unusual for women to work outside of the house but today our daughters can be expected to take part in public life fully. In the house and on the job men and women still hold different expectations and approaches. This may change further into the future. Who will do the dishes then, who will take care of sick family members, who will use tough managerial techniques, who will enforce laws and regulations; women, men or machines?

## COMMENT BOX

Looking back for looking forward. To think about the next fifty years, Heiskala looks at the past fifty years first. Looking back to better look forward gives a sense of how things change over longer periods of time. Seeing the impact of what has happened before, can help us imagine the impact of what may happen later.

# VISION VARIETY CTD...

## THE ARTIST AND THE MACHINES PAUL GRANJON - France - Z-Productions

Paul Granjon started his art practice even before graduating from the Ecole des Beaux-Arts de Marseille. He is interested in the shared evolution of humans and machines. His investigation of the relationships between humans and technology is both entertaining and disturbing. Exploring difficult terrain, touching on cultural anxieties, he is neither a techno-optimist nor a techno-pessimist.



"The subject of my practice as an electronic artist is the co-evolution of man and machine, understood as the way in which the development of a technological culture changes people's perception and operation of their environment, social context and bodies... The rapid progress of tools and techniques has a resounding effect in both my methods of fabrication and the content of my work."

"As an artist working with technology, although I recognize the fundamental human urge that drives technological progress and use tools of increasing ability and decreasing cost, I also question some of the effects of this evolution. On the positive side, the affordability and capabilities of the commercially

available equipment is just mind-boggling. Technology that only a few years ago, belonged to the top secret military domain is now available from the internet corner shop (machine vision systems, GPS, networking protocols...)." "The relationship of 21st century humans with technology almost completely takes place at a high level. The abstraction offered by ever more sophisticated human-machine interfaces occludes the intricate processes that occur between the command issued by the user and the effect of the command. For example a mobile phone users can press the 1 key on the keypad, to which their best friend's number was allocated, and start a conversation within a few seconds, oblivious of the complexity of the technology

packed in the handset, the supporting network and the scientific principles at work behind mobile telephony."

"Ever smarter objects used by humans, while providing increasingly facilitated access to and manipulation of data and matter, ubiquitous communication with people and environment, should simultaneously stimulate and train the physical, mental and psychological capabilities of the user. This view goes against current practices which encourage 21st century humans to become multitasking, information overfed beings, an increasing amount of their physical and mental functions replaced or assisted by artificial devices."



## THE TECHNOCALYPS OR FAIRY-TALE LIKE WORLD OF A MULTI-MEDIA ARTIST Frank Theys – Belgium

FRANK THEYS is a philosopher and visual artist. He has worked in theatre, video, interactive multimedia and film. He is fascinated by technology and science and their social, psychological and philosophical implications. He is the maker of a three part documentary series entitled Technocalyps.

"Defenders of nanotechnology like to recount the story of the 'auto-assemblers': machines, as small as viruses, that can procreate and accomplish all kinds of tasks. In the documentary, I compare them with yeast cells. Yeast cells procreate and while they do so, convert sugar into alcohol. The difference is that the auto-assemblers can be programmed to handle any task we like them to perform. If such a thing becomes reality, we end up in a fairy-tale like world. These

little robots could change us genetically, they could clean water, create food by assembling water, carbon and other atoms they find in their surroundings. Further into the future, they could even transform entire planets into living environments. Today all this sounds like total fantasy and it is not sure that it will ever become possible, but it is a direction in which one can think. What is sure, is that we will find always better and more intelligent machines and production methods. Soon a

nanotechnological water filter for example will be available that filters H2O cheaply from seawater or any other water, however dirty. This could solve what is an enormous problem for the world population today. If humanity as a whole finds an ecological balance with the planet, then at a certain point there will be no more reasons for one human being to exploit another. There could be plentiful production, with always less human labour. But what



## ARCHITECT WANTS MODELS AND TRANSPORT TECHNOLOGY FOR THE CITY

VITTORIO AURELI – Italy – Berlage Instituut

The Italian architect VITTORIO AURELI is the head of the Capital Cities Research Program which aims to redefine the idea of the city by focusing on the relations between architectural form, political theory and urban history. His large-scale polemical urban projects present specific

visions of the futures of specific cities. While these designs are precise and specific, the overarching principles that guide them are much more general. Aureli talks about the models that inform his visions of cities.

"I have certain principles I work with in my research, my teachings and writings. In the future, in the near future, what the city needs, after decades of relative *laissez-faire*, is a strong form."

