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ERUDITIO

"A multidisciplinary forum focused on the social consequences and policy implications of all forms of knowledge on a global basis"

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Eruditio Vision

The vision of the Journal complements and enhances the World Academy's focus on global perspectives in the generation of knowledge from all fields of legitimate inquiry. The Journal also mirrors the World Academy's specific focus and mandate which is to consider the social consequences and policy implications of knowledge in the broadest sense. The vision of the Journal encompasses major challenges facing global society and seeks to examine these issues from an interdisciplinary, multi-method and value guided perspective.

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Editorial

Jakob von Uexkull is the brilliant founder of the influential World Future Council. His articles and speeches are noted for brevity and incisive insights. In this short article, "Toward a Comprehensive Approach to Paradigm Change," the author seeks to clarify precisely what the preexisting paradigm is, and how we are to understand the shift in this paradigm. He gives us many illustrations of the problems indicated in conventional economic wisdom and the hard reality outside about the dangers we face, which seem oblivious to the conventionally trained experts. He draws attention to the problem of climate change and why it is that public concern is so deficient. A central insight, critical to scientists and intellectuals who influence public opinion, is that paradigm changes cannot be negotiated away. It is impossible to negotiate away melting glaciers and spreading deserts. There is no nature that provides for rescue packages here. So, we confront the challenge of a non-negotiable world future. The issues are starkly presented and represent an utterly important urgency. The author presents the issues with a sharp and unambiguous clarity.

Joseph Agassi's essay, "To care for the future of the human race," focuses on the real dangers that challenge human survivability. Matters such as the proliferation of nuclear weapons, exponential pollution, unconstrained poverty, and population expansion are central crises of our time. He contends that the most urgent task of enlightened intellectuals is to think clearly about how we might minimize the risk of the destruction of all humanity. He sees in this the dire necessity of some form of global governance. Notwithstanding the fears of some form of globalized central authority, he suggests that we can create an institution whose authority is vested in a world constituent assembly. This, it appears, is a shift towards the notion of a world politics and possibly away from the field called international relations. The notion of a world politics, if thought through, results in a demand for a radical change in the global power process. It would require a radical redesign of hierarchies and a complex realignment of global participatory interests. The author opens up the discourse for what is effectually a radical democratization of the entire global social, power, and constitutive process.

In "The Psychology of Warmaking," **Roberto Vacca** has revisited a classic to date initiated in the correspondence of Einstein and Freud about the role of personality in the initiation and conduct of war. In a sense, we tend to think of the impulse which drives war-making decision making as reflective of darker unconscious drives. Pitted against this is another important drive, and that is the drive that somehow connects altruism with compassion, love and reason. What makes these considerations matters of urgent global concern is the fact that human technological capacity points to the real and serious possibility of human extinction. The author addresses these issues

from a variety of vantage points and emerges with a critical challenge given the state of global organization and disorganization. One key issue moves us simply beyond the domain of psychology or it moves psychology into the important domain of culture, and in particular, the culture of peace. He challenges us to think more deeply about a paradigm of peace culture. In addition, the new paradigm calls for an alertness of imagination in understanding, new horizon, resources, tools, and mileposts. This is a provocative and thoughtful contribution.

Democracy is an endangered political practice when unlimited forms of wealth are used to influence, dominate, or otherwise undermine the essentials of democratic participation in politics. An excessive wealth in these processes will ultimately lead to the institutionalization of plutocracy, which threatens the fundamentals of democratic governance on a global basis. In "Simulated Judgment on Campaign Finance," **Winston Nagan** has followed his earlier example of providing a simulated judgment of the International Court of Justice. Co-authored with **Madison Hayes,** the article revisits the lawfulness of the threat or use of nuclear weapons. This simulated judgment is identified with a fictional jurisdiction of the Constitutional Court of Azania. The term 'Azania' was promoted by some groups resisting apartheid in South Africa. However, the constitutional provisions quoted are from the new Constitution of South Africa. The judgment assumes that the constitutional provisions of the Azanian Constitution and the Constitution of the United States are functionally similar. The judgment then has to look at the Azanian provisions and take into account the decisions of the United States Supreme Court. The Azanian Constitution permits the Azanian Court to consider comparative law as a source. Therefore, it is in a position to review the judgment of the United States Supreme Court to determine whether it should be followed in Azania. This provides the author of the simulated judgment an opportunity to review the U.S. Court's approach to campaign expenditures. In this review, it is concluded that the reasoning of the U.S. Supreme Court is constitutionally deficient and may indeed open the floodgates for changing democracy to plutocracy. **– Garry Jacobs, Member of the Editorial Board, *Eruditio* Journal.**

Carlos Alvarez Pereira's short essay "The Greatest Adventure on Earth" is a wonderfully provocative meditation on the contradictions, dangers and possibilities of human existence. He sees among the challenges of global importance the immense value of human potentiality, the importance of the expansion of trust and generosity, a deeper sense of appreciation of feminine and masculine values, the changing objectives in organizational behavior, the importance of the empowerment of all human beings, and the centrality of a holistic view of the global human prospect. This essay is a challenging intellectual adventure.

Ullica Segerstrale's essay, "Futuristic Scenarios and Human Nature," takes up the challenging issue of how human nature may be impacted and possibly even transcended by future scenarios of technological development. She provides us with a very good insight into the problem of the interdependence and interdetermination of social process and technological innovation. This is a challenging vista, one that may generate an optimistic future for human nature and one that is perhaps more dismal among the great challenges of the dynamics of artificial intelligence. As she notes, some machines may indeed have the capacity to self-replicate and improve. The possibility of a dramatic and sudden transition might confront humanity with a "singularity." What is the role of a human future in the universe of singularity? This is a vital question and the author has done us a service in raising such questions in such a clear and elegant manner.

Ruben Nelson is an original and powerful thinker. His short essay, "Civilizational paradigm change: The Modern/Industrial Case," focusing on civilizational paradigm change in the context of the Modern/Industrial civilization is a brilliant outlook at the factors that shape our thought and paradigms of thought. His essay looks at paradigm change from several perspectives, all of which throw light on the forms of civilization and the challenges of transformation. This is another important essay and an indication of the far-reaching intellectual power of the Fellows of the Academy.

John Scales Avery has written a brief but elegant essay on the urgent need for renewable energy. "The Urgent Need for Renewable Energy" brings in important scientific insights in a form that is readable to non-scientists and public policy intellectuals. The issue of renewable energy, the challenge of climate change, the dominant role that energy interests play in seeking to constrain the evolution of alternative energy sources are a major challenge according to Avery's article, which puts the core issues on the table in a concise and communicable manner. This is an important contribution.

Michael Marien has provided us with a useful summary of the most recent reports touching on the question of how climate change poses serious national security challenges in his "Book Reviews". Recent reports, for example, look at the challenge climate change poses for economic and national security interests. It is interesting to note that the findings of the Military Advisory Board declared that climate change poses a serious threat to American national security. The Military Advisory Board provided an update expressing its dismay that discussions about climate change have receded from informed public discourse and debate. The military experts again stressed the seriousness that climate change poses for human security systems on a global basis. The military's report is very useful because of its comprehensive checklist of climate change issues, as well as its specific recommendations for action. The author's summary of literature here is a very useful update for those Fellows who are deeply concerned about the challenges posed by climate change.

Robert Hoffman has provided us a short review essay of a book by Mary Christina Wood. Her book, *Nature's Trust: Environmental Law for a New Environmental Age*, details the failures of the agencies regulating the protection of the environment and is a call for urgent radical reform.

Emil Constantinescu, in "Golden Fleece: Higher Education and the New Society of Third Millenium", has written a powerful and wide-ranging meditation on education, in general, and higher education, in particular. He is certainly one of the most experienced learned Fellows with significant views on the nature of the university in the context of the challenges of modern society. His insights are profoundly challenging, such as the idea that the fundamental vocation of the university is truth. The acquisition of knowledge may, of course, represent a move to the omnipotence of skilled elites. Here he raises the profound question of the democratization of knowledge. The author's wide-ranging insights flow from financing education and its importance for the disadvantaged, the memories of totalitarian times, the problem of market values and broader humane values, the role of shared responsibility, the idea of a university occupying space outside the traditional walls of the Academy, the challenge of democratizing higher education while avoiding the pitfalls of "massification", and the new paradigm ideas implicit in a world university. These and many more insights from Emil are included in this essay and make it a must-read for our Fellows.

Janani Harish, in "The Power of Values," explains how the quality of our values and the measure of our commitment to them play a significant role in determining the level of our accomplishment. A global society needs universal values which evolve hand-in-hand with the evolution of the society. Janani, in this important contribution, concludes how striving for values is not a luxury but a necessity to accomplish at a greater level.

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Toward a Comprehensive Approach to Paradigm Change

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Abstract

The term 'paradigm shift' suggests a dramatic discontinuity, one which is almost impossible to prepare for. Paradigm shifts happen quickly and often unexpectedly. We presently find ourselves on the precipice of another threatening environmental catastrophe.

Developing a comprehensive approach to our challenges will require us to spend less time discussing why we need change and where we want to go and more time focusing on how we can actually get there. We must facilitate a choice of futures through policy incentives. A failure to take action today will see major global conflicts arising over increasingly scarce resources and increasing areas of our planet becoming uninhabitable, causing countless millions of refugees.

The World Future Council's latest initiative, the Global Policy Action Plan (GPACT), is an essential tool for today's policy-makers seeking to implement proven innovative policy solutions for our most urgent challenges to protect future generations. Bringing together the minimum policy changes required to achieve the goals the global community is debating, at the very least, GPACT will ensure that we are ready when the seemingly impossible suddenly becomes imperative.

The term paradigm change signifies a drastic discontinuity, practically impossible to prepare for. After such a change, the previous paradigm is not just seen as wrong but as incomprehensible, even mad, or at the very least "exhausted". It no longer makes sense and we find it hard to understand how it ever did. Did learned men in medieval Europe really debate how many angels could find room on the top of a needle?

The 2008 financial crisis did not change the worldview of the global majority. But those working in the financial sector might feel justified in speaking of a paradigm change. The World Wars and the collapse of the Soviet empire fall in the same category. For those who lived in the affected European countries, the world of 1915, 1940, and 1992 had dramatically changed, in ways which were inconceivable only a few years before the events occurred.

What can those drastic changes teach us about paradigm changes? First, they happened very quickly and unexpectedly. Neither the media, nor the markets, nor decision-makers and "experts" expected a world war at the time – with very few exceptions. As for the collapse of the Soviet order, at a conference in Moscow in May 1989, I heard the West German government representative assure his East German colleague that no one in the West was thinking of changing the status of Berlin – six months before the wall fell.

Another key lesson is how insignificant an event can trigger such momentous changes. The wrong turning which brought Archduke Franz Ferdinand in front of Gavrilo Princip's gun is well-known. In 1938 my father, working as a journalist in Berlin, became convinced that Hitler was planning a war and that killing him could prevent it. My father had an apartment overlooking a square where Hitler often spoke and was prepared to shoot him. But while he was within a good shot, he feared he might miss, with disastrous consequences. So he sent a message to London via his contacts, suggesting they send a sharp-shooter, but the reply came back that His Majesty's Government would not do such a thing... As for the collapse of the Soviet Union, a few years later President Gorbachev told a common friend that, if he had known how badly Yeltsin wanted to be "Number 1", he would have offered him his job so that he did not have to destroy the Soviet Union to get it...

"There is a growing paradigm gap between the "experts" our governments follow and our sense of reality."

What paradigm shift are we facing today, if any? While the "end of history" school has been discredited, we are still assured by leaders and opinion-leaders that our current world order is the best imaginable. The consequences of the financial crisis are being overcome, "growth" is resuming and poised to take off, technology and markets will solve our problems and a bright global future awaits.

The media love self-proclaimed converts who have re-joined this optimistic mainstream. A Danish statistician, Bjorn Lomborg, who claims to be a "self-proclaimed convert," but now "skeptical" environmentalist, assures us that "growth" will solve all environmental challenges. In a 100 years' time, he tells us, Bangladesh may be flooded because of climate change, but, if you extrapolate the country's current GDP growth rates, it will then be as rich as the Netherlands and thus able to afford to build enough sea-walls to protect itself. Orio Giarini, Director of the Risk Institute, identifies this modern belief in the "magical power of price" as a key element of the current paradigm, which is increasingly disconnected from the real world. In a ruined natural environment, there is unlikely to be any economic growth – or markets, or democracy or human rights. All our achievements and all our hopes depend on sustainable ecosystems, enabling life on earth to flourish. This may seem obvious. But it is not the preachers of GDP magic who our political leaders follow. Prominent climate economists like William Nordhaus and Thomas Schelling write that climate change will only seriously affect agriculture. But, in an industrialised country like the USA, agriculture only represents ca. 3% of the economy. So, they say, even a 50% collapse would only slow down GDP growth by 1.5%, which can easily be compensated for in other areas. Thus, as long as we produce enough iPods and iPads, it does not matter if food production is collapsing.

This is not an isolated example. In a famous disagreement with his colleague, Herman Daly, while they were both at the World Bank, the US economist Lawrence Summers insisted that our natural environment is a dependent subsystem (box within a box) of our human economy. To many outside the economics profession, this belief is not just wrong, but mad, on par with the belief that the earth is flat. But Summers is one of the most influential men on the planet, having served as a chief economic advisor to two US Presidents (Clinton and Obama), as well as chief economist of the World Bank and President of Harvard University.

So it would appear that there is a growing paradigm gap between the "experts" our governments follow and our sense of reality. It is hard to deny that this gap is the most serious ever, as it reflects not just a shift in worldviews, but how to deal with a threat to the survival of our civilisation, possibly even of life on earth. The fear that runaway climate change can trigger events which will make our Earth uninhabitable, like the planet Venus is, fortunately, not a majority view among climate experts. But neither is it a negligible minority view. It has recently been expressed by Lord Giddens, a former prominent British government advisor and Director of the London School of Economics in *The Politics of Climate Change*.

The majority of climate change experts predict a world radically different from today, with ongoing major global conflicts over ever scarcer resources, increasing areas of our planet becoming increasingly uninhabitable and with countless millions of refugees. Such scenarios can also be found in studies from the Pentagon and British defence government think thanks.

So why is there no greater public concern? The Club of Rome warned of such scenarios 40 years ago and predicted that the crisis would hit now. But such truths are still too inconvenient, to use Al Gore's term, because the required changes would not only be very difficult, but, in many cases, inconceivable. Economic globalisation has enabled us to extend natural limits by growing into the economic and ecological space of other countries, ensuring that, when limits hit, they will come globally and simultaneously: "global peak everything". Orio Giarini, who participated in the early Club of Rome discussions, writes that "no one at that time had any idea of a possible warming of the planet or of the role of the greenhouse effect" ("*Itinerary to the Third Age*", The Risk Institute 2013, p. 88).

Of course some experts did, but it is sobering to consider that today, not just humanity as a whole but even a single wealthy human being could fund geo-engineering experiments which could influence the global climate...

Paradigm changes are non-negotiable. We can negotiate with financial creditors, and find a solution (including a refusal to pay) within years to even the most serious economic crisis. But melting glaciers and spreading deserts do not negotiate. Nature provides no rescue packages.

The shift of perspective required is very hard to imagine within the old paradigm. But we have to try to visualize it if we want to secure our shared future. Al Gore warned in his 1992 book *Earth in the Balance* that the environmental challenges force us to re-think and, where necessary, change every institution, treaty, law, etc. As we know, not much has happened since in this respect.

A sustainable energy supply is now a human and environmental security issue which cannot be subjected to the rules of the market. A World Future Council study last year found that the cost of the non-use of renewable energies amounts to over US $3 trillion p.a. in wasted natural capital. The solar, wind, etc. energy potential we do not use every day is lost forever. Instead we burn valuable fossil fuel raw materials. Cost comparisons between non-renewables and renewables which omit these wider costs are bad accounting, reflecting the power of the corporate oligarchies ruling the world.

Chandran Nair, who founded the Global Institute for Tomorrow and advises the Chinese Government, says that the most urgent innovations now needed are not technical but new accounting models which help internalize costs. But costs have been externalized for so long and on such a massive scale – at the expense of our environment and future generations – that such reforms will be extremely difficult to implement. Attempts to abolish fossil fuel subsidies in African and Arab countries have caused major riots. Integrated approaches for compensating the poor are being tried e.g. in Indonesia, but so far with limited success.

"We are ruled by increasingly absurd economic dogmas."

WFC councillor Pavan Sukhdev, who was referred by Deutsche Bank to UNEP to study the costs of biodiversity destruction, writes in *Corporation 2020* that most corporations would be bankrupt if forced to pay the full costs of their production. Not doing so is of course unfair competition, even fraudulent. But the necessary transition will be an enormous challenge, requiring detailed strategies and a new legal framework for corporations and markets. Sukhdev points out that our economic planning is based on discounting the future, based on the assumption that we will be richer then. But what, he asks, if we become poorer, due to the need to share scarcer resources, as many now fear? Should future discount rates then be negative? Should value-added taxes be replaced by value-depleted taxes? Where is the research being done on the economic implications of such reforms?

Sukhdev is not alone. Lord Stern, former Chief Economist at the World Bank, regards discounting the future as discriminatory.

We are ruled by increasingly absurd economic dogmas. No political leader would dare proclaim a goal of 1% to 1½% GDP growth. But such a growth rate would still expand the economy by a third to one-half in one generation. The German Empire was industrialised with such growth rates. CEOs in the extractive industries warn that the resources to support global 3% growth are not being found at rates which would make this possible. Chandran Nair, founder of the Global Institute for Tomorrow (GIFT) in Hong Kong, writes in *Consumptionomics* that it will not be physically possible for China to have the p.c. resource consumption of the USA – or even Taiwan. There can be no human right to something which is not possible.

When asked what a sustainable future would be like, Nair replied: "Fewer car races and more dancing competitions". In the USA, this earned him the accusation of being "an environmental Taliban"... A re-focusing on traditional community values is the key message of the "Chinese Dream" of an ecological civilisation spread by President Xi. But he finds it very difficult to change course, facing demands to open up China's financial markets to speculators with very different priorities...

Developing a comprehensive approach will require us to spend less time discussing why we need change and where we want to go. There is already considerable agreement on this, but far too little attention has been paid to the "how", i.e. the practical steps necessary to get from here to there. Many believe that this will require either a sudden change of human consciousness (which we cannot wait for) or a huge "bottom-up" movement to debate and agree

on a common future. But, while our future will be shared, as we live on the same planet, there is no reason why it should be "common", i.e. the same. This terminology reflects the "end of history" and globalisation ideology which claims that there is only one global future.

Our task should be to ensure that a variety of futures can flourish. That is our duty to future generations: to expand their choice of futures, rather than reducing them, as we are currently doing. This also requires that future generations are represented when decisions affecting them are made, which is why the WFC is working for the establishment of a UN High Commissioner for Future Generations. (This will be decided at the High-Level Political Forum and then at the General Assembly in the coming months).

We are also working for the creation of Parliamentary Ombudspersons for Future Generations on the national level in different countries, as well as on establishing the concept of crimes against future generations in international law.

Removing 'unfreedoms', to use Amartya Sen's term, for future generations requires first of all reversing trends which will increase such unfreedoms by biodiversity destruction, over-fishing, reducing forest cover, destabilising our climate, etc. It also requires a sustainable economic and financial system facilitating the creation of real and sustainable wealth, where money and markets become our servants, instead of our religion.

This will include monetary reform to ensure that whatever a society can do, it can also finance. It will require a radical ecological tax reform, taxing resources instead of labour, as well as building sustainable systems of production and finance to create the right incentives for entrepreneurship and innovation.

The key policy reforms we have identified, after a broad international consultation process, are presented in the WFC Global Policy Action Plan (GPACT), which we plan to publish next year as a (draft) Global Pact. The aim is to provide a tool for decision-makers and public campaigning by bringing together the minimum policy changes which we believe will be required to achieve the goals the global community is debating. At the very least, this will ensure that we are ready when the seemingly impossible suddenly becomes imperative.

The end of the belief in the power of market prices to solve human and planetary challenges – the "modern magic formula" (Orio Giarini) – is likely to have very drastic consequences. But the paradigm change approaching may go even deeper, challenging another cornerstone of our modern worldview: the belief in the unstoppable global dominance of science and technology over our lives and minds. There is today a growing public disillusionment with both, seen as intolerant gods which increasingly dominate instead of benefiting us.

As is to be expected, this change of perspective is first appearing in the nation which was a pioneer in adopting and embracing technology. The latest issue of "Baku Eye" reports that young Japanese "are becoming distrustful of technologies in a broad sense, as they are now often associated with falseness and futility. Having developed unimaginably complex virtual worlds, the Japanese have found themselves in a situation where dreaming about the future is no longer appealing because it can readily be visualized, packaged and sold in a matter of seconds". Young Japanese are "astonishingly anti-consumerist" and "frustrated with the values of progress", preferring to seek 'satori' (enlightenment). This is not an

isolated example. The pilgrim path to Santiago de Compostela in Spain, the monasteries of Mount Athos in Greece, spiritual and "intentional" communities in many countries, almost all deserted a few decades ago, are finding it hard to cope with demand. The young want to be captains of their soul, to use Dr. Ismail Serageldin's expression, instead of being ruled by economic cost-benefit-analyses. Their indicator of progress is not economic growth, which has not delivered for them. In the last six years, the percentage of young Americans describing themselves as "lower-class" has doubled. Those in their 20s and 30s are less likely to have a high-school diploma than those aged 55-64. The American middle-class lifestyle, the dream of the global poor, is becoming unaffordable even in the USA ("*The Observer*", London 27.4.14).

"Is it conceivable that the coming paradigm change will even invalidate the reductionist materialism on which our modern worldview is based?"

So the shift in focus from consumerism to inner growth is not surprising. My grandfather, the Baltic-German biologist after whom I am named, predicted 80 years ago that the key discoveries in future would be "diesseits" ourselves, i.e. in our inner rather than our outer worlds.

Our current paradigm is based on scientifically confirmed and mediated reality, but this is increasingly challenged, causing a counter-productive (and very unscientific!) backlash from a dogmatic thought-police. Prof. Rupert Sheldrake's book *The Science Delusion: Freeing the Spirit of Enquiry* was bound to upset the scientific establishment. But the massive pressures which caused his TED Talk recording to be removed show a disturbing trend.

But is it conceivable that the coming paradigm change will even invalidate the reductionist materialism on which our modern worldview is based? This question has increasingly become taboo, because our scientific elites fear that any doubts will be used to validate creationism and superstition. But such taboos and fears reflect the weaknesses of the current worldview.

"The 'scientific' reactions to Nagel's book show that the defenders of old paradigms have not progressed in 500 years."

My grandfather, who studied the sensitive universes (Umwelten) of many animal species, and the irreducible complexities of their interactions, regarded the grandiose claims made for Darwinian evolutionism as "playing games, not science". His work has inspired the science of biosemiotics.

The biologist Lynn Margulis, who collaborated with James Lovelock on developing the Gaia theory, thought that Neo-Darwinism would come to be seen by history as a "minor twentieth-century religious sect".

In 2012 the US philosopher Thomas Nagel, a self-proclaimed atheist, published *Mind & Cosmos,* subtitled "Why the materialist neo-Darwinian conception of nature is almost certainly false". He describes it as a "heroic triumph of ideological theory over common sense

(which) will come to seem laughable in a generation or two". His critique is two-fold. First, physico-chemical reductionism is becoming increasingly unbelievable as science discovers more details "about the chemical basis of life and the intricacy of the genetic code". Second, neither the development of consciousness nor of reason can be explained in reductionist terms.

The 'scientific' reactions to Nagel's book show that the defenders of old paradigms have not progressed in 500 years. He was inter alia accused of being part of a "reactionary gang", causing the US *New Republic* magazine to warn of a "Darwinist mob"....

This leaves us with a twofold task, remaining open to new paradigmatic challenges while also being prepared to defend the values and achievements of modernity in an increasingly disorderly world of transition. From 1989-91, many citizens in Eastern and Central Europe assembled at round tables to help steer their countries to a new future. But they had a functioning model to follow, while we will have to both build and implement a new world. As Winston Churchill said, it will not be enough to do our best. We will have to do what is necessary.

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To Care for the Future of the Human Race*

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Abstract

*Humanity can now destroy itself through the **P**roliferation of weapons of mass destruction, **P**ollution, the increasing **P**overty of the poor nations, and the **P**opulation explosion (the four Ps). The urgent task is to minimize the risk of destruction of the human race. This cannot be done locally, only globally. It belongs to the new field of global politics. Hence, to rescue humanity we must institute a global coordination agency, known as world government or as world coordinator or by any other name. There is a reasonable fear that if such a central organization were instituted, some power may usurp and control it and thus increase the risk rather than reduce it. Hence, a world constituent assembly is urgently needed.*

1. The New Situation

Of the many changes that humanity has undergone, the most traumatic one was World War II. In Auschwitz we have learned the enormity of our readiness to destroy, and in Hiroshima we learned the enormity of our ability to destroy. Together this led to a culture of living without tomorrow. This culture could not sustain itself physically as the many experiences of the sixties of the twentieth century testified to, and it could not sustain itself morally as many works of narrative art made tangible to those who experienced it. We may take as representative the 1957 novel *On the Beach* by Nevil Shute that was a bestseller for decades and made into a very successful 1959 Stanley Kramer movie. It displays the loss of all joy of life due to the loss of the future. Evidently, this and similar musings over the matter managed to change attitudes somewhat. Whereas early in the day Einstein reported with amazement that too many people did not care whether humanity will survive, today, though there is still too much indifference, there is much more concern and it is on the increase. The claim is now popular that we are living in a permanent global crisis, at risk of causing a global catastrophe that we should seek to reduce.

The problems of global politics are serious and in sore need for reasonable solutions. Thus far none has been offered. Unable to offer even a clue, let me make do with a preliminary discussion of the problem-situation in general. Let me begin with two rather obvious presuppositions. First, survival is always on the top of any agenda ─ personal, collective, national, or human. Second, today human survival is in grave danger: human life on earth may come to an end due to the four Ps: the proliferation of weapons of mass destruction, the pollution of the environment at large, the increased economic gulf due to the increased poverty of the poor nations, and the population explosion. These four dangers reinforce each other and there

* For more details see the author's 1985 book, *Technology: Philosophical and Social Aspects* http://www.tau.ac.il/~agass/joseph-papers/technoln.pdf

is no saying how much time we have before the threat of extinction becomes irreversible.

> *"Science can instruct us only on details, not on comprehensive ideas."*

We should put the survival of humanity on top of every political agenda, global, international, national and party-political; we do not. However, the late Norwegian philosopher Arne Naess did.[1] He devoted the last years of his life exclusively to the discussions of human survival. This is admirable but not recommended: it is too radical. For all we know, the service of intellectuals as intellectuals, and of philosophers as philosophers, may be vital: they contribute to intellectual hygiene, helping to maintain some sense of proportion through the search for a comprehensive view, for clarity and precision, for the training to examine problems and get them as much in focus as possible prior to studying them, and to examine critically solutions to them.

2. Facing the New Situation

Traditional philosophy includes some care about comprehensive matters ─ on the supposition that we need a broad synoptic vision that understandable but still regrettable specialization ignores, or even cautions against in the fear of superficiality. Yet we need a reasonable approach to global problems even if it will be superficial to begin with, if not even conducive to megalomania: we do need some bold speculations to guide us in our deliberations. In the 20th century at least two individuals tried their hands at this, Albert Einstein and Bertrand Russell, who both cared very much about the future of humanity. We should study their teachings as they are still relevant and useful today. Yet, clearly, what they have offered is insufficient. Also, our problems keep changing. New problems accumulate and old ones deepen. Hence, the hope that their teachings should suffice is unreasonable. Still, since the Cold War is over, a new air of optimism has spread. Now, how serious is our situation after the Cold War? Is the risk of proliferation of weapons of mass destruction bigger or smaller, now that the Soviet Union and its nuclear arsenal are no longer under much less centralized control? We do not know. To find this we need an improved synoptic view of the situation. Science should contribute to it, but it is insufficient. This assertion angers many scientists and analytic philosophers. Attempts at sweeping overviews are naturally speculative, and speculations are often not serious. At times they are not responsible. Speculative philosophers are often ignorant of details of contemporary science and at times they are even contemptuous of the details that they are ignorant of, perhaps in efforts to suppress a sense of inadequacy that may stifle efforts to do anything. So they ignore the details of relevant scientific information or, worse, they carelessly advocate outdated scientific information and theories. Without defending them one may appreciate their courage. The scientific tradition values the empiricist philosophy that shuns speculations as suspected of frivolity; it suggests that the safe ways to comprehensive ideas pass through small, serious researches devoid of megalomania. Ernst Mach denied that he had any philosophy, and declared that his comprehensive view of the world was the totality of science. Recently W. V. Quine advocated the same idea. Yet, science can instruct us only on details, not on comprehensive ideas. On questions of global politics, then, we have too little knowledge and little agreement about the way to proceed with the study of the broad outline of the situation.

"Great solutions come in the wake of small ones."

We have hardly any tradition to go by. As Heinrich Heine, Bertrand Russell and John Maynard Keynes have noted, leading political ideas are those that philosophers had developed earlier. The global problems that demand urgent attention are so new, they can hardly have sufficient ancestry. Traditional religion can hardly offer anything beyond the invitation for good will. Science often serves as a substitute religion, if upheld somewhat dogmatically. Nevertheless, for efforts to cope with current global problems to succeed, we must shun science worship; they must appeal to the good will of all, including the good will of the vast populations of the poor parts of the world that are not prone to consider science as a religion. Even what western people deem commonsense is sufficiently imbued with science to be often extremely hard to spread. We have nothing much to go by, then, and have to make do with presenting the best ideas relevant to the problems at hand around as best as we can, and examine their insufficiency as solutions for the problems. There is no other way, and in particular we must discourage the idea that some great thinker will emerge and solve our problems for us. At least on this we have some idea: great solutions come in the wake of small ones.

Hardly anyone can claim even minimal credentials for the task of developing good, comprehensive ideas. This task is very urgent: it is becoming increasingly difficult to be sanguine about the near future, let alone the distant future. We should face the uncertainties of the future as a matter of responsibility: if responsible people neglect the task of caring for the future, and the ancillary task of developing some comprehensive ideas about it, then this task will be left to irresponsible people. And then, when action is demanded, they will lead: in emergency, when drastic action is called for, if only one plan of action exists, it wins regardless of all objections to it. What then is required of the responsible but not qualified? They should present as best and as clearly as they can the problems and the backgrounds to them in efforts to engage in them as many people as possible. What this demands most is to be as critically minded as possible.

3. Some Preliminary Rules

The required action in global politics must be global: it is futile to perform it locally. The practice of population control in one country, for example, leads to increased immigration from poor countries where this facilitates population growth. And the current practice of shipping toxic waste from rich countries to poor ones, for another example, is going to hurt us all.[2] This is not to discourage local moves in the right direction; these may be of some practical value even though they fall short of the target, and they always have educational value.

Global action requires global coordination. This is achievable by international bodies designed to help such coordination. These are now used by representatives of member nations to defend their nations' policies. What is missing then is a sufficiently broad, if not quite unanimous, agreement on the need to seek ways to act in the right direction. And unanimity cannot be imposed, especially not on educated, democratic publics. This holds for all ideas, no matter how obvious they look.

Unanimity within science is insufficient. Even within science, only the well examined information commands some measure of unanimity; it functions as a challenge to theoretical researchers to explain it or as a basis for acquiring licenses for practice. To be useful, applied science often needs coordination. Regarding global matters this is wanting, since the coordination we need is global. So the task is to spread the comprehension of the available information that requires a movement towards global coordination for controlling the risk of global destruction.

The required broad comprehension is unattainable without some scientific literacy. Facts are easier to comprehend than the theories that explain them, but not sufficiently easy. This invites efforts to facilitate comprehension of relevant scientific information. Discussing the reliability of information (of the question, how well examined it is) is easier than discussing the reliability of theories (whatever this means), yet theories are vital for discussing forecasts and their reliability. Unfortunately, people with much good will advocate good causes poorly as they exaggerate the reliability of their information and theories and they even blow up information and prefer extreme forecasts without saying so, in efforts to scare the public in order to mobilize public interest in important issues.[3] This is irresponsible, and it causes damage.[4,5] Perpetrators of inferior advocacy assume that the public is too ignorant to see through it; but it is easy to expose dishonesty to the public, and all the more so when scientific literacy grows and democratization opens new channels for free public discussion. The proper democratic procedure seems exceptionally frustrating whenever a huge and urgent task is at hand, and this raises hopes to achieve better results by replacing democracy with technocracy. It is suggested that experts will do things more quickly and efficiently if they are exempt from the democratic process, especially if they comprise an amalgamated team of scientific and managerial experts. There is some reason to this idea: already the ancient Roman Republic practiced it. A number of guarantees were instituted there to prevent the temporarily strong leader from becoming permanent. Julius Caesar, we remember, broke them. This was no historical necessity as the case of Churchill illustrates: he was the strongest leader ever, yet after the war he was defeated in elections. Only active democratic education made the difference between Caesar and Churchill. And active democratic education includes training for coordination.

Training for coordination is best achieved in practice, like swimming, so that possibly the best democratic education is in the democratic movement, and then it should begin from the start. If so, then the recognition of it should perhaps lead to the democratization of schools, and on all levels. Whether this is so or not is irrelevant here. For, the global crisis requires urgent solution and we hardly have the time to reform education and apply its fruits to the crisis. What is needed most, then, is a modicum of scientific literacy, grass-roots democracy and individual autonomy. Putting these in minimal form on top of the public agenda may suffice for developing quickly a forceful synoptic view. One small item may illustrate this. Today a new social philosophy is afoot: communalism. Like many buzzwords, it is not clear what it is. Some people who speak in its name oppose individual autonomy; others only play it down. It is important to confront them all and ask them, is their communalism helpful for the cause of saving humanity from itself? For, this holds generally: the task of putting global politics on the map, it seems obvious, requires mobilizing local politicians. They will not necessarily be thrilled with the idea, so they have to be won over or replaced in the political

arena by democratic means. Yet it is very important to notice that cynicism is easily misplaced here: cynics will say that it is too idealistic to expect local power seekers to give in for the sake of global politics. This need not be so. After all, the same story occurred when nationalism evolved, when local feudal potentates gave way to central authority, and at times voluntarily, understanding that it was also in their own interest to give in a little. World security is in everyone's interest. This is not such a difficult idea to comprehend.

"It is the coordination of all efforts within global politics — academic, political and other — to work together without exaggeration and stressing the great need that may create a genuine mass movement and push it to become a grass-roots democratic-scientific movement."

Why then is it so difficult to mobilize people for this great cause? Evidently because no one wants to be the only volunteer for the cause that can be profitable only if it gains momentum. This is true of all mass movements, yet some of these did succeed. The analysis of their success may be crucial. The success need not happen at random: we can try to engineer it. For example, we can ask, why do people participate in harmful activities like the transfer of toxic waste from rich countries to poor ones? This conduct depends on the understanding of an important and dangerous fact. If the persons involved in the act will desist, others will take their place and have their cut in the profit. The situation will drastically alter were such conduct illegal. Why is it not? We must investigate this question and deal with the situation according to our finds.

4. Final Remarks

In conclusion of this preliminary discussion, let me notice that it is on the trite side ─ as it should be if it is to summarize what everyone concerned with the future of humanity must agree upon. All this is tentative, of course, to be scraped when someone comes up with a smashing revolutionary idea that should reopen the discussion. In the meantime, we are only able to seek hints at sketches of possible comprehensive views that may stand behind some future solutions. Everyone who is concerned who has anything new to say on the matter should present it publicly in the hope that others will succeed in developing ideas further, or in criticizing them, and thus opening the road to hints of better ideas. We are facing a tremendous intellectual and practical challenge. Many universities in many countries have already instituted a number of new departments to meet this challenge. Most of these departments are devoted mainly to ecology, leaving it to older departments to discuss the other new global issues. It is the coordination of all efforts within global politics ─ academic, political and other ─ to work together without exaggeration and stressing the great need that may create a genuine mass movement and push it to become a grass-roots democratic-scientific movement. To that end we should seek ways and means for helping existing organizations whose official tasks would be to seek ways to prevent global catastrophes to do a better job: to seek ways for creating an umbrella organization for them all, one that should have powers to

push things forward as much as possible, and to seek ways to turn this umbrella organization into a constituent assembly for a world authority for the purpose of reducing the risk of the self-destruction of humanity.

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The Psychology of Warmaking

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Abstract

In this paper, historical, cultural, juridical theoretical arguments have been collected to substantiate the conclusion that the only way to prevent nuclear war is by the neutralization of all nuclear weapons.

Why should we analyze the psychology of warmaking? Because understanding its mechanisms should suggest measures to avoid suffering and destruction of resources entailed by war. To prevent even minor local conflicts is impossible – just as preventing any crime is. The vital issue is prevention of major war. In 1932 the issue was debated in a correspondence between Albert Einstein and Sigmund Freud. It was published in a pamphlet ("Why War?"), which had minimal diffusion and impact. Both authors treated the problem agreeing on two main points – discussed quite superficially.

The first was the notion that humans are subjected to the instinct to conserve and unify – to love – and also to the instinct to hate and destroy, each as indispensable as its opposite. The phenomena of life were considered to derive from their interaction.

The second point was that the war impulse could only be opposed by forming a superior class of independent thinkers upright and able to enlighten and guide both the intelligentsia and the masses so they would follow the dictates of reason – a utopian hope in the view of the two authors.

We shall discuss these naïve views both based on historical evidence and on theoretical grounds in the substantive conclusions of the present document.

