



Quest for a New Paradigm



UN Palais des Nations, Geneva

The world is beset by multiple problems that are pressing. Humanity has identified, catalogued and analyzed them exhaustively. But we struggle in the search for viable, comprehensive, lasting solutions. Piecemeal remedies are innumerable but insufficient, for the effectivity of each is constrained by external conditions. Is there any approach that can effectively address the multiple challenges facing humanity today?



Council Chamber, Palais des Nations

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This was the compelling question posed by UN Director-General **Kassym-Jomart Tokayev** and WAAS President **Ivo Šlaus** in their opening remarks to over 200 participants attending the international conference on "Opportunities and Challenges of the 21st Century: Search for a New Paradigm", which the World Academy and the United Nations co-organized at Palais des Nations in Geneva on June 3rd, 2013. **Rolf Heuer**, Director-General of CERN, **Peter Maurer**, President of International Committee of the Red Cross and **Alexandre Fasel**, Swiss Ambassador delivered keynote addresses. They were followed by 42 speakers representing the Academy, UN ambassadors from eight nations, universities, research institutes and leading international organizations including ICRC, CERN, Club of Rome, Fondation pour Genève, Geneva Centre for Security Policy, Green Cross International, ILO, International Crisis Group, World Council of Churches and World Future Council.

Presentations explored comprehensive strategies to address four interdependent clusters of issues related to economy and employment, energy and ecology, human capital, governance and international security. Reports in the concluding session called for a fundamental change in values, institutions, laws, policies and strategies capable of effectively leveraging the enormous untapped human, organizational, technological and scientific resources available today to transform the pressing challenges into opportunities for rapid progress in promoting human welfare and well-being. The Geneva conference was the second in a series of WAAS events that seeks to evolve the outlines for a new paradigm of global security and development. For a summary of conclusions, see [page 2](#). Detailed information on the agenda, presentations and conclusions can be found on the [WAAS conference website](#).

Ivo Šlaus & Garry Jacobs



Left to Right: David Chikvaide, Alexandre Fasel, Ivo Šlaus, Kassym-Jomart Tokayev, Rolf Heuer, Ivan Pictet

Geneva Conference Report

Excerpts from Keynote Address by UN Director General Tokayev



Kassym-Jomart Tokayev

This time we have come together to discuss acute problems of today's international situation.

Geneva represents an ideal platform for a deeper reflection on where we are headed as

the international community and which kind of future we wish to build on. The international conference on Syria, which is taking shape now, is another demonstration of Geneva's enduring value as a global hub.

I am grateful to our partners in the World Academy of Art and Science – and in particular its President **Ivo Šlaus** and its Chairman **Garry Jacobs** – for organizing the event with us. The World Academy has a long and distinguished tradition for cutting-edge thinking that goes across boundaries, leading to creative approaches. I believe that your motto – **“Leadership in thought that leads to action”** – is very appropriate for our discussions today.

The world is undergoing profound changes, and we need both political will and immediate action to react to this transformation.

Political, economic and social balances are shifting. New dynamics have come into play, moving centres of gravity – from west to east, and from north to south. As just one example, it is projected that by 2020, the combined output of the three leading South economies – China, India and Brazil – may surpass the aggregate production of the United States, Germany, United Kingdom, France, Italy and Canada.

While some of these developments begin to address long-standing global imbalances, they also bring new contradictions and inequalities. 1.1 billion people still live below the internally-accepted poverty line of 1.25 dollars a day. Over 785 million people have no access to clean drinking water and 2.3 billion lack sanitation. The world is more connected than ever before, but still close to 4.5 billion people – predominantly in the developing world – are not online, and 1.5 billion people do not even have electricity.

Well-known mechanisms and tools no longer seem adequate to respond effectively to these negative trends. The international conferences are not delivering the results we need.

Against this background, we need to embrace a different type of governance – a new paradigm for how we work together to build a better world. Let me highlight three key components of this governance, which I hope may become issues of our discussions today.

First, nurturing partnerships. The challenges we face are interconnected. No single country, no single institution can confront them in isolation. Individually, they have neither the capacity nor the expertise. Over 200 million

people are without jobs – of these, some 75 million are young people. And this is not simply an economic issue, it is a political one. Lack of employment has already led to the undermining of social stability in many regions and countries, to the mistrust of just and efficient governance.

Second, reaching across boundaries. We are all aware that the challenges before us touch upon many disciplines. We still have a long way to go in including different types of knowledge at the policy level, in particular from the scientific, technological and academic communities. As policy-makers, we need to get better at reaching out for the knowledge that we need so that we base decisions on the latest evidence and thinking.

Third, embracing different models. No one size fits all. We need to embrace different types of governance models for different issues. The large-scale multilateral negotiations, driven by Governments, still have value. There will be contexts and issues where they are the only way of doing business. But they cannot stand alone. Action through regional organizations. Action through smaller groups of like-minded States. Action led by civil society, or at sub-national level. These are complementary, not competing, models.

We have posed as the overarching question for this session: Can humanity realize the apparently conflicting goals of prosperity, security, sustainability and social justice? I believe that the answer is yes. But it will require a new way of doing business, probably with the three elements that I have just outlined at the core and with a strong United Nations bringing these elements together.

Some observers consider the new governance a threat to the United Nations. I see it as a unique opportunity for it to play a more important role in connecting the different layers and partners for a cohesive and coherent global approach.

Please click [here](#) to read the full opening keynote address.



Geneva Conference Report

Welcome Address by Ivo Šlaus

Goals and Issues that need to be addressed by a New Paradigm for Global Development



Ivo Šlaus

The contemporary world is plagued by numerous problems, threatened by economic, ecological, social, political and moral crises. Each of these subjects has been subject to in-depth analysis and endless expert discussion. This is the time to focus on solutions, rather than on further analysis. The lack of significant progress on addressing these issues in recent years has seriously raised doubts about the collective capacity of the human community to effectively address them. Do solutions really exist for the complex multidimensional problems confronting humanity today? Is there any way in which apparently mutually contradictory goals of prosperity, security, sustainability and social justice can all be realized? If so, what is lacking? Do we even know of approximate solutions? Do we at least know “solutions” that are not worse than the present problems? Our record is not very good. In the 20th century many attempts to remedy problems and reduce threats led the world into even greater calamities. We should be guided by the course proposed by Hippocrates: Try to help so as to not inflict damage on a patient. Not to act would be a mortal sin of omission that would lead to destruction, so act we must. This conference co-organized by the United Nations Office in Geneva and the World Academy is a call for solutions – a call for ideas, out-of-the-box ideas. It is a call for a paradigm change.