"The issue of technology is important. One of the biggest problems of technology right now, is that its development is overly conditioned by the logic of profit. This is especially true for mobility and communication, vital technologies for the city. Their development often leans towards goals that have nothing to do with our ordinary lives. Instead

of thinking of technologies that evolve all the time, almost naturally, for the future we have to cultivate the idea that we can also tame technology. We should not just see it as something that has to provide us always with something new, but also as something we have to control. "Today one of the biggest problems is the way in which the city is actually organized, physically and structurally. A technological sector where I see a vital future is the engineering of public transport. For me that is a very important

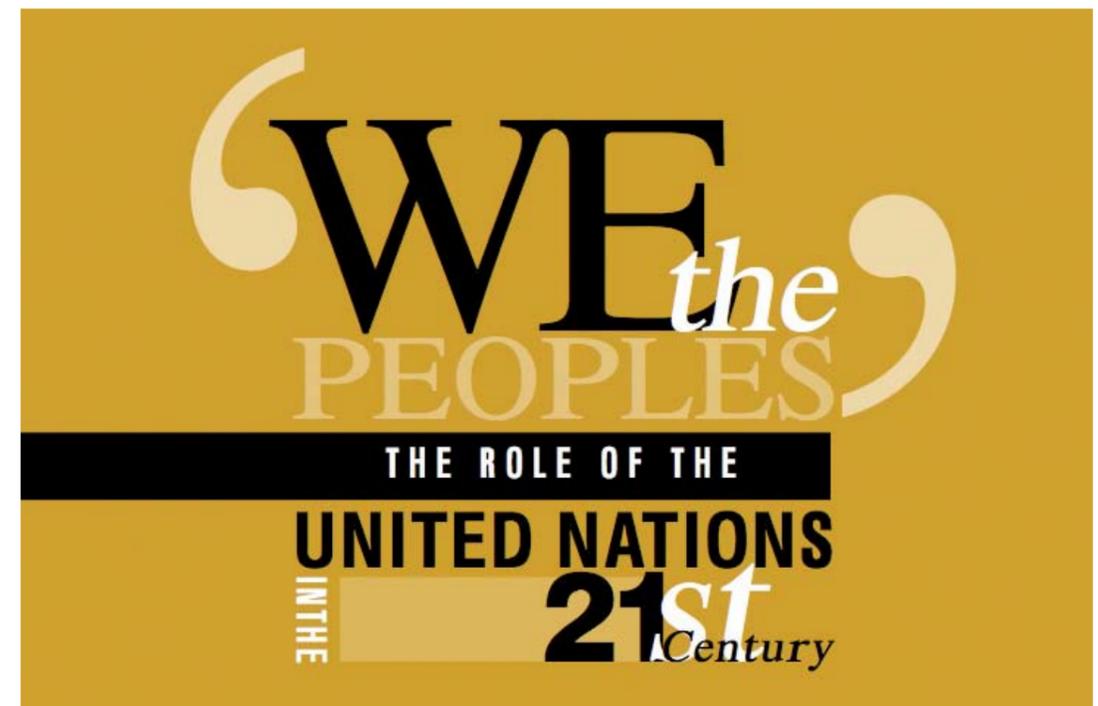
field of application. Through transportation humans move physically from one place to the other and eventually can encounter one another physically. Today I see too much interest in digital technology and communication. These imply that we do not move anymore but simply communicate via infrastructure. These technologies present two distinct scenarios and to me the stimulation of physical movements through the city is the most desirable."

### COMMENT BOX

The model AURELI proposes for European cities is the model of the archipelago. The concept is that different islands, while separate from each other, and each with its own specific boundaries, are connected by these boundaries. In the archipelago metaphor, it is clear: the sea is what divides the islands and at the same time unites them. Infrastructure and technology make up part of the sea of the city, connecting different places and spaces.

Urban transport and mobility let us move through the city with ease or with difficulty. Commuters spend valuable hours in traffic jams. We travel by public or private transport, in cars, bicycles or walking to the cinema or the shop, from home to the office, through the park and past building sites. The lay-out of cities in the future and the available modes of transport may influence what we see en route, who we meet, who we talk with or what distances we cover.

## UNITED NATIONS AND EUROPEAN INSTITUTIONS LOOKING FORWARD



### THE MILLENNIUM REPORT

In the year 2000, the then secretary-general of the UN, KOFI ANNAN, submitted what has become commonly known as 'the millennium report' but was actually entitled "We the peoples, the role of the UN in the 21st century."