Obviously in the 21st century THE major war would be a thermonuclear war, possibly producing 'The Holocaust'. Assume, then, that we accept the categorical imperative of preventing the major war. Note that the London Charter of August 8, 1945, signed by the plenipotentiaries of the governments of France, United Kingdom, USA and USSR established the principle that "the mere preparation of total war constitutes an international crime against peace and humanity". The intent was sensible and meritorious, but in almost seven decades no attempt was made to apply the principle although the four original nations and a handful of others advocating it have indeed experienced total war vastly more devastating than those experienced up to 1945.

Waging major wars historically was decided by autocrats as well as by democratic governments with popular support. The public was often brainwashed to favor war by means of campaigns evoking visceral passions masked by allegedly rational, nationalistic or ethical

motivations. During the Cold War the balance of terror was accepted by millions. They were induced to think evenhandedly about the *unthinkable* global thermonuclear holocaust. The underlying rationale was based on considering the threat of ultimate nuclear warfare as a factor of restraint – a deterrent apt to guarantee peace.

Strategic Arms Limitation Talks (SALT) took decades to achieve steps on the path of total elimination of nukes. At the peak of the Cold War the destructive potential in all the thermonuclear weapons arsenals of the world was estimated to be equivalent to 4.5 tons of high explosive for each human being on Earth. After the partial disarmament achieved over the years the amount is now "only" 700 kilograms of high explosive for each of us.

The military confrontation between NATO and Warsaw Pact exists no more. Possession of thermonuclear weapons has now spread to many countries and it appears with increasing probability to be within reach of "crazy states". This term was coined by Prof. Y. Dror to define countries or regimes which are: unreasonably aggressive, prone to risk taking, apt to choose means unrelated to their goals, sticklers to styles incorporating quaint rites and dogmas. Cases in point are: Crusaders, violent anarchists, Nazis and, more recently, revolutionary Iran and Al Qaeda. The psychology of "Crazy Leaders" is hard to analyze. By definition they tend to be unpredictable.

The systems comprising radar and satellite early warning, aiming, control and real time steering of nuclear warheads vectors are highly sophisticated. Their complexity is comparable to that of systems controlling thermonuclear power stations. The latter have provoked major disasters (Chernobyl, Fukushima). Causes were due to gross incompetence in design, implementation or management – not obviated, although the corresponding situations were widely known and amenable to corrective criticism of experts. In the case of nuclear weapons, designs, structures, functional rules, safeguards are kept secret. Outside experts cannot suggest improvements nor caution about covert risks. The consequence of glitches could be a first thermonuclear explosion, followed by others in retaliation of an assumed attack. To convince the target country that the attack was not deliberate, the attacking country could, perhaps, inflict an identical attack on one of their own major cities. This drama was vividly depicted in *Fail-Safe*, a well known novel and film.

The situation is made more critical because a large part of the complexity is not visible. It is hidden in the software of control and telecommunication systems and of telematics networks and in some cases not even experts are fully aware of how it all works. A critical problem in delegating decisions to computers is integrating software operation with human decisions. Expert systems are of no use in the hands of morons. A vital task is to make software control transparent so that well trained humans may monitor the process and override it if needed (as aeroplane pilots do with automatic pilots).

The most imminent danger, then, is the unleashing of nuclear war caused by malfunction of computerized control systems or by human decision to launch reprisal Intercontinental Ballistic Missiles (ICBMs) after having erroneously concluded from faulty early warning radars, that a first strike is about to hit. In 1983 the radars of the Serpuchov 15 Bunker near Moscow signaled the detection of 5 American ICBMs in flight towards Russia. The commanding officer, Colonel S.Y. Petrov of the Soviet Air Defence Forces, correctly identified

the warning as a false alarm and prevented an erroneous retaliatory nuclear attack on the United States which might well have unleashed World War 3.

"Warmaking can be blocked by the strength of culture."

Probably, then, warmaking would not be the outcome of deliberations by politicians nor of decisions by the military. Analyzing the psychology of decision-makers in these groups may well be irrelevant: a first nuclear strike is likely to be the random consequence of malfunctions of control systems or the improvised extemporaneous demented action of crazy states or of self styled freedom fighter groups or jihadists.

The only way to prevent nuclear war is then the neutralization of all nuclear weapons.

More than the psychology of warmaking we have to investigate the psychology of absentee populations who don't realize that eliminating nukes is the only salvation from total war. We cannot expect international diplomacy to achieve this goal: their progress in this direction has been too slow. We cannot expect a benevolent tyrant to decree the elimination of A- and H- bombs. We have to bring back the nuclear disarmament issue on the political agenda of our nations and of supranational bodies (UNO, UN Security Council, FAO, ILO, OECD, International Court of Justice, UNDP, UNEP, UNESCO). These organizations will have to be prompted by the people through all channels: from mass media to academia, from the WWW to local groups, from political structures to NGOs. Spiritual leaders of organized religions and of informal movements have to be challenged. If they persist in ignoring this ultimate risk, they should be branded as unreliable and irrelevant.

Warmaking cannot be fettered by a superior (benevolent?) brute force. It can be blocked by the strength of culture. This statement is proved by historical evidence.

"European peace stems from European culture."

In the '30s, militarist, nationalistic governments were ready to start war and they did start it in cold blood. The culture of that time was not uniform. It hosted democracy descending from British parliamentarianism, Jeffersonian principles, the French Revolution. It also contained Nazi-fascist and Bolshevik dictatorships, negating basic freedoms and actively exercising extreme violence. There are still dictators as well as crazy states around, but no big powers advocate war as a superior mystic value.

In 2012 the European Union and the European Commission were awarded the Nobel Prize for Peace as they *"for over six decades contributed to the advancement of peace and reconciliation, democracy and human rights in Europe."*

Prof. H. Menudier of Nouvelle Sorbonne University celebrated this Peace Prize in Vienna at OECD on December 18, 2012. He said that from 1870 to 1945 in 75 years France and Germany fought 3 fratricidal wars with a disastrous material, human and moral toll – whereas today the very notion of a Franco-German war sounds utterly absurd.

European peace stems from European culture. It is true that some diehard, extreme violent politicians still have followers in France, Greece, Hungary. However aggressive ranting in the style of Hitler or Mussolini would not find large audiences today.

Peace is not global in the 21st century. Europeans have intervened, fought and died in Iraq, Afghanistan, Libya, Mali. Even now, local wars erupt in Asia and Africa. Escalations are still to be feared. So we have to study, plan and act to identify the applied psychology of war prevention. This would not be effective, if it was limited to the dissemination of do-gooder exhortations. The message MAKE LOVE, NOT WAR was not a success. The symbol is vaguely interpreted by most people as "for peace", whereas it stands for "ND" – Nuclear Disarmament [it is the superposition of the letters N and D in the flag semaphore alphabet].

The Anti-nuclear weapons culture has to be disseminated explaining the meaning of symbols, the cause-effect mechanisms of the threats – the unique solution being Nuclear Disarmament. These vital factors have to be brought to bear to understand and modify the psychology of absenteeism.

Culture should certainly continue to be fostered and renewed as a factor of human growth, of scientific progress, of research and development. In a specific sense, it should be oriented toward Nuclear Disarmament – a worldwide movement to be revived in the wake of the great thinkers Linus Pauling and Bertrand Russell.

The goal here is to raise cultural levels so that entire populations understand the numbers and the probabilities involved – the fact that we are facing **extinction**, not just hardships and decimation. To really grasp this impending tragedy, the public should learn how to forecast future events, how to identify real dangers and how to calculate their consequences. The fact that the equivalent of 700 kilograms of high explosive for each human is stored in nuclear arsenals could destroy most of our world, should motivate the public to accept and disseminate a new BAN THE BOMB manifesto. This cannot be a single purpose edifying text.

The manifesto must be an appeal to design and implement a large international endeavor involving many public and private sponsors, academia, firms, communicators, Web operators, agencies and all the media.

Hi-tech war is a much more severe threat than conventional war. The movement should, then, promote the spreading of technological upgrading of the public. High technology runs the risk of being strangled by lack of culture. Very fast and powerful personal computers are less and less expensive, but (apart from professional tasks) the public predominantly uses them for playing games, reproducing non-descript images, listening to music, watching films and for swapping improvised words. These instruments should be used, instead, for significant aims of knowledge processing, acquisition and creation. If the public understands the world better, it will be convinced that war has to be avoided.

The number and complexity of technological choices to be made by governments, international bodies and enterprises are growing. The consequent impacts are large on society's wealth, health and stability and also on international dramatic issues. The latter are: poverty, injustice, violence exerted to secure resources, migrations to the West and the North. Many least developed countries have vast potential natural resources (minerals, energy, arable land) which are blocked due to lack of culture and investments. They don't need short term

emergency measures, but major international enterprises aimed at their pacification and stabilization and then at advanced technical solutions. The socio-economic impacts of technology are positive, if it is permeated with culture and if culture is disseminated and offered as a real option. These results would also diminish international tensions generated by the determination of securing more equitable distribution of resources and wealth. Raising cultural levels is the prescription to avoid not only ultimate total war, but also stark inequalities and local grievous conflicts.

1. Resources, Tools, Mileposts

The World Wide Web offers data banks, software packages, sophisticated financial and banking services, highly significant texts, information on advanced control and decision systems, but the majority of people (often including managers, planners and decision makers) are not knowledgeable enough to use them. In fact they are often unable to tell high quality information and services from valueless, illusory items of which there is ample supply. They end up accessing irrelevant, volatile materials.

It is necessary to create alliances and task forces enrolling culture, academies, parliaments, business enterprises of all sizes, to use the media in order to offer to the public tools for continuous cultural upgrading. This improvement will boost not only demand and profits for hi-tech industries, but also the value added by human activity to any other resource. Affluence grows in societies where the search for knowledge is an accepted and financed value.

This endeavor will use all media: newspapers, TV, radio, magazines, electronic publishing. The very concept of entertainment will have to be redefined. The new contents will not be volatile, but edifying.

The art of communication will be at the service of culture. The dissemination of culture is the basic task of schools, but their functions need to be integrated, stimulating emulation. School systems are slow to innovate. It is advisable to start new cultural enterprises outside of schools. No single firm, even among the largest, could be so wealthy to be able to finance such a large program. It would be appropriate to create an international consortium of firms (publishers, information and communication technology producers, engineering companies), advertisers and experts, all united to promote a cultural revolution. Culture may not be surrogated by television spots, slogans and platitudes.

The following goals and resources will have to be publicized by highly visible, authoritative, learned individuals who will credibly twist the arms of politicians, entrepreneurs, publishers, media moguls. Their non-participation or lack of support will have to be construed as a scandal. A detailed program prepared with the help of an adequate number of experts will have to be submitted to sponsors – a major undertaking.

2. Indoctrination for Cooperation

The cultural upgrading enterprise needs vast popular support in order to succeed. Indoctrination of academics, teachers, human resources managers, parliamentarians, publishers, journalists, media moguls will have to be organized. Examples of positive rational

thinking as well as abstention from abstract, ill-defined, vaguely optimistic endeavors will be proposed.

From prehistoric times the psychology of the majority has been warped to believe that egotism and avidity in the end are profitable. In fairly recent times the mathematical theory of cooperation has proved that the reverse is true. Cooperation is more advantageous to all concerned than self-seeking and self-aggrandizing. However logical proof and rational thinking are often disregarded: people trust conventional alleged wisdom and gut feeling more. A first step should be to teach cooperation theory in schools at all levels.

"Cultural upgrading will not advocate a mere scientific and technological rehabilitation program spread by geek missionaries but will spread knowledge of teaching from the classics."

Obvious word of mouth channels will be used and advertising experts will be enrolled shifting their pitch from their traditional approach (more sales, larger audiences, sacrifice taste and rigor to popularity, centering messages on logos and slogans) to intellectual yardsticks. Their abilities will be aimed at a viral diffusion of the equation "cultural upgrading = salvation". There is no surefire prescription for this. Many cut-and-try empirical attempts will have to be experimented.

3. Tenets to be Carved in Collective Awareness

The ablest wordsmiths have to produce memes which are apt to carve themselves in people's minds. Not slogans – but meaningful, easy to remember tenets to foster motivation.

4. Teachings from the Classics, not just from Technology

Cultural upgrading will use modern ICT technology. It will not advocate a mere scientific and technological rehabilitation program spread by geek missionaries. It will revamp cultivation of the "two cultures" and of many more. It will spread knowledge of teaching from the classics.

5. Outstanding Contributors

Support will be sought from first class scientists already active in cultural upgrading, as for example,

1. Prof John L. Casti, Senior Research Scholar at IIASA
2. Prof. Richard Dawkins, author of "The Selfish Gene", Foundation for Reason and Science
3. Prof. Freeman Dyson, physicist.
4. Sir Harold Kroto (discoverer of C60 buckyballs carbon molecules), founder of the Vega Science Trust (www.vega.org.uk) enrolling scientists to disseminate their knowledge; founder of the Kroto Research Institute for nanoscience and technology, connected to the University of Sheffield.

5. Carl Weiman (Physics Nobel 2001) who has defined programs for improving post-secondary education (see www.livescience.com/technology/080725-sb-education-future.html)

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Simulated Judgment on Campaign Finance in the Constitutional Court of the Republic of Azania

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Abstract

This article comes in the form of a simulated judgment of a fictional constitutional court. Its focus is on the scope of liberty in the distribution of private sector funding in the contentious democratic political process. The judgment is triggered by rulings of the United States Supreme Court, which seeks to limit the power of the legislature to constrain campaign expenditures. In its recent judgments, the Supreme Court has equated political liberty as a device to permit unconstrained political spending. This simulated judgment is drawn from the constitution of South Africa, which has provisions functionally similar to related provisions in the U.S. Constitution. This "Azanian" Constitutional Court is set the task of interpreting its own provisions in the light of the U.S. Supreme Court's determination of provisions similar to its own. This judgment in reviewing the central elements of the American Court considers that the approach of the American Court undermines democracy and promotes plutocracy. The promotion and defense of democracy are, as a global matter, intricately tied to the principles of good governance, which include responsibility, accountability, and transparency. Plutocracy is the antithesis of good governance and as a global norm should be rejected.

Introduction to a Simulated Judgment in the Supreme Constitutional Court of the Republic of Azania

This simulated judgment is written from the perspective of jurisconsults reviewing the jurisprudence of comparative constitutional law concerning the right of the legislature to enact legislation that seeks to control, regulate, and limit contributions from private-sector actors to those who are campaigning for electoral office. The developed constitutional jurisprudence in this area has been significantly defined by two recent Supreme Court decisions of the United States. The Constitutional Court of Azania has both constitutional provisions and legislative enactments that are remarkably similar to the constitutional and legislative provisions of the law of the United States. Thus, the Supreme Court of Azania, although facing a paucity of judge-made law, has the benefit of reviewing its own law and Constitution via an examination and appraisal of the example set in the Supreme Court of the United States.

Supreme Constitutional Court of the Republic of Azania
October Term 2014
Appeal from the High Court of the Cape of Good Hope

Chief Justice announced the judgment of the Court. The judgment is unanimously joined by the other six Justices.

The Constitution of the Republic of Azania in its Preamble indicates that the Constitution of this Nation was drafted and adopted in order to "lay the foundations for a democratic and open society in which government is based on the will of the people and every citizen is equally protected by law."* Chapter One of the Constitution expresses several of the founding provisions of the Constitution. Chapter One Article Id states "universal adult suffrage, a national common voters roll, regular elections, and a multi-party system of democratic government, to ensure accountability, responsiveness and openness"† are among the foundational values of the new constitutional order. Chapter Two of the Constitution codifies the Bill of Rights of the Nation. The cornerstone of a democratic political culture must ensure and advance "the democratic values of human dignity, equality and freedom."‡ The Constitution stipulates that "the state must respect, protect, promote and fulfill the rights in the Bill of Rights."§ The scope of the application of the Bill of Rights is that it "applies to all law, and binds the legislature, the executive, the judiciary and all the organs of the state."¶ The scope of the Bill of Rights inter alia binds both natural and juristic persons, taking into account the specific circumstances of each context.** The Constitution also clarifies the position of juristic persons under the Bill of Rights: "a juristic person is entitled to rights in the Bill of Rights but only to the extent required by the nature of the rights and the nature of that juristic person."†† In dealing with the interpretation of the Bill of Rights, the Constitution provides additional guidance. It "must promote the values that underlie an open and democratic society."‡‡ In order to interpret the Constitution, the interpreter must consider international law. The interpreter may as well consider foreign law.§§

Because freedom of expression is a foundational value of all open and democratic societies, the Azanian Constitution Article XVI stipulates that "everyone has a right to freedom of expression."¶¶ This includes the following:

(a) freedom of the press and other media;

(b) freedom to receive or impart information or ideas;

(c) freedom of artistic creativity; and

(d) academic freedom and freedom of scientific research

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* S.A Constitution, Preamble

† *ibid., art. 1d*

‡ *ibid*., art. 7, sec. 1, cl. 1.

§ *ibid*., art. 7 sec. 2.

¶ *ibid*., art. 8, sec. 1.

** *ibid*., art. 8, sec. 2.

†† *ibid*., art. 8, sec. 4.

‡‡ *ibid*., art. 39, sec. 1a.

§§ *ibid*., art. 39, sec 1b and 1c.

¶¶ *ibid*., art. 16, sec. 1.

Additionally, the Constitution clarifies the scope of freedom of association: "Everyone has the right to freedom of association."* This implicates the political rights listed in the Constitution:†

1. Every citizen is free to make political choices, which includes the right-
   (a) to form a political party;
   (b) to participate in the activities of, or recruit members for, a political party; and
   (c) to campaign for a political party or cause.

The Constitution does not specify the precise coordination of these rights in actual practice. In particular, it does not indicate how these rights are to be expressed in terms of the process of funding the promotion and defense of these rights. In this sense, our Constitutional scheme is somewhat silent about precisely how this is to be done, what standards are to govern it, and precisely what the scope of the prescriptive power of the State is to legislate standards to ensure that the foundational values of an open and democratic society are enhanced and not undermined.

The central problem posed for the process of ensuring the integrity of the electoral process is the problem that in an open society which has a significant private sector for the production of wealth and capital, that segment which monopolizes and controls the wealth-generating process may use its wealth and capital assets to support particular candidates in the political competition for electoral success. This led the United States Congress, in a bipartisan initiative,‡ to begin the process of limiting campaign contributions so that the political process is not swamped by the wealthy contributions of a few members of the electorate, a process that may therefore diminish the competitive capacity and weight of the average citizen voter in the political campaign arena. In the U.S. system, there are limits to what an individual may contribute to a particular candidate.§ That same individual, however, can also channel unlimited funds through a Super PAC that supports that same candidate or party.¶

In a recently decided case,** the Republican National Committee and a citizen of Alabama, Shaun McCutcheon challenged a law that limited an individual's aggregate campaign contributions to $48,000.†† McCutcheon was simply claiming that he could provide a donation of $2,600 [the base limit] to as many candidates for election as he chose. In short, his money provided him with a form of political influence and communication that could not be matched by poorer sections of the community. The fundamental principle here is that the freedom of speech and communication in the American Bill of Rights restricts campaign contribution limits. Since we have a similar provision in our Bill of Rights and similar limitations on

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* *ibid*., art. 18.

† *ibid*., art. 19, sec. 1.

‡ *An Act to Amend the Federal Election Campaign Act of 1971 to Provide Bipartisan Campaign Reform,* Public Law 107-155, *U.S. Statutes at Large* 116 (2002): 81-116, also known as the Bipartisan Campaign Reform Act or the McCain-Feingold Act.

§ For a complete list of all current campaign contribution limits, see the Federal Election Commission's website: "Contribution Limits 2013-2014," http://www.fec.gov/pages/brochures/contriblimits.shtml

¶ The notion of a Super PAC emerged after United States Court of Appeals for the District of Colombia Circuit decided *Speechnow.org, et al. v Federal Election Commission*, U.S. 2 (2010). The Court ruled to invalidate the $5,000 base limit previously imposed on individual contributions to independent political committees.

** *McCutcheon et al., v Federal Election Commission,* 572 U.S. 1 (2013).

†† The law in question was a section of the Bipartisan Campaign Reform Act.

campaign expenditures we are facing roughly the same question: whether Article XVI of our Constitution should be given a similar interpretation as the First Amendment has been given in the American Constitution. Our Bill of Rights is subject to Article XXXVI, which stipulates:*

1. The rights in the Bill of Rights may be limited only in terms of law of general application to the extent that the limitation is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom, taking into account all relevant factors, including-
   (a) the nature of the right;
   (b) the importance of the purpose of the limitation;
   (c) the nature and extent of the limitation;
   (d) the relation between the limitation and its purpose; and
   (e) less restrictive means to achieve the purpose.

2. Except as provided in subsection (1) or in any other provision of the Constitution, no law may limit any right entrenched in the Bill of Rights.

Our judgment will mainly focus on two decided cases from the United States Supreme Court because these cases are very similar to the appeals before this Court. The first of these appeals focuses on the role of corporations engaging in the expenditure of corporate funds in the electoral activity currently in the state.† The second appeal deals with the mechanisms by which legislation placing limits on aggregate political expenditures is constitutionally challenged. The United States Supreme Court, in handling these issues of corporate identity, expenditures, and aggregate limitations, has ruled that matters fall squarely within the reach of the First Amendment to the United States Constitution.‡,§ In approaching the process of adjudication here the Supreme Court of the United States has developed extra-constitutional tests [words not found in the Constitution] to guide its interpretation of the proper constitutional reach of the First Amendment. Since the First Amendment represents a fundamental constitutional right, the Court provides a level of strict scrutiny over the legislation that seeks to control and regulate it. This places a burden on the legislative drafter to show that any legislation impacting upon the freedom of speech represents a compelling state interest. If the court finds that this interest is indeed compelling, the legislation is valid. If it finds that the reason for the legislation does not represent a compelling governmental interest it will be struck down.

The United States Supreme Court's decision in Citizens United v. FEC overturned the provision of the 2002 Bipartisan Campaign Reform Act prohibiting corporations from engaging in "electioneering communication,"¶ including the funding of political advertisements to be aired in the 30 days before a federal election. The Court ruled that to restrict the political

* S.A. Constitution, art. 36, sec. 1 and 2.

† On the theories of the nature of corporate personality see George Whitecross Paton, "Types of Incorporation: § 90 Theories of the Nature of Corporate Personality", in *A Textbook of Jurisprudence* (London: Oxford University Press, 1967) 365-376, discussing fiction theory, concession theory, bracket theory, and purpose theory.

‡ *McCutcheon v FEC,* 3.

§ *Citizens United v Federal Election Commission*, 588 U.S. 1 (2010), 3.

¶ *Bipartisan Campaign Reform Act,* § 203.

spending of corporations based on their identity as juridical persons was in violation of their First Amendment rights.* In short, the Federal Government could not establish a compelling governmental interest prohibiting corporations from dispersing funds in federal elections. It would be useful to provide some further contextual background to the effects of this case on the American electoral process. The net effect of this precedent was that nearly $1 billion in new spending money emerged in the Federal elections.[1] Super PACs became a routine part of the vocabulary of National elections.† Additionally, non-profit corporations could contribute to campaigns through Super PACs without disclosing the source of the funds they were contributing.‡ For example, the American Crossroads PAC and Crossroads Grassroots Policy Strategies Non-Profits created by political operative Karl Rove raised $123 million of which 62% was undisclosed.§,¶ The Court's ruling also influenced non-federal elections. "Laws restricting spending by outside interest groups in elections were invalidated in 24 states, extending the impact of the high court decision to races for governor, state supreme court and beyond."**

> *"Current reports indicate that the official total of funds expended on lobbying activity in Washington is $3.2 billion, however, investigative reporting indicates that the real figure is vastly in excess of this and is estimated to be closer to $9 billion."*

The evidence connecting super PACs and their donors appears in the following table:††

Table 1: Super PACs and their donors

Rank	Name	Total Given	Ideology
1	Sheldon Adelson & family	$93.3 million	Republican
2	Harold Simmons & wife, companies	$30.9 million	Republican
3	Bob Perry	$23.5 million	Republican
4	Fred Eychaner	$14.1 million	Democratic
5	Joe Ricketts	$13.1 million	Republican
6	William S. Rose (Specialty Group)	$12.1 million	Republican
7	United Auto Workers	$11.8 million	Democratic
8	National Education Association	$10.8 million	Democratic
9	Michael Bloomberg	$10 million	Independent
10	Republican Governors Association	$9.8 million	Republican

* *Citizens United v FEC,* 50. See footnote * on this page for further discussion.

† See footnote ¶ on page 23.

‡ Michael Beckel, "Nonprofits outspent super PACs in 2010, trend may continue" *ibid., Part III: Nonprofits, the stealth super PACs,* 56.

§ These startling numbers certainly call into doubt Chief Judge Sentelle's statement that "contributions to groups that make only independent expenditures cannot corrupt or create the appearance of corruption." *Speechnow.org v FEC,* 14.

¶ Michael Beckel, "Crossroads political machine funded mostly by secret donors" in Consider the Source, *Part II: Super PACs crash the parties*, 13.

** "Introduction" *ibid., Part I: Big bucks flood 2012 election,* 5.

†† *ibid*., 6-7.

Rank	Name	Total Given	Ideology
11	James H. Simons	$9.6 million	Democratic
12	AFSCME	$8.2 million	Democratic
13	AFL-CIO	$7.4 million	Democratic
14	Robert B. Rowling	$6.1 million	Republican
15	American Federation of Teachers	$5.8 million	Democratic
16	Robert Mercer	$5.5 million	Republican
17	Steve and Amber Mostyn	$5.2 million	Democratic
18	George Soros* & family	$5.1 million	Democratic
19	William Koch	$4.8 million	Republican
20	Peter Thiel	$4.7 million	Republican
21	SEIU	$4.4 million	Democratic
21	Joe Craft	$4.4 million	Republican
23	John Childs	$4.2 million	Republican
23	Plumbers and Pipefitters Union	$4.2 million	Democratic
25	Jerry Perenchio	$4.1 million	Republican

"The Supreme Court of the United States has a focus on the interrelationship of wealth and power that is vastly astigmatic."

When we look at these numbers, which are payments to influence the elections, it is worthwhile to consider these financial facts in the context of the aggregate funds spent directly to influence policymakers in Washington. This is of course to consider the financial foundations of Washington's lobby industry. Current reports indicate that the official total of funds expended on lobbying activity in Washington is $3.2 billion, however, investigative reporting indicates that the real figure is vastly in excess of this and is estimated to be closer to $9 billion.[2] The major lobbyists include Public Relations Firms, Law Firms, In-House and Corporate Public Relations Departments, Trade Associations and Policy Advocates representing interests such as the natural gas, petroleum, clean coal, food marketing, aerospace, film, biotechnology, healthcare industries, the financial sector, and specific corporations and corporate interests, for example TransCanada's Keystone XL Pipeline, Apple, Science Applications International Corporation (SAIC), and Monsanto.* The fact that there is a $9 billion slush fund to fuel and disperse these funds in the Washington arena of political action signals that as a Constitutional matter it is inappropriate to confuse the idea of the unlimited diffusion of cash into the political process with politics as usual. It is critical that as a matter of constitutional adjudication a Court of Law brings a sense of serious contextual realism to its process of authoritative and controlling decision-making. More importantly, from a juridical point of view these vast infusions of private-sector wealth into the political process suggest a reallocation of fundamental power in the body politic from democracy to the financial elite.†

* *ibid*., 12-13.

† See *infra* footnote on page 28.

By broadening the contextual focus of the Court's concern for the role that wealth plays in the electoral and legislative process in the United States we conclude that the Supreme Court of the United States has a focus on the interrelationship of wealth and power that is vastly astigmatic. A central concern of the American legislature has been to protect the democratic foundations of the American Republic from being swallowed up by the overwhelming infusion of money meant to influence the political process and possibly dominate it.* The interest of the American Congress therefore has been to protect the democracy of the Republic. The Supreme Court's inversion of the compelling governmental interest in the protection of democracy from the overreaching influence of a plutocratic impulse is a conclusion that is not necessarily warranted by the text and the values behind the American Constitution. It is certainly not warranted under the text and values of the Azanian Constitution.

Our own Constitution provides us with a form of scrutiny that in principle is not radically different from the form of scrutiny engaged in by the American Court though our Constitution is a bit more explicit in the interpretive guidance it gives. For example, our Constitution makes clear that there are limitations to our Bill of Rights. However, those limitations must be ones that are "reasonable and justifiable in an open, democratic society."† These are important guidelines relating to the democratic culture and its constitutional underpinnings, which are not as clearly enunciated in the American Constitution. It is with this background that we can examine in a more contextually sensitive way the importance of the freedom of speech and expression and the importance of legislation which secure that the freedom of speech or expression will not be so extended as to confuse the notion of a right with the notion of political license. Our legislation must also be examined in terms of "the nature and extent of the limitation"‡ on corporate expenditure or aggregate expenditure in the electoral process. Are these limitations restrictions of a fundamental right or are these limitations the preservation of approximate fairness and equality for all citizens participating in the political process? In short, if you are a schoolteacher, a plumber, a garbage worker, a student, or a minority, the flood of funds targeting the interests of the few may drown out your ability to express yourself politically. Our Constitution then provides more structured guidelines in order to make the context more relevant to the process of adjudication.

The U.S. Supreme Court takes the view that money and speech are the same thing.§ This is tortured logic. If such a position were taken as a Constitutional truism then those with fat bank wallets can ensure themselves an even fatter level of participation and influence in politics. And if this is entrenched the United States could well be on its way of evolving from democracy to plutocracy.¶ The approach of the Supreme Court of the United States is

* This concern has been the driving force behind a number of congressional acts in the last century. The Tillman Act of 1907 (34 Stat. 864, now 18 U.S.C. § 610), the 1910 Federal Corrupt Practices Act (2 U.S.C. § 241), the Hatch Act of 1939 (5 U.S.C. §§ 7324-7327), the Labor Management Relations Act of 1947 (Pub.L. 80-101, 61 Stat. 136), the Federal Election Campaign Act of 1971 (Pub.L. 92-225, 86 Stat. 3), and the 1975 creation of the Federal Election Commission, and the recent Bipartisan Campaign Reform Act were all enacted for the purpose of regulating the influence of money on the federal government.

† S.A. Constitution, art. 36, sec. 1 and 2.

‡ *ibid*., art. 36, sec. 1c.

§ This precedent was set in 1976, when the Supreme Court ruled that "a restriction on the amount of money a person or group can spend on political communication during a campaign necessarily reduces the quantity of expression by restricting the number of issues discussed, the depth of their exploration, and the size of the audience reached. This is because virtually every means of communicating ideas in today's mass society requires the expenditure of money." *Buckley v Valeo,* 424 U.S. 1 (1976), 19.

¶ Recent evidence suggests that this process has already begun. In their soon to be published "Testing Theories of American Politics," researchers from Princeton and Northwestern analyze the statistical influence of various groups (the average voter, economic elites, and corporate and mass-based interest groups) in American politics and compared their findings to prevailing political theories (majoritarian electoral democracy, economic elite domination, majoritarian pluralism and biased pluralism). Their conclusion, found on pages 28 and 29 of the final pre-production draft, is perhaps less startling than

to ascribe to this plutocratic trend a single narrow possibility of limitation. This legislation must be tailored directly and specifically to the condition of political bribery.* This assumes that the giver is naïve about influence and can only expect something if he or she specifically requests a special political favor or vote, in return for the money. No moneyed citizen, if he had the brains to make that money, would make such an explicit request, one which would be criminal and land him in jail. This is therefore a vastly unrealistic standard by which to measure the unstated but undoubtedly clear expectations involved in the giving and receiving of vast sums of money. It is notoriously obvious there will be some form of connectivity between the general and specific interests of the donor and the dependency of the recipient or his agents and affiliates. In politics, there is nothing for nothing. In short, as indicated earlier, the infusion of extraordinary amounts of cash into the political process results in the disproportionate influence of those that command the wealth. Consequently, we have an allocation of power disproportionately skewed in favor of the wealthy elite at the expense of the people.

In the McCutcheon case the Roberts Court's apology for unlimited spending contributions is that limits on spending "unnecessar[ily] abridg[e]" First Amendment rights.† In short, the wealthy have a license to spend as much as they want in order to communicate their political ideas, and interests. The First Amendment's protection here serves to encourage broader political participation. Any legislation that seeks to limit this cannot be seen to advance a legitimate governmental objective. The only case in which there would be a legitimate governmental objective would be to control corruption. But spending large amounts of money does not necessarily imply corruption. The corruption the U.S. Court has in mind is *quid pro quo* bribery. This is so narrow a definition as to be humorous when we consider that buying and selling politicians for influence and access at least have the "*appearance* of corruption."‡ In our view, we see the prohibition represented by aggregate limits to be a reasonable tool to prevent bribery and/or corruption of the political process and to be a restriction on the gravitation of our democracy to a plutocracy.

The Constitutional Court of Azania completely rejects the unrealism of the American Supreme Court's definition of corruption as limited by its notion of quid pro quo bribery. What is missing from this analysis is that the United States is a democracy and protecting the integrity of the democratic process from being purchased by the few at the expense of the many is not only a misunderstanding of American democracy but clearly this reasoning is completely inappropriate with regard to our conception of fundamental rights in the political process.

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it should be:

> The estimated impact of average citizens' preferences drops precipitously, to a non-significant, near-zero level. Clearly the median citizen or "median voter" at the heart of theories of Majoritarian Electoral Democracy does not do well when put up against economic elites and organized interest groups. The chief predictions of pure theories of Majoritarian Electoral Democracy can be decisively rejected. Not only do ordinary citizens not have uniquely substantial power over policy decisions; they have little or no independent influence on policy at all. By contrast, economic elites are estimated to have a quite substantial, highly significant, independent impact on policy…Similarly, organized interest groups… are found to have substantial independent influence on policy….These results suggest that reality is best captured by mixed theories in which both individual economic elites and organized interest groups (including corporations, largely owned and controlled by wealthy elites) play a substantial part in affecting public policy, but the general public has little or no independent influence.

Martin Gilens and Benjamin I. Page, "Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens," upcoming article in *Perspectives on Politics* (2014).

* This view is summed up well by the statement made in the Opinion of the Court that "the fact that speakers may have influence over or access to elected officials does not mean that these officials are corrupt." *Citizens United v FEC*, 43.

† *McCutcheon v FEC*, 30, quoting *Buckley v Valeo*, 25.

‡ The Supreme Court's opinion on the appearance of corruption is, inexplicably to many, the exact opposite: that "independent expenditures, including those made by corporations, do not give rise to corruption or the appearance of corruption." *McCutcheon v FEC*, 5.; italics author's own.

"The United States is speeding up its constitutional train without regard to the fact that it is on the wrong track, headed in the wrong direction, and will undermine democracy via its confusions between freedom and license in expression which can only lead to the tragedy of plutocracy."

With regard to corporations being treated as flesh and blood citizens there is much here that is problematic. A corporation is an artificial person. It is a juristic person. It has rights and it has obligations in terms of its charter of incorporation. Human beings are not given rights by some mythical charter of incorporation. Clearly, there's a vast difference between the civil and political rights of a flesh and blood person and the rights constructed for the limited purposes of the juristic life of a corporation. As our law says we must consider the nature of these participants.* What the Court in the United States is not taking into account is the widespread discontent with corporate abuse; many theorists in the United States consider that corporate reform is overdue.[3] Before we give corporations the complete rights of flesh and blood citizens we had better take corporate reform seriously. We summarize five publicized notorious principles that are proposed for corporate reform:†

1. Limit the power of top executives and financial decision-makers who may have the power to use the corporation for inappropriate ends and for personal gain;
2. Allow institutional investors, such as pension fund managers, to nominate independent directors to the boards of the corporations in which they are major investors;
3. Implement an aggressive program to make employees on all levels stakeholders in the corporation itself, thus giving them an interest in the success of the corporation; corporations may achieve this by awarding stock options to employees as bonuses or rewards for excellent company performance;
4. Give blue and white collar employees a direct voice in corporate decision-making to represent the perspectives of professional and nonprofessional employees in the business to improve the objectivity and quality of corporate decision-making;
5. Reduce salary packages and stock options for top-level executives to avoid artificial inflation of the company's share price; stock options may remain part of an executive incentive package, but the corporation should limit their magnitude to protect and enhance corporate interest.

When we examine the juristic identity of corporate entities, we should be cautious about extending to them all the benefits of the Bill of Rights, which may be inappropriate to the juristic purposes for which they were created. Moreover, the scope of corporate privilege and license is itself, at least in the United States, a contested matter. It would have been more appropriate for the American Court to have reviewed the concerns of responsible theorists about the need for corporate reform before giving them a blank check to preempt the political process. This Court is aware of these concerns and would be reluctant to underwrite the complete freedom to flood the political arena with corporate funds to advance corporate interests.

* S.A Constitution, art. 8, sec. 4.

† *ibid*., 446.

At the very least, it is important for us to consider the criticisms that have been made about the possible abuse of corporate personality and capacity.

In 1907, The Wall Street Journal captured the essence of the Theodore Roosevelt era. "He was fighting gross and corrupt extravagance, the misuse of swollen fortunes, the indifference to law, the growth of graft, the abuses of corporate power."[4] Roosevelt's concern for the capacity of the wealthy to abuse their power for unsavory political ends is captured in this excerpt from one of his letters:*

> *The policies for which I stand have come to stay. Not only will I not change them, but in their essence they will not be changed by any man that comes after me, unless the reactionaries should have their way… I am amused by the shortsighted folly of the very wealthy men and … how large a proportion of them stand for what is fundamentally corrupt and dishonest. Every year that I have lived has made me a firmer believer in the plain people- in the men who gave Abraham Lincoln his strength- and has made me feel the distrust of the over educated dilettante type and, above all of… the plutocratic type.*

We decline to follow the example of the Supreme Court of the United States in the case of collapsing juristic identity into normal flesh and blood personal identity. We decline to follow the decision of the Supreme Court of the United States in striking down reasonable and justifiable aggregate limits on campaign expenditures. Indeed, we believe that the United States is speeding up its constitutional train without regard to the fact that it is on the wrong track, headed in the wrong direction, and will undermine democracy via its confusions between freedom and license in expression which can only lead to the tragedy of plutocracy. This is a path we decline to follow.

