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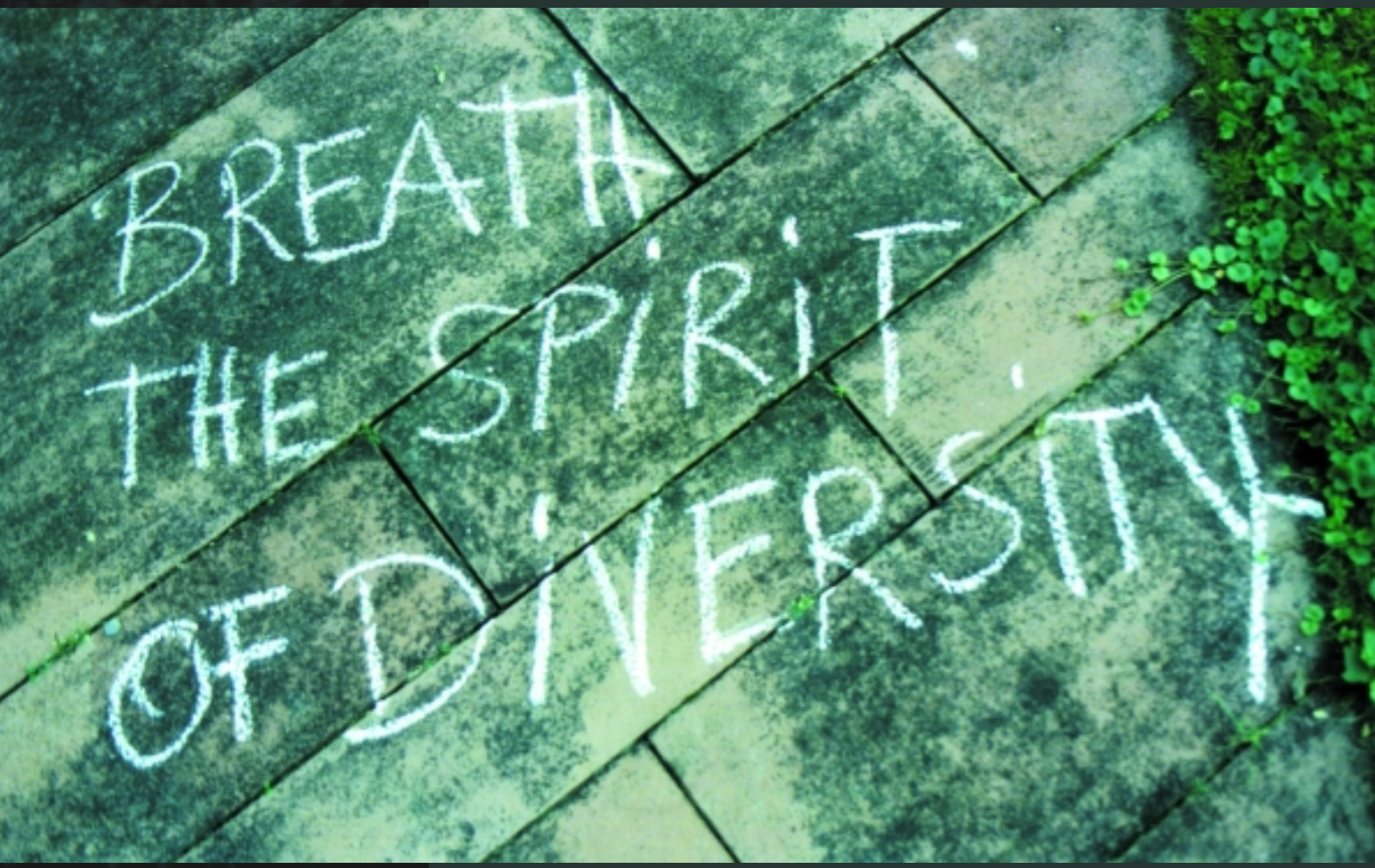

Future Societies

Principles of Order for the 21st Century

Aventis Triangle Forum
September 8-10, 1999
Frankfurt am Main, Germany

Painting "Encounter" by Jörg Frank, Cologne

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Editorial

The beginning of the 21st century brings with it both hopes and fears. On the one hand, processes of political, economic, and social change in recent decades are opening up new opportunities for the future. On the other hand, humanity is faced with complex challenges requiring innovative solutions that no one has even begun to look into.

Statistics indicate that in just a few decades, around ten billion people from a wide variety of cultural backgrounds and political systems will inhabit the earth. There are many signs that the income divide will become even greater and that the gap between the educated and uneducated and the haves and the have-nots will become wider.

The future cannot be predicted, let alone planned. Nevertheless it is unlikely that the major trends that have influenced human thinking and actions over the past decade will disappear in the near future. Better and faster communications technology, exponential increases in knowledge, and the development of new technologies, for example in the biosciences, will give rise to a wave of innovation that will soon reach formerly untouched regions and realms of life. It is clear that ways have to be found for a population of ten billion people to be able to co-exist.

We don't know whether the political, economic and social tools at our disposal in the 20th century will suffice to shape the 21st century: are the existing value systems of the world's different cultures strong enough to withstand global interaction? Are systems of law and order or neo-liberalism suitable drivers of sustainable development around the world? Can they promote the convergence of living standards? Are western political and social standards the right basis for a global set of rules to live by? Are such rules needed and who will set them?

The Aventis Foundation, which was founded in 1996, aims to promote projects that raise these issues and are at the same time interdisciplinary, international and intergenerational in nature. It wants to create and support networks that link up available knowledge resources, creativity and intelligence and intentionally cross interdisciplinary boundaries. These networks require constant feedback in order to generate ideas and impetus that can be used to create and shape a sustainable future. The Aventis Foundation wants to identify the cultural catalysts of tomorrow and to give them a forum to present their ideas for the future in dialogue form. Contributions to artistic, scientific or political or social causes are welcomed.

The "Aventis Triangle Forum", which was held for the first time in September 1999 in cooperation with the Center for Applied Political Research, is an example of this type of project. The contributions to and discussions at the event regarding the question "how we want to live tomorrow" are documented in the following pages.

Jürgen Dormann
Chairman of the Board of Trustees of the Aventis Foundation

Chairman of the Board of Management of Aventis S.A., Strasbourg

Preface

Prof. Dr. Dr. h.c. Werner Weidenfeld
Director, Center for
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The internationalization of many issues of daily life, together with technological progress and the variety of reactions towards it range among the biggest challenges for the ability of political, economic and social leaders to devise and implement new policies. Innovative governance strategies are less and less developed within the traditionally responsible institutions. Most of today's active international organizations were constructed under different economic, political and social assumptions from those pertaining today. They reflect past interests and decision making structures. Therefore, the suitability of today's whole web of international organizations is severely tested by the present period of transition. Given this state of affairs, non-state, open and independent forums acquire a special role in processes of policy innovation, orientation and mediation. As a pools of ideas formed through the concentration of creative energy, they can contribute substantially to the shaping of the future. To take on this challenge, the 1999 Aventis Triangle Forum in Frankfurt am Main brought together decision-makers from North America, Europe and Asia in a creative dialogue on the global future.

For this task, the Center of Applied Policy Research and the Aventis Foundation recruited high-level participants from three different continents and a wide spectrum of different professions as well as varying social and political responsibilities. The aim of the project was to discuss sustainable solutions for political, economic and social problems within the framework of an open discourse, in order to synthesize and utilize the knowledge and experiences of professionals from a wide array of different fields. Against a background of accelerating globalization and path-breaking technological innovation, especially in the fields of information technology and biotechnology, the forum was a place of intensive debate about the future of social life.

Are democracy and the welfare state reconcilable with globalization? What has to be done to organize employment for as many as possible? What conception of "work" will be relevant in the future? What consequences do these developments have for the long-grown web of institutions like churches, trade unions, the family and forms of economic organization, which helped to define societies in the past? To what extent can new technologies contribute to the solution of essential problems like a growing world population, the growing demand for food, persistent poverty and new forms of violence? Supported by a working document that provided the thread for the discussion, all these questions were considered at the conference in Frankfurt.

There was agreement about education as the essential instrument for shaping societies' futures. In this context, it will be important to not only teach people how to use new technology, but also to use it sensibly and responsibly in order to create real added value from the growing flood of information. The allocation of tasks and responsibilities is at the core of social and political debates. The issue of the democratic legitimization of civil society will increasingly occupy the debate about the role of different social agents. The relationship between technological innovation and social stability will be of critical importance. New technologies can help to solve existing problems. However, where their potential for problem solving is not sufficient or where new dangers may result from their usage, new social instruments will have to be developed.

In a time without overarching visions, the fundamental question arises of how approaches to strategic leadership, beyond stopgap measures to cope with change, can be formulated and translated into a wider debate. The concern of the Aventis Triangle Forum is to formulate such approaches to strategic leadership. To continue thinking about them systematically in the future remains our task.

Future Societies:
Principles of Order for the 21st Century

Discussion Paper for the
Aventis Triangle Forum
Schloß Hoechst
September 8-10, 1999
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Research Group on
the Global Future,
Center for Applied Policy
Research (C•A•P)

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I. Globalisation, Technological Innovation, and Social Change: Molding the 21st Century

The twentieth century bid farewell with the ambivalence of fundamental shifts in the co-ordinate system of the industrial society and nation-state. In this system, the general conditions of society were defined by two conceptions: national state and national economy. The correlation of these two ensured income growth in many countries as a result of efficient value creation in market economies. Nation and society formed reference points of collective identity and the framework for mediation of social and political conflicts. The economic model was based on a market structure that rewarded efficient efforts, favoured competition, and secured rights of ownership. This was the basis of economic growth and of the ability to change structurally.

Within the framework of the nation-states' political constitution, political civil liberties were clearly defined. Division of powers, along with parliamentary government, guaranteed maximum supervision of those in power. Supported by a broad political consensus of parties and interest groups, pluralistic societies produced a settlement mechanism through which the denominational and social conflicts of this stage of modern society could be moderated.

In the age of globalisation, the ordering power of this conception is weakening. The range and speed of this shift demand transformation of the organisational structure of industrialized nations. On the threshold of the 21st century, we are faced with a blueprint of the future depicting a transnationally connected society, whose central economic resources consist neither of iron and steel nor electricity and chemistry, nor of large industrial organisations. Rather, these economies are based on knowledge, communication, transnational networks and decentralised production. At the same time the gap is widening between global reality and the out-dated leadership experience of existing institutions.

» Globalisation and technological advance question structures of order «

In close connection with this transformation are the developments in biotechnology and genetic engineering, which are paving the way to revolutionary innovations in biomedicine, pharmacy and agriculture. Technological advance promises a new dimension of shaping living conditions around the globe.

At the same time, genetic engineering allows access to the biological architecture of humankind and its potential is comparable to the Hippocratic revolution 2,500 years ago. The possibilities of genetic engineering allow the natural history of the organism to pass into a new age, wherein the shaping of life lies in human hands. The connection between information technology and the advances in biological sciences changes the substance of societal co-existence. Humans are defining their own species and at the same time challenging the age-old creation myths and the paradigms of religion and philosophy.

