

Journal für

Reproduktionsmedizin und Endokrinologie

– Journal of Reproductive Medicine and Endocrinology –

Andrologie • Embryologie & Biologie • Endokrinologie • Ethik & Recht • Genetik
Gynäkologie • Kontrazeption • Psychosomatik • Reproduktionsmedizin • Urologie



Mankind in Search of Humankind or: Tomorrow Will Be Different

Diczfalusy E, Holmberg W, Vejnovic T

J. Reproduktionsmed. Endokrinol 2011; 8 (Sonderheft
1), 239-258

www.kup.at/repromedizin

Online-Datenbank mit Autoren- und Stichwortsuche

Offizielles Organ: AGRBM, BRZ, DVR, DGA, DGGEF, DGRM, D-I-R, EFA, OEGRM, SRBM/DGE

Indexed in EMBASE/Excerpta Medica/Scopus

Krause & Pachernegg GmbH, Verlag für Medizin und Wirtschaft, A-3003 Gablitz



ENDO FERTI FORUM

ENDOKRINOLOGIE & FERTILITÄT
FÜR KLINIK & PRAXIS

20.-21. März 2026

Universitätsmedizin Mainz

Einladung zu unserer wissenschaftlichen Veranstaltung Endo-Ferti-Forum

Brücke(n) zwischen Unikliniken und Praxen an Rhein und Main(z)

– die aus dem bisherigen Format „Ferti Forum“ ab 2026 hervorgeht –



Freuen Sie sich auf spannende Vorträge und den lebendigen Austausch mit Kolleg:innen und Expert:innen aus Klinik und Praxis. Freitagabend laden wir Sie herzlich zu einem entspannten Empfang ein – eine perfekte Gelegenheit, Kontakte zu knüpfen und den Tag genussvoll ausklingen zu lassen.

Wissenschaftliche Leitung: Univ.-Professorin Annette Hasenburg, Dr. Susanne Theis, Universitätsmedizin Mainz, Sanitätsrat Dr. Werner Harlfinger, BVF Rheinland-Pfalz Dr. Rüdiger Gaase, BVF Hessen Dr. Klaus J. Doubek

Schirmherrschaften: Prof. Nicole Sänger, Uniklinik Bonn, Prof. Jan-Steffen Krüssel, Uniklinik Düsseldorf, Dr. Annette Bachmann, Uniklinik Frankfurt am Main, Prof. Christine Skala, Uniklinik Köln

Weitere Informationen
& Anmeldung unter



Mankind in Search of Humankind or: Tomorrow Will Be Different*

E. Diczfalusy¹, W. Holmberg², T. Vejnovic³

*There will always be a tomorrow,
Albeit it will be different from
Anything and everything imaginable.
(E. Diczfalusy, 2010)*

Many, if not all of us, agree with the statement that "Tomorrow will be different", but none of us really knows in what way. However, we are convinced that there will be a tomorrow, albeit it is far from certain, that there really will be one and if so, whether we really will be capable of distinguishing it from the present and the past. In a letter to Michelangelo Besso (21 March 1955) Albert Einstein emphasized, that "the distinction between past, present and future is only an illusion, however persistent". These concepts are difficult for us to say the least to distinguish from each other due to the fact, that the timeframe of human existence is a continuum. However, from the point of view of elementary logic for everyday usage, it may be helpful to distinguish the present from the past and the future, in spite of all obvious limitations of such an artificial distinction ...

*„Progress is the law of life,
man is not man as yet“
(Robert Browning: Paracelsus pt. v.
1835)*

■ Introduction

This rather unorthodox and somewhat iconoclastic review is the result of many (mainly after dinner) conversations and reflections of three citizens of the world, divided and united by a multitude of factors. They are divided not only by their mother tongue, education, cultural background, religious and/or political persuasion, historical and social exposure and medical specialization, but also by a difference of 38 years of age.

The authors are aware of the almost 2500 year old opinion of Aristotle, according to which *"It is not once or twice but times without number that the same ideas make their appearance in the world"* (Aristotle, 384–322 BC, in T. H. Heath: *Manual of Greek Mathematics*, Oxford U.P. 1931). However, in contrast to the harsh critical attitude of Horace (658 BC) published some 300 years later *"O imitatores, servum pecus"* [O imitators, you slavish herd] (Epistles, bk. 1, No.1, l.117), the authors much more prefer the views of Aelius Donatus (4th century AD), who some 500 years after Horace advocated a more humane ap-

proach to the time-honoured behaviour of many generations of a multitude of epigones, by saying *"pereant qui ante nos nostra dixerunt"* [to the devil with those who published the same ideas before us] (Quoted by St. Jerome, the pupil of Aelius Donatus). Also the authors of this review feel, that by the end of the day it will become obvious to many intellectuals that most of the time many, if not all of us consciously or unconsciously plagiarize, since we tend to accept apparently good ideas so willingly that we soon forget their origin and in good faith believe that they were invented by ourselves. Hence an advanced apology is certainly in order, since it is not unlikely that many of the views expressed by the authors of this booklet had been familiar to our ancestors many centuries ago.

The authors of this review also share the more than 2500 years old view of Xenophanes of Colophon (570–480 BC) that *"pure truth hath no man seen nor e'er shall know"* together with that formulated rather recently by A. N. Whitehead: *"There are no whole truths; All truths are half-truths. It is trying to treat*

them as whole truths that plays the devil" (Dialogues, Prologue, 1954). Meanwhile these considerations dictate a very humble approach to the assessment of the state of affairs in our European environment, they also strongly suggest that it is most timely to analyse our present situation against the background of some new realities, that have a significant impact on our life already today, and will dominate and may drastically change our way of life tomorrow.

As already indicated above, the authors of this review are divided by several things and united by some others. For example, they are united by a devoted friendship, a humanitarian value-system and a profound belief, that it is possible to improve the human condition by the judicious use of the achievements of science in general and of the medical sciences in particular. In fact, this belief is the "Leitmotiv" of this review.

The authors also agree with the concept of the former President of the United States, Woodrow Wilson, that friendship is the only cement that will ever hold the world together and therefore they fre-

* Reprint with friendly permission of the authors and the publisher (Medicinski fakultet Novi Sad, Republika Srbija)

From ¹Stockholm, Sweden, ²Sandnes, Norway, ³Novi Sad, Serbia

Correspondence: Professor Dr. med. Tihomir Vejnovic, Medicinski Fakultet Novi Sad, 21000 Novi Sad, Majevicka 1, Republika Srbija, e-mail: vejnovict@gmail.com

quently try to say to their friends, what an anonymous author expressed in the following way:

*Don't walk in front of me,
I may not follow.
Don't walk behind me,
I may not lead.
Just walk beside me
and be my friend forever.*

Last, but not least like Heracles, the hero of the drama of Euripides some 2500 years ago the authors of this booklet are also profoundly convinced that “*whoever prefers wealth or might to the possession of good friends, thinks amiss*”.

■ Evolution and progress

Arthur Koestler remarks in his *Sleepwalkers* (1964) that “*I mistrust the word progress and much prefer the word evolution, since progress by definition can never go wrong, whereas evolution frequently does, and so does the evolution of ideas.*” The title of this review proposes a tentative (perhaps almost simplistic) interpretation of this statement, according to which progress (like scientific and technical progress) belongs to the domain of humankind, whereas evolution (like historical and political evolution) is part of the domain of mankind. In the short term it may sometimes be difficult to make a distinction between evolution and progress, but in the long, historical perspective progress (with its significant consequences) is fairly easy to be identified. The title of this review is also in agreement with our profound belief, that mankind has a potential to eventually develop into humankind.

■ New realities, outdated perceptions

Our time in history is frequently considered as the age of revolutions. According to the Oxford English Dictionary, the word *revolution* has multiple meanings; it may mean movement around an axis, the movement of certain celestial bodies, a complete overthrow of a government, or a great change in affairs and things, fundamental and radical changes, which may have a significant impact on the human condition. We are going to use the word in this latter context. Our generation has witnessed, and is witnessing, enormous changes around the world, and many of them are considered such

Table 1. Our earth: The most “recent” stages in its history of 4600 millions of years or more

Epoch	Million years ago (mya)	Human relevance
Pliocene	5.0–1.8	1 st primitive hominids (appr. 4.4 mya) <i>Homo habilis</i> (appr. 2.4–1.5 mya)
Pleistocene	1.8–0.012	<i>Homo erectus</i> (appr. 1.8–0.3 mya) <i>Homo sapiens neanderthalensis</i> (appr. 0.2–0.03 mya) <i>Homo sapiens sapiens</i> (appr. 0.1 mya)
Holocene	0.012–	Humans acquire agriculture and technology
Anthropocene	< 0.0001	Humans change the global environment

Table 2. The seed of civilization: acquisition of agriculture or the past is never dead, it is not even past ...

When years ago (approx.)	What	Where
10,000	Barley, Wheat	Middle East
10,000	Maize, Squash	Mesoamerica
10,000	Manioc, Squash, Yams	Neotropics in South America
8,000	Rice, Millet	China
7,000	Banana, Sugar cane	Papua New Guinea

revolutions, like the demographic, scientific and technical, energy, and contraceptive revolutions, or those in communication and information and even our revolutionizing concern about the environment to mention just a few. Many of these changes constitute the new realities of our time. Quite a few of them are accelerating and increasing in magnitude, but our perception of their significance and likely consequences is frequently lagging behind. In fact, in a world in which the new scientific and technical information is said to double every sixth to seventh year, it may be very difficult for large groups of our fellow men and women living under widely different conditions, with cultural norms largely based on historical traditions, parochial identities and religious dogma to get adjusted to our world of new realities.

“*Those who cannot remember the past are condemned to repeat it*”, George Santayana said more than 100 years ago (*The Life of Reason* vol. 1. chapter 12, 1905) and it is more than likely, that without some knowledge of the past it is difficult to confront the new realities and to have a vision of the future. In the words of José Ortega y Gasset “*He who wants to see his time rightly, must look upon it from a distance. How great a distance? Just far enough away so that he cannot discern Cleopatra's nose*”. Therefore whenever the scarcity of data

does not interfere with our aim we shall try to consider a historical perspective.

Finally, because of a certain restriction in space, in the discussion that follows heavy emphasis will be placed on an analysis of the demographic revolution, with particular attention being paid to the situation in Central and Eastern Europe.

■ Our earth and our species

It is believed that the history of our Earth may go back some 4600 millions of years, or perhaps even more; however, only the last few million years appear to have any human relevance as indicated in a simplified fashion by the data of Table 1.

The balance of evidence would seem to suggest that the first primitive hominids appeared approximately 4.044 million years ago, in the Pliocene epoch and were followed by *Homo habilis*, approximately 2.415 million years ago. Some tools were found from this period together with fossil remains. *Homo erectus* seems to have made his appearance some 1.8 to 0.3 million years ago in the Pleistocene epoch; the available evidence suggests that he was capable of developing tools, weapons and fire and learned to cook his food. *Homo sapiens neanderthalensis* is believed to have existed some 0.2 to 0.03 million years ago;

he is credited i.a. with the introduction of the burial of cadavers. Finally, *Homo sapiens sapiens* is thought to have made his appearance on Earth approximately 100,000 years ago.

Then a giant leap forward occurred in the Holocene period, approximately 10,000 years ago, when our ancestors acquired the know-how of agriculture and with it some more advanced technology, and laid the basis for a rapid development of the species, almost on a geometric scale, unforeseen in history before. Some early steps in the acquisition of agriculture ("the seed of civilization") are presented schematically in Table 2.

An inspection of the data shown in Table 2 provides perhaps also an opportunity for some philosophical reflection about a possible programming of the development of the human mind; isn't it interesting, that the acquisition of the cultivation of different foodstuff took place almost simultaneously in various areas on different continents?

To appreciate the exceptionally rapid development of the human species, it may be enough to look back just some 50,000 years as it was done by two NASA-scientists, R. L. Leshner and G. J. Howick in 1966 (Assessing Technology Transfer, 1966, NASA Report SP-5067, pp. 910). They remark that "eight-hundred life spans can bridge more than 50,000 years. But of these 800 people, 650 spent their lives in caves or worse; only the last 70 had any truly effective means of communicating with one another; only the last 6 ever saw a printed word or had any real means of measuring heat, or cold; only the last 4 could measure time with any precision; only the last 2 used an electric motor; and the vast majority of the items that make up our material world were developed within the life of the eight-hundredth person". Rather impressive, isn't it? Furthermore, if we consider all the scientific and technical progress that has taken place since this NASA-report was published, it would appear that it is probably as much as that achieved by all preceding generations together, including the generation of doctors Leshner and Howick. Hence, the conclusion that the process of human development is still accelerating seems to be justified.