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The Greatest Adventure on Earth*

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Abstract

A paradigm shift of unprecedented scale in human civilizations is considered both as necessary and possible, towards a new form of "sustainable happiness", as a way out of the entanglement of multiple dilemmas we face today.

For all the amount of cultural, social and technical inventions produced by the evolution of humanity, it has not solved the basic contradictions of life, in itself a source of permanent conflict between creation and destruction.

On the contrary, our current paradigm puts at risk the environmental conditions of all species, including ours. We increase the contradictions between our human drive and the future of life, on a planet whose limits have been reached and whose resources are being exhausted, without eliminating human poverty and need.

Of course we cannot suppress the contradictory essence of life, between the beauty of our aspirations and the truth of our limitations, but we can choose which limits and tensions we use in order to create more life than we destroy. By changing our purposes and betting on human potential and intelligent generosity, we can build an inclusive, sustainable and more feminine world to make life a meaningful journey for us and the generations to come.

Life is a pure contradiction. It should not even exist. Actually, as far as we know, it did not exist for most of the time of the Universe and it does not exist anywhere but on Earth. This makes it so valuable.

The contradiction is manifold: it is between the expansionist drive of life, its propensity to grow and expand by default, and the finiteness of exploitable resources; it is also about the need for animals to feed themselves by destroying other living beings; ultimately, it is about the mystery of improbable birth and inevitable death, certainly as an individual, possibly as a species.

That makes life in itself a source of permanent conflict between creation and destruction. But any particular form of life, even the simplest, is also a singular opportunity to transcend that contradiction by creating more life than it destroys.

For all our intelligence, humankind faces the same and endless contradiction, but with a big difference. The history of life on Earth is punctuated by the emergence of new adaptive forms, enabling new dynamic equilibria between emerging species and the environment, and

* This essay reflects a very personal vision, inspired by the open and passionate conversations of a group of concerned individuals convened by the Club of Rome at Castellet Castle (in Catalonia, Spain), in March 2014. The author is grateful to the Club of Rome for the invitation to participate, and especially to Robert Engelman and Garry Jacobs for their careful review and useful suggestions.

also by the extinction of species unable to adapt any longer. Likewise, but on a much shorter time scale, the history of human life is punctuated by the emergence of intelligence and culture and the production of social and technical inventions which change our relationships, between us and with the environment. That way, we are able to (re)create ourselves.

We used to think that all those human inventions meant progress, but this is not always true for earthly life as a whole or even for human life. Certainly, we have been inventing rituals, institutions, ways of exploring the world and technical artifacts in such quantities and richness that we have accumulated an impressive amount of cultural, social and material achievements. By doing so, we have also brought the expansionist drive of life to a much higher level, being able to fill the planet and alter dramatically the environmental conditions of all species, including our own, and to put them and us at risk.

In a deeper way, emotional, conscious and imaginative beings that we are, we constantly look for meaning and transcendence. For all our inventions, we know we are still not able to deal with the basic contradiction of life without entering into conflict with others, whether they are other humans, other living species, the natural environment in which we live, or even our own future. Actually, much of what we have done and still do is based on an ever increasing exploitation — of the many weak by the few strong, of helpless natural resources, of future time as the least renewable resource of all.

And afraid as we are of our permanent conflict with the world, we also invent self-delusions to alleviate our fears. For instance, we observe social status and practice individual accumulation to protect ourselves not from need but mainly from the feeling of personal irrelevance and the anxieties we face everyday in our eternal quest for meaning. Is that the right response to our fears?

Moreover, we artificially transmit to our inventions our own values of perpetual growth and expansion. Useful as it is as a mediation tool, we give money an undeserved centrality in our life, forgetting there is no natural law entitling money to reproduce by itself unless it is backed by human labor creating authentic value. And we also forget that real life is much richer than money because its diversity and complexity cannot be reduced to the one-dimensional nature of any currency. This is one of many examples of how we inadvertently or interestingly substitute human purposes, complex as they are, with all too simple goals, like the truly utopian one of boundless financial accumulation.

But our consciousness also tells that, tomorrow, unless we change dramatically the course of things, there will be no way to fulfil human aspirations, as we conceive them in our consumerist culture. We feel that we are not reducing but increasing the contradictions between our human drive and the future of life as a whole, on a planet whose biophysical limits have been reached, whose climatic stability has been endangered by human activity, whose living and mineral resources are being exhausted at an ever increasing pace, and all of this without eliminating human poverty and need.

At a time when 6 out of 7 billion humans strive to reach, much deservedly, the same comfort enjoyed by many of those living in rich countries, the welfare fabric of these is being attacked for the sake of financial mirages and the agenda of sustainability is being postponed, and so we continue weaving everyday the entanglement of multiple dilemmas which, in spite of the dance of change in which we live, inhibits the transformations we need.

First among the dilemmas we face is the metabolic one, the most determining in the long term: we know that our consumerist society of uneconomic growth and waste, driven by the well publicized and materialistic lifestyles of the leisure class, is totally incompatible with the pace of renewal of natural resources brought to us by the magic alliance of Earth and Sun. Without solving that contradiction, sooner or later the collapse of human civilizations is inevitable, as it was for the people of Easter Island, a small-scale but significant precedent.

"The dominant behavior we practice today when facing the contradictions and conflicts of life is based on the powerful but false idea that progress is a result of the selfish pursuit of individual interests."

Second is the dilemma of will, especially that of western elites which, in rebellion with the societies they should serve, are living on short-term and narrow-minded purposes and not leading the construction of a sustainable and inclusive future for the planet.

Third and most important is the cultural dilemma, more difficult to apprehend and no less critical. Consciously or not, the dominant behavior we practice today when facing the contradictions and conflicts of life is based on the powerful but false idea that progress is a result of the selfish pursuit of individual interests. Powerful because it connects with many people adopting selfishness as an artificial relief for their fears, and false because it actually produces concentration of power and richness in the hands of a few, and therefore inhibits the potential of most.

"Instead of fighting others, we can decide to fight ignorance and prejudice."

On the contrary, if we propose a definition of progress that it should create more life than it destroys, we should recognize that our individualistic interpretation of the expansionist drive of life has the ability to destroy much more life than it creates.

Time has come for a quantum leap in our strategy of adaptation. The only way to get out of the Gordian knot in which we live is to collectively transcend those dilemmas by creating a new paradigm of civilization, one that actually can be built with pieces we already have.

Of course, we humans cannot live without feeding ourselves, and we cannot aspire to a decent life without extracting many resources from our environment. But we can decide in which ways we frame and deal with the conflicts our existence creates.

For instance, if we are not preserving each animal or vegetable, we can apply permaculture practices to preserve the existence of living species ensuring at the same time the appropriate feeding of all humans. We can decide to deter mutual destruction of humans through war and violence. Instead of fighting others, we can decide to fight ignorance and prejudice. Instead of accumulating useless artifacts, we can fight our inner limitations and develop our talents. Instead of practicing depredation, exploitation and exclusion, we can require ourselves to behave better for the profit of all. We can choose creation (and self-creation) instead of destruction. We can choose life instead of death.

How to achieve that? When we calculate the balance of creation and destruction produced by our actions, the result depends on the boundary we choose: caring about other humans or living species is not the same as not worrying at all about their survival. Fixing that boundary is required to perform rigorous ecological balances, but it is the result of truly political will, since it depends on including or not into our concerns the victims (human or not) of any kind of exploitation. Ultimately, creating more life than we destroy will depend on extending that boundary so far that we only leave out the Sun, as the unlimited source of energy to which we owe our existence (for now and until the remote future of its own death).

There, at the junction of thermodynamics and humanism, lies the real opportunity to reconcile beauty and truth, the beauty of our aspirations and the truth of our limitations, and to ensure that life is able to continue its adventure on Earth under a new and transcendent form, that we could wishfully call "sustainable happiness".

Let us try to imagine further how that could be, through different but intertwined dimensions of desirable futures.

1. Unleashing Human Potential

Actually there is one unlimited game to which we can direct our human drive in harmony with the environment. It is that of learning and experiencing together in the infinite variety of disciplines of knowledge, of sports and crafts, of art and science, of beauty and truth.

The world would look very different if we recognized at last that every human being has talents of their own which must be developed, that emotions and human relationships are among our most valuable assets and that they can be educated to produce a multitude of individual passions for the profit of all, not for the sake of individual accumulation. This in turn would require education to be no longer centered on reproducing social hierarchies and selecting narrow elites, but on the assumption that everybody has the right and obligation to achieve personal fulfilment.

2. Extending the Circle of Generosity and Trust

While it is obvious in the most universal and intimate experience of any mother with her children, it is taking a very long time to understand that the progress of civilization is all about extending the frontier inside which we practice generosity and trust by default.

Self-indulgent that we are, we prefer to ignore that the rule of generosity and care, rather than that of selfishness and exploitation, applies not only to our family but also to the weak and suffering, to the persons who share our land and language, whatever their origins or income, to those who are like us but live elsewhere or talk differently, to those who are different from us in beliefs, skin or habits, to all children of all nations, to all forms of animal and vegetable life, and in the end to the whole planet we share.

By applying the rule in clever ways, protecting the institutions of collective welfare from abuses, extending their reach and being self-demanding in our personal generosity, we could receive much more than we give and create more life than we destroy.

3. Sharing Feminine and Masculine Values

For too long, the game of human power has been an exclusive battlefield for alpha males, whose natural drive is expansion and conflict, even at unreasonable costs. We need to transcend zero-sum deals and change the nature of power to transform it into a practice of shared potentialities and care of the common nature in which we all live.

Of course, we speak here of a deep cultural revolution to recognize at last that women are equal to men in rights and opportunities, but also to change our vision of what is quality of life, to state that quantity (in particular, of offspring) is not necessarily good and that collaboration is not always but many times better than competition.

In the end, we will understand that the deep unity and richness of humanity and life are only possible through the respect of diversity and the sacred principle of dignity for all, and that overcoming segregations, whether social, cultural or racial, is both a moral and a practical imperative.

4. Changing the Purpose of Organizations

Based on such universal values, human organizations of the future will no longer be obsessed with monetized growth for the sake of it, but devoted to better problem-solving. As the parts of a societal ecosystem, they will address different facets of a global purpose: producing an equitable and universal human welfare while preserving for now and the future the essential equilibria of the natural ecosystem in which we live.

Of course, this will need fundamental changes: a combination of societal innovations and technical progress to ensure both a very high productivity in the use of natural resources and a very low unemployment, so as to maximize the use of our abundant human talents and minimize that of the scarce factors.

This will also mean abandoning the self-delusions of financial accumulation and consumerism and combining different types of property for different purposes in competitive collaboration. Also, we will have to reclaim the legitimacy of good governance and regulation to produce public good and limit public bad, and to reinitiate politics, not as a pure game of power but as the common space where collective problem-solving is debated and addressed.

5. Empowering Citizens of all Ages

At a time when, even in rich countries, the promise for most is made of exhausting full-life workdays just to ensure some material comfort and avoid the threat of unemployment, we cannot help saying that life should be something completely different from a mad race towards status and hyper-consumption, where so many lose and some seem to win (while losing their own time).

Societal arrangements are feasible to produce what is needed with much shorter workdays and a variety of professional engagements over personalized curricula, so that ordinary people would no longer be just workers and consumers, threatened by the exclusion of unemployment or the (so frequent) emptiness of retirement, but empowered citizens who can enjoy substantial time in lifelong learning, exchanging across generations, practicing passions and participating in collective decisions at all levels, from local to global.

6. Taking the Holistic View

Life is more complex than ever before, and the chance is it will continue to be so, because complexity is the result of our dreams coming true. We, all humans, aspire to personal autonomy and dignity, to express our multiple identities in local or global communities, to practice our passions, to receive social recognition, to enjoy life not only with our loved ones but also with the strangers who share our feelings, whether near us or on the other side of Earth.

"Complexity is the result of our dreams coming true."

This two-sided nature of autonomy and connection is what makes society a complex system that is much more than the sum of its parts. It is more and more so, in a small world in which the distant flap of a butterfly can produce a tornado next door. This requires us to analyze and understand reality with a holistic mindset, in which details and macro-behaviors are connected and the center of the world is everywhere.

Fortunately, this also brings the opportunity of unexpected emergent behaviors, of new capabilities of self-organization for the sake of life. And it creates as well the feeling that we are all together, of any origin, language or color of skin, in the same adventure, and that the best ideas may come, why not, from a remote village of Africa, where the whole story began.

Of course, some will say that we speak about Utopia, a land of wishful ideas which will not materialize, at least in our lifetime. But being just realistic is today a recipe for disaster. And the practicality of painting sketches of desirable futures is that they can inspire not only those who already dream but also those many more who still do not dare to dream.

So, let us get back from the future of our common dreams, and start making them real. Let us continue this adventure, the greatest on Earth − a paradigm shift of unprecedented scale in human history. Let us abandon the pervasive disenchantment of the early 21st century and our obsession with money and the exhibition of material privileges.

Let us assemble the energy of the young, the wisdom of the elders, the claim of women and the excluded, the voices of all nations, for the greatest of all revolutions, one without enemies except our very own fears. This will be to build a human world at peace with itself and the planet, an inclusive, sustainable and more feminine world where we could practice the obligation and pleasure of making life a meaningful and enjoyable journey for all of us and our children in the generations to come.

Our life is a pure contradiction. We know we will be here just for a while, and yet we try not only to survive everyday, but also to give a meaning to not just what we do for ourselves but mainly for others, to our loved ones, and also to many people we do not know. We will never suppress the eternal dilemma between beauty and truth, but by extending our innate generosity and practicing intelligence, we can make life joyful instead of miserable.

To do that, we will certainly have to overcome our fears and bet on love and trust. But, what could be the meaning of our presence here if we do not dare to love?

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Futuristic Scenarios and Human Nature

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Abstract

This article discusses current developments in information technology and artificial intelligence and their projected implications for humankind. It examines the arguments and projections of some contemporary technological pessimists and optimists in the light of historical insights about technological development and asks what kind of situation we are in at present. Should we believe, with extreme technological optimists, that we will soon reach a point, the Singularity, where it will be possible to "upload" a person in a computer, making him/her in this way immortal? Is it true that technology has a life-like nature and "wants" to evolve? The extreme arguments, however, are based on an outdated view of technology as information. They also involve an unrealistic view of human nature: humans cannot be reduced to information. We are in need of new models. Moreover, as we learn from a Silicon Valley insider, the Internet was never intended to be used to make some people rich through gathering and aggregating data about others. A new digital humanism would help diminish the fast growing global inequality and restore respect for the creative individual.

Is technology an autonomous force that drives social change, or is the use of technology dependent on human choices? Do we have a scenario of technological determinism or technological voluntarism (or what some call constructivism)? And what are the consequences of choosing one or the other to explain the direction of society? The framing of what is going on and the use of language are not neutral but important tools in a cultural struggle with vast consequences. (Think for instance about the word 'sharing'). Moreover, these perspectives are not obviously connected to either an optimistic or pessimistic outlook on technology, but can be combined with both.

In the following sections, I will briefly discuss these issues in relation to the current situation in digital technology, taking a look at some recent opinions by prominent individuals in the field. We will see different predictions and suggested solutions. The views will vary from cyber-hype to cautious optimism and realistic warnings to outright scares. The solutions are typically connected to an assessment of where we are right now in regard to technological development, and here the diagnosis depends on one's historical perspective as well as belief in the future of digital power.

1. Changing Views of the History of Technology

Over the last few decades, the traditional "heroic view" of individual inventors has increasingly given way to a view that is more systems and process oriented. This is largely due

to a more complex historical analysis of the way in which technological progress actually took place. A closer look at the detailed background history of many inventions shows that they in fact came about through the accumulation of many small increments over time. Also, much more attention is being paid to such things as the availability and willingness of financial entrepreneurs to support an invention, the availability of suitable supportive technology, and the social need or desire for a particular invention – which may not at all have been obvious at the time.[1]

"A closer look at the detailed background history of many inventions shows that they in fact came about through the accumulation of many small increments over time."

There was often a considerable difference between the original intent of the invention and the way in which it was finally used (a good example is the phonograph of Thomas Edison, which was first developed to record the dying wishes of important men; instead, it was used for music recording and mass entertainment). In fact, customer interest was often a driving force for the development of a new technology, and constant feedback from customers led to continuous corrections of mistakes and improvement of performance of a new technology. These kinds of observations make technology seem more like a product of a social process than something invented by single geniuses.[2]

2. The Current Situation – Uncontrolled Buildup of Control

Where are we now? Are we at the beginning of an era of unprecedented technological innovation and development? Or are we rather at the tail end of an era that started some 70 years ago? Let's see what some techno-gurus and innovators think. But first, a snapshot of recent developments in artificial intelligence and information technology.

Research in AI is developing rapidly, as indicated by such recent products as self-driving cars and personal assistants like Siri and Google Now. A computer recently won a game of Jeopardy! (Remember when the computer Deep Blue beat the world chess champion Garry Kasparov in 1997?). According to Stephen Hawking, we are now developing the kind of artificial intelligence that is familiar from science fiction movies. Enormous investments are made in information technology and these are bigger than ever before; it can be likened to an arms race. New AI startups are created all the time and receive the financing needed for innovation. Google and other major companies are acquiring artificial intelligence and robotics companies. We could soon have smart robots roaming our streets.[3]

Another source reports: "Over the past year, Google has bought seven robotics companies…It has bought firms that specialize in natural language processing, gesture recognition, and more recently in machine learning…. If Silicon Valley's best minds succeed, their software will not only be listening, it will be understanding and anticipating."[4]

Indeed, AI is everywhere in some form. Every time you plug into the internet, someone is there to spy on you and track your behavior. It is almost impossible to avoid being tracked. New face recognition software can now identify you to the authorities whenever you are close to one of the many information gathering devices – including a police constable, who

doesn't even need your name if he has your face identity. And devices are everywhere. New wearable computers of various kinds are being developed. The most intrusive seeming futuristic spyware would be "smart dust" flowing around you, taking pictures of you or measuring your bodily proportions. A picture of your key chain lying on a table in a coffee shop may provide sufficient information to copy your keys, suggests Lanier.[5]

But is all this spying and control actually legal? IIT lawyer and author Lori Andrews has been looking into this. She finds that in the US, at least, there is no law actually forbidding this spying (Which may or may not indicate that the law lags behind technological development and would need to catch up quickly). She has been addressing the issue of smart phones – in fact portable mini-computers, which are providing information about our conversations and movements in real time. In a cleverly titled piece, she asks, "Is your cell phone listening in on you?" Yes, it is – and if it has the hidden program Carrier IQ, it can also read your text messages and emails as you write them. That is one of the many programs installed without your permission; other spy programs you may just unwittingly download together with some legitimate smartphone application. The problem is the existing Wiretap Act. Your consent is not required if your wireless carrier decides that marketing companies are allowed to collect and transmit your personal information.[6]

3. Optimists and Pessimists among the Tech Insiders

Technological optimists see fantastic possibilities of realizing long-held dreams. They believe that it is possible to increase human intelligence and sensory powers so as to create super-humans of some sort. They believe in an extended human life span. There are those who welcome increasingly "cyber-like" humans. The so-called Transhumanists are the most extreme. Technological pessimists point to unforeseen technological problems and dangerous social consequences. Their views may in fact not be particularly pessimistic, just realistic checks on the situation…

But an important question has to do with how we assess the current situation in the history of humankind. Where are we now? Are we in a historically unique period of unprecedented growth and innovation, and open-ended promise (this is clearly the basic assumption of the tech leaders and investors)? Or are we rather at the end of an earlier historical period, picking the last of the "low hanging fruit" of earlier important innovations? This may sound counter-intuitive on the face of it, but it is the recent view of at least one technological pessimist, the economist Robert Gordon, to whom I will now turn.

At the 2013 annual Innovation Forum organized by the *Economist* at UC Berkeley, Gordon provocatively suggested that "long-term economic growth may grind to a halt", especially in economies with advanced technology. Looking backward in history he concluded: "Two and a half centuries of rising per-capita incomes could well turn out to be a unique episode in human history".[7]

Another technological pessimist is the author of *The Big Stagnation,* Tyler Cowen.[8] He uses the idea of "low hanging fruit" quite effectively, arguing that after the Second World War and the "Sputnik effect" (which triggered a campaign for massive education and innovation in science and technology in the US), there have actually been very few significant innovations. The potential from existing innovations after Sputnik (e.g., the computer,

telecommunications) has already been extracted, which is why economic growth is slow. Although Cowen recognizes the Internet, he argues that much of the activity on the net is free and, if anything, the internet rather displaces jobs than create new ones, and he does not count innovations in fields like health-care and finance as having created significant benefits for people in general.

Moreover, he points to a number of very special circumstances that favored the growth of America – earlier types of "low hanging fruit", such as available land, an inflow of immigrant workers, available education, and scientific and technological progress. So what is driving the Great Stagnation? He says he can formulate it in one sentence: "Recent and current innovation is more geared to private goods than to public goods. That simple observation ties together the three major macroeconomic trends of our time: growing income inequality, stagnant median income, and…the financial crisis."[9]

Technological optimists have a different view of the situation. For example, the authors of *The Second Machine Age*, one, the director of MIT's Center for Digital Business, and the other, a research scientist at that center, argue that digital technologies are dramatically changing our world and economy: as more and more goods and services are produced, they will become increasingly cheaper. At the same time they admit that computers will increasingly take over human labor, which will cause rising inequality. But the solution is to be found in a new kind of collective intelligence, consisting of networked brains as well as strongly connected intelligent machines.[10]

Chris Anderson, the editor of *Wired* magazine with his bestselling book *Makers: The New Industrial Revolution,* introduces his readers to the new way in which digital technology is now impacting the production of goods as well, and transforming mass production into small scale or even home manufacturing.[11] Digital manufacturing will involve among other things 3D printing which is improving all the time. It will also involve different types of financing (e.g. Kickstarter, which is an online platform for funding seed capital for launching a new business). With the new digital technology for production it will be possible for people to follow the "do it yourself" strategy. The "Makers" has already become a movement. Anderson keeps the door open for impact on other fields too, such as health and education.

Two other insiders have an alternative approach. They recognize today's huge global challenges involving such things as population, food, water, energy, education, and health-care and want to tackle these problems head on on huge market opportunities! These are the authors of the book *Abundance: The Future is Better than you Think*, Peter Diamandis and Steven Kotler.[12] This book, published in 2012, can be seen as a response to Cowen's pessimism. Peter Diamandis has degrees in molecular genetics and aerospace engineering from MIT and a medical doctorate from Harvard and is the founder of more than a dozen tech companies. He is also in charge of the XPrize Foundation, which provides support to young social entrepreneurs' innovative ideas and awards them. Kotler is a journalist and book author. Together they suggest that we take the initiative away from slow-moving governments and encourage small innovative teams instead to solve the big challenges facing humankind.[13]

An even more impressive voice is that of the billionaire Naveen Jain, founder of the World Innovation Institute, who similarly concentrates on finding solutions to difficult global problems with great impact on the quality of life. Health, energy, environment, and education

are some of his core areas. For Jain the true measure of progress is not economic productivity but rather improvement of the quality of life. In other words, he is advocating a type of social entrepreneurship, which he is supporting through his institute. Just like the authors of *Abundance*, he believes the solution lies in creative new applications of information technology, and that major innovations are just around the corner. He is an innovator himself, a developer of Windows and other Microsoft products.[14]

4. The Promise and Scare of Artificial Intelligence and the Singularity

The possibility of highly intelligent machines has existed a long time in science fiction and in movies. The tension is typically between machine power and human power and the question is the extent to which machine power will come to dominate humans.

Using technology to enhance or modify our human nature is already a reality.

For technological optimists, the benefits of AI are obviously enormous. In fact, it seems that they take a future involving highly intelligent machines for granted. This is clear from the attitudes and jargon among some leaders in Silicon Valley.

A couple of articles from May 2014 describing the culture of Silicon Valley bring this point home; the titles already tell the story: "Silicon Valley: an army of geeks and 'coders' shaping our future", and "In the future, the robots may control you, and Silicon Valley will control them." We learn about lots of young people working 80 hour weeks without taking weekends off and a startup company "incubator" called Hacker DoJo where anyone can come and work for free on his own project and meanwhile be in close proximity to others with whom they may later form a team. The language of the Valley, interestingly, is full of expressions like "changing the world" and "disruption", deriving from a certain counter-cultural rhetoric from the sixties and seventies. The place is also said to sustain a spirit that regards failing as acceptable and part of the process, as long as one learns from it.[15]

The people in the Valley naturally conceive of an unfolding future of AI with an open horizon towards superhuman intelligence. What is more, to the extent the machines become self-replicating or self-improving – which is also expected to happen – they could effectuate a sudden transition, the situation that techno-wizard Ray Kurzweil famously calls "singularity".[16]

For Kurzweil, this is an event that is bound to happen, and soon, because following Moore's Law, the power of information technology rapidly and inevitably increases in sophistication, doubling every 18 months. When this happens, the expectation is for human intelligence to merge with machine intelligence, making it possible to "upload" a person's digitalized personality for preservation and access in the future, achieving a sort of immortality in this regard. There is a tremendous attraction to this kind of thing, it seems, for some of the leaders in information technology, and also for other techno-enthusiasts. (Experiments at a milder scale are already underway, for instance the possibility of exchanging emails with a deceased person, based on this person's typical answering pattern).

Is it true that *The Singularity is Near*, as Kurzweil's famous book with the same name suggests? Well, it is coming nearer at least in the form of the 2014 blockbuster movie

Transcendence, depicting such a state. This will now spread one of the weirdest ideas of the Silicon Valley to the general public. Here is a short description of what is involved by a fellow tech guru who has followed Kurzweil closely:

"The Singularity, recall, is the idea that not only is technology improving, but the speed of improvement is increasing as well…We ordinary humans are supposedly staying the same … while our technology is an autonomous, self-transforming supercreature, and its self-improvement is accelerating. That means it will one day pass us in a great whoosh. In the blink of an eye we will become obsolete. We might then be instantly dead, because the new artificial superintelligence will need our molecules for a much higher purpose. Or maybe we will be kept as pets."[17]

We are also informed that Kurzweil "awaits a Virtual Reality heaven that all our brains will be sucked up into as the Singularity occurs, which will be 'soon'. There we will experience 'any' scenario, any joy." Here we encounter a clearly religion-like atmosphere, which presumably also permeates the Singularity University, which Kurzweil helped found, located next to Google.

Some time ago another technophile, Bill Joy, after first being enthusiastic, reflected on (an early version of) Kurzweil's optimistic interpretation of the future development of technology. He came to a negative conclusion. "The future doesn't need us," was his alarming realization, and the title of a famous long article of his. Joy could not see how humanity could avoid the possibilities for destruction on a mass scale.[18]

The real scare of AI was expressed most recently by a group of scientists including Stephen Hawking. The fear is that AI technology will end up not only surpassing humans in inventions, but producing things that humans cannot understand, while outsmarting them in various ways. "Success in creating AI would be the biggest event in human history," Stephen Hawking recently wrote in an op-ed in *The Independent*. "Unfortunately, it may also be the last". He continued: "Whereas the short-term impact of AI depends on who controls it, the long-term impact depends on whether it can be controlled at all."[19]

Equally extreme is the idea of a life-like direction to technological progress, argued by the founder and first editor of *Wired* magazine, Kevin Kelly, in the book *What Technology Wants*.[20] The main thesis of the book is that technology "wants" to evolve. It is a process similar to evolution, which at the same time follows Moore's Law. This "want" of technology is supposedly so great that humans become just bothersome obstacles to what technology wants. Therefore, it is natural for technology to "want" to transcend humans; we are just its temporary vehicles.

This relative contempt for human beings in favor of technology – or is it concern for humans, it is hard to tell! – can be taken even further. We humans are not only not good enough intellectually, but also morally, according to a book called *Unfit for the Future: The Need for Moral Enhancement*.[21] The authors suggest that we do something to radically enhance human nature – we are not up to the responsibilities that come with the future of technology and the new challenges we will face. We are too morally weak and our traditional methods of transmitting morality are too inefficient. Therefore, in order to guarantee our

survival as a civilization we should provide ourselves with more adequate moral capabilities. This is being argued by the Director and Research Fellow of the Program on Ethics and the New Biosciences at Oxford University.

5. What happened to Human Nature?

But what happened to human nature in these last projections? It seems that great liberties are being taken with assumptions of who we are. The first two extreme arguments appear to see humans as bundles of information.

The Singularity scenario appears to involve a would-be religious view of information as the essence of what it means to be human. Information was, incidentally, a metaphor also used by molecular biologists – all those scientists (such as Jim Watson, first Director of the Human Genome Project) who early on wanted to persuade us about the importance of the human genome project and how it would reveal to us our "blueprint" or "the very essence of being human".[22]

"The biggest problem with these futuristic scenarios may be the unrealistic way in which they conceptualize human nature. Humans cannot be reduced to information."

The second case uses the same conception of technology as information, this time actively evolving by itself. But the information model is not of a living organism adapting to its (changing) environment, it is only of its DNA. The claim is entirely dependent on the validity of the information model of the gene. This is particularly ironical today, since it has been recently realized that all those earlier assumptions about DNA as an information code were too simple. They ignored DNA's ongoing requirements for appropriate stereochemical and environmental conditions for it to function at all. DNA is alive, it is not just a code, and it is far more complex than previously assumed. Also, it turns out to be hard to find simply identifiable "genes for" most human traits.

The biggest problem with these futuristic scenarios may be the unrealistic way in which they conceptualize human nature. Humans cannot be reduced to information; we have bodies and emotions, and are from birth absolutely dependent on nonverbal interaction. Also, even the most extreme information capabilities will not take care of the many inbuilt biases that affect the decision-making of our evolved human minds. We will continue jumping to conclusions, confuse correlation with causality, select cases that support our views, believe in self-fulfilling prophecies, sustain a good image of ourselves through various self-serving biases, etc. (Of course since we know this better now, we should also be better at counteracting it).

In fact, evolutionists have already for some time been concerned about the discrepancy between the speed of technological development and the biological adaptability of humans – exactly because we are not machines!

What about the third extreme suggestion, that of enhancing human morality? The authors' perception of the necessity for this measure is postulated on their assumptions that humans do

not have an innate moral sense, and are therefore dependent on education and culture. But this is an assumption that is being increasingly challenged by scientists such as ethologist Frans de Waal, in books such as *Primates and Philosophers* and *The Age of Empathy*.[23,24] Frans de Waal is on the forefront of those who point to an evolutionary programming in humans for empathy, altruism and cooperation, in direct opposition to those who present human morality as basically hypocritical and grounded in our self-interest (for instance Robert Wright in his book *The Moral Animal*).[25]

This kind of argument about innate morality (and empathy) taps into a fundamental philosophical difference between two camps. There are those who see human nature as "saved" from the brutality of the natural world by the existence of culture, and others who regard humans as part of the natural world, but with the special addition of a cultural dimension. The famous proponent of the first view was Thomas Henry Huxley, whose contrast between nature and culture (education) was later reiterated by Richard Dawkins. Unfortunately, Dawkins' popular biology book *The Selfish Gene* (1976) was often seen to further ingrain the idea of natural human selfishness.

A counter-scenario to deterministic arguments emphasizes human choice and the need for and capability of humans to take charge. As responsible humans we should be able to rely on traditional human morality, culture and social norms, instead of referring to technology as a social force somehow external to us. And this is where I wish to bring in Jaron Lanier.

6. Toward a Humanistic Technology

Time has come to bring in one more technology wizard, computer scientist Jaron Lanier, a long time insider of Silicon Valley, best known for having created virtual reality. Lanier believes in technology (obviously). But he is thinking deeply about the actual potential of internet-based technology and culture and asking himself if what we have in place now is the best way to go, and if not, what can be done.

Positive results: the Internet has shown that people are not passive consumers (as some worried during the time of television) but instead want to express themselves. Especially in the developing world, the Internet and mobile phones have had a dramatic effect, empowering people to connect and coordinate with each other.

But, according to Lanier, deterioration began with the rise of so-called "Web 2.0" designs around the turn of the century. These designs valued the information content of the web over individuals. The expressions of real people were aggregated into dehumanized data instead. There are many more things wrong with this. Only the "aggregator" (like Google, for instance) gets rich, while the actual producers of content get poor. Newspapers are dying. "The Internet has become anti-intellectual because Web 2.0 collectivism has killed the individual voice," he complains.[26]

His book *You Are Not a Gadget* takes up this issue with a number of books that glorify "the crowd" or the collective. The popular idea that the collective is smarter than the individual is wrong, he argues. Crowd processes are good for some things, such as setting a market price, or for political elections, but they typically fail in cases that involve creativity and imagination. (An earlier author who examined such aspects of the Internet was Cass Sunstein

in his classical book *Infotopia.* He went through the various potential uses of information technology and worried among other things that the Internet might promote such undesirable phenomena as "group think" on a mass scale).[27]

Yet another criticism has been that "open culture" sites such as Wikipedia undervalue achievements by human individuals and overvalue the collectivist spirit and anonymity of a crowd community. Lanier's argument here is that important inventions are not mass phenomena but connected to individuals who struggle and persist, and test and modify their products. The current emphasis is on quantity when it should be on quality!

But this is not a logical consequence, Lanier protests. The internet does not *have* to be used this way. New radical technologies do not *have* to deny the uniqueness of the individual. Collectivism is not inherent in the Internet or the Web. The actual challenge will be, and should be, to develop a new digital humanism that can accommodate creative and innovative individuals.

Lanier was recently interviewed on television about his most recent book, *Who Owns the Future?* The information networks have taken an unexpected turn towards reducing human participation in the economy, he explained. This was not the intent! Lanier himself was part of this when it started: "We wanted to make the system more open and self-regulating," he said. Instead, big companies with strong computers started aggregating information about humans, trying to learn about them.* However, computers can only generate a statistical picture of the world. They don't know and cannot see physical limits. Lanier gave the example of automated machine translation. Back in the 1950s there was a belief that a formula could be created for computers to translate one language into another. Total automation would be achieved. This turned out to be impossible. In fact, computers that do language translation today actually rely on human translators. Computers scan the Internet for examples of language usage and based on this create a statistical picture of translation from one language to another. This automated translation can stay close to reality as long as there are professional human translators whose work the machine can keep aggregating. However, automation lowers the price of translation, and human translators cannot make a living. Today, translators do translations as a side job. Should they quit in larger numbers, there will be no reference base and machine translation will collapse completely! Lanier used this case as an example of what is going on in other fields too, such as finance, insurance, and other areas where Big Data is involved. According to him, the process of automation has a limit. If people are laid off, the economy will have no workers. His solution is to subdivide the information tasks so that humans will play a role in this. He believes that a new middle class can be created this way. He also believes that there should be a system of micro-payments: every time someone uses data about you, you get paid by them.

Lanier invented virtual reality, but at the same time he is a musician, and has a strong feeling for the creativity of the individual. He also strongly emphasizes the need for people to be paid for their creations. The aggregation of data about people is stealing from them, just as "mash-ups" of pieces of music are not giving royalties to the individual musician. The big mistake that was made with the idea of open source and sharing was that not everybody has the same computer power. Lanier says:

* See Interview with Charlie Rose, PBS, March 19, 2014 http://www.bing.com/videos/watch/video/ukraine-jaron-lanier-yancey-strickler/17w9xmljt

"The old ideas about information being free in the information age ended up screwing over everybody except the owners of the very biggest computers. The biggest computers turned into spying and behavior modification operations, which concentrated wealth and power.

Sharing information freely, without traditional rewards like royalties or paychecks, was supposed to create opportunities for brave, creative individuals. Instead, I have watched each successive generation of young journalists, artists, musicians, photographers, and writers face harsher and harsher odds. The perverse effect of opening up information has been that the status of a young person's parents matters more and more, since it's so hard to make one's way."

"As the French economist Thomas Piketty has shown in his massively documented and bestselling Capital in the 21st Century, more and more wealth is being concentrated in the hands of the few. According to him, this tendency is inbuilt in capitalism."

So, who owns the future, or rather, who should own it?

"If we keep on doing things as we are, the answer is clear: The future will be narrowly owned by the people who run the biggest, best connected computers, which will usually be found in giant, remote cloud computing farms.

The answer I am promoting instead is that the future should be owned broadly by everyone who contributes data to the cloud, as robots and other machines animated by cloud software start to drive our vehicles, care for us when we're sick, mine our natural resources, create the physical objects we use, and so on, as the 21st century progresses.

Right now, most people are only gaining *informal* benefits from advances in technology, like free internet services, while those who own the biggest computers are concentrating *formal* benefits to an unsustainable degree."

In other words, Lanier is here addressing a central problem that others have also commented on and found explanations for: the increase in inequality that is taking place. He approaches it from the point of view of having the technological power to make money. He uses the term "Siren Servers" (for e.g. Google) to indicate the temptations they present to individuals to submit to an ever increasing connectivity and data collection on themselves. He might add that it has been shown that digital media, especially cell phones, can easily become addictive – just as in the case of addiction, a reward center in the brain is being stimulated.

The rising inequality is a serious and fundamental social problem, even without the technological development that hugely magnifies its impact. As the French economist Thomas Piketty has shown in his massively documented and bestselling *Capital in the 21st Century*, more and more wealth is being concentrated in the hands of the few. According to him, this

tendency is inbuilt in capitalism.[28] He suggests that we are in fact on the way to a 'patrimonial society' where inherited wealth (rather than talent and merit) will increasingly come to dominate the economy which can result in political upheaval. That is, if the government does not do something. In other words, beyond all the tech talk and AI hype, in the 21st century we are back to the very basic problems of political economy.