In the past we have made several important paradigm changes, at least in science. Although the physical world, the particles composing it and laws governing it did not change for the last 14 billion years, our understanding of the physical world has been dramatically altered; first by the Copernican Revolution, then much more through Quantum Physics and the Theory of Relativity, when our concepts of time, space and certainty changed radically. In place of perfect certainty, we have realized that our physical world is based on the uncertainty principle, and that uncertainty still allows quantum electrodynamics to predict with accuracies of one in billions. Our social world is even more complex than the physical. Human beings and society change constantly and the laws governing them evolve over time. We change ourselves and the world we live in. It would be vain, even preposterous, to assume that the laws we formulated millennia ago for that different period and very different people are still valid today. Although we resemble in many ways our predecessors from before the Agricultural Revolution, we are in fact very different!

Addressing the current problems and threats confronting humanity today requires a fundamental paradigmatic change! It is not enough to merely change the course. We must change the paradigm, but which one? And how? Again, Physics, the simplest of all sciences, can help. We realized that the conception of time has changed, but we preserved the Newtonian laws in domains where they

are still valid. The situation in the socio-economic-political domain is much more complex. First, it is a moving target, rapidly moving! So, our first conclusion should be that the new paradigmatic change we look for has to be dynamic, not static! Our second conclusion should be that whatever the new paradigm is, it has to be consistent with the existing paradigms in domains where they remain valid and useful, if there are any.

There is one area in which the old paradigm must clearly be abandoned. Although humanity has enjoyed several long intervals of peace, war and violence have been endemic throughout our history. The new paradigm must absolutely call for elimination of violence. No war, no violence – under any circumstances! There is no domain where violence is acceptable! No war, no weapons of any kind, much less weapons of mass destruction or their 21st century successors. Let the incomplete steps initiated by Reagan and Gorbachev in Reykjavik become a reality. Abolish nuclear weapons now! Instead of MAD – Mutually Assured Destruction – let us focus on mutual economic development.

The new paradigm may still retain the principle of competition, for competition helps to release human energy, innovation and creativity; but competition is augmented and complemented by cooperation (as biologists from J. Maynard Smith and W. Hamilton argued almost half a century ago). Private property is another feature of the existing paradigm which we cannot dispense with, but private only within limits. Private ownership of the oceans, water, air, would be disastrous. As Mahatma Gandhi said, the world has enough to satisfy everyone's need, but not for everybody's greed. It is essential that we recognize the value of need as supreme. Greed is a threat to those afflicted by it, but also to those advocating it. At a time when income inequalities have increased from the ratio of 5:1 approved by Plato and 20:1 endorsed as the maximum by J.P. Morgan to thousands and thousands to one, it is time to remember that humans are social animals, that the Golden Rule is imbedded in our biology, that we need each other and that human capital is our most precious capital. Human capital is the basic foundation stone of the new paradigm. It is the source of all our creativity and innovation and, as Aristotle claimed, it is the main source of our happiness too!

The world faces many problems, but they are all interconnected and interdependent. They will not lend themselves to fragmentary, piecemeal solutions. We need to evolve a comprehensive, holistic approach, but one that is at the same time individualized so as to be applied to different conditions. We cannot rely on the model of physical science for our answers, but we can and should apply the same intense creativity and imagination that have enabled physical science to answer the famous Thales' question “How and from what is the world made?” That creativity is our greatest resource for meeting difficult challenges and availing of the expanding opportunities that lie ahead.

Geneva Conference Report

Closing Address by UN Director General Tokayev

First of all, I would like to thank all of you for taking part today and sharing your views. I know that we may not have had as much time as we would have liked for discussion, but I hope that you have all taken full advantage of the coffee breaks and other opportunities to talk and to network. It is my hope that new connections have been made here that can lead to further collaboration.

I will not attempt to sum up our discussions. Our distinguished moderators have already done that very well. Concluding our discussions today, I wanted to simply highlight a couple of key messages:

One of the recurring themes today has been the importance of translating theory into practice. In many areas, we actually know what the problems are, and we know what to do. The challenge is in implementation, through a systemic approach that allows all interests to be accommodated.

New concepts have been put forward. I am sure that ideas such as the “governance cloud” and “the G-0 world”, as well as the correlation between democracy and stability in the world, will continue to generate discussion. We had an interesting discussion on what global leadership is, and how it is being practiced. Many speakers identified the current constraints of short-term electoral cycles and the imperative of immediate results as part of the failure to develop adequate long-term strategies.

Another theme that has come up in many is the relationship between politics, science and education. Many speakers highlighted that priorities in these areas have to be based on democracy and human rights. Another overall conclusion is that the future is a resource-constrained world. The competition for water, land and energy will be fierce, and hence will be creating an inherently unstable world, with more conflicts and inequalities.

Until now, price and value have been given to traditional sectors of the economy. If we want to beat further environmental degradation and destruction, we need to give proper value to sustainable goods. We need to maximize resource productivity. We need a resource-efficient strategy that goes beyond conventional economic policy frameworks.

Employment was another key point. All agreed that the issue of employment is too important to leave to the markets. What we need to figure out, as the international community, is what kind of growth path will create good, decent jobs in the future.

So, how do we move forward from here?

I take four key conclusions with me from today’s debate:

First, we need a vision for sustainable energy in an interconnected world. Second, we need a new logic for economic development that gives priority to science and education. Third, we need economic, financial and political reform that deals with the current short political cycles to enable long-term strategy. And finally, we need a change of the value and pricing system to reflect the current sustainability challenges.

As **Ambassador Fasel** said at the opening this morning, this meeting has increased the quality of the debate at all levels, further enabling us to have an informed dialogue on our interconnected challenges.

I thank again the World Academy of Art and Science, as well as the diplomatic community, the international organizations in Geneva and the Swiss Government, for the excellent collaboration that culminated in today’s conference. I wish to take this forward and I hope that all of you will be ready to continue our in-depth reflections on how to build the world that we all want.

Thank you very much for your active involvement.



Left to Right: Janani Harish, Saulo Jose Casali Bahia, Heitor Gurgulino de Souza, Winston P. Nagan, Ljudmila Popović, Momir Djurovic & Alberto Zucconi

Geneva Conference Report

"A Creative Moment" - Concluding remarks by Garry Jacobs

We have much to be grateful for. In spite of appearances, the world is a far more peaceful place than any time in the last half century. In the past 65 years since the founding of the UNO, the world avoided a third recurrence of world war. Battlefield deaths are at an all-time low. The number of democracies has risen fivefold. The long looming threat of nuclear war has receded since the end of the Cold War, though it is yet to be vanquished. Our more peaceful world is also a more prosperous one. Over the past 200 years world per capita income has risen twelvefold in spite of a sevenfold rise in population – a remarkable achievement in the history of humanity. Yet in spite of these achievements, we are still a world beset with pressing problems and threatening crises – political, financial, economic, social and ecological.