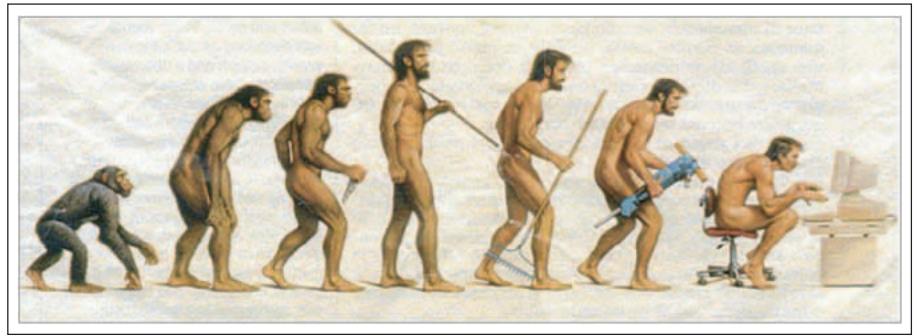


Figure 1. Schematic view of the intellectual development of *Homo sapiens*.

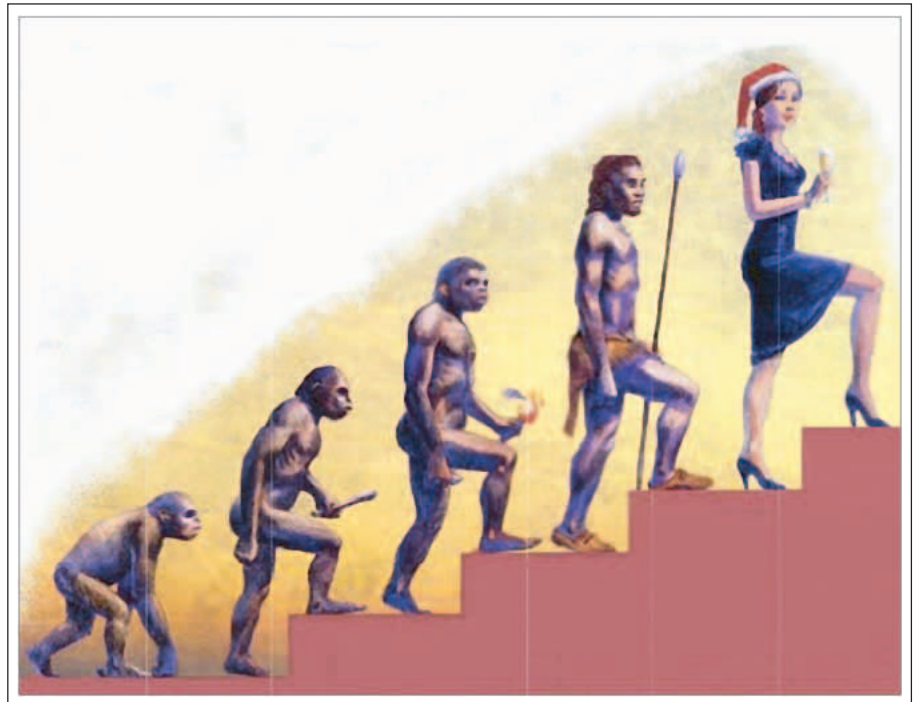


Figure 2. The march of the human race towards gender equity.

This extremely rapid development has captured the imagination of many cartoonists, like the picture shown in Figure 1 depicting our way towards the revolution of information, or the picture shown in Figure 2 which was the cover page of the Dec. 24, 2005–Jan. 6, 2006 issue of *The Economist*, depicting our evolution and rapid progress towards gender equity.

As indicated in Table 1 the most recent epoch in the history of Earth, and also of the human race, is anthropocene. What is anthropocene? It is a neologism coined only some 10 years ago, in the year 2000, by Nobel laureate Paul Crutzen to indicate the most recent period in the life of the Earth, when for the first time the impact of human activities reached the same dimensions as that of natural forces. Whether it started 100 years ago, or less than 50, is a matter of definition

and also of some disagreement, with little, if any, practical significance.

On the other hand, the fact that today for the first time in history *Homo sapiens* is capable of significantly changing his Earth, his environment and even his own development, has an enormous significance for our common future, the consequences of which can hardly be overestimated. Ten years ago one of us remarked that "to every new epoch in history belongs a new spiritual, ethical, and philosophical content and the new world view of the 21st century will be anthropocentric. During hundreds of thousands, if not millions, of years, nature was shaping humankind; today *Homo sapiens* is shaping nature and sets the boundaries between the artificial and the natural. Contraception, assisted reproduction and genetic manipulation are just early examples of this trend. These and other

Table 3. Development of the global population (United Nations, 2008)

Year	Millions
14	256
1000	280
1500	500
1920	1,860
1958	2,919
2000	6,115
2005	6,512

new realities have brought with them also a new philosophy that deconstructs the deterministic worldview and replaces it with a sciencedriven anthropocentric approach“ (Diczfalusy: Eur J Contracept Reprod Health Care 1999; 4: 187–201).

A final comment on our early history, Walt Whitman said that *“the future is no more uncertain than the present”*. We feel, that he could have added *“... or the past”*. Although our knowledge of the living conditions of our early ancestors is constantly improving, we are still facing a great deal of uncertainty.

■ The demographic revolution, or the tyranny of numbers

Isidorus (560–636 AD) the archbishop of Seville, one of the most erudite scientists of medieval Europe, said: *“Tolle numerum omnibus rebus et omnia pereunt”* [Take from all things their number and all shall perish]. If it was true at that time, it is even more so in our time, when we are living “under the tyranny of numbers”. In our attempt to briefly consider our demographic past, present and future, it will be inevitable to present numbers, numbers and even more numbers. Some of the conditions governing the fate of many human beings may frequently be a function of such “dry” numbers. As Horace said (Epistles, bk.1, No.2, 1.27): *“Nos numerus sumus et fruges consumere nati”* [We are just numbers, born to consume resources].

Population historians are in essential agreement that when Emperor Augustus of the Roman Empire died in the year 14 AD and was followed by Tiberius, the known world population was less than 300 million people and that during the

Table 4. Growth of populations – Estimates and projections (millions) (United Nations, 2008)

Region	Year		
	1950	2005	2050
World	2,529	6,512	9,150
Africa	227	921	1,998
Asia	1,403	3,937	5,231
Europe	547	729	691
Latin America and The Caribbean	167	556	729
Northern America	172	335	449
Oceania	13	34	52

first millennium it remained so. Relevant estimates and projections prepared by the Population Division of the United Nations Secretariat are presented in Table 3.

Even as late as in the year 1500, global population was around 500 million people. When the oldest author of this review was born, in 1920, world population was still below 2,000 millions and when the youngest of the authors was born, in 1958, it was still below 3,000 million people. However, by the turn of the century, in the year 2000, global population exceeded 6,000 million fellow men and women and only 5 years later, in 2005 it was more than 6,500 million people. The latest estimates and projections of the UN Population Division are shown in Table 4.

During the 100 year period between 1950 and 2050 the world population is expected to increase from two-and-a-half to more than nine billion people. Most of this increase is projected to take place in Asia and Africa (an almost four-fold increase in Asia and a nine-fold increase in Africa.) The UN Population Division also projects that in the first half of the 21st century with the exception of Europe the growth of the population of all regions continues to increase; it is also projected that between 2010 and 2050 the population of some 30 less developed countries will be doubled, whereas in more than 40 (mainly more developed) countries a sizeable decline in the population will take place. However, in terms of the global population, it is projected that it will stabilize around 2050, after which little, if any, increase will take place. If so, then the growth of the human species will experience a pla-

Table 5. UN estimates and projections of the world population (millions)

Year	In 1984	In 2008
1980	4,435	4,438
2000	6,147	6,115
2025	8,298	8,012
2050	9,780	9,150

teau from the second half of the 21st century, probably for a few centuries.

Perhaps students of “geopolitics” may also wish to reflect on the possible future impact of the changing ratio of European and African populations between the years 1950 and 2050; in 1950 almost two-and-half times more people lived in Europe than in Africa, whereas it is projected that by the year 2050 the population of Africa will outnumber that of Europe three times.

Obviously, all the figures presented that are related to the year 2050 are projections. Projections are not estimates, but they carry much more weight than predictions, forecasts or appraisals. The UN Population Division’s projections are based on an in-depth analysis of past and present trends of many variables, and they are updated every second year. Since the 1980s the Population Division constantly improved and strengthened the predictive value of their projections; for instance the projections of the latest report (2008) are based on the analysis of many independent variables (so-called scenarios), like low, medium, high, constant and “instant replacement” fertility, death rates, international migration, constant death rates and “zero migration”. An analysis of this latest – in the presence of medium fertility – makes it possible to assess the effect of different fertility rates on the other demographic variables.

In view of these developments in methodology, it would be of considerable interest to assess some published projections in retrospect after the passage of a couple of decades, when some estimates are also available. As an example, the estimates and projections of the world population by the UN Population Division from 1984 are compared to those from 2008 in Table 5.

As expected, the estimates of the global population of the year 1980 made in 1984

Table 6. Growth of European populations – Estimates and projections (millions) (United Nations, 2008)

Region	Year		
	1950	2005	2050
Eastern Europe	220	297	240
Northern Europe	78	96	113
Southern Europe	108	150	154
Western Europe	141	186	185

and 2008 are almost identical; however, the projections made in 1984 for the years 2000, 2025 and 2050 indicate increasingly higher figures than the estimates and projections published in 2008. In fact – as mentioned above – the Population Division's most recent projections (2008) suggest that after 2050, or so, the global population will not continue to increase.

As already indicated by the data of Table 4, between 2005 and 2050 – with the exception of Europe – the population of all regions of the world is projected to increase. In contrast to the projected major increase in regions like Asia and Africa, it is expected that the population of Europe will diminish from 729 to 691 million people. It appears from the data presented in Table 6 that mainly the Eastern European region will be responsible for this decline.

There are major between-country differences in the projected decline of European populations, as indicated in Table 7 where estimates and projections of the development of the population of 15 mainly Central and Eastern European countries – with a population projected to diminish between 2005 and 2050 – are compared with those of some selected countries (among them the most populous countries of the world), where the population is projected to increase between 2005 and 2050 (albeit with a much slower rate than between 1950 and 2005).

It would appear from the data of Table 7 that between 1950 and 2005, in the first group of 15 mainly Central and Eastern European countries, the population of all of them showed a moderate to marked increase, whereas for the period between 2005 and 2050 a decrease in their population is projected.

As far as the selected countries of the second group are concerned, it is pro-

Table 7. Change in the projected population of selected countries – Estimates and projections (United Nations, 2008)

Country	Total population (Thousands)			Population-change (%)	
	Year			Years	
	1950	2005	2050	1950–2005	2005–2050
Belarus	7,745	9,816	7,275	+26.7	–25.9
Bosnia-Herzegovina	2,661	3,781	3,008	+42.1	–20.4
Bulgaria	7,251	7,739	5,392	+6.7	–30.3
Croatia	3,850	4,443	3,825	+15.4	–13.9
Georgia	3,527	4,465	3,267	+26.6	–26.8
Germany	68,376	82,409	70,504	+20.5	–14.4
Hungary	9,338	10,078	8,934	+7.9	–11.4
Moldova	2,341	3,759	2,734	+60.6	–27.3
Poland	24,824	38,198	32,013	+53.9	–16.2
Romania	16,311	21,635	17,279	+32.6	–20.1
Russian Federation	102,702	143,170	116,097	+39.4	–18.9
Serbia	6,732	9,856	9,193	+46.4	–6.7
Slovakia	3,463	5,386	4,917	+55.5	–8.7
TFYR Macedonia	1,230	2,035	1,857	+65.4	–8.7
Ukraine	37,298	46,936	35,026	+25.8	–25.4
Austria	6,936	8,232	8,515	+18.7	+3.4
China	544,951	1,312,253	1,417,045	+140.8	+8.0
France	41,832	61,013	67,668	+45.9	+10.9
India	371,857	1,130,618	1,613,800	+204.0	+42.7
Spain	28,009	43,060	51,260	+53.7	+19.0
Sweden	7,014	9,066	10,571	+29.3	+16.6
United Kingdom	50,616	60,261	72,365	+19.1	+20.1
United States of America	157,813	302,741	403,932	+91.8	+33.4

jected that between 2005 and 2050 their population will continue to increase, although compared with their rate of growth between 1950 and 2005 it will considerably slow down.

Such a marked decline of the population as that projected for some Central- and Eastern European countries in the next few decades (Tab. 7) is likely to reflect major changes in the estimated and projected crude birth- and death rates and/or changes in the number of international migrants. The crude birth rates and crude death rates for the countries indicated in Table 7 are shown in Table 8.