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Civilizational Paradigm Change: The Modern/Industrial Case*

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Abstract

The intent of this paper is to put a fundamental, if not yet urgent, question on the table for further exploration and discussion. We proceed by defining our use of three key concepts: ***Paradigm, Culture and Form of Civilization****. Then the concept of paradigm is applied to the concept of a form of civilization. The question is asked,* ***"Is it plausible to think that we are in a truly rare time during which our dominant form of civilization (Modern/Industrial) is disintegrating and a truly new form of civilization is beginning to emerge?"*** *The significance of a positive answer is briefly considered for serious conversations about our actions intended to nudge us towards a transition to a new society are briefly considered.*

1. Introduction

I have long been convinced of the vital importance of the mental maps, images and metaphors through which we experience, make sense of and plan our lives as persons, groups, cultures and whole forms of civilization. The prime reason our sense-making matters is that, contrary to any form of realism, we are animals that construe our world and we live within and as a part of a reality that is itself construable. A second reason is that human persons only occur within cultures. This is important because all cultures not only construe reality in some ways and not others, but do in ways that are largely unseen by those who constitute the culture at a given time and place. It follows that all cultures are both a human construct and a cosmic bet that their grip on reality is sound and reliable enough for their grandchildren to cope with the emerging conditions of their time and place.

Sadly, we know that the widespread and deeply-held human assumption about the reliability of one's culture's grip on reality is not always warranted. In 2014, a small but growing minority are increasingly worried about the human future.[1,2]

It follows, especially in turbulent times such as our own, that it is wise for every culture to make special efforts to become consciously aware of the cognitive content, emotional freighting and logic of the metaphors, images and mental maps by which it imagines, shapes and experiences its world and itself. Great danger lurks when we insist on continuing to construe life in unconsciously inherited ways. As Will Rogers put it, *"You can't trust your eyes when your imagination is out of focus."*

* Some of the material in this paper draws on an earlier paper. Ruben Nelson: "Adelaide's Lament: Exploring Our Inability to Make Reliable Sense of Our Situation." A Keynote address delivered to the 2012 Summer Conference, "Saving the Future," Silver Bay, New York, July 31, 2012. Available at http://eruditio.worldacademy.org/author/ruben-nelson

The contribution I seek to make to the conversation about our journey to a new society has four parts. First, I shall offer my understanding of a *paradigm.* Second, I shall offer my understanding of a *form of civilization* and argue that this concept is now needed if we are to make reliable sense of the dynamics of the 21st Century, let alone human history. Third, I shall ask if there is any reasonable chance that ours is a time of *civilizational paradigm change.* Fourth, I shall offer my understanding of the core characteristics of our *Modern/Industrial form of civilization.* Such an understanding is needed if there is any reasonable chance that the dominant way we have come to construe life over the past 1,000 years is in long-term disintegration and decline. In such a situation, we must give up the illusion that a better version of the world we know will serve us well in a truly new future. We need to be able to assure ourselves that those things we take to exemplify a new civilizational paradigm, to be a sign that we are moving towards a new society, are not just freshly painted versions of yesterday.

2. Paradigm

The OED offers both 'pattern' and 'exemplar' in its definition of 'paradigm.'[3] This implies that both features – a pattern and an example of the pattern – are required for a complete understanding of a paradigm.

For example, being told by one's mother that one must finish cutting the lawn before one can eat supper, may be seen, at least by the mother, as paradigmatic of the general and desirable pattern that one should finish what one starts before taking on another task.

As so many have noticed over the years, particularly Margaret Masterman, the concept of 'paradigm' is inherently fuzzy.[4] Therefore, I shall note five things in order to be clear about how I use this term.

First, since they are not the same thing, it is necessary to distinguish patterns of the imagination from patterns of thought and both of these from patterns of action. All are patterns. Therefore, a paradigm – a pattern and an exemplar – can exist at each of these levels. But such paradigms would exist at quite different levels of generality. Typically, human imagination is seen as being at a higher, or more general, level of mind than human thought. This view is reflected and reinforced by the litany that *"as we see the world, so we will think it and think it through. As we think the world, so we will act within it. As we act in the world, so we set ourselves up for future success or failure."*

The litany makes it clear that there is a hierarchy of what may be characterized as degrees of change or transformation. From the least to the most transformative the hierarchy runs like this:

- New actions that reflect and reinforce familiar patterns of thought and imagination.
- New actions combined with new patterns of thought that reflect and reinforce familiar patterns of the imagination.
- New actions combined both with new patterns of thought and new patterns of the imagination.

These levels of generality must be taken in account. It may be helpful if we learn to see, think and act routinely in these terms:

- PC_A stands for paradigm change solely at the level of human action.
- PC_T stands for paradigm change solely at the level of human thought.
- PC_I stands for paradigm change solely at the level of human imagination.
- PC_{TA} stands for paradigm change at both the levels of thought and action.
- PC_{IT} stands for paradigm change at both the levels of imagination and thought.
- PC_{ITA} stands for paradigm change at all three levels – imagination, thought and action.

I have argued elsewhere that in a time when change is occurring at all three levels, "thinking outside the box" will not get the job done because one's new thinking will still reflect and reinforce one's inherited imagination.[5] In my view, this hierarchy does not imply that only changes of action, thought and imagination are to be valued. However, it is to say that until our faltering steps towards a new way of living reflect how we see, think and act, with reasonable consistency, the job of becoming a new society will not be complete. At the least, talking glibly about moving towards a new society as if we know what we are doing when only one level of human life is involved is inappropriate and unwise.

"The disintegration of the existing order is a prerequisite for a new order to emerge."

Second, it should be noted that the dynamics of transformative paradigmatic change can work both from the inside-out and from the outside-in. To take the latter case, there are many stories of a new imagination emerging in ways that shatter the existing patterns of imagination, thought and action. *"She loves me"* and *"His character is not a biological function of his skin colour,"* are but two examples. In such cases, it is almost always inappropriate to ask of the person who has just had such an insight, *"What are you going to do now?"* Most often the person with the insight has no idea. It takes time to wrap one's mind and heart around new realities and let them sink in to the point that one can begin to think through what new paths one must learn to travel.

Third, any culture that has even a reasonable chance of success has to be reasonably coherent in two ways. One way to measure coherence is the degree to which the key elements at any of the three levels are consistent with one another and mutually reinforcing. A second measure of coherence is the degree to which there is a coherent line of sight from the patterns of imagination, through those of thought, to those of physical action.

Fourth, any journey to a new society, provided the "new" is truly a new paradigm of human civilization, will experience a temporary and profound increase in the degree of incoherence not only in its society, but in all societies that are exemplars of its inherited form of civilization. The disintegration of the existing order is a prerequisite for a new order to emerge. Does this insight help us make sense of the largely unanticipated increase in disordered societies globally? Sadly, cultural disintegration does not entail the emergence of a new order. Sometimes societal death is the end of the road.

3. Forms of Civilization

I have come to distinguish between a culture and its current *form of civilization.* For me, this distinction is critical. By *'culture'* I mean not *arts and culture,* but the totality of a

people's ways of being – their seeing, thinking and acting. However, for me, it is not sufficient to use the category of *culture* to capture the deepest and most profound transformations that are afoot within and among us today. Much as cultural differences are not to be overlooked or taken lightly, they do not capture the deepest dynamics of what is going on among humans in the 21st Century. To get at these deeper dynamics and changes I use the phrase *'form of civilization.'*

"To ignore the larger game of civilizational transformation is to ignore the key changes and dynamics on which our future hangs."

By 'form of civilization' I point to the deep and largely unconscious patterns and boundaries of the imagination, thought and practice that characterize a culture that is an exemplar of a particular form of civilization. In this sense a society in any given place and time is a paradigmatic exemplar of some form of civilization. This implies that *at any given time in human history, if we are to make reliable sense of what has gone on, is going on and may well go on, we must understand both the unique character of every culture and the wider, deeper and longer frame of reference each culture exemplifies, namely, its form of civilization.*

I note that a form of civilization is not bound by geography, but by time. Therefore, it is a mistake to define civilizational differences, at least as I use the term, as a function of geographic differences. Today's differences between East and West are real, but they hang on a time shift, not on different locations on the planet. More specifically, in 2014 there are real and noticeable differences between Eastern cultures and modern Western cultures, but the difference is not at root an East VS West difference. Rather, the difference has been created by the fact that over the last 1,000 years the West has experienced a civilizational paradigm change, while Eastern cultures, now generally committed to this transformation, are not yet far enough into it to understand how they themselves are changing.

I readily acknowledge that mine is a stipulated definition of '*civilization*.' It differs from the vast array of senses commonly given to this term. Since there is today no coherent and common sense of what is meant by '*civilization*' – rather its usage is a dog's breakfast – I feel free to stipulate how I shall use the term. I follow this path, of course, because, at the least it clarifies how I use the term. In addition, my usage allows me to make more sense of the past, present and future and do so more reliably than any other usage.

By distinguishing between a culture and its form of civilization at any given time, we can identify cultural changes that occur within its current civilizational frame of reference and distinguish them from those changes that indicate that a culture is growing out of its inherited civilizational frame and possibly into another. *This distinction is vital because these two types of cultural change have very different dynamics and very different risks for truly tragic outcomes if mishandled. Therefore, very different strategies are required to handle each type of change successfully.* Sadly, this point is not well or widely understood. I am suggesting that we must not focus only on the evolution of different cultures as if this is the most important game in town. Such a focus systematically misses a good deal of the length, breadth, depth and drama of the challenges and opportunities we face in the 21st century. To ignore the larger

game of civilizational transformation is to ignore the key changes and dynamics on which our future hangs.

An example may help.

Consider the statement made in a powerful Keynote address in 2009 in Essen, Germany at a conference on Climate Change as Cultural Change by my friend and colleague, Thomas Homer-Dixon: *"I have come to realize that the solutions to our climate-change crisis will ultimately reside at the level of culture."*[6] Most who hear this statement will hear it as Homer-Dixon intended it – as a call to include in our attention not merely the technology of climate change but also the much wider and more powerful level of the shape and evolution of the whole culture. While I wholly agree with this call and his use of 'culture', I would add to his statement, *"and the form of civilization it manifests."* In my view, the changes he is pointing to and calling for not only entail a transformation of our *culture*, but the evolution of our commonly-shared Modern/Industrial form of civilization into a new *form of civilization.* It may be that our future hangs on understanding and operationalizing this difference. If it does, the distinction matters. Put bluntly, in my view we must sustain success not only as a culture, but as a truly new form of civilization. I note that the aspiration of consciously evolving our Modern/Industrial form of civilization into a new form of civilization is not yet on the agenda of any significant body on this planet.

As I consider our history as a species, I find it useful to distinguish five forms of civilization. I will list them in the order in which they emerged. Only the first four are now exemplified in actual human cultures and societies. First, Small-group Nomadic forms. I note that this was the only form for 95% of our life as a species. Then roughly 10,000 years ago Settled Regional forms of civilization emerged. These were followed in a few places by Settled Empires. Fourth, over the last 1000 years, the Modern/Industrial form has been developed. Fifth, we may now be in a long transition to the next form of civilization. I call it the Consciously Co-Creative form of civilization.

This understanding implies that any given *form of civilization* is not static and forever. If the conditions are right, a new form of civilization can emerge from an existing form. If this were not so, there would still only be one form of civilization on Earth. For good and ill, this is obviously not the case. Consider for example, that the French, among many other Europeans, have lived in the first four forms of civilization, although, of course, they did not know themselves as *French* 20,000 years ago. This evolution suggests that we may well find traces of prior civilizational forms in any culture that is no longer Small group Nomadic. I note that the Hebrew/ Christian tradition also runs through these four forms. The evolution is from *"A wandering Aramean was my father"* to *"We shall have a King like the others,"* through the Roman Catholic church of Settled Empire and on through the Reformation to Modern/ Industrial main-line Protestant churches. Americans and Canadians, on the other hand, save for our aboriginal cousins, have lived our whole lives within the Modern/Industrial form of civilization. By 1500 the foundation was well laid and much of the edifice already designed, if not yet embodied. Does this account, in part, for our frequent misreading of and impatience with those who still know and live by earlier forms?

In any case, it is clear to me that the diversity we celebrate is diversity within the Modern/Industrial frame. Those who would challenge this frame are marginalized, not lionized.

In this perspective, what we call "development" can be seen as an attempt to move a given culture from its inherited form of civilization into the Modern/Industrial form. That this fact is not well understood, and even often denied, is a major source of confusion both for folks in "developing" countries and those of us in Modern/Industrial societies.

"Is it even plausible to imagine, think and act as if ours is one of the truly rare times in history during which a civilizational paradigm change is occurring?"

If I had time, I would argue that this perspective can re-frame our well-intended but almost wholly misbegotten ways of creating public policy about human security, social welfare, innovation, multiculturalism, Islam, globalization, the clash of civilizations, development and East/West differences. One policy implication is clear – we should stop promising persons in any existing culture, including our own, that they have the right to maintain their present form of civilization forever. Whatever our intentions, this is a promise we simply *cannot* keep. Given the actual dynamics of human life on this planet, no way of life as either a culture or a form of civilization is non-negotiable and forever. On this point, those who continue to claim otherwise are not only wrong, but wrong-headed.

4. The Question We Must Learn to Ask and Answer

We are now in a position to ask and briefly explore what may well be the most important questions for humanity in the 21st Century: *"Is it even plausible to imagine, think and act as if ours is one of the truly rare times in history during which a civilizational paradigm change is occurring?" "When we talk of a 'transition to a new society' must we also learn to see, explore, understand and respond to a transition to a new form of civilization?" "Are those who worry about the long decline of our Modern/Industrial world essentially right in what they assert, even if, by and large, they are still largely blind to the signs of emergence of the next form of civilization?"*[7,8]

This short piece is not the place to respond to these questions. However, I note three things.

First, this question has been at the centre of my life as a futures-oriented societal researcher, policy wonk and activist for five decades. My own response to the above questions is, *"Yes."*

Second, these questions are not yet securely in our minds or on our lips. As far as I know, no significant organization or research centre in any sector is dedicated to raising and exploring the above questions. At best, only half of the view advocated here – that our Modern/Industrial form of civilization has no long-term future – is hesitantly recognized. Even the boldest of political parties or business associations are wholly unwilling to gently suggest more than the view that *while we may have trouble, long-term, sustaining our Modern/Industrial way of living is the only way to frame our situation in the early 21st Century.* Sadly, even the vast bulk of the sustainability conversation has been captured by those who presume

that if we apply enough capital and science-based technological innovation within a Modern/Industrial frame, our future is secure.

Third, the frame of civilizational paradigm change changes almost everything. It makes sense of the fact that our normal patterns of sense-making no longer enable us to make reliable sense of our world. It allows us to face, rather than deny, the facts of the long-term disintegration of the world as we have known it. It also allows us to come to terms with the increasing disorder caused by the intensification of our own efforts to impose order by the means that are consistent with our Modern/Industrial mindset. Most important, it changes the story we are in from one of either outright denial or the embrace of never-ending decay to one of facing a challenge that no other humans have had to consciously embrace – their conscious and active participation as agents in the emergence of a new form of civilization. This understanding provides a firm basis for a call to active service that is the psychological equivalent of a call to arms. Yes, the odds are long. One may be pessimistic about the chances we have. But hope is warranted.

Hope is also conditional. It is justified only if we are willing to pay the price of learning to see our situation and our role within it for what they are and then respond to what we are coming to know. This will take degrees of courage, insight and love that are truly rare. Yet we know that to call us to any other response is a betrayal of all that we hold dear.

5. The Modern/Industrial Form of Civilization

My next task is to sketch my understanding of the core character of our modern/Industrial form of civilization. Having an adequate grasp of who we have been and mostly still are is a necessary, if not sufficient, condition for a successful transition to a truly new society that exemplifies a new paradigm of civilization. The reason, as noted above, is that, openly and consciously, we must come to be able to distinguish between those new things that are truly new and those that merely reinforce our existing habits, if with greater subtlety. Reflexive consciousness is required because as we have learned from every liberation movement *imaginations we do not know we have, have us.*

It is useful to remember that the modern/Industrial form of civilization grew out of pre-Industrial forms of settled civilization, namely Regional Empires and Regional Settlements. Assuming that the modern/Industrial form did not break in every respect with what went before, it is useful to ask, *"Which defining characteristics of the earlier forms of civilization were inherited by the modern/Industrial form and which were developed as truly novel?"*

My response is that one of the two deepest defining characteristics of Modern/Industrial civilization is a continuation from the past. I refer to the deeply-held sense that ultimate reality is timeless and changeless; that truth, if reliably known, is the same for all persons in all places in all times; that the logic of contradiction and contrariety both hold; and that certainty is a mark of true knowledge. It follows that in a classic modern/Industrial culture life will be organized, both inside and out, hierarchically. The practical reason is that for large scale purposes someone must be in charge. The ultimate reason, of course, is that in order to get organized as humans we must assure ourselves that we have reliable access to eternal truth, even if only through a great chain of being, with a god-king as the key link between heaven and earth.

This hierarchical sense can be seen in Ken Boulding's doggerel, *"In every organization from root to crown, ideas flow up and vetoes flow down."* Command and control based on one's role and place in the hierarchy are of the essence. It follows that the whole point of human life is to learn to live on earth in the ways that best reflect and reinforce our knowledge of the unchanging eternal. *As above, so below*. Obedience to the eternal is also built in. As Pope Paul IV, the first Pope to visit the USA, reminded Americans as he flew out of Detroit, even if one disagrees with him, to be Roman Catholic is to understand the requirement that to be faithful to Christ is to obey him as Pope. Given the presupposition of static reality and timeless truth, this claim is reasonable and to be expected. Finally, I note that a sense of hierarchy is not Western or Eastern. It shows up in every culture that exemplifies the Regional Empire, Regional Settled or modern/ Industrial forms of civilization. Thousands of years ago, once the logic of a settled life took hold of our ancestors, truth has always been found higher up the hierarchy – beyond one's pay grade.

"In what our culture produces, whether it is art, philosophy, military strategy or political and economic development, there are no accidents; everything a culture produces is equally a symbol of that culture." – Northrop Frye

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But to the last several Popes' consternation, the West did not remain wholly faithful to the Regional Empire form of civilization into which the church was born. We developed a powerful new insight that came to deeply define the modern/Industrial West. While we kept the sense of static reality and the hierarchy that goes with it, over the last 1,000 years the West has cut a new swath in history. We in the West moved slowly and incoherently from our pre-modern/Industrial default sensibility of a deep holistic grasp on reality to the sense we now still largely take for granted, at least for most public and private purposes: *whole systems and entities are made of pieces, that are themselves made of pieces. It is pieces all the way down. Further, the pieces are ultimately more real than the wholes they, when taken together, constitute.*

In sum, the holistic grasp on reality that marks all forms of civilization prior to the Modern/Industrial age was fragmented by the Modern/Industrial into stand-alone pieces. The roots of this journey run very deep. It can be seen in 11th Century architecture. By the thirteenth century time was fragmented enough to demand mechanical clocks; reality was fragmented by Aquinas who authorized us to think about the earth apart from God. I know that Aquinas is not normally thought to be a father of our Modern/Industrial world, but he is. Once on the path of fragmentation, we soon learned to think of physics without philosophy or even the history of physics, fact without value, the secular apart from the sacred, commerce without ethics, nations as sovereign entities, and solipsistic individuals as sufficiently primordial to require a social contract in order to have any relationships with or obligations to each other or to a common societal authority.

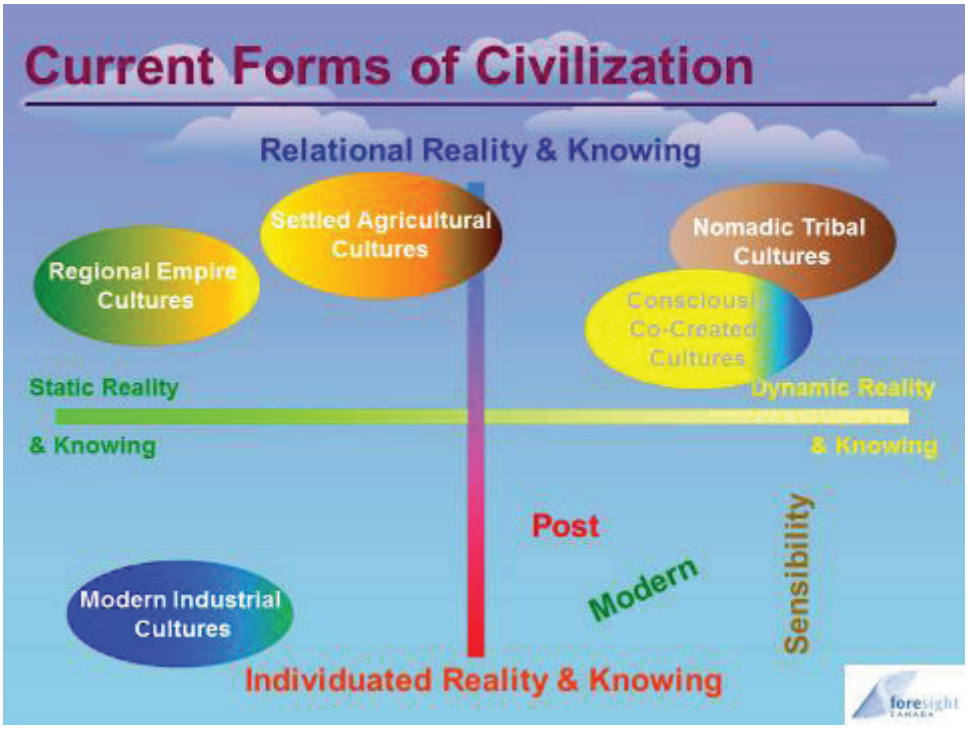
I note in passing that all of these developments, at best, are puzzling, if not offensive, to those with a pre-modern/Industrial sensibility. Most would pay it no heed if we did not have

more money and better weapons as an outcome of our sensibility. We would be well-served to reconsider the rebellion of some parts of Islam against the West in these terms. We would learn things about ourselves and our situation that we need to know.

This evolution from wholeness to fragments can also be seen in Western art, architecture, weaponry and philosophy. As Northrop Frye observed, *"In what our culture produces, whether it is art, philosophy, military strategy or political and economic development, there are no accidents; everything a culture produces is equally a symbol of that culture."*[9] Again, I would add, *"and its form of civilization."*

If you wish to take the time, I invite you to work with a few others and answer this question, "What are the major features of a culture that assumes and exemplifies a sensibility that is the product of the tension between these two deeply defining ontological/epistemological assumptions about reality: One, that reality is static, not dynamic. Two, that reality is made up of and can be known by individual persons as separate pieces – pieces *which then can be added together to result in some form of wholeness?".* This space can be seen in the bottom left quadrant of Figure 1.

Figure 1: Forms of Civilization as Determined by Ontological/Epistemological Presuppositions



I have facilitated this exercise for over 30 years. It is my experience that a variety of possible cultures, all of which embody and reinforce the Modern/Industrial form of civilization, can be inferred from the tension and interaction between these two fundamental ontological and epistemological assumptions. I note that no well-trained Jesuit would be surprised or

bothered by this assertion. I note further, that the resulting diverse cultures are all isomorphic with our Modern/Industrial form of civilization.

One way to experience the sensibility that has come to define our Modern/Industrial form of civilization is to walk through any art gallery with a decent collection of European art from roughly 1200 to today. You will see the slow transformation that marks our journey as a form of civilization along the left hand side of the above figure, from top to bottom.

I shall offer, then, my understanding of some of the core elements of the mythology that have come to dominate and shape the Modern/Industrial form of civilization, and therefore, all Modern/Industrial cultures. For me this is not a random list. Rather the following features are entailed in the interaction of the two deep assumptions that underlie our way of being in the world. Given variations in time, geography or among cultures these features will not all show up to the same degree or in the same ways. In this sense some Modern/Industrial cultures can be said to be more or less Modern/Industrial than others. But these features are present as defining features of all cultures that can be characterized as developed Modern/Industrial cultures.

- A Modern/Industrial culture will have a reductionist/materialist bias – physical realities will be seen as not merely more obvious, but as more real than subtle realities that touch us gently. In the *Rock, Paper, Scissors* game of such societies, numbers always trump metaphors and anecdotes. On this point, every Chamber of Commerce agrees with Karl Marx.
- In human terms, individual persons are seen as the primary units of reality and each individual is complete in him or herself.
- Nation states are spaces where persons who are culturally similar live together. Each nation state is a sovereign unit unto itself and must not be intruded on by those external to it, not even by the UN's recently declared *"responsibility to protect."*
- Within the culture, life is divided into public and private realms – matters that are shared and common to all (the public realm) are divided from those that are unique to each individual (the private realm).

  In the public realm, the same rules must apply to all without discrimination. The price that must be paid for each of us legitimately to have an idiosyncratic private life is that our subjectivity cannot be taken into public space as if it belongs there. In public space, we are functions, not persons. *Don't bring it to the office.* For example, in Canada's largest province you cannot know anything about my private persona for public purposes. If you want to hire me it is illegal to ask me what schools I attended. The reason is that I may have gone to St. Michael's and then you might think I am Roman Catholic – a private matter that by law you may not know for public purposes.
- Public, *common to us all,* space is itself divided into self-contained sectors in some way or other. One type of division is the now common Triple Bottom Line with its economic, environmental and social sub-sectors.
- Institutions in every public sector are organized hierarchically. Those few that have merged recently that are not organized this way are seen to be paradigm breakers.

- Economic matters trump all others. Their primary function is to increase material wealth. They do this primarily by increasing the scope and efficiency of material throughput. Within economics, money dominates all other economic considerations. Efficiency, therefore, trumps effectiveness and relevance.
- Human life is seen as a production/consumption function. The good life is defined and measured by one's *"command over goods and services."* Education is valued because a well-educated person has better access to a job, without which one has no access to goods and services. A well-functioning economy is a consumer-based economy. Social policy is primarily about how much access to goods and services the poor and those with special needs should have.
- The bias to reductionism results in a bias to reify human affairs into separate and self-contained realms, e.g. politics, commerce, science, religion, art. Non-overlapping magisteria (NOMA) between these sectors is an expected and widely-held perspective.
- The bias to experience and treat reality in pieces is legitimized by a host of boundaries. One outcome is that all matters beyond the boundaries of our present concerns and purposes are defined as 'externalities' that we can safely afford to ignore for the purposes at hand.
- Critical-mindedness is required in public life. Deep reflexivity is restricted to private life. Even there it is optional.

6. Conclusion

I will conclude by dealing with a matter that may be arising within you. I have said that we need to learn to see, explore, think through, understand and factor into our commitments and decisions the fact that in 2014 there are now four main forms of civilization exemplified on the planet – Small-group Nomadic form, Settled Regional form, Settled Empire form, and our Modern/Industrial form. I have also said that we in the West exemplify the Modern/Industrial form. And I have defined the Modern/Industrial form on the basis of two deep ontological/epistemological assumptions – static and piecemeal reality. Yet, you may have noticed that today's world is also marked by dynamic systems and complexity, not static pieces. In what sense, then, are we in the West still truly Modern/Industrial?

This is a good and important question. My reading of the data suggests the following sketch of a response.

First, I wholly agree that in 2014 there are many emerging features of our lives and societies, including for example, the category of emergence, that are incompatible with our still being seen as a classic and pure form of a Modern/ Industrial culture and form of civilization. Apparently, there is evidence that we are already growing, at least to some degree, into something that is not just a new culture, but a new form of civilization. This, of course, is one of the possibilities to which I want to point. That this notion should come to play a major role in our public policy is an aspiration I wish to mindfully and heartily endorse.

Second, there is evidence that a culture does not shift from one form of civilization suddenly and completely, but slowly, unconsciously and incoherently. This implies that at any

given time in history we have to ask of any given culture, *"To what extent is it deeply coherent?"* By 'coherent' I mean that the cognitive contents of the fundamental structures and patterns of its physical artifacts, thought patterns and imagination are essentially aligned and isomorphic; that they reflect and reinforce the same dominant mythic form of civilization. I raise the question of coherence because there are limits to how incoherent a culture can become and still be a well-functioning culture. Since the core of globalization is in fact Modern/Industrial Westernization, much of the societal disorder now readily seen around the world can be read in this light. There is a clash of civilizations going on around the world, but it is not the one that we have commonly taken it to be. See, for example, Samuel Huntington.[10]

Third, regarding any given society at any given time we need to learn to distinguish between two profoundly different types of diversity and incoherence. The first type of diversity arises because a society encounters artifacts, thoughts and mythic structures that, while different from its own, are from cultures that also exemplify the same form of civilization. Up until roughly 10,000 years ago, this type of diversity was the only type experienced by our species. Today, I think of encounters between the Mohawk and the Cree, or the modern Greeks and modern Germans.

The other type of diversity arises from encounters with cultures that exemplify a form of civilization different from one's own. I note again that we now have four forms of civilization encountering one another. I think of encounters today between Americans and Chinese or European-rooted Canadians and Canadian Aboriginals. By and large these types of encounter do not go well. In large part this is because, while each can see that the other has a quite different culture, as yet, neither has the capacity to understand, much less grasp the significance of, the differences in their forms of civilization. Therefore, those engaged in such encounters are prone to systematically misconstrue the other and therefore the encounter with the other.

Finally, I must reinforce the fact that one can misunderstand one's own experiences of cultural change without leaving home; without encountering others from cultures that exemplify a different form of civilization. The reason, of course, is that inappropriate conduct will almost certainly be an outcome when one is unable to discern which changes in one's self and one's culture are within the paradigm of one's inherited form of civilization and which are paradigm bursting at the level of our form of civilization.†

Any serious journey that bills itself as a *transition to a new society* must keep these things in mind.

Or so it seems to me.

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The Urgent Need for Renewable Energy

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Abstract

The transition to 100% renewable energy must take place within about a century because fossil fuels will become too rare and expensive to burn. But scientists warn that if the transition does not happen much faster than that, there is a danger that we may reach a tipping point beyond which feedback loops could take over and produce a catastrophic increase in global temperature.

1. Geological Extinction Events and Runaway Climate Change

The melting of Arctic sea ice is taking place far more rapidly than was predicted by reports of the Intergovernmental Panel on Climate Change (IPCC). David Wasdell, Director of the Apollo-Gaia Project, points out that the observed melting has been so rapid that within less than five years, the Arctic will be free of sea ice at the end of each summer. It will, of course continue to refreeze during the winters, but the thickness and extent of the winter ice will diminish.

It has also been observed that both the Greenland ice cap and the Antarctic ice shelves are melting much more rapidly than was predicted by the IPCC. Complete melting of both the Greenland ice cap and the Antarctic sea ice would raise ocean levels by 14 meters. It is hard to predict how fast this will take place, but certainly within 1-3 centuries.

Most worrying, however, is the threat that without an all-out effort by both developed and developing nations to immediately curb the release of greenhouse gases, climate change will reach a tipping point where feedback loops will have taken over, and where it will then be beyond the power of human action to prevent exponentially accelerating warming.

By far the most dangerous of these feedback loops involves methane hydrates or clathrates. When organic matter is carried into the oceans by rivers, it decays to form methane. The methane then combines with water to form hydrate crystals, which are stable at the temperatures and pressures which currently exist on ocean floors. However, if the temperature rises, the crystals become unstable, and methane gas bubbles up to the surface. Methane is a greenhouse gas which is much more potent than CO_2.

The worrying thing about the methane hydrate deposits on ocean floors is the enormous amount of carbon involved: roughly 10,000 gigatons. To put this huge amount into perspective, we can remember that the total amount of carbon in world CO_2 emissions since 1751 has only been 337 gigatons.

A runaway, exponentially increasing feedback loop involving methane hydrates could lead to one of the great geological extinction events that have periodically wiped out most of the animals and plants then living. This must be avoided at all costs.*

The worst consequences of runaway climate change will not occur within our own lifetimes. However, we have a duty to all future human generations, and to the plants and animals with which we share our existence, to give them a future world in which they can survive.

2. Preventing a Human-initiated 6th Geological Extinction Event

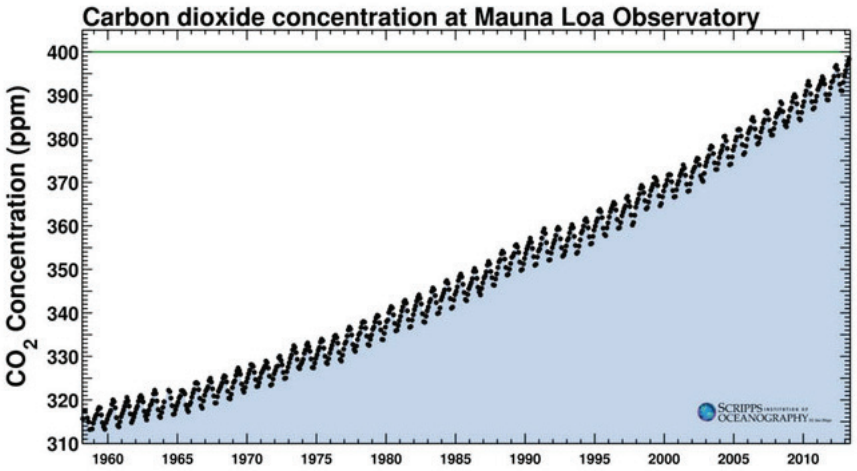

Figure 1: Despite the efforts of scientists to warn of the dangers of runaway climate change, the atmospheric concentration of CO_2 continues to increase steadily. We need more public debate of the dangers, and a sense of urgency.

Geologists studying the strata of rocks have observed 5 major extinction events. These are moments in geological time when most of the organisms then living suddenly became extinct. The largest of these was the Permian-Triassic extinction event, which occurred 252 million years ago. In this event, 96 percent of all marine species were wiped out, as well as 70 percent of all terrestrial vertebrates.

In 2012, the World Bank issued a report warning that without quick action to curb CO_2 emissions, global warming is likely to reach 4 degrees C during the 21st century. This is dangerously close to the temperature which initiated the Permian-Triassic extinction event: 6 degrees C above normal.†

* Here are links to some videos which discuss these dangers:

https://www.youtube.com/watch?v=MVwmi7HCmSI

https://www.youtube.com/watch?v=AjZaFjXfLec

https://www.youtube.com/watch?v=m6pFDu7lLV4

† Here is a link to the World Bank report: http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century

The Permian-Triassic thermal maximum seems to have been triggered by global warming and CO_2 release from massive volcanic eruptions in a region of northern Russia known as the Siberian Traps. The amount of greenhouse gases produced by these eruptions is comparable to the amount emitted by human activities today.

Scientists believe that once the temperature passed 6 degrees C above normal, a feedback loop was initiated in which methane hydrate crystals on the ocean floors melted, releasing methane, a potent greenhouse gas. The more methane released, the more methane hydrate crystals were destabilized, raising the temperature still further, releasing more methane gas, and so on in a vicious circle. This feedback loop raised the global temperature to 15 degrees C above normal, causing the Permian-Triassic mass extinction.‡

No reputable doctor who diagnoses cancer would keep this knowledge from the patient. The reaction of the patient may be to reject the diagnosis and get another doctor, but no matter. It is very important that the threatened person should hear the diagnosis, because, with treatment, there is hope of a cure.

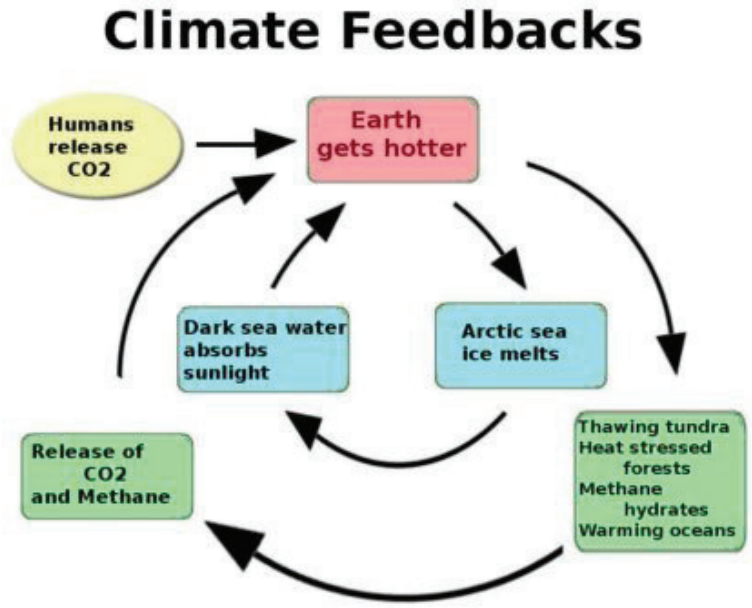

Figure 2: There is a danger that a runaway methane hydrate feedback loop might initiate a 6th geological extinction event.

Similarly, the scientific community, when aware of a grave danger to our species and the biosphere, has a duty to bring this knowledge to the attention of as broad a public as possible,

‡ Here is a link to a short, important and clear video discussing the danger that a 6th mass extinction event could be caused by human activities: https://www.youtube.com/watch?v=sRGVTK-AAvw

Other videos discussing this very grave danger can be found on the following links:

https://www.youtube.com/watch?v=MVwmi7HCmSI
https://www.youtube.com/watch?v=AjZaFjXfLec
https://www.youtube.com/watch?v=m6pFDu7llLV4

even at the risk of unpopularity. The size of the threatened catastrophe is so immense as to dwarf all other considerations. All possible efforts must be made to avoid it.

"A shift to 100% renewable energy has to happen within about a hundred years."

Consider what may be lost if a 6th mass extinction event occurs, caused by our own actions: It is possible that a few humans may survive in mountainous regions such as the Himalayas, but this will be a population of millions rather than billions. If an event comparable to the Permian-Triassic thermal maximum occurs, the family trees of virtually all of the people, animals and plants alive today will end in nothing.

The great and complex edifice of human civilization is a treasure whose value is almost above expression; and this may be lost unless we give up many of our present enjoyments. Each living organism, each animal or plant, is a product of three billion years of evolution, and a miracle of harmony and complexity; and most of these will perish if we persist in our folly and greed.