What is it that opposes our progress? Our greatest obstacle seems to be the persistent dead weight of old ideas and outmoded ways of thinking that resist change. In spite of our remarkable progress, we seem to have run out of creative ideas to effectively cope with the challenges we confront. Many say what we lack most today is great leadership. They yearn for another FDR, Churchill, Mahatma Gandhi or Gorbachev to lead us from the morass. But what if the very idea that we depend on great individuals for our collective progress is an outdated idea whose time has passed?

Throughout history we have seen the creative power of ideas. Ideas can lead even in the absence of great leaders. An influx of creative ideas from Classical Greece spurred the cultural and social revolution of the Renaissance. An influx of new thinking about democracy, socialism, universal education, evolution, relativity and uncertainty spurred the scientific, technological, political, economic, and social revolutions of the 19th and 20th centuries.

Today we live in a world where ideas can lead. Ideas have immense power to change the world. As **Victor Hugo** once wrote, "No one can resist an idea whose time has come". 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. We need leadership in thought which will lead to effective action. This is the mission of the World Academy.

Of all ideas, values are the most powerful. It has been said that it takes centuries of human experience to make a little recorded history and centuries of history to create a little civilization and centuries of civilization to form a drop of culture. Culture represents the distilled essence of human wisdom acquired over many centuries and the quintessence of culture is universal values which tell us how to live together in peace and harmony, how best to survive, grow, develop and evolve as a species.

A new paradigm must be founded on a reaffirmation and elevation of the values which underpin our civilization, government, institutions, laws, policies and activities. Today, we have heard more than forty thoughtful observers and actors on the international scene share with us their vision of the possibilities and opportunities that await us. They reinforce the view that the individual and global community – the human microcosm and macrocosm – are each infinite in its potential for development. Their messages were positive and full of hope, saturated with the reaffirmation of universal human values that can lead us into a better future.

Speaker after speaker affirmed the rights of our common global community as well as the fundamental rights of every individual human being to peace, freedom, right livelihood, economic security and social justice. They stressed the need for value-based economic theory that seeks to promote human welfare and equality rather than growth for growth's sake. They called for a paradigm shift from competitive to cooperative security, from an inherently unstable system where each nation seeks to enhance its own security by measures that increase the insecurity of others to one in which all cooperate to enhance the security of all at far lower levels

of military spending. They argued for expanding the very notion of security from a narrow military-political conception to encompass the economic, social, psychological and ecological dimensions of human security. They reminded us of our collective responsibility to future generations and urged us to act in the interests of all humanity. They reasoned that the social systems we live in have been fashioned by our own minds and hands, not any immutable laws of Nature, and that we have the power to change them if we have the will. They demanded that the rule of law be based on true principles of democracy and founded on the will of the people – of humanity as a whole – not on the power of money or the unlimited, unconditional sovereignty of nation-states. They projected new ideas, evolutionary creative ideas that can build a better future for us all.

The discussions today are only one step in a process. Yet already we can perceive the first outlines of a paradigm emerging, founded on basic human rights, fueled by the dynamism of creative human energies, and aspiring to build a world whose principal aim and objective are the welfare and well-being of all human beings.

We are living in remarkable times and have been witness to some great creative moments in history. In 1933 America adopted the New Deal. The most capitalistic and individualistic of all nations proclaimed its responsibility to ensure the economic security and social welfare of all its citizens. In 1945 the founding of the United Nations marked the end of centuries of incessant warfare on this continent. In 1947 Indian Independence signaled the beginning of the end of colonialism. The fall of the Berlin Wall and Iron Curtain in 1989 marked a new stage in global peace and development. It was followed in quick succession by the establishment and rapid expansion of the European Union, an unprecedented experiment in human unity, the founding of the WTO and the birth of the first truly global social

institution – the Internet – the most powerful instrument of individual empowerment and social cohesion ever created, whose full creative potential is yet to be realized.

What the world needs now is another great creative moment – a moment energized by fresh creative ideas, supported by dynamically progressive institutions, and inspired by

universal values that express our collective aspiration for a better life and a better world.



Raoul Weiler, Heitor Gurgulino de Souza, Alberto Zucconi, Winston Nagan, Herwig Schopper & Saulo Casali Bahia



Zbigniew Bochniarz, Momir Djurovic & Orio Giarini



Ivo Šlaus, Saulo Bahia, Ljudmila Popovic, Winston Nagan & Alberto Zucconi



Colum Murphy, Heitor Gurgulino de Souza, Janani Harish, Margarete Baddeley, Pierre-François Unger, Herwig Schopper & Juri Engelbrecht



Janani Harish & Zbigniew Bochniarz



Zbigniew Bochniarz, Janani Harish, Juri Engelbrecht, Raoul Weiler, Ivo Šlaus, Ljudmila Popovic, Garry Jacobs, Momir Djurovic, Heitor Gurgulino de Souza, Saulo Bahia, Winston Nagan & Alberto Zucconi

Report on Alexandria Workshop

Library of Alexandria



Left to Right: Winston P. Nagan, Gerald Gutenschwager, Garry Jacobs, Robert Horn, Heitor Gurgulino de Souza, Ruben Nelson, Agni Vlavianos Arvanitis, Jakob von Uexkull, Ljudmila Popovic, Mary Gutenschwager, Ali Eldean Hilal, Alexander Likhotal, Rana Tamim & Mutaz Qafisheh

According to a proverb, there is nothing new to be learned, only old knowledge to be recovered and interpreted in the light of the present. The Academy's quest for a new paradigm brought it to one of the world's oldest and largest known repositories of collective knowledge, the Library of Alexandria in Egypt, first constructed in the 3rd century BC, destroyed during the Roman occupation, and resurrected as a state-of-the-art center in 2002.

Building on the insights and momentum of the Geneva conference, a small group of WAAS Fellows and invited participants from the region met in Alexandria on June 5th and 6th to review the conclusions of the Geneva confer-

ence and search for an underlying framework for a new paradigm for global peace and development. The workshop was co-chaired by **Ismail Serageldin**, Director of the Library of Alexandria, and **Garry Jacobs**, Chairman of the WAAS Board of Trustees. Conclusions of the Geneva conference were presented by Fellows **Alexander Likhotal**, **Heitor Gurgulino de Souza** and **Winston Nagan**. Fellow **Jakob von Uexkull** presented a detailed policy framework developed by the World Future Council.

The meeting generated a tentative list of concepts, principles and values which could constitute the foundations of a new paradigm.