The report was presented to the Member States to facilitate their preparations for the Millennium Summit. The report identified some of the pressing challenges faced by the world's people and proposed a number of priorities, recommending several immediate steps "to lift people's spirits and improve their lives". All the proposals in the document were set in the context of globalization, which Annan saw as transforming the world at the outset of the twenty-first century. "In this new era, people's actions constantly — if often unwittingly — affect the lives of others living far away. Globalization offers great opportunities, but at present its benefits are very unevenly distributed, while its costs are borne by all."

The report proposed a set of values, shared by all nations, that were of particular importance for the age we are entering. These values are:

Freedom. Equity and solidarity. Tolerance. Non-violence. Respect for nature. Shared responsibility.

The application of these values, at the end of the report, leads to the formulation of three main priorities.

- 1) We must spare no effort to free our fellow men and women from the abject and dehumanizing poverty in which more than 1 billion of them are currently confined.
- 2) We must spare no effort to free our fellow men and women from the scourge of war.
- 3) We must spare no effort to free our fellow men and women, and above all our children and grandchildren, from the danger of living on a planet irredeemably spoiled by human activities, and whose resources can no longer provide for their needs.

### COMMENT BOX

VALUES, ETHICS, MORALS are always the basis for the formulation of visions of the future. These visions in turn can form the basis for priorities for the future which then can be used as inputs for the development of strategies.



## TIME HORIZONS AND DREAMS THAT SHAPE THE FUTURE

**WIEBE DRAIJER** – Nederland  
McKinsey and STT

*Since late 2005 Wiebe Draijer chairs the Dutch Stichting Toekomstbeeld der Techniek, which conducts project-based explorations of the relationship between technology and society. He is managing partner of the Amsterdam office of McKinsey & Company.*

"The majority of McKinsey's activities are concerned with either strategy -what companies or governments need to do in response to challenges

and opportunities- or with adjusting companies or institutions to changes that have taken place so far and that will most likely remain in the future." Draijer considers a whole range of time horizons possible. "Typically, a strategy would have a measurable impact in the 3 to 5 year time frame, but it should also create a robust platform that reaches beyond the five years." In broader future-oriented research, his company applies longer time horizons, looking at global trends in the world and how they affect business and society. "There is a common assumption that the future is uncertain, and yes, that is true. But there are a number of trends that you can count on. They will take place, and they are affecting our futures." Of the trends that can be identified Draijer says "They are not rocket science... One trend is the aging population. What we do is to develop perspectives on how these trends are most likely going to happen." Other trends he names are the economic move to the East and the continued scarcity of resources. "All of these things are taking place as we speak and will continue to take place into the far future. Therefore, you can develop strategies that take them into account. The future is less uncertain than most people think." "What I find even more inspiring than either a vision or a scenario are things that you can help shape by your actions. When you have a view of the future and this future is partly influenced by what you do, that is very exciting..." According to the manager, even 'dreams' can be useful: "If you start to move your actions, assuming that the dream is possible - even when unreasonable - then you start to influence that future. That is the more exciting work."

## METHODS FOR APPROACHING THE FUTURE

*Whether designed specifically for the purpose or not, a wide range of methods can be used for looking ahead to the future. Some of these require specialized skills, others could be applied by almost anybody. We list and sketch some of the best-known methods.*

**Visioning:** The systematic creation of visions of a desirable future for an organization or an individual. Typically, this procedure starts with a review of past events and the current situation, moves on to envision desirable futures, and concludes with the identification of specific ways to move toward the desired future. A visioning procedure often prepares the way for more formal goal setting and planning.

**Scanning:** An ongoing effort to identify significant changes in the world beyond the organization or group doing the scanning. Typically, scanning is based on a systematic survey of current newspapers, magazines, web sites, and other media for indications of changes likely to have future importance.

**Trend Analysis:** The examination of a trend to identify its nature, causes, speed of development, and potential impacts. Trends can have many different impacts on different aspects of human life, many of these may not be apparent at first.

**Trend Monitoring:** Trends viewed as particularly important may be carefully monitored—watched and reported regularly to key decision makers.

**Trend Projection:** When numerical data are available, a trend can be plotted on graph to show changes through time. The trend line can then be extended or "projected" into the future on the basis of the recent rate of change.

**Scenarios:** The future development of a trend, a strategy, or a wild-card event may be described in story or outline form. Typically, several scenarios will be developed to emphasize that future events may invalidate whatever scenario used for planning purposes.

**Polling:** Collecting people's views on the future and other topics. Data may be collected through face-to-face conversation, telephone interviews, and questionnaires sent by electronic or ordinary mail.