Let us, for once, look beyond present pleasures, and acknowledge our duty to preserve a future world in which all forms of life can survive.

3. Is a shift to 100% Renewable Energy Possible?

One answer to the question of whether a shift to 100 percent renewable energy is possible is that it has to happen during this century because fossil fuels are running out. Within a century or so they will be gone in the sense that they will be much too expensive to be burned. Therefore, a shift to 100% renewable energy has to happen within about a hundred years. The vitally important point is that if the shift does not happen quickly, if we do not leave most of our fossil fuels in the ground instead of burning them, we risk a climatic disaster of enormous proportions, perhaps comparable to the Permian-Triassic thermal maximum, during which 70% of terrestrial vertebrates and 93% of marine species became extinct. Thus the shift must happen, and will happen. But we must work with dedication, and a sense of urgency, to make it happen soon.

4. What are the Forms of Renewable Energy?

The main forms of renewable energy now in use are wind power, hydropower, solar energy, biomass, biofuel, geothermal energy and marine energy. In addition, there are a number of new technologies under development, such as artificial photosynthesis, cellulosic ethanol, and hydrogenation of CO_2.

At present, the average global rate of use of primary energy is roughly 2 kilowatts per person. In North America, the rate is 12 kilowatts per capita, while in Europe, the figure is 6 kilowatts. In Bangladesh, it is only 0.2 kilowatts. This wide variation implies that considerable energy savings are possible, through changes in lifestyle, and through energy efficiency.

4.1. Solar Energy

Biomass, wind energy, hydropower and wave power derive their energy indirectly from the sun, but in addition, various methods are available for utilizing the power of sunlight

directly. These include photovoltaic panels, solar designs in architecture, solar systems for heating water and cooking, concentrating photovoltaic systems, and solar thermal power plants.

Solar photovoltaic cells are thin coated wafers of a semiconducting material (usually silicon). The coatings on the two sides are respectively charge donors and charge acceptors. Cells of this type are capable of trapping solar energy and converting it into direct-current electricity. The electricity generated in this way can be used directly (as it is, for example, in pocket calculators) or it can be fed into a general power grid. Alternatively it can be used to split water into hydrogen and oxygen. The gases can then be compressed and stored, or exported for later use in fuel cells. In the future, we may see solar photovoltaic arrays in sun-rich desert areas producing hydrogen as an export product.

The cost of manufacturing photovoltaic cells is currently falling at the rate of 3-5% per year. The cost in 2006 was $4.50 per peak Watt. Usually photovoltaic panels are warranted for a life of 20 years, but they are commonly still operational after 30 years or more. The cost of photovoltaic electricity is today 2-5 times the cost of electricity generated from fossil fuels, but photovoltaic costs are falling rapidly, while the costs of fossil fuels are rising equally rapidly.

Concentrating photovoltaic systems are able to lower costs still further by combining silicon solar cells with reflectors that concentrate the sun's rays. The most inexpensive type of concentrating reflector consists of a flat piece of aluminum-covered plastic material bent into a curved shape along one of its dimensions, forming a trough-shaped surface. (Something like this shape results when we hold a piece of paper at the top and bottom with our two hands, allowing the center to sag.) The axis of the reflector can be oriented so that it points towards the North Star. A photovoltaic array placed along the focal line will then receive concentrated sunlight throughout the day.

Photovoltaic effciency is defined as the ratio of the electrical power produced by a cell to the solar power striking its surface. For commercially available cells today, this ratio is between 9% and 14%. If we assume 5 hours of bright sunlight per day, this means that a photocell in a desert area near the equator (where 1 kW/m^2 of peak solar power reaches the earth's surface) can produce electrical energy at the average rate of 20-30 W_e/m^2, the average being taken over an entire day and night. (The subscript e means "in the form of electricity". Energy in the form of heat is denoted by the subscript t, meaning "thermal".) Thus the potential power per unit area for photovoltaic systems is far greater than for biomass. However, the mix of renewable energy sources most suitable for a particular country depends on many factors.

4.2. Wind Energy

Wind parks in favorable locations, using modern wind turbines, are able to generate 10 MW_e/km^2 or 10 W_e/m^2. Often wind farms are placed in offshore locations. When they are on land, the area between the turbines can be utilized for other purposes, for example for pasturage. For a country like Denmark, with good wind potential but cloudy skies, wind turbines can be expected to play a more important future role than photovoltaics. Denmark is already a world leader both in manufacturing and in using wind turbines. The use of wind power is currently growing at the rate of 38% per year. In the United States, it is the fastest-growing

form of electricity generation.

The location of wind parks is important, since the energy obtainable from wind is proportional to the cube of the wind velocity. We can understand this cubic relationship by remembering that the kinetic energy of a moving object is proportional to the square of its velocity multiplied by the mass. Since the mass of air moving past a wind turbine is proportional to the wind velocity, the result is the cubic relationship just mentioned.

Before the decision is made to locate a wind park in a particular place, the wind velocity is usually carefully measured and recorded over an entire year. For locations on land, mountain passes are often very favorable locations, since wind velocities increase with altitude, and since the wind is concentrated in the passes by the mountain barrier. Other favorable locations include shorelines and offshore locations on sand bars. This is because onshore winds result when warm air rising from land heated by the sun is replaced by cool marine air. Depending on the season, the situation may be reversed at night, and an offshore wind may be produced if the water is warmer than the land.

The cost of wind-generated electrical power is currently lower than the cost of electricity generated by burning fossil fuels. The "energy payback ratio" of a power installation is defined as the ratio of the energy produced by the installation over its lifetime, divided by the energy required to manufacture, construct, operate and decommission the installation. For wind turbines, this ratio is 17:39, compared with 11 for coal-burning plants. The construction energy of a wind turbine is usually paid back within three months.

4.3. Biomass

Biomass is defined as any energy source based on biological materials produced by photosynthesis − for example wood, sugar beets, rapeseed oil, crop wastes, dung, urban organic wastes, processed sewage, etc. Using biomass for energy does not result in the net emission of CO_2, since the CO_2 released by burning the material is already absorbed from the atmosphere during photosynthesis. If the biological material had decayed instead of being burned, it would have released the same amount of CO_2 as in the burning process.

Miscanthus is a grassy plant found in Asia and Africa. Some forms also grow in Northern Europe, and it is being considered as an energy crop in the United Kingdom. Miscanthus can produce up to 18 dry tons per hectare-year, and it has the great advantage that it can be cultivated using ordinary farm machinery. The woody stems are very suitable for burning, since their water content is low (20-30%).

Jatropha is a fast-growing woody shrub about 4 feet in height, whose seeds can be used to produce diesel oil at the cost of about $43 per barrel. The advantage of Jatropha is that it is a hardy plant, requiring very little fertilizer and water. It has a life of roughly 50 years, and can grow on wasteland that is unsuitable for other crops. The Indian State Railway has planted 7.5 million Jatropha shrubs beside its right of way. The oil harvested from these plants is used to fuel the trains.

For some southerly countries, honge oil, derived from the plant Pongamia pinnata may prove to be a promising source of biomass energy. Studies conducted by Dr. Udishi Shrinivasa at the Indian Institute of Sciences in Bangalore indicate that honge oil can be produced at

the cost of $150 per ton. This price is quite competitive when compared with other potential fuel oils.

Recent studies have also focused on a species of algae that has an oil content of up to 50%. Algae can be grown in desert areas, where cloud cover is minimal. Farm waste and excess CO_2 from factories can be used to speed the growth of the algae.

It is possible that in the future, scientists will be able to create new species of algae that use the sun's energy to generate hydrogen gas. If this proves to be possible, the hydrogen gas may then be used to generate electricity in fuel cells, as will be discussed below in the section on hydrogen technology. Promising research along this line is already in progress at the University of California, Berkeley.

Biogas is defined as the mixture of gases produced by the anaerobic digestion of organic matter. This gas, which is rich in methane (CH_4), is produced in swamps and landfills, and in the treatment of organic wastes from farms and cities. The use of biogas as a fuel is important not only because it is a valuable energy source, but also because methane is a potent greenhouse gas, which should not be allowed to reach the atmosphere. Biogas produced from farm wastes can be used locally on the farm, for cooking and heating, etc. When biogas has been sufficiently cleaned so that it can be distributed in a pipeline, it is known as "renewable natural gas". It may then be distributed in the natural gas grid, or it can be compressed and used in internal combustion engines. Renewable natural gas can also be used in fuel cells, as will be discussed below in the section on Hydrogen Technology.

Biofuels are often classified according to their generation. Those that can be used alternatively as food are called first-generation biofuels. By contrast, biofuels of the second generation are those that make use of crop residues or other cellulose-rich materials. Cellulose molecules are long chains of sugars, and by breaking the inter-sugar bonds in the chain using enzymes or other methods, the sugars can be freed for use in fermentation. In this way lignocellulosic ethanol is produced. The oil-producing and hydrogen-producing algae mentioned above are examples of third-generation biofuels. We should notice that growing biofuels locally (even first-generation ones) may be of great benefit to smallholders in developing countries, since they can achieve local energy self-reliance in this way.

4.4. Geothermal Energy

The ultimate source of geothermal energy is the decay of radioactive nuclei in the interior of the earth. Because of the heat produced by this radioactive decay, the temperature of the earth's core is 4300 degrees C. The inner core is composed of solid iron, while the outer core consists of molten iron and sulfur compounds. Above the core is the mantle, which consists of a viscous liquid containing compounds of magnesium, iron, aluminum, silicon and oxygen. The temperature of the mantle gradually decreases from 3700 degrees C near the core to 1000 degrees C near the crust. The crust of the earth consists of relatively light solid rocks and it varies in thickness from 5 to 70 km.

The outward flow of heat from radioactive decay produces convection currents in the interior of the earth. These convection currents, interacting with the earth's rotation, produce patterns of flow similar to the trade winds of the atmosphere. One result of the currents of

molten conducting material in the interior of the earth is the earth's magnetic field. The crust is divided into large sections called "tectonic plates", and the currents of molten material in the interior of the earth also drag the plates into collision with each other. At the boundaries, where the plates collide or split apart, volcanic activity occurs. Volcanic regions near the tectonic plate boundaries are the best sites for collection of geothermal energy.

The entire Pacific Ocean is ringed by regions of volcanic and earthquake activity, the so-called Ring of Fire. This ring extends from Tierra del Fuego at the southernmost tip of South America, northward along the western coasts of both South America and North America to Alaska. The ring then crosses the Pacific at the line formed by the Aleutian Islands, and it reaches the Kamchatka Peninsula in Russia. From there it extends southward along the Kuril Island chain and across Japan to the Philippine Islands, Indonesia and New Zealand. Many of the islands of the Pacific are volcanic in nature. Another important region of volcanic activity extends northward along the Rift Valley of Africa to Turkey, Greece and Italy. In the Central Atlantic region, two tectonic plates are splitting apart, thus producing the volcanic activity of Iceland. All of these regions are very favorable for the collection of geothermal power.

4.5. Hydrogen Fuel Cells

Electrolysis of water to produce hydrogen gas has been proposed as a method for energy storage in a future renewable energy system. For example, it might be used to store energy generated by photovoltaics in desert areas of the world. Compressed hydrogen gas could then be transported to other regions and used in fuel cells. Electrolysis of water and storage of hydrogen could also be used to solve the problem of intermittency associated with wind energy or solar energy.

Fuel cells allow us to convert the energy of chemical reactions directly into electrical power. In hydrogen fuel cells, for example, the exact reverse of the electrolysis of water takes place. Hydrogen reacts with oxygen, and produces electricity and water, the reaction being

$$O_2(g) + 2H_2(g) \rightarrow 2H_2O(l) \qquad E^0 = 1.23 \text{ Volts}$$

The arrangement of a hydrogen fuel cell is such that the hydrogen cannot react directly with the oxygen, releasing heat. Instead, two half reactions take place, one at each electrode, as was just mentioned in connection with the electrolysis of water. In a hydrogen fuel cell, hydrogen gas produces electrons and hydrogen H^+ ions at one of the electrodes.

$$2H_2(g) \rightarrow 4H^+(aq) + 4e^- \qquad E^0 = 0$$

The electrons flow through the external circuit to the oxygen electrode while the hydrogen ions complete the circuit by flowing through the interior of the cell (from which the hydrogen and oxygen molecules are excluded by semipermeable membranes) to the oxygen electrode. Here the electrons react with oxygen molecules and H^+ ions to form water.

$$O_2(g) + 4H^+(aq) + 4e^- \rightarrow 2H_2O(l) \qquad E^0 = 1.23 \text{ Volts}$$

In this process, a large part of the chemical energy of the reaction becomes available as electrical power.

The theoretical maximum efficiency of a heat engine operating between a cold reservoir

at temperature T_C and a hot reservoir at T_H is $1-T_C/T_H$, where the temperatures are expressed on the Kelvin scale. Since fuel cells are not heat engines, their theoretical maximum efficiency is not limited in this way. Thus it can be much more efficient to generate electricity by making hydrogen and oxygen react in a fuel cell than it would be to burn the hydrogen in a heat engine and then use the power of the engine to drive a generator.

"A rapid shift to renewable energy could provide the needed jobs to replace lost jobs."

Hydrogen technologies are still at an experimental stage. Furthermore, they do not offer us a source of renewable energy, but only means for storage, transportation and utilization of energy derived from other sources. Nevertheless, it seems likely that hydrogen technologies will have great importance in the future.

5. Economic and Political Considerations

In our present situation, a rapid shift to renewable energy could present the world with many benefits. Ecological constraints and depletion of natural resources mean that industrial growth will very soon no longer be possible. Thus we will be threatened with economic recession and unemployment. A rapid shift to renewable energy could provide the needed jobs to replace lost jobs in (for example) automobile production. Renewable energy is becoming competitive with fossil fuels, and thus it represents a huge investment opportunity.

On the other hand, fossil fuel companies have a vested interest in monetizing the assets that they own, as Thom Hartmann points out in the video mentioned at the start of this essay in a footnote. Professor Noam Chomsky of MIT also explains this difficulty very well.§

These considerations point to a fight that will have to be fought by the people of the world who are concerned about the long-term future of human civilization and the biosphere, against the vested interests of our oligarchic rulers. This fight will require wide public discussion of the dangers of runaway climate change. But at present, our corporate-controlled mass media refuse to touch the subject.

6. Our Duty to Future Generations

Many traditional agricultural societies have an ethical code that requires them to preserve the fertility of the land for future generations. This recognition of a duty towards the distant future is in strong contrast to the short-sightedness of modern economists. For example, John Maynard Keynes has been quoted as saying "In the long run, we will all be dead", meaning that we need not look that far ahead. By contrast, members of traditional societies recognize that their duties extend far into the distant future, since their descendants will still be alive.

Here is an ethical principle of the Native Americans: "Treat the earth well. It was not given to you by your parents. It was loaned to you by your children." They also say: "We must protect the forests for our children, grandchildren, and children yet to be born. We must protect the forests for those who cannot speak for themselves, such as the birds, animals, fish and trees."

§ See http://www.youtube.com/watch?v=NCAsxphZoxE

In some parts of Africa, a man who plans to cut down a tree offers a prayer of apology, telling the tree why necessity has forced him to harm it. This preindustrial attitude is something from which industrialized countries could learn. In industrial societies, land "belongs" to someone, and the owner has the "right" to ruin the land or to kill the communities of creatures living on it, if this happens to give some economic advantage, in much the same way that a Roman slave-owner was thought to have the "right" to kill his slaves. Preindustrial societies have a much less rapacious and much more custodial attitude towards the land and its non-human inhabitants.

"Our economic system is built on the premise that individuals act out of self-interest."

On April 22, 2010, the World People's Conference on Climate Change and the Rights of Mother Earth in Cochabamba, Bolivia, adopted a Universal Declaration of the Rights of Mother Earth.¶

Contrast this expression of the deep ethical convictions of the world's people with the cynical, money-centered results of various intergovernmental conferences on climate change!

Our economic system is built on the premise that individuals act out of self-interest, and as things are today, they do so with a vengeance. There is no place in the system for thoughts about the environment and the long-term future. All that matters is the bottom line. The machine moves on relentlessly, exhausting non-renewable resources, turning fertile land into deserts, driving animal species into extinction, felling the last of the world's tropical rainforests, pumping greenhouse gases into the atmosphere, and sponsoring TV programs that deny the reality of climate change, or other programs that extol the concept of never-ending industrial growth. But the economists, bankers, bribed politicians and corporation chiefs who destroy the earth today, are destroying the future for their own children, grandchildren and great-grandchildren. Does it make sense for them to saw off the branch on which they, like all of us, are sitting?

Must there be a human-initiated 6th geological extinction event? Is it inevitable that the long-term future will witness the disappearance of human civilization and most of the plants and animals that are alive today? No! Absolutely not! It is only inevitable if we persist in our greed and folly. It is only inevitable if we continue to value money more than nature. It is only inevitable if we are afraid to question the authority of corrupt politicians. It is only inevitable if we fail to cooperate globally, and if we fail to develop a new economic system with both a social conscience and an ecological conscience.

We are living today in a time of acute crisis. We need to act with a sense of urgency never before experienced. We need to have great courage to meet an unprecedented challenge. We need to fulfill our duty to future generations.

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¶ See http://therightsofnature.org/universal-declaration/

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Book Reviews

Climate Concerns Expanding in 2014: The CNA/MAB Report and Six Others. National Security and the Accelerating Risks of Climate Change.
CNA Military Advisory Board. Foreword by Michael Chertoff and Leon Panetta.
Alexandria VA: CNA Corporation, May 2014, 37p.
(download at www.cna.org/reports/accelerating-risks).

Review by Michael Marien
Director, Global Foresight Books;
Fellow, World Academy of Art and Science

1. Introduction

The early months of 2014 have seen several new reports on climate change, all more worrisome than earlier reports. The best-known is the **Fifth Assessment Report** (AR5) of the Intergovernmental Panel on Climate Change (www.ipcc.ch), which provides a voluminous survey of the three IPCC Working Groups: WGI**: The Physical Science Basis**, WGII**: Impacts, Adaptation, and Vulnerability**; and WGIII**: Mitigation of Climate Change**. A Summary is available for each of these three reports, and a **Synthesis Report** will soon be available.

In May 2014, the third **National Climate Assessment** was issued by the U.S. Global Change Research Program (www.globalchange.gov), described as "Thirteen Agencies, One Vision: Empower the Nation with Global Change Science." The report involved more than 300 experts, with analysis and excellent maps projecting regional variations as concerns future climate, sea level rise, human health, infrastructure, extreme weather, water supply, oceans, ecosystems, and biodiversity.

At about the same time, the American Association for the Advancement of Science, the largest organization of scientists in the world with 140,000 members, issued a simply-written 28-page statement on **What We Know: The Reality, Risks and Response to Climate Change** (http://whatweknow.aaas.org). It stressed the reality that climate change is happening and "very likely" to be worse over the next 10-20 years and beyond, and that 97% of scientists agree with this view (a rebuttal to the deniers who still say that the science is not settled).

The statement also covers potential scenarios (including permafrost melt in the Arctic as "a key uncertainty"), wildfires and the growing chance of a "mega-fire," and climate change and national security. We face the risks of abrupt and potentially irreversible changes, and "the sooner we act, the lower the risks and costs."

An emphasis on economic risk is the focus of **Risky Business: The Economic Risks of Climate Change in the United States** (www.riskybusiness.org), issued shortly after writing

this long review of the CNA Military Advisory Board report. An EPILOGUE to this review provides a brief look at the "Risky Business Project" co-chaired by former NYC Mayor Michael R. Bloomberg, former US Secretary of the Treasury Henry M. Paulson Jr., and retired hedge fund manager Thomas F. Steyer, and notes important parallels to the CNA/MAB report.

These two reports addressed to American audiences raise alarms about climate change from national security and economic security perspectives. But doing something about it in a major way is left to yet another major report addressed to a global audience: **Pathways to Deep Decarbonization** from SDSN and IDDRI (Interim 2014 Report, July 2014, 195p; www.deepdecarbonization.org). This report is also briefly covered in the EPILOGUE. And still to follow is **The New Climate Economy Report** of the Global Commission on the Economy and Climate, to be published in September 2014, focusing on urban development, energy systems, and agricultural land use.

2. Background to CNA and its Military Advisors

CNA Corporation (www.cna.org) was originated in 1942 as the non-profit Center for Naval Analyses, and became CNA Corporation in the 1990s. It employs nearly 400 staff and now includes the Institute for Public Research, which does studies on education, energy, water and climate, air traffic management, and security. The Military Advisory Board, which is part of the Institute, includes 15 retired Generals and Admirals from the US Army, Navy, Air Force, and Marine Corps, and one retired British Rear Admiral.

An initial 63-page report of the Military Advisory Board, **National Security and the Threat of Climate Change,** was issued in 2007, finding that "climate change poses a serious threat to America's national security"; it can act as a threat multiplier for instability in volatile regions, it will add to tensions even in stable regions, and it is linked to energy dependence and national security. Five recommendations were made.

After nearly a decade of scientific discoveries in environmental science and a burgeoning scholarly literature on the complex interdependence among nations, the MAB felt "compelled" to provide an update, where "we validate the findings of our first report and find that in many cases the risks we identified are advancing noticeably faster than we anticipated. We also find the world becoming more complex in terms of the problems that plague its various regions… We see more clearly now that while projected climate change should serve as catalyst for change and cooperation, it can also be a catalyst for conflict. We are dismayed that discussions of climate change have become so polarizing and have receded from the arena of informed public discourse and debate."(p. iii)

The Foreword by Michael Chertoff (former Secretary of Homeland Security) and Leon Panetta (former Secretary of Defense) states that "projected climate change is a complex multi-decade challenge. Without action to build resilience, it will increase security risks over much of the planet. It will not only increase threats to developing nations in resource-challenged parts of the world, but it will also test the security of nations with robust capability… Even though we may not have 100% certainty as to the cause or even the exact magnitude of the impacts, the risks associated with projected climate change warrant taking action today… When it comes to thinking through long-term global challenges, none are more qualified than

our most senior military leaders… (who are) experts in geopolitical analysis and long-range strategic planning." (p. 1)

"Coordinated, wide-scale, and well-executed actions are required—now."

3. CNA/MAB Major Findings

"We gather again because of our growing concern over the lack of comprehensive action by both the United States and the international community to address the full spectrum of projected climate change issues."

1. ***Insufficient Action.*** Climate mitigation and adaptation efforts are emerging in various places around the world, but the extent of these efforts is insufficient to avoid potential water/food/energy insecurity, political instability, extreme weather events, and other manifestations of climate change. Coordinated, wide-scale, and well-executed actions are required—now.
2. ***Cooperation or Conflict?*** The potential security ramifications should be serving as catalysts for cooperation and change; instead, "climate change impacts are already accelerating instability in vulnerable areas of the world and are serving as catalysts for conflict." As identified in the 2007 report, the projected effects of climate change are "threat multipliers that will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions."
3. ***Population Challenges.*** "Rapid population growth, especially in coastal and urban areas, and complex changes in the global security environment, have made understanding the strategic security risks of projected climate changes more challenging." Since research began for the 2007 report, the world has added more than half a billion people, geopolitical power has become more dispersed, and non-state actors are having increasing impacts.
4. ***Arctic Ice Melt.*** Accelerated melting of "old ice" in the Arctic is making the region more accessible to a wide variety of human activities. "The US and the international community are not prepared for the pace of change in the Arctic."
5. ***Water/Food/Energy Nexus.*** As the world's population and living standards continue to grow, projected climate impacts on the nexus of water, food, and energy become more profound. By 2030, worldwide demand will call for 35% more food and 50% more energy, which will stress resources across a growing segment of the world.
6. ***U.S. Homeland Security.*** Heat waves, intense rainfall, floods, droughts, rising sea levels, more acidic oceans, and melting glaciers and Arctic sea ice will not only affect local communities, but challenge key elements of National Power to protect national assets and influence others.
7. ***Military Impacts.*** Climate change could be detrimental to military readiness and strain base resilience, as more forces are called on to respond in the wake of extreme weather events at home and abroad; climate change will also make training more difficult, and put at greater risk critical military logistics, transport systems, and infrastructure.
8. ***National Infrastructure.*** Extreme heat is already damaging roads, rail lines, and airport runways. Much of the nation's energy infrastructure (oil and gas refineries, stor-

age tanks, power plants, electricity transmission lines) is located in coastal floodplains increasingly threatened by more intense storms and rising sea levels. Increased temperatures and drought across much of the nation will strain energy systems with more demand for cooling, and possibly dislocate and reduce food production.

9. ***Economic Impacts.*** Most US economic sectors in every region, including international trade, will be affected by projected climate change.

10. ***Social Support Systems.*** As coastal regions become increasingly populated and developed, more frequent or severe storms will threaten vulnerable populations in these areas and increase requirements for emergency first responders. Simultaneous or widespread extreme weather events and/or wildfires, accompanied by mass evacuations and degraded critical infrastructure, could require increased use of military and private sector support.

4. CNA/MAB Recommendations

Risks posed by predicted climate change "represent even graver potential than they did seven years ago and require action today to reduce risk tomorrow."

1. ***U.S. Leadership.*** To lower national security risks, the US should take a global leadership role in preparing for climate change. "At the same time, the US should lead global efforts to develop sustainable and more efficient energy solutions to help slow climate change."

2. ***Planning.*** US Combatant Commanders should factor in the impacts of projected climate change across the full spectrum of planning and operations, and focus on building capacity and sustained resilience with partner nations.

3. ***The Arctic.*** The US should accelerate and consolidate efforts to prepare for increased access and military operations in the Arctic, which is already becoming viable for commercial shipping and increased resource exploitation. To provide itself with better standing in resolving future disputes in the Arctic, the US should become a signatory to the UN Convention on the Law of the Sea.

4. ***Water/Food/Energy.*** Adaptation planning should consider this nexus to ensure comprehensive decision-making for these vital resources.

5. ***National Risk Assessment.*** Projected impacts of climate change should be integrated fully into the National Infrastructure Protection Plan and the Strategic National Risk Assessment. "As military leaders, we know that we cannot wait for certainty. The failure to include a range of probabilities because it is not precise is unacceptable." [Note: This responds to the deniers who insist on perfect or near-perfect certainty.]

6. ***New Metrics.*** The Department of Defense should develop plans to adapt to impacts of climate change, including developing metrics for measuring climate impacts and resilience. Climate impacts should be considered in all vulnerability assessments.

7. ***Recognizing Risks.*** The risks associated with climate change are accelerating, and the effects of climate change are becoming more than just threat multipliers: without action to build resilience in the most vulnerable parts of the world, the projected impacts of climate change will likely serve as catalysts for conflict. "On the positive side, recog-

nition of the risk can lead to increased collaboration; thus we see climate change also serving as a catalyst for cooperation and change." In the past seven years, the world has moved toward a greater understanding of the threats, and "most countries now identify climate change as a national security threat."

8. ***Better Data, but Wild Cards Remain.*** Improved models and better data collection systems are contributing to increased confidence levels of projected changes. Growing risks measured with greater accuracy since 2007 include longer and stronger fire seasons, an acceleration of sea-level rise (the 100-year storm surge associated with Superstorm Sandy can now be expected every 10-20 years), the continued collapse of sea ice in the Arctic Ocean, the movement of plant and animal diseases toward higher elevations and latitudes (posing a greater risk to crops from pests and invasive species), precipitation becoming more irregular and intense, increased drought frequency and stress to freshwater systems.

   Although scientists are coalescing around standard climate change predictions, some wild cards remain, the most significant being the melting West Antarctic Ice Sheet, which "has the potential to raise sea levels by several meters within a few decades." A second wild card is the ability of the ocean to adapt to increased acidification, which affects the entire aquatic food chain, and "could cause food shortages around the globe, with considerable security implications." [Note: Expanding the list of potential wild cards, and roughly assessing their likelihood, are unfortunate omissions to the list of recommendations. Especially important is methane released by permafrost melt in the Arctic, described in the AAAS report as "a key uncertainty."]

5. Comment on the CNA/MAB Report

The key word in this important report is "*acceleration,"* which has not been used by other official and quasi-official reports on climate change written by perhaps overly cautious scientists. Another distinctive and useful phrase in this report is "*threat multiplier,"* which is more likely to be seen by military planners than by scientists.

The theme of **Climate Change and National Security**, edited by Daniel Moran (GlobalForesightBooks.org Book of the Month, March 2013), is forcefully demonstrated by thoroughly assessing potential negative impacts of climate change in 19 regions and nations beyond North America. The US National Research Council has issued a recent report, **Abrupt Impacts of Climate Change: Anticipating Surprises** (GFB Book of the Month, Jan 2014), which considers the likelihood of 14 "wild card" changes in the ocean, the atmosphere, higher latitudes, and ecosystems. **Bankrupting Nature: Denying Our Planetary Boundaries** by Anders Wijkman and Johan Rockstrom, a recent report to the Club of Rome (GFB Book of the Month, Jan 2013), not only introduces the concept of nine "planetary boundaries" (such as ocean acidification and biogeochemical loading), but warns of a possible tipping point in the Arctic as permafrost continues to melt, and the melt becomes "self-accelerating." Thus, there are still more plausible threat multipliers and wild cards—if one bothers to look for them.

A further addition to these concerns is the probable advent of El Nino in Fall 2014, as reported by Nate Cohn in *The New York Times* (20 May 2014, A3). "Above average sea-surface

temperatures have developed off the west coast of South America, and seem poised to grow into a full-fledged El Nino event, in which unusually warm water spreads across the equatorial East Pacific. Models indicate a 75% chance of El Nino this fall, which could bring devastating droughts to Australia or heavy rains to the southern US." The Pacific Decadal Oscillation, which favors more frequent and intense El Ninos during its "warm" or "positive" phases, has been "cool" or "negative" since the historic El Nino of 1998. The oscillation between El Nino and its cold-water cousin, La Nina, is part of the reason for slower atmospheric warming in recent years. "But this year's El Nino might represent a turning point." Kevin Trenberth of the National Center for Atmospheric Research believes that it is reasonable to expect that 2015 will be the warmest year on record if this fall's El Nino event is strong and long enough. It could at least double the rate of surface temperature increases, and "unleash a new wave of warming that could shape the (climate) debate for a decade, or longer."

The CNA's Military Advisory Board calls for climate action now, and AAAS warns that the sooner we act the lower the costs. In **America's Climate Choices** (GFB Book of the Month, Oct 2011), the National Research Council called for global-scale efforts, due to "a pressing need for substantial action to limit the magnitude of climate change and to prepare to adapt to its impacts."

The Obama Administration has recently issued new rules to reduce CO_2 emissions from US power plants by 30% by 2030, compared with the 2005 base. But, as reported by Eduardo Porter in "A Paltry Start in Curbing Global Warming" (*The New York Times,* 4 June 2014, B1), the proposed rules—even if realized despite expected political pushback—"fall far short" of what is needed. "Rather than a bold stride into the vanguard of the battle against climate change, the new proposals from the E.P.A. offer just enough progress to shuffle along with a world that unfailingly falls short of delivering what is needed." Perhaps a strong El Nino in 2015 will sharply boost the necessary global response. Viewing climate change as a major threat to national security everywhere can certainly help.

6. Epilogue: Two New Reports

Shortly after preparing this review of the CNA/MAB report, yet another report on climate change was issued that has important parallels. The CNA/MAB report by 15 retired generals and admirals was introduced by a former Republican Secretary of Homeland Security (Chertoff) and a former Democratic Secretary of Defense to emphasize the focus on national security aspects of climate change.

Risky Business: The Economic Risks of Climate Change in the United States (June 2014, 36p, www.riskybusiness.com) is co-chaired by Michael R. Bloomberg (recent New York City Mayor), Henry M. Paulson Jr. (former Republican US Treasury Secretary), and Thomas F. Steyer (a retired billionaire hedge fund manager and head of NextGen Climate Action). The seven politically-balanced Risk Committee members are Henry Cisneros (former Democratic US Secretary of Housing and Urban Development), Gregory Page (Executive Chairman and former CEO of Cargill, Inc.), Robert E. Rubin (Co-Chair of the Council on Foreign Relations and former Democratic Treasury Secretary), George P. Shultz (Distinguished Fellow at the conservative Hoover Institution, former Republican Secretary of State, Treasury, and Labor), Donna E. Shalala (President, University of Miami; former Democratic US Secretary of Health and Human Services), Olympia Snowe (former Republican US Senator from Maine), and

Dr. Alfred Sommer (Dean Emeritus and Distinguished Professor, Johns Hopkins University School of Public Health).

"Our findings show that, if we continue on our current path, many regions of the U.S. face the prospect of serious economic effects from climate change…(and) our climate risks will multiply and accumulate as the decades tick by." (pp. 3-4) These risks to specific business sectors and regions of the economy include:

1. Large-scale losses of coastal property and infrastructure. "If we continue on our current path, by 2050 between $66 and $106 billion worth of existing coastal property will likely be below sea level nationwide, with $238 to $507 billion worth of property below sea level by 2100. There is a 1 in 20 chance that more than $701 billion worth of existing coastal property will be below mean sea levels by 2100, with more than $730 billion of additional property at risk during high tide."
2. Extreme heat across the US—especially in the Southwest, Southeast, and Upper Midwest—threatening labor productivity, human health, and energy systems. Demand for air conditioning will surge, straining regional generation and transmission capacity. Changes in temperature will likely necessitate construction of roughly 200 new power plants costing ratepayers up to $12 billion per year.
3. Shifting agricultural patterns and crop yields, with likely gains for Northern farmers offset by losses in the Midwest and South. Some states risk up to a 50-70% loss in average crop yields, agricultural adaptation being absent. (The Report assesses risks for six US regions, as well as for Alaska and Hawaii.)

In sum, "we call on the American business community to rise to the challenge and lead the way in helping reduce climate risks." To plan for climate change, we must plan for volatility and disruption. If we act now, "the U.S. can still avoid most of the worst impacts and significantly reduce the odds of costly climate outcomes—but only if we start changing our business and public policy practices today." However, the Risky Business Project "does not dictate the solutions to climate change…rather, we document the risks and leave it to decision-makers in the business and policy communities to determine their own tolerance for, and specific reactions to, those risks." (p. 7)

Although the Project offers no proposals for action, co-chair Henry Paulson, chair of the newly-formed Paulson Institute at the University of Chicago, followed up the report with an essay on "The Coming Climate Crash" in *The New York Times* (Sunday, 22 June 2014, SR1), warning of "a crisis that we can't afford to ignore" and the "profound economic risks of doing nothing," and calling for a tax on CO_2 emissions.

A few weeks after **Risky Business**, yet another report was issued by the Sustainable Development Solutions Network (SDSN) of the United Nations and the Institute for Sustainable Development and International Relations (IDDRI) of Sciences Po in Paris. **Pathways to Deep Decarbonization: Interim 2014 Report** (July 2014, 195p. www.deep-decarbonization.org) is a collaborative initiative of 15 Country Research Teams showing how individual countries can transition to a low-carbon economy and how the world can meet the internationally agreed target of limiting the increase in global mean surface temperature to less than 2 degrees Celsius before 2050. The 15 countries in this Deep Decarbonization

Pathways Project (DDPP) represent 70% of global GHG emissions. The Interim report includes 12 country chapters from Australia, Canada, China, France, Indonesia, Japan, Mexico, Russia, South Africa, South Korea, the UK and the USA. Chapters on Brazil, India, and Germany will be in the complete report to be published in September 2014.

The 2014 DDPP report addresses such topics as taking the 2°C limit seriously ("a solemn responsibility of the global community"), catastrophic climate change as likely under business-as-usual, CO_2 energy budgets for the 2011-2050 and 2011-2100 periods, emissions reduction trajectories to 2050, pathways to deep decarbonization (the High Renewable Scenario of 75% renewables, the High Nuclear Scenario of 60% nuclear energy, the High CCS Scenario), low-carbon technologies (advanced nuclear power, carbon capture and sequestration, advanced biofuels, energy storage and grid management, new industrial processes, negative emissions technologies), developing country-level DDPs, sectoral shares of total emissions, etc.

The 2015 DDPP report will take a broader perspective by considering integrated approaches, national and international financial requirements, and policy frameworks for implementation. "Above all, we hope that the findings will be helpful to the Parties of the UN Framework Convention on Climate Change (UNFCCC) as they craft a strong agreement on climate change mitigation at the Conference of the Parties (COP-21) in Paris in December 2015."

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As a final comment, everyone involved with forecasting, planning, policy analysis, new ideas and paradigms, investments, and general concern for the future should stay abreast of the accelerating threats of climate change and the wide-ranging responses that are necessary and likely in the years ahead. The seven 2014 reports covered here, written in a variety of styles for a variety of audiences, should help to point the way forward.

No single report is sufficient. The IPCC **Fifth Assessment Report** provides all of the scientific detail, but will be daunting to most readers. The US **National Climate Assessment** focuses on a single nation that plays a critical part in addressing the climate question. The 28-page **What We Know** report from AAAS is a simple, authoritative, and easily-read introduction to the problem by America's leading scientific organization. The Military Advisory Board report extensively reviewed here describes climate change as a "threat multiplier" affecting national security. The **Risky Business** report addresses various economic aspects in eight US regions. The interim **Pathways to Deep Decarbonization** report describes how 15 countries representing 70% of global GHG emissions can each help to keep global temperature rise to less than 2°C by 2050. And **The New Climate Economy Report** published in September 2014 will focus on urban development, agricultural land use, and energy systems. Many more reports will surely follow, especially if the many impacts of climate change worsen in the years ahead.

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Wood, Mary Christina. (2014) ***Nature's Trust: Environmental Law for a New Environmental Age.*** New York: Cambridge University Press.

Review by Robert Hoffman
President, WhatIf? Technologies Inc.;
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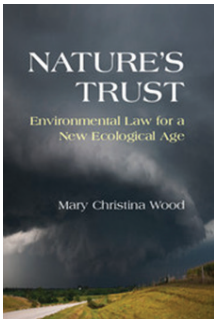

Nature's Trust is a must read for those interested in the issues of governance of the commons and the rule of law that were important topics for discussion at the Annual General Congress and Conference of the Club of Rome held in Ottawa, September 2013.