» Genetic engineering initiates an era of human responsibility «

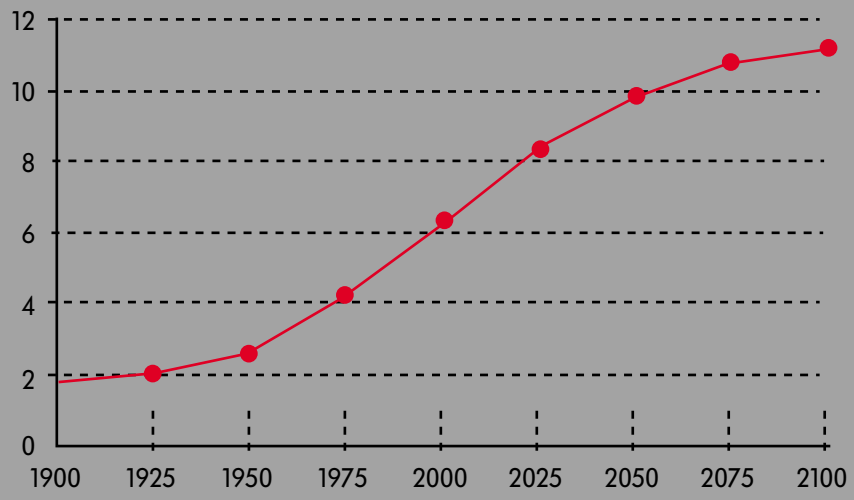
The new technology means opening up new possibilities for society, but at the same time closing off traditional ones. Digitalisation is eliminating the accustomed stability of both working life and career, as well as social status and societal surroundings. Established forms of solidarity and social structures are losing their impact. Although this networking dissolves conventional structures of societal fellowship, it also lays building blocks for new structures.

» *Global problems become more and more critical* «

The process of globalisation not only represents new opportunities for more productive interdependence, but also for a new sensibility concerning the interactions and burdens on the world system. The upheaval in industrial societies sharpens the senses for the general global conditions of economic and technological transformation. Transnational relations of the future present seven challenges:

■ Even though world-wide population growth has decelerated somewhat, by the year 2050 between 8 and 10 billion people will inhabit the earth, with 3 billion in Asia alone.

World Population (in billions)



Source: United Nations

The mega-cities of the future will be located in the world's poorer regions, where children and youth already form half of the present day population. Their nutrition, education, and occupation will become the critical questions of politics.

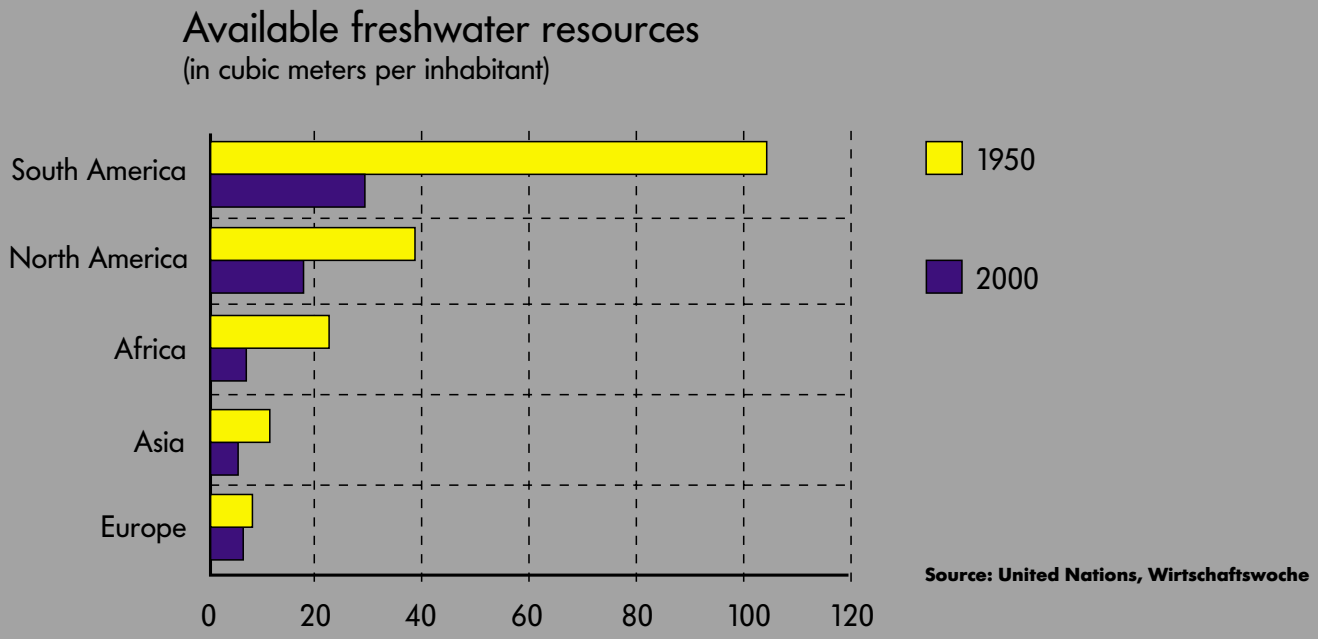
In the meantime, population growth is increasingly narrowing living space. Greater concentration is leading to social, ethnic and political conflicts and could become the starting point of mass migrations. At present, there are over 200 million people fleeing rural poverty for the city, or conflict regions for stability. In the ageing societies of the northern hemisphere the population pyramid is reversing and present day social security systems will be caught in a crisis if a decreasing work force has to care for an increasing number of persons receiving services.

■ The spread of toxic substances, the acidifying of lakes and forests, and the contamination of the atmosphere with effects on the climate and biosphere have not yet stopped. Burning fossil fuels releases more than 20 billion tonnes of carbon dioxide into the air year after year. If nothing is done, the world-wide production of carbon dioxide will rise to 31.5 billion tonnes by 2010. The eastern and south-eastern Asian countries will replace the USA as the world's greatest emissions producers with an increase of 180%.

» Population growth, demographic change, ecology «

■ One hundred fifty to two hundred species disappear from the gene pool daily. On the other hand, goods and services are dependent on the variety and variability of genes, species, populations and ecosystems. The genetic material provided by plants, animals, and micro-organisms holds great potential for agriculture, nutrition, health, the general well-being of humankind, not to mention the goals of environmental politics. Agenda 21 rates these biological resources, with good reason, as the capital stock of the future, i.e. this stock is our potential for obtaining lasting profits and its increasing destruction is a huge loss for generations to come.

■ The economic development of an ever-growing world population calls for new methods of producing energy and supplying water. The present available resources, even if the distribution were to be optimised, are inadequate. The earth's surface consists of 71% water. Less than 1%, however, is fresh

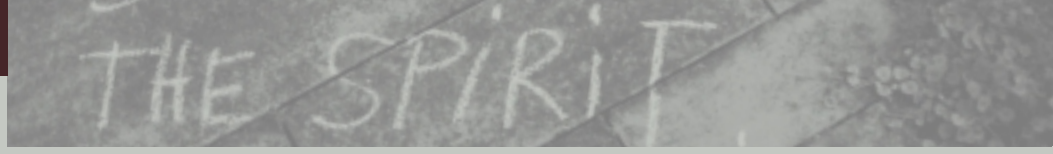


water and thus useful for humans. Increasing consumption, pollution, and waste are dwindling our resources. At present over 2 billion people are without access to clean drinking water and 5 million of them die annually from infectious diseases transmitted through polluted water.

■ The political consequences of demographic, ecological, and social crises are endangering peace. Growing poverty, disregarding of human rights, and an ever-increasing population stir up conflict, particularly in the southern hemisphere. The proliferation of weapons of mass destruction and their possible use by totalitarian states or terrorists becomes a global threat as the network of transnational interdependence grows ever denser. The signs of the times in the approaching century are newly aroused wars caused by ethno-national, social or religious tensions. Just Europe and its periphery in the Middle East have seen seven new regional conflicts since the beginning of the nineties.

» War and peace, financial instability, unemployment «

■ International finance markets have seen an increase in the problems of globalisation resulting from speculation, hysteria, and automation of buying and selling. Free and volatile flows of capital pose control problems for many states and financial institutions. Consider, for example, monetary speculations that occurred in Europe at the beginning of the nineties, which led to Britain and Italy's expulsion from the European monetary system. The collapse of the monetary policy in Southeast Asia at the end of the century is a further example.



■ The old equation of growth and employment is no longer valid for the global economy. As the expectations for Europe and Asia show, the employment crisis remains dominant in those areas where structural change stagnates. According to estimates, the end of the century saw 16.9 million unemployed for the EU (1989: 12.8 million), 3.75 million in Asia-Pacific (1989: 2.0 million), and 2.87 in Japan (1989: 1.42 million).

The transnational society is simultaneously confronted with the consequences of globalisation, the impact of technological change, and the inherited burdens of the past century. With the globalisation of many political issues, there is increasing pressure to develop global means for steering change. Presently, this supplementing of nation-states' political ability to guide change is, at best, only discernible at regional levels. In many cases, the political decision makers do not sufficiently accept the new political challenges. Discrepancy is growing between the actual control of the global state of affairs by the economy and economic cycles, and the influence of this reality on the politicians. The question of how a globally connected economy and society should be efficiently administered, sensibly governed, and democratically legitimised has yet to be answered.

» *Pressure for global governance* «

Globalisation has already changed important democratic circumstances. Politics has lost the ability to influence incidents when its solution structures do not keep pace with the internationalisation of problem structures. However, if it is not possible to fit lost capabilities of nation-states into another level of democratic framework, then internationalisation drains the democratic substance from decision-making. Eventually, social conflicts spread if differing classes and situations of interest do not find politically mediated balances in the transnational society. On the one hand, the result may be the development of political extremists who could utilise popular discontent and endanger the continued existence of democracy. On the other hand, democracy is in danger of turning into a backdrop where citizen legitimised action wastes away to symbolism.

» *Globalisation reduces democratic substance* «

On this basis, questions for future societies arise in dramatic new ways, without the present generation being adequately politically or intellectually prepared. The search for functioning forms of order and society must be intensified, i.e. is transnationalism also leading to a tightly connected world civilisation? Are society and economy removing themselves from the narrow fixation of the nation-state? Does technological change offer solutions to the urgent economic, ecologic and demographic problems of the future? Or are compensating opposing trends – trends that will lead to regional demarcation, national renaissance or state control of new technology – prevailing? Will this situation more likely lead to global co-operation or global conflict?