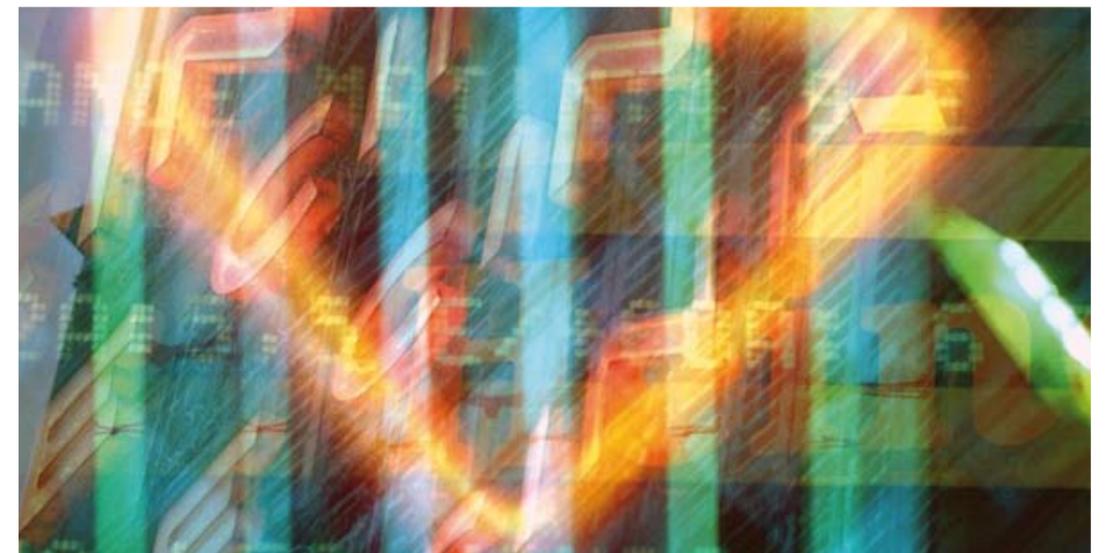
**Brainstorming:** The generation of new ideas by means of a small group assembled to think creatively about a topic. Group members are encouraged to build on each other's ideas and withhold criticism. Brainstorming is useful in identifying possibilities, opportunities, and risks.

**Other idea-generating or problem-solving methods:** idea mapping, impact analysis, and the systematic identification of all possible variables.

**Modeling:** The use of one thing (the model) in place of something else that is more difficult or impossible to experiment with. In addition to real-world models, such as miniature airplanes and houses, a set of mathematical equations can be used to represent a complex system. The model can then be put into a computer and used to simulate the behaviour of the system under a variety of conditions.

**Gaming:** The simulation of a real-world situation by means of humans playing different roles.

**Historical Analysis:** The use of historical events to anticipate the outcome of current developments. Often a current situation can be compared to one or more situations in history that seem to be similar.



How old would you be if you double your current age? **Could you still be alive by then?** What is the best thing that could happen in your personal life in the next 20 years? **What is the worst thing that could happen in your personal life in the next 20 years?** What do you expect to happen in your personal life in the next 20 years? **What kind of work might you do?** What might your income be? **Where do you expect to live?** Who do you expect to live with? **How might your health evolve?** How much will you learn in 20 years time? **How much will you forget?** What technologies do you expect to be using? **How will you look back at your current life by then?** Who will you be sharing your ideas with? **Who will you be sharing your holidays with?** What kind of holidays will you be enjoying?

In fifty years time, how would people move about the area where you live? **How often would people be able to leave the area?** Where would they go to? **What is the best thing that could happen in the place where you live in the next decades?** What is the worst thing that could happen in the place where you live in the next decades? **What do you expect to happen in the place where you live in the next decades?** What changes could take place over the next half century in the country where you live? **What might remain the same?** What changes could take place over the next half century in the city, town or village where you live? **What might remain the same?** How might the place be governed? **How many people will be living in this place in fifty years time?** Who might they be? **What would their relationships be?** Where might you meet them? **What activities might you share with them?** What infrastructure might be available there in fifty years time? **What technologies may be found in the public space?** Who would be using these technologies? **What could be the main economic activities in the area?** Who will be conducting these activities? **Who will be benefiting from them?** What kind of work will be available in the area? **What might be going on in neighbouring areas?**

In fifty years time, how will people know about what is going on in the world? **Will they still be interested?** How many people will be living on earth? **How might they be spread over different continents and regions?** How will they communicate? **How will they celebrate?** What kind of work will they do? **What religions will they practice?** How will they worship? **What will be important reasons for celebration?** What is the best thing that could happen in the world as a whole in the next decades? **What is the worst thing that could happen in the world as a whole in the next decades?** What do you expect to happen in the world as a whole in the next decades?

# SO MANY FUTURES SO MANY QUESTIONS



