

# Epilogue I

The world is rapidly shifting to a multipolar mode. Power is moving from the more industrialized countries to the emerging economies and, to some extent, to the developing world. A significant number of countries in the first group are likely to go through a relatively long period of economic stagnation and high unemployment, driven largely by demographic disparities with the rest of the world, decreasing productivity of capital, and large debts and deficits created by profligate policies practised over many years. The continuous rise in government debt is like a Ponzi scheme, requiring an ever-increasing population to assume the burden, while the population is not in fact growing in most developed countries. The stagnation period will cause a lot of pain, and probably a general feeling of Western decline, at least in some Western countries, contributing to distrust with regard to politicians and the elites. A worst case scenario would be a new Western financial and economic crisis resulting to a large extent from the continuing incapacity of the political systems in the USA and the EU to reduce the deficits and debts of their countries.

Ideally, the downturn could be used positively as an opportunity to move toward the creation of a framework for a sustainable non-growth economy in the developed countries. However, there is no evidence whatsoever that there is currently any possibility of following this difficult pathway. On the contrary, from a psychological point of view the preferred response is to fight the downturn by promoting growth at any cost. Furthermore, if a period of growth returns, the dynamism and self-confidence it generates will also act against any serious attempt to achieve a non-growth economy. The most probable outcome in the medium to long term is that we will eventually be forced against our will into some sort of steady-state economy. Meanwhile, according to Joseph Stiglitz (Stiglitz, 2011a): “We have created an ersatz capitalism with unclear rules — but with a predictable outcome: future crises.”

The unfolding power shift is likely to create considerable risks. At the beginning of 2011, the situation was characterized by what some called an international currency war, where various countries, particularly the emerging economies, drive down the value of their currencies against the US dollar in order to boost their exports. The USA is in dispute with China, accusing its government of dampening

the value of the renmimbi and thereby making US exports more expensive. Various other countries, such as Brazil, Japan, and South Korea have intervened either directly or through policy measures to control the rise of their currencies.

The G20 meeting in October 2010 decided to give the countries with fast-growing economies a greater say at the International Monetary Fund and agreed to let the markets exert more influence in setting foreign exchange rates. Nevertheless, the international currency war may eventually lead to trade tensions that would decrease global trade and economic activity worldwide. Recently, the IMF has addressed the problem of defining circumstances under which capital controls could usefully form part of a policy response to the large current wave of capital inflows into emerging economies, since these tend to increase the value of a currency (IMF, 2011).

In their third summit, held on the island of Hainan on 14 April 2011, the BRIC countries plus South Africa called for a greater economic and political role in international affairs. Their share of the world economy increased from 17.7% in 2001 to 24.2% in 2009. According to the first annual Social and Economic Development report by the BRIC countries, published by the Chinese Academy of Social Sciences, their average annual economic growth in the first decade of the 21st century was over 8%, while that of the industrialized countries reached only 2.6% (WSWS, 2011). In their April 2011 summit, they called for “a restructuring of the World War II-era global financial system and an eventual end to the long reign of the US dollar as the world’s reserve currency”. Russia, China, and Brazil had previously agreed to use their own currencies in bilateral trade, instead of the US dollar.

There are indications that the current US policy of ‘quantitative easing’, which in effect corresponds to the printing of dollars to ease US economic troubles is causing the rise in food and energy prices in China and threatening some of Brazil’s export sectors. Tension between the USA and China is likely to increase as China grows faster and acquires more power, in spite of the deep financial and economic ties between the two countries. It remains to be seen to what extent this tension spreads into the geostrategic and military domains.

Power is shifting from states to non-state actors, and this may promote or oppose cooperation for development. The actors in the first group include national and international non-governmental organizations, religious organizations, business corporations, advocacy groups, and civil society in general. The second includes extremist, criminal, and terrorist organizations, and networks empowered by the access to sophisticated technologies, which represent an increasing threat to world security. Pakistan is a sensitive example and likely to become a terrible conundrum for the West. It was an essential platform for the Afghanistan war but its relationship with the USA is deteriorating. The country has nuclear weapons and is a fertile ground for anti-American movements and terrorist groups, in part because it has been embarrassed and humiliated by continuous covert US operations and drone attacks in its territory, including the killing of Osama Bin Laden. Furthermore, Pakistan is increasingly reliant on its alliance with China. Much of the future global geostrategic power game is likely to involve the alignments and tensions between the USA, India, China, and Pakistan.