Mary Christina Wood, University of Oregon School of Law, makes the case that the spate of environmental laws enacted in the 1970s have not only failed to protect the environment as was intended but they have legalized its destruction. Many of these laws established agencies, such as the Environmental Protection Agency, with mandates to establish regulatory frameworks for protecting endangered species, ensuring clean water and clean air and for promoting stewardship of natural resources. Often these agencies issue permits giving corporate interests the right to take water, to release pollutants into air and water, to harvest fish, and to take timber from crown lands.

These agencies have been easy prey for corporate interests and the politicians whose campaigns are funded by those interests. A number of strategies are used that have been effective in perverting the original intent of these agencies. Insofar as regulatory frameworks are based on scientific consensus, corporate interests have succeeded in casting doubt in scientific consensus, thereby delaying the adoption of regulations and weakening their provisions. Senior agency officials are political appointees often appointed from senior positions in the industries subject to regulation, resulting in failure to prosecute violators, reduced enforcement effort, lack of due diligence in permitting, suppression of agency scientific findings, and dismantling of monitoring programs. The agencies are fragmented and overlapping in jurisdiction adding layers of complication and opportunity for corporate interests to obtain permits from one agency that negates the mandates of other agencies.

The establishment of these environmental laws represented a major shift in power from the judiciary to the executive. The long established legal principle known as public trust doctrine rests on a civic and judicial understanding that some natural resources are so vital to public welfare and human survival that they should not serve private interests to the exclusion of the public good. Under public trust doctrine, such natural resources remain common property belonging to the people as a whole. Such assets take the form of a perpetual trust for future generations. Public trust law demands that governments act as trustee in controlling and managing natural assets. Governments are obligated to promote the interests of citizen beneficiaries and ensure the sustained resource abundance for society's endurance.

The author concludes that instead of incremental reform, the present circumstances call out for a fundamental reform that infuses all government decision making with its responsibility for stewardship. Citizens must tap a wellspring of legal obligation to compel their governments to act accordingly.

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Golden Fleece
Higher Education and the New Society of Third Millennium

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Abstract

A complex vision on higher education in the 21st century should not neglect the experience of two millennia of civilization, in which democracy and education have enhanced and sometimes even opposed each other, reflecting the contradictory nature of the human being. The democratization of knowledge has been a key component of the progress of civilizations, in a direct relationship with the social environment. Globalization has opened a market without frontiers for the education system, but this fact involves the risk of transforming universities from institutions molding the spirit and consciousness into institutions marked by the obsession for profit. The relationship between university-politics and university-moral in the contemporary world approaches the topic of academic discourse to avoid both conformism and negativity, emotional excitement, vulgarization and populist concessions, and focusing on the value of truth in a society that seems to accept a "relaxed cohabitation with a lie". The responsibility of professors, researchers and students in promoting higher education based on moral values can create a new arbitration between power and knowledge, which would reconfigure a framework where each individual cannot just "be", but also "become".

1. Education: Expansion and Hostility

Almost half a century ago, Pink Floyd band had an explosive success with their song entitled "*We Don't Need No Education*". In 1968, students on riot in American campuses or in the great European universities were shouting, as democratically as possible, "*il est interdit d'interdire*", militated against the Vietnam War. They were also protesting against famous traditional courses, such as archaeology or classical studies. In March 2006, in Paris, young rebel crowds had set cars and police stations on fire. They also set schools on fire and destroyed university buildings, starting with the Sorbonne, old symbol of the *Republic of Philology* in Europe and in the entire world. Consequently, democracy has generated today policies that have led to an unprecedented expansion of education as a system, and also to anarchical protests against the expanding system. Why has that been so?

Higher education for a democratic society in the 21st century is a topic we can talk about either in prefabricated and politically correct formulas or, on the contrary, we can profoundly reflect upon it in an attempt to comprehend not only what connects the two concepts – democracy and higher education, but also what might disconnect them and even contradict them. What do we, democratic university professors and staff, need to do if we wish these

two concepts to enhance each other? I believe that we should start by elaborating on a few theses, which we can then debate further. I would like to propose a few axes for this debate: the first refers to *upstream* education related to the academic stage, the way past and social environment that put a mark on the university; the second examines the contribution of universities to democracy within the societies which developed them – meaning *downstream* education, and the third would refer to universities themselves and their perspectives in a society of knowledge and of a real democracy, as we all undoubtedly desire.

We can understand that it is natural for any educational process to meet a certain resistance from its beneficiaries. We can understand that the European adolescents and youth aspire to have all the advantages of a competitive world, but they refuse uncertainties. We can notice that in a society that made higher education its main social elevator, education is challenged at the very moment when the elevator is no longer functional. We may become sad, or we can try to start the discussion over from its beginnings in the 19th century, a century that empowered education, and most particularly academic education, which proposed meritocratic system instead of favoring hereditary elites of the old aristocratic regime.

It may be possible that hostility against school, as it sometimes appears nowadays, arises because the educational system is disconnected from the realities of contemporary society. I do not refer here to the often called-upon adjustments to the labor market requirements. Numerous experiences and experiments have proven that the maximum adaptation to these exigencies is not fit for the young beneficiaries of an early specialized education – here, we talk about IT or other modern specializations; or, on the contrary, those who have passed through a formation intelligently centered on the traditional fundaments of science and culture and who thus gain a flexibility that allows them to further choose the highest fields within the professional hunting field.

2. Reinventing School

In order to avoid these expensive confusions, we must reinvent the school so that it will know how to preserve itself and use its passionate interest for exploration of new knowledge. It must be a school that transforms every child's passion for stories into an ability to use adequate words. It must be a school that puts in service of the didactic process all the childhood colorful fantasies, and the explosive inventiveness of adolescence. Briefly, it is about a school that focuses on the joy of learning. Such a school integrates and does not compete with the almost infinite information, which means that today's society is developing fast. We will have to reinvent the school so that it will not exclude, but include. It would take into account every child's and teenager's talents, it would offer him or her a customized path that will develop his or her personality to the full. Under present circumstances, of an informatics and information revolution, the biggest effort necessary to reinvent the school radically is not one involving economic effort, but one concerning intellectual effort.

Universities that are, at the same time, beneficiaries of the educational process and its latest achievement, have the duty to reflect upon this vital issue and fight for a real democracy that is based on knowledge for a new humanism, capable of radically rebuilding our contemporary society.[1]

Will this process be adopted by our democracies? Will the families, the local communities, the mayors, the local administration, the governments, parliaments, be willing to take the

chance to support and finance such a radical reform, to open the way to an adapted, flexible education, able to mould itself on any child's, adolescent's, adult's or the active third age's needs and potential?

3. The Argonauts and the Knowledge Adventure

One of the most fascinating legends of the world, *Argonautica*, tells the story of 50 heroes of Ancient Greece – amongst them, Hercules, Orpheus, Theseus, Castor and Pollux – who were sailing on Argo ship, built by Jason, who was claiming the throne of Thessaly, looking on the shores of Pontus Euxinus (today the Black Sea) for the Golden Fleece – symbol of wealth, power, and maybe even happiness.

Known especially from Apollonius of Rhodes's poem written in 3rd century B.C., the legend was seen as an initiating journey and interpreted either as a heroic action with the purpose of discovering new wealthy territories, or as a metaphor of knowledge, both supported with strong arguments.

The Argonauts' itinerary can be easily followed as the places where events happened keep, even nowadays, names related to the legend's heroes; and Strabo (60 BC – 24 AD), three centuries after Apollonius, described the land of Colchis, target of the expedition, as the place "where the gold of mountains is carried away by rivers".[2]

I myself have halted in most of the places mentioned; and in 1998, when I made my first visit to Georgia, I asked my host, President Shevardnadze, to facilitate a stop in Kobuleti, near Batumi, where the first stop made by the Argonauts on the Eastern shore of the Black Sea is stated to have taken place.*

As a geologist, the Golden Fleece of the ram Crius Chrysomallus was familiar to me and I understood that the expedition was the description of the first "gold rush", from south to north, as rivers with alluvionary gold are placed in the igneous and metamorphic rocks in the Carpathians, Balkans and Caucasus Mountains around the Black Sea on its West and South-Eastern side and are missing in the area of the Aegean Sea, where mountains are mostly made up of sedimentary chalk. The time when the legendary action happened preceded the "auri sacra fames" fever in the European Middle Ages, the "Western race" in North America and the frenzied expeditions in search of gold in Canada and Australia in the modern ages.†

Gold could not have been the journey's only practical target. Roman poet Publius Ovidius Naso (43 BC – 17 AD) exiled in Tomis (Constanţa in today's Dobruja region), city founded by Greeks in the 7th century BC, has written again the story, with the specification that Tomis would have been the place where Aeëtes, king of Colchis, buried his son whose remains were spread by the Argonauts in the sea in order to have enough time to run through Bosphorus back home with the stolen prey. Over there, where the Istros (Danube) river was flowing into the sea, the Greeks were impressed by the golden wheat crops, another "Golden Fleece",

* In the area of Riom river, the old Phasis mentioned by Strabo, was found a big thesaurus of gold objects, after three decades of archeological excavations, in a place where Vani city was located in ancient times. Researchers led by Professor Otar Lordkipanidze from the Georgian Academy discovered gold objects weighing tens of kilograms, but mostly showed a remarkably refined art, that belonged to a local culture.

† During the first geological field applications in the Romanian Apuseni Mountains, a branch of the Carpathian Mountains, I saw the so-called "harchiu", a sheep fur laid stretched on an inclined area in the fast course of the river with alluvionary gold tiny pieces of gold were clinging to it. Then, they were washed again in a gold washing cradle, sort of a cherry tree pot in which by horizontal moves, sand is separated from the silt gold. It was mostly through this method, and not using mine galleries made by Romans, the Dacians (descendants from Thracians) have gathered the 350,000 kg gold treasury Emperor Traian carried to Rome as war trophy in 106 AD.

rising from a fertile land they did not have at home. The Greek merchants would use this wheat, cultivated by the Scythians, to feed their cities in the Aegean and Ionian Seas for centuries.

But could we reduce the legend of the Argonauts only to a historic process of colonizing the Black Sea shores, by the Greeks in Mycenae, which they called Pontus Euxinus? Have the heroes of so many myths, sprung out of a fantastic imagination, been brought together just for materialistic reasons, to assure food and accumulate wealth? Or is it about an extraordinary adventure of knowledge? And I do not talk about only discovering high mountains covered by perennial snow (Caucasus), a dark and cold sea (Black Sea), and a huge and large river (Danube) – different landscapes from the ones they knew until that moment. I do not refer here either to discovering foreign people, with unknown languages, religions or customs. Nor about the shock of meeting the Paleolithic and Neolithic Ages' culture and art, which are unexpectedly refined on these realms.

I am thinking about knowing the dark side of human nature. After all, what is so interesting about this legend? It is about planning a theft and making an association in view of an organized crime, as we would say using the contemporary juridical terms. The teller shows us deceit, betrayal, fratricide, committing horrifying crimes like when Medea slays her hostage brother and chops him into pieces, then throws him into water in order to delay the tentative of their unhappy father to retrieve his children and stolen goods. All these made under the blessing of Gods as perverted as people whose destinies they were governing. Why should we know these aspects of the human being? In order to understand that any educational process is a process of taming what Plato was calling "the wild part of the human being" and of bringing out, as Socrates was proposing through his "Maieutics", its good side.

4. The University and the Citadel

Teaching, knowledge and skill are more precious than gold, and all roads are open to those who have gained the knowledge, wise Solomon warned us.*

That is what makes me think that in no global vision, which can create sparks when we address political, social or economic issues, should the University be left apart. It plays an essential role in shaping the future we aspire for, a future which cannot be separated from education and knowledge.

Sooner than any entity of the ancient world, Athens brought the academic community and the spirit of the Citadel in the circuit of perennial values. *Academos* and *Polis* are the fundamental roots of European vocabulary used in schools, literature, social and family life even today. The Greeks were among the first to perceive the virtues of academic dialogue to the benefit of propelling cities' policy.

Modern university, a creation of medieval Europe, proved to be the institution with the greatest influence on accomplishing intellectual education and human personality. Of the three powers recognized by medieval European society – *regnum, sacerdotium* and *studium* – political power, the first, has undergone profound changes; the second preserved its

* "Receive my instruction, and not money: choose knowledge rather than gold .They are right to them that understand, and just to them that find knowledge," The Holy Bible, Containing the Old and New Testaments, New York: American Bible Society, 1999, *The Book Of Proverbs,* Chapter 8. The preaching of wisdom. Her excellence.

structure in the Roman Catholic Church, expanded all over the planet, but lost the monopoly of preaching Christian doctrine; only the third, *studium generale*, kept both patterns and its social role and functions throughout its long history. No other European institution had the force of attraction and radiation of a pattern widespread throughout the world, as the traditional European university did.

At first, the University was a corporation, a *universitas* in the meaning given by the medieval law, i.e. a community of students and magisters whose essential point was the search for Truth. It was not just about absolute truth, of Christian revelation, but about the complex truth, crossed by doubts and dilemmas of the human reason. In the University, ideas triumphed not one over the other, as it happens in ideologies, precisely because the fundamental vocation of the University is the Truth. Modern university has the merit of taking the confrontation of opinions and the freedom of speech outside its walls, of making them enter the human consciousness and behavior. It has the merit of proposing a certain way of treating human relationships to the society. Consecrated values, housed first in the University City, were gradually adopted as fundamental values of history's democratic age.

The academic milieu constitutes even today the most educated part of the civil society. However, the academic community seems, in a way, less connected to the present realities than the civil society generally. When the matter you work with concerns mainly past actions, the present becomes a time for researching the past with an eye to the future. The past and the future together are somehow inseparable. Indeed, the study of the past should remain pure archeology if it would not generate a project, if it would not become a challenge to potential wonders and interrogations and, ultimately, a memory of the future.

The University, conceived as a great forum, will last as a part of the democratic world as long as it will continue to promote critical thinking, reason, pluralism, human values. The confrontation of ideas in a critical, rational manner requires not only accepting the differences, but also paying the right attention to others' views. Because concepts and experience might become waste if there were no interest, interrogations and freshness of young thinking, to give debates color and to generate novelty, meaning the *creative technologies* the knowledge society needs.

5. Democratization of knowledge

In many documents and working papers, the term *knowledge* is considered to be universally understood, but in fact there are many competing significations on the market. Too many of these definitions confound information and knowledge, reducing the realm of knowledge to an accumulation of technical skills. Or, the significance of the concept of *knowledge* as a driving force of the contemporary world must be as deep as possible, in the most comprehensive, philosophical meaning of the term. Knowledge is a unique resource, never exhausted, but, on the contrary, increased both by use and by sharing.*

* In his Dissertation on the Canon and Feudal Law, published in 1765, one of the Founding fathers of the American democracy, John Adams, the first Vice-President and second President of the USA, wrote: Liberty cannot be preserved without a general knowledge among the people, who have a right, from the frame of their nature, to knowledge. . . . The preservation of the means of knowledge among the lowest ranks, is of more importance to the public than all the property of all the rich men in the country. . . . Let us tenderly and kindly cherish, therefore, the means of knowledge. Let us dare to read, think, speak, and write. Let every order and degree among the people rouse their attention and animate their resolution. Let them all become attentive to the grounds and principles of government. . . . Let us study the laws of nature . . ., contemplate the great examples of Greece and Rome. . . . In a word, let every sluice of knowledge be opened and set aflowing.

In a work dedicated to the information-knowledge ration, I have supported the idea of looking at modern knowledge as *a territory of synergies* where each domain of research functions as a broth culture, a nourishing medium for the other domains of knowledge: history for the sciences of the Earth as well as geology for history, classics for physics, and ethics for biology or vice-versa.[3]

> *"Bare information opens a royal way to massification, whereas knowledge stimulates the harmonious development of responsible individualities."*

Knowledge should never be reduced to technologies, research and development (R&D). It includes fundamental sciences, humanities, social sciences and education – all forming the ***culture of knowledge***. Modern knowledge cannot and should not be reduced to a technical compilation and use of information, but has to be coextensive to the depth and breadth of human wisdom accumulated through millennia. Bare information opens a royal way to massification, whereas knowledge stimulates the harmonious development of responsible individualities. There is no other antidote against de-humanization but an individual capacity for building information into knowledge.

That is why we need to offer the most gifted all the opportunities they need to blossom in their own field, and to exchange ideas in a variety of related areas: libraries, scholarships, internships, jobs. But we must also stimulate a dramatic widening of recruitment for the most innovative domains of science and creation. Historically speaking, such bursts of new human resources in the realm of knowledge were essential for the swift progress of humanity.[4]

Amongst the many theories that strive to explain the different rhythms of progress in world history, I think that the prize should go to those who consider that the *democratization of knowledge* is the basic component of the progress of civilizations. Think just for a second about the innovative force of the ancient Greek culture in relation not only with a new dynamic of social mobility, but also with the amazing accessibility of the alphabetic writing as compared to the hieroglyphs. Think about the invasion of new social forces in the realm of science in the 19th century, or of the acceleration in knowledge due to the generalized integration of women in all components of higher education.* These are examples motivating us today to identify new ways for integrating youth from the marginal areas of our own societies and of the world in general in universities.

6. Education: Costs and Benefits

When we refer to financing education, we should remind ourselves that the first character the Argonauts met on their journey was Phineus, who was empowered by Gods with the ability to predict the future, but later, the Gods, fearful of the power he might wield of this gift, blinded him. And thus Phineus, who could see the future, was no longer able to see the

* A hundred years have passed in a special conjuncture (discovery of Radium and the tragic death of Pierre Curie). Marie Curie had the chance to become the first woman professor in a European University (Sorbonne University), then the first woman accepted to be a member of the Academy (the French Academy). We often forget that in 19th century England, women not belonging to the aristocracy did not have the possibility to learn how to write and read.

present he was living in. Moreover, the harpies stole the food which was usually in front of him so that he would remain forever hungry! As Phineus was also gifted with the ability to find solutions for problems in the future, he suggested that the Argonauts chase away the harpies who tortured him. In return, he would teach them how to sail through the rocks of the Bosphorus straight, which were clashing against everything passing through the place headed to Pontus Euxinus. The story of Phineus appears to me quite instructive for those who have the mission to lead and reform the higher education system, who focusing on anticipating changes, might risk losing contact with the present or, even more, losing the necessary funds for achieving their visionary or strategic projects.

The issue of financing education could tame the budget *shrews* in an apparently paradoxical manner, meaning not by restricting access to studies, including higher education, but on the contrary, through a larger and democratic opening of the school gates at all levels. At least these will be the results if we take into consideration the projections published in a study made by McKinsey Consulting Company on education in the United States. The study takes as starting point the situation presented in a report in 1983, entitled *A Nation at Risk,* which was drawing attention even at those times, to the increasing mediocrity within American education. The McKinsey study calculates what would have been the possible earnings during the preceding 25 years had the measures put forth at that time been implemented. Had the United States attained the educational performance of Finland in 1998, the GDP of the United States in 2008 would have been higher by at least 1.3 trillion dollars and up to 2.3 trillion dollars. Had graduates from disadvantaged ethno-cultural groups such as the Afro-Americans and the Latinos reached their white colleagues' level from 1998 onwards in terms of performance, the GDP of the country in 2008 would have been higher by between 310 and 525 billion dollars, and had the difference between the quality of education for youngsters from families with poor income and the rest of the population decreased over 10 years ago, the GDP in 2008 would have risen by between 400 and 670 billion dollars.[5]

I do not know if such studies have been made for countries such as Hungary, Poland, Bulgaria, and the Czech Republic or even for Great Britain or France. What I do know, without any statistics, is that in my country there are many talented adolescents who never succeed in realizing their potential because of an unhappy combination of objective – basically economic related – and subjective situations, especially related to the family and social environment they live in, and those, for many reasons, do not offer them the enthusiasm, the motivation and the support necessary to perform in an educational system based on the 19th century principles of excellence, which were based on rigid evaluation criteria. These criteria automatically isolate those gifted with special artistic talents (a child having a perfect ear for music, but with no native talent for mathematics has no chance to become a prize-winning pupil in mathematics). Besides, despite the progresses in the social sector, the chances of those coming from a disadvantaged environment are low, depriving the progress of society.

There is no doubt – the most profitable investment is one made in the educational system, but under an essential condition: that financing should not just increase, but should also be correctly used. Not to restrain the democratic basis of academic institutions and communities, nor their contribution to the democratic development of society.

Education costs. But has anybody ever measured how much the lack of education may cost? I cannot provide an exact figure, but I can say for sure that the number of lives lost due

to dropping out of school early, to juvenile delinquency, or just to boredom and frustration, costs the entire society not only the unfulfillment of personal goals, but also a huge amount of money.

7. New and Old Imbalances

The research programs new EU member states accessed also bring about traditional lack of balance – between the "tough" and the "soft" sciences, between theory and practice, between the Anglo-Saxon and the continental European traditional system; last, but not the least, between the national element and the internationalization of higher education.

Seen from this perspective, the present financing system of the universities in Central and South Eastern Europe dramatically points out the inequalities inherited from the recent past. Even though the new democratic governments allocate 5 or even 6 percent of their GDP to education, we are talking about a share of modest GDP and about a system that has been poorly financed for decades.

From among such distortions, I will choose only the one that places at risk traditional fields of excellence in the Euro-Atlantic academic community. However we speak mainly about less expensive fields that need only a few books and a computer or even because of that, a great part of the humanistic sciences, particularly those situated beyond the acute up-to-date characteristics – to which are often subjected projections regarding the educational system and research – which are less and less supported in the study and financing programs. The history of civilizations, the languages of the old documents, the rare languages, and the history of philosophy may become, in today's society, more and more endangered knowledge species. This happens also because of the power games played within the world of academic decision makers. In Romania, for 50 years, it has been constantly repeated that these represent "bourgeois prejudices". Today, we see that in Western countries the decisions are being taken by the post-68 generation, with all its qualities and also with all post-colonial and post-modern prejudices. We cannot neglect the fact that it also happens as a consequence of democratizing the decisions in the education field, and of the pressure created by the labor market and the consumer society.

8. Memories from Communist Times

We, the university professors from the East, come from a very different background when compared to the world of open competition for grants. In the Communist regimes there was, of course, a struggle for power between political groups of the nomenclature, having branches within the academic world. Let me evoke here the example of sociology, forbidden for a period of time, later rehabilitated for a few years, and then isolated again from 1978. In its essence, the arbitrary distribution of the resources came from the ideological options of the Communist party. Thus, the massive support enjoyed by the technical sciences reflected a very simple idea: "the more engineers exist, the greater the production can be." Back in the 1990s, 67% of the university graduates in Romania were engineers. The rest (33 percent) were physicians, professors, jurists, military people, artists, priests, according to the new requirements. On the other hand, during the Communist regime, a researcher could have been sure that, unless he broke the party rules, he could not obtain finance for the research he

wanted (or a modest, but comfortable, life of miming research with a big economy of effort), explaining thus some nostalgic feelings from within the academic field for the former regime. We had the opportunity to examine critically how the research and the university studies were organized in former East European Communist countries, where they were imposed on us through a political system we had not adhered to. But we also have the capacity to see the weak points of the competition-based system developed in the universities of the Western democracies.[6]

9. Academic Competition

The terms used within academic competition in the contemporary world distinguish many positive qualities, not least to mention limiting subjectivism, abuses, or the absurdities generated by the political guiding of intellectual life. However, it does not mean that we would live in a perfect world. But, far from it. I cannot deny the virtues of academic competition. In essence, this is an effect of democracy.* In Athens, not only great architectural projects of the Parthenon or the Propylaea, but also the well-known literary works written by great poets and playwrights in the age of Pericles were financially supported following a public debate in the People's Assembly. I wondered for a long time if Pascal would have ever won a research grant, no matter how small, given the present criteria. Especially, given that he did not write in English…

10. Shanghai University Ranking – A New World Championship?

One of the issues that concerns more and more visibly the academic communities in the world and the societies that developed them is, in the last years, the issue of *World-Class Universities*. The tough competition generated by globalization touched the academic world long ago and now this competition has elaborated its instruments, concepts and weapons, and has become obvious even in the eyes of public opinion, much more sensitive towards the Olympics environment, say even in boxing matches or basket-ball tournaments, interwoven between world university centers, than towards the essence of the issue: what entails being a worldwide competitive university? Why should we make the effort to enroll our own universities in this race and at what price?

It is not only about money, although we are talking about a great amount of money. The indisputable figures provided by a study undertaken by the World Bank in cooperation with the International Bank for Reconstruction and Development (IBRD) demonstrate an undoubted existence of a constant relationship between the level of general financing in the *Shanghai ranking* universities, professor's remunerations, research grants and the excellence of their results.[7] Obviously, a research team that attracted huge grants in the past has all the chances to do so also in the future and a laboratory led by a Nobel Prize laureate will attract, most of the time for good reasons, funds beyond comparison and more significant than those allotted to a quasi-anonymous laboratory located in Eastern Europe.

* Once with the initiation of the European integration project, a series for inter-university cooperation programmes became operational: TEMPUS, ERASMUS, which supported universities from the former communist countries. Currently, the Marie Curie Actions aims to support long-standing prestigious Central European universities to preserve their status of centers of excellence. The fact that the European Union allotted the ELI-NP (Extreme Light Infrastructure - Nuclear Physics), the most advanced (and expensive) research project in the field of physics worldwide, to Universities in Central Europe, among which is the University of Bucharest through its Center in Măgurele, represents an excellent sign of a European integrative vision within the scientific research field.

The hierarchy of universities in the Shanghai rankings has not changed significantly since its first publication. Why is this hierarchy so rigid? An answer is provided by Adrian Bejan, a professor at Duke University, which is permanently present at the top.[8] He developed the constructal law, and believes that ideas, human beings and education flow across the globe as water does in river beds. When a researcher appreciates and uses the work of an author, the idea flows from author to user. It flows "better" because of the long rooted history and geography of the flow network, which is due to the evolutionary process that led to a shared use of information at the present level of efficiency. This is why the user from one end of the globe seeks, finds, and trusts ideas to young professors educated in famous universities in other parts of the globe. There are many intermediate channels along each route: other universities, disciples of known professors, magazines, books, libraries, a hierarchical design that concentrates the main scholars in some schools. It is a design more efficient for the flow of ideas, one that spreads bright lights evenly over all schools. Members of the University Boards promising to change their rank by the simple theft of a name from a top university are defeated every time by nature. The same fate awaits those who want to change ranks by artificially building something big, as long as it is not required by the natural geography that created the university flows tapestry, covering our world. If size does not matter, age does. For older universities have dug the first channels that attract those who generate new ideas and develop disciples in order for those to produce and transmit new ideas further in the world and to the future. This does not mean that the future is closed to the others. Large groups, national priorities and well-equipped research centers overwhelm individual researchers. Managers and those with a thirst for reaching higher classification encourage this trend. However, the individual researcher will not disappear for the same reason that the invention of automobiles did not mean the end of walking, which still today is a good way to move in many circumstances. Similarly, insects were not replaced by birds as the global flow needs components of all dimensions.[9]

The rankings for universities of American origin or those similarly developed (Shanghai ranking) met legitimate objections since they were allegedly supporting some criteria at the expense of others, maybe equally, partially or through non-transparency. It seems to me that even more relevant are their inadequate characteristics in relation to the education systems based on a different kind of relationship with the society, as it happens to be in the case of the European education system.

That is the reason why in January 2013, the European Commission launched a new procedure for an international ranking of universities, stating that this "multidimensional" ranking of universities appears within the context of current approaches in the classification of university performances focusing "in a disproportionate manner" on excellency in the research field. The new classification will assess universities in five different areas: reputation in research, quality of teaching and learning, international orientation, the success of knowledge transfer (e.g. partnerships with enterprises) and contribution to regional development. It is to be expected that this will offer students and institutions a clearer image of the university performances and will help them choose the University best suitable for them.

I would like to draw attention to the fact that a risk might exist, on the lines that after the world states have been classified based on indicators specific to commercial enterprises, universities would be classified according to the same pattern. Ignoring traditions, mentalities,

social and religious behavior in favor of the Professional and Interpersonal Behavior Ranking (PIB), GDP (PPP), GDP (nom), Gini, HDI etc. lead to quaint rankings and may lead to wrong decisions even in the financial-economic sector. When speaking about universities, ignoring traditions, experience, as well as the relationship with national environment could lead to more serious consequences, as this approach affects not only diversity, but creativity in the end. Creativity is the basis of the new knowledge society.

"The need to modernize universities rapidly should not make us overlook the fact that any true university is a pillar of democratic society, so long as reason, pluralism and tolerance are values underlying its intellectual approach."

11. Market World versus Values World

We live in pragmatic times, dominated by principles of efficiency. A world of markets has been brought into discussion and is still a largely debated topic – either it is about goods, capitals or labor force. Certainly, the market world, which seems to have a solid present, will not have a viable future if it is not backed by world values. That is why I am convinced that it is essential for us to have a better knowledge of ourselves; we need to exchange and share more and more of our experiences and products, and the same holds true for an increasing number of professionals, students and pupils, more and more books, shows and exhibitions. We will thus discover what unites us. And so we will enrich the unique spiritual experience knowledge and diversity sharing offers us.

Beyond its right or left oriented ideological wrapping, totalitarianism has taught us a history lesson. Its failure is undoubtedly the failure of excesses made by state authority; it is blowing the cult of state, the omniscient, omnipresent and omnipotent state. Who would be more capable than those who learned this lesson, at the cost of infinite suffering, to rethink today citizens' sovereignty? It is about a principle placing the citizen at its center, and not a legal fiction which is the state, on whose behalf the greatest atrocities were committed.

Following this road further on, politics cannot be a way to organize relationships between friends and enemies; but on the contrary, it should be understood as the best way to be together, as a set of practices that are not intended to separate, but to unite all major components of society around a common project. This project must place human value at its core. By stating this, I only name the task the University knows to fulfill better than any other modern institution, as it has been doing for centuries.

The lesson drawn from the vitality of academic dialogues, education, culture, and amphitheatres and the balance of university citadels can be the counterforts, the new 3rd millennium society needs.

I cannot help myself from seeing how Universities are threatened and assaulted by market economy. Of course, as a man who has spent almost all his adult life in the university, I cannot

express myself against modernizing infrastructure and bringing certain performance criteria in university life. I think, however, that too much importance given to immediate effectiveness, as well as engaging faculty, departments and teachers in a restless race for obtaining financing would mean a risk diminishing very soon the original vocation of the University.

The University is not and should not become just some institution of the market economy. If such a thing were to happen, it would not be a place of freedom, reflection and debate, and the stakes of academic education – the human person – would significantly diminish. The need to modernize universities rapidly should not make us overlook the fact that any true university is a pillar of democratic society, so long as reason, pluralism and tolerance are values underlying its intellectual approach. Let us not sacrifice the quality of communitary relationships weaving between people involved together on the path of knowledge, on the altar of technology and market economy.

Pre-eminence of reason, freedom of conscience, tolerance and pluralism represent high *technology* that the University can provide to the New Society.

12. Brain Market

During the last decade of the 20th century it was often said that states' success in the global competition will not be primarily determined by the intensive use of natural resources, but by their level of well-educated human resources. Switzerland, Denmark, Japan are just classical examples, and now it is appropriate also for the United States of America, a country with intense exploitation of their natural resources. We can see that the United States has outsourced a large part of its industrial power (except military industry) as its military superpower will be less and less useable due to democracy spreading around the world. However, I believe that the US will continue to be a superpower in scientific research for a long time from now on.

How was this formidable American scientific power created? In the Middle Ages and during the age of Industrial Revolution, scientific theories and inventions created in the European universities generated human progress. The explosion of research in American universities occurred relatively late, during World War II, closely related to military orders, the first exodus of scientists running away from Nazi persecutions. It was followed by a powerful "brain drain" from Western European countries impoverished by war losses.

During the Cold War, the Soviets launching the Sputnik was a serious hit to the American ego, causing an impressive increase in financing basic research as well as a growth in the number of staff employed in the field. The superiority of the American system over the Soviets with regard to the scientific competition was seen not only in the cosmic race, but especially in the ability to quickly transfer space military technology into civil technology, for the benefit of U.S. citizens, as well as citizens of the entire world.

At the same time with the collapse of the Soviet empire, the biggest brain drain of educated people occurred from Eastern Europe to the West, especially to the U.S. During the last 25 years, the presence of researchers educated in East European universities with old cultural traditions has impelled creativity and diminished the effects of excessive specialization and of the European lycée superiority over the American *high school*.

I was often challenged to condemn the harmful effects this huge brain drain had over the former Communist countries and urged, as President of the National Council of Rectors and then President of Romania, to propose measures to limit it. My reply was that, at least in my country where during the Revolution in 1989 thousands of people gave up their lives for attaining freedom, brain drain should not be possible; and it is the duty of those who have remained in their country to produce reforms capable of making their country attractive to those who have made brilliant careers in the West to return.

It was much later that I realized that besides the moral approach, there is also a financial problem, one of funds invested in the education of these young people. If in the United States of America, universities enlisted in the *Top Ten* and the *Ivy League* are mostly private, in East European countries, and also in Western Europe (Germany, France) universities are funded from the state budget. If we take into account the amounts used to pay annual fees in the U.S., of approximately 30-40,000 USD for the Bachelor's, Master's or Ph.D. degrees, we realize the advantage American universities have from receiving researchers who obtained these graduation, Master's or Ph.D. diplomas in East European countries, where higher education in state universities is free of charge.

Although rapid, the post-1990 brain drain followed a certain sequence – professors (including myself), followed by lecturers, assistants, doctors, students attending doctoral courses, graduates and students – for recruiting to take place even among high school graduates with outstanding results. Only a small percent of them returned home. Unfortunately, this massive exodus on all levels exactly struck what was the most precious thing of Eastern European universities: *national research school*. Universities rightly called "national", represented the place where novelty, experience and traditions were passed on from one generation to another and irradiated in the entire society. Let us hope that the amazing capacity for regeneration of Eastern intellectuals, proved by its survival after the physical decimation of scientific and cultural elites in Gulags of the 50s and 60s, will be functional this time too. For now, the effects of exodus are to be felt.

It is to be mentioned that meanwhile, after the end of the post-Communist transition, a new phenomenon emerged in the *brain market*: if during the first two decades we could talk about *grants* for outstanding Eastern students offered by Western universities, now, a rich class of oligarchs or even a middle class has appeared in the Eastern countries, and a new market has developed, a market for those willing to pay no matter how big the fees are for their more or less talented children to study in private American or British universities.

The paid recruitment system is rigorously organized: job fairs, advertising, credits, and part time job fairs. To hire graduates with diplomas, companies turn to *head hunting* in East European countries. A so-called visa lottery has been organized for immigrants trying to enter the USA whose only winners are, obviously, holders of diplomas useful for the US employers' fields of activity.

Of course, all the actions are transparently made and in compliance with market rules. Ancient indigenous rules – relationships, acquaintances, bribery – are not applicable. The slogan "You are not what you know, but who you know", which is still applicable to these countries, is not applicable to intelligent industrious young people, who can build their individual careers in Western countries and decide their own destiny, which is admirable.

If the migration of specialists from Eastern Europe towards the West may be individually beneficial, in general terms, the massive import of "grey matter" with small costs from the East robs the high educated resources of these countries, leading to consequences that might become serious in the long term even in the field of education.

A special situation is related to migration of physicians. I am talking about this group as beyond the personal or group interest. The migration problem seriously troubles the current national health systems of former Communist countries in Central and Eastern Europe. Romania may be taken as a case study. According to official data, in 2014, 39,896 doctors were working in the health field in the country.* According to Eurostat, the average number of Romanian physicians per 1,000 inhabitants is 2.4 specialists, while the average number of doctors per thousand inhabitants in the European Union is 3.4. In spite of this discrepancy, the doctors' migration rate from Romania to West European countries is 9% compared to the average European rate of 2.5%. After the last official count in January 2014, we find that over 25,000 physicians left Romania in the last 5 years alone. The President of the Carol Davila University of Medicine and Pharmacy in Bucharest recently warned that migration is also diminishing the number of professors teaching within the University and likewise is the quality of the pedagogical deed in the Romanian health education, which proved highly performant during the last hundred and fifty years by preparing highly qualified doctors not only for Romania, but also for several countries in Eastern Europe (as the former German Democratic Republic), Israel, the Balkans, Middle East, Maghreb or Latin America.

Coming back to the topic of financials, I would mention that the Romanian state spends 7,100 lei (2,132 dollars) per year for a student attending health graduation courses and 14,910 lei (4,478 dollars) per person for an advanced studies and qualifications. Thus, in order to prepare a graduate health practitioner (6 years), the cost is 42,600 lei (12,794 dollars) and for resident physician (3 years) the cost is 44,730 lei (13,433 dollars). The total amount rises to 87,330 (approximately 20,000 euros and 26,227 dollars). Professor Iaonel Sinescu, President of the Carol Davila University of Medicine and Pharmacy in Bucharest, had recently stated that the University he runs (one of the 11 health universities in Romania) receives for educating a class of physicians for 6 years, over 8 million euros (approximately 10,562,600 dollars). These amounts may seem insignificant compared to the money spent for educating physicians in the United States. Comparing the performances of doctors in Eastern Europe working now in clinics in the United States, it looks like there is no possibility to make a real difference between the quality of their professionalism. On the other hand, these amounts which may seem even ridiculous for Western people represent a considerable effort for the former Communist countries engaged in the line of reaching Western standards.