The visionary energies of the world seem exhausted and a construction plan for future political worlds is not in sight. One senses that globalisation will have similar revolutionary social and psychosocial consequences and side effects to the social question of the 19th century. And still, the fears and models of the past dominate the debate on the future. Insights from the political world on the necessity of new political categories and strategies to implement the third wave of the industrial revolution are still pending. Three central questions are at the heart of this clarification process:

- How can adaptations in commerce, employment, and distribution be carried out so that economic prosperity is possible and ecologically sensible in the future?
- What do political freedom and democracy mean in a limitless society?
- What impact do these changes have on human identity and social cohesion?

» Familiar organization models outdated «

» The present is an interregnum «

As long as these basic questions remain open, the turn of the era will occur without orientation on how to effectively build these fundamental achievements for the future. At present, the societies of America, Europe and Asia are living in an "interregnum" in which every thesis and tendency finds its opposing thesis and tendency.

The phenomenon of compensation determines the pulse of our time. No orienting picture of the future is bringing social controversy to a head, no unequivocal trend that could carry us over the threshold of the millennium, and no means which specify what we should desire are presently discernible. The assumption of power by such an alliance of disorientation and information is deeply alarming.

II. Compensation – The Dialectic of an Interregnum

» Compensation as a sign of the times «

The mobile information society is fulfilling a new global reality, initiating a new phase of social change, and intensifying the extent of international interdependence. The cement of the old order no long binds societal powers. The vertical lines of the East-West conflict that were so influential for decades are being replaced by horizontal conflict lines within societies. In America, Europe, and Asia-Pacific societal cohesion has been based on a promise of prosperity and on the desire of all to live better. Globalisation opens up new prospects for that, alongside new challenges, as international interdependence means an increase in vulnerability to failures elsewhere and creates interaction between societies far removed from one another in both distance and culture.

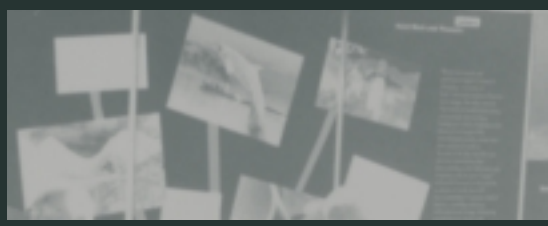
Because globalisation is so far ahead of societies' recognition of its effects, a time lag has opened up. The globally relevant problem patterns no longer correspond to the prevailing national, regional, and international solution structures. A paradox seems to exist – the quantity of available information has never been as abundant as it is today and yet the idea of human future remains vague.

Societies and politics have delayed reactions to rising challenges. Their structures reflect the processing of back-dated conflicts and problems. To date, this model has proved itself in a traditional speed of development, but it may break down when the tempo of change increases. And that is

just the case today. Political adaptation can not follow the dynamics of economics and technology. Societies are stepping backwards into a future in which much will be without precedent, i.e. the size of the world population, the density of its communication, and the measure of its economic interdependence.

» *Social institutions and political authorities react too slowly* «

The radicalness of this structural change is expressed by compensation, in dialectic search for a balance between risks and uncertainties. This radicalness is typical for an interregnum and for society's uncertainty about future paradigms. An interregnum is a stage of transition where differing, sometimes opposing, models compete. It is becoming obvious that globalisation and technological change will provoke a conflict of feelings within many people. The confident trust some have in new opportunities for individual and societal development faces the fear others have of losing material possessions and social security.



This interregnum of contemporary society is expressed by three models of interpretation that respond to specific characteristics of the change:

■ Globalisation leads to sharpening of cultural zones

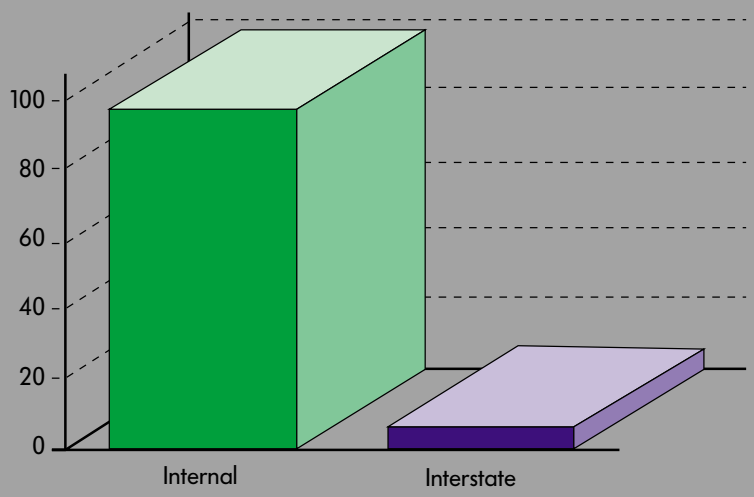
The creation of a transnational networked society, supported by both English as a standard language and a spreading communication network, results in a countermove to emphasise regional and local unity in an effort to preserve individual identity. Citizens, social groups, or sections of society actively evade the uncertainties of the transnational world. Such reaction models are best articulated by the sharpening of cultural zones, which is becoming especially obvious in the growing number of ethno-national conflicts.

The universalism of globalisation provokes demarcation, and internationalisation has nationalism and fragmentation as consequences. Ethnic, historical, and national ties gain power to cause conflict.

» While international conflicts decrease, regional or national conflicts increase «

The risk of international wars has diminished with the end of the East-West conflict. At present there is no threat to security comparable to the danger posed by the bipolar world system. In return, however, the increase in internal or regional conflicts cannot be ignored. In Europe there are, for example, the ethnic confrontation in Kosovo and the ethno-national conflicts in Ireland, Spain, and France. Other examples are the minority and nationality conflicts in Southeast Europe and the political conflict potential in Asia, where increasing ethnical and social tension is possible. The financial crisis has thrown parts of the population into poverty and the political systems have proven themselves unstable. The region lacks the democratic tradition of Europe or North America to be able to mediate conflict with majority votes.

Number of armed conflicts 1989-97



Source: Stockholm International Peace Research Institute (SIPRI)

» Xenophobia, nationalism, fundamentalism, extremism «

The internationalisation of politics and economics is increasing the contact points of different religions, world views, and ways of life. Topics of conflict are arising between, as well as within, societies and often marginalisation, xenophobia, and fundamentalism are the answers to political change. This is exhibited by the attraction of Islamist movements in central Asia, the nationalistic politics of right wings in Russia, or the extremist endeavours of some Hindus in India.

In the industrial nation-states themselves, interdependence and immigration can lead to xenophobia. Globalisation seems, to many, to be a zero-sum game where the gains in other economic areas automatically imply losses at home. The prospects of major discontinuities in individual biographies create uncertainty and fear of the future. The search for individual identity, anxiety about personal protection, and defence of one's own terrain can cause the stranger to seem increasingly more threatening. Migration of people in need calls for state resources and can rouse conflict to the point of actual violence. The gains by movements hostile to foreigners in Germany and France in the nineties are prominent examples of this, as is the violence in Indonesia against well-to-do Chinese. In order to uphold civil and peaceful order, however, it is essential that people learn to live with this new variety, to respect differences, and to be able to handle them open-mindedly.

In terms of economic regionalisation, the USA, Europe, and Asia have all, to varying degrees, grasped the economic problems resulting from globalisation and combined their strengths and skills. This resulted in NAFTA in North America, Mercosur in South America, the EU in Europe, the ASEAN in South Asia, and the APEC in Asia-Pacific. The goal of economic regionalisation is to expand trade and stimulate the growth with liberalisation and deregulation. Economic activity is executed within the framework of common concepts of order and procedures, which make conflict solutions as well as regulations possible.

» *Regional integration economically successful* «

■ The decline of traditional belief systems provokes a search for new orientations

» Traditional ways and means become less attractive «

The extent and speed of the economic, technological and societal change is already overtaxing many people. Excessive demands of change are strengthened by a loss of collective identities in modern day society. Collective identity deficits are the result of a world that has become non-transparent, and in which no institution has a monopoly on making sense of the world. Traditional large institutions, such as parties, churches or associations, and their accompanying political programmes, ideologies, or religions have lost their binding power. Europe is going through a phase of so-called "de-churching" like no other region in the world. Secularisation has led to an idea of society that renounces religion's traditional interpretation. Religious and similar impulses are migrating out of traditional institutions, and new religious as well as non-religious groups are laying claim to recognition in the public arena. This shifting of the search for meaning becomes most apparent when one looks at large enterprises. They are becoming ever more the point of orientation whose meaning for many employees clearly exceeds its primary interest of the optimisation of operations.

Individualisation, as well as new common sources of meaning, compensate for deficiencies that have grown over long periods of time. Modern society thereby produces a dialectic simultaneity of contrasts. Within just a few generations, individualism has dissolved deeply rooted customs and traditions. Rituals have been crushed and central institutions weakened. Whereas sturdy social foundations once defined social cohesion, today individual life plans dominate.

The increase in individual freedom is further connected to immense personal responsibility. The individual now must permanently organise and care for his own social integration. Because economic prosperity is the basis of individualising societies, one can expect such tendencies to increase in south-east Asia, provided growth processes continue and individualisation tendencies

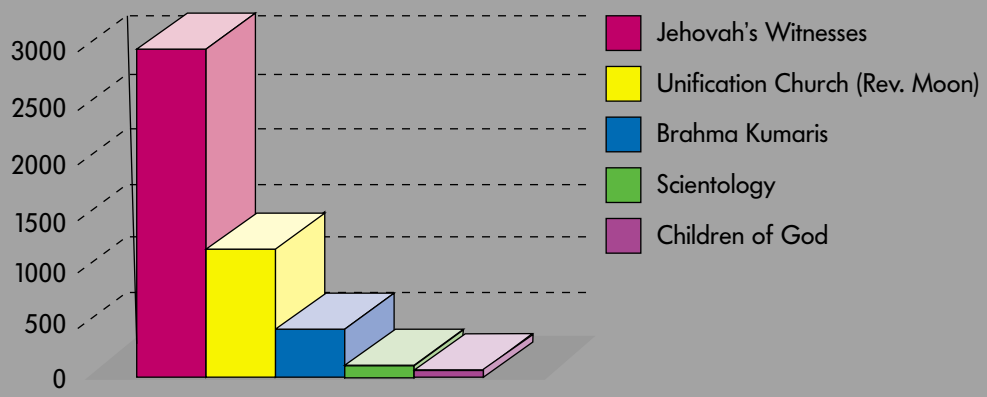
are not suppressed by a strong cultural or political opposition movement. At the same time, however, there is much to be said for the fact that individualistic tendencies are meeting their boundaries in the western world. The plea of the communitarians in the USA indicates plural society's weakening meaning, as does the European boom in new providers of meaning, from sects to alternative social movements. They reduce the constant pressure of self-integration and physical self-assertion by conveying identity and offering collective cover.

» *Simultaneous individualisation and search for collective meaning* «

Interest in alternative religion is growing. In 1997 new religions and sects world-wide registered 138 million members. For example, in 1935 in Japan the group Soka Gakki split off from Buddhism and by the mid-nineties could count on 20 million members. Their ascent indicates an intercultural trend, i.e. individualisation alone is not producing a fulfilling social life. Pluralisation and changing values demand understanding through societal norms which are independent of sectarian convictions.