Left to Right: Ruben Nelson, Ismail Serageldin, Garry Jacobs & Winston P. Nagan



Left to Right: Librarian, Ismail Serageldin, Garry Jacobs & Winston P. Nagan

Report on Alexandria Workshop

Ideas, Principles & Values for a New Paradigm

This report presents ideas discussed at the WAAS international conference at UN in Geneva and the Library of Alexandria workshop in June 2013. They represent an initial, incomplete set of guidelines for evolving a new global paradigm to address the multiple challenges facing humanity in the 21st century. This document is intended to serve as a basis and stimulus for further discussion.

Core Concepts

1. **Framework:** The need for a new paradigm has been clearly established and much work has been done on individual components of it, but the world today is a very complex organism consisting of many interdependent subsystems which are undergoing rapid change. For this reason formulation of a comprehensive, integrated global perspective will be extremely challenging. Nevertheless, it may be possible to identify a set of fundamental ideas, principles and values that will provide a sound foundation and framework for a new paradigm.
2. **Power of Ideas:** Ideas have immense power to change the world. The new paradigm will derive its power from the ideas and values on which it is based. "No one can defeat an idea whose time has come".
3. **Four-dimensional Mosaic:** The new paradigm can be conceived as a mosaic encompassing movement in four dimensions –
 - From uni-sectoral to comprehensive, integrated
 - Scale from local to global
 - From static to dynamic
 - Conceptual to analytical
4. **Competition of paradigms:** We need to understand how paradigms emerge, persist and decline. A new paradigm must demonstrate its capacity to address the negative consequences of the existing paradigm and provide a better alternative.
5. **Concept of Society:** Society is much more than a combination of individuals. Society encompasses the relationships between people, organizations, institutions, systems and cultural values which support human activities, interactions and cooperative endeavor. A new paradigm must encompass all dimensions of society, rather than confine itself to the sphere of economy or technology.
6. **Individual and the Collective:** A new paradigm needs to arrive at a more effective reconciliation of individual freedom with social equality, the rights of the individual and the rights of the collective.
7. **Human Choice:** Social science is the science of conscious humanity, not a science of inanimate physical nature. The principles governing society and social science are not determined by immutable and eternal laws of nature. They are created by human beings and based on human values and choices that can be altered.
8. **Instruments of Development:** Humanity has the tendency to develop marvelous instruments and then become subservient and enslaved to the tools fashioned to serve us. Human welfare and well-being must be given precedence over the compulsion of our social organizations, institutions and instruments.
9. **Rationality:** Our problems are the result of clinging to naïve assumptions, wishful thinking, invalid or outmoded concepts, entrenched interest and common superstitions, such as blind faith in technological progress or the wisdom of the unregulated marketplace. Solutions will become evident when we insist on a rational approach.
10. **Values:** Values are not merely utopian ideals. Values represent the essence of knowledge and wisdom acquired by humanity over millennia regarding the fundamental principles for human survival, growth, development and evolution. A paradigm based on universal values will be ultimately the most practical and sustainable.

Economy

11. **Trans-disciplinary Science of Society:** Economy is a subset of society and inseparable from the political, social, ecological, technological and cultural context and needs to reflect their true contribution to society and human welfare. Economic activity always occurs within a political policy framework and impacted by prevailing policy, laws and values. A broader and more trans-disciplinary understanding of economics is needed which also integrates knowledge from the natural sciences and opportunities from the engineering sciences.
12. **Paradox of Needs and Capabilities:** The world today confronts a paradox of enormous unmet human needs coupled with a vast reservoir of underutilized resources – human, financial, organizational, technological – capable of meeting those needs. The existence of this paradox reflects fundamental deficiencies in economic theory and public policy.
13. **Regulation:** The free (unregulated) market is only a concept. All economy is political economy. Regulation is essential for freedom. Regulation must reflect the values of the new paradigm.

14. **Efficiency:** The economic concept of efficiency is confined to maximizing return on capital and other resources, irrespective of its impact on human welfare. A wider social concept of efficiency is needed to reflect the real social costs and benefits of economic activity, including its impact on peace, human welfare and well-being and the environment.
15. **Financial Markets:** Financial markets were developed as a mechanism for accumulating capital to meet the growing needs of the real economy, not as an end in themselves. Today financial markets are increasingly divorced from the real economy and need to be realigned to serve their essential social purpose. Financial transactions need to be regulated and taxed in a manner that protects and promotes the real economy.
16. **Money:** Money is not a thing. It is a social organization backed by the accumulated wealth and future productive capacities of society. Money creation should be directed to meeting human and social needs rather than supporting speculative investment. Money created for investment in human capital and other productive capabilities is an essential catalyst for social development.
17. **Technology:** Like money, technology is not an end in itself but an instrument which should only be utilized in a manner and measure that it promotes human welfare and well-being.
18. **Tax Bias:** Current fiscal policies that incentivize capital investment while taxing labor promote investment in technology at the expense of human beings and depletion of natural capital. Taxes and subsidies should promote what we want more of, not vice versa.
19. **Sustainability:** The concept of sustainability should reflect the opportunities for future generations as expressed in terms of total capital per person -- natural, man-made, human and social.
20. **Freedom vs. License:** Freedom and responsibility are inseparable. Unbridled pursuit of personal selfish gain is incompatible with extension of freedom to all. The right to development by individual pursuit has to be balanced by the right of the collective for equitable distribution of benefits.
21. **Measurement:** Quantification is a powerful and essential tool for social progress. But in practice we get what we measure, not necessarily what we really need. The quality of our measures determines the quality of results. The current system of national accounts fails to distinguish between positive and negative economic activity and fails to measure net impact on national wealth. National accounts need to reflect stock as well as flow, distinguish negative from positive contributions, and fully reflect contributions to long term viability.
22. **Prices should reflect true costs:** Economic values must reflect the real value of natural resources, the real cost of various energy sources, and the social costs of unemployment. Pricing water and other resources based on the cost of extraction rather than their replacement costs grossly distorts decision-making. Failing to take into account the real risks and insurance costs for nuclear power distorts the relative cost of alternative forms of renewable energy. Neglecting the impact of unemployment on public health, crime rates, social stability and drug use distorts assessment of the relative value of capital and labor.
23. **Right to Employment:** Employment in a market economy is the economic equivalent of the right to vote in democracy. It is the minimum condition for economic freedom and human welfare. The present system which supports that right to unbridled speculation, even when it undermines the real economy and employment, is incompatible with human welfare and social justice for all. Employment needs to be recognized as a fundamental human right.
24. **Full employment:** Full employment is an achievable goal. Ample scope exists for rectifying the implicit biases in the present system that favor capital and technology over labor and accumulation of wealth over fair distribution of income and the proceeds of production. Higher education and vocational training must be made affordable and accessible to all.
25. **Policy counts:** Better policies can enhance living standards and quality of life independent of rising levels of income. Policy should be based on sustainable development indicators.