An inspection of the figures reported from the first group of 15 (mainly Central and Eastern European) countries reveals that – compared to the data obtained in 2005 – by the year 2050 the crude birth rates are projected to be lower in 12 of the 15 countries and the crude death rates higher in all of them. Moreover, in 2005, 11 of the 15 countries of this group reported higher crude death rates than crude birth rates and the Population Division of the UN projects that by 2050, the crude death rates will

be considerably higher than the crude birth rates in all of the 15 countries.

In the second group of 8 selected countries the crude birth rates projected for 2050 are lower than those estimated in 2005 in 7 of them and are lower than the crude death rates in 4 of them.

Hence, it would appear that today, in the majority of the 15 mainly Central and Eastern European countries studied, death rates are higher than birth rates and this situation is projected to prevail also in the year 2050.

Estimates of the number of international migrants in the countries indicated in Table 7 and their percentages of the total population in 1990 and 2005 are presented in Table 9.

The data of Table 9 indicate major within-country and between-country variations, which is not too difficult to understand, since international migration is not only the reflection of economic and political destabilization of the country in question, but it also provides the mirror image of similar prob-

Table 8. Crude birth rates and crude death rates in 2005 and 2050 in the countries indicated in Table 7 (United Nations, 2008)

Country	Crude birth rate*		Crude death rate*	
	2005	2050	2005	2050
Belarus	10.0	8.5	14.7	17.3
Bosnia and Herzegovina	9.2	7.6	9.8	16.5
Bulgaria	9.6	9.2	14.6	16.9
Croatia	9.6	9.6	11.5	14.7
Georgia	12.1	9.9	11.9	15.3
Germany	8.1	8.2	10.3	15.4
Hungary	9.9	9.8	13.4	14.4
Moldova	12.3	10.5	12.9	15.7
Poland	9.8	8.3	10.0	15.2
Romania	10.0	8.6	12.3	15.5
Russian Federation	10.8	10.7	15.1	16.2
Serbia	11.6	10.3	11.6	13.2
Slovakia	10.2	8.8	10.0	14.5
TFYR of Macedonia	10.9	9.6	9.1	13.9
Ukraine	9.9	10.6	16.0	16.8
Austria	9.1	9.3	9.3	12.9
China	13.5	9.9	7.0	13.0
France	12.2	10.2	8.6	11.7
India	23.0	12.4	8.5	9.7
Spain	11.0	9.7	8.7	12.1
Sweden	11.7	11.0	10.1	10.9
United Kingdom	12.2	11.2	9.9	10.7
United States of America	14.2	11.4	7.8	10.5

* Estimated and projected per thousand

Table 9. The estimated number of international migrants (in thousands) in the countries indicated in Table 7, and their percentage of the total population in 1990 and 2005 (Source: United Nations, Department of Economic and Social Affairs, Population Division 2009; Trends in International Migrant Stock: The 2008 Revision, United Nations database, POP/DB/MIG/Stock/Rev. 2008).

Country	1990	%	2005	%
Belarus	1,249	12.2	1,107	11.3
Bosnia-Herzegovina	56	1.3	35	0.9
Bulgaria	22	0.2	104	1.3
Croatia	475	10.5	661	14.9
Georgia	338	6.2	191	4.3
Germany	5,936	7.5	10,598	12.9
Hungary	348	3.4	333	3.3
Moldova	578	13.3	440	11.7
Poland	1,128	3.0	825	2.2
Romania	143	0.6	133	0.6
Russian Federation	11,525	7.8	12,080	8.4
Serbia*	130	1.3	512	4.9
Slovakia	41	0.8	124	2.3
TFYR of Macedonia	95	5.0	120	5.9
Ukraine	6,893	13.4	5,391	11.5
Austria	793	10.3	1,156	14.0
China	376	0.0	590	0.0
France	5,897	10.4	6,479	10.6
India	7,493	0.9	5,887	0.5
Spain	830	2.1	4,608	10.7
Sweden	778	9.1	1,113	12.3
United Kingdom	3,716	6.5	5,838	9.7
United States of America	23,251	9.1	39,266	13.0

* Serbia data from the 2005 revision

lems around the world, particularly in the less developed regions. Thus the number of international migrants in more developed countries is often a function of economic and political turmoil in less developed countries. Since in the 20th century the economic and political history of many, if not all of the countries shown in Table 9 exhibited many rapid changes, with frequent upheavals and almost continuous alterations of the political map, it is – obviously – exceedingly difficult to present relatively simple and straightforward interpretations of the migratory events of this period. However a few facts may be pointed out in connection with the data reported in Table 9.

It would appear that the percentage of international migrants in 1990 was highest in Ukraine and Moldova and lowest in China and Bulgaria. In the year of 2005, the highest percentage was reported by Croatia and Austria and the lowest by China and India. In terms of absolute numbers, both in 1990 and in 2005, the highest figures were reported by the United States and the Russian Federation.

Given the low fertility prevailing in the more developed countries (to be discussed later cf. Tabs. 25–27 and 32) death rates are expected to exceed birth rates in most, if not all of them, like in some Central and Eastern European countries, presented in Table 8. Hence their population would diminish if the excess of deaths over births were not compensated by a net gain in migration. According to the estimates and projections of the UN Population Division, during the period between 2010 and 2050 the net number of international migrants to the more developed regions is projected to be 96 million, whereas the excess of deaths over births during the same period is expected to be 58 million, suggesting a net growth of 38 million people.

The report of the UN Population Division concludes: “*Although the current economic crisis may reduce migration flows in comparison to those registered over the recent past, the major economic and demographic asymmetries that will persist are likely to remain powerful generators of international migration over the medium-term future*”. How did

Table 10. Population aged 60 years and over – Estimates and projections (percentage of total) (United Nations 2008)

Region	Year		
	1950	2005	2050
World	8.1	10.2	21.9
Africa	5.3	5.2	10.6
Asia	6.7	9.1	23.6
Europe	12.1	20.6	34.2
Latin America and The Caribbean	5.6	9.0	25.5
Northern America	12.4	16.8	27.8
Oceania	11.1	14.0	23.9

Rabindranath Tagore say in 1893? “*Fate has allowed humanity such a pitifully meagre coverlet, that in pulling it over one part of the world, another has to be left bare*”.

A last comment: A particularly sad chapter of the issue of international migrations is the problem of clandestine migration. It is an extremely sensitive political issue, the objective debate of which is rarely encouraged by governments, or international organisations.

■ Ageing populations; *quo vadimus?*

According to R. L. Stevenson “*the obscurest epoch is today*” and it is tempting to agree with him, except for the fact that he said it in 1892. This then begs the question: was his time or our time the obscurest epoch? Who knows, perhaps all our epochs since the dawn of history would qualify for this particular distinction? In fact, almost 30 years earlier Waldo Emerson remarked that “*these times of ours are serious and full of calamity, but all times are essentially alike*”. ... Are they really? We are profoundly convinced that they are not and that our time is fundamentally different from all other times in the history of humankind. What is the difference? A world population that is growing rapidly and ageing rapidly is a basically new reality, a new feature in the history of humankind. The implications of an extremely rapid growth from some 300 million to 6,500 million people just in a period of 1,000 years have been discussed above (cf. Tabs. 3–7); in this section we will deal with another unprecedented feature of our history, a rapidly growing elderly population.

Table 11. Population aged 65 years and over – Estimates and projections (percentage of total) (United Nations 2008)

Region	Year		
	1950	2005	2050
World	5.2	7.3	16.2
Africa	3.3	3.4	7.1
Asia	4.1	6.2	17.3
Europe	8.2	15.9	27.4
Latin America and The Caribbean	3.5	6.3	19.5
Northern America	8.2	12.5	22.0
Oceania	7.3	10.2	18.7

“*Old age is the most unexpected of all the things that happen to a man*”, L. Trotsky wrote in his *Diary in Exile* (1935). If so, should it not be unexpected also when it happens – and within a relatively short time – to all humankind? A rapidly ageing world population is a new demographic reality, indeed, so new that people and their governments could not grasp – as yet – all its political, socio-economical and medical implications and consequences for the human race at large. As far as we can perceive, it will be one of the greatest challenges confronting humankind in the 21st century.

Data on the development of the population aged 60 and over between 1950 and 2050 are shown in Table 10.

Between 1950 and 2005 the population of sexagenarians increased from 8.1 to 10.2% of the global population, or from 205 million to 667 million persons. Emphasizing that globally the population aged 60 and over is the fastest growing, the UN Population Division projects that by the year 2050 as much as 21.9% of the world population, or 2,000 million individuals, will be aged 60 and over (an increase by almost 1,300 million people during less than 50 years). The sexagenarian population in the more developed countries will increase at the fastest pace ever (2% annually) and that in the less developed countries will grow even faster (more than 3% annually). Hence it is projected that by the year 2050 as much as 34.2% of the population of Europe and 27.8% of that of North America will be aged 60 years, or more.

Since we can only see what we are willing to see, many people refuse to reflect on the probable consequences of popula-

tion ageing and prefer to cast some doubt on the validity of such demographic projections. They reason, that we do not even know what will happen tomorrow; how can one then make projections as to what will, or will not happen in the year 2050? Obviously, demographic projections are neither forecasts nor destiny. They are complex extrapolations of past and present trends to the future; and as such, uncertain. However, some of the projections presented are less uncertain than others! The projected 2,000 million 60 year old people (21.9% of 9,150 million) of the year 2050 are already around us as teenagers and young individuals; hence they do represent a reality both for today and for tomorrow.

Even today the retirement age in many countries is unchanged at 65 years. Therefore it may be of interest to assess the trends in the proportion of the population aged 65 years. Estimates and projections for the period between 1950 and 2050 are presented in Table 11.

Between 1950 and 2050 the proportion of individuals aged 65 years or more is projected to increase worldwide three times and by the year 2050 it will constitute some 16% of the global population. The United Nations also project that by the year 2050, more than 27% of the European population will be aged 65 years and over.

As the UN Population Division states: “*slow population growth brought about by reductions in fertility leads to population ageing, that is, it produces populations where the proportion of older persons increases while that of younger persons decreases ... In ageing populations the numbers of persons with older ages grow faster the higher the age range considered.*” This tendency clearly appears from a comparison of the data of Table 10 with those of Table 12 shown below.

Between 1950 and 2050 the proportion of octogenarians is projected to increase from 0.6% to 4.3% worldwide and from 1.1% to 9.6% in Europe. In a number of countries the projected increase in their proportion is expected to be rather dramatic, as shown by the data of Table 13.

It is indicated by the data of Table 13, that by the year 2050 the population aged 80 years and over is projected to exceed 11%

Table 12. Population aged 80 years and over – Estimates and projections (percentage of total) (United Nations 2008)

Region	Year		
	1950	2005	2050
World	0.6	1.3	4.3
Africa	0.3	0.4	1.1
Asia	0.4	1.0	4.4
Europe	1.1	3.5	9.6
Latin America and The Caribbean	0.4	1.2	5.5
Northern America	1.1	3.6	8.0
Oceania	1.0	2.6	6.5

Table 13. Population aged 80 years and over in selected countries – Estimates and projections (Percentage of total) (United Nations, 2008)

Country	Year		
	1950	2005	2050
Japan	0.4	4.9	15.6
Germany	1.0	4.3	14.1
Italy	1.0	5.1	13.4
Austria	1.2	4.3	12.1
France	1.6	4.6	11.3
Spain	1.0	4.3	11.3
Croatia	1.2	2.9	9.3
Bosnia-Herzegovina	0.5	1.8	9.1
United States of America	1.1	3.6	7.8
Romania	0.6	2.4	7.6
China	0.3	1.2	7.2
Hungary	0.8	3.3	6.9
TFYR of Macedonia	1.4	1.7	6.8
Serbia	1.2	2.4	6.3
Moldova	1.1	1.6	5.1
India	0.4	0.6	2.6

of the total in half a dozen countries. Such a high proportion of the octogenarian population is again an entirely new phenomenon, a new reality, for which we cannot find analogies in our history, nor do we know – as yet – how to deal with the fundamental challenge presented by it to modern society. As a contrast, in a “young” population, like that of India, the proportion of octogenarians by 2050 is projected to be only 2.6%.