13. A Huge Business and its Risks

Higher education in the U.S. has been operating as a system relying mostly on a trade relationship between private universities collecting tuition fees, banks giving long term loans, the US administration paying interests for these loans and students who after graduation pay the loan in installments from the income earned after they get a job. It has been successful until today, producing a high percent of high educated youth; 42.5% of the US population

* According to the statistics data released by the Romanian Ministry of Health, 25,311 certificates of conformity have been released for physicians, dentists and pharmacists during 2007-2012, based on which they can practice in healthcare institutions all over the European Union.

has higher education studies, with an increasing rate of 1.4% per year, the USA topping the list of countries with highest education levels.[10] This high percent of educated population has had beneficial consequences on the U.S. economic and social progress.

But in time, this system turned into a business whose huge dimensions could hardly be perceived even by countries in Western Europe with advanced education and economy systems. However, during the last few years this business has started to hit the young generation of Americans.

The Fed Bureau in New York announced in 2012 that the total amount of study loans increased reaching 956 billion dollars, 42 billion dollars higher compared to the previous trimester. According to the data presented by the BBC in 2013, the tuition fees paid by college students in the USA surpassed 1,000 billion dollars for the first time, with an average amount of loan per student increasing to 23,300 dollars; and *The Modesto Bee* writes that tuition fees in California's biggest Colleges surpassed 130 percent, approximately 5 times faster than inflation.[11]

On the other hand, College Board of the U.S. Department of Education, Census Bureau, shows the increasing discrepancy between the cost of higher education in the U.S. and the evolution of the net average income of a graduate aged between 25 and 34 years old. While the cost of studies increased by 72% from 2000 till now, with an annual average rise of 5.6%, the average income of a young university graduate decreased by 14.7%, minus 1.6% a year on an average. According to the *Wall Street Journal*, in 2012, 284,000 college graduates, including 37,000 holding advance degrees who were registered in the U.S., were employed on minimum wage jobs and the *Huffington Post* writes that out of the 41.7 million working college graduates in the U.S. in 2010, 48% worked on positions that did not require a bachelor's degree.

Analysing this situation, several American researchers, authors of the paper "The Great Reversal in the Demand for Skill and Cognitive Tasks" have come to the conclusion that 2000 represented a turning point, when demand for cognitive tasks associated with high educational skills began to decline. This new reality triggered a first backlash towards loans made by students in order to pay for their education. For the moment, these are just "seeds of discontent" for a system which seemed to work flawlessly.

When you consider an educational system as a business you have to also assume the business risks. Thomas Frey imagined such a scenario for what he calls the "education industrial complex", which in the United States is represented by 4,495 institutions that share the tuition money paid by over million students. He made a prediction that by 2030 over 50% of the colleges in the United States will collapse. Colleges' ability to issue degrees gave them a competitive advantage any entrepreneur is looking for; it was easy to sell the idea of paying for a student's education today in exchange for some unknown monthly payment to be determined later. Good businesses attract competition. Due to the new alternative education options offered by companies (Coursera, Udacity and iTunesU) which started a new credential system, the number of enrollments in Colleges will decline. When revenues run short, the first instinct will be to arrange for short term financing. This, coupled with long term bonds and other obligations, will create a growing mountain of debt. Less expensive schools with extensive online capabilities will begin to "steal" students and colleges and will engage in

a pricing war to "keep their numbers up." Universities will spend heavily on marketing to change their image and boost enrollment or even more on lobbyists in hopes of gaining more support from the government. With a 10% decline in enrollment per year, as well as a decrease in income, some of the present colleges will not financially last longer. In the business world, such declines are referred to as a "death spiral" and they are associated with layoffs, selling assets or mergers in order to assure survival; but the driving force to reflect the shifts in the United States' higher education system will not be, in Frey's opinion, just financial changes. They will mostly reflect students' attitudes, expectations, and demands.

Although these predictions seem to look like a catastrophic scenario, I am convinced that appropriate solutions will be identified in the U.S., as it has always happened, and anyway, great universities in Ivy League or Top 100 will not be affected by these changes. However, I believe that in the globalized world, problems may occur where this model of American "education industrial complex" will be taken over by states which are not ready in the institutional and financial aspects and thus might lead to a financial crisis and totally unpredictable social reactions.

On several occasions when I was talking about building democracy during the post-totalitarian transition, I have pointed out that the American democratic system works not only because of the legislation and the institutions, but especially due to citizens' democratic conscience. That is why I believe that in the current accelerated expansion of higher education at the global level, it would be useful to make a comparative analysis between the experiences of states in different regions of the world.

In most of the countries of the European Union such as Germany, France, Finland and Norway, private education's share within the entire education system is extremely limited, and universities are funded almost exclusively from the state budget. In Turkey, private higher education had developed on a sound financial basis, especially in universities with English teaching courses and professors educated in prestigious universities in the U.K. and the U.S.A. An explosion of private education, that had developed in parallel with state education, is to be noticed in some former Communist countries in Eastern Europe, after the collapse of Communism. The business worked because it covered a shortage of skills required in the areas necessary for the transition to a market economy: management, law, political science and administration, journalism and communication. The business was profitable because these areas did not require expensive infrastructure, professors were teaching in state universities, and were poorly paid for second jobs and there was no investment in research. With regulatory legislation imposing rigorous quality criteria to be followed for diploma credits only few of them have survived.

Higher education is an issue concerning a complex relationship with the social environment. A report made by the Organisation for Economic Co-operation and Development (OECD) *Education at a Glance 2013* shows these particularities in the case of countries considered to have the highest education level.[12]

Thus, in Finland, where the percentage of population that has attained tertiary education is 39.3%, with an average annual growth of 1.7% and the annual expenditure per student in GDP of 6.5%, 96% of university expenditures are covered through public funds, compared to an average of 68% for OECD countries. In this case, the quality of higher education is

assured by the very high quality of high school and elementary school, proved by the results obtained in international tests. In South Korea, 40.4% of the population attained tertiary education, the annual growth rate is 4.9% and the annual expenditure per student in terms of GDP is 7.6%. Only 2.6% of adults with minimum studies of baccalaureate diploma are unemployed, less than in any other OECD country assessed, except Norway. Investments in research programs in universities cover a high percentage of GDP, though over 72% of research funds come from the private sector. Although Japan invests a lower percentage of GDP than most countries in the OECD, it manages to be a country with one of the highest percentages of people with higher education: 46.4%. With an average increasing rate of 3% per year, the rate of high school graduates is among the highest in the world, and 23% of Japanese obtained the highest marks in the toughest tests of literacy, which is twice USA's rate. Canada spends on a student attending a higher education institution a budget almost double than the OECD average, while having one of the lowest levels of unemployment in the world. A somewhat special case occurs in Russia, where more than half of the population aged between 25 and 64 years (53.5%) holds a university degree. Analysts noted a strong investment in education, but also a high level of corruption in higher education, where many students pass the exams without being present in classes and Russian politicians and billionaires buy their doctoral degrees easily.

The process of turning universities from molding the spirit and conscience of institutions into some "brain valorisation plants" seems to be a feature of our present. Maybe my way of thinking is too conservative, but the outlook for this process to grow and become generalized is terrifying to me.

14. Unemployment of Higher Educated Youth

The first decade of the 21st century for the European Union was confronted with a new problem – unemployment among young people with higher education studies. If the technological progress inured us to unemployment among industrial workers or among those coming from rural areas or unqualified workers in the public service, this form of intellectual unemployment has become an anguishing challenge. Who is there to blame?

In order to obtain a better insight of the phenomenon, we should leave away the general statistics and search the fields and professions where we have an extra-large number of specialists; and on the contrary, what are these fields with deficit of specialists? United Kingdom, Germany and France, European countries with highest level of economic and social development and with best universities, claim a shortage of specialists in fields like medicine, engineering, IT and teaching (mathematics, physics). This deficit is covered by university graduates coming mainly from countries which became EU members after 2004: Poland, Hungary, Czech Republic, Romania. And this is happening although the percent of faculty graduates from the total population is, according to Eurostat 2012 data, 34%, 27%, 24% in the United Kingdom, France, Germany, compared to 21%, 19%, 17%, 14% in Poland, Hungary, Czech Republic, Romania. On the other hand, the percentage of graduates is quickly increasing in countries of Central and Eastern Europe, when compared to the stable population (for instance from 7% to 14% in Romania) absorbed by West European countries, especially in these deficient areas.

In the existing European Union, out of 28 members, 12 are countries that, 25 years ago, were part of the Communist dictatorship regimes (to which is added former Eastern Germany). The total population of these countries amounts to 122 million people of a total of around 500 million. That is why I believe that we cannot ignore a comparison with the way higher education and employment were approached in these countries before 1989. We refer to a period in the history of those countries, of which today's youth are not aware of or if truth be told, are not interested in. In the Communist regime, unemployment was not tolerated. All citizens should have been "appointed" in order to control them. Everybody was working, including the hundreds of thousands of political prisoners from camps and gulags, forced to participate in building canals or working in lead mines, in exterminating conditions. Well paid positions were offered by the bodies of repression to a large number of people, and the party-state was opening a large number of positions for party activists (a structure parallel to the governance), through which the system was controlled. For all the others, University was the only chance for a professional career. The students were competing for the limited places available in higher education institutions, severely set by the Communist party for each profession and specialization. They were then studying with remarkable determination because, according to the total marks obtained when graduating, the graduates were acquiring an assignation which was to determine their career, lifestyle, most often for the rest of their lives. In the big cities, which were closed, one could not enter without an identity card released by the local police (*Militia*) unless one was granted a job and housing facility by the state. One could not exit the country he was born in, which was a kind of a bigger prison, without having the approval of the party bodies and of the *Security*. During the '80s, Ceauşescu, the dictator, even issued a law stating that all of those not having a legal occupation could be investigated and convicted for vagrancy.

The 1989 revolutions broke down these regimes and the citizens of the former Communist countries obtained their freedom and citizens of former Communist countries gained freedom. Today's youth have the freedom to make their life in a democratic regime the way they want it to be, to freely travel, to talk freely, coincided with the end of the monopoly of the state planned economy and its job appointments. At the same time, the strict planification of the number of students for each academic specialization was dropped, as well as jobs for the graduates according to states' interests.

15. 21st Century Jobs

The University cannot afford not to reflect seriously on its graduates' future and on the way it will find jobs in a fast changing society. This is the reason why the World Academy of Art and Science involved simultaneously in the virtual World University Consortium as well as in the project for a new paradigm in the 21st century. Shaping an image of the future world does not mean that we will necessary know the kind of jobs that will exist in the current century, but it means that we need to prepare ourselves for jobs that don't exist yet.

Predicting future jobs is an act imposed by the technological progress that would generate, undoubtedly, new types of jobs and will lead to the disappearance of some professional categories, a fact which was predicted by Bill Gates and which, according to several sources, might lead to the disappearance of 2 billion current jobs in the world, and which by 2030, will be taken over by automation and robots. Industrial progress as an engine of development,

will keep up the new generation's interest for engineering studies in universities. On the other hand, as long as it is not available as an alternative to the market economy, probably fields like business administration, accounting, and marketing will be of interest, even though work in such fields might be different from how it is nowadays.

Futurologists enthusiastically approached the topic of new jobs of the next few decades. One of the most famous futurologists, Thomas Frey, presented an opinion that 162 jobs existing today might be open even in 2030, which in my opinion is not an idea related to the classic field of futurology providing long term visions, but more like belonging to the field of short term strategies. Most of the 162 jobs proposed by Thomas Frey have titles which seem strange: Last Milers, Lending Tacticians, Fear Containment Managers, Failure Point Assessors, time hackers, time brokers, time bank traders, Brain Quants, Clone Ranchers etc.

The perception over these jobs becomes more explicit when the author places them into related fields like *Future Agriculture* with *Plant Psychologists & Plant Therapists, and Plant Educators*; *Bio-Factories* with *Gene Sequencers and Bio-Waste Optimizers; Atmospheric Water Harvesters; Contour Crafted Houses; Our Trillion-Sensor Future* with System Anthropologists; *Personal Rapid Transit Systems; Commercial Drone Industry* where there are predicted positions like Drone Classification *Gurus, Drone Traffic Optimizers and Backlash Minimizers; Driverless Everything; Crypto Currencies & Alternative Financial Systems* with Crypto Currency Lawyers; *Micro Grid Conversion* having Secondary Opportunity Expansionists; *3D Printing; Big Data* to have positions like Waste Data Managers; *Internet of Things* would have Lifestyle Auditors; and the *Senior Living* sector - Life-Stage Attendants. The author of the article also mentions even more sophisticated fields like *The Sharing Economy* with Involvement Specialists; *The Quantified Self*, having Guardians of Privacy; and even *Creating the God Globe* requiring the existence of Inflectionists, those who can pinpoint the optimal intersection of time, place, and information for change to occur.

What seems relevant to me is the fact that in a world more and more controlled by technology, the interest in maintaining positions involving human contribution is very high. Among these new skills are: *Transitionists* – Those who can help make a transition easier due to their analytical and organizational skills; *Expansionists* – road opener of the evolutionary tendency, *expansionists* are those who have the talent for adapting along with a growing environment, *Maximizers* – people having the ability to take advantage of processes, situations, and opportunities, the *maximers* use circumstances on their advantage for best results; *Optimizers* – The skill and persistence to tweak variables until it produces better results; *Dismantlers* – Every industry will eventually end, and this requires talented people who know how to scale things back in an orderly fashion; *Feedback Loopers* – people who can devise the best possible feedback loops; *Last Milers* – in their attempt to reach a maximum utility for the end user, technologies will reach a point of diminishing returns. People with the ability to mastermind solutions to pass to the "next best thing" will be in hot demand; *Contexualists* – every technology will have a specific image and a big picture. *Contextualists* will set the operational procedure of new technologies taking into account firstly the context; In between the application and the big picture lays the operational context for everything new; *Ethicists* – in an age of technology, where moral standards change, there will be ever-growing demand for people who can question complex situations.

Gladly, all futurologists agree on the fact that *Theorists* will still be needed, as every new product, service, and industry begins with a theory.

In the end of this outlook on future jobs, I chose one of Thomas Frey's conclusions published in his article dedicated to the future of colleges and universities: "Preparing humanity for world's unknown means preparing our minds for thoughts unthinkable, and preparing our resolve for struggles unimaginable."[13]

16. Professors' Responsibility

The crisis today's world faces puts a question mark over a large number of options that the last half century took for granted, and forces us to reflect on how far our own choices have somehow contributed to the aggravation, if not even triggered the global crisis. If we agree that behind the rotten loans, of imaginary money balloon, of artificially inflated shares on the stock market and of all forms of speculation that caused the current collapse of the banks and the economy, a common factor could be perceived - a serious crisis of values I think, then I believe that our responsibility as academics, as administrators of academic institutions and as intellectuals is undeniable. We all participated in the last few decades, even if through resignation, in a vast process of massification of education, more and more dominated by the economic obsession for immediate profit, and less and less concerned with the educational value of disinterested knowledge. We have accepted that a knowledge based society can be created, but almost completely lacking in philosophical contemplation, fundamental theoretical knowledge, interest in the history of concepts and values of our own society. We have accepted, on behalf of an illusory practical efficiency, the dehumanization of research activity, a damaging subordination of the asymptotic search for Truth to the benefit of mass series production of convenient truths. Like bankers and investment funds managers, we have sold illusions, too.

17. Students' Responsibility

During the last two decades, Freedom and Democracy have created a new problem: the difficulty of choice. It is often said, not without justification, that choosing is even more important than the choice made. Responsibility thereby falls on those who wish to prepare their future through university studies. It is about the courage of choosing and the strength of wanting to find out what you can become, that are crucial elements in a world whose future we cannot know in detail, but we can anticipate its main direction, including potential dangers and risks. Young people can now choose a more difficult job or an easier job. Studies are more fastidious, more pleasant or easier. Statistics show that an increasing number of candidates with university diplomas chose the easiest way. In the UK, young English people avoid Faculty of Medicine because studies that are made for a longer period of time are difficult and medical profession has risks and restrictions. In Germany, the cradle of technical sciences, the number of local candidates in technical universities is on a decreasing trend, and Germany has to import engineers and IT specialists from Central and Eastern Europe. However, there is an inflation of degrees in the fields of Communication, International Relations, Political Science, even if it is obvious that their holders will find jobs in these areas with an increasing difficulty. On the other hand, the exact same profession can now be made in difficult circumstances, in remote areas or, more comfortable and nicer, in ultra-civilized

centers. There will always be jobs for physicians, engineers or professors in the rural or remote areas from the large cities, meaning exactly the place where they are most needed.

In an open competitive environment, on a large common labour market, such as the European Union, and in the globalized world at large, unemployment of university graduates will also depend on the way each young person choosing a university specialization understands that he is the main character of his own life scenario, and the University should train him for difficult confrontations with social obstacles and with himself.

18. Globalisation of the Technological Progress

The globalization of technological progress involves two observations. First, the transfer of scientific and technological progress cannot take place without a transfer of the skills needed to use it, and even more, in the lack of a system of values to lead to a good use of it. The second observation: the gaps between rich and poor, or between advanced and backward technologies, are not coextensive with those caught in between human potentials. The situation of the countries in Central and Eastern Europe clearly demonstrates that despite local delays that occurred during the last half century, training networks however were maintained and allowed the survival of cultural and intellectual potential without regard to material resources, seriously affected by an aberrant policy, a potential providing the breeding ground for a rapid development.

Challenges of technological development put enormous pressure on human resources. I do not think I'm wrong when I say that the issue of training and development of human resources represents a key issue for humanity, because there is no technology to produce men and women who use it. It is necessary for us to convince policymakers of an obvious, but often neglected fact: the social costs of gaps in education are infinitely greater than the costs involved in quality education.

19. Globalization Ethos

A borderless world in education involves, as I have already said, redefining institutions. We need to prepare graduates with global competencies, who will be able to act in accordance with the local, religious, technological and cultural environment. We must not forget that problems have their roots in globalization. Global issues, often diseases, require global responses. The slogan *Global versus Local* is not a geographical definition, but a reasoning and a means of action adjusted to local issues, but with global impact. Globalization associated with democratization cannot be regarded as an exclusive Western product anymore. Modern technology is indeed a product and a consequence of the concentration of scientific production in the West. Globalization seen as a response to global problems forces Western technology to take into account local specificities and seeks global solutions. But in order to build a new concept of global solidarity in the field of higher education, we must be able to see globalization not only in its technological aspect, but also in its anthropological one. Only then we can reach the globalization *ethos*.

Globalization cannot be assimilated to simple trade or homologation of goods on the free market dynamics, of the most competitive products. Beyond this, globalization is the consecration of some universal values and symbolic goods; it means knowledge and, therefore,

closeness and understanding. In a speech addressed to the academic community at the Prague Castle, His Holiness Pope Benedict XVI warned that the massive increase of information available and technology also raises the trend of dividing reason from searching for the truth. If on the one hand, times of interference derived from the political totalitarianism passed, isn't it true, on the other hand, that nowadays the act of reasoning and academic research are often and subtly constrained to bow in front of the pressures made by groups of ideological interests and in front of the consideration for short term utilitarian purposes? What would happen if our culture would have to be built only on arguments en vogue at a certain moment and with little relation to a historical intellectual tradition or built on promoted beliefs, which are very noisy and strongly financed? Our societies will not become more rational, more tolerant or flexible, but more fragile and less and less inclusive, becoming distant from what is true, noble and good; and suggests that the analyses of skills and the ones required to formulate a scientific hypothesis combined with the cautious art of discernment offer an efficient antidote for their self-centered attitudes of non-involvement or even alienation, which are present in the welfare societies which might strike especially the youth. * The extraordinary movement in which we are all involved should not make us forget that behind every action, there is man. Over 2,000 years ago, Protagoras said: "Man is the measure of all things".

20. Globalisation of Education

I believe that globalization should not be considered only an egalitarian force in the negative sense as is very often the case nowadays. Technological and knowledge imperialism, promotion of the consumption culture or supremacy of the English language to the detriment of cultural diversity and national identities, are realities that generate, for good reasons, opposite reactions. However, there is here a positive meaning, too: equal opportunities are now available to the young generation. Globalization has opened a borders-free market of the educational system. At the same time, it has offered a communication infrastructure where space or time is no longer important. In order to place a value on this opening it is necessary to move on from reforming the institutions to redefining them. The educational process can be compared to a tree. If mobility were the tree top, and its roots, a network of domestic and international institutions, then the tree trunk must be made up of a new strategic organization of information that would valorize the critical mass of fundamental knowledge. But how?

21. Double and Triple Propeller

In a Report to the Club of Rome, published in 2003, the well-known Triestine economist and thinker Orio Giarini launched together with the Romanian academician Mircea Malița, Professor of mathematics at the University of Bucharest, the concept of "Double propeller of education and work"[14] in which they were stressing the unity and relationship between education and work. This double propeller of education and work can be functional only if it follows two principles: a multi-disciplinary profile and lifelong education. Along with the Bologna process, and once the license/master/doctoral degree (LMD) system has been generally adopted in Europe, including in the new EU member states in the Central and South Eastern Europe, *lifelong education* will have been officially implemented. The Bologna

* Speech delivered by His Holiness Pope Benedict XVI addressed to the academic community at the invitation of Prof. Václav Hampl, Rector of Charles University in Prague, Prague Castle, September 2009

system offers students in Eastern Europe the possibility of mobility during their university studies and facilitates faster access to the European labour market. As negative effects, I must mention a decrease of the education quality, which affected especially the Eastern elite universities. The last decade's experience shows that the multi-disciplinary profile has not yet escaped the tyranny of disciplines and of the research institutes' caste mentality. A solution for surpassing this situation would consist in an offer to be addressed to the young generation to present an outlook on professions, where part of the classical disciplines are replaced by modules that allow a personal study itinerary able to make up personalized curricula. The professors should become more than prestigious entities of the research world, that teach courses and give grades. They would rather be tutors and models, reviving the old European tradition of schools' founding fathers. It is necessary for us to create, both in the educational system as well as in research, new playgrounds and new games amidst which university presidents have the ability to manage interactions. The organizational background should also change within the context where the fight for talent recruitment becomes global, and jobs are accessible through the Internet. As a consequence, managing talents becomes more of an art than a profession.

In 2013, Ivo Šlaus was rightly reminding us about the social dimension of humanity, and said that, in addition to learning and working, which can be individual activities, it is necessary to extend this double helix adding realization of human rights and duties – governance of human societies – which would condense into: *"Triple Helix of Education, Employment and Governance"*.[15]

22. University Beyond the Walls - Inside of Outside

Under the European context where Universities are funded by the state budget, there is a danger for the *government* sector (the third propeller), as put forth by Šlaus, to be mostly associated to the central administration. In the U.S., where elite universities are private, the relationship with local communities has a tradition that is largely missing in Europe, which is why the risk is smaller. This was the reason why, in my project *University beyond the Walls - Inside of Outside,* I have proposed together with Professor Dan Grigorescu for the WAAS Center within the University of Bucharest and which addresses the academic communities in the Europe – Mediterranean region, a collaboration with local communities rather than with governments. I have chosen the *geopark* as instrument for implementing this project. The experience of the European Geoparks network under the auspices of UNESCO, which valorize together natural and cultural monuments, offers encouraging examples of good practice. The expansion of the University-communities' collaboration opens interesting perspectives for innovative developing strategies initiated in the triple helix concept. I mean adding to the old functions of university as "diffusers of knowledge", "creators of educated human resources" or more recently, "producers of technologies" to function of "non-formal education" with the purpose of developing entrepreneurial skills of individuals and organizations through ideas and business incubators at the local level. In addition to the objectives targeted in the past, getting new features, services and jobs for graduates and students in *part-time* system, this can raise the visibility of the academic milieu in the Society and an increase in the social cohesion. In order to achieve the success of this goal of social inclusion, where universities can take over the role of initiator and coordinator, a holistic approach is needed through changing

the type of intervention from the "transactional" way limited to a certain action, to the "transformational" way focusing on programs with larger and longer duration.[16]

23. A Cultural Initiative for Global Peace

Such a major program might be developed around the project *Rediscovering Levant, Cradle of Culture, Religions and Science*, which I had launched on behalf of the Institute for Cultural Diplomacy in Berlin. The project goal "culture of peace through understanding the other" envisages as implementation tool the creation of a *network* between UNESCO accredited geoparks in the Levant-Mediterranean area, a region with fertile contacts for millennia. I think it is a good opportunity for universities in the region, and not only for them, to approach a new reading perspective on the history of the Levant, which was so far seen considering wars and conflicts, rather than its common myths and traditions.

This vision is addressed to the younger generation which, liberated from the burden of the old adversities, can now engineer a new solidarity. The fact that WAAS has adopted this initiative is an encouraging step towards achieving an action plan for a culture of peace. The culture of peace is a fertile ground where we can grow a new culture of democracy and a new culture of free market, without which the project of a New Society has little chance of success.

24. Prospective Mission

We live in a world which seems to prove the triumph of democracy, freedom and cooperation, an open world, a world of constant communication and interaction, a world whose perpetual motion cannot be stopped and where isolation would mean a form of collective suicide. Yet, this world is not yet ready for globalization. If we want to understand what would be the right moment for us to turn to the University's prospective mission, we need to understand that it is the moment when the university should find in itself the necessary resources to give a new impulse to the world we live in.

Academic institutions' identity and their role within the assessment of 21st century challenges no longer need to be demonstrated. Specialists whom we educate today will be active until 2050-2060, so their projective capacity represents an indispensable component in this process. In this sense, adopting a development strategy requires a few prior clarifications regarding anticipation: the general framework of the society's evolution, the forecasting of supply-demand ratio of the academic capitalization valorization, the assessment of human potential and material resources.

My generation left many questions unanswered. I have no regrets, if a new generation will ask the same questions. The answers will undoubtedly be different from the ones we would have delivered, as the world we used to live in has changed. We sought answers to what we hoped to be a world of certainties. The only thing we know for sure today is that this world will be a world of uncertainties and that answers to the exact same questions will change more rapidly than we could have imagined. Professors, researchers and university graduates are, today, the measure of future. Thus, the University may be considered an essential partner in the endeavor of shaping the future.

25. The World University

On the occasion of several workshops organized in 2013 in different universities in the United States, Canada and Europe, the World Academy of Art and Science's Board of Trustees discussed the project of a Virtual World University, to be undertaken by the World University Consortium (WUC).[17]

This idea is not new, it belongs to the founding fathers of Academy – Einstein, Oppenheimer, Fleming – but 60 years ago this generous idea seemed like a dream. The fast success of the MOOCs platform launched by a few of the prestigious US universities like Berkeley, Stanford, Harvard and MIT, as well as the recent MOOCs created in Europe and Asia gives us the reason to believe that it may become a reality now.[18]

The main objective of a new World University, which now has the force of ideas to become a reality, is to create and implement a new paradigm in higher education and, through it, in the global culture and civilization. It has to start from new concepts, new methods, and new perspectives.[19] Redefining current academic courses in order to reflect the inter-disciplinary and trans-disciplinary perspectives goes hand in hand with the creation of a new human-centered global paradigm, and which opens a way to reach new fields of knowledge. As Garry Jacobs was defining this desideratum, *"A new paradigm based on ideas, principles and values appropriate to the 21st century can rapidly transform this world of pressing challenges into one of ever-expanding opportunities."* [20]

A world university seems to be the best instrument for such innovating perspectives if and only if we start by changing our rules.

A radical change of concepts through intellectual cooperation within a consortium representing diverse directions and practices is imperative because the concept of higher education of a single country cannot be imposed as a world standard for long. Promoting diversity of ideas and perspectives is one of the biggest missions of contemporary education. As it is so rightly said in the WAAS manifesto, "it is essential that world education be adapted in order to reflect the different insights of different cultures". If sciences of nature and technology impose English as the *lingua franca*, and if it is accepted for efficiency reasons, humanities will have to show care towards different cultures, the World University should avoid not becoming a new channel for homogenization, which would be even more dangerous, because it does not only address to a population already subjected to homogenization through TV or the Internet, but especially to the future elites responsible for preservation and development of national identities.

Essential for the World University project are its aims and objectives. This project should be directed to diminishing the gaps in education, especially concerning its quality, financial capacities, research and innovation.

Taking into account the fact that we cannot realistically hope to ensure soon enough the necessary estimated at around 350 million seats in the existing conventional higher education institutions, a radical change of means is imperative. Heitor Gurgulino de Souza, the new President of the World Academy of Art and Science (WAAS), was drawing attention to the fact that in Brazil 7.1 million young people graduated from secondary school. State universities can provide places for half a million students, and private universities have

around 2 million places, with students having the obligation to pay taxes. What will happen to the others who would like to continue their studies in universities? It is estimated that Brazil, a country with rapid economic growth, urgently needs 150,000 engineers and 175,000 professors to teach in the fields of physics, mathematics, chemistry and biology. Changes seem even more amazing worldwide. According to the data provided by Angel Calderon, the number of students enrolled in higher education is due to grow from 99.4 million in 2000 to 414.2 million in 2030, which would represent an increase of 416%. The decreasing cost of *on-line* education might offer the World University the possibility to create a set of original basic courses, accessible to a greater and greater number of beneficiaries.[21]

One of the main inconveniences of the transition towards a New Society is the constantly growing gap between the quickening pace of the technological progress and the reduced pace of the cultural evolution. I believe that a World University, open and accessible, promoting new concepts and a new paradigm in higher education, may become an essential step for a new humanism, based on essential values of freedom and equality, opening new perspectives to, potentially, millions of young persons all over the world, and finding a way to a fundamental shift in education: from a utilitarian enrolment in a system which pours information in innumerable vessels, to an authentic process of modeling personalities, a new form of the ancient notion of PAIDEIA, a formative process meant to create true citizens and noble members of humanity for a new millennium.

26. Democratization versus Massification

One of the most noxious illusions of the present times is misinterpretation of mass education as the democratization of the educational system. In Romania, as probably in the majority of the countries of the former Socialist space, we have already passed through the experience of cultural massification through a distorted and at the same time under-financed educational system, with pupils and students trapped in an equalizing assessment mechanism, which systematically neglected theoretical and human sciences for the exclusive benefit of narrow practical occupations. You cannot imagine the despair many of us feel when seeing how the same errors, generating harsh errors as consequences, are now being repeated in the name of the "knowledge-based economy" and of a laxity taken as democratization.

A crucial question for a new World University to answer is how to support the **democratization** of education without enhancing at the same time its **massification**.

We have inherited and are currently using a mould, so to say, of the general education system, which was imagined and put to use, in its essence at least, in the 19th century. Then, the industry needed workers with a generalized primary education: no more, but also no less. Secondary education comprised elites of around ten percent from each generation, mostly of males, and higher education marked the five percent of the ten percent who benefited from a college education. However, history shows that this tiny proportion of highly educated people ensured the explosion of theoretical and applied sciences which founded the modern world.

Nowadays, the new economy needs workers with secondary school and higher education studies, which require at least three years of university. Does that also mean that they should resume being a poor copy of their elders, with a shallow and superficial access to the

fundamental superior knowledge? Does that mean that, if they are computer-literate, they may well be ignorant in a traditional sense – not reading literature, not understanding either mathematics or philosophy, unable to write without a computer corrector, they would be indifferent to beauty? Does that mean that they may wave away their civic rights and duties, mostly out of ignorance than of indifference?

I strongly believe that, if we leave the current trend of massification to invade the whole world of our schools and universities, we shall lose forever all the benefits that the democratization of the educational process has offered humanity in the last two centuries.

A democratic society does not deny or dissolve its elites, but uses them for the common good, making them accessible to any citizen willing to use their talents and abilities in order to reach as far as possible the road chosen.

27. University and Politics

At first glance, it would seem that there are almost no points of encounter between these areas. In my opinion, university and politics are not two completely separate worlds, lacking in connections and interactions. And I say that from my personal experience; and I think I can prove the existence of intimate and extremely powerful links between academia and the political field.

If a universitarian has a duty to educate new generations, a politician bears responsibility for making decisions involving the community's destiny. The two therefore meet through the responsibilities assumed for the future, which will always have the altitude of those who imagine it.

I think, therefore, that politics should be inspired by science, which it can learn from. Any science is organized around common values such as dialogue, exchange of ideas, and respect for the truth. Any science maintains a certain strong connection with time. Through this particular relationship between people and time, science may offer politicians an example to follow. Citizens should not only submit to consequences of time passing, not only be the subject of time; they should give value and measure to their time.

Today, when science and high technology make people feel closer and closer, politics cannot aim to separate them. Science gives us the opportunity to share a common language. The scientific community transcends natural borders and boundaries and, therefore, the academic milieu, through its cohesion and effervescence, might be regarded as a forerunner and a model for cooperation, with no exclusion and marginalization. Through its universal character, ease of communication and mutual understanding, through its continuous need for relating to and involving in the overall effort, the scientific community may become an example par excellence of the projects which set as its aim to create unity in diversity. Intellectual solidarity may be the groundwork for building a new European and world political architecture.

A place of exchange and debate of ideas, the University reunites men and women from different places and times in the same intellectual Republic, in the same spiritual resonance box. Encouraging freedom of expression and intellectual debate, the University has the power to disseminate these values beyond the walls of university campus, to engrave them in

people's consciousness and behavior. The University has the merit of proposing to the society a certain way of conceiving the human being and human relations. Thus, values that first flourished within the University have gradually become core values of the modern era and the era of democracy. Democratic society is not an abstract society; it gives a better visibility to real man and polarizes its efforts for his own benefit. In such a society, the University has the privilege to propose models and solutions, to build and promote a new prioritization of values, appropriate for the challenges of a time which becomes a time of rapid changes.

The University may offer debates and political confrontations a model of authentic and balanced dialogue. And that is because ideas do not circulate in a hostile competition within the University walls; they are not mutually exclusive, nor do the ephemeral fireworks of election campaigns of opinions or routine celebrations live. Here, ideas meet the dialogue with warm fervor and peace, still refusing to exclude the cold war of ideologies. Within the University walls, ideas are backed by arguments; they take shape and substance; they are examined, accepted or rejected. Inside the University, educating does not merely mean dominating the one who listens, but patiently building the core of human personality, a patience political action does not have.

Does the University have anything to learn from Politics? Certainly. Representatives of the academic milieu can learn from the successes and especially the losses occurring in the political sector on how to become more cautious in proposing political, economic or social projects for which there are no serious impact studies and others are in charge to make these studies, not them. From statesmen's experience, academics may learn the meaning of taking responsibility for decisions concerning life, freedom and sometimes even the death of millions of people, and that could bring the decay, the birth or the progress of some countries. And above all that, for these decisions statesmen could pay with their career, freedom or even their own life.

28. University and Morals

It is often said that universities have shaped the destiny of nations, starting with the European Middle Ages, even more than sovereigns of kingdoms and presidents of republics did. In the paragraph dedicated to the University-Politics relationship I have recalled, with the pride of those grown in the academic milieu, how values of democracy first flourished in the academic environment, and then have been disseminated in peoples' consciences and behavior. But has it always been like this?

In a fair assessment of 20th century history, how could we leave out the fact that during its first half anti-Semitism firstly "blossomed" in the great University of Vienna, was then followed by the murder of a Jewish professor on the University steps; or that in 1938 students of the Humboldt University in Berlin burned dangerous books in the square in front of the Faculty of Law, which led to the terrible fulfillment of Heinrich Heine's prophecy: "Where they burn books, they will burn people, too" through the Holocaust drama? Could we forget that Lenin's diabolical mind was "educated" in the universities in Germany and Switzerland, that Hitler was fond of classical music and painting and that Stalin was a graduate of the Theological Seminary – the most bloodthirsty criminals of history? Closer to our times, could we forget that bloody dictators such as the Albanian Enver Hoxha or the Cambodian Pol Pot were "educated" in universities in France? Not to mention the way Soviet KGB in

collaboration with the local political police has implemented in Romania a reeducation system based on physical and psychological terror on students, turning them into tortionaries with the terrifying "Pitesti experiment", in order to prepare the Communist society for the "New man".[22]

"Any global political paradigm for the 21st century should take into consideration the complexity of human nature."

Are Universities to be blamed? Of course not. Because during the sinister Communist dictatorships in Eastern Europe, universities remained the only oasis of intellectual and civic resistance. How many of us remember today that the first major manifesto against communist terror on intellectuals, *Charter 77*, was originally a protest against dissolving the Jazz Department within the Prague Conservatory by the Czech Communist Party? And how many of us have begun to forget 25 years after the collapse of these dictatorships, the diligence the young students of the University of Bucharest showed on December 21st, 1989 after the massacre in Tiananmen Square happened earlier that year, in August, to face Ceausescu's regime with bare hands and chanting *Freedom, Democracy, Freedom of Press!* and that dozens of them were shot or tread by tanks of the dictatorship repression troops?

We can understand one fundamental truth from all these tragic events: that the relationship between the University and Politics cannot be separated from the University-Moral relationship.

As science develops, the University-Moral relationship becomes more and more complex. In a previous paragraph, I have proposed science as a possible model for the 21st century world politics. However, science to be accepted as a potential model for politics should be accompanied by a warning. If utopia is for science the "mother of progress", when we talk about politics, utopia was, with no exception in the last hundred years, the "mother of criminal Communist dictatorships".

"Philosophy can prove anything, even to make the killers become judges", Albert Camus found after the horrors in the first half of the 20th century.[23] The 20th century's bloody history abundantly proved this truth and it is because of that any global political paradigm for the 21st century should take into consideration the complexity of human nature.

I also believe that scientists, before hurrying to give advice to politicians, should tackle with courage the difficult moral controversies progress creates "in their very gardens." We should never forget the advice of Voltaire, the Illuminist: "Science without conscience is but the ruin of the soul." In a new society, Universities have the duty to exercise their role as guardian of "science's quality" they assumed since their foundation, as well as the guardian of "scientific consciousness".