Energy & Ecology

26. **Anthropocene:** Human beings are the most powerful geological force impacting the planet and biosphere. Consequently, we have a special responsibility to ensure that our actions are compatible with the protection and progressive enrichment of the earth's biosphere. The science of Economics must evolve to fully reflect the costs and measure the contribution of all human activity to our natural capital base.
27. **Decoupling Consumption vs. Well-being:** Global development strategy must be compatible with the fullest attainment of both advanced and developing nations. Human welfare and well-being have to be decoupled from unbridled consumption of the earth's finite resources, as pollution has been largely decoupled from industrial development in technologically advanced nations.
28. **Resource Efficiency:** Radical improvements in resource efficiency are available and can lead to a massive decoupling of resource consumption from economic activity.
29. **Ecological Development Models:** Dynamic development models should explicitly incorporate climate challenges, ecological footprints, ecosystem services, and the concept of planetary boundaries.

30. **Incentives & Subsidies:** Incentives for sustainable consumption and production should be designed, e.g. by reducing or removing ecologically destructive subsidies.
31. **Public Goods:** The real impact of economic activity on public good needs to be assessed and reflected in pricing and taxation.
32. **Energy:** Energy strategy should seek to maximize energy efficiency while minimizing energy consumption in a manner compatible with economic prosperity for all. Decoupling growth and resource consumption is an essential but not a sufficient strategy.
33. **Circular Economy:** Policy and incentives should be introduced to make recycling of natural resources the norm in every sector.

Human Capital

34. **Human Resourcefulness:** Anything becomes a resource only when human beings recognize it as such. Material resources are finite, but the potential development of human capacities is unlimited. A human-centered paradigm must be directed to maximize human welfare, not growth, and to place maximum emphasis on the full development of human capacities and social opportunities – human and social capital.
35. **Human Capital:** The bias toward capital and technology should be replaced by recognition that human beings are the source of all productivity, innovation and creativity. Investment, taxes and subsidies patterns should reflect the relative importance of human capital in development.
36. **Individuality:** Society can only reach its full potential by fostering the full development of each and all of its individual members. The individual is the catalyst for social change. The new paradigm should secure the rights and promote the fullest possible development of the unique capabilities of each individual in a manner compatible with the full development of others.
37. **Education:** Education is the prime instrument of conscious social evolution. Raising levels of education is essential for promoting peace, democracy, employment, economic development and cultural symbiosis. Expenditure on education should be recognized as an investment in human capital. Quality, type and content of education need to be oriented to meet emerging needs and opportunities.

Governance & Security

38. **Basis of law:** Law derives its legitimacy from the will of the people and emerges by a social process, not merely by past precedent, legislative process or the arbitrary acts of states.
39. **Leadership:** What the world needs now is good governance systems rather than strong leaders. Global leadership needs to be replaced by the evolution of international rule of law.
40. **Democracy:** Democracy must evolve from plutocracy, competition between elites and corruption into a truly representative participatory system based on human values and promoting human security.
41. **International law:** Principles of democracy must be extended to international institutions – globalize democracy. Sovereignty and international law are the result of a global constitutional process which must be expanded to include the role of the individual as a subject and not merely an object. The notion of law cannot be divorced from the notion of justice.
42. **Concept of Sovereignty:** National sovereignty is a leaking ship. The basis for national sovereignty is inseparable from the rights of its citizens. The concept of sovereignty must be broadened to take into account the rights of the human collective and its individual members. The authority foundations of the UN Charter should be expanded to clearly reflect the sovereign rights of individual human beings and humanity as a whole.
43. **Concept of Security:** The concept of security needs to encompass political, social, ecological, cultural and psychological dimensions. Ideas and policy security should evolve from maximizing national security to maximizing human security.
44. **Cooperative Security:** The prevailing security paradigm fosters competition between states in a manner that each nation's efforts to enhance its own security are perceived as threats by other states leading to perpetual escalation. Global security must move from an exclusive competitive paradigm to an inclusive cooperative paradigm.
45. **Nuclear Weapons:** Weapons of mass destruction designed to wipe out large civilian populations, endanger future generations, and reek widespread, lasting damage to the environment are totally incompatible with the fundamental rights of humanity. The use, threat of use or possession of nuclear weapons should be declared a crime against humanity.
46. **Global Society:** The whole is more than the sum of its parts. Humanity is more than a collection of nation-states. Governance needs to evolve to reflect the will of humanity as a whole.
47. **Global referendum:** Mechanisms need to be developed to assess the will of humanity and allow it an effective role in global decision-making.

Compiled by Garry Jacobs

Send comments, modifications and additions to paradigm@worldacademy.org

Zagreb & Split Conference Report

Abolishing Weapons of Mass Destruction



Left to Right: Ivo Šlaus, Astrid Couzians, Ankica Marinovic, Garry Jacobs, Ivo Josipović, Kassym-Jomart Tokayev & Louise Vinton

Human and global security are among the main objectives of the World Academy. On May 6-7, 2013, WAAS, together with the European Leadership Network (ELN) and Dag Hammarskjöld University College for International Relations and Diplomacy, convened a conference on "Actions to Enhance Global Security" in Zagreb to prepare recommendations for a presentation at the "IX Annual NATO Conference on WMD Arms Control, Disarmament and Non-Proliferation" in Split on May 6-7. The Zagreb meeting was a follow-up to the "International Conference on Nuclear Threats and Security" in Dubrovnik, which the same organizers conducted last September and which was sponsored by NATO, the Croatian Ministry of Foreign and European Affairs, and the Geneva School of Diplomacy and International Relations.



Alyn Ware, Kassym-Jomart Tokayev, Tibor Tóth, Ted Whiteside, Paolo Cotta-Ramusino & Ivo Šlaus

The Zagreb conference was attended by **Dr. K. J. Tokayev**, UN Under-Secretary-General, UN Office in Geneva; **Ambassador Tibor Tóth**, Executive Secretary of the Preparatory Commission for the Comprehensive Test Ban Treaty Organization, Vienna; **Lord Des Browne**, convenor of the European Leadership Network; **Paolo Cotta Ramusino**, Pugwash Secretary-General; **Alyn Ware**, Founder and International Coordinator, Parliamentarians for Nuclear Non-Proliferation and Disarmament

(PNND); **Ted Whiteside**, NATO Deputy Assistant Secretary General for Public Diplomacy; together with about 35 other Fellows and participants from the UK, USA, Spain, France, Hungary, Sweden, Kazakhstan, New Zealand, Canada, India, Slovenia, Serbia, Montenegro and Croatia, as well as students and professors from the Dag Hammarskjöld University College. The Zagreb conference was sponsored by NATO, the Croatian Ministry of Foreign and European Affairs, and The Atlantic Council of Croatia. Just prior to the Zagreb conference, President of the Republic of Croatia and WAAS Fellow **Prof. Ivo Josipović** met with **K.J. Tokayev, Garry Jacobs** and **Ivo Šlaus**.