Peace and security are also threatened by a significant number of weak or failing states in the less developed countries. The number and intensity of conflicts generated by these countries may overwhelm the capacity for international conflict management and containment. It is crucially important to recognize that peace and security are closely related to development, and that they cannot be achieved in a world with an increasingly inequitable distribution of wealth. The poorer, less developed countries have higher risks of becoming failed states, and from there turning into breeding grounds for criminal and terrorist organizations.

In spite of these facts, shocking inequalities in development persist throughout the world. For part of the population in the developed countries, and a very small part of the population in the developing countries, material prosperity and well-being have never been better in the history of mankind. In a recent article the economist Joseph Stiglitz (Stiglitz, 2011) speaking about the growing inequality in the USA wrote:

The upper 1% of Americans are now taking nearly a quarter of the nation's income every year. The top 1% have the best houses, the best education, the best doctors, and the best lifestyles, but there is one thing that money doesn't seem to have bought: an understanding that their fate is bound up with how the other 99% live.

The same reasoning also applies to the whole world, although probably on different time scales. In stark contrast to the fate of the world's upper economic bracket, poverty, hunger, disease, lack of safe drinking water, lack of basic sanitation, and lack of access to electricity continue to affect hundreds of millions of people. It is only with difficulty that most people in the developed world genuinely recognize these people as fellow human beings.

Social and economic inequalities are growing as much between as within countries. The current capitalist economic system has been highly successful in transforming the unstinting greed of a few into a mechanism for economic growth. However, the system tends to create extremes and to aggravate inequalities rather than ease them. From an ethical point of view, it is surprising to observe our individual, collective, and institutional inaction. There are many good initiatives around the world but their effective impact is still small. Social solidarity at the global level has a relatively low priority.

Leaders of rich and poor countries pledged to build a better world by 2015 through their agreement to fulfil the United Nations Millennium Development Goals. They agreed to halve extreme poverty and hunger from 1990 levels, to reduce by two-thirds the child mortality rate, by three-quarters the maternal mortality rate, and to achieve universal primary education. In September of 2010, the world leaders that participated in a Millennium Development Goals Review Summit recognized that progress so far makes it almost impossible to meet those targets by the deadline. To achieve the goals, it is essential that the wealthy nations contribute effectively, in particular through 0.7% of GDP in official development aid, a pledge that was agreed in 1970 but never fulfilled, except by a small handful of countries.

Another distinctive characteristic of the present time is the rising competition to secure natural resources. The major economic powers are increasing geostrategic

pressure to ensure the supply of scarce natural resources. A clear sign are the restrictions that China has placed on its exports of some rare earth elements, vital for the development of the green economy. They are scarce in the world, and about 95% of the global production comes from China, but the Chinese have repeatedly reduced export quotas over the past five years, so that they are now well below world demand. In 2010, neodymium, a rare earth essential for making lightweight magnets for large wind turbines, hybrid cars, and electronic devices such as iPhones, cost about US \$ 40 000 a ton in China, and about twice that price outside China due to export restrictions. Lanthanum is another rare earth, needed to make catalytic converters that reduce the pollution of gasoline-powered cars. In 2010 it cost about US \$ 5 000 a ton in China, and ten times more outside the country.

We are at a turning point as regards the essential resources of food, water, and energy. Demand already exceeds what can be sustained at current levels of consumption. In the medium and long term, competition between states will be further increased by population growth and climate change impacts. The challenges of food, water, and energy are clearly interrelated, but we lack an overall integrated framework to manage them, particularly at the global level. The competition between the major states to secure reliable supplies may lead to a breakdown of cooperation. Scarcities are likely to hit the least developed countries the hardest, increasing the risk of internal or interstate conflicts that may become regional.