» *Boom of alternate religions, sects and movements* «

Members of sects and new religions 1997 (in thousands)



Source: Wiebus, Hans- Otto: Religionen, Sekten, Seelenfänger. Bindlach: Loewe Verlag GmbH, 1997.

■ The erosion of nation-states' problem solving abilities leads to the development of transnationally operating non-governmental actors

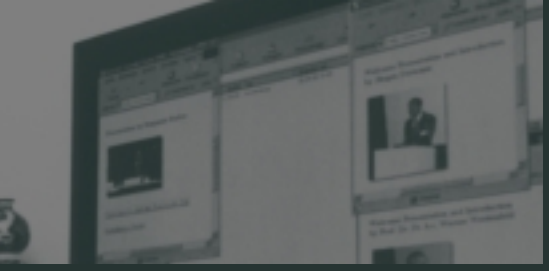
A key experience of modern society is the increasing irrelevance of political, economic, societal, and cultural borders. They are being confronted with a growing number of international networks. International organisations and transnational, non-governmental actors are influencing political events more and more. They intervene in the internal affairs of nations where problems overtax conventional state action. Globalisation is resulting in nation-states no longer being able to effectively fulfil their traditional responsibilities without new forms of co-operation and communication. Politic and economic interdependence are changing nation-states' autonomous scope for action. The territorially bounded democracy loses its substance while transnational politics gain in impact power – mostly without democratic legitimation.

» Increasingly limited margin of action of the nation-state «

Globally acting firms as well as non-state organisations relieve the welfare state by patronage and commitment to the community. Firms are also becoming centres of competence in the change process. By taking over social responsibility they are likewise defining political positions and influencing the topics of international politics to an increasing degree.

Transnational enterprises are becoming weighty actors in international politics and their resources are often considerable. General Motors' turnover of $125 billion US in 1995 exceeded the gross national product of a medium sized economy like Norway. In 1968 7,276 companies were operating globally compared to 35,000 in 1990. By the end of the century this had reach 45,000. With their 280,000 subsidiaries abroad multinational firms produce one third of the world's products. More and more they control international investment and financial streams. Their foreign investments have increased greatly in the recent past and in doing so raised the importance of such companies for national economies. (A growing part of world trade is not properly foreign trade because it is investment and delivery of goods and services within transnational enterprises. The volume of these global transactions is estimated to be approximately US $200 billion daily.)

» Globally active corporations and non-governmental organisations as new actors in international politics «



The number of international non-governmental organisations (NGOs) rose from 1,899 in 1968 to 4,646 in 1990. By the end of the century it had doubled once more. Their influence is growing: the world-spanning activities of the Pugwash conferences, the environmental protection organisation Greenpeace, or the human rights organisation Amnesty International are all examples of this. The raw material for this work is information, which is the instrument of effective communication. The transnational society is creating the platform for more expansion by further optimising digitised data flow. Even smaller organisations will be able to perform internationally coordinated and effective actions.

» Companies and NGOs gaining political importance «

Globalisation and the fields of compensation sketched above are being driven by accelerating cycles of innovation. Both processes – opening and renewal – are interrelated. The development of new technologies opens up new fields of growth and reduces the transaction costs of acting across national borders. On the other hand, globalisation stimulates competition and thereby increases pressure to innovate. These international developments bear a certain resemblance to the situation at the beginning of the twentieth century, as internationalisation andtechnological progress brought about an unsurpassed level of simultaneous competition and interdependence. At the end of the century, the process is repeating itself but with greater speed and density than ever before.

III. Digitalisation and Biotechnology: Chances and Challenges for Future Societies

» *Revolutionary impact of technological changes* «

The innovative power of digital networking and advances in biological science are developing revolutionary impact. This will globally change present forms of work, communication, entertainment, education, business, leisure time, and health. Digitalisation and biotechnology will not only become so urces of new value creation, but will also aid in solving current ecological and economic problems. Scenarios for development of both areas call for social means of coming to terms with this upheaval.

■ Digitalisation

» *Digitalisation makes new kinds of solutions possible* «

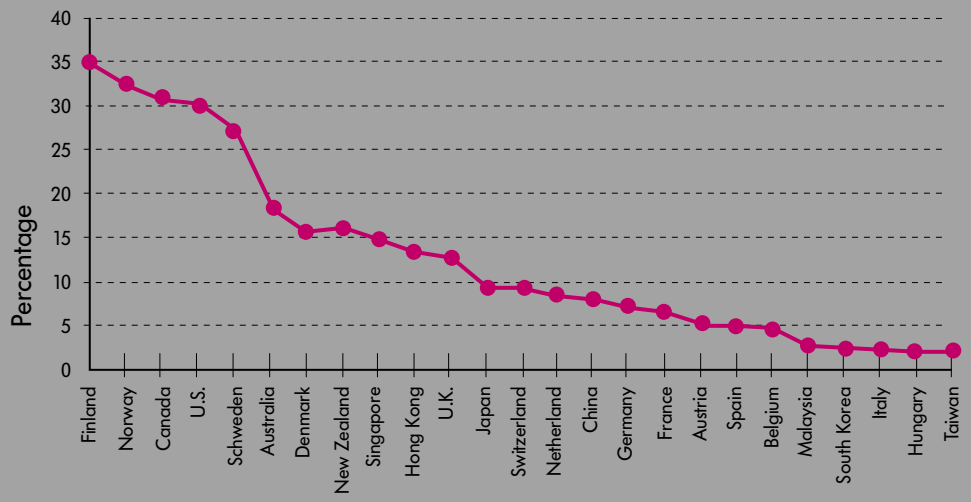
Digitalisation enables the optimising of various technological information systems. It marks the connection of telecommunications with computer and satellite technology, and with consumer electronics. In conjunction with the construction of comprehensive data connections and the development of new storage media, digitalisation enables communication to overcome borders and span the entire world. According to some estimates, by the year 2020 it will be possible for people in all corners of the earth to attain all publicly accessible information and contact any other person, if they so desire. As a result, a global market will arise, a virtual continent so to speak, which will broaden the materialism of the real world with a new dimension. In the next qualitative development phase, quantum and DNA computers will overcome capacity and transmission deficiencies in digital methods by combining molecular and optical technologies.

Digitalisation opens up new concepts and solutions in all data-intense areas, i.e. employment, education, and infrastructure. Thanks to digitalisation, homes will become interactive systems capable of determining the residents' needs via sensors and adapting accordingly. Automobiles, aeroplanes, and railways will become increasingly more intelligent with digital control methods and will be able to steer themselves over long distances via autopilot, seek out the best routes, and offer their own communication possibilities. In medicine "shrinking" technology will play an increasingly prominent role. Nanorobots may be able to mill through plugged arteries, implanted biochips to monitor one's health, and minicomputers to partially replace lost senses in the blind and deaf.

The basic framework of a networked and digital world is the internet with its commercial subsystems and the growing number of intranet set-ups in firms and institutions. Furthermore, world-wide communication is developing in leaps and bounds. Since 1959, 3000 communication satellites have been put into orbit. With our multimedia world, the requirements for communication capable of overcoming boundaries in time and space have fully developed. In doing so, digitalisation has considerable impact on the production of goods and services, understanding among people, execution of political power, and lastly on essential organisational aspects of everyday life.
In 1993, only ten million people were internet users. At present, the number is doubling every 100 days. Estimates show that by the end of 2001 nearly 225 million people world wide will use the internet. If one projects this development, then by the year 2010 three billion people will be using the net. While the innovations of radio, telephone, and television required decades to become integrated into society, the internet has asserted itself in only a few years.

» Combination of internet, telecommunication and satellite technology as technological base «

Internet users as percentage of population 1998



Source: Nua Ltd.

» Abuse of the internet creates debate about regulation «

With its growing density, the internet is becoming a medium that requires regulation and orientation. Data protection and the guarding of intellectual property require effective international decisions regarding general legal conditions. The distribution of child pornography or political extremist content demonstrates that the freedom of the data network must be regulated by a responsible society.

The internet's freedom undercuts all possibilities for authoritarian political systems to monitor economic, cultural, and political communication. Countries like China or Singapore, where the government is seeking to control internet usage, will test whether open communication promotes social stability or political conflict. At present however, internet use is still quite limited and is therefore less threatening for the authoritarian state. Sooner or later the internet will undoubtedly become a powerful factor that, along with economic modernisation, will influence China's political and social development.

The Development Differential of the Digital Revolution

The transition to a global communication society, the access to information and knowledge will split the international community. There is a gap between the highly developed information societies and the emerging markets on one side, and developing nations on the other. If nothing changes, only a fraction of humankind will profit from the opportunities communication has to offer. To illustrate: there are just as many telephones in Tokyo as in all of sub-Saharan Africa; world-wide, approximately four billion people live more than two hours from the nearest telephone; a mere 0.1% of Africans have internet hook-up; one could provide for an entire family for one year in Bangladesh for the cost of internet access.

» Information elites also in developing countries «

Emerging markets like India, Malaysia, or South Korea are becoming high-tech islands, offering competitive information and service products world-wide. The Indian Silicon Valley, Bangalore, as well as the Korean high-tech centre Anmyon, prove that the high-calibre education of many Asian natural and engineering scientists is producing a new group of pioneers and top performers familiar with modern high technology, and who are able to produce innovative products and services. Global digitalisation allows emerging economies to progress without having to pass through all the classical steps of industrial and infrastructural development. With access to specialised literature, media, television, and advanced communication, including world-spanning networks, the ability to use global information, and the opportunities provided by a comprehensive education consequently decide who wins and who loses in the new economy.

Digital Employment and Society

The creation of virtual worlds revolutionises the education systems from elementary school right up the universities. Later in the twentyfirst century, humans will be able to speak with computers; a telephone call with a foreigner will probably no longer require an interpreter, thanks to connected artificial intelligence. An interpreting telephone the size of a wristwatch will be able to perform this service.

» Digitalisation changes learning and education «

Subject matters and research results can be communicated globally and connectively without any great loss of time. Mutual adoption of best practices will be made easier. By reducing costs and subsidising access, the disadvantaged can be aided. For those with physically limited mobility, the interactive elements of the internet open up easy access to the world.

» Decentralized and flexible employment in the new work force «

Volunteer employment is finding both offers and inquiries in the internet. Civic society is supported by physical as well as virtual neighbourhoods. The necessary flexibility of the future working world can be enhanced by internet utilisation. The economic, ecological, and social costs of this mobility are sinking. Increases in knowledge and project work, whose raw material is information, can be carried out via the decentralised set-up of networked employment places. The digitalisation of work routines will increase productivity by 20% and in doing so improve the competitiveness of companies. As a result, digitalisation opens up organisation potential corresponding to the needs of a flexible working world, but does not have to stand in the way of individual desires of self-realisation.