29. University in the 'Lie Society'

More and more historians, philosophers, sociologists, and political scientists consider that the society we live in is a 'Lie Society'. Sociologist Robert Hettlage even believes that we live in a "cohabitation accustomed to lie" and identifies more than sixty ways to lie, which are frequently applied nowadays.[24] But of course, not all of them seem to be of appropriate interest to the subject approached and there is no point in referring to what covers the sphere

of politeness, poly-significance, semi-truth, children's plots or grown-ups' everyday tricks. I am here considering the lie from the spheres of political and economic decision, such as political honesty, keeping compromising secrets, statistical deception and media manipulation which can easily change peoples' way of living and their value system. Not to mention the maneuvers of deceiving the public through mass media commercials or by miming the "free exchange of views" during political debates leading the value of truth to ridicule. Noam Chomsky warns that a corrupt and unfunctional education system is the ideal instrument for keeping citizens ignorant and to manipulate public opinion at its own convenience.*

We, the ones in Eastern Europe, who have lived the majority of our lives under the Communist dictatorship, know that this pictures a lying system maintained on terror. We are now confronted with a surprising "creative" approach of lies in democratic politics and in the market economy, which seems to be more dangerous than the official Communist lie, that few believed in anyway, and absolutely no one in the academic environment. Even though, sometimes, the professors were forced to broadcast that, they knew too well that those who listened did not believe it.

Extremely serious is for me the intrusion of lie in the academic environments. Also we, the academics that passed through the Communist system, understand what may be pleaded as a "positive manipulation" in democracy. Well-intentioned politicians, but dependent on votes, may be compelled to fabricate spatial myths, climate scenarios or social catastrophes in order to support investments in scientific research areas of major interest. This approach is eventually convenient and profitable to all on a long-term.

But what about the truth? German historian Wolfgang Reinhard, who introduced the concept of the *Lie Society* (eine Lűgen Gesellschaft) and analyzed its different facets, wrote two theses.[25] The first one regards the expansion of lies in today's modern society, where "the untruth proves itself not only to be usual and necessary, but even friendly to men". The second one is the thesis of complicity in lieu of the ones lying and the ones being lied to, according to which, the leaders' political lie is just a part of the lie including all. The conclusion: within this type of social configuration, skeptical, analytical and self-critical people are removed right from the start as being unable for the political game. If this is the case in the society, how does it work in the University?

For the past few years, I cannot help but notice a reduction or sometimes even an almost complete lack of critical analysis of assumptions, that much rapidly changed into axioms just because politicians converted them into slogans that lead to popularity, multinational commercial companies used them in profitable businesses, mass media presented them as successful stories that led to audience and incomes form publicity, and the civil society made them popular by using mobilizing manifestations over the Internet and through mass meetings. Universities also take part in this "feast" that offers them money for research, conferences, new subjects and courses, and a visibility in the public space, which they did not have before.

We like stating that Universities are a citadel of science. Natural sciences or humanities do not bear any other purpose than finding the truth. And then how will we justify if some of

* Noam Chomsky, well-known American linguist, professor emeritus at Massachusetts Institute of Technology (MIT), formulated "10 strategies of manipulation by the media" on which is based the political power in lack of legitimacy, which he calls strategies of distraction, among which are: people should not have access to complete, accurate, right and objective information means. People should have their minds busy with something else than their real problems and have a way of thinking that would not allow them to see the connection between causes and effects.

the new assumptions, grounded more on global statistics or, on some relevant, but isolated, cases, do not get confirmed? What if the positive effects, that are visible today, are followed by short term or long term harmful side effects or by the creation of some unexpected imbalances? What will be our reaction to those who are now questioning the "fashionable" theories? Are we to expect a new "Trial of the Apes"? A few isolated cases of marginalisation in the scientific environment of those questioning the "main trend" are already buried in a shameful silence. His Holiness Pope Benedict XVI reminds us that trust in the human capacity for searching the truth, to find the truth and to live according to the truth has led to the foundation of great European universities. Today we must utter again this thing in order to offer the intellectual community the necessary courage to develop a new future of real welfare, a future for real respect of the human being.

Wolfgang Reinhard is offering us even a personal way out of this "Lie Society" that has created so many unexpected complicities: "When no one else can tell us what truth is, we can at least learn what the truth is not". In this situation, we are only left to present ourselves with a clear conscience, as witnesses of reality.

30. Reconsidering the Academic Speech

The way you talk and write defines you. It is the very reason that makes me firmly believe that contemporary society needs a rehabilitation of the academic speech, not only through its rhetoric, but also through the approach of phenomena. The academic speech is different from the political, economic or theological ones. The political speech is, by nature, directed either against opponents or at glorifying its own achievements for propaganda purposes. The economic speech analyzes reality in terms of efficiency and profit. The theological one, based on faith, promotes an undeniable divine truth. Unlike all these, the academic speech forces you to consider opposing views and urges you to take into account also negative side effects of positive phenomena or, on the contrary, positive side effects of negative phenomena. The academic speech stands out from her sister, scientific communication, because it is not the novelty of discovery, but reflection upon it, which becomes a priority. Therefore it is only at the end of a long road, starting from scientific research in a specialized field towards the philosophy of science and then to the philosophy of life it is fulfilled. Its rigor forces you to avoid conformism and negativism, emotional excitement, vulgarization and populist concessions.

The trend of making up the reality, seen in many speeches circulated in public space, comes either from the pressure of contemporary bureaucracies to present the *politically correct* clichés, a modern version of the wooden language used during the communist dictatorships, or from the preference of some civil society organizations for catastrophic scenarios, which are favored by media. The choice for the *Academic speech* emphasizes a cultural approach, opposite to simplifications, partisanship or to the arrogance of holding the unique truth. It detaches itself also from the motivational speech pattern, dedicated to rapid methods for obtaining success in career and society. Many of my former students, now scattered throughout the world, remember, perhaps, how I concluded the annual courses of the Faculty of Geology warning them that science promises us neither wealth nor happiness. It promises only the truth. I am convinced now, as I was at that time, that this relentless search for truth in a society which increasingly becomes a society of organized lie and of fierce fight for power and profit is the one that can offer us freedom and self-respect.

31. Preservation of Ethical Values

Now, at the beginning of the millennium, when we are aware more acutely of the risk of depersonalization in a globalized world of computerized information, which is often anonymous, the University apprehends to assume the mission of replacing the human being. Tried by the swirl of so many anti-human projects and realities, man comes again to the foreground of options, regaining its statute of favorite subject and the object of reflection.

"The global financial crisis may be a historic opportunity for a new political project of organizing the contemporary globalized society."

When I refer to the preservation of universal values, I am thinking that traditionally, politics as an art of the possible is seen in an unequivocal relationship with conjectural present. On the other hand, the academic community is less related to the present, the matter it works with being mostly past and future – a past and a future taken together and somewhat inseparable. And yet, I think I can assert that a possible and necessary conjunction exists between politics and University, understood as immediate purpose, and the relationship of science with an ever present time. Being forced to face the present, politics is obliged to understand and analyze the past in order to be able to imagine the future.

Exclusion, conflict and intolerance cannot be part of a project for the future. Forerunner of the medieval university, Saint Bernard of Clairvaux, said that the past, present and future do not exist as such. Only memory, action and project truly exist. Memory, enlightened by truth and wisdom, may inspire positive energies for action, for a project of the future we aspire to.

32. Managers and Leaders

In order for higher education to answer the great challenges the 21st century democratic societies are facing, we need good managers of the present educational system, and leaders able to change the present educational system. But even more is needed.

Experts and politicians have been looking for solutions to make the current economic and political system survive in the current period of the economic and financial crisis. However, the global financial crisis may be a historic opportunity for a new political project of organizing the contemporary globalized society. It is time for representatives of academic milieu, and businessmen and politicians, freed from the pressures of obtaining profit or popular votes, to build a new cultural project to meet the 21st century uncertainties.

The main difference among political systems lies today in how they can manage uncertainty. They can assume it by trying to find solutions through a dialogue, or can try to eliminate it through the dictate of ideologies, religions or money. Managing uncertainty can be done only in an open society. From the confrontation with high stakes could emerge a behavior meeting the challenges of reality through respecting principles. When we cannot act motivated by the certainty of success, we can act from the consciousness of duty. This concept corresponds best to what politics should be in a knowledge-based society and in the globalized world: a complex vision of the future, based on a new dialogue about human values.

33. To have – To be

Over two millennia ago, the Argonauts' journey to Pontus Euxins in search of the "Golden Fleece", looking for material wealth, inspired them to act and offered them the perspective of another world, different from the one of the Aegean Sea where they were living. The legend does not say whether they won anything from this journey. But later, the same Greeks wrote on the Apollon's Temple in Delphi "*Gnothi seauton"*, *know yourself*. The concept of Academia was founded by Socrates in order to preach this principle to young people who were eager to learn.

I started my tryst with the University when I wasn't even 17 and did not leave it until 75, not even during the four years when I had responsibilities in the public space. I went through all stages, from student to professor and rector and I owe it all I am now. University is for me a fundamental landmark and a hope, in a world torn between, on the one hand, an exceptional progress of science and technology and, on the other hand, a visible spiritual and moral degradation.

I believe that the lack of real solution for the global financial crisis forces us now brutally to choose between **to have** and **to be**.

A higher education based on moral values may create for the democratic 21st century world, a new balance between power and knowledge, which would reshape a framework inside which each individual cannot only ***be,*** but also ***become***.

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Notes

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The Power of Values

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Abstract

Value is a discipline internalized as self-discipline. It is a universal ideal of conduct, an idealized goal of perfection. In all great stories in history, biography, business and current affairs, we see a very close relationship between values and accomplishment. Values are of many levels, the physical, social and mental. Just as physical skills are the channels through which physical energy is directed so that it produces results, values play a similar role at the psychological level. The quality of the values and the intensity of our commitment to them determine the level of our accomplishment. The power of a value comes from the measure in which it is accepted in the emotions. There is a passion felt for the value. The commitment is unconditional. Striving for high values is not a luxury for the successful; it is a way to become successful.

1. Introduction

There was once a young American legislator who ran for the senate. He needed to defeat two others who were in the fray, Joel Matteson and Lyman Trumbull, to win the seat. He had 38% support, and Trumbull only 9%. Matteson was leading, with 44%. But what was of greater concern to this legislator about Matteson was not his vote base but his character. Matteson was not a man of character (he was later charged with financial fraud).Whereas the legislator shared a common vision for the country with Trumbull. When it became clear that he could not win the election, he withdrew from the race. Rather than splitting the votes and allowing Matteson to win, he backed Trumbull and urged his supporters to do the same. He wanted the right person in the senate, and not a man of questionable character. Not himself, but the right person. Everyone, including Trumbull, was surprised to see the young man giving up his great advantage, but he only said, "I could not let the whole political result go to ruin, on a point merely personal to myself." Trumbull won the seat, and the legislator won Trumbull. When he later contested the elections at the national level, Trumbull was one of his loyal supporters. He was already known for his honesty and ethical practice. As a lawyer, he took up cases only if he believed the client was innocent. When he knew otherwise, he walked away from considerable fees without a thought. This man happened to be Abraham Lincoln, and we know where adopting high values took him.

All stories of great men and women, of successful organizations and flourishing societies have one element in common – values. A study of accomplishment shows a very close relationship between high positive values and sustained success.

2. What is a Value?

A value is a high principle, an ideal of conduct. When Abraham Lincoln withdrew from the race, his ideal was the country's welfare. He made his own personal interest subservient to the national interest. No one forced him to withdraw or even suggested it to him. If anything, they dissuaded him from doing it. His principle of acting for the greater good was an act of self-discipline.

"Crises often reveal latent capacities."

Value is a discipline that is internalized as self-discipline. It provides an internal reference for what is right, good, and important. It is an idealized goal of perfection, perfection being the ultimate of every quality. Each object, person or group can have a number of qualities. Take a computer, for example. It can be powerful, easy to use, well designed, light and affordable. When all these attributes are met, we call the computer perfect. Every one of these attributes is a value. In the case of a company, what would its attributes be? Reliability, quality products, good organization, customer service, punctuality, safety, cleanliness and many more. Every one of these attributes that contributes to its perfection is a value of that company. When the positive values of hard work, sincerity, generosity, honesty, creativity, sense of humor, patience − the list is endless − are expressed to the utmost degree, the individual exhibits perfection in an infinite number of dimensions. And each strand of that perfection expresses a value.

Values can also be seen as ever receding goals. One can never attain a value; one is always in the process of practicing it. Take the simple quality of cleanliness. Right after an object or a place has been made spotlessly clean it takes non-stop effort to maintain it so. How long does it take before dust settles in a spot that has just been cleaned, or something is dropped or spilled? A person is good tempered or honest if he or she practices it all day, every day. A single lie or an angry outburst is enough to mar the reputation built up over years. If a parcel delivery company has achieved 100% on time delivery in a whole year, it still has to begin all over again from the first day of the next year, to maintain the record. Values are like the horizon, they always beckon us to go further.

Crises often reveal latent capacities. When faced with a challenge, great people, organizations and entire societies rise to the occasion. The pressure of the very challenge releases the energy and aspiration and makes one rise to heights one would not reach or even aim for otherwise. A crisis is a compulsion of outer circumstances. Values are what one imposes on oneself.

Steve Jobs, the co-founder of Apple Computers, imposed the value of elegant design upon himself or accepted it. The company's phones were not only great in their functionality; he made sure they felt good when held in the hand. The music players were simple and easy to operate. Even the carton that the computer came packed in, which people would throw away, and the design of the printed circuit board inside the computer case that no user would see were made to look good. When his engineers argued that no one would ever see or admire the neat circuit lines, he said a cluttered circuit board was an unfinished product. He was a perfectionist; such a component, regardless of whether it did the job or not, whether anyone would ever see it or not, was unacceptable. He wanted the title bar at the top of the windows and dialog boxes to be beautiful, he wanted the built-in calculator to be pleasing to the eye.

At the end, when he was sick and barely able to speak, he had an oxygen monitor put on his finger. He told the doctors that it was too complex, and suggested ways in which it could be designed to be simple and elegant! He set the industry standards, and in some cases, he created the industry itself. Jobs attained perfect perfection when it came to the physical value of the external appearance of his products – good looks, elegant design, ease of use, simplicity. Such a value for perfection took him to the height of not just one, but multiple industries – computer, animation film, music, telephone, tablet computing, retail and digital publishing.

Without waiting for the external circumstances to prod one into action, values make people excel themselves. They form the bedrock of sustainability and resilience – at the individual, organizational, societal and global levels.

3. Physical, Emotional and Mental Values

When Steve Jobs ensured that his company's phone would fit snugly in the palm, he focused on the value of physical appeal. What Abraham Lincoln valued was the mental ideal of patriotism. Values are of different types, and can be broadly classified into three categories −physical, emotional and mental.

What pertains to the physical plane is plainly visible to the eye. It can be the beautiful appearance of a product, the neatness of a place, the hard work or skill of an individual. The value is a tangible, physical reality, unlike an idea or feeling. The speed of airplanes, the efficiency of computers and the precision of the atomic clock are the physical values that have made these objects successful.

Speed, efficiency, precision and a few more values are rolled into one in the character of Phileas Fogg in Jules Verne's novel *Around the World in Eighty Days.* In the story, Fogg is a wealthy Englishman who is so methodical, organized and punctual that one can set one's watch by Fogg's routine. Every one of his daily tasks is according to a fixed schedule. He wakes up at the same hour every day, and has his bath, the temperature of his bath water being constant all year round. He leaves the house, takes a certain number of steps to reach his club, and has breakfast and lunch at mathematically fixed hours, the menu unvarying from day to day. He never hurries or delays, is economical of his energy and is always on time. One day at the club, his friends discuss a newspaper report that claims that it is possible to go around the world in eighty days. The friends dismiss it as impossible. In 1872, eighty days seemed too short to go around the world! But Fogg, whose life revolves around the clock, does not agree. The newspaper prints a schedule for each leg of the journey, starting from England to Africa, and from there to Asia, America and back. There isn't a single day for unaccounted delays. But the unexpected does not exist, says Fogg, to whom following schedules is the way of life. He bets his entire fortune on completing the journey in eighty days, and sets off on an adventure that sees delays, dangers and a lot of the unexpected. But through it all, Fogg is collected, organized, and as usual, punctual in the completion of his journey in the said time.

The physical value of punctuality in one's actions can be measured by the clock. There are other values, such as Lincoln's love for the country and aspiration of freedom for the slaves that cannot be measured by a tool. These are values of the emotions, intangible, but just as real and powerful. The generosity or goodwill of a friend, the cooperation among employees,

the integrity of the seller, the commitment of a company to its customers, the harmony in a family, the empathy for another or the unity in diversity in a country are emotional values that define the individual or group.

'All for one, one for all' is the refrain of the musketeers in Alexander Dumas' French novel *The Three Musketeers*. Athos, Porthos and Aramis, the original three musketeers, along with their friend D'Artagnan, live and are willing to die by their motto. Their unity, courage, taste for challenge, loyalty to the group and the leader are evident throughout the novel. When the queen entrusts them with the task of getting her diamonds back from the Duke of Buckingham in England, the French Cardinal Richelieu tries to prevent them. He sets up one obstacle after another, and attempts are made to attack the musketeers and kill them. But they are united, brave, and deeply motivated to fight for each other and their queen. They accomplish the task successfully, and all of them go on to reach very high levels in society.

A subtle variant of the value that is non-physical but unemotional is the value of the thinking mind. Accuracy in financial accounting in a company, discipline in an army, the educational level of the population, creativity of an artist, and knowledge or dynamism in individuals are some mental values that contribute to success.

Literature is filled with men and women of values of all types. The prolific English writer Anthony Trollope who has written forty seven novels besides short stories and non-fiction has created hundreds of characters, some of whom exemplify great values. Doctor Thorne, in the book with the same name, is an honest, sincere man who lives with his niece Mary in a small English town. He is not wealthy, but makes a comfortable living. He is trusted by all who know him, and Roger Scatcherd, the wealthy businessman in the town, makes him the executor of his will. By a turn of circumstances, it turns out that Thorne's niece, Mary, stands to inherit all of Scatcherd's wealth. The sum is enormous, and its consequences, greater still. It will enable Mary to marry her lover, the local squire's son, and reverse the square's family fortunes. But neither title nor fortune interests Thorne. He places people above money, and values even above people. He treats Scatcherd without a thought about the money. Scatcherd's son is drinking himself to death, and Thorne tries his best to cure the young man of his habit. He not only keeps from talking or doing anything with reference to the money, he is able to even keep from thinking about it. When he fails to save Scatcherd's son, he sincerely regrets the loss, and gives no thought to his niece's inheritance. Even when Mary becomes an heiress, the thought of any personal benefit does not cross his mind. So completely immune is he to all mercenary feelings that the fabulously wealthy Lady Dunstable, who is chased by suitors who have an eye on her money, falls in love with him for this very value. He is the only man of her acquaintance who does not value her, or anyone else for their bank balance. She marries him, and the middle-aged bachelor finds unexpected emotional fulfillment as well as great wealth.

There are some values that may be classified under more than one category. Freedom may mean employees in a company can spend part of their time on any project of their choice. In a family, it can translate as imposing less authority and encouraging greater individuality. Freedom in society allows each member to practice any religion or adopt any political ideology. It can be freedom in act, feeling or thought. There are some other values that transcend the physical, emotional and mental, and touch the spiritual−love, faith, goodness, self-giving.

4. Values at the Individual, Societal and Organizational Level

'The first thing [in credit] is character … before money or anything else,' said J P Morgan. Individuals like Morgan who have internalized positive values are guided in their every act, decision, word, even thought by these values. These values are often seen raising these people to the peak of their fields. Leonardo da Vinci's creativity, William Shakespeare's insight into human nature, Abraham Lincoln's idealism, Winston Churchill's courage and Nelson Mandela's aspiration for equality were the guiding light of their lives, which influenced not only their own future but that of their society, sometimes the whole of humanity as well.

One such individual value was George Washington's self-restraint. Washington was one of the founding fathers of the US, the man who won the Revolutionary War and led the country to freedom. It needed patriotism, self-sacrifice, leadership qualities and immense courage to wage a war and free the country. But what made him the first president of the independent country was his ability to restrain himself, even under pressing circumstances.

Abraham Lincoln would say later, 'If you want to test a man's character, give him power'. Washington had this power. He led the continental army against the British in America, and had all the military power that was to be had. But when he wanted money for his army, he approached the US Congress and waited for its sanction. When he and his soldiers were hungry, cold and ill, he did not demand or take what was desperately needed. He never once overruled the Congress or acted arbitrarily. He sought to establish a democracy in the US, where the military would serve the elected government, and not overrule it. This great self-restraint he expressed under trying conditions, even when his soldiers were starving in the winter, convinced everyone that he was a man they could trust with supreme power. After the country became free of authoritarian foreign rule, the Americans did not want any more authoritarianism, even if it was only domestic. They were even reluctant to forge a central government. Having got rid of a foreign monarch, they did not want another closer to home. Only one who would not misuse power would be acceptable. They had seen that the one man who could be absolutely trusted with power, regardless of the circumstances, was George Washington. So they unanimously elected him the President of America twice. He refused to contest a third time, a practice that has been followed by Presidents in the US ever since.

Today, the American nation is known for the various types of freedom it provides its people. The American value of freedom, Germany's reputation for engineering precision or the sense of honor among the Japanese are values adopted collectively in society. Values when adopted at the level of society or the whole nation generate enormous power for accomplishment.

When Mahatma Gandhi told the Indians that it was possible to obtain freedom from the British colonists through peaceful means, he was only voicing his strong conviction. His sincerity and idealism drew millions of Indians to follow him. He asked them to give up their British government jobs, boycott British goods and defy the government rules without violence. And 300 million people obeyed him. His commitment to his values was so intense and he was able to inspire the entire society to follow him. A half-naked man, according to the British, Gandhi had no military, political or financial power. But when he called on the Indian people to practice civil disobedience, they responded in millions. His idealism and values of non-violence and self-sacrifice became the values of the entire nation. The strength

of these values at the level of the whole society proved greater than the political, military and financial might of the British.

Values lead to unfailing success when coupled with the view of the whole. High achieving companies and other organizations are distinguished by their values. A narrow focus on profits is not the formula for sustained success. Success stories are better known for one or more values instead −BBC's reliability, Walt Disney Company's creativity, FedEx's organization, Apple Computers' user-friendliness, Volvo Cars' safety, Walmart's value for money, Google's innovation, Wall Street Journal's expertise, Amazon's user-friendliness. This is a very incomplete list of successful organizations that follow values, and see profits follow.

This is true even when adopting a high value seems to be detrimental to the annual balance sheet. Northwestern Mutual is a US financial services organization that offers among other products, life insurance. Soon after it was started 150 years ago, there was a train accident in Wisconsin, and the fledgling company received its first two claims amounting to $3,500. The company had only $2,000. So the company's President and Treasurer personally borrowed the needed funds to pay the claims immediately. Following this, the company saw a rapid increase in sales and expansion into new markets. It was seen that the company would always honor its policy, regardless of its own monetary interests.

Northwestern Mutual came to be one of the most admired in its field. The value of its Founder President is seen in the company even a century and a half later. When a man died of gunshot wounds, the coroner's investigation found that it was a case of suicide. The man had taken out a Northwestern Mutual life insurance policy, which did not provide coverage in the event of suicidal death. But Northwestern Mutual was not quite satisfied by the coroner's report and decided to launch an investigation of its own. The company concluded that there was a reasonable doubt about whether it was a case of suicide and paid the full value of the policy to the deceased man's family!

There was another case where a 32-year-old stockbroker, a married man with children, failed to pay the quarterly premium on his $100,000 life insurance policy with Northwestern Mutual. In spite of repeated reminders from the company, the policy owner allowed his policy to lapse. Six months later the man's wife phoned the Northwestern Mutual agent who had sold the policy to her husband and informed that her husband had been hospitalized with a brain tumor. The doctors said he had only one or two years to live. She was informed by the agent that the policy had lapsed. Legally, there was nothing more that was necessary or could be done by anyone.

The company's values permeate into each employee, who is motivated to uphold them. The agent was quite upset. He had done what was officially required of him. But he was not satisfied. He recalled a casual statement of the man's wife that her husband had been making irrational business decisions for several months, perhaps because of the tumor. The agent referred the matter to the Northwestern Mutual head office, asking if anything could be done. The company agreed to reopen the case for investigation. Months went by, and then one day the policy owner's wife received a call from the agent. The company had decided that her husband had been disabled by his illness prior to the lapse of the policy and was entitled to a waiver of premiums from that time. The policy was reinstated at no cost! It is no wonder

there is a joke about the company, you can recognize a Northwestern Mutual agent by his halo. Apart from this halo, have the company's high ideals resulted in anything else? Yes, the admiration of people and the corporate analysts and unsurpassed ratings for insurance financial strength from all major rating agencies in the US. And the number one position in individual life insurance in the country.

5. The Power of Values

Values form a part of everyone's education, starting from infancy. Fables, fairy tales and folk tales are full of them. The thirsty crow that fills the pot with stones to make the water level rise so it can drink the water is a lesson in resourcefulness, the tortoise that plods slowly and steadily and overtakes the sleeping hare is a testimony to the ultimate success of hard work and perseverance. Proverbs and aphorisms do the same. 'Pride comes before a fall' and 'Fortune favors the brave' contain the essence of profound values in a few words. Religion and philosophy preach them. Motivational speakers, books and movies too deal with them. Values are often seen as what makes one good in a moral sense. But values are not simply ethical or moral issues. They are of practical significance.

If you take any case of sustained success, at any level, in any field, anywhere in the world, in the individual, organization or society, accomplishment has always been accompanied by values. It may be one value to the exclusion of all else, or it may be a number of values, each practiced to different extents. But there has been no case of sustained success in the absence of strong positive values.

Physical skills harness, direct and channel physical energy in a controlled manner to generate precise movements and achieve high performance. Similarly, values harness, direct and channel psychological energy to generate remarkable results in personal and social life.

Values spur us to excel ourselves, where we would have been satisfied otherwise. When we set a high standard for ourselves, we follow it up with action. Values give the sense of direction; they provide the energy for the journey. The quality of the values and the intensity of our commitment to them determine the level of accomplishment. Values translate as consistency at a high level.

6. Integration of Values

It is very rare to see an individual or a group with only a single positive value. When one value is raised, many others are raised in the process. When we decide to practice punctuality, we find that it is necessary to be organized as well. Our things have to be kept in order, so time spent on searching is eliminated. Cleanliness results. We begin prioritizing our tasks better. Our efficiency and productivity improve. What begins as the raising of one value results in overall improvement. When a company decides that it will minimize wastage of every type, it finds new uses for objects it would have otherwise discarded. Creativity is spurred, money is saved. When it minimizes the time spent on tasks, processes become faster and more cost effective. Customers are better pleased. Business improves and greater growth ensues. All values are integrated, such as cleanliness and health; customer relations and prompt service; education and employment; prosperity and communal harmony; women's

education and children's health; good governance and law & order. When one is adopted, the others follow since they are interlinked. Sometimes, two values that seem mutually exclusive can become powerful allies.

"The power that the US enjoys today can be traced to Lincoln's reconciling and integrating the values of unity and freedom."

The United States at the time of Abraham Lincoln's presidency was disunited on the subject of slavery. Lincoln wanted all Americans to be free. After his victory and even before he took office, the southern states that wanted the continuation of slavery declared their secession from the union. It seemed like Lincoln could either keep the nation united, or free the slaves. He could have unity or freedom, but not both.

The American Civil War was waged. Lincoln tried to reconcile two values that seemed contradictory. He also knew the deeper truth, that fundamentally there is no unity without freedom, or vice versa. Lincoln preserved the union, abolished slavery, strengthened the federal government, and the United States came into its own. The power that the US enjoys today can be traced to Lincoln's reconciling and integrating the values of unity and freedom.

7. Value Implementation

A man once picked up his shopping bag and was leaving a store, when the girl at the billing counter said something he did not catch. He asked her to repeat it, and she snapped, 'I said, have a good day'. She had been trained to say 'Have a good day' to each customer as he or she left. She followed it, but how?

The power of values issues from the intensity of our commitment to them and the extent to which they actually influence our mental, emotional and physical behavior. Seen at the individual level, good manners represent a superficial external expression of values, which may not reflect any real inner conviction or commitment. When we mentally endorse a value and are determined to realize it, the value acquires the energy of a mental conviction. When our emotions fully sanction the value and are determined to live by it, the value acquires the power of character. The greater and deeper the acceptance of the value, the more fully it expresses in external acts and the greater the intensity it generates for achievement. Values that build the individual also build the organization, society, and all humanity.

The most powerful corporate values are not the ones that are preached and practiced by top management. They are the ones that penetrate through all the layers of the organization down to the bottom, where they are implicitly followed, often unconsciously. Implementation of the values in an organization involves a multi-stage process of defining, communicating and measuring performance on the value, assigning responsibility for it at different levels of the organization, developing systems for monitoring and feedback, and imparting the required knowledge, skill and attitudes to people. The implementation of the value of safety at the DuPont chemical company illustrates all these stages of value implementation.

Éleuthère Irénée du Pont immigrated to America from France in 1790 and established a gunpowder mill. He started a safety tradition at his mill that has long outlived its founder or the mill and become a core value of the company. He designed his first powder mills to

minimize the danger in the event of an explosion. He tested new gunpowder formulations himself before permitting other employees to handle them. He established a rule that no employee was allowed to enter a new mill until he or his general manager had first operated it safely. But more than all these precautions, he demonstrated his commitment to safety by living with his family on the plant site beside the mills along with his employees.

Nearly two hundred years later, in 1985, DuPont's safety record was truly impressive. Its workdays-lost rate (related to accidents) in the United States was 69 times better than the average for all U.S. industry and 17 times better than the average for the U.S. chemicals industry. In 2013, one DuPont site at Towanda, Pennsylvania celebrated 40 consecutive years without an event-related, lost workday case. The plant population has varied from 500 to 1,000 employees, and put in 57 million hours of work! Another plant at Stow, Ohio set a workplace safety record in 2007 with 60 years without a lost workday case.

How does DuPont do it? It begins by converting the corporate value of safety into an explicit objective—zero accidents. This objective is based on the belief that all accidents are preventable. At DuPont safety is a line management responsibility. All managers, from the chairman of the board to the supervisors who manage groups of workers in plants or offices around the world, are responsible for safety in their departments. If an injury occurs in any DuPont plant, it is reported to world headquarters within 24 hours. If a death occurs, it is reported to the chairman. At DuPont the CEO is also the Chief Safety Officer, and at all executive committee meetings, safety is first on the agenda.

The same importance is given to safety by plant managers. Every plant defines standards, sets goals, designs a safety program, and conducts regular safety audits. Training is a key element. The first thing taught in every training program is safety. Studies have shown that safety performance is proportionate to the level of training of the workforce, so training is continued as an ongoing activity. More impressive than all these things is the fact that all supervisors in DuPont facilities must review one safety feature every single day with each of their subordinates. Every sales and administrative department also conducts regular safety meetings. An open file drawer in a DuPont office is considered a safety hazard and attracts immediate attention.

There is also a specific set of safety-related rules. Wearing seat belts in company vehicles while on work-related business travel is mandatory. Defensive-driving courses are given to employees who travel for the job by car. When one traveling employee in Florida was identified by his manager as a problem driver, an outside driving expert was flown in the next day to give him special instruction.

Safety is the responsibility of every employee at DuPont, not just managers. Rules are enforced by discipline, and violations are a serious matter. All employees know that the fastest and surest route to getting fired is to repeatedly violate safety rules and procedures. The company tries to positively involve workers in the safety program.

Safety at DuPont does not end at 5 P.M. There are off-the-job safety programs, too. The company has managed to reduce off-the-job accidents and raise the number of employees wearing seat belts during non-work hours. Even visitors who drive out of a DuPont parking lot may have the guard asking them to buckle up. Not only is implementation done

through formal systems and procedures but the value has become so fully institutionalized that it is a custom or culture of the company. As a value becomes more institutionalized, the formal structures for implementation fade out of use.

"Values form the bedrock of free, prosperous resilient societies."

DuPont's obsession with safety more than justifies the cost. It has saved the company hundreds of millions of dollars, won the loyalty of its employees, and earned it the best reputation in the chemicals industry. Safety is an outstanding human relations tool. It shows concern for people. It pays in the protection of the skills that they have built up and in the elimination of suffering. It pays in the reduction of workers' compensation and maintenance rates and in the loss of property. A manager who manages safety well manages quality, production and costs well, too. The technique that one learns in managing safety applies to any parameter. There is a tremendous payback, and the biggest payback is in the efficiency of management.

Striving for high values is not a luxury for the successful, it is a way to become successful.

8. How do Values evolve over time?

High idealistic values are as ancient as humanity itself. But over time the application and implementation of those values have changed enormously. Values once applied to intimate family and local communities have gradually been extended to the community, caste, class, nation and beyond to encompass all of humanity. At one time the value of the individual was narrowly limited to the divine right of kings. The lofty values of freedom and equality enshrined in the American Declaration of Independence were formulated by many eminent individuals who either owned or condoned slavery. At the time it was drafted, the proclamation that "all men are created equal and endowed with certain inalienable rights" was not applied to women or blacks. The founding fathers of the US who signed the Declaration of Independence were not insincere in their declaration, but their commitment was limited and very narrowly defined. Slavery was only abolished in 1865. Women obtained the right to vote only in 1922. It took a long Civil War and two centuries of further social evolution for these lofty principles of freedom and equality to be extended in law and partially in practice to all Americans regardless of race, religion or gender. Values permeate gradually. That is the process of social development.

Gradually, the application of values is being extended more broadly and comprehensively. The rights of citizens in most countries were never intended to protect foreigners or even non-citizens. Religions often applied values only to members of their own sect and denied them to "non-believers".

The "Universal Declaration of Human Rights" adopted in 1948 marks a new and greater stage in the social evolution of humanity in which the notion that values must be uniformly applied universally to all humanity has been accepted in principle even though we are a long way from doing so in practice. Slavery, religious persecution, apartheid, holocaust and untouchability are some ideas that appall us today. Caste system, fundamentalism, human trafficking, corruption and many such negative elements in the world today will similarly become part of our past someday.

Values and social organization evolve hand in hand. Values energize and elevate the organization. The organization disseminates and reinforces the values. The extension of values requires the evolution of legal, political, social and cultural institutions capable of giving expression to the values, of enforcing adherence and inculcating them in its members.

9. Conclusion

As societies evolve, so do values. Stated otherwise, society evolves in the measure it adopts and extends in practice high values to its members and expresses them in its relationships with other societies. Society is not built on any physical structure. It is built on values. A relationship or an organization without values becomes an oppression. It is values that decide whether an organization stifles growth, freedom and individuality, or fosters them, whether it is part of the problem or part of the solution.

Values represent the subtle psychological infrastructure on which cohesive, sustainable, resilient societies are founded. So, if we need a global society, we need universal values. Values form the bedrock of free, prosperous resilient societies.

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United Nations Educational, Scientific and Cultural Organization

UNESCO Chair in Anticipatory Systems

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First International Conference on

ANTICIPATION

5-7 November 2015, Trento (Italy)

The UNESCO Chair in Anticipatory Systems, together with World Academy of Art and Science (WAAS), International Society for the Systems Sciences (ISSS), the Advanced Design Network, and the Department of Sociology and Social Sciences of the University of Trento, is organizing the First International Conference on Anticipation on 5-7 November, 2015 in Trento, Italy.

Anticipation is coming to the fore as an emerging field of study that is influencing a wide variety of disciplines. This international conference will explore the interaction among anticipation, uncertainty and complexity. Some questions that we intend to raise are these: When does anticipation occur in behavior and life? What types of anticipation can be distinguished? What structures and processes are necessary for anticipatory action? How can anticipation be modeled? A better and more complete understanding of anticipation and its effects will improve theories and models of individual and collective human behavior and its consequences. The ability to anticipate in complex environments may improve the resilience of societies facing threats from a global proliferation of agents and forces by articulating uncertainties through anticipatory processes.

Topics of Interest include but are not limited to

- Anticipation in the human and social sciences,
- Anticipation and decision-making,
- Anticipation and global social challenges,
- Anticipatory governance and the resilience of societies,
- Anticipation and Futures Studies,
- Anticipation in fiction, the arts, design and gaming,
- Modeling anticipation.

Invited Speakers: Arjun Appadurai, Jens Beckert, Julian Bleecher, Riel Miller, Martin Seligman, and Erik Olin Wright.

Program Committee: Roberto Poli (Chair), Flaviano Celaschi, Garry Jacobs, John Kineman, and Giuseppe Sciortino.

The Conference's Program Committee invites proposals for workshops to be held in conjunction with the main conference. Further information is available from http://www.projectanticipation.org, the website of the UNESCO Chair in Anticipatory Systems. Recognising the importance of Anticipation, special issues of the journals *Axiomathes, Cadmus, European Journal of Futures Research,* and *Futures* will be published from peer reviewed conference contributions.

Conference Fee:

- Early registration (before 1 September 2015): €150
- Late registration (from 1 September 2015): €200

Relevant dates:

- Deadline for individual abstracts: 31 April 2015
- Acceptance/rejection: 15 May 2015
- Final Program: 30 June 2015
- Early registration: Before 1 September 2015
- Deadline for registration: 15 October 2015
- Conference: 5-7 November 2015

Editorial Policy

The editorial guidelines reflect the policy priorities for the publication of articles in this forum of the World Academy. These priorities are:

- articles and papers solicited from Fellows or from knowledgeable experts who are members of academies and associations having a fraternal and cooperative relationship with the World Academy;
- papers generated in the advancement of specific projects adopted by the World Academy, which may emerge from the give-and-take of electronic seminars or other processes in furtherance of the completion of Academy-adopted projects;
- papers that are reasonably well developed and which may serve as a stimulus, among the Fellows, for the development of new project proposals for the World Academy;
- other such contributions as may emerge from the Fellows of the World Academy and which the editorial board deems important to be published and made available to all the Fellows of the World Academy; and
- that editorial policy enhance creative freedom, fresh perspectives, original ideas and new proposals which capture interface of different disciplines, transparency for non-specialized readers, and challenging conclusions.

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