Food prices are becoming increasingly volatile, threatening food security. The severe drought in Russia in the summer of 2010 and the country's ban on wheat exports pushed prices up to two-year highs, reviving memories of the 2007–2008 global food crisis. The rising cost of agricultural food commodities at the beginning of 2011 was a contributing factor in the uprisings in North Africa and the Middle East. In some countries such as Morocco, Algeria, Tunisia, Egypt, Pakistan, and Indonesia, more than 36% of total household spending goes on food, making people in these countries very vulnerable to increasing food prices.

Volatile food prices are leading import-dependent countries to seek opportunities to secure supplies overseas, in particular through land acquisitions in developing countries. According to a recent World Bank report (WB, 2010), investors tend to buy arable land in countries with weak land governance and fail to link investment to the country's broader development strategy. The data on land transfers is currently sketchy, but it shows that they are quite significant. Between 2004 and 2009 the land area transferred in the Sudan was 3.9 million hectares, and in Ethiopia 1.2 million (WB, 2010).

Concerning water, a recent study (Vorosmarty, 2010) concludes that 80% of the world's population lives in areas where the fresh water supply is not secure. Rich countries have been able to safeguard drinking water supplies by means of huge investments in dams, canals, aqueducts, and pipelines, but poor countries are much more vulnerable because they cannot afford such infrastructure. Surface water represents only about one per cent of the available freshwater on Earth, while groundwater accounts for about 30%. A reduction in the availability of groundwater would have very serious consequences for a growing human population. According to a recent study (Bierkens, 2010), global groundwater extraction is about 1 000 to

1 100 km<sup>3</sup> per year, far exceeding the recharge rate. The increasing disparity means that the world is relying ever more on non-renewable groundwater.

As previously indicated, the energy sector probably involves the most serious risks in the near future. Energy prices, particularly those of oil, are likely to become a major obstacle on the way to robust global economic growth of the kind experienced in the period from 2001 to 2007.

The current situation is also critical as regards the environment, although the most damaging consequences are likely to occur in the medium and long term. There are increasing signs that climate change is getting out of control. In spite of the efforts made by President Barack Obama, there is very little chance that an effective climate and energy bill will be approved in the US Congress before the Durban UNFCCC Conference at the end of 2011, because of Republican Party opposition. According to a IEA report issued in May 2011, global CO<sub>2</sub> emissions reached a record 30.6 Gt in 2010, which represents an increase of 5% over the previous record year of 2008. If annual global emissions of CO<sub>2</sub> attain 32 Gt much before 2020, the prospects of limiting the global average temperature increase to 2°C become utopistic.

Meanwhile, the risks involved in uncontrolled climate change are becoming ever clearer. A study based on the analysis of NASA satellite data (Zhao, 2010) shows that the terrestrial net primary production has decreased in the decade from 2000 to 2009 due to large-scale droughts, particularly in the southern hemisphere. A continuous decline would pose very serious threats to food security. This is likely to happen in the future. Climate scenarios indicate that drought may endanger much of the world in the coming decades if we fail to significantly reduce the global emissions of greenhouse gases.

A recent review paper (Dai, 2010) from the US National Center for Atmospheric Research used an ensemble of 22 climate models to project a comprehensive index of drought conditions throughout the world. The conclusions indicate that most of the western hemisphere, along with large parts of Eurasia, Africa, and Australia, may suffer an increasing threat of extreme drought during this century. In the oceans, the amount of phytoplankton in upper layers has declined markedly over the last century (Boyce, 2010). The decline results from the stratification of those layers induced by ocean warming, and this in turn is caused by climate change. This is a significant ecological issue, because phytoplankton sits at the base of marine food chains.