The sex-ratio of the octogenarians today is 57 men for 100 women worldwide and is projected to increase to 64, or so, by the year of 2050. It is expected to be similar in Europe, except Eastern Europe where it is projected to be only 39 men for 100 women. Since there will be considerably more women than men in

Table 14. Increases in life expectancy at birth – Estimates and projections (by sex, years) (United Nations, 2008)

Region	Year			
	1950–2005		2005–2050	
	Male	Female	Male	Female
World	20.2	21.8	7.9	8.1
Africa	15.4	15.3	12.8	13.9
Asia	26.5	28.9	7.6	8.1
Europe	8.1	11.1	7.4	5.4
Latin America and The Caribbean	20.5	23.6	6.5	6.2
Northern America	10.9	9.6	4.1	4.5
Oceania	16.0	16.0	5.9	5.3

Table 15. Life expectancy at birth by sex – Estimates and projections (years) (United Nations, 2008)

Region	Year			
	2005		2050	
	Male	Female	Male	Female
World	65.4	69.8	73.3	77.9
Africa	52.9	55.3	65.7	69.2
Asia	67.1	70.8	74.7	78.9
Europe	71.1	79.1	78.5	84.5
Latin America and The Caribbean	70.2	76.7	76.7	82.9
Northern America	77.0	81.5	81.1	86.0
Oceania	74.1	78.9	80.0	84.2

this category of the oldest-old population, these figures will have an obvious impact on the planning of future social and health services.

Life expectancy at birth; where is the limit?

In the year 1950, worldwide life expectancy at birth was 45.2 years for men and 48.0 for women; in 2005 it was 65.4 years for men and 69.8 years for women and by the year 2050 it is projected to increase to 73.3 years for men and 77.9 years for women.

This spectacular increase in life expectancy in the various regions of the world is presented in Table 14.

Between 1950 and 2005 worldwide life expectancy increased by some 20 years for men and by almost 22 years for women and is projected to further increase between 2005 and 2050 by approximately 8 years for both sexes. Among the various regions, the highest increase was found in Asia; 26.5 years for men and 28.9 years for women, followed by Latin America and the Carib-

bean with 20.5 years for men and 23.6 years for women. The figures for Europe should be considered against a background value, which already in 1950 was considerably higher for Europe than for any other region of the world.

In fact, this is no longer true today, as indicated by the data of Table 15.

Among the different regions, in 2005 the highest life expectancy at birth was reported by Northern America (77.0 years for men and 81.5 years for women).

For 2050 considerably higher life expectancies at birth are projected for all regions compared to those reported in 2005; the highest figures are expected to be found in Northern America (81.1 years for men and 86.0 years for women). Life expectancy at birth in the various European regions is shown in Table 16.

It appears from the data of Table 16 that today life expectancy at birth in Eastern Europe is considerably lower than in the three other regions, a fact, that is projected to remain so even by 2050.

Table 16. Life expectancy at birth by sex in the european regions – Estimates and projections (years) (United Nations, 2008)

Region	Year			
	2005		2050	
	Male	Female	Male	Female
Eastern Europe	63.8	74.8	72.8	80.4
Northern Europe	76.4	81.5	81.6	86.3
Southern Europe	76.7	82.7	81.8	87.1
Western Europe	77.4	83.1	82.5	87.7

Table 17. Life expectancy at birth by sex – Estimates and projections (selected countries, years) (United Nations, 2008)

Country	Year			
	2005		2050	
	Male	Female	Male	Female
Japan	79.0	86.2	83.5	91.0
France	77.6	84.7	83.1	88.9
Italy	78.1	84.1	82.5	88.4
Spain	77.6	84.1	83.1	88.0
United States of America	76.9	81.4	80.8	85.8
Croatia	72.8	79.5	78.8	84.5
Hungary	69.2	77.4	76.3	82.8
Bosnia-Herzegovina	72.4	77.7	77.7	82.5
Romania	69.1	76.2	76.2	82.2
TFYR of Macedonia	71.8	76.6	77.2	81.8
Serbia	71.7	76.3	77.2	81.7
China	71.3	74.8	77.4	81.3
Russian Federation	60.3	73.1	70.5	79.0
Ukraine	62.8	73.8	71.3	78.8
Moldova	64.7	72.2	71.8	78.1
India	62.1	65.0	71.4	75.4

Estimates and projections of life expectancy at birth for some selected countries are presented in Table 17.

In 2005 the highest life expectancy at birth was reported by Japan and France. Even these figures are projected to increase by the year 2050, with the highest life expectancy at birth projected again for Japan and France. Those who will live in 2050 will confront a new reality, a “brave new world for octogenarians”.

Similarly to the data presented earlier on the assessment of global population (cf. Tab. 5) figures for the global life expectancy at birth, as estimated or projected by the UN Population Division in 1984 and 2008, respectively, are compared in Table 18.

Whereas in Table 5 the estimates of the global population of the year 1980 made in 1984 and 2008 were almost identical, the estimates of global life expectancy at

birth made in 1984 for the years 1975 to 2000 were found consistently lower compared to those made in 2008, suggesting that the increase in life expectancy was higher already in 1975 than estimated in 1984 and remained so beyond the year 2000, as projected for 2025. In fact, whereas it is projected that by the year 2050 the global population is going to stabilize and not continue to further increase, the projections shown in Tables 15 to 17 indicate that the increase in life expectancy at birth may probably not come to an end by the year 2050.

■ Retirement age; facts and fancies

A rapidly ageing population actualizes the more than a hundred year old issue of an “optimal” retirement age. The very first *Old Age and Disability Insurance Bill* was adopted in 1889 by the Prussian Parliament for workers who reached the age of 70 years. At that time life expect-

Table 18. Global life expectancy at birth, years, as estimated or projected by the UN

Year	In 1984	In 2008
1975	55.4	58.2
1985	58.9	61.7
2000	63.5	65.2
2025	70.0	71.1

ancy at birth for Prussians was about 45 years. In a short time many countries followed the Prussian example and established retirement ages generally at 65 years, which – by and large – remained unchanged for more than a century. Since life expectancy at birth today is several decades higher than it was during the last century, there is an ongoing debate whether or not retirement age requires reconsideration.

Needless to say, the issue of an “optimal” retirement age is an extremely complex and difficult one in view of the markedly increased individual variation in the ability and performance of the elderly population. Hence in a possible reconsideration of an “optimal” retirement age, the chronological age per se most probably will be of very limited significance. Much more important parameters to consider will be the biological age and working ability. Also, in the autumnal mind there is a well documented decline in short-term memory, and in the critical ability to assess the significance of major changes and to get rapidly adjusted to them, which may be of paramount importance in certain occupations and less in others.

Hence a reform of the retirement age appears to be an unresolved issue even today, with many questions about how general should it be and how should it be financed. Our fundamental problem in connection with ageing – which seems to be still valid today – was formulated by Henri Estienne (1470–1520) some 500 years ago: “*Si jeunesse savait, si vieillesse pouvait*” (*If only youth knew and the old could do ...*).

■ Longevity and its socio-ethical dimension

On the previous pages ample evidence is presented (cf. Tabs. 12–18) indicating that life expectancy at birth and also at

higher ages is still increasing together with the number and proportion of old and “oldest-old” people, and that they are projected to continue to increase for several decades ahead. By now it is also established beyond any reasonable doubt that the last years of life are accompanied by a marked increase in disability and sickness, with increasingly high demands on social and health services. As D. Callahan remarked in a publication on health policy, ethics and human values by the Council for International Organizations of Medical Sciences (CIOMS, Geneva, 1988): “*Given the rising proportions of the elderly in the population and the increasingly effective and expensive technologies that will be applicable to them, we are at the edge of a new and endless frontier of ethical inquiry*”.

Obviously, the soaring elderly population of the world in general, and of Europe in particular, is bound to raise major economical, social and ethical issues and may strain to the limit the ability of health, social and political infrastructures – particularly, but not exclusively, in developing countries – to cope. Hence it is understandable that we are confronted by some dramatic questions, like that posed by a group of African scientists and health workers: “*Longevity has been our quest for ages; now that we have found it, can we afford it?*” (Tulanian, 1986; 57: no. 1).

Professor Soedjatmoko, the first President of the United Nations University in Tokyo, once remarked that “*our fundamental challenge is how to deal with problems for which we cannot find analogies in older, often petrified systems of wisdom*”. Soaring elderly populations represent such a problem; an entirely new aspect in history with many expected and unexpected implications. Hence, it would seem likely that people and their governments have not had – as yet – sufficient time, vision, willingness and perhaps political courage to face up to this entirely new reality and consider the major social, cultural and political readjustments that it will require. By the end of the day it will be more and more obvious to more and more people, that rapidly aging populations worldwide will profoundly affect many aspects of our life, institutions and also moral and ethical values.

To quote a thirteen year old paper: “*In simplistic terms, our problem is that – as individuals – all of us hope to live a very long and healthy life; however – as a society – we are greatly preoccupied with the aggregate consequences of ageing, but are not ready as yet to make the necessary – and in part fundamental – socioeconomic and political adjustments to meet one of the greatest challenges of the 21st century*” (Diczfalusy & Benagiano, Int. J Gynecol Obstet 1997; 58: 177–88).

Part of the necessary adjustment could be institutional reform. There is an increasing realization that several of our institutions do not serve us well any longer. Many of them were designed more than a century ago to cater for the needs of a population structure (with many children and few elderly persons) that no longer exists. A few examples of such institutions could be mentioned, like: social security, social and health care, education and housing. Even our classical system of “nation states”, which successfully existed for more than a millennium, may be ripe for some basic changes, since many of them became too small to do “the big things” and still too big to concern themselves with the “small things” that will always be so important at the individual level.

Another urgent aspect of the necessary adjustment at the international, regional and national levels must be the recognition of an overwhelming need for a “quantum leap” in research on the preservation of health of the elderly. We have to learn more about how to prevent what can be prevented and how to postpone what cannot be prevented.

What will be the major obstacles to such much-needed reforms? Probably the usual ones: financial limitations, political inertia and our general modus operandi, to do too little, too late. In addition, it should always be borne in mind that it is impossible to foresee how future (as well as present) societies will perceive the issue in general, and its critical nature in particular.

■ Children; an endangered species?

It is not too difficult to perceive that the rapidly increasing elderly populations

Table 19. Population of children – Estimates and projections (0–14 years: percentage of total) (United Nations, 2008)

Region	Year		
	1950	2005	2050
World	34.1	28.4	19.6
Africa	41.7	41.2	27.3
Asia	36.1	28.2	17.9
Europe	26.2	15.9	15.0
Latin America and The Caribbean	40.2	29.8	17.0
Northern America	27.2	20.5	16.9
Oceania	29.9	25.0	19.1

will have a multifaceted, major impact on the way of life in many – if not all – countries in the 21st century; however, the impact will be compounded and further accentuated by a simultaneous and worldwide decline in the population of children as indicated by the data of Table 19.

In 1950, 34.1% of the world’s population consisted of children, i.e. people aged less than 15 years; by the year 2005 their proportion declined to 28.4% and it is projected to further decline to 19.6 % by 2050. In Europe, in the year 2005, their proportion of the entire population was only 15.9%, a figure that is projected to further decline to 15.0% by 2050.

The UN Population Division points out that currently children and youth account for just 17% and 14% of the population, respectively, in more developed countries and whereas the number of children is expected to show little, if any, change in the future, (remaining close to 200 million), the number of young people is projected to decrease from the current 166 million to 134 million in 2050.

On the other hand, in the less developed regions currently children and youth account for 31% and 19% of the population, respectively. It is emphasized by the 2008 Report of the Population Division that the numbers of children and young people in the less developed countries are at an all time high (1,600 million children and 1,000 million young people) posing a major challenge to their countries how to provide education and/or employment to all these children and youth.

Table 20. Projected population in 2050 (Number of persons aged 80 and more in relation to that of persons aged 14 years or less. Selected countries, % of total population) (United Nations, 2008)

Country	Age-Group	
	≥ 80	≤ 14
Japan	15.6	11.2
Germany	14.1	12.6
Italy	13.4	13.5
Austria	12.1	14.0
France	11.3	16.2
Spain	11.3	14.8
Croatia	9.3	14.5
Bosnia-Herzegovina	9.1	11.8
United States of America	7.8	17.1
Romania	7.6	13.3
China	7.2	15.3
Hungary	6.9	14.8
TFYR of Macedonia	6.8	14.4
Serbia	6.3	15.8
Moldova	5.1	16.0
India	2.6	18.2

■ Too many grandparents for too few grandchildren?

By relating the projected proportions of the “oldest-old” population to those of the children, one may get an impression of the expected changes in the population distribution. The number of persons aged 80 and more in relation to that of persons aged 14 years or less in selected countries is presented in Table 20.

It is projected that in 2050 there will be as many octogenarians, or slightly more, as children in Japan, Germany and Italy, meanwhile – at the other end of the spectrum – the number of children is projected to exceed that of the octogenarians more than twenty-five times in Africa and more than six times in India.