Digitalisation restructures future societies according to the intensity of participation and the shaping role of social groups. On the other hand, digitalisation can also contribute to moderating the division lines of globalisation within society, i.e. sectors of society that presently hold a small share in this process, and whose life and working world are particularly regional and locally influenced, will be balanced against the transnational acting elite in the economy, administration, and society. The experiences of global interaction will only open up to this circle indirectly. Politically, the dividing lines could lead to opposition between elitist and populist representation of interests. The digitalisation of civil society and networking over borders and experience scopes can fill at least a gap in experience by opening to the wider world personal and professional circles that had been limited to a local outlook. For example, a plumber whose market was and is local may order spare parts from international suppliers over the internet, or a member of a local citizens' initiative may exchange ideas and experiences with other local activists in distant locations.

Motor of a New Economy

Together with the life sciences and other highly productive digital sectors, the information business is laying the cornerstone of a new economy. Information will take first place among the production factors of the future economy. Concepts, content, and assessment services for the national and international financial, goods, and service markets, as well as consulting firms for companies, offers for continuing education, and the strengthening of individual and social competence are all shifting to the center of the new economy. The world of material goods exists beside that of digital products.

» Information as a factor of production «

The digitalisation of information urges the integration of once separate industrial sectors. The value-creation chains of telecommunication, media and information technology are growing together in complex relations. The borders between media firms as information providers as well as telecommunication and internet ventures as technical service providers are merging. Large telecommunication or media groups have either founded or bought internet service provider firms, or are in cooperation with online services, through which more and more people enter the internet daily. Using digital technology, television pictures, radio programmes, web pages, and telephone calls can be transmitted within converged formats and be used interactively in increasing amounts.

Ecological Prospects

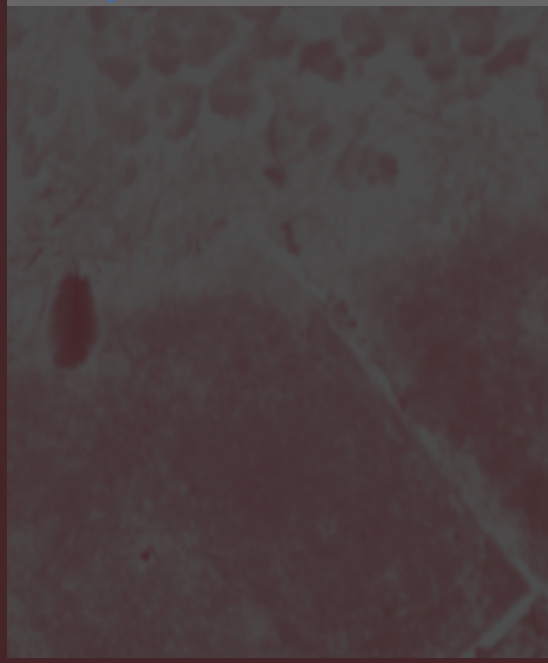
» Decrease of emissions «

Digital expansion in the economy is growth without limits. That is to say, without the limits defined to date by energy and raw material consumption. Digitalisation will re-shape economic growth to be more ecologically tolerable, i.e. a decentralised internationally networked information society reduces transport costs and traffic flow, and digital waste does not require disposal sites. Optimising electronic control of production facilities will diminish both the energy input and the pollutant output of industrial manufacturing. In this way, digitalisation will become a pillar of ecological sustainability. Technological solutions alone, however, are not sufficient guarantees of sustainability. Savings on resource consumption are offset by feedback effects. An increase in resource productivity can create new needs and trigger greater consumption by sinking prices, raising product quality, or creating follow-up products. The original limited use of natural resources is thereby surpassed.

Potential in Biotechnology and Genetic Engineering

» Changes in reproductive medicine «

Biotechnology and genetic engineering make it possible not only to heal disease, but also to act preventively before an outbreak occurs with an early diagnosis, thus possibly enabling many risks to be eliminated. In fifty years, it will be possible to identify and delay physical wear and tear and life expectancy will rise to over 90 years of age. By the year 2005, the three billion genetic material components will be deciphered, and in 25 years it will be possible to specifically correct the genotype. By the year 2010, cell and tissue cultures are to be used in the production of transplant organs. Donor and receiver can be one and the same, so as to bypass rejection reactions and the moral problems of organ donations. Already at present a specific cloning of animals is emerging, enabling the production of valuable performance animals that could be used to produce vaccines, to name but one example.



Reproduction in this scenario is not a foregone conclusion, and certainly no accident. Over 3,000 test-tube babies are born world-wide each year and their numbers are increasing steadily as a result of ever-increasing parental age. The possibility of genetic engineering via artificial insemination will further change attitudes towards reproduction. This will have distinct consequences:

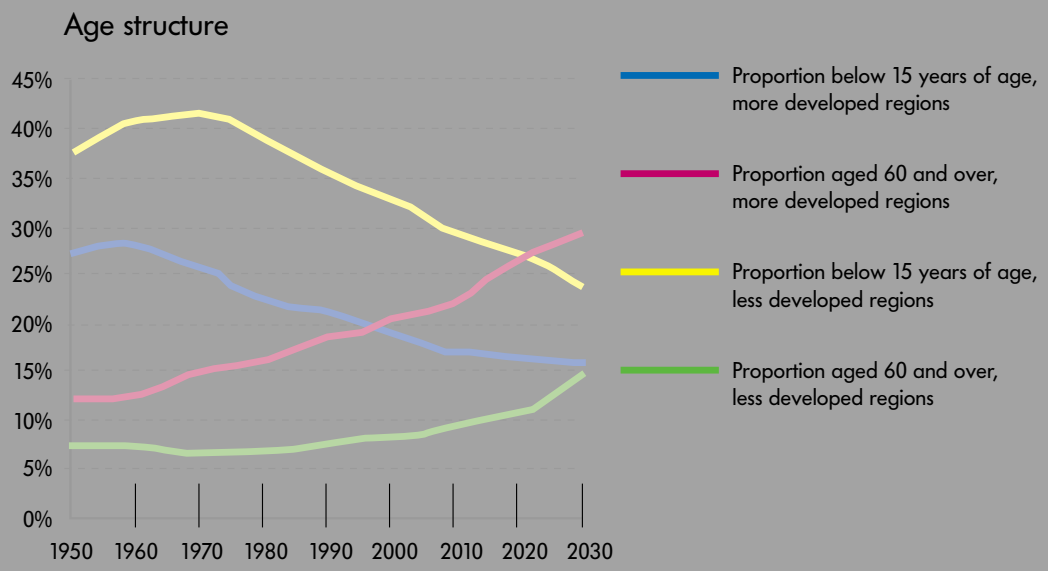
- The generational change will be delayed even further.
- Gene analysis and reproductive medicine methods will allow for correction of genetic make-up and force us to redefine the ethical foundations of our future societies.
- Families will find new forms if people enter relationships for a limited time but have children for the long run.

» High-tech transformation of agriculture «

Biotechnology also opens up possibilities for feeding a growing world population. A large part of agriculture is changing over to a capital intensive and research-oriented high-tech sector, as well as an industry in which DNA can be described, patented, and possessed. In 2025, more than 85% of humankind will live in developing nations and in order to guarantee adequate nutrition for all, agricultural production must increase by 75%.
Biotechnology presents itself as a basis for environmentally friendly foodstuff cultivation. The world-wide available space for agriculture is not decisively extendable and the present forms of intense cultivation are, to a great extent, exhausted. On this basis, biotechnology will become the key factor in foodstuff production for a world of 8 billion inhabitants. However, it will only be able to eliminate world hunger in connection with a more effective distribution system.

Socio-political and Medical Justice

Better nutrition, improved medical care, and the prospects of biotechnology and genetic engineering create new general conditions of social policy. Japan, Germany, and Sweden belong to the oldest countries, i.e. the percentage of those older than 60 years of age is over 20%. In China, this group is growing seven times faster than the entire population.



Source: United Nations

The number of elderly compared to young will sharply increase. This shift is caused by sinking birth rates, creating a decreasing number of potential contributors to national welfare systems. Rising life expectancy leads to higher service claims. The average length of time on pension will rise. Pressure to adapt is especially great in countries like Germany and Italy, whose old-age pension systems are financed by current budgets and not capital. If the percentage of elderly is still increasing at current rates in 2025, the old-age pension percentage share of the gross national product will increase and the additional burden will have to be carried by the employed generation in the form of higher contributions or taxes.

» Challenges for health, pension and social systems «

An additional problem is access to expensive medical treatment. The development of gene therapeutic procedures and medications results in costs. Although treatment costs can be reduced by using genetic engineering prevention, in the end the advances in technological medicine may consequently cause greater financial strain. This is relevant when considering the concept and type of medical and old-age security systems. Such systems must establish fairness concerning universal distribution and care protection. In addition, a growing senior population causes total social expenditures to rise for treatment of disease and other health care. Unless, of course, one wants to accept restrictions on health welfare for seniors.

New opportunities oppose these possible burdens; life expectancy, health situation, and the upheavals in the work world point towards a longer working life instead of a shorter one. The performance limits that are still predominantly physically defined are being measured anew. The active life span is extending. New medical procedures could prevent long-term disease, heal addictions, and drastically reduce care costs. In total, some costs will rise, but realisable savings have the potential to balance out the increase.

» *New opportunities through medical advances* «

■ Ethics of Biotechnology and Genetic Engineering

The possibilities of reproductive medicine ask anew the question of the ethics of progress. The key task is to supplement medical or economic decisions to use genetically engineered intervention with ethical criteria. One can not sweepingly condemn all forms of genetic engineering on an ethical basis if they promise to conquer genetic defects endangering human life. The production of insulin with genetic engineering does not create an ethical problem. Furthermore, the use of genetic engineering, similar to digitalisation, allows for more consistent, and with that more sustainable, procedures. For example, by cultivating genetically altered plants the US has already saved using thousands of tonnes of pesticides.

» *A different form of ethical debate* «

At present, however, we are one not nearly in the position to ignore all the implications of genetic engineering – a control problem in view of the speed of developments in genetic research. The combination of reproductive medicine and human germline engineering seems to be especially problematic for society and is discussed with much controversy. American scientists have already successfully developed a procedure of allowing parents to choose the sex of their child. Children could be made better or fitter than the average. "People made-to-measure" are a part of a scenario of possibilities which could sharpen future society's conflict potential.

IV. New Responsibility: Organising Sustainability

» *New concepts of sustainability* «

Transnational networking, technological advance, and the conflict potential of a shrinking world are setting the stage for reconceiving the idea of sustainability. Agenda 21 from the 1992 Rio de Janeiro Earth Summit anchored the concept of sustainability as a controlling principle in the international community. The Agenda 21 platform formulated action commissions to secure sustainable use of natural resources. Ecological aspects were to be integrated into all political areas.

However, narrowing the term to only its economic and ecological dimensions is inadequate for the future. Sustainable development also requires fixing lasting societal structures that are prepared for the future, as well as the development of sustainable regulatory instruments in politics. To think of sustainability only as a goal would be just as inaccurate; it is much more a quality criterion for assessing the models of order and strategies of future societies with respect to three fundamental parameters of political and societal affairs: political freedom, economic competitiveness, and social cohesion. To date, the assessment of these three goals has been carried out differently. In the USA, political freedom and economic prosperity are in the foreground. Societies in Europe turn their gaze more towards social unity and political freedom and neglect economic competitiveness. Asian countries have tended to emphasize economic growth and social cohesion, at the relative cost of political freedom.

» *Political freedom, economic competitiveness and social cohesion* «

Technical, economic, social, and cultural changes are affecting the results of these achievements and confronting all societies with growing conflicts among goals. The models of order of the past, nation-state and national economy, no longer provide sufficient answers to the question: in which political system, and with what instruments, can a society balance these goals? The national economy does not take into consideration the production factor of the environment; nor does the concept of nation-state impart sensible insights into which type of politics is suitable for the problems of future societies in order to fulfil desired and accepted developments.

Contrary to the Agenda 21 targets, the planning and application of sustainability have their defects. On one hand, they are based on the responsible actors' differing perceptions; on the other hand, on the contextual reference to durable politics. There can hardly be globally connected sustainability conditions, because those conditions are dependent on time, situation, culture, and knowledge. Differing views exist on just how to apply them. Because the term sustainability has been used normatively from the beginning, a standard definition is practically impossible and the concept of sustainability, as well as the programme and discourse, become like a vague cipher, a process for changing societies that can approach the model via stipulations or legal regulations, as well as by voluntary processes.

» *Difficulties of implementing sustainability* «

The deficient application of sustainable solutions may result from the inaccuracy of differing definitions or operationalisations. It is more important to recall, however, that the neo-classic economic model knows neither nature's nor society's barriers. Economical conduct aims at the maximising of economic returns and ignores the biospheres and sociospheres as cost factors. The economic system does not necessarily produce individual or collective behaviour that enforces the protection of natural and societal living spaces. With that, the following question becomes fundamental: how can individual or group behaviour overcome generational barriers and change in favour of balanced economic, social, ecological and cultural factors?

The concept of sustainability that originally came from the ecological problem of unlimited resource consumption, must therefore consider the political and social dimension of human problems. It is about re-designing our balance because protecting natural life, economic performance, social responsibility, and political control belong together. The expanded process of finding and defining goals shows that in addition to efficient technology (and how it can be developed within the framework of digitalised and biotechnical systems), innovative management of the political system and changes in individual conduct can open up real potential for sustainability. The necessity of social learning exists alongside the possibilities of technological innovation.

In the energy field today, for example, one can see that a substantial increase in fossil fuels usage causes the sulphur and nitrogen emissions to rise drastically on global scales, despite the most modern reduction technology. The transition from the present approach to a sustainable energy use pattern appears to be quite conceivable by the year 2010. The technical questions are not of crucial importance here. The problem is how necessary general conditions can be created in order to produce a structural and conscious change.

» Technology and social learning unlock the potential for sustainability «

It is a question of political instruments, moral norms and a new interpretation of what one understands as prosperity. In the industrial nations, the following question is increasingly being asked of governmental, as well as non-governmental institutions, and enterprises: how can economic competitiveness, scarce resources, stable political conditions, and social justice be combined? The linking of these goals is becoming more difficult to imagine in a transnationally networked society.

The objective of development requires an assertive conversion to social learning and, taking into account the accelerating globalisation of many life factors, international co-operation. The consequences of the transnational society require a qualitatively new approach to international co-operation. Steering world development with internationalisation and globalisation on the one side, and differentiation and regionalisation on the other, counts as the largest challenge for political, economic, and social leaders:

» *Search for moral standards and political instruments* «

- Coming developments force the merging of worlds that have been independent until now, i.e. the separation of state, economic, and social fields is being abolished. New potentials for both synergy and conflict are arising as a result.
- Knowledge and orientation achievement in various areas must be brought together; structures of forming opinions and preparing decisions must be developed; and institutions for applying these decisions must be adapted and extended.
- At the same time it is necessary to convey the political and economic problems, options, and acting strategies to society in order to include those who do not share the definite view of world-wide interdependence.

The greatest amount of influence can be brought about by the actors in North America, Europe, and East Asia. The economic power and the intensity of interdependence among these regions form the engine of change in culture, society, and politics. These three zones are leading global thinking. Sufficient material and intellectual resources, institutional structures, and political-cultural readiness exist for global cooperation.
The modernisation of thinking demanded of America, Europe, and Asia will, however, only appear as the outcome of a concentrated cultural feat. The variety of the existing perceptions, goals, and solutions found in economics, politics, and society offers the real substance for change. Each of the three zones is characterised by specific experiences and preferences, strengths and weaknesses. Because a common challenge from the outside is lacking, their modernisation potential lies in the creative utilisation of their differences, i.e. in dialogue about and for the future, in the application of the insights gained therein, and in mutual learning. Globalisation and its control makes demands on the American, European, and Asian societies from the inside out – their capability for cultural renewal will decide their common future.

» *America, Asia and Europe as the motors of change* «

Report on the HOECHST TRIANGLE FORUM
8-10 September 1999, Frankfurt am Main

Instructions for the 21st Century

by Jürgen Turek

**The site of the Forum:
Schloss Höchst in Frankfurt am Main, Germany**

What do Robert Wilson, an American theater director, Ronnie Chan, a Chinese entrepreneur, and Ernst-Ludwig Winnacker, president of the German Research Society, have in common? They share the concern for a livable future in a world characterized by rapidly growing interdependence, speed and complexity. Why are they eager to exchange their ideas? They want their children and grandchildren to inherit a livable and ordered world, and they know that many of today's problems can only be solved through common effort. Besides, being visionary leaders and thinkers is part of their profession. Considering the problems of industrial societies at the end of the 20th century, the associated dangers can only be overcome by global action. In the past this led from the Brundtland report and Rio process to the development of a global infrastructure for problem-solving. However, success so far has been only moderate. The problems of the 20th century persist and continue to grow. Since the end of the 1980s, when the implosion of the East-West conflict shook the global order, various new challenges have arrived, which demand far-sighted reactions.

Technological innovation is transforming structures of social and economic interaction in such a fundamental way that no industrialized or developed country on the globe will remain unaffected by the consequences. However, the challenges and opportunities of growing international economic interdependence, the revolution in information technology, and the quantum leaps in biotechnology provoke different points of view across the world on what can be done, what should be done, and what may be beneficial or harmful. Only global teamwork across all professions is apt to lead the way to innovative solutions in a borderless world, where traditional approaches to problem-solving no longer fit the international scope of most problems, expert knowledge seems to more and more insulate itself, and policy makers seem increasingly to pay attention only to the short-term demands of the current legislative session. However, how can efficient cooperation be achieved, considering the differing perceptions of the situation in different countries, cultures and political systems?

No contradiction – contemporary art in the timeless ambience of Schloss Höchst

Living together in the future

One goal of the project "How we want to live tomorrow" initiated by the Aventis Foundation and the Munich Center of Applied Policy Research (C•A•P) is to bring together decision makers, thinkers and practitioners from Asia, America and Europe in an intercultural and interdisciplinary dialogue to discuss innovative means of governance as well as opportunities and limitations of potential cooperation. Together with forty other leaders from the three continents, the American artist, the Chinese entrepreneur and the German scientist met at the Aventis Triangle Forum in the Schloss Hoechst near Frankfurt am Main in order to speak about essential future challenges. The participants' main concern was to work out answers to the question of how sustainable solutions to enduring and foreseeable problems can be formulated and implemented. As a special feature, the conference could be followed over the Internet by a world-wide audience. The contributions of the speakers and a working document pre-structuring the discussion, which was supplied by the C•A•P prior to forum, are still available at the project's web page under http://www.aventis-forum.uni-muenchen.de.

Broadcasting the Forum live on the Internet

Artistic contributions complemented the program, offered different perspectives, enriched the intellectual debate and contrasted the working atmosphere of the forum in a stimulating way. Jörg Frank's performance "Mind your Step," spontaneously arranged in the gardens of Schloss Hoechst, presented some of his expressive works intended as a continuation of the artistic work of his mentor, Joseph Beuys. They merge visual and verbal forms of expression in order to create an original medium of communication. His performance invited people to walk the lovely gardens of the Schloss Hoechst and to think about the future from a different angle. On the second evening, the international "Ensemble Modern Orchestra" performed pieces from their extensive repertoire, which elegantly combines avant-garde sensibility with modern classical works.

The Ensemble Modern brings music from the 19th and 20th centuries together with new compositions

Sustainability versus Short-run perspectives

Two points stood on the agenda of the forum: taking stock of the essential current and future problems and debating sustainable rather than short-run solutions. The working document of the policy consultants from Munich set the stage. According to their analysis, the power of the nation state to direct its national political economy is being drained by globalization. The reach and speed of change demand high adaptability from the structures of today's industrial states. Increasing interdependence not only offers new possibilities, but also makes the world system as a whole more sensitive to local stress and crises. The radical transformation of industrial societies is subject to a global framework of social, economic and technological change, exemplified in a growing world population, demographic shifts, ecological pressures, unemployment, security and the financial instability of increasingly volatile markets. New additional challenges and opportunities originate from technological change, especially from the progress in information and biotechnology, which creates new social problems and solutions at the same time.

Opening the Forum

The conference was opened by Jürgen Dorman, Chairman of the Board of Aventis S.A. and Prof. Werner Weidenfeld, Director of the Center of Applied Policy Research (C•A•P). Both emphasized the forum's important contribution to intercontinental and intercultural teamwork. Weidenfeld stressed that sustainable global progress can only be achieved if differing interests can be integrated leading to concerted action. Dormann pointed to specific challenges which will have to be addressed by future societies: aging, the demand for ecologically sustainable food production, and the necessity to ensure comprehensive medical treatment.

An uneven triangle

The discussion quickly showed that Asians often feel overrun by the wave of modernization swapping over from Europe and the USA. Ronnie Chan reminded the audience that Asia, like Africa, suffered a long time under colonialism. As a result, the continent is still less developed. In China for example, the survival of the family is a much more urgently perceived problem than human rights or democratic reform. Also, with many Asians, the deep-rooted collective memory of poverty and hunger leads to a totally different appraisal of biotechnological innovation: its achievements in terms of food production are considered of much higher value than any ethical implications.

However, according to Chan, Asia will increasingly resemble the West in the future, as it lacks a different, indigenous model, and the Western one seems reasonably efficient, transparent and fair to many Asians. In addition, all important international institutions such as the United Nations, the IMF or the World Bank are of Western origin and many concepts of modern management have been developed in Europe and the USA. In order to stay competitive in the next millennium, the Asian states have no other choice than to follow Western rules.