The ecological footprint of humanity has doubled since 1966, and in 2007 the footprint exceeded the Earth's biocapacity by 50% (WWF, 2010), meaning that the Earth takes 1.5 years to produce the resources that humanity consumes in one year. The Living Planet Index that assesses the changing state of biodiversity fell by almost 30% between 1970 and 2007. There is an increasingly divergent trend between the tropical regions, where the index declined by about 60%, and the temperate regions where it increased by 30%. This discrepancy clearly shows the grievous consequences for biodiversity, and for the environment generally, of a profoundly unbalanced world marked by large inequalities between rich and poor countries. Loss of biodiversity is a very dangerous medium to long term threat. It represents a serious threat to entire ecosystems and economies, and ultimately to humans themselves, if

it goes on unchecked. There are positive signs that investors and corporations are beginning to understand these risks, establishing partnerships with the public sector and NGOs to halt the loss of biodiversity.

The results obtained at the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity held at Nagoya in October 2010 were also encouraging. The negotiations were difficult, but there was goodwill and readiness to compromise. Agreement was finally reached on the text of the Nagoya Protocol, which includes the decision to expand nature reserves to 17% of the world's land and to 10% of the world's waters. The EU and Brazil were very active in securing the agreement, while China and India showed willingness to compromise. However, the USA is not a signatory to the Convention. The reason for the success in Nagoya in 2010 and the relative failure in Copenhagen in 2009 and Cancun in 2010 is that CO<sub>2</sub> emissions have a much stronger coupling to economic growth through the energy sector than biodiversity loss. Competing countries require stringent tests on the implementation of CO<sub>2</sub> emission reductions to check compliance with mitigation commitments, because they are directly related to growth, but are less demanding as regards checking biodiversity targets. In fact the last biodiversity goals established by the United Nations were far from being implemented by the countries that made the commitments. Let us hope that the implementation of the Nagoya Protocol is strictly controlled.

Contrary to the naive confidence of the Promethean discourse, science and technology do not have the capacity to solve all the supply problems relating to food, water, energy, and other natural resources, and nor do they have the key to stemming the environmental degradation that would result from trying to sustain the current paradigm of economic growth indefinitely around the whole world. Science and technology are unable to bring about magical breakthroughs, because their achievements are ultimately bounded by the laws of nature. Let us consider a simple example. It is impossible to stop the greenhouse effect in our atmosphere and to stop its intensification as a result of large atmospheric emissions of greenhouse gases produced by some human activities. Science and technology can only help to reduce the emissions from such activities, or help to substitute them by others with lower emissions, or devise geoengineering solutions to counteract global warming.

*Homo sapiens* is the result of a remarkable evolutionary process. We do not know of other comparable processes in the Universe leading to intelligent beings. Since the extinction of *Homo neanderthalis* about 30 000 years ago, the cultural evolution of *Homo sapiens* accelerated in an extraordinary way. We colonized all the continents and evolved from primitive hunter-gatherer societies, through the invention of agriculture and the industrial revolution, to the current highly complex and predominantly urban civilization, heavily dependent today on science and technology.

We have explored the Earth from the depths of the oceans to the peaks of the highest mountains, from the tropical forests to the most inhospitable deserts. We have gone beyond the Earth and explored outer space. We have deciphered the fundamental laws of nature and we are able to observe, interpret, and understand phenomena happening at the subatomic scale, on Earth, in the Solar System, in our galaxy, in intergalactic space, and up to the most distant confines of space. We have reconstruc-

ted the history of the Universe from its origin and we are able to foresee how it will end. We know in great detail the history of life on Earth and how living organisms function, interact, and evolve.

Beyond these truly remarkable achievements, we dominate the biosphere and have profoundly changed the surface of our planet. It has been shown that our impact on the atmosphere, the cryosphere, the oceans, the lakes, the rivers, the aquifers, the soils, the ecosystems, and the biodiversity is growing, and is often devastating. The rate of exploitation of natural resources and interference with Earth subsystems, particularly the atmosphere, the oceans, and the biosphere, is not sustainable in the medium to long term future. If we do not take these warnings seriously and find ways to a sustainable development, critical economic and environmental situations will become more and more likely throughout the 21st century. There is a growing awareness of this challenge, especially in the developed countries, but progress to address it has been slow. Without adequate responses, the risk will grow unrelentingly and time will provide the inevitable adjustments, as Francis Bacon said at the beginning of the 17th century (Bacon, 1605): “He who will not apply new remedies must expect new evils, for time is the greatest innovator.”