In view of the exceptionally rapid changes in the relationship between children and elderly people, it would be interesting to compare again the UN Population Division's estimates and projections made in 1984 with those prepared recently, in 2008. Typically, in 1984 no estimates or projections were published on octogenarians, because – at that time – their numbers were too small to justify such calculations. Instead, in 1984 the highest age group considered was “60 years, or more” and all octogenarians

Table 21. Comparison of age structures as percentage of the population of more developed countries as estimated or projected by the UN

Year	In 1984		In 2008	
	< 15	> 60	< 15	> 60
1975	25	15	24	16
2000	21	18	18	20
2025	20	23	16	27

Table 22. Comparison of age structures as percentage of the population of less developed countries as estimated or projected by the UN

Year	In 1984		In 2008	
	< 15	> 60	< 15	> 60
1975	41	6	41	6
2000	33	7	33	8
2025	26	12	26	13

were included into this. Therefore – in order to make comparisons possible – in the tabulations of Tables 21 and 22, also the age groups of the most recent 2008-data are adjusted accordingly.

■ Growing slower, ageing faster

A comparison of the age structures as a percentage of the population of more developed countries estimated or projected in 1984 and 2008, respectively, is shown in Table 21.

It appears from the data of Table 21 that all estimates for the years 1975 and 2000, as well as the projection for 2025, prepared in 1984 gave consistently higher figures for children and consistently lower figures for those aged 60 and over in comparison to those provided in 2008, suggesting that in these countries the ageing process further accelerated during the past 25 years. Hence it would appear that the population of the more developed regions is growing slower and slower and is ageing faster and faster. In fact, in the more developed countries as a whole, the number of persons aged 60 and over has already surpassed the number of children, and it is projected that by the year 2050 the number of sexagenarians in the more developed regions will be more than twice the number of children.

Table 23. Median age – Estimates and projections (years, in different regions) (United Nations, 2008)

Region	Year		
	1950	2005	2050
World	24.0	27.9	38.4
Africa	19.2	19.1	28.5
Asia	22.3	27.4	40.2
Europe	29.7	38.9	46.6
Latin America and The Caribbean	20.0	26.0	41.7
Northern America	29.8	36.2	42.1
Oceania	28.0	32.2	39.1

A similar comparison of the age structures of less developed countries is provided by the data of Table 22.

The comparison given in Table 22 reveals that, whereas all estimates and projections prepared for children in 1984 were identical to those presented in 2008, there was a minute discrepancy between the sets of estimates as far as the elderly (aged 60 years and over) population is considered. These data would suggest that the population of less developed regions is still growing rapidly, and also starts to age more rapidly. Hence, meanwhile in the more developed regions currently 20% of the population is already aged 60 years and over and is projected to reach 33% in 2050, in the less developed countries as a whole, only 8% of the population is today sexagenarian, but it is projected to reach 20% in the year 2050.

■ Median age, or who will be young in 2050?

When in a society the proportion of elderly persons increases and that of children decreases, it will result in a general ageing of the population in question, as reflected by an increase in median age. This is usually expressed in years and can best be characterized by an imaginary line, dividing the population into two age groups: those younger than and those older than the median age. The marked worldwide increase in median age between 1950 and 2050 is presented in Table 23.

The United Nations project that between 1950 and 2050 the median age worldwide will increase from 24.0 to 38.4 years and in Europe from 29.7 to 46.6 years.

Table 24. Median age, (years) – Estimates and projections (selected countries) (United Nations, 2008)

Country	Year		
	1950	2005	2050
Japan	22.3	43.1	55.1
Bosnia-Herzegovina	20.0	37.3	52.2
Poland	25.8	36.8	51.0
Portugal	26.2	39.3	50.4
Bulgaria	27.3	40.8	49.5
Romania	26.1	36.7	49.5
Slovakia	27.3	35.4	49.5
Croatia	27.9	40.3	48.2
TFYR of Macedonia	22.3	34.2	47.6
Hungary	29.9	39.1	46.6
China	23.9	32.1	45.2
Serbia	25.8	36.6	44.7
Moldova	26.6	34.0	44.7
United States of America	30.0	36.0	41.7
India	21.3	23.7	38.4

Similar estimates and projections for selected countries are shown in Table 24.

It is projected, that by 2050 Japan and several European countries will have a median age of 50 years, or more. As the UN Population Division points out *“the pervasiveness of population ageing will increase by 2050, when all 45 more developed countries are projected to have median ages higher than 40 years and 43 less developed countries will also have similarly high median ages”*.

Since by the year 2050 43% of human-kind is projected to live in countries where the median age will be 40 years or higher, one may wonder what the definition of a young person will be in those countries in some 40 years time ...

■ Population pyramids or funnels of uncertainty?

Currently, and for quite some time in the past, the classical way of presenting the distribution of a population is in the shape of a population pyramid, with men on the left and women on the right half of the pyramid, showing their relative proportions (most frequently as percentages) in age groups of 5 years, with the youngest age group at the bottom and the oldest at the top of the pyramid. A hundred years of change in the population structure of the world (between 1950 and 2050) is presented in Figure 3.

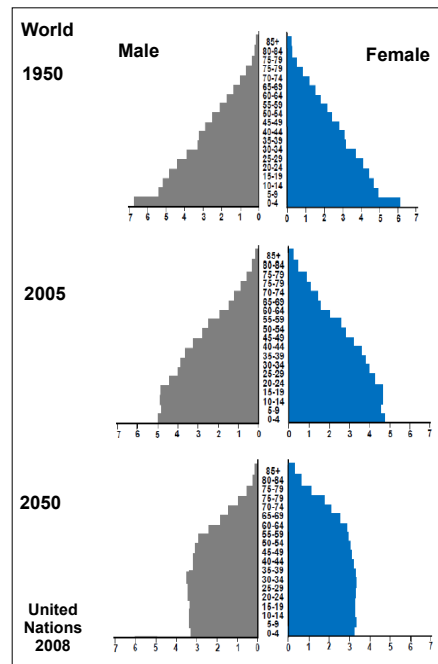


Figure 3. The estimated or projected population pyramids of the World in 1950, 2005 and 2050.

A comparison of the three pyramids suggests that – due to the significant decline of the younger and increase of the older age groups – by the year 2050, the population distribution of the world is projected to assume a balloon-like shape instead of a classical population pyramid.

The development of the pyramids of African and European populations during a hundred years of growth, between 1950 and 2050, are shown in Figure 4.

Africa represents the most rapidly growing population of the world. Nevertheless, its population pyramid shows the same tendency as that of the whole world (cf. Fig. 3), but appears to be a “step behind” with a more limited reduction of the contribution of children and a slower increase of the older age groups, which can be observed in both pyramids reflecting years 2005 and 2050, respectively.

The European pyramid reflects a much more advanced aging of the population and according to the projections of the United Nations for the year 2050 it will no longer resemble a pyramid, but rather a funnel (it would seem that there is some justification to call it “the funnel of uncertainty”).

The changing population distribution of the two most populous countries of the world, China and India, between the

years 1950 and 2050 is depicted in Figure 5.

A comparison of the Chinese and Indian pyramids suggests that the ageing process in China is “a step” further advanced than in India. Furthermore, a comparison of the Indian population pyramids with those of the world (Fig. 3) reveals a striking similarity.

According to the projections of the UN, by the year 2050 the number of the octogenarians (people aged 80 years and over) will come close to that of the children (people aged 14 years, or less) in several countries and in a few of them the former may even exceed the latter. The changing population distribution of Japan, Germany and Italy during the period 1950–2050 is illustrated by the data of Figure 6.

The extremely rapid ageing of the Japanese population is truly reflected by the presence of a classical population pyramid in 1950 and its disappearance by the year 2005; moreover, the funnel-like shape of the population distribution projected for 2050 further indicates the expected increase in the elderly population and an additional decline in the population of children. The population pyramids of Italy, and particularly of Germany, indicate an excess of the elderly population already in 1950 and a gradual change of the population pyramids into population-funnels during the next 100 years.

The corresponding changes in the population structure of Hungary, Romania and Serbia follow – in essence – those presented in Figure 6 for Japan, Germany and Italy, as indicated by the data presented in Figure 7.

Even in these countries the changes in population profile between 1950 and 2050 are characterized by a gradual decline in the number of children, accompanied by a gradual increase in the number of old individuals.

Finally, the changing population structures of the Russian Federation and of Ukraine are reproduced in Figure 8.

The populations of the Russian Federation and Ukraine have some particular characteristics, since the life expectancy

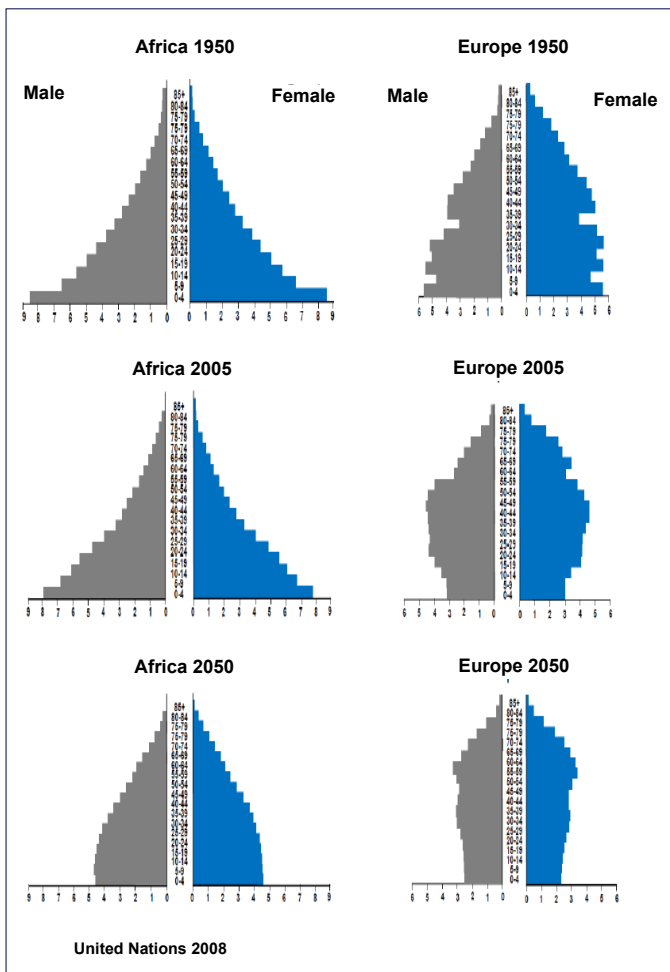


Figure 4. The estimated or projected population pyramids of Africa and Europe in 1950, 2005 and 2050.

at birth of their male populations is the lowest in Europe (60.3 and 62.8 years, respectively, in the year 2005) and the difference between male and female life expectancies is the largest (12.8 and 11.0 years, respectively). Their population pyramids indicate an excess of women over men, particularly in the elderly population. According to the projections for 2050, the population distribution will show a funnel-like structure even in these countries.

From the data shown in Figures 3 to 8, it would appear that – by the year 2050 – the classical population pyramid will no longer exist ... It will disappear, like the snow of yesteryear.

■ Our fertility; what happened?

Total fertility rate is usually measured by the number of children a woman will have during her reproductive life and it is generally assumed that 2.1 children per woman represent the replacement level

Table 25. Total fertility rate per woman (replacement level: 2.1 children per woman) (United Nations, 2008)

Year	World	Europe
1965	4.8	2.4
1975	3.8	2.0
1985	3.4	1.8
1995	2.8	1.4
2005	2.6	1.5

in a given society. At this level of fertility, or above it, the population of a given area is not expected to diminish. As indicated by the data of Table 25, as late as in 1965 this figure was 4.8 children per woman worldwide and 2.4 children in Europe.

The subsequent decades witnessed an exceptionally rapid decline in fertility rates all over the world and just 30 years later, in 1995, worldwide fertility rate dropped to 2.8 and the European rate to 1.4, a figure far below the replacement level of 2.1. Ten years later, in 2005,

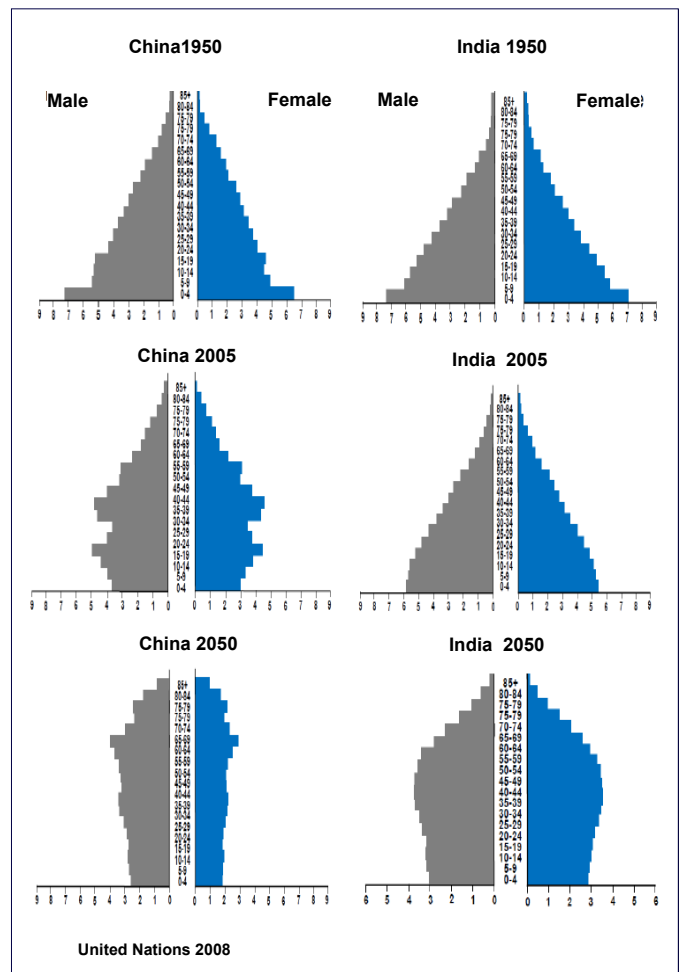


Figure 5. The estimated or projected population pyramids of China and India in 1950, 2005 and 2050.

total fertility rate was below replacement level in all European countries and even in China. Representative data from selected countries are presented in Table 26.