"Mutual respect is a condition for peaceful cooperation...," Chinese entrepreneur Ronnie Chan

In this context, Zulkifli Bin Baharudin, nominated member of parliament in Singapore and Vice President of Circle International, stressed that the Western world will need to respect Asian idiosyncrasies more than in the past. Also, more attention will have to be paid to Asia's stage of development, traditions and social institutions. It would be wrong to completely destroy existing structures and systems in order to exchange them without reservation for entirely new ones. According to him, the fact that Asian stock markets do follow the recommendations of Wall Street more than those of the national Ministers of Finance showed just how much Asia is already oriented towards the West. As for the huge economic crisis Asia has to

struggle with, Baharudin expressed optimism. In the end, in his view, the region will have gained more than it has lost. He also welcomed the growing importance of NGOs in Asia, the number of which is steadily increasing thanks to the Internet and a growing civil society. Their transparent and decentralized structures give them an advantage compared with the state in solving urgent problems.

Asian fears mainly center about the possible dangers of their traditional institutions' loss of authority and the world's rapid cultural and economic integration, such as social instability, decay of traditional values and the spread of terrorism on their continent.

With progress and education into the next millennium

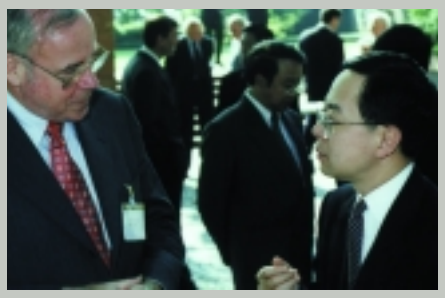
How will societies develop in the future? Is there a lurking threat of destructive conformism as Huxley's "Brave new World" predicted, or will new technological possibilities ease and enrich our daily lives and contribute substantially to the solution of many problems? Michio Kaku, professor of physics at New York City University and author of the best-seller "Visions" argues for the latter. In his view of the 21st century, objects like glasses, watches, ear-rings and tie-pins will allow people to access the Internet and download all wanted information. Microchips will be used in every respect of our daily lives, as their price will fall to the price of paper. Toilets of the future will give us information about our diet and credit cards will contain the whole genetic code of their user, enabling reliable diagnosis of his health anywhere, anytime. Nano-technological instruments will revolutionize medical treatment, for example through the use of microscopic robots that will be able to clear calcified veins. Computers as we know them today will become invisible like electricity and traditional professions will vanish, giving way to new forms of work. Intellectual capital will be the most important: only those who invest in education, science and technology will be among tomorrow's winners.

Normative implications and ethical limitations

Reactions to Kaku's views were divided. Doubts surfaced whether people actually want to live in such a world. The discussion about the possible negative impacts of the Internet such as net-addiction, isolation, dangerous political or sexual content, political demagogy, and criminal activities like confidence tricks and theft of intellectual property raised the questions of who will actually govern this "brave new world" and how governance can work. Who will enjoy the power? The telecommunications industry, Microsoft's software engineers or the state? Kaku replied that technology per se is never intrinsically evil or harmful. Besides being unstoppable, the Internet precisely reflects what people think and look for. Therefore, it is very democratic by nature. "Those who do not like the Internet, do not like what people think."

American science journalist Moira Gun (right) and bestselling science author Michio Kaku

Ernst-Ludwig Winnacker, one of Germany's leading molecular biologists, approached the topic from a different perspective and offered valuable insights into what could be achieved by biotechnology in the future and where the limitations lie. He referred to various possibilities of preventing and healing illnesses through genetic therapy. The opportunities offered by biotechnology are that genetic defects can be remedied and many illnesses like cancer or AIDS can possibly be discovered and defeated early in their course. However, ethical problems arise when certain dispositions like homosexuality or forgetfulness that deviate from so-called normality are perceived as illnesses needing "correction."



German-Chinese exchnange in the castle garden

He openly pointed to additional issues of biotechnological progress. What happens if genetic defects can be discovered but not healed? Should people be informed about the illnesses threatening them and when they will possibly die? The right to know is undoubtedly important, but should there not be a right not to know in some cases? How should the relationship between patient and employer or insurer be regulated in the future? He stressed that solutions for these problems have to be developed today and that in general the debate about ethics in biotechnology needs to be more down-to-earth, transparent and public. In his view, discussions about human cloning seem bizarre. Accordingly, he closed with the observation that he had "never heard a plausible answer" to the question of why humans should be cloned.

An optimistic outlook on Russia's future

Russia's ex-deputy prime minister Nemtsov puts his hope in young people

With Boris Nemtsov, the former deputy prime minister of Russia and ex-governor of Nizhny Novogorod, and Benjamin Barber, chair of the Walt Whitman Center at Rutgers University, the discussion shifted from the advantages and disadvantages of technological innovation to the effects of economic and cultural globalization on political institutions and social structures of industrialized states. Nemtsov expressed optimism about the future of his country. According to him, Russia is already a stable democracy with free votes and free press, despite the current political and economic instabilities and social tensions. His hopes rest on the well-educated younger generation, which will lead the country in about five to ten years. Then it will be possible to contain corruption and poverty. He appealed to all countries of the EU to offer concrete proposals for a future Russian membership and surprised everybody with his claim that his fellow countrymen would profit more from an international exchange of knowledge than from the financial help offered by the World Bank.

McWorld: the implications of economic globalization

According to the American political scientist Benjamin Barber, the consequences of globalization have to be assessed a lot more critically than up to this point. If the globalization of democratic institutions, which guarantee fair competition, is not furthered as quickly and comprehensive as economic globalization, international anarchy will be the result. We already witness the unchecked spread of crime, arms, pornography, terrorism and drugs. The global reach of the "infotainment" sector increasingly melting information and entertainment ultimately means the Americanization of the rest of the world in the names of Disney and Coca-Cola. In this homogenized, materialistic and trivial "McWorld", power is no longer in the hands of democratically legitimized politicians like Bill Clinton or the German Chancellor Gerhard Schröder, but in those of Bill Gates, Rupert Murdoch and their cohorts. He especially criticized the unleashed war against our children, by which he means the terror of consumerism, where two-year-olds are already targeted as potential customers.

Intensive dialogue – the American social scientist Benjamin Barber (left) and Eckard Minx of DaimlerChrysler

Among the artists – the American theater director Robert Wilson (right) and the German painter Jörg Frank

Recommendations for a livable future

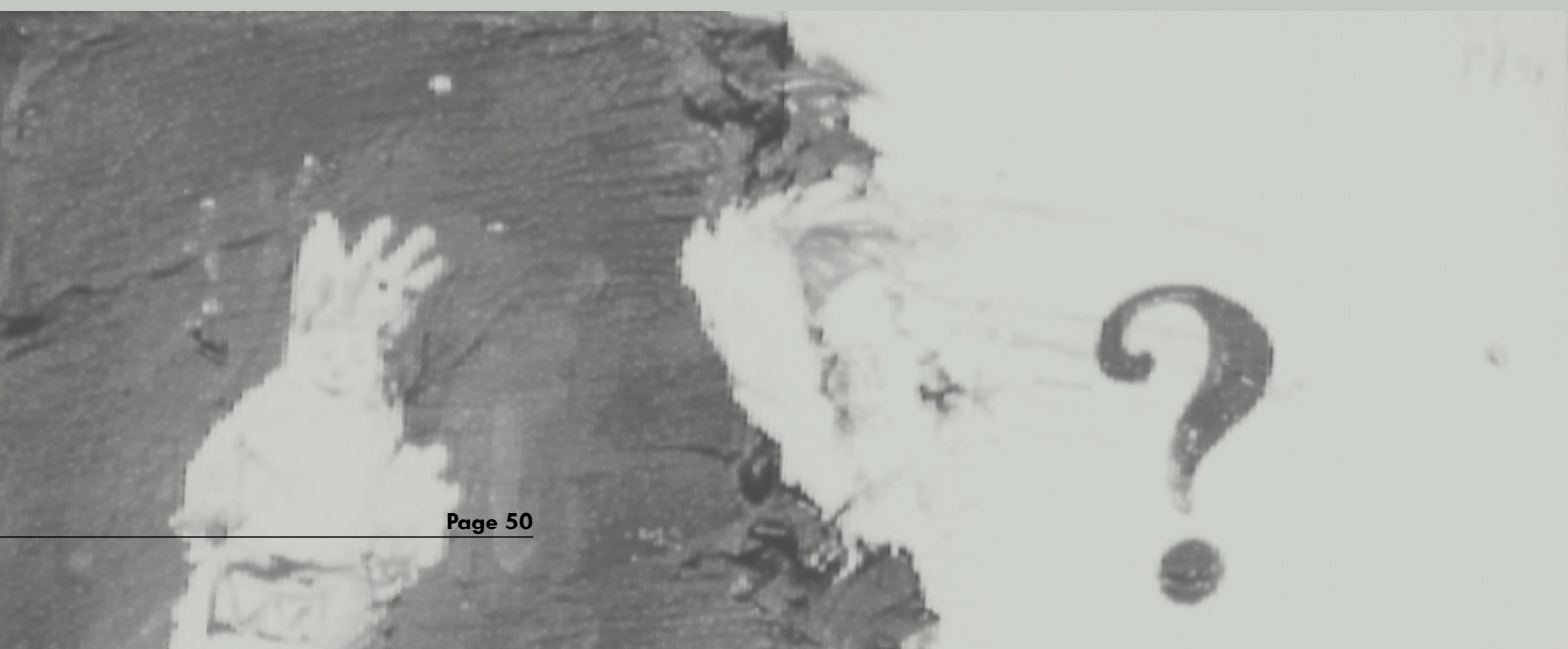
The last part of the conference was devoted to policy recommendations which could be drawn from the preceding analysis. William Drake, Senior Associate at the Carnegie Endowment for International Peace, called for concrete national as well as international regulative steps in the areas of telecommunications and the Internet. The more information is exchanged and the more business transactions take place over the new medium, the more important questions of security and intellectual property become. Many experts agree that the international transfer of existing standards for the security of communication, intellectual property and personal data constitutes a big challenge in an environment of open networks. This is already the subject of many initiatives world-wide to regulate the Internet. The transfer of know-how to developing countries was another point raised by Drake. In conjunction with financial support, the transfer of technology will be of increasing importance in the future. In addition, he stressed that the revolution in information technology not only affects the culture, economies and societies of all countries, but also world politics as a whole. The balance of power between states is altered and new issues of security concern each country. Commercial and non-commercial interests as well as private initiatives and public involvement have to be brought into a new equilibrium.

No reason to sound the "all-clear" signal: persisting worries about the environment

Maritta Koch-Weser, Director General of the World Conservation Union, stressed the urgency of more responsible global treatment of the environment. At the start of her contribution she pointed to bigger than ever destruction of the environment and the accelerating extinction of many species. The gap between what would be necessary and what is actually done in favor of the environment is widening, despite many efforts, an increasing number of projects and a growing sense of the importance of the issue. According to her, the following instruments would be appropriate to sustainably secure the survival of the natural environment in the future: the development of environment funds, the intensification of green banking, i.e. the increased purchase of equity in firms with strong environmental policies, or finally, the establishment of an international court of justice for environmental matters similar to the one for human rights. To guarantee sustainable success, all projects need to be planned and implemented supranationally and long-term. Especially, an open and informed discussion about topics like genetically modified food needs to be initiated.

Because of the various historical, cultural and social backgrounds of the participants, a variety of differing views and expectations were expressed in the discussion, which was followed by about 2000 people over the Internet. Optimistic and pessimistic opinions were equally spread among Americans, Europeans and Asians. However, all experts agreed about the increasing importance of education as the key factor for the future competitiveness of single individuals, parts of the labor market and whole societies. In addition to being familiar with the mere technological possibilities, people will also need to be taught the skills necessary for transforming the growing flood of information into knowledge. In this context, it will be essential to draw the public more into the discussion and to clarify who will help to structure the huge amount of information and to filter out the useful bits. In addition to William Drake, who primarily thought of working people, Kriengsak Chareonwongsak, Director of the Institute for Future Studies for Development in Thailand proposed to build an international network of politicians, artists, entrepreneurs, educators and representatives of non-governmental organizations in order to facilitate a systematic debate about possible routes for sustainable developments. That way, the skills of people who have an intuition for undesirable developments are sensible to the root causes of problems and are able to contribute to problem-solving in all public areas can be combined. The resulting synergy would make them to agents of change, which can no longer be governed and directed by traditional institutions and bureaucracies.

In his conclusion, Professor Weidenfeld summed up the various complex challenges of change, emphasizing that the pace and reach of change will ask much of many people. In many ways the pace and reach of new developments can create social injustice and provoke conflicts that may lead to xenophobia, nationalistic confrontations and extremist or terrorist activities. New forms of conflict management and prevention have to be developed, as the beginnings of such confrontations are already visible. The emerging information and knowledge society bears the danger of creating a new social gap between the informed elite and the ignorant rest of the world, a possible source of conflict that is emphasized by some as the new social question. It is true that over a hundret million people use the Internet, but half of the world's population has never made a phone call. Such asymmetries in and between societies are comparable to the problems caused by the transition from agrarian to industrialized societies. What was important then and is essential now is to develop new socio-political concepts that fit the radical change of social structures.



The silent loss of power of traditional policy instruments leads to an intensified search for concrete mechanisms to strengthen civil society in order to fill the gaps left by the state. To achieve this aim, new public-private partnerships have to be created, new means of communication have to be established through the use of the Internet and other new media and finally, people have to be encouraged to take on more responsibility for public life. In many industrialized states with high prosperity a significant decline of democratic participation can be observed. Democratic societies can not afford for their citizens to be indifferent towards political votes. In addition, the democracies have endeavored to globally establish and strengthen democracy and free market economics. If civic society becomes the leading idea forming social life in the coming century, the question of political legitimacy arises. The shift of competencies from democratically legitimized institutions and agents to others that are not legitimized by a democratic process erodes the separation of powers in democratic societies and the very basis of their legitimization.

The debate about ecologically sustainable economics started in the 1980s. In view of the constant damage done to the ozone layer, global warming, the accelerating extinction of many species and increasing pollution, new ecological strategies must be realized that transcend classical industrial thinking and short-term profit maximization in order to secure a long-term prospect of survival. In principle, this demands a new definition of security also incorporating specified non-military risks for future societies. The problem of how technological innovation, legal frameworks and voluntary measures of consumers and the industry can be combined in order to realize ecologically sustainable economics must be solved. At the same time, the concept of sustainability has to be extended to all social areas without a weakening of the intention.

Of central importance will be the relationship between technological innovation and social stability. The transition from agrarian to industrial societies showed how important this relationship for society really is. New technologies can provide solutions to social problems, increase wealth, eliminate health risks and reduce environmental dangers. However, they require adapted approaches to education. People must learn to use them sensibly and responsibly. Even more important than merely to teach children how to use modern technology is to help them develop the skills necessary to structure the growing multitude of information and to understand and evaluate the purpose and usefulness of a single piece of information. Where the potential for problem-solving does not suffice, or where dangers may grow out of the application of new technology, new instruments from politics, economics, culture and law have to meet the challenges. Whether this can be achieved best through voluntary self-regulation of the industry, new regulations by the state or a mobilized public articulating its interests will have to be decided from time to time according to the circumstances. A good example for the need of new regulation caused by the application of new technology is the area of individual privacy. The combination of computer technology, chip-cards and knowledge about human genes will affect individual privacy in unprecedented ways. How modern societies will treat personal information and how much privacy will be secured constitutes one of the biggest challenges of the 21st century. At the same time, new technologies offer new opportunities for destructive usage such as cyber-warfare or the construction of new biological weapons. Tomorrow's destructive potential necessitates political action today in order to successfully counter new possible kinds of blackmail, terrorism, and threats of physical extinction.

The current and future challenges call for a new way of thinking and communicating. Opportunities seem to have clearly improved, as politicians no longer have to think in terms of rival blocs confronting each other, but new concepts and ways of governance remain to be developed. So far, international institutions are not equipped with enough resources and decision-making powers to steer global developments. In addition, the world-wide spread of Western consumerist culture has not lead to a common global ground on ethics. Under these circumstances, successful initiatives to govern can only be expected from a dialogue of all relevant political, economic and social agents. Thus, in today's age of globalization, a success-driven culture of discourse that allows all involved persons and institutions to participate equally, rules out social or political discrimination and pays attention to regional problems and worries is a prerequisite to master the current and future challenges of a rapidly changing world.

Program

September 8

7:00 p.m. Informal Welcoming Dinner

September 9

9:00 a.m. Welcoming and Introduction

Jürgen Dormann
Chief Executive Officer, Aventis S.A., Strasbourg

Prof. Dr. Werner Weidenfeld
Director, Center for Applied Policy Research (C•A•P), Munich

9:45 a.m. Common Currents of Power? The Future of Societies and Governance in the US, Europe and Asia

Key Question: How will industrialized societies face the future challenges of governing?

Hon. Boris Y. Nemtsov
Former Deputy Prime Minister of Russia, Nizhni Novgorod

Prof. Dr. Benjamin Barber
Director, Walt Whitman Center, Rutgers University New Brunswick, New Jersey

Ronnie Chan
Chairman of the Board, Hang Lung Development Co.Ltd., Hong Kong

11:15 a.m. Coffee Break

11:30 a.m. Common Currents of Power – Discussion Continued

1:00 p.m. Luncheon

2:30 p.m. Shaping Future Societies: Globalization, Digitalization and Biotechnologization

Key Question: How do we expect these technologies to affect our societies?

Prof. Dr. Michio Kaku
City University of New York, New York

Prof. Dr. Ernst-Ludwig Winnacker
President, German Research Society, Bonn

4:00 p.m. Coffee Break

4:15 p.m. Shaping Future Societies – Discussion Continued

6:00 p.m. Break

7:15 p.m. Meeting the Art of the Trilateral Dialogue

"Mind Your Step"
Jörg Frank, Cologne

Short Program
Ensemble Modern, Frankfurt am Main

8:00 p.m. Cocktails & Dinner

September 10

9:00 a.m. Responsibilities for the Future

Key Question: What concrete steps for action does the Forum recommend?

Dr. Maritta Koch-Weser
General Director, World Conservation Union, Geneva

Hon. Zulkifli Baharudin
Nominated Member of Parliament, Singapore

Dr. William Drake
Senior Associate, Carnegie Endowment for International Peace,
Washington, DC

11:30 a.m. Coffee Break

11:45 a.m. Conclusion – Key Issues and Recommendations

12:30 p.m. Concluding Luncheon

Participants

András Inotai

Ronnie Chan

Joanne Perez

William Drake

Friedmar Nusch

Prof. Dr. Shlomo Avineri
Professor of Political Science, Hebrew University, Former Director General, Ministry of Foreign Affairs, Israel

Prof. Dr. Benjamin Barber
Director of the Walt Whitman Center for the Culture and Politics of Democracy, Rutgers University, author of Jihad vs. McWorld, USA

Mr. Zulkifli Bin Baharudin
Nominated Member of Parliament, Vice President, Circle International, Singapore

Mr. John Browning
Contributing Editor, Wired Magazine, UK

Dr. Olarn Chaipravat
Director and Advisor to the Management Board, The Siam Commercial Bank, Thailand

Mr. Ronnie Chan
Chairman of the Board, Hang Lung Development Co., previous Co-Chairman, Davos Annual Meeting of the World Economic Forum, Hong Kong, China

Prof. Dr. Kriengsak Chareonwongsak
Executive Director, Institute of Future Studies for Development, Thailand

Mr. Jürgen Dormann
Chief Executive Officer, Aventis S.A., Chairman of the Board of Trustees, Aventis Foundation, Germany

Dr. William Drake
Senior Associate, Carnegie Endowment for International Peace, USA

Mr. Jörg Frank
Artist, Germany

Mr. Michael Freitag
Editor, Future Magazine, Germany

Dr. Martin Frühauf
Deputy Chairman of the Supervisory Board, Aventis S.A., France

Dr. Moira Gunn
Host of TechNation radio series, former NASA computer scientist, USA

Prof. Dr. András Inotai
General Director, Institute for World Economics of the Hungarian Academy of Sciences, Hungary

Mr. Josef Janning
Deputy Director, Center for Applied Policy Research; Director, Bertelsmann Group on Policy Research, University of Munich, Germany

Prof. Dr. Jin-Ho Jeong
Professor of Global Competitiveness, FKI International Management Institute, South Korea

Prof. Dr. Michio Kaku
City University of New York, author of Visions: How Science will Revolutionize the 21st Century, USA

Dr. Maritta Koch-Weser
General Director, World Conservation Union, Switzerland

Prof. Dr. Duckhwan Lee
Professor of Chemistry, Sogang University, South Korea

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Former Member of the Board, Hoechst AG, Germany

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Director, DaimlerChrysler Society and Technology Research Group, Germany

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Senior Research Fellow, Research Group on the Global Future, Center for Applied Policy Research, University of Munich, Germany

Mr. Toshiya Nakamura
Kyoto News Agency, Japan

Dr. Karl-Heinz Narjes
Former Vice-President of the European Commission, Germany

Hon. Boris Y. Nemtsov
Former Deputy Prime Minister, former Governor of Nizhni Novgorod, Russia

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Chairman, Dornier Medical Technology, Germany

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President, German Research Society, Professor of Biochemistry, University of Munich, Director of the Molecular Biology Laboratory, Germany

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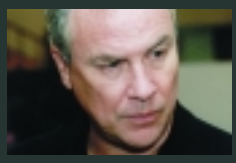
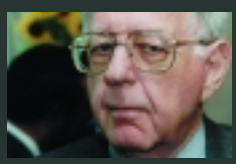
Duckhwan Lee



Robert Wilson

Kriengsak Chareonwongsak

Eckard Minx



Shlomo Avineri

Painting "Encounter" by Jörg Frank, Cologne

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