The number of issues on the international agenda regarding financial and economic systems, development, environment, peace, and security is increasing, and their acuteness, urgency, and complexity are exceeding the capacity of national governments and international organizations to cope with them. Moreover, rapid globalization has implied that localized crises and threats to security and stability are no longer locally containable, but constitute a risk to the global international system. Our common future depends crucially on our ability to collectively address the wide variety of pressing and interrelated global challenges, from financial and economic crises to nuclear arms proliferation, and to environmental degradation. To address these new global challenges successfully, a more innovative and robust system of global governance will be needed, able to take legal action and enforce compliance. This may seem a very demanding goal that would take many decades to achieve. However, if we do not pursue it, the risk of repeated critical situations and widespread conflicts is likely to increase dangerously.

World crises of the next 10 to 20 years are likely to be dealt with by the present institutions of global governance. It is also likely that the developed countries, especially the USA, will continue to play a central role in securing world peace, and also the stability of international financial and economic systems. Nevertheless, the world balance of economic power will continue to change relentlessly.

Most European countries face a systemic relative decline of their economy and standards of living, particularly the less developed ones. There are signs of a new protest movement that rejects the traditional political and parliamentary system and opposes it through the organization of demonstrations, protest marches, and sit-ins. In Germany, the protesters have been called ‘Wutburger’ or ‘enraged citizens’. Their main message is that the current political parties are out of touch with the democratic needs of the 21st century, which include complex issues such as national debt, corruption, immigration, and energy and environmental challenges.

Dissatisfaction with political parties is visible in southern Europe, particularly in Greece, Portugal, and Spain where sit-ins in the squares of the main cities began in May 2011. Protesters complain against unemployment, economic hardships imposed by the government, and outdated and corrupt judiciary and political systems. Up to now these have been non-ideological movements that seek more direct forms of democracy and political representation. They are probably a sign of the medium and long term inadequacy of the current Western political and parliamentary system to deal with the major and pressing questions of this century. The relative economic decline of the USA is also inevitable and currently a very hot discussion topic (Nye, 2011; Time, 2011a).

To take advantage of this situation by developing a stable non-growth economy in the more industrialized world would be a major achievement in our cultural evolution. It would be a decisive contribution for sustainable development and economic convergence with the developing countries, and also an opportunity for cultural flourishing. China is likely to continue increasing its economic power and political influence around the world, and may eventually lead an economically self-sufficient group of Asian countries, establishing a new regional order. Still, there remains quite a lot of uncertainty because social and political movements seeking democratic representation may derail the current ascending economic growth. It all depends on whether the majority of people in China feel that their expectations of better living conditions are being fulfilled by the present regime.

Returning to global governance the most probable scenario is that the reformation of the institutions will be slow and gradual. In a less likely scenario, future crises in the next 10 to 20 years may provide the opportunity and the incentive to promote greater cooperation among states, and to effectively strengthen global governance. This response is clearly the most favourable to create an enduring pathway for sustainable development. In this situation, countries agree to share their political power with a global governance system capable of addressing the challenges of food, water, energy, other natural resources, environmental degradation, peace, and security in an integrated way. In a third, least probable scenario, crises may decrease the cooperation between countries and global governance may become increasingly inoperative and irrelevant. Competition among countries trying to maintain their hegemony and power and their high levels of economic growth by securing access to resources and markets will lead to growing tensions. Conflicts then become much more probable.

Beyond 2030, the uncertainties in the scenarios become increasingly great and it is practically impossible to assess their relative likelihood. In the medium to long term, it is difficult to see how the current largely unregulated financial system can provide the foundation for sustainable global development. Eventually, the unrestricted freedom to seek profit with ever more ingenious and sophisticated financial products is likely to become incompatible with the accessibility to decreasing natural resources and ecosystem services, and with the conservation of nature and the environment. Here humanity is very probably at an expected crossroads.