Among the countries shown in Table 26, in the year 2005 total fertility rate was at, or above, replacement level only in the United States (2.1) and India (2.8). However, according to the projections of the UN, by the year 2050 total fertility rate will be below replacement level even in these two countries.

Unless compensated by massive migratory activities, a total fertility rate maintained below replacement level for a longer period will result in a sizeable decrease of any population. The rather dramatic and rapid decline in the fertility of *Homo sapiens* certainly raises the question: “Where are we heading to? *Quo vadimus?*” In fact, never before in history have birth rates fallen so far, so fast, so low and for so long all around the world.

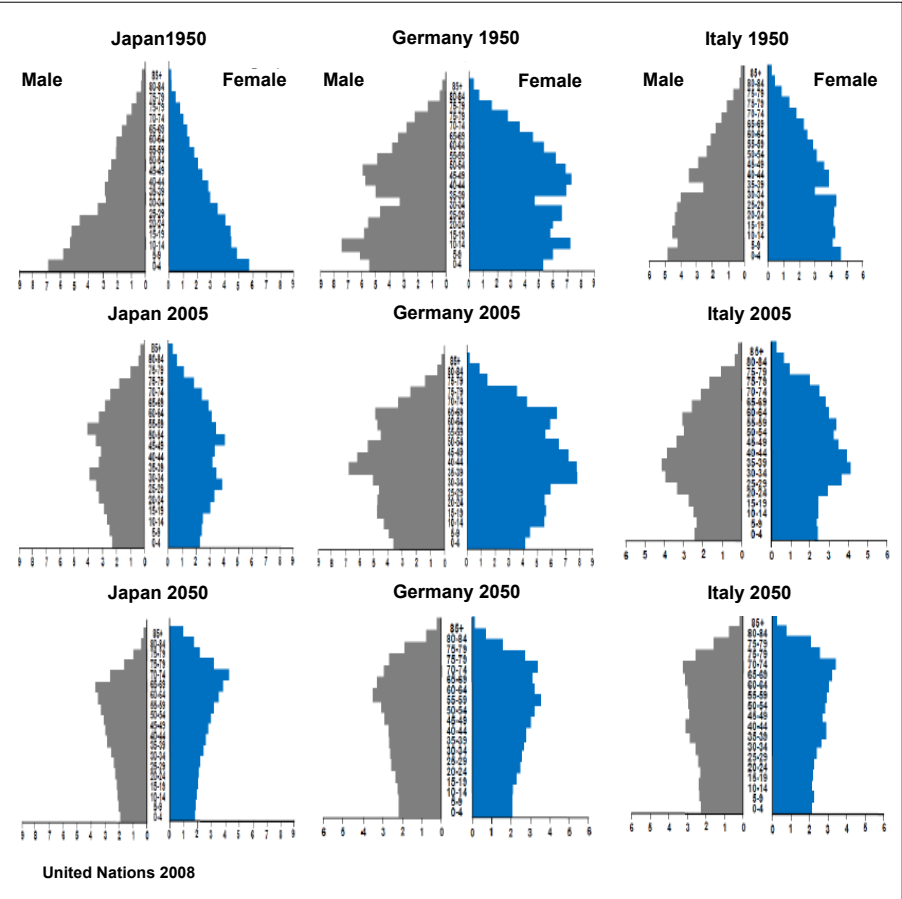


Figure 6. The estimated or projected population pyramids of Japan, Germany and Italy in 1950, 2005 and 2050.

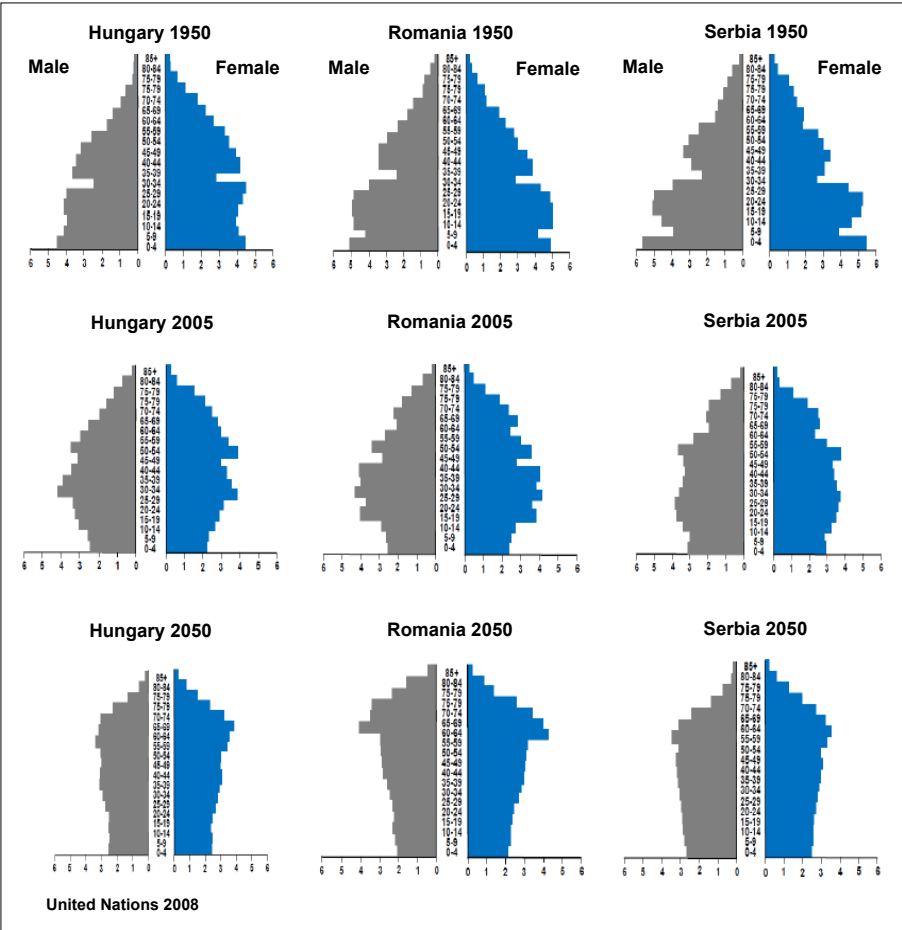


Figure 7. The estimated or projected population pyramids of Hungary, Romania and Serbia in 1950, 2005 and 2050.

Table 26. Total fertility rate per woman in selected countries – Estimates and projections (replacement level: 2.1 children per woman) (United Nations, 2008)

Country	Year		
	1950	2005	2050
Albania	5.6	1.9	1.9
China	6.1	1.8	1.9
India	5.9	2.8	1.9
Serbia	3.2	1.6	1.9
Ukraine	2.8	1.3	1.9
United States of America	3.4	2.1	1.9
Croatia	2.8	1.4	1.8
Hungary	2.7	1.4	1.8
Russian Federation	2.9	1.4	1.8
Germany	2.2	1.3	1.7
Italy	2.4	1.4	1.7
Portugal	3.0	1.4	1.7
Romania	2.9	1.3	1.7
Bosnia-Herzegovina	4.8	1.2	1.6
Japan	3.0	1.3	1.6
Poland	3.6	1.3	1.6

What is behind this rapid fertility decline? Our mind is structured so, that we would always prefer one single reason; a simple and straightforward cause-effect relationship, but real life is much more complicated and the causes underlying the fertility decline of our times are very complex and manifold and may reflect major societal changes of historical dimensions. In fact, there is considerable concern – particularly in Europe – about the decay of the family and the decline in its institutional quality.

At an important consultation conveyed by the Population Division of the United Nations some ten years ago, Jean-Claude Chesnais presented an analysis of some determinants of the low fertility rates of our time, which are below replacement level, particularly in Europe (Chesnais, Popul Bull 1999; 40/41: 126–36). Needless to say, the discussion of these factors as separate entities is rather artificial, since they are intimately intertwined. A few of these determinants are indicated in Table 27.

Many of the classical determinants of Table 27 relate to the “gender revolution”, a fundamental change in the situation of women in society, with an impact on their family life and the family, as such. All of this happened in the second half of the 20th century. The magnitude

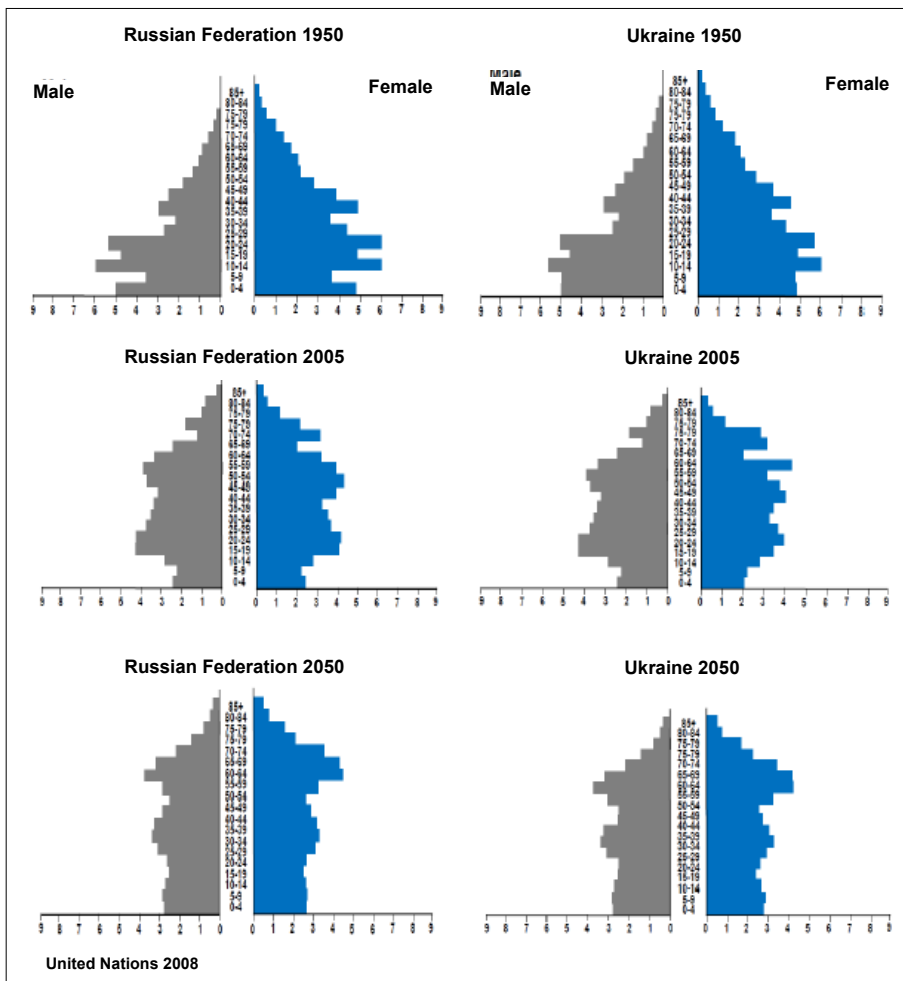


Figure 8. The estimated or projected population pyramids of the Russian Federation and Ukraine in 1950, 2005 and 2050.

of these changes is illustrated below by a few examples. The share of women among legislators and managers in selected countries is shown in Table 28.

In many of the countries presented in Table 28 women have about a third or more of special responsibilities as legislators and managers. From this group of countries the highest figure was reported by the United States (43%) and the lowest by Japan (9%).

A very important factor beyond these changes is the major progress in female education, which brought female education qualitatively and quantitatively to the level of male education in many countries. According to a recent analysis, among some 30 countries the share of girls in primary enrolment varied within narrow limits, between 46.6% (India) and 49.0% (United States) and their enrolment in secondary education between 43.2% (India) and 51.0% (Portugal) (The World's Women 2000, Rev. 2008).

Furthermore, women's share in tertiary education was higher than that of men in many countries, as indicated by the data of Table 29.

An assessment of the number of female teachers as a percentage of the total teaching staff in selected countries is presented in Table 30.

It would appear from the data of Table 30 that – with the exception of India (39%) – in the majority of countries analysed there were more female than male teachers involved in primary education. Even in secondary education the number of female teachers exceeded that of the male ones in 13 of 16 countries; the three countries with less female teachers being Japan (31%), India (34%) and China (45%).

The second half of the 20th century also witnessed a marked increase in labour force participation by women; representative figures from selected countries are shown in Table 31.

Table 27. Some determinants of low fertility (Source: Chesnais, Popul Bull 1999; 40/41: 126–36)

Increasing female autonomy
Major gains in female education
Increasing labour force participation by women
Changing pattern of union formation
Increasing instability of unions

Table 28. Women's share of legislators and managers (selected countries, percentage) (Source: The World's Women 2000, Last update: Dec. 2008)

Country	%
United States of America	43
Republic of Moldova	40
Russian Federation	39
Germany	38
Hungary	35
Serbia	35
Georgia	34
United Kingdom	34
Spain	32
Slovakia	31
TFYR of Macedonia	29
Romania	28
Austria	27
Croatia	21
China	17
Japan	9

Table 29. Women's share in tertiary education (percentage of total enrolment, selected countries) (Source: The World's Women 2000, Last update: Dec. 2008)

Country	%
Albania	62.1
Sweden	59.6
Hungary	58.5
Slovakia	57.7
United States of America	57.4
United Kingdom	57.3
Russian Federation	56.9
Romania	55.4
Ukraine	54.3
Croatia	54.1
Spain	53.9
Bulgaria	53.5
Georgia	52.0
China	47.1
Japan	45.7
India	39.9

Table 30. The estimated number of female teachers as a percentage of the total teaching staff (selected countries in alphabetical order) (Source: The World's Women 2000, Last update: Dec. 2008)

Country	Primary education (%)	Secondary education (%)	Tertiary education (%)
Belarus	99	80	56
China	55	45	42
Croatia	90	67	41
France	82	59	39
Germany	84	57	35
Hungary	96	72	39
India	39	34	40
Italy	96	67	34
Japan	65	31	18
Republic of Moldova	97	76	58
Romania	87	67	43
Russian Federation	98	80	57
Slovenia	97	71	34
T F Y R of Macedonia	70	53	44
United Kingdom	81	61	41
United States of America	89	62	45

Table 31. Women's share of adult labour force (selected countries, percentage) (Source: The World's Women 2000, Last update: Dec. 2008)

Country	%
Republic of Moldova	52
Russian Federation	50
Belarus	49
Portugal	47
China	46
France	46
United Kingdom	46
United States of America	46
Germany	45
Hungary	45
Romania	45
Serbia*	45
Italy	41
Japan	41
TFYR of Macedonia	39
India	28

* Refers to Serbia and Montenegro

The data of Table 31 indicate that – with the exception of India (28%) and TFYR of Macedonia (39%) – women's share of the adult labour force exceeds 40% in 14 of the 16 countries assessed.

It can not be denied that the past 50–60 years witnessed considerable progress in improving the situation of women; however, the achievement of gender equity in most countries still is a long journey as far as nutrition, health care, education, human rights, income and personal security are concerned.

There is a great deal of debate but a paucity of reliable information on two additional issues: the changing pattern of union formation and the increasing instability of the unions. Hence, for the time being any discussion of their extent and impact on society would be speculative.

In the paper of Chesnais mentioned above a number of other determinants of low fertility are also considered; some of them are indicated in Table 32.

Concerning the major rise in life expectancy at birth during the past 50–60 years, this has been covered rather extensively in this review (cf. Tabs. 14–18). Here it will suffice to say that since 1950 life expectancy at birth increased by more than 20 years worldwide, inducing a number of changes in the human condition and in our life situation.

Also contraception became “a way of life” worldwide; recent information on contraceptive prevalence is presented in Table 33.

By the year 2007, 63% of women who are married or living in union practiced some form of contraception, and their number exceeded one thousand and one hundred million persons. The data of Table 33 also show the differences existing between more developed and less developed regions in terms of contraceptive prevalence and the choice of methods. That such an extensive use of con-

Table 32. Other determinants of low fertility (Source: Chesnais, Popul Bull 1999; 40/41: 126–36)

- Spectacular rise in life expectancy
- Extensive use of contraceptives
- Urbanization and densification
- Fundamental changes in society worldwide (Uncertainty replaces tradition)
- “Social atomization” (People living alone)

traceptive methods significantly reduces total fertility rate was demonstrated by a detailed assessment of the UN Population Division (1997).

Among other changes, our time is also characterized by extensive urbanisation and densification; representative data for various regions are shown in Table 34.

It appears from the data of Table 34 that the population of Northern America, Latin America and Europe consists largely of urban dwellers; 81%, 78% and 72%, respectively. The lowest degree of urbanisation is reported for the African region: 38%. The urban population of some selected countries is indicated in Table 35.

It would appear from the data of Table 35 that the percentage of urban population of the two most populous countries of the world (India: 29% and China: 43%) is still considerably lower than that of the majority of more developed countries, where it may come close to 70%, or even more. As emphasized by Chesnais, urbanization means deruralization and detraditionalization. It is basically a civilizational change from an agropastoral way of life to an urban universe, where the anonymity of big human settlements offers new opportunities to escape from ancestral mores and innovate, mainly in the realm of privacy (celibacy, informal union, childless marriage, one-child family, etc).

■ The spirit of the time; uncertainty

The fundamental changes in society worldwide are also mentioned among the determinants of low fertility. It would appear that in an epoch, where the increasing uncertainty gradually weakens the former power of tradition in society, instability becomes a key value which may be difficult to combine with

Table 33. Contraceptive Prevalence (percentage using contraception among women aged 15–49 who are married or in union) (Source: United Nations, Department of Economic and Social Affairs, Population Division. World Contraceptive Use 2009, POP/DB/CP/Rev2009)

	World	More developed regions	Less developed regions
Any method	62.9	69.7	61.7
Sterilization, female	20.3	8.1	22.3
Sterilization, male	2.8	4.8	2.5
Pill	8.8	18.1	7.2
Injectable or implant	3.7	1.3	4.2
IUD	14.2	9.1	15.1
Condom	6.1	16.1	4.4
Vaginal barrier methods (a)	0.2	0.6	0.1
Other modern methods (b)	0.1	0.4	0.0
Rhythm (c)	3.3	4.6	3.1
Withdrawal	2.8	6.2	2.3
Other traditional methods (d)	0.6	0.4	0.7

(a) Diaphragms, cervical caps and spermicidal foams, jelly, cream and sponges.

(b) Emergency contraception, female condom etc.

(c) Also called periodic abstinence or the calendar method.

(d) Prolonged abstinence, breastfeeding, douching, various folk methods

Table 36. Percentage of Italian women aged 25 and of men aged 30, who do not live in any kind of partnership (by birth cohort) (Source: Golini A, Popul Bull 1999; 40/41 : 247–65)

Born	Women	Men
1946 – 50	31	24
1956 – 60	40	35
1966 – 70	60	44

Table 37. Proportion of Japanese women never married, by age (percentage) (Modified from Kaneko R, Popul Bull 1999; 40/41: 266–91)

Age (Years)	Year		
	1975	1985	1995
20–24	69	81	96
25–29	21	31	48
30–34	8	10	20
35–39	5	7	10
40–44	5	5	7

Table 34. Urban population (as percentage of the total population, 2005) (Source: UN Dept. of Economic and Social Affairs, Population Div.; Urban Population, Development and the Environment 2007)

Region	%
Northern America	81
Latin America and the Caribbean	78
Europe	72
Other more developed countries*	69
Less developed Asia and Oceania**	39
Africa	38

* Australia, New Zealand and Japan

** Excluding Australia, New Zealand and Japan

Table 35. Urban population (percentage of total population in 2008 in selected countries) (Source: The World's Women 2000, Last update: Dec. 2008)

Country	%
United Kingdom	90
United States of America	82
France	77
Germany	74
Russian Federation	73
Bulgaria	71
Hungary	68
TFYR Macedonia	67
Japan	66
Croatia	57
Romania	54
Serbia	52
Bosnia-Herzegovina	47
China	43
Moldova	42
India	29

an irreversible choice like having a child. At the same time, and in a broader perspective, the recognition of uncertainty as a leading idea also provides modern physics and modern philosophy with a new cultural relevance for our time. This is discussed in detail by Nobel laureate I. Prigogine in his book *The End of Certainty; Time, Chaos and the New Laws of Nature* (The Free Press, 1997).

■ What is “Social atomization”?

In the view of Chesnais, the human condition is marching towards an extreme degree of “individuation”; individuals develop their own independent identity,

based mainly on personal achievement. This process then works against all forms of association or union and encourages the phenomenon of loneliness; a rapidly growing share of households, mostly in big cities, are one-person households by choice (celibacy, divorce) with a clear female predominance. Extensive urbanisation seems to be associated with increased “social atomization” so that more and more people are living alone in metropolitan and large urban areas. An example of this is presented in Table 36.

The data of Table 36 indicate the percentage of Italian women (aged 25) and men (aged 30) who do not live in any kind of partnership. It can be seen that the percentages are increasing with subsequent birth cohorts (Golini, 1999). Another example is shown in Table 37.

The data of Table 37, which are condensed from a more detailed table published by R. Kaneko (1999), indicate the trends in proportion of Japanese women never married. There is an increase in the proportions recorded between 1975 and 1985 and a further increase between those found between 1985 and 1995.

Social atomization also affects older age groups. In a study of “repartnering” at the age of 50 and over in the Netherlands it was found that whereas before 1974 some 77% of the study population remarried and only 3% lived “apart and together”, in 1985–1992 only 24% did remarry and 52% lived “apart and together” (De Jong Gierveld J, Eur Rev 2002; 10: 43–52).

■ Our future fertility; what to expect?

Even this is subject to the general principle of uncertainty; whether the next generations may witness a further de-

cline, or a major upturn of human fertility, is impossible to say. However, it would be unwise in this context to underestimate the power of the strong natural desire among our fellow men and women all around the world to have children, or the demand in many societies for a family policy of two children. Also, the prevailing exaggerated and merciless capitalism – as a philosophy – may end up in the wastebasket of history and could be replaced by some decapitalisation mechanisms and post-materialistic value systems, the early signs of which can already be sensed in several cultures. All this may generate fresh hope and foster the rebirth of the concept of the “child-friendly” society.

Nobel laureate Werner Heisenberg once remarked that “*reason is a very limited faculty of the human mind. It is a highly useful faculty, but we cannot grasp everything with it that has to be grasped in a full life*” (Heisenberg, in Urban GR, Glenny M (eds). *Can We Survive Our Future?* The Bodley Head Ltd. London, 1972). We feel that this has a relevance also to the motivation of humankind in relation to procreation. Every child comes to the world with an unknown, but unlimited, potential to contribute to the improvement of the human condition and to a brighter future of mankind. As Rabindranath Tagore said: “*Every child comes with the message that God is not yet discouraged of man*” (*Stray Birds*, 1916).

■ More new realities

There is an old Chinese curse, saying “*May you live in interesting times*”, and few of us would deny that we live in interesting (sometimes even too interesting) times. Maybe preceding generations also felt so; Waldo Emerson in 1864 wrote that “*these times of ours are serious and full of calamity, but all times are essentially alike*”. Would he be willing to state the same, if he lived today? Probably not, since our time is fundamentally different from all previous epochs, because of the rate of change. The changes around us are accelerating, but our perception of these changes and their consequences is lagging more and more behind. Perhaps most of us are prisoners of our perceptions, watching the shadows of the new realities on the walls of Plato’s cave ... Twenty years ago, the

World Commission on Environment and Development in a book entitled *Our Common Future* underlined, that “*the rate of change is outstripping the ability of the scientific disciplines and our current capabilities to assess and advise*” and there is no “slow-down” in sight; we are still facing an increasing number of new realities. It is not too difficult to see, that in a world, where the amount of new scientific information doubles in every 6th to 7th year, the value systems of our different societies (which are still largely based on historical tradition, parochial identities and religious dogma), cannot keep pace with the new realities. No wonder, that our contemporary history gives the impression of a stormy sea, where the fragile vessel of rationalism is constantly threatened by the high waves of passion, fanatic faith and emotion. Bertrand Russell (in his book *Has Man a Future?*, 1961) perceived the hazards involved by remarking that “*without the emotional element, life would be dull and not worth living. With it, it is extremely dangerous*”. Hence a major challenge facing the present and future generations of scientists is to convince our fellow men and women, that religious fanaticism, obscurantism and senseless violence will not improve the quality of life of their children and grandchildren and that only science has the proven ability to do so. As P. C. Snow stated in his book *The Two Cultures: A Second Look* (1963): “*The scientific revolution is the only method by which most people can gain the primal things (years of life, freedom from hunger, survival for children)*”. Indeed, the “track record” of science in improving the human condition is unparalleled by any other human activity.

At the other end of the spectrum, there is a naïve belief that science knows no limits, that it is omnipotent. Obviously, science is not omnipotent; it has its limitations. Human knowledge is imperfect and it will remain imperfect forever. However, it is indefinitely perfectible. Research is indefinitely perfecting human knowledge and constantly improves health and the human condition in general. As Albert Einstein remarked: “*One thing I have learned in a long life: that all our science, measured against reality, is primitive and childlike – and yet it is the most precious thing we have*”.

■ The moral space; is it decaying?

It seems to be a characteristic of human nature that we tend to believe that the moral and ethical standards of former generations were higher than those at present. For instance, Jürgen Mittelstrass, in his Presidential address at the meeting of Academia Europaea in Toledo, Spain, 2007, remarked that “*in my (possibly erroneous) view the 21st century will go to history as a period characterized by incredible technical progress associated with merciless materialism, shrinking moral norms and ethical standards*”.

Even when considering the three classical Kantian spheres (science, art and moral), contemporary intellectuals are in agreement that during the past couple of centuries progress has been spectacular in both science and art; the negative views are focussed on our moral development since the times of Immanuel Kant, which is considered by many to show signs of stagnation, if not retrogression. In the view of many critics, we live in a period frequently labelled “late modernity”, which has brought to the extreme both the achievements and the costs of modernization. The great pioneer in theoretical sociology, Professor Piotr Sztompka, points out that a crucial item on the negative side of the balance sheet is the decay of the moral space. He singles out three areas of empirical facts where such a decay seems evident, namely *crime, collapse of trust and depleted social capital* (Sztompka P, Eur Rev 2002; 10: 63–72).

In his view, in addition to common crime there is also a considerable increase in ideological crime, terrorism and “pure” violence, committed for no obvious reason. The collapse of trust can be observed as growing litigiousness, increasing formalism in business deals, rapidly expanding vigilantism and a general “culture” of distrust (Sztompka P, *Trust: a Sociological Theory*, Cambridge Univ. Press, 1999). Under the heading depleted social capital, the factors frequently mentioned are: erosion of the family, disappearance of networks of association, partnership in connivance, globalization of corruption and the collapse of cohesive communities (“*people in the US are now bowling alone*”, writes Robert Putnam in the *J Democracy* 1995; 6: 65–78).

How general these findings are, is difficult to say; are they irreversible? Most probably not. Even a technologically highly developed humankind needs an authentic, universal and all-inclusive morality, and there are some traits of late modernity that generate strong hope for the reconstruction of the moral space. The concept of “humankind” is no longer only a textbook reality and in a rapidly increasing segment of the world population there is an accelerated perception of a global destiny. Among the young people of today there is an increasing revolt against the moral void and a re-awakening of the moral impulse, resulting i.a. in a stronger demand for an increased transparency in public affairs. In addition, new international and regional social ties are being established and such global or regional communities (for instance scientific communities) are assuming a growing importance. Indeed, in this new world a brighter future can be predicted for regional and/or trans-national collaboration among universities and professional associations. They will play an increasingly important role in influencing regional and national health policies, because of their special expertise and deep commitment to the improvement of the health of populations.

■ What about history?

There are many different views on record about history since Antiquity. For instance, Aristotle, in his *Poetics* emphasizes that “poetry is something more philosophical and more worthy of serious attention than history” and John R. Seeley, the English historian, in a famous lecture entitled *Growth of British Policy* (1883) remarks that “history is past politics and politics present history”. Hence those disenchanted with politics are likely to have a negative view also about history. Thus Stephen, in James Joyce’s *Ulysses* (1922) remarks that “history is a nightmare from which I am trying to awake” and Nobel laureate Elias Canetti (*Masse und Macht*, 1960) feels that he must divide all of us into two groups: “those who accept history and those who are ashamed of it”. The problem with these views is that they are based on a too narrow definition of history, disregarding what Karl Popper (*The Open Society and Its Enemies*, 1945) emphasized, saying that “there is

no history of mankind, there are only many histories of all kind of aspects of human life. And one of these is the history of political power. This is elevated into the history of the world”: How does Hamlet say it? “*There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy*” (act I, sc. 5, 1. 166).

Historians sometimes refer to the “Dark Ages” in connection with medieval history; one wonders, how dark were they? Compared to which ages? In his book published 1799, the philosopher of Königsberg Georg Christoph Lichtenberg remarks that “*perhaps in time the so-called Dark Ages will be thought of as including our own*” and long before that, at the beginning of the first century, Seneca (c:a 4 BC–65 AD) exclaimed: “*We are mad, not only individually, but nationally. We check manslaughter and isolated murders; but what of war and the much vaunted crime of slaughtering whole peoples?*” (Epistles, 95, 30). And in case we really wish to consider Dark Ages, what about the 20th century? This century was characterized not only by a heavy flirtation with apocalypse – in the shadow of the hydrogen bomb – by the “superpowers” of the time, but also by the incredibly enthusiastic acceptance and embrace, by millions of people, of pseudo-intellectual simplistic “ideologies” that exposed millions of fellow men and women to terror, cruelty, moral horrors and an indescribable amount of unnecessary suffering. This was the time in human history, when some 200 million human beings were systematically killed by other human (?) beings on the orders of “political magicians”; in the words of the poet Rabindranath Tagore: “*They hated and killed and men praised them. But God in shame hastens to hide its memory under the green grass*”. (*Stray Birds*, 1916) Had he known in 1916 what is in the coming just a few decades later, what more would he have said? This approach of “problem solving” is still not out of fashion in the 21st century; Nobel laureate Albert Szent-Györgyi alluded to this in a paper published in 1978, remarking that “*it is said that man is not intelligent enough to solve problems without killing*”. Hence the manifestations of the classical dark aspects of human nature, be it aggression, barbarity, terror, cruelty, hypocrisy, naked cynicism, moral and intellectual

corruption and indifference, were not restricted in any way to a particular epoch that justifiably could be characterized as the Dark Ages. In fact, it is not unjustifiable to raise the question whether it is possible at all to draw a line between Dark and Less dark ages?

To further complicate any assessment of the “good and evil times”, the 20th century also witnessed some great advances and true progress. The second part of the 20th century brought along a major revolution in our perception: a holistic view of the world and the concept of global identity. Homo sapiens of the late 20th century started to grasp the message of Erasmus of Rotterdam from the early 16th century: “*Ego mundi civis esse cupio*” [*I wish to be a citizen of the world*] (1522). This new worldview led to the establishment of a wide variety of international organizations, like the United Nations (UN) with its numerous specialized agencies, such as the World Health Organization (WHO), the United Nations Environmental Program (UNEP), the High Commissioner for Refugees (UNHCR), the United Nations Food and Agricultural Organization (FAO), the United Nations Population Program (UNFPA) and the World Bank (International Bank for Reconstruction and Development – IBDR), just to mention a few.

Another dimension of this global identity is represented by several hundreds of international professional organizations. Moreover, for the first time in history it became possible for humankind to provide organized assistance in every corner of the world to those stricken by famine, epidemics, or natural catastrophes. Admittedly, the human race is still heavily involved in a learning process as to how to optimize these new mechanisms, which have come to stay, since they meet a long-standing need. Last, but not least, the scientists of the 20th century have witnessed more progress in sciences than all scientists of all preceding generations put together since the dawn of history.

In view of such complex, multifaceted, intermingled and far reaching ramifications, one wonders, whether any contemporary historian would be willing or able to provide a simple definition of a “Dark Age” in the history of humankind.



Figure 9. The Company of Frans Banning Cocq and Willem van Ruytenburch. Rembrandt 1642



Figure 10. Detail from the dollar bill of the United States of America, designed in 1776.

■ Chiaroscuro; the human condition

In his *Essay on Man* (1733), Alexander Pope remarks that “*there must be shadows, if there should be light*”. Was he possibly influenced by the giant step in the history of painting almost a century earlier, the introduction of “chiaroscuro”, the masterful variation of light and dark parts by Rembrandt in the 1640s? A classical example of Rembrandt’s “chiaroscuro” is his famous “Night Watch” in the Rijksmuseum in Amsterdam, which was painted in 1642 and was originally entitled: “The Company of Frans Banning Cocq and Willem van Ruytenburch”. It is reproduced in Figure 9.

Even today, a case could be made for considering “chiaroscuro” as the quintessence, or at least a fundamental constituent, not only of the human condition and human nature, but also of human history, in which the history of political power seems to represent a considerable amount of the dark aspects.

In fact, there are many other facets of human history that are far more important for the progress of the human race than the ceaseless fight for the kaleidoscopically changing political power. For instance, what about the history of sciences, in general, and that of the medical sciences, in particular? It is tempting to describe them with the words of Sophocles

(from *Ajax*): “*This is a long road knows no turning*”.

■ These times of ours

As mentioned before, in 1864 Waldo Emerson remarked that “*these times of ours are serious and full of calamity, but all times are essentially alike*”. ... One of those fundamental truths characterized by the fact that the opposite proposition is also a fundamental truth; however few of us would be prepared to say today, that the 21st century is essentially alike the 19th century. The philosophy presented on the U.S. dollar bill, which was designed in 1776 (Fig. 10), is much more adequate to describe our time: *Annuit coeptis novus ordo seclorum* [*New times favour new enterprises*].

■ Homo sapiens and his future

Our time is full of calamity, and in such epochs the prophets of gloom and doom have a grand time; they tell us with almost masochistic delight that our future is behind us. It is not difficult at all to reach the opposite conclusion, provided one has some historical perspective. In fact, the motto of our first medical school, that of Salerno, stated more than a thousand years ago: “*Know the past to understand the present and to imagine the future*” and in an address to the Royal College of Physicians in London, in 1944, Winston Churchill reminded us that “*the longer you can look back, the further you can look forward*”.

It is estimated, that – for the time being – the amount of new scientific and technical information is doubled in six to seven years. Therefore it is likely, that the latest generation of scientists has witnessed more progress than all preceding generations of scientists together since the dawn of history. Hence the future of *Homo sapiens* appears to be almost unlimited as far as the acquisition of new information is considered. As Bertrand Russell stated: “*In a biological sense Man, the latest of species, is still an infant. No limit can be set to what he may achieve in the future*”. (Russell B, *Has Man a Future?*, 1961). In fact, today the human race has all the means to greatly reduce human suffering, provide health services for all, eliminate very many diseases and even to eradicate hunger and poverty. And all this can happen, if mankind allows humankind to do it.

Mitteilungen aus der Redaktion

Besuchen Sie unsere Rubrik

☒ Medizintechnik-Produkte



Neues CRT-D Implantat
Intica 7 HF-T QP von Biotronik



Artis pheno
Siemens Healthcare Diagnostics GmbH



Philips Azurion:
Innovative Bildgebungslösung

Aspirator 3
Labotect GmbH



InControl 1050
Labotect GmbH

e-Journal-Abo

Beziehen Sie die elektronischen Ausgaben dieser Zeitschrift hier.

Die Lieferung umfasst 4–5 Ausgaben pro Jahr zzgl. allfälliger Sonderhefte.

Unsere e-Journale stehen als PDF-Datei zur Verfügung und sind auf den meisten der marktüblichen e-Book-Readern, Tablets sowie auf iPad funktionsfähig.

☒ Bestellung e-Journal-Abo

Haftungsausschluss

Die in unseren Webseiten publizierten Informationen richten sich **ausschließlich an geprüfte und autorisierte medizinische Berufsgruppen** und entbinden nicht von der ärztlichen Sorgfaltspflicht sowie von einer ausführlichen Patientenaufklärung über therapeutische Optionen und deren Wirkungen bzw. Nebenwirkungen. Die entsprechenden Angaben werden von den Autoren mit der größten Sorgfalt recherchiert und zusammengestellt. Die angegebenen Dosierungen sind im Einzelfall anhand der Fachinformationen zu überprüfen. Weder die Autoren, noch die tragenden Gesellschaften noch der Verlag übernehmen irgendwelche Haftungsansprüche.

Bitte beachten Sie auch diese Seiten:

Impressum

Disclaimers & Copyright

Datenschutzerklärung