Two days later, **D. Browne, G. Jacobs** and **I. Šlaus** participated in the NATO conference at Split and presented a paper based on recommendations formulated in Zagreb as well as ideas presented at recent conferences organized by WAAS, ELN and Pugwash related to disarmament, WMD, NATO and NATO enlargement, WMD Free Zones, terrorism and failed states. The paper and the individual observations by our delegation were the subject of significant discussion at the conference. Please see WAAS website for the agenda, full list of participants, background and discussion papers.



Des Browne

The events in Dubrovnik, Zagreb and Split demonstrate the Academy's continued commitment to peace, disarmament and non-proliferation in cooperation with other leading organizations such as Pugwash, ELN and PNND; our efforts to collaborate with the UN Office in Geneva, CTBTO, and NATO and with academia and scientific institutions such as Geneva School of Diplomacy and International Relations, Monterey Institute of International Studies and Dag Hammarskjöld University College for International Relations and Diplomacy.

Ivo Šlaus

Zagreb & Split Conference Report

Actions to Enhance Global Security - Focus on WMD and Terrorism

"Paper prepared for presentation at the NATO Conference on Weapons of Mass Destruction at Split, Croatia on May 6 & 7, 2013"

Des Browne, Garry Jacobs & Ivo Šlaus

Under the auspices of the European Leadership Network, the World Academy of Art & Science and the Dag Hammarskjöld University College of International Relations and Diplomacy, a group of experts propose to present a set of recommendations to the conference.

Politicians are distracted with the ongoing economic crisis and instability. While understandable, this is far from the only challenge facing the world as we have been discussing today. If we are to seize the opportunities of the future then we have to address the legacy of the past and nowhere is this more evident than on defense and security issues. The blunt truth is that security policies in the Euro-Atlantic region, in NATO's back yard, remain on Cold War autopilot, strategic nuclear forces remain to be launched in minutes, thousands of tactical nuclear weapons remain in Europe, a missile defense debate remains stuck in neutral, while new security challenges such as cyber, conventional, prompt strike force, space remain contentious and inadequately addressed. The truth is this legacy contributes to tensions and mistrust across the Euro-Atlantic region and needlessly drives up risks and most importantly at a time of unprecedented austerity drives up the cost of defense. But this is about more than guns and butter. The likelihood of a major war in Europe may have practically disappeared since the end of the Cold War but this legacy with its attendant mistrust undermines any effort to build a true partnership in the Euro-Atlantic region and beyond to meet the challenges of the 21st century including what we are focusing on in this session on WMD and global terrorism. The status quo, the legacy divides our continent and sets both Europe and Russia up for a future of failure but worse, a future of irrelevance in the 21st century.

The overwhelming conclusion of our experts' deliberations is that we need a new approach, a new paradigm for the 21st century which is not dependent on what worked in the 20th century. Among other things, we considered the recommendations of Building Mutual Security, the report of deliberations by a group of experts and political leaders brought together by the Nuclear Threat Initiative, the European Leadership Network, the Munich Security Conference and the Russian International Affairs Council which was published on 4 April. The report's analysis, its key findings and matrix of steps for a new cooperative global security discussion commended itself to our participants and we recommend that it be given serious consideration by our political leaders.

The world faces unprecedented challenges to global and human security. The threats facing the world are interconnected and interdependent. Current crises destroy human capital and harm and humiliate human dignity. The frustration resulting from unfulfilled expectations provides fertile grounds for terrorism. Mistrust and tensions reinforce each other. War and violence make all problems and threats worse. Under these circumstances

it is easy to lose sight of the existential threat posed by the use and threat of use of nuclear weapons and other weapons of mass destruction.

We must recognize the progress that has been made in reducing the number of nuclear warheads by about 75% since the end of the Cold War. And that number is decreasing still. But at the same time, we must acknowledge our collective failures. The number of nuclear armed states has increased, and this proliferation has taken place in the most unstable regions and in some of the unstable regimes of the world. The CTBT is still not ratified and stalemate prevents progress on the FMCT. We know terrorists are striving to obtain access to nuclear weapons and materials. Although the world has succeeded in avoiding use of these weapons for the past 68 years, there is no assurance that this record of no-use will be maintained in future as the present very dangerous confrontation with North Korea should make evident.

We are far from being able to guarantee the security of existing nuclear weapons and materials. Recent experience in both North Korea and Syria demonstrates that a deterrence strategy based on the threat of use of WMD has failed to deter both threats of use and actual use of WMD. Inconclusive evidence has emerged suggesting that chemical weapons have been used. If it is true, it would be a very serious precedent and maybe also the breach of a red line followed by impunity. New thinking is called for and NATO has a special obligation to take the lead in that thinking.

Before coming to specific proposals, we would do well to ponder some fundamental questions related to nuclear weapons. Answers to these questions will reflect our willingness to take the courageous actions necessary to address the threats that they pose.

- Is there presently a problem that nuclear weapons solve that is a greater danger than the weapons themselves?
- Can a nonproliferation regime based on the premise of do as we say and not as we do be sustained?
- When the world's most powerful military alliance in human history claims a need for these deployments for security, what message does a weak state in a dangerous region hear?
- Do the weapons provide prestige or military value?
- Can the resources of NATO not come up with a better way of enhancing security and thus set an example that can truly be emulated by all nations?

Now for our specific proposals, which are by necessity limited to a small number of priorities, but at my presentation suggests, are part of a longer list of necessary steps

1. Reduce the role of NW in NATO Strategic Concept and national security doctrines of NWS members of the Alliance

- Elimination of US non-strategic NW from Europe
 - Build-up the non-nuclear aspects of NATO security concept and explore ways to provide US assurances of commitments without stationing of NW in Europe
 - Commit not to use NW against a non-nuclear-weapon state under any circumstances
2. Make NATO-Russia missile defense cooperation more productive and report on results in spring 2014; US and Russia to engage in negotiations on further reductions in nuclear arsenals, including all types of nuclear weapons
 3. Demonstrate good faith commitment to achieving a world without nuclear weapons and, in this regard, engage seriously and constructively in the deliberations of the Open-Ended Working Group on taking forward multilateral nuclear disarmament negotiations, which will commence its substantive work in Geneva on May 14, 2013.
 4. Call on NPT depositaries and co-sponsors of the 1995 Resolution on a Middle East zone free of nuclear weapons and all other weapons of mass destruction to exert all efforts to convene the Conference on the zone, as mandated by the final document of the 2010 NPT Review Conference, as soon as possible. Call also on states in the region to engage constructively with the Facilitator (Ambassador Jaakko Laajava) and with each other to agree on modalities and agenda of the Conference at an early date.
 5. Reaffirm that any use of chemical and biological weapons is unacceptable. NATO is in many ways a unique structure. One of the three pillars of NATO is Science for Peace and Security. Scientific research is among the most important generators of our global fast changing world. The world is no longer a bipolar confrontation, but our common global home. NATO should and can fulfill a role of a significant actor guaranteeing global and human security.

Additional Remarks at Split Conference by Garry Jacobs

The current policy of the P5 nuclear powers has been to separate the issues of non-proliferation and disarmament as far as possible, implying that non-proliferation is the responsibility of all signatories to the Non-Proliferation Treaty whereas disarmament is an issue solely under the purview of the nuclear powers themselves. As a senior UN official pointed out, the failure to prevent the proliferation of nuclear weapons proves that this approach is inherently flawed. The issues of non-proliferation and disarmament are inseparable. Non-proliferation in the absence of complete nuclear disarmament is wishful thinking and unachievable. Lack of progress on disarmament is itself a stimulus to proliferation. The pressure and incentives for proliferation are growing, as these weapons have come to be perceived as a means of acquiring political power and prestige.

It was encouraging to hear a representative of the P5 acknowledge that any use of nuclear weapons would constitute a violation of international humanitarian law. Even in the event that North Korea should choose to use a nuclear weapon, it would not justify retaliation against that country by nuclear weapons, in which case huge numbers of innocent civilians would perish. Conventional weapons would be more than sufficient to totally destroy North Korea's military capabilities without resorting to nuclear weapons. The sole circumstances under which the International Court of Justice conceded that the use of these weapons might not be illegal is in the event of imminent threats to a nation's very survival, not as a means of retaliation against aggressors, even nuclear aggressors.

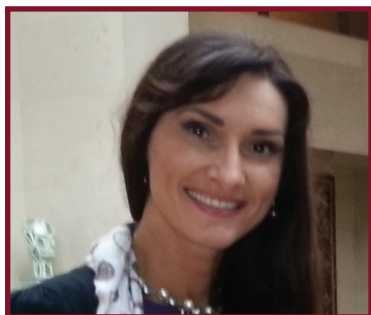
Harlan Cleveland, former NATO Ambassador and WAAS President, has stated that NATO officials knew even in the late 1960s that nuclear weapons were unusable, an idea repeated by several NATO representatives in this conference. Retention of these weapons during the Cold War may have been understandable, but the continued inclusion of nuclear weapons in NATO and national military strategies more than two decades after the end of the Cold War is indefensible.

The emphasis placed by some participants on building trust between NATO and Russia cannot be sufficiently emphasized. Recent events in Syria demonstrate that it is difficult for the UN Security Council to address any international issue without the active cooperation of Russia. Indeed, the constitution of NATO as a cooperative security system makes it essential. The logic of cooperative security compels it. The larger the number of countries incorporated within a cooperative security system, the greater its strength and the less the potential threat from countries outside the alliance. Those omitted from its ranks necessarily regard it as a competitive threat and feel compelled to enhance their own military capabilities in response. Incorporation of Russia within NATO would represent a natural step in the evolution of the alliance from a regional to a global cooperative security system. Therefore, it is reasonable to inquire of NATO what plans it has conceived and measures it is taking to bring about this most desirable outcome.

Today the world is subject to innumerable threats to its security, among which the proliferation or use of weapons of mass destruction is an important element, but certainly not the one that poses the most immediate threat to the security of the greatest number of human beings. Rising levels of unemployment, persistent poverty, financial instability, climate change, terrorism in all forms are ever-present threats impacting on the lives of hundreds of millions of people daily. Therefore it is essential to keep in mind that a military alliance by itself can never assure security to its members or the world. Human security must be conceived and approached comprehensively. Efforts to contain terrorism are essential, but by themselves they will never eliminate the threat of terrorism unless the underlying causes are removed. This is the rationale for the work of the World Academy on a comprehensive approach to addressing global challenges in the 21st century, which is the theme of the conference co-organized by the Academy and the United Nations in Geneva on June 3rd, 2013.

E-Seminar Reports

The Role of Crises in Social Evolution: Lessons from History



Ljudmila Popovic

This WAAS web-seminar held on May 13, 2013 was designed as a follow-up to the Trieste conference and preparation for discussions at the United Nations in Geneva and the Library of Alexandria. Recognizing the need for a new paradigm of human development, the Trieste forum called for a trans-disciplinary theory of social change and evolution. The web seminar reviewed the historical role of crises in social evolution and sought insights relevant to addressing the present global challenges confronting humanity today.

Ivo Šlaus emphasized the centrality of Human Capital. He pointed out some paradoxical characteristics of modern times regarding development of Human Capital, such as the tension between freedom and social responsibility in a multicultural world, and stressed the need for evolved ways to reconcile them.

Re-asserting the need for a new paradigm, **Garry Jacobs** emphasized that the complexity of these challenges necessitates a transdisciplinary, integrated approach, illustrating how the problem of unemployment was linked not only to economy but also to public policy, education, health, psychological well-being, crime, social stability, and terrorism. He urged the forum to go beyond analysis of causes to the formulation of a set of ideas, values, principles, strategies and policies that will lead to inter-sectoral and integrated action.

Mila Popovich offered insights from past world crises by focusing on the decline and break-down of former empires and their ambiguous nature, by which they possessed both the most unifying and the most destructive power. Evaluating crises in their simultaneously disintegrative and regenerative potential for social evolution, she identified key systemic features that need to be taken into account for present solutions and future organization.

Ruben Nelson examined the grand civilizational design and progress of humanity, inquiring about the choices of forms of civilization and human culture. When we call for the preservation of civilization, Nelson observed, we rarely question what we mean by civilization. He pointed out the complete absence of critical reflection on the inherent desirability of the modern industrial civilization as it exists today.

Drawing on examples from history, **Suleika Reiners** of the World Future Council examined a set of policy measures for future finance. She proposed key initiatives to reclaim money creation for the public, taxation to eliminate destabilizing financial speculation, implementation of slow finance, and the benefits of a global currency.

Alberto Zucconi quoted Einstein's observation that we cannot solve problems with the same tools with which we created them. In the lack of effective tools to observe the problem, Zucconi traces reductionist thinking and denial as the causes of the failure to adopt a different matrix. He presented compelling evidence that investments in human well-being, such as preventive protection and promotion of health in the workplace, generates significant return on investment.

Janani Harish concluded by examining the advantages and challenges of online education as part of a global strategy for higher education. The current paradigm of higher education is inadequate to eliminate the qualitative skills gap faced by economically advanced nations and the enormous quantitative gap in access to higher education faced by developing countries. Online education is the most effective strategy to address both these needs in the shortest time and most affordable manner. She called for the establishment of a truly global delivery system capable of providing quality higher education to hundreds of millions of additional students.

The proposal was made for creation of a New Paradigm Working Group to review and consolidate the insights of this seminar and the upcoming conferences.

Mila Popovich

WAAS Membership Dues for 2013

We request all Fellows to support the continued expansion of the Academy's activities by promptly paying membership dues for this year.

Fellows & Associate Fellows: €100 or US \$125

Junior Fellows: €50 or US \$65

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The Evolution of Sovereignty

A transdisciplinary discussion of Issues related to Global Governancy



Winston P. Nagan

The concept of sovereignty was the focus of the second WAAS web-seminar on Global Rule of Law, conducted on May 20th, 2013. This meeting was preparatory to the conference at the UNO in Geneva on June 3rd.

Keynote speaker Winston Nagan, who heads the Academy's law project, examined the evolution of the notion of sov-

ereignty from its roots in the 19th century and the gradual transformation taking place in its essential meaning and relevance. The very first terms which introduce the UN Charter affirm the rights of all human beings – "we the people...determine.." The Preamble in Chapter 1 identifies people's and individuals' rights in terms of the need for security, human rights and dignity, humanitarianism, economic and social justice, and respect for law. The growing recognition of international humanitarian rights represents another challenge to the notion of absolute, unconditional national sovereignty.

The five-fold rise in democracies and the development of institutions of global governance since the founding of the UN now make it possible to challenge the sovereignty of authoritarian states which do not reflect the will or safeguard the rights of their own people. The globalization of information flows, communications, trade, investment, production, mobility, education, crime and terrorism have also substantially weakened the boundaries of sovereign states. The emergence of huge multinational corporations – the GDP of Walmart is twice that of Israel – further undermine the notion of national sovereignty. The problems confronting humanity today cannot be effectively addressed at the level of the nation-state. The recent international financial crisis resulted from the incapacity of the global regulatory system to keep pace with the rapid expansion of financial markets,

since regulatory authority remains rooted at the national level.

The concept of national sovereignty is no longer functionally useful. Its critical role in global security has already been supplanted by collective and cooperative security arrangements such as NATO which need to be further expanded and made more inclusive.

Law is an institution for affirming and protecting values. Rule of law must be based on a constitutive process for converting power into legitimate authority. Nagan argued that the world already has a global constitutive process to serve as the foundation, but that it is not yet sufficiently effective. Law and politics are rooted in authority and authority is rooted in people. Governments are as much a prisoner of public opinion today as they are its leader. Today humanity is represented not only by nation-states but also by a rapidly expanding global civil society of non-governmental organizations.

Foremost among the challenges for global rule of law is to legitimize the institutions of global governance by democratization of the UN and its constituent organizations. The present unrepresentative, undemocratic composition of the UN Security Council must be altered before global rule of law can mature.

The seminar also explored the role of academic institutions, human rights organizations, and international associations of civil society in furthering the advancement of global rule of law. It also discussed the issue of aesthetic rights as a complement to political and economic rights. Ultimately, global rule of law must be fashioned to reflect the will and rights of each individual citizen – not only the minimum rights that need to be protected, but also the undeveloped potential for human development which is the source of new ideas, individual creativity and social evolution. Democracy based on the fundamental value of human capital is fulfilled in individuality. Global society is fulfilled in the fullest psychological development and flowering of the individual.

Call for Nominations

Fellows are invited to submit nominations for WAAS President, Fellows, Associate Fellows and Junior Fellows.

For criteria and procedure [click here](#).

The Science of Complexity

A Transdisciplinary Exploration of Theory and Applications



Raoul Weiler

The [main presentation](#) by **Raoul Weiler** gave an overview of the structure and development of the Science of Complexity. The [time map](#) by B. Castellani was used to explain the stages of the evolution of new concepts and applications in the field of complexity. In addition, contemporary problems were examined: networks, evolution and adaptation, pattern formation, systems theory, nonlinear dynamics, game theory, and collective behavior.

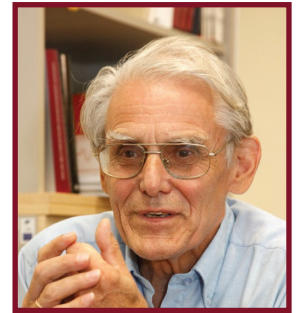
tion, systems theory, nonlinear dynamics, game theory, and collective behavior.

The main concepts of complex systems involve modeling the relationships between constituents (parts) of systems and studies of organized but unpredictable behaviors of systems. More attention needs to be focused on social systems and agent-based modeling, which help to integrate individual behavior and social interaction in the society. The Science of Networks and Complexity approaches are strongly driven by mathematical analyses and techniques.

A new sociology is now emerging based on quantitative data – as far as available – allowing improved ‘predictions’, essentially based on statistical and mathematical models. The properties of complex systems – adaptability, emergence, self-organization, chaos, self-organized criticality, etc. – were briefly explained before coming to the challenges of the modern society, such as resilience and vulnerability, climate change, financial markets, food crises, political instabilities, etc. These studies apply many tools derived for the analysis of physical systems, includ-

ing agent-based modeling, network analyses, data mining, sensitivity analysis, and genetic algorithms.

A challenge for policymakers is to grasp the essence of complex systems paying more attention to dynamic connections and evolution, understanding the possibilities of predictability, uncertainties and recognizing critical self-organizing states. **Jüri Engelbrecht** stressed that this requires a change of mindset.



Jüri Engelbrecht

The discussion was centred around future challenges and also on the role of WAAS in developing the ideas of complex systems. **Alberto Zucconi** proposed publishing an e-book for children on complex systems, which could be part of a general effort to educate the young generation about complex systems.

Garry Jacobs identified several important applications of complexity theory for a more integral understanding of society directly related to the current work of the Academy, including the role of values as attractors, the non-linear role of significant individual actions in effecting social change, and the relationship between the individual and the collective in social theory.

The authors have promised a paper on both topics in the Fall of this year. A third e-seminar in the series in Fall 2013 will deal with self-organization and autopoiesis.

Raoul Weiler & Jüri Engelbrecht