As a biological species we have distinctive features. The key to our remarkable success story in the biosphere is our ability to develop an increasingly complex



social life that has decoupled us from nature. The driving forces of our cultural evolution were the ever more complex social bonds for protection, cohesion, and cooperation within the group, infighting to reach the leadership roles in the group, and strategies for aggression and warfare between groups. This evolution allowed us to adapt our lifestyles to the most diverse environments from the tropics to the Arctic, and from coastal zones to the highest mountains, and to transform and use them to our benefit. Now we are reaching an extreme situation in this paradigm. We may believe that we can go on extrapolating it, even beyond the Earth. A more likely outcome is that we may have to pay for our success by learning to live in a sustainable way on Earth.

## Epilogue II

In this long journey back through the history of civilizations, all the way up to the contemporary problems of development, natural resources, and the environment, something important has been missing. If this omission corresponded to a real deprivation it would create a feeling of imbalance and angst and an exaggerated sense of disquiet and even anguish. There is something essential in human nature that has not been brought to the fore.

We do not like to be faced with future scenarios filled with uncertainty and risk, and which some consider overstated and catastrophic. For the majority of people, the problems that have to be solved in the next few days, weeks, and months are overwhelming and constitute a heavy enough burden without the negative visions of a more distant future that will mainly affect only subsequent generations. We can hide behind the selfish assumption that our contribution to solving the problems of sustainability is minimal and hence practically unnecessary. But this is clearly erroneous.

Each of us is truly essential in the quest for solutions. We know that we should believe, appeal to, and promote intragenerational and intergenerational solidarity. We know that hunger, poverty, and misery afflict hundreds of millions of people and that, without some form of sustainable development, critical situations are likely to become more frequent and even to threaten the stability of our civilization. We know that there are profound inequalities in the world. We may say that our potential contribution to facing and solving these challenges is practically irrelevant. Again this is erroneous.

Some may argue that the inequalities have always been present, right through the history of civilizations, and that it would be impossible ever to eradicate them completely from human life. Whatever our vision about the present and the future, we are all more or less conscious that we live in a risk society and that the risk is likely to increase in the future. But again some may argue that there is no significant difference with past degrees of risk, and therefore that there is no reason for special concern.

How is it then possible to assume the human condition and live with its inexhaustible supply of deficiencies, miseries, frustrations, anguishes, failures, accidents, ca-

tastrophes, conflicts, wars, uncertainties, and risks? There are various experiences that can help us, in particular religion and the many forms of spirituality. However, an important one has not yet been mentioned. The omission was *art*, with its history and its capacity to stimulate and convey emotions and ideas that can make us transcend our condition. Art cannot be separated either from history or from the future pathway of the current globalizing civilization. Art in its various forms — plastic arts, music, opera, theatre, cinema, dance, poetry, literature, and architecture — is a fundamental part of our culture, like religion and spirituality, science and technology. Without art, the world would be incomprehensible, empty, much more hostile, and in fact unimaginable. Artistic creation is one of the defining characteristics of our species.

Since about 40 000 years ago, *Homo sapiens* has created a remarkable diversity of representations and objects with symbolic, ornamental, ritualistic, and aesthetic value that constituted pioneering artistic expressions. Each of the great civilizations — Egyptian, Persian, Indian, Chinese, Greek, Roman, Mayan, Incan, and European, among many others — developed forms of art with unique and characteristic styles. To appreciate the monumental and artistic remains of those civilizations and the magnificent expressions of Islamic, oriental, mediaeval, Renaissance, and Modern art, is an immense pleasure that can help us to understand the human odyssey and to mitigate the sorrows and miseries of our individual and collective lives.

Art is a way to surpass and exchange the hard reality with another one, more firmly built upon human values, and geared to promote new emotions that range from faith to aesthetic pleasure, the enjoyment of harmony, eroticism, argumentation, social criticism, and the deconstruction of the supposed real world, of social conventions, preconceptions, certainties and beliefs, to repulsion and nausea. It is the irrepressible impulse to create with the feeling of absolute freedom, and to reach for and express the deepest and most secret essence of our changing human identity